



AGENDA OF THE COMMON COUNCIL

WEDNESDAY, FEBRUARY 17, 2021, 4:30 PM

Virtual Meeting. Public may join via Zoom.

A. Zoom Meeting Information.

- I. This item contains information and instructions for the virtual Zoom meeting.

B. Roll Call.

C. Pledge of Allegiance.

D. Invocation.

- I. The invocation will be led by Alder Kathy Lefebvre, District 6.

E. Approval of Minutes.

- I. Approval of the minutes from the February 2, 2021 Common Council meeting.

F. Approval of the Agenda.

G. Report by the Mayor.

H. Announcements.

I. Appointments.

- I. **Re-appointments**

Ethics Board

Said Hassan, 538 Clement St., Apt. 5, Green Bay, 54302

Term to expire: March 1, 2024

J. Ordinances - Second Reading for Adoption.

- I. General Ordinance No. 01-21

An ordinance amending Section 29.208, Green Bay Municipal Code, relating to parking regulations.

2. General Ordinance No. 02-21
An ordinance amending Section 29.307, Green Bay Municipal Code, relating to traffic regulations.

K. Report of the Finance Committee (February 9, 2021).

1. To recommend for approval by City Council the purchase for Lights and Siren package for the sum of \$40,642.47 to SoundOff Signal. Vendor held GSA schedule pricing from 2020.
2. To approve the acceptance of the Center for Tech & Civic life grant extension for \$731,191 with an expiration of June 30, 2021.
3. To receive and place on file the status of litigation on the following Notices of Decision from the US Dept of the Interior regarding the intent to take land into trust: Kuffel, Bruss, Syndergaard, Kolb, Kelley, Howey, Duquaine, Cornelius, Kestell, Baumgart, Orlando, and Debenedetto parcels.

The Committee may convene in closed session pursuant to Section 19.85(1) (g), Wis. Stats., for the purpose of conferring with legal counsel for the governmental body who is rendering oral or written advice concerning strategy to be adopted by the body with respect to litigation in which it is or is likely to become involved. The Committee will thereafter reconvene in open session pursuant to Section 19.85(2), Wis. Stats., to take action on items discussed in closed session, if appropriate, and to consider the remainder of the agenda.

4. To approve the Cooperative Governance Agreement and the Law Enforcement Response and Mutual Assistance Agreement between the Oneida Nation and the City of Green Bay.

The Committee may convene in closed session pursuant to Sections 19.85(1)(e), Wis. Stats., for purposes of deliberating or negotiating the sale of public properties, investing of public funds or conducting other specified public business as necessary for competitive or bargaining reasons. The Committee will thereafter reconvene in open session pursuant to Section 19.85(2), Wis. Stats., to take action on items discussed in closed session, if appropriate, and to consider the remainder of the agenda.

5. To receive and place on file the report of the Claims Committee.

The Council may convene in closed session pursuant to Section 19.85(1) (g), Wis. Stats., for the purpose of conferring with legal counsel for the governmental body who is rendering oral or written advice concerning strategy to be adopted by the body with respect to litigation in which it is or is likely to become involved. The Council will thereafter reconvene in open session pursuant to Section 19.85(2), Wis. Stats., to take action on items discussed in closed session, if appropriate, and to consider the remainder of the agenda.

6. To receive and place on file a request of City Council President Jesse Brunette to seek an outside Attorney Client Privilege(d) legal opinion for discernment on options to balance the incredibly important need for public disclosure and transparency with the need to protect the city against potential liability (referral from Protection and Policy Committee, January 25, 2021).

L. Report of the Improvement & Services Committee (February 10, 2021).

1. To approve the report of the Traffic Engineer regarding the need for a barrier on Bellevue Street running north from Lilac Lane and implement the following recommendations from the report. (Ald. Galvin)
 - A. Remove the existing advance northbound curve and southbound turn warning signs on Bellevue St approaching Lilac Ln.
 - B. Install an advance northbound Turn left sign (MUTCD Code W1-1L) with supplemental Speed Advisory plaque (MUTCD Code W13-1P) and advance southbound Turn right sign (MUTCD Code W1-1R) between 150 and 200 ft in advance of Lilac Ln on Bellevue St.
 - C. Install a minimum of 6 chevron signs (3 in each direction) (MUTCD Code W1-8), spaced each approximately 80 ft, on the outside of the turn left (northbound) and turn right (southbound) conditions on Bellevue St approaching and through the Lilac Ln intersection.
2. To receive and place on file the list of streets proposed for resurfacing and reconstruction in 2021 Capital Improvement Program and utilization of Vehicle Registration Fee proceeds. (Ald. Wery)
3. To approve the request by Georgia-Pacific to lease property at 1100 West Mason Street to the City of Green Bay on a month-to-month basis to be used by the Department of Public Works for operations at the West Side Garage.
4. To approve the request by Whitney Townhomes, LLC to enter into an agreement for Department of Public Works collection of sanitation tipper carts on their private road located in the block bounded by Webster Avenue, Pine Street, Van Buren Street, and Cherry Street.
5. To approve the request by Department of Public Works to award a contract for bridge inspection services for 2021-2022 to Ayres Associates in the amount of \$42,652.
6. To receive and place on file the proposed revisions to Section 8.11, Green Bay Municipal Code, Noxious Weeds and Maintenance of Vegetation.
7. To approve the report of the Purchasing Manager to award to Bobcat Plus for a Utility Terrain Vehicle with tracks for the sum of \$28,622. Bobcat Plus was the only vendor to meet the specifications of RFB 2021-04.
8. To approve the award of the contract GREEN BAY WATER UTILITY ADDITION / RENOVATION to the low responsive bidder, Miron Construction Co., Inc., in the amount of \$4,339,725.

9. To receive and place on file the report of actions taken by Department of Public Works

A. Granting of Licenses

1. Sidewalk Builder

- a. Absolute Concrete LLC
- b. Larry Van Rite Trucking & Excavating

2. Tree & Brush Trimmer

- a. AI Tree Service, Inc.
- b. Consciously Fresh Tree Service LLC
- c. Economy Tree Service LLC

10. To order in the improvements constructed and levy assessments for the following:

ASPHALT RESURFACING

GUNS ROAD – Main Street to south City limits

HARVEST ROAD – Finger Road to Crest Lane

IRENE STREET – Crooks Street to Main Street

CONCRETE PAVEMENT

GRAY STREET – Dousman Street to Mather Street

M. Report of the Protection & Policy Committee (February 8, 2021).

1. To approve a request by The Sardine Can at 128. S Broadway Ave. to extend their license premises to parking lot for one day special events on June 9, 2021, June 30, 2021, July 21, 2021, August 11, 2021 and September 1, 2021, subject to complaint.
2. To approve an application for a "Class A" Liquor Class "A" Beer license by Gerczak's Liquor & Catering, LLC at 1244 Velp with a license premises description as "1 room retail store-liquor on shelves, beer cave, fridge units, backroom (app 300 sq feet) (Previously licensed as J&D Gerczak Liq & Catering, LLC), with the approval of the proper authorities.
3. To approve a resolution for the City of Green Bay to adopt the Brown County All-Hazard Mitigation Plan.
4. To refer to staff to bring back an updated map and data listing all licensed establishments, type of license and location in applicable moratorium areas and for the Police Department to provide a report with data to include calls for service city wide to licensed establishments from 2018 through the end of the summer of 2021.

5. To refer to staff to continue working with state representatives and the Military Business District to enact additional regulations for massage spa ordinance.
6. To receive and place on file a request by Ald. Brunette for discussion with possible action on forwarding the Face Covering Ordinance to the Brown County Health Department for review.
7. To receive and place on file The Liquor Violation Report for February 8, 2021.

N. Report of the Plan Commission. (February 8, 2021)

1. To appoint Neil Stechschulte as Secretary of the Green Bay Plan Commission.
2. To rezone 1500 N. Irwin Avenue from General Commercial (C1) to Highway Commercial (C2), subject to the following conditions:
 - a. Compliance to all ventilation standards and HVAC regulations within the City of Green Bay.
 - b. Meets code requirements with an application for review to the Building Inspection Department, this includes proper plans and permits.(Public Hearing held 02/08/2021)
3. To rezone 2226 Main Street from General Commercial (C1) to Highway Commercial (C2). (Public Hearing held 02/08/2021)
4. To amend the Comprehensive Plan for the property located at 215 Elizabeth Street from Medium Density Retail, Office or Housing (MIROH) to Commercial (C) for an area no greater than 320 ft. from the intersection of Main Street and Elizabeth Street. The balance of lands included in the request shall be designated as low density residential.
5. To holdover a request of Ald. Corpus-Dax to examine regulations regarding the current zoning code and "Drive Thru" or "Pickup" lanes, and the necessity of bypass lanes and/or menu boards so notices can be properly posted.

O. Report of the Park Committee (February 10, 2021).

1. To direct staff to proceed with negotiations for the sale of a portion of the Mahon Creek Greenway for residential yard expansion purposes at 2100 Emmalane Drive (Parcel 21-8116) as directed in closed session.

The Council may convene in closed session pursuant to Sections 19.85(1)(e), Wis. Stats., for purposes of deliberating or negotiating the sale of public properties, investing of public funds or conducting other specified public business as necessary for competitive or bargaining reasons. The Council will thereafter reconvene in open session pursuant to Section 19.85(2), Wis. Stats., to take action on items discussed in closed session, if appropriate, and to consider the remainder of the agenda.

2. To receive and place on file the staff update on fat tire biking at He-Nis-Ra Park. (Informational Only)

P. Report of the Personnel Committee (February 9, 2021).

1. To approve the request to fill the following replacement positions and all subsequent vacancies resulting from internal transfers.
 - a. Park Supervisor - Park, Recreation & Forestry

2. To approve the amended request to over hire three firefighter recruits.

Q. Receive and Place on File.

1. The Municipal Court Report for January 2021.
2. Building Permit Report for January 2021.

R. Resolutions.

1. Resolution Authorizing Execution of the DNR Principal Forgiven Financial Assistance Agreement.
2. Resolution for the City of Green Bay to adopt the Brown County All-Hazard Mitigation Plan.
3. Resolution accepting dedication of right-of-way and public improvements in Excalibur 3rd Addition Subdivision.
4. Final resolution authorizing asphalt resurfacing improvements and levying special assessments against property.
5. Final resolution authorizing concrete pavement improvements and levying special assessments against property.
6. Resolution accepting dedication of right-of-way and public improvements located at 420 and 520 North Broadway.
7. Resolution in support of Green Bay Area Public School District students, parents, teachers, and employees in urging the school board and administration to transition quickly but safely toward an in-person option for all students.

S. Ordinances - First Reading.

1. Zoning Ordinance No. 2-21
An ordinance rezoning property located at 1500 N. Irwin from General Commercial (C1) District to Highway Commercial (C2) District.
2. Zoning Ordinance No. 03-21
An ordinance rezoning the property located at 2226 Main Street from General Commercial (C1) District to Highway Commercial (C2) District.
3. Miscellaneous Ordinance No. 01-21
An ordinance adopting an amendment to the Smart Growth 2022 Comprehensive Plan of the City of Green Bay pertaining to property located at 215 Elizabeth Street.

T. Referral of Petitions & Communications.

1. TO: Plan Commission

Submitted by: Alderman Chris Wery, District 8, to the City Clerk via email 2/12/21

The Petition/Communication: "Request that the property at 1022 Ridge Rd, operating as Darjune Recovery House, be required to apply for a conditional use permit. This would be in accordance with Green Bay Municipal Code §13.602 and 13.1603."

U. Adjournment.

- 1) **SUPPLEMENTAL INFORMATION:** The Video of this meeting, Agenda, Agenda Packet, and Minutes are available online at www.greenbaywi.gov/Meetings.
- 2) **ACCESSIBILITY:** Any person wishing to attend who requires special accommodation because of a disability, should contact the City Safety Manager at 920-448-3125 at least 48 hours before the scheduled meeting time so that arrangements can be made.
- 3) **QUORUM:** Please take notice that a majority or quorum of the Common Council will attend this committee meeting and will constitute a meeting of the Common Council for purposes of discussion and information gathering relative to this agenda.
- 4) **REPRESENTATION:** The party requesting the communication, or their representative, should be present at this meeting.

Virtual Meeting Instructions



Common Council Wednesday February 17, 2021

Zoom Meeting Information

Join Zoom Meeting

<https://us02web.zoom.us/j/85787286163>

Meeting ID: 857 8728 6163

Passcode: 804760

One tap mobile

+19292056099,,85787286163#,,,,*804760# US (New York)

+13017158592,,85787286163#,,,,*804760# US (Washington DC)

Dial by your location

+1 929 205 6099 US (New York)

+1 301 715 8592 US (Washington DC)

+1 312 626 6799 US (Chicago)

+1 669 900 6833 US (San Jose)

+1 253 215 8782 US (Tacoma)

+1 346 248 7799 US (Houston)

Meeting ID: 857 8728 6163

Passcode: 804760

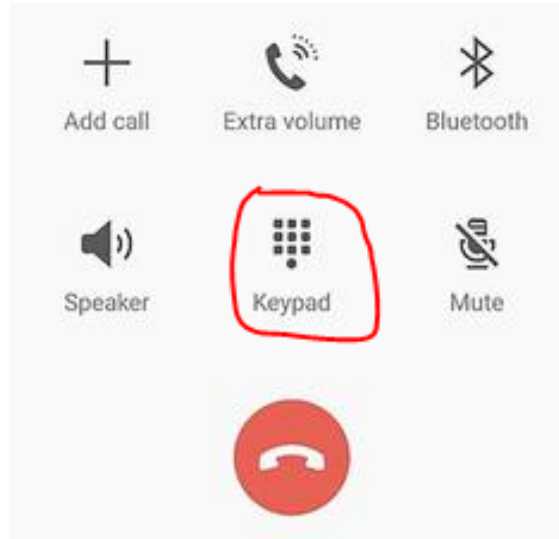
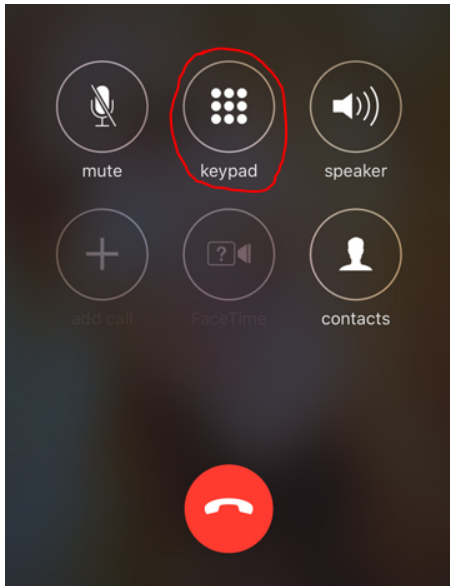
Find your local number: <https://us02web.zoom.us/j/85787286163>

Additional Information

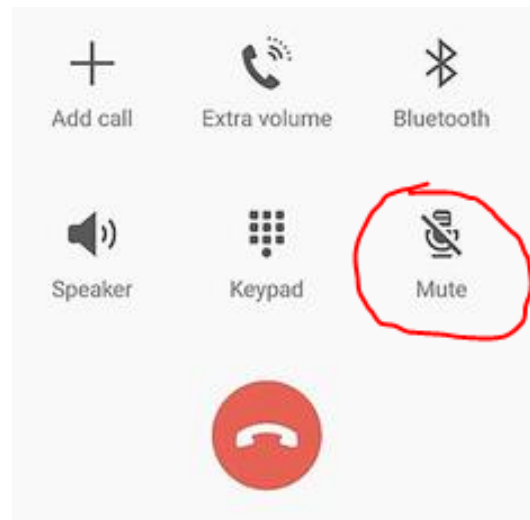
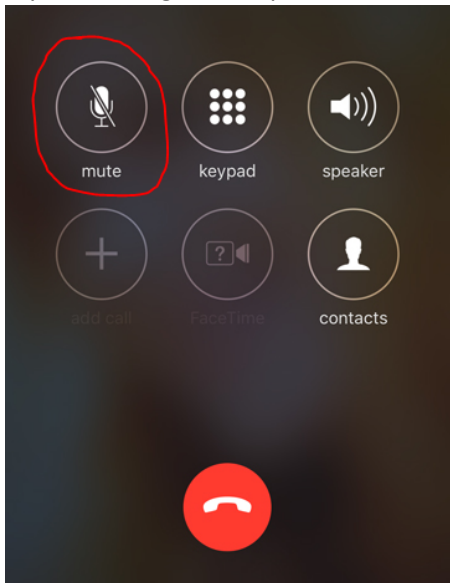
1. Wisconsin Open Meetings Law still applies
 - a. Persons interested in speaking to an item must give their name and address
 - b. Committee/Commission/Board members will still follow *Roberts Rules of Order*
2. All zoom meetings will have a password in the instructions. Please enter when prompted.
3. Please log into the Zoom meeting 10 minutes before the meeting starts to ensure proper technology is working.
 - a. If you are a Board Member, please log into [CivicClerk](#) with a computer, laptop, or tablet device.
4. Once you are in the meeting please mute yourselves.
 - a. You may unmute yourself when you are called upon to speak.
5. Waiting room
 - a. When you call in, all callers/participants will be placed in a “waiting room.”
 - b. Persons on the agenda will be admitted to the meeting, and then once the item is concluded, the host will permanently mute you from the meeting (you can still hear the meeting).
6. Using Zoom with a tablet or computer
 - a. Tablet—you will be asked to sign in. Download the app either with the Apple Store or the Play Store
 - b. Computer—you will be asked to sign in. You may download the app or click on the link to open Zoom in your browser.
7. Registering
 - a. The host may ask you to register for the meeting. A registration link will be sent to you along with the invite. You’ll receive another email confirming that you’re registered for the meeting.
 - b. If you’re using a phone, your registration will still be tied to an email.
8. Raising your hand
 - a. Committee members—you can either use CivicClerk and request to speak or you can “raise your hand” in the zoom meeting (you’d need to use a computer or tablet) to let the host know you’d like to speak. You can also un-mute yourselves and start speaking.
 - b. Persons on the agenda—you can “raise your hand” but you’d need to use a computer. You will be allowed to speak, per Wisconsin Open Meetings Rules, once the committee has “opened the floor for interested parties to speak.” Once the committee is finished with your agenda item, the host will mute you permanently, unless the committee opens the floor again.
9. What devices should I use?
 - a. Smart phone (please see more detailed instructions on page 3)
 - b. Land line
 - c. Tablet—well in advance of the meeting, please download the Zoom Meeting app before you join a meeting by using either the Apple Store or the Play Store. You will be asked to input your name, thus identifying you for the meeting. You’ll also be asked to verify your email.
 - d. Computer—well in advance of the meeting, please download the Zoom Meeting app, but you can also click on a link to open the Zoom Meeting in your browser. You will be asked to input your name, thus identifying you for the meeting.
 - e. For tablet and computer users—if you download the app you will be asked to verify your email.
10. Zoom etiquette
 - a. Muting yourselves when you’re not talking will prevent your background noise from interfering with others’ ability to listen to and participate in the meeting.
 - b. If you’re using a telephone, please identify yourself with your phone number and name before you speak. Zoom meeting hosts can see only your telephone number and will ask you to identify yourselves.
11. Closed session
 - a. Persons in the Zoom meeting will be put into a waiting room while the committee meets in Closed Session. Participants will be admitted back into the Zoom meeting once the committee reconvenes in Open Session.
 - b. Persons watching live on YouTube will see a gray screen with the City logo during closed session.
12. Persons interested in attending anonymously or listening to the meeting may call in by dialing *67 followed by the phone number above.

Calling into the Zoom meeting using a smartphone

1. Dial the phone number listed at the beginning of this document.
2. When prompted, enter the Meeting ID number followed by #
 - a. If you're using a smartphone, you can access the keypad by clicking "Keypad" on your screen



3. Once you are in the meeting, notify the meeting host that you are in and state your name.
4. If you do not need to talk, please make sure your phone is on **Mute**
 - a. If you're using a smartphone, look at your screen and click the Mute button



- b. If you're using a computer, you should see a Mute button in the Zoom application



GENERAL ORDINANCE NO. 01-21

**AN ORDINANCE
AMENDING SECTION 29.208,
GREEN BAY MUNICIPAL CODE,
RELATING TO PARKING REGULATIONS**

THE COMMON COUNCIL OF THE CITY OF GREEN BAY DOES ORDAIN AS FOLLOWS:

SECTION 1. Section 29.208, Green Bay Municipal Code, is hereby amended to remove the following NO PARKING zone:

MILLS STREET, north side, from a point 80 feet west of Henry Street to Henry Street.

IRWIN AVENUE, west side, from a point 200 feet north of Cass Street to a point 130 feet south of Mason Street (Monday through Friday).

SECTION 2. Section 29.208, Green Bay Municipal Code, is hereby amended to establish the following NO PARKING zones:

FERN LANE, south side, from a point 80 feet west of Bader Street to Bader Street.

HILLCREST DRIVE, both sides, from Haven Place to West Mason Street.

SECTION 3. Section 29.208, Green Bay Municipal Code, is hereby amended to establish the following NO PARKING 15-MINUTE LOADING zones:

MILLS STREET, north side, from a point 80 feet west of Henry Street to Henry Street.

SECTION 4. All ordinances, or parts of ordinances, in conflict herewith are hereby repealed.

SECTION 5. Effective date. This ordinance shall take effect on and after its passage and publication.

Dated at Green Bay, Wisconsin this _____ day of _____, 2021.

APPROVED:

Mayor

ATTEST:

City Clerk

DJAH

GENERAL ORDINANCE NO. 02-21

**AN ORDINANCE
AMENDING SECTION 29.307,
GREEN BAY MUNICIPAL CODE,
RELATING TO TRAFFIC REGULATIONS**

THE COMMON COUNCIL OF THE CITY OF GREEN BAY DOES ORDAIN AS FOLLOWS:

SECTION 1. Section 29.307, Green Bay Municipal Code, is hereby amended to establish the following 1-WAY YIELD condition:

RICKY DRIVE, at August Street (northbound)

SECTION 2. All ordinances, or parts of ordinances, in conflict herewith are hereby repealed.

SECTION 3. Effective date. This ordinance shall take effect on and after its passage and publication.

Dated at Green Bay, Wisconsin this _____ day of _____, 2021.

APPROVED:

Mayor

ATTEST:

City Clerk

DJAH



Report to the
Finance Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

Calvin Winters

AGENDA ITEM # K.I

To recommend for approval by City Council the purchase for Lights and Siren package for the sum of \$40,642.47 to SoundOff Signal. Vendor held GSA schedule pricing from 2020.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

- I. REQ 18 New Squad Lights and Siren 1-22-21

Green Bay Police Department

FY 2021 (2020 Bonded Funds)

Requisition # 18

Department Contact for this Requisition: Lt. Mike Sobieck @ 3217.

Specs for complete Lights and Siren package for new Squad SUV build.

Approximate cost: \$42,000

Account Number: 423300-55140-27308 (Approved 2020 Bond Funds)

Created and Approved by Rick Jurkanis 1/22/21

Note:

Please refer to specs provided and Single Source document for details and review with Lt. Sobieck before issuing bid opportunity.

Note: Please see attached quote from Soundoff Signal (Same vendor as last year's purchase). This contains exact model numbers needed and the prices listed are on the State Government Pricing Plan.



PO Box 206
Hudsonville, MI 49426-0206
www.soundoffsignalgsa.com
800.338.7337 / office 616.896.7100 / office fax 616.896.1226

Our Quotation # Q04083 -00
11/12/2020

GREEN BAY POLICE DEPARTMENT
307 S ADAMS ST
GREEN BAY WI 54301--4582
USA

Terms : PREPAID

Quotation Valid Thru : 03/31/2021

Attention : DEAN SIMMON

We are pleased to quote your requirements as shown below. Our company has a reputation for delivering quality products on time and we look forward to the opportunity of serving you. Please reference quote number shown above when placing order for these products to ensure that pricing shown is honored.

Item	Part / Rev / Description / Details	Quantity Quoted	Unit Price	Extended Price
001	SS-ENFSGS3D Rev 000 U/M EA N-FORCE SGL D/G 12LED SAE BLK (R/W)	2.00	103.490	US \$ 206.98
	SoundOff Signal nForce™ Single Deck/Grille Mount Light, SAE Class 1, 10-16v, Black Housing, 12 LED, Dual Color - Red/White Customer Part : SS-ENFSGS3D			
002	SS-ENFSGS3E Rev 000 U/M EA N-FORCE SGL D/G 12LED SAE BLK (B/W)	2.00	103.490	US \$ 206.98
	SoundOff Signal nForce™ Single Deck/Grille Mount Light, SAE Class 1, 10-16v, Black Housing, 12 LED, Dual Color - Blue/White			
003	ENFLB008BL-0B6 Rev NS U/M EA NFORCE LED LIGHTBAR	6.00	1,764.960	US \$ 10,589.76
	48"/122cm 12 VOLT NFORCE LED LIGHTBAR W/ LIN DSC TECHNOLOGY /D24/ D12 D12 D12 D12 D12 D12 D24\ /R_W/ R_W R_W R_W B_W B_W B_W B_W\ A --GRT-- --GRT-- --GRT-- O--GRT-- A A --CLR-- --CLR-- --CLR-- O--CLR-- A \D24\ D12 D12 D12 D12 D12 T18 /D24/ \R_W\ R_A R_A R_A B_A B_A RBA B_W/ Material - Lexan [12 12] Accessories - PNFLBSPLT1, AUTO-DIM Mount - Standard Fixed Height Mount (PNFLBK08) & Extension Plate (PNFLBKXT) Hook - PNFLBF32 OPEN MARKET			
004	ENGCC01243 Rev NS U/M EA BLUEPRINT 3.0 100 AMP CENTRAL CTRL	13.00	305.760	US \$ 3,974.88
	OPEN MARKET			
005	SS-ENGCP18001 Rev 000 U/M EA BLUEPRINT REMOTE CONTROL PANEL	13.00	137.830	US \$ 1,791.79
	Customer Part : SS-ENGCP18001			
006	ENGLNK002 Rev NS U/M EA BLUEPRINT LINK KIT (002)	13.00	236.160	US \$ 3,070.08
	OPEN MARKET			

GREEN BAY POLICE DEPARTMENT
307 S ADAMS ST
GREEN BAY WI 54301--4582
USA

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Item	Part / Rev / Description / Details	Quantity Quoted	Unit Price	Extended Price
007	SS-ENGND04101 Rev 000 U/M EA BLUEPRINT 0410 50AMP REMOTE NODE	13.00	173.130	US \$ 2,250.69
	Customer Part : SS-ENGND04101			
008	ENGSA07152 Rev NS U/M EA BLUEPRINT 482 200W AMPLIFIER/SWITCH	13.00	323.040	US \$ 4,199.52
	OPEN MARKET			
009	SS-ENGHNK01 Rev 000 U/M EA BLUEPRINT CENTRAL CTRL HRNS KIT	13.00	35.300	US \$ 458.90
	Customer Part : SS-ENGHNK01			
010	SS-ENGHNK02 Rev 000 U/M EA BLUEPRINT REMOTE NODE HRNS KIT	13.00	32.880	US \$ 427.44
	Customer Part : SS-ENGHNK02			
011	ETTFUT-16 Rev NS U/M EA FORD UTILITY PLUG-IN TAILLIGHT FLSH	13.00	67.200	US \$ 873.60
	OPEN MARKET			
012	EML6E20R Rev NS U/M EA ML6 FLUSH MOUNT LIGHT (RED)	13.00	47.520	US \$ 617.76
	OPEN MARKET			
013	EML6E20B Rev NS U/M EA ML6 FLUSH MOUNT LIGHT (BLU)	13.00	47.520	US \$ 617.76
	OPEN MARKET			
014	ETSSVBK01 Rev NS U/M EA 100 SERIES SPEAKER BRACKET KIT (01)	26.00	21.600	US \$ 561.60
	OPEN MARKET			
015	ETSS100J Rev NS U/M EA 100J SERIES COMPOSITE SPEAKER	26.00	120.000	US \$ 3,120.00
	OPEN MARKET			

GREEN BAY POLICE DEPARTMENT
307 S ADAMS ST
GREEN BAY WI 54301--4582
USA

Terms : PREPAID

Quotation Valid Thru : 03/31/2021

Attention : DEAN SIMMON

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Item	Part / Rev / Description / Details	Quantity Quoted	Unit Price	Extended Price
016	PMP1BRK2LPV Rev NS U/M EA MPOWER 3" LICENSE PLATE VERT KIT OPEN MARKET	13.00	19.200	US \$ 249.60
017	SS-EMPS1STS3D Rev 000 U/M EA MPOWER 3" STUD MNT SAE 8 LED (R/W)	26.00	84.630	US \$ 2,200.38
018	SS-EMPS1STS3E Rev 000 U/M EA MPOWER 3" STUD MNT SAE 8 LED (B/W)	13.00	84.630	US \$ 1,100.19
019	SS-EMPS1STS4RBW Rev 000 U/M EA MPOWER 3" STUD MNT SAE 12 LED (RBW)	13.00	93.330	US \$ 1,213.29
020	ENFWB001KJ Rev 000 U/M EA NFORCE INTERIOR LIGHTBAR Ford Explorer/PI Utility w/o option 76P (2020) Split Front (DRV) D12 D12 D12 D12 D12 D12 D12 (PAS) R_W R_W R_W R_W B_W B_W B_W B_W Accessories: PNFLBSPLT1 DSC w/ Breakout Box (Included)	2.00	819.702	US \$ 1,639.40
021	ENFWB001LV Rev 000 U/M EA NFORCE INTERIOR LIGHTBAR Ford Explorer/PI Utility w/o option 76P (2020) Solid Rear (DRV) D12 D12 D12 D12 D12 D12 (PAS) R_A R_A R_A B_A B_A B_A B_A Accessories: PNFLBSPLT1 DSC w/ Breakout Box (Included) OPEN MARKET	2.00	635.934	US \$ 1,271.87

Total Items Price US \$ 40,642.47

Thanks again for your interest in our company as one of your suppliers.

With best regards,
SoundOff Signal GSA Sales
ETI LIGHTING, DBA SOUNDOFF SIGNAL GSA
GS-07F-0485Y
CONTRACT PERIOD JULY 20, 2017 TO JULY 19, 2022
DUNS 831009597
CAGE 6FVPo
TAX ID 382739208



Report to the
Finance Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # K.2

To approve the acceptance of the Center for Tech & Civic life grant extension for \$731,191 with an expiration of June 30, 2021.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

- I. Tech & Civic Life Grant

Diana Ellenbecker

From: Celestine Jeffreys
Sent: Monday, February 8, 2021 9:14 AM
To: Diana Ellenbecker
Subject: FW: CTCL COVID-19 Response Grant, Extension Request - Approved



Celestine Jeffreys

Clerk, City of Green Bay

From: CTCL Grants Team <grants@techandcivillife.org>
Sent: Thursday, February 4, 2021 3:46 PM
To: Celestine Jeffreys <Celestine.Jeffreys@greenbaywi.gov>
Subject: CTCL COVID-19 Response Grant, Extension Request - Approved

Hello from the CTCL team,

Thank you for providing the requested additional information and for your patience throughout the review process. We are pleased to share that CTCL has approved your request for a 6-month extension to the extent that your proposed expenditures fall within the below criteria.

This extension provides you until **June 30, 2021** to expend the remaining **\$731191** of your grant.

Please note the following criteria for your approved extension request:

1. Funds must be used exclusively for the public purpose of planning and operationalizing safe and secure election administration in your jurisdiction. Additionally remaining funds can only be used for:

- Staffing or administrative costs for continuing expenses relating to the November 2020 general election, including any associated runoffs. These continuing expenses may include:
 1. Cleanup, closing out vote history or reconciling poll lists.
 2. Responding to media or public information requests relating to the November 2020 election.
 3. Any equipment necessary to conduct any of these tasks safely in a pandemic.
- Payment of invoices or expenses incurred or arising from the November 2020 general election, including any associated runoffs, even if the expenses are paid in 2021.
- Expenses related to the safe administration of elections taking place in 2021 during a pandemic, for which an election department is unable to use supplemental federal funds that Congress approved in 2020 (or where federal funds are unavailable).

*Please note that we understand that you may adjust your plans for expending remaining funds based on this criteria. You are **not** required to resubmit an “Additional Information Form” proposed 2021 budget.

2. A final report is to be submitted no later than July 31, 2021. Please submit via the reporting portal.

3. Grantees will be required to return any unspent funds at the time of final reporting.

- Any remaining funds that are not able to be spent on the above categories of expenditures must be returned to CTCL via check by **August 7, 2021**.
 - **Payable to:** Center for Tech and Civic Life
 - **Mailing address:** 233 N Michigan Ave, Suite 1800, Chicago, IL 60601
 - **Attn:** Nareth Phin, Operations Director

Thank you for all your hard work! And as always, let us know if you have any other questions by contacting us at grants@techandcivicliflife.org.

Best,

The CTCL team



Report to the
Finance Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # K.3

To receive and place on file the status of litigation on the following Notices of Decision from the US Dept of the Interior regarding the intent to take land into trust: Kuffel, Bruss, Syndergaard, Kolb, Kelley, Howey, Duquaine, Cornelius, Kestell, Baumgart, Orlando, and Debenedetto parcels.

The Committee may convene in closed session pursuant to Section 19.85(1) (g), Wis. Stats., for the purpose of conferring with legal counsel for the governmental body who is rendering oral or written advice concerning strategy to be adopted by the body with respect to litigation in which it is or is likely to become involved. The Committee will thereafter reconvene in open session pursuant to Section 19.85(2), Wis. Stats., to take action on items discussed in closed session, if appropriate, and to consider the remainder of the agenda.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

None



Report to the
Finance Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # K.4

To approve the Cooperative Governance Agreement and the Law Enforcement Response and Mutual Assistance Agreement between the Oneida Nation and the City of Green Bay.

The Committee may convene in closed session pursuant to Sections 19.85(1)(e), Wis. Stats., for purposes of deliberating or negotiating the sale of public properties, investing of public funds or conducting other specified public business as necessary for competitive or bargaining reasons. The Committee will thereafter reconvene in open session pursuant to Section 19.85(2), Wis. Stats., to take action on items discussed in closed session, if appropriate, and to consider the remainder of the agenda.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

1. Oneida Nation_City of Green Bay_Cooperative Governance Agreement_FINAL
2. GBPD and OPD Mutual Assistance Agreement FINAL

COOPERATIVE GOVERNANCE AGREEMENT

BETWEEN

THE ONEIDA NATION

AND

THE CITY OF GREEN BAY

THIS AGREEMENT, by and between the ONEIDA NATION (the “Nation”), a federally recognized treaty tribe organized under the laws of the United States, and the CITY OF GREEN BAY (the “City”), a municipal government organized under the laws of the State of Wisconsin (each a “party” and collectively, the “parties”),

WITNESSETH:

WHEREAS, the Nation and the City have been good neighbors and desire the spirit of cooperation between the two governments to continue; and

WHEREAS, the Oneida Reservation was established pursuant to the 1838 Treaty with the Oneida, 7 Stat. 566, and encompasses approximately 65,400 acres; and

WHEREAS, the boundaries of the Oneida Reservation and the boundaries of the City overlap, and portions of the City are within the Oneida Reservation; and

WHEREAS, the Nation owns fee title to parcels of land located within the City, and the Nation may apply to have such parcels taken into trust by the United States; and

WHEREAS, the United States holds title to parcels of land within the City in trust for the benefit of the Nation; and

WHEREAS, both the Nation and the City provide services which benefit properties, residents, and the community within the Oneida Reservation and the City; and

WHEREAS, the services provided by the Nation and the City complement each other and are not intended to create duplication of services; and

WHEREAS, the City derives revenue from the taxation of real property, among other things; and

WHEREAS, lands held in trust by the United States for the benefit of the Nation are exempt from taxation under federal law due to the Nation’s status as a sovereign; and

WHEREAS, the Nation and the City enjoy a relationship of mutual trust and respect; and

WHEREAS, both the Nation and the City exercise jurisdiction and provide governmental services within their respective territories, and both the Nation and the City recognize the importance of collaborative efforts to enhance governmental services and to mitigate costs associated with providing governmental services; and

WHEREAS, the officers and officials of the City have a duty to uphold the laws of the United States and the State of Wisconsin, including complying with the terms of the 1838 Treaty; and

WHEREAS, it is mutually beneficial to the parties to put their understandings in writing;

The Nation and the City hereby agree to the following terms and conditions:

1. **DEFINITIONS.** For purposes of this Agreement, the following terms shall have the following meanings:
 - a. “Class III Gaming” has the meaning ascribed to it in the Indian Gaming Regulatory Act, 25 U.S.C. § 2703(8).
 - b. “Gaming Compact” means the agreement entered into by the Nation and the State of Wisconsin pursuant to the Indian Gaming Regulatory Act, 25 U.S.C. § 2701, et seq., for the conduct of Class III Gaming on the Nation’s Indian lands within the State of Wisconsin, and all amendments to such agreement.
 - c. “Oneida Reservation” or “Reservation” means the land set aside for the use and occupancy of the Nation and its Members pursuant to the 1838 Treaty with the Oneida, 7 Stat. 566, encompassing approximately 65,400 acres, and any lands added thereto pursuant to federal law.
 - d. “Tribal Fee Land” means land to which the Nation holds title in fee simple.
 - e. “Tribal Land” means Tribal Fee Land on the Reservation and Tribal Trust Land.
 - f. “Tribal Member” or “Member” means a duly enrolled member of the Nation.
 - g. “Tribal Trust Land” means land to which the United States holds title for the benefit of the Nation pursuant to federal law.
 - h. “Year” means the fiscal year beginning on October 1st of a given calendar year and ending on September 30th of the following calendar year.
2. **TERM.** The term of this Agreement shall be fifteen (15) years, commencing on the date the Agreement is executed by both parties, and ending on December 31, 2035, and shall automatically renew for successive five (5) year terms.

3. **LAW ENFORCEMENT MUTUAL AID.** The Oneida Police Department and the Green Bay Police Department will provide mutual aid in the form of back-up/secondary assistance for police, ambulance, emergency medical or rescue services (“Mutual Aid”). The conditions under which Mutual Aid shall be provided are set forth in full in Attachment B, which the parties may from time to time amend.

4. **INTERGOVERNMENTAL COOPERATION.** The parties agree to work collaboratively to the greatest extent possible in order to foster positive intergovernmental relationships, achieve common goals, and realize efficiencies in the delivery of programs and services, including but not limited to the following efforts:

- a. Point of Contact. The parties hereby designate the following representatives as points of contact who shall have primary responsibility for ensuring compliance, receiving notice, and ensuring continued participation under this Agreement:

City of Green Bay:

Chief of Staff
City of Green Bay
100 North Jefferson St., Rm 200
Green Bay, WI 54313

Oneida Nation:

Tribal Secretary
Intergovernmental Affairs Director
Oneida Nation
P.O. Box 365
Oneida, WI 54155

A party may only change its designated Point of Contact by providing written notice to the other party.

- b. Information Sharing. The parties will collaborate on mapping and share data bases concerning issues of mutual interest and concern, including but not limited to parcel information, zoning, land use, land ownership status, census information, archeological/historical background (with appropriate limitations on culturally sensitive sites and public access), utilities, roads and rights of way, etc.
- c. Resource Sharing. The parties agree to make equipment, supplies, and other physical assets available to each other on an at-cost or in-kind basis when permissible and feasible in order to facilitate the delivery of governmental services and to promote the common good.
- d. Cost Mitigation. The parties will actively explore ways to conserve resources through cooperation and agree to accept and review proposals from each other regarding potential cost saving measures related to the delivery of governmental programs and services.
- e. Grants and Funding Sources. The parties agree to support each other in seeking grants and other sources of funding, and agree, to the extent feasible, to share knowledge and expertise regarding grant opportunities and grant writing.

- f. Legislative Initiatives. The parties agree to share information regarding legislative initiatives on matters of mutual concern and in which their interests coincide, and each party agrees to consider the interests of the other party in determining whether to support or oppose legislative proposals.
- g. Environmental Protection. The parties each provide programs and services which protect the environment and promote human health and agree to coordinate such activities to the extent possible and to work together on public education, stormwater management, responses to spills, clean sweep programs, and the like.
- h. Departmental Meetings. Each party will identify a contact person to facilitate meetings between corresponding departmental staff of the parties in order to identify issues of concern, address emergent issues, and promote intergovernmental cooperation. The parties' contact persons are listed in Attachment A, which the parties shall update from time to time as necessary, but not less than annually.
- i. Liaisons. Each party will identify representatives to serve as liaisons to relevant boards, committees and commissions of the other party for the purpose of facilitating communication. The parties' liaisons are listed in Attachment A, which the parties shall update from time to time as necessary, but not less than annually.

5. BAY BEACH WILDLIFE SANCTUARY. The mission of the City's Bay Beach Wildlife Sanctuary (the "Sanctuary") is: "To provide an urban wildlife refuge where people can interact with wildlife, plants and other natural resources through environmental education and recreation." This mission corresponds with and complements the Nation's goals of protecting and enhancing the natural environment. Despite the City's ongoing commitment and efforts to maintain the Sanctuary, additional capital improvements, education, and services are necessary to enable the Sanctuary to fulfill its mission. In recognition of the mutual benefit of the Sanctuary to the community, the Nation agrees to make a one-time payment of \$150,000 to further the mission of the Sanctuary.

6. NEIGHBORHOOD LAND USE

- a. The Oneida Code of Laws contains zoning, building, nuisance, and other land use regulations ("Land Use Regulations") which are applicable to the Nation, Tribal Members, and individuals and businesses leasing, occupying or otherwise using Tribal Land. City ordinances addressing Land Use Regulations do not apply to the Nation or Tribal Members on the Reservation.
- b. The parties agree to work together to improve neighborhood services and recognize that communication between the parties is the best way to achieve this goal. The parties shall each identify a contact person responsible for communication regarding land use regulation issues, and Tribal staff and City staff shall meet quarterly.

- c. The City agrees to refer land use regulation issues concerning the Nation, Tribal Members, and individuals and businesses leasing, occupying or otherwise using Tribal Land to the Nation's contact person and appropriate tribal staff. The Nation agrees to refer neighborhood peace and safety issues concerning nonmembers on non-tribal land to the City's contact person and appropriate city staff.
- d. The parties' contact persons and staff members are listed in Attachment A, which the parties shall update from time to time as necessary, but not less than annually.

7. PUBLIC IMPROVEMENTS.

- a. Residential Street Improvements. The City does not currently assess property owners the cost of residential street repairs. Instead, the City collects a vehicle registration tax ("Wheel Tax") in lieu of the assessments for street improvements on residential properties. The Annual Payment under section 8 below covers the cost of all residential street improvements benefitting Tribal Land. In the event the City in the future assesses the cost of street improvements on residential properties, the Nation will pay the actual proportional cost of all such improvements benefitting Tribal Land in the same manner as provided for in subsection (b) below, and all amounts paid by the Nation for such improvements shall be credited against the Annual Payment for the year in which they are paid.
- b. To the extent the City assesses the cost of public improvements against properties benefitted by such improvements, the Nation agrees to pay the actual, proportional cost of all public improvements benefitting Tribal Land including, but not limited to, grading, graveling, storm and sanitary sewer and laterals, water mains and laterals, sidewalks, paving and relays, reconstructions, overlays or repairs thereof, to the same extent and on the same basis as such costs are charged to other property owners. The Nation agrees to pay those costs in accordance with the following procedure: The City will not take any action to levy assessments for such improvements but will inform the Nation of the proposed improvement and the estimated cost thereof not less than thirty (30) days prior to commencement of the project. The City agrees to give due consideration to all comments which the Nation may submit regarding the project. The City will bill the Nation the cost of any such street improvement attributable to the Tribal Land upon completion of such improvement. The Nation will pay such bill in full within thirty (30) days of receipt thereof.

8. COMPENSATION.

- a. Annual Payment. In consideration of the services provided by the City, and the promises and agreements stated herein, the Nation shall make an annual payment (the "Annual Payment") to the City in accordance with the following schedule:

2021	\$322,192
2022-2025	\$525,000

2026-2030	\$575,000
2031-2035	\$625,000

On or before January 31, 2035, the parties shall enter into good faith negotiations regarding the amount of the Annual Payment for 2036 and following years. Either party may request peacemaking and/or non-binding mediation to facilitate such negotiations, and the parties shall thereafter engage in such peacemaking and/or mediation. Disagreements about the amount of the Annual Payment for 2036 and following years shall not be subject to arbitration. In the event the parties cannot agree on the amount of the Annual Payment for 2036 and following years by December 31, 2035, either party may terminate this agreement by providing written notice of termination to the other party.

The Nation may make Annual Payments in the form of cash or cash equivalents, in-kind and non-monetary contributions, cooperative governance project payments, and payments for residential street improvements under section 7 above, provided that the Nation shall make a payment of at least \$300,000 annually in the form of cash or cash equivalents.

- b. **In-Kind and Non-Monetary Contributions.** The value of rights, goods and services which the Nation provides or transfers to the City shall be counted as part of the Annual Payment, provided the City accepts and agrees to such in-kind and non-monetary contributions. In-kind and non-monetary contributions shall be valued at the fair market value of the rights, goods or services, or the actual price paid by the Nation to acquire the rights, goods or services. For example, if the Nation acquires and transfers ownership of \$100,000 in firefighting equipment to the City in March 2030, the Nation shall receive a credit of \$100,000 against the Annual Payment for that year. Under no circumstances shall Nation's internal costs be considered to be in-kind or non-monetary contributions.
- c. **Cooperative Governance Project Payments.** Payments directly to a vendor or agency as part of a joint or cooperative project between the City and Nation shall be counted as part of the Annual Payment. The Nation shall receive a dollar-for-dollar credit for all expenditures made by the Nation in furtherance of such projects. For example, if the Nation pays \$100,000.00 to fund cooperative governance projects in March 2030, the Nation shall receive a credit of \$100,000.00 against the Annual Payment for that year.

Cooperative Governance Projects. Cooperative governance projects are intended to facilitate or enhance governmental services and/or to promote economic development. By way of illustration but not limitation, cooperative governance projects may include: the construction, maintenance, and repair of roads, bridges, pedestrian pathways, and related infrastructure; the construction, maintenance, and repair of storm sewers, storm water treatment facilities, and related infrastructure; the construction, maintenance, and repair of buildings, public facilities, and related infrastructure; the purchase of land; the procurement of leases, easements, or rights-

of-way; and the purchase of machinery, equipment, and tools; contracted lobbying services for the benefit of the City; contracted grant-writing services for the benefit of the City.

Cooperative Governance Project Team. Each party shall designate three (3) representatives to serve on a cooperative governance project team which shall be responsible for identifying, planning, bringing forward for approval, and overseeing the implementation of cooperative governance projects. The cooperative governance project team shall meet as frequently as necessary, and in no event fewer than four (4) times/year. With respect to each approved project, the cooperative governance project team shall determine the amount of credit to which the Nation shall be entitled for cooperative governance project payments and in-kind and non-monetary contributions to fund or facilitate the project.

The parties' cooperative governance team members are listed on Attachment A, which the parties shall update from time to time as necessary, but not less than annually.

- d. Invoices and Payment. On or before February 1st of each year, the City will submit an invoice to the Nation reflecting the Annual Payment for that year. In the event the Nation disputes the invoice, the Nation shall initiate the dispute resolution procedures set forth in section 10 below within thirty (30) days of receipt of the invoice. On or before September 30th, the Nation shall pay the Annual Payment less any amounts taken as credits for in-kind and non-monetary contributions, cooperative governance project payments, and payments for residential street improvements, and shall itemize the amounts of such credits in writing. In the event the City disputes the amounts taken as credits by the Nation, the City shall initiate the dispute resolution procedures set forth in section 10 below within thirty (30) days.
- e. Suspension of Payments. In the event of a Change in Circumstances which affects the Nation's ability to make Annual Payments, the Nation may suspend payment until such time as the Change in Circumstances has abated, and thereafter shall pay the suspended Annual Payment(s) in three equal annual installments beginning in the year after the Change in Circumstances has abated or as the parties may otherwise in writing agree. If the Change in Circumstances persists in excess of one (1) year, either party may terminate this Agreement upon written notice to the other party; provided, however, that the obligation to pay the Annual Payment shall not be affected until termination, and all amounts accruing prior to termination shall remain due. The parties shall thereafter enter into good faith discussions regarding the possibility of entering into a successor agreement. For purposes of this subsection 8(e), Change in Circumstances includes: (1) impairment of the Nation's ability to conduct Class III gaming at the locations at which the Nation currently conducts such gaming due to adverse court decision(s), acts of God, or otherwise; (2) shutdown of the federal government lasting three months or more; and (3) economic recession defined as lasting two quarters or more. A party may not terminate this Agreement

pursuant to this section 8(e) unless payments have been suspended due to a Change in Circumstances, and the Change in Circumstances persists in excess of one (1) year.

- f. Repayment by City. In the event the Nation serves written notice of dispute on the City under subsection 10(a) below alleging the City has materially breached the terms of this Agreement, the Nation's obligation to make Annual Payments shall continue pending resolution of the dispute pursuant to the procedures outlined in section 10 below. If an Arbitration Panel empaneled pursuant to subsection 10(d) below determines the City has materially breached or is materially breaching the terms of this Agreement, the City shall repay to the Nation those amounts paid under subsection 8(a) above and return any in-kind and non-monetary contributions received under subsection 8(b) above, from the date of service of the written notice of dispute to the date of the Arbitration Panel's determination, order and/or judgment. The requirements of this subsection 8(f) shall not apply to any Cooperative Governance Projects Payments identified in subsection 8(c) above, which projects the parties agree are mutually beneficial to the City and Nation. In addition, if the City does not cure such breach within fifteen (15) days of such determination, order and/or judgment, the Nation may terminate this Agreement pursuant to section 13 below and thereupon shall not be required to make any payments to the City. For purposes of this subsection 8(f), any violation by the City of the provisions of section 9 below shall be deemed to be a material breach of this Agreement.

9. LAND INTO TRUST.

- a. When the Nation acquires fee title to land located within the City, the Nation will notify the City of the acquisition and the following information: 1) the street address, 2) the tax parcel number(s), 3) the acreage, 4) the current use of the land, and 5) the Nation's proposed use of the land. Upon receiving such notice, the City may request a meeting and the parties shall thereafter meet to discuss any issues or matters raised by the City pertaining to that parcel.
- b. At least sixty (60) days prior to submitting an application to have land within the City taken into trust, the Nation will send notice to the City which includes the following information: 1) the street address, 2) the tax parcel number(s), 3) the acreage, 4) the current use of the land, 5) the Nation's proposed use of the land after trust acquisition, and 6) any proposed development or improvements to the land. Within thirty (30) days of receiving such notice, the City shall identify in writing any issues or matters pertaining to the land, and the parties shall thereafter meet within ten (10) days, or at any other time mutually agreeable, to discuss such issues or matters. Prior to submitting the application, the Nation shall inform the City in writing of any measures it may take to address any issues or matters raised by the City. After sixty (60) days have elapsed from the date of the Nation's notice to the City, the Nation may file the application, and shall clearly identify in the application any unresolved issues or matters, any actions taken or proposed to be taken by the Nation to address the issues or matters, and any final positions taken by the City or the Nation with

- regard to the unresolved issues or matters. Either party may thereafter request mediation or peacemaking to attempt to resolve the issues or matters, and the parties shall engage in such mediation or peacemaking. This subsection 9(b) shall not apply to any applications filed by the Nation prior to the effective date of this Agreement.
- c. The City will not oppose applications by the Nation to have land taken into trust during the term of this Agreement if the following criteria are satisfied: 1) the Nation has held fee title to the land in question for a period of three (3) years or more prior to the date of the application; or prior to the Nation's acquisition, a tax exempt entity held title to the land in question; 2) the Nation has met its obligations under subsection 9(b) above with respect to the application in question; and 3) the Nation has not been determined to be in material noncompliance with the terms of this Agreement pursuant to the dispute resolution procedures set forth in subsection 10(d) below; or if the Nation has been determined to be in material noncompliance with the terms of this Agreement pursuant to the dispute resolutions procedures set forth in subsection 10(d) below, such noncompliance has been cured or corrected. If these criteria are not satisfied, the City may object to the application as provided for in 25 C.F.R. Part 151. Notwithstanding the foregoing, in no event shall the City challenge the authority of the Secretary of the United States Department of the Interior to take land into trust for the benefit of the Nation on the grounds the Nation allegedly was not under federal jurisdiction in 1934 or otherwise.
 - d. If a representative of the City, in his or her official or personal capacity, submits an objection to the United States Bureau of Indian Affairs or other responsible federal agency regarding an application for trust acquisition of Tribal Fee Land which meets the criteria listed in subsection 9(c) above, the City will as soon as practicable submit appropriate correspondence to the United States Bureau of Indian Affairs or other responsible federal agency attesting that the objector does not represent the interests of the City or have authority to speak on the City's behalf. In addition, if a representative of the City, in his or her official or personal capacity, appeals a notice of decision or other determination issued by the Bureau of Indian Affairs or other responsible federal agency to place into trust Tribal Fee Land which meets the criteria listed in subsection 9(c) above, the City will as soon as practicable file appropriate pleadings or correspondence with the Interior Board of Indian Appeals or other responsible hearing body attesting that appellant does not represent the interests of the City or have authority to speak on the City's behalf.
 - e. Upon execution of this Agreement and in consideration of the promises and payments identified herein, the City shall withdraw any and all objections it has submitted to the Bureau of Indian Affairs or Department of the Interior regarding the Nation's applications to have land placed into trust, and shall withdraw and move for the immediate dismissal with prejudice of any and all appeals it has filed with the Interior Board of Indian Appeals of notices of decision to place land into trust for the Nation.

10. DISPUTE RESOLUTION.

- a. Negotiation. If either party believes the other has failed to comply with the requirements of this Agreement, or if a dispute arises over the proper interpretation of any provision of this Agreement, then either party may initiate negotiation by serving a written notice on the other identifying the specific provision or provisions of the Agreement in dispute and specifying in detail the factual basis for any alleged non-compliance and/or the interpretation of the provision of the Agreement. Within thirty (30) days of service of such notice, representatives designated by each party shall meet in an effort to resolve the dispute through negotiation.
- b. Peacemaking. If either party believes the other has failed to comply with the requirements set forth in this Agreement, or if there is a dispute over the proper interpretation of any provision of this Agreement, the parties may agree in writing to attempt to settle the dispute through peacemaking.
- c. Mediation. If either party believes the other has failed to comply with the requirements set forth in this Agreement, or if there is a dispute over the proper interpretation of any provision of this Agreement, and peacemaking has been unsuccessful, the parties may agree in writing to attempt to settle the dispute by non-binding mediation.
- d. Arbitration. If a dispute is not resolved within one hundred twenty (120) days of service of the notice provided for in subsection (a) above, either party may serve on the other a written demand for arbitration, and the dispute shall thereafter be resolved by arbitration which shall be conducted in conformance with the rules set forth below and such other rules as the parties may in writing agree.
 - i. Arbitration Panel. Each party shall appoint one arbitrator. The two party-appointed arbitrators shall then appoint a third arbitrator, and the three arbitrators shall constitute the panel.
 - ii. Cost of Arbitration. The cost of arbitration shall be borne equally by the parties, with one-half (1/2) of the cost charged to the Nation and one-half (1/2) of the cost charged to the City, and each shall bear its own expenses.
- e. Limited Waiver of Immunity. The City and the Nation specifically waive sovereign immunity and consent to suit in Brown County Circuit Court solely for the limited purposes of compelling arbitration in accordance with the provisions of this Agreement or enforcement of any arbitration award rendered pursuant to this Agreement.

11. ENTIRE AGREEMENT. This Agreement constitutes the entire agreement of the parties and supersedes all prior oral and written agreements between the parties on the subjects addressed herein.

12. **AMENDMENT.** Either party may propose amendments to this Agreement at any time. No amendment or modification of this Agreement will be effective unless the amendment or modification is reduced to writing and agreed to and executed by both parties. The parties may agree to non-binding mediation for disputes regarding proposed amendments, but such disputes shall not otherwise be subject to dispute resolution or arbitration.
13. **TERMINATION.** This Agreement may be terminated only in one of the following ways: 1) this Agreement will immediately terminate and cease to be effective in the event the City no longer provides services to the Nation; 2) this Agreement will immediately terminate and cease to be effective in the event the Nation for any reason ceases to conduct Class III Gaming pursuant to a Gaming Compact with the State of Wisconsin; 3) the parties may terminate this Agreement by mutual agreement, provided that such agreement is reduced to writing and signed by both parties, and 4) either party may terminate this Agreement by serving written notice of termination in accordance with subsection 8(a) above; 5) either party may terminate this Agreement by serving written notice of termination pursuant to subsection 8(e) above; and 6) either party may terminate this Agreement by serving written notice of termination on the other party in the event an Arbitration Panel determines the other party has materially breached the terms of this Agreement and the other party does not immediately cure such breach. Upon termination, neither party shall have any further obligation under this Agreement, except that the provisions of section 10 above shall survive termination of this Agreement.
14. **NOTICE.** Notice provided by a party under this Agreement must be in writing sent by either e-mail, read receipt requested, or certified mail, return receipt requested, to the appropriate representative(s) of the other party as set forth in Attachment A.
15. **SEVERABILITY.** If any provision of this Agreement is determined to be invalid under the laws of the United States, the Nation or the State, such invalidity will not affect the validity of the remaining provisions of this Agreement.
16. **PRESERVATION OF JURISDICTION.** Nothing in this Agreement is intended to be a grant of jurisdiction from one party to the other. This Agreement is not intended to alter the existing jurisdiction of any party, and by approving this Agreement, neither party is agreeing or conceding to any jurisdiction of the other party which would not otherwise exist under the law.
17. **NO THIRD-PARTY BENEFICIARIES.** This Agreement is made and entered into for the sole protection and benefit of the Nation and the City, and is not intended to create any right, benefit, obligation, or cause of action, whether direct or indirect, for any person or entity not a signatory to this Agreement.
18. **CHOICE OF LAW.** This Agreement shall be construed in accordance with the laws of the State of Wisconsin.

IN WITNESS WHEREOF the parties have set their hands and seal on the date listed below.

ONEIDA NATION

By: _____
Tehassi Tasi Hill, Chairman
Date: _____

By: _____
Lisa Liggins, Secretary
Date: _____

Seal of the
Oneida Nation

CITY OF GREEN BAY

By: _____
Eric Genrich, Mayor
Date: _____

By: _____
Celestine Jeffreys, Clerk
Date: _____

Seal of the
City of Green Bay

LAW ENFORCEMENT RESPONSE AND MUTUAL ASSISTANCE AGREEMENT

BETWEEN

ONEIDA NATION

AND

CITY OF GREEN BAY

THIS AGREEMENT (“Agreement”), by and between the ONEIDA NATION (the “Nation”), a federally recognized treaty tribe organized under the laws of the United States, and the CITY OF GREEN BAY (the “City”), a municipal government organized under the laws of the State of Wisconsin (each a “party” and collectively, the “parties”).

WITNESSETH:

WHEREAS, the Oneida Reservation was established pursuant to the 1838 Treaty with the Oneida, 7 Stat. 566, and encompasses approximately 65,400 acres; and

WHEREAS, the boundaries of the Oneida Reservation and the City overlap, and portions of the City are within the Oneida Reservation; and

WHEREAS, the Nation established the Oneida Police Department pursuant to tribal and federal law in order to provide law enforcement services within the Oneida Reservation; and

WHEREAS, the City established the Green Bay Police Department pursuant to State law in order to provide law enforcement services within the City of Green Bay; and

WHEREAS, beginning in 1996, the Nation and City codified the cooperation and collaboration of their two police departments in a mutual aid agreement; and

WHEREAS, the Oneida Police Department and Green Bay Police Department continue to work collaboratively to prevent and deter crime, to provide assistance in the form of trained personnel and/or equipment when requested by the other, and to promote effective law enforcement for the benefit of the entire community; and

WHEREAS, the Nation and the City continue to have good law enforcement relations and wish to reflect their spirit of cooperation and collaboration in an updated mutual aid agreement that reflects their current practices; and

WHEREAS, the Nation and City believe such mutual aid agreement is to the benefit of the entire community; and

WHEREAS, the General Tribal Council of the Nation is authorized to enter into this

Agreement pursuant to Art. IV., Sec. 1(a) of the Nation's Constitution, and the General Tribal Council has delegated this authority to the Oneida Business Committee; and

WHEREAS, the City is authorized to enter into this Agreement pursuant to sections 66.0301(1) and (2) of the Wisconsin Statutes.

NOW THEREFORE BE IT RESOLVED, that the Nation and the City mutually agree on the terms and conditions as follows:

AGREEMENT

1. DEFINITIONS.

- A.** "Arrest Related Death" means the death of any person who is: (1) detained by law enforcement; (2) under arrest; (3) in the process of being arrested; (4) en route to being incarcerated or detained.
- B.** "Deadly Force" means the intentional use of a firearm or other instrument that creates a high probability of death or great bodily harm.
- C.** "Internal Investigation" means a formal investigation of an employee who has become the subject of possible misconduct.
- D.** "Lead Investigator" means the person in charge of the investigation, who plays a principal, guiding role.
- E.** "Officer Involved Death" shall be defined according to Wis. Stat. § 175.47(1)(c), or successor statute. Officer Involved Deaths include, but are not limited to the use of deadly force (shooting or otherwise) and traffic related fatalities.
- F.** "Officer Involved Injury" means any serious injury resulting from an application of force.
- G.** "Primary law enforcement response" means the police department which is responsible for providing the first law enforcement response or services in a specific area.
- H.** "Secondary law enforcement response" means the police department which is responsible for providing the secondary law enforcement response or services in a specific area. Secondary response may occur when the primary police department is unavailable, requests additional assistance, or any other circumstance additional law enforcement response is appropriate.
- I.** "Requesting Department" is the police department that requests the Responding Department to provide assistance with alternate or additional

law enforcement response or services.

J. “Responding Department” is the police department that responds to the Requesting Department to provide assistance with alternate or additional law enforcement response or services.

K. “Use of Force” means the application of physical techniques or tactics, chemical agents or weapons to another person. It is not a use of force when a person allows him/herself to be searched, escorted, handcuffed or restrained.

2. **TERM.** This Agreement shall become effective upon execution of this Agreement by both parties and shall remain in effect for the duration of the Cooperative Governance Agreement Between the Oneida Nation and the City of Green Bay, including renewals thereof.
3. **PRIOR AGREEMENT.** Upon the execution of this Agreement by both parties, the Law Enforcement Mutual Aid Agreement Between the Oneida Nation in Wisconsin and City of Green Bay executed October 16, 1996 is hereby terminated. This Agreement supersedes all prior agreements between the parties pertaining to mutual aid.
4. **COMPLIANCE WITH WISCONSIN LAW.** The parties recognize that Wis. Stat. § 165.92(2) authorizes tribal law enforcement officers to exercise the same powers to enforce the laws of the State and to make arrests for violations of such laws that sheriffs have, including powers granted to sheriffs under § 59.27 and 59.28 and under the common law. The parties acknowledge that Wis. Stat. § 165.92(3m) requires the Nation to pass a resolution waiving its right to sovereign immunity to the extent necessary to allow the enforcement in the courts of this State of its liability or to maintain an insurance policy covering any liabilities that may arise from the acts or omissions of its tribal law enforcement officers before its officers can exercise such powers. This Agreement is contingent on the Nation’s ongoing compliance with the provisions of Wis. Stat. § 165.92(3m), or any statutory successor. In the event it is determined that the Nation is not in compliance with Wis. Stat. § 165.92(3m), or any statutory successor, the terms of this Agreement shall be suspended until compliance is achieved by the Nation, which the Nation agrees to pursue diligently.
5. **PURPOSE.** The primary responsibility of the Oneida Police Department and Green Bay Police Department is to provide law enforcement services and protection to their community. This Agreement is intended to clarify each Department’s areas of primary and secondary response, provide for mutual assistance when requested, and provide for the provision of additional services such as providing the Requesting Department with an independent law enforcement agency to provide a criminal investigation into certain use of force situations, certain officer-involved injuries, and officer-involved deaths.
6. **OPERATIONAL PLANS AND PROTOCOLS.** The Chiefs of the Oneida and Green Bay Police Departments may jointly promulgate operational plans, protocols or policies in order to implement the intent and purposes of this

Agreement. The provisions of such operational plans, protocols or policies shall be consistent with the provisions of this Agreement.

7. LAW ENFORCEMENT RESPONSE IN OVERLAPPING JURISDICTION.

A. Grant of Authority and Scope.

1. **Territorial Jurisdiction of the Oneida Police Department.** The Oneida Nation GIS Department maintains up-to-date maps of the official Oneida Nation Reservation boundaries. The Nation shall make such maps available to the City upon request.
2. **Territorial Jurisdiction of the City of Green Bay Police Department.** The City of Green Bay GIS Division maintains up-to-date maps of official City of Green Bay boundaries. The City shall make such maps available to the Nation upon request.
3. **Overlapping Territorial Jurisdiction.** The Nation and the City have overlapping territorial jurisdiction in the City of Green Bay. A copy of a map depicting the overlapping territorial jurisdiction is attached hereto as **Appendix A**.
4. **Concurrent Jurisdiction.** “Concurrent Jurisdiction” refers to the sharing of or having equal authority within the same jurisdictional boundaries by two or more law enforcement entities. The Oneida Police Department and City of Green Bay Police Department have concurrent jurisdiction over criminal matters occurring in their overlapping territorial jurisdiction. It is the policy of both Departments to provide assistance and cooperation to one another when they are performing law enforcement duties in their overlapping territorial jurisdiction.

B. Areas of Responsibility.

1. The Oneida Police Department will be responsible for providing primary law enforcement response and services to the locations and/or areas attached hereto as **Appendix B**, which may from time to time be amended to reflect current response areas. The City will be responsible for providing secondary law enforcement response and services to the locations and/or areas in **Appendix B**. The list of properties in **Appendix B** shall be provided to the communication entity/system to be coded in the communication system.
2. The Nation may update **Appendix B** by providing an updated list of tribal properties the Oneida Police Department will provide primary law enforcement response and services to. The Green Bay Police department will be responsible to provide

primary law enforcement response and services to all other areas within the City of Green Bay, including the parties' overlapping territorial jurisdiction. The parties agree to work together and with any other communication entity/system in order to code necessary properties to reflect the agreed upon law enforcement response, provided however, that in the event of a conflict between **Appendix B** and the coding in the communication system, the law enforcement response shall be in accordance with the coding in the communication system. Neither Department has any responsibility to review **Appendix B** prior to responding to a call, and may rely exclusively on the coding in the communication system as the basis for their response.

3. Nothing in this Agreement shall be construed to prevent the officers from each Department from performing community policing or other self-initiated law enforcement activity, or otherwise assisting one another, in the parties' overlapping territorial jurisdiction.
4. The parties understand that any request for mutual assistance beyond their territorial jurisdiction requires compliance with the requirements in Wis. Stat. § 66.0313.

C. Handling of Calls.

1. Calls for assistance within the areas described above in Paragraph 7.B are the sole responsibility of the Department designated as providing primary law enforcement response and services. If all officers of the primary Department are busy or otherwise determine that assistance is needed, the primary Department may make a request for response to the secondary Department.
2. When the Department designated to provide secondary law enforcement response and services responds to a call in lieu of the primary Department, that secondary Department generally agrees to handle the call in its entirety. This does not preclude the Responding Department from seeking additional assistance from the Requesting Department for follow-up work.

8. RESPONDING TO REQUESTS FOR ASSISTANCE.

- A.** Officers from one Department will assist any officer from the other Department whenever such assistance is requested. Requests may be made through any means available.
- B.** The Requesting Department shall retain jurisdiction over the call for the entirety of its duration regardless of whether that Department would have secondary or primary jurisdiction. Under no circumstances shall

either Department assert jurisdiction over a call for which it is the Responding Department, and instead the parties agree to provide support when responding unless the Requesting Department specifically states to the highest ranking officer on the scene that jurisdiction is being transferred to the Responding Department.

- C. When requests for assistance are made, the officer will notify his/her Communications Center as soon as reasonably possible, unless such request for assistance was given by the Communications Center. Officers are responsible for notifying their respective supervisors of requests for assistance, based upon their departmental policies and expectations.
- D. If for some reason the officer is not able to respond to the request for assistance from the Requesting Department, the Communications Center will notify the Requesting Department immediately. As soon as officers are free to respond from the Responding Department, the officer or the Communications Center will notify the Requesting Department and determine if assistance is still needed.
- E. Refusal, insubordination, misconduct or any other non-professional behavior from any officer from the Requesting or Responding Department will be dealt with according to the rules and regulations of that officer's Department.

9. **AUTHORITY TO ISSUE MUNICIPAL AND TRIBAL ORDINANCE CITATIONS.** Should the Oneida Police Department and/or Green Bay Police Departments agree to a grant of authority to authorize officers from the other Department to enforce City and/or Tribal ordinances, this Agreement may be amended or an addendum agreement may be entered into and incorporated herein as referenced by such document.

10. **INVESTIGATIVE SERVICES.** The Parties agree to provide additional Investigative Services in accordance with Wis. Stat. § 66.0301 and § 175.47 and in accordance with the provisions set forth herein.

- A. **Cooperation.** The Requesting Department shall cooperate with the Responding Department's investigation.
- B. **Written Policy.** The Requesting Department shall provide its written policy regarding the investigation of officer-involved deaths as well as any other pertinent policy to the Responding Department.
- C. **Required Investigators.** When requested to provide a criminal investigation for certain use-of-force situations, certain officer-involved injuries, and officer-involved deaths, the Responding Department shall provide at least

two (2) investigators. The Responding Department shall designate one investigator to serve as the lead investigator. No investigator or other staff provided by the Responding Department shall be an employee of the Requesting Department.

- D.** Internal Investigations. The Requesting Department may assign up to two (2) investigators to perform an internal investigation, so long as such internal investigation does not interfere with the investigation being performed by the Responding Department. Although the Requesting Department may seek additional outside assistance to perform its internal investigation, it may not request the Responding Department to assist with the internal investigation.
- E.** Expeditious Investigation. The investigators performing the investigation shall perform all functions of law enforcement, perform the investigation in an expeditious manner, and shall provide a complete report to the District Attorney of the county in which the use of force, officer-involved death, or other incident occurred.
- F.** Release of Report. Records requests pertaining to the report shall be processed in accordance with the Open Records law that applies to the Department that receives the records request. The report shall be maintained by the Responding Department in accordance with its standard policies and practices.
- G.** Non-Exclusivity. Nothing herein shall be construed to create an exclusive relationship between the parties. As such, the Requesting Department involved in the use of force or officer-involved death has the authority and discretion to request the services of another or additional outside departments or agencies.

11. SUPERVISION AND COMPENSATION.

- A.** Oneida Police Department Officers acting pursuant to this Agreement shall remain employees of the Nation and shall remain under the control and supervision of the Nation and the Oneida Police Department. Oneida Police Department Officers are not employees of the City of Green Bay. The Nation shall remain responsible for its employees' salaries, insurance, and civil liability. Each Oneida Police Department Officer shall be deemed to be performing regular duties of the Oneida Police Department while performing services for the City pursuant to this Agreement. Oneida Police Department Officers shall not represent themselves as Officers of the Green Bay Police Department.
- B.** Green Bay Police Department Officers acting pursuant to this Agreement shall remain employees of the City and shall remain under

the control and supervision of the City and the Green Bay Police Department. The City shall remain responsible for its employees' salaries, insurance, and civil liability. Each Green Bay Police Department Officer shall be deemed to be performing regular duties of the Green Bay Police Department while performing services for the Nation pursuant to this Agreement. Green Bay Police Department Officers shall not represent themselves as Officers of the Oneida Police Department.

12. COSTS AND COMPENSATION.

- A.** The Nation shall assume responsibility for all costs incurred by the Oneida Police Department and its Officers under this Agreement. The City shall assume responsibility for all costs incurred by the Green Bay Police Department and its Officers under this Agreement.
- B.** Should the Responding Department cause damage to the Requesting Department's equipment while such equipment is in the custody and control of the Responding Department, normal wear and tear excepted, the Responding Department shall repair or replace the Requesting Department's equipment as soon as practicable and at no cost to the Requesting Department. Repairs shall be made by an entity so authorized by the equipment manufacturer. If the equipment is damaged beyond repair, the Requesting Department shall be entitled to an amount equal to the value of the equipment immediately prior to the same being damaged beyond repair. Such determination of value may be determined by an independent appraisal.
- C.** Investigative Services.
 - 1. **Regular wages.** The Responding Department shall not bill the Requesting Department for any regular or "on duty" time spent on the investigation or routine use of equipment.
 - 2. **Overtime wages.** The Requesting Department is responsible for payment of any overtime wages or non-routine expenses of the Responding Department that are deemed necessary to perform the requested investigation. The Responding Department's command staff shall be vested with the authority and discretion to authorize overtime for responding staff and non-routine expenses as deemed appropriate. However, the Responding Department's command staff shall be required to regularly communicate expenses related to the investigation to the Requesting Department.

3. **Evidence.** The Requesting Department is responsible for reasonable evidence storage fees for evidence collected in the investigation. The Responding Department bears no financial liability for fees associated with the keeping and/ or testing of evidence associated with the investigation.
4. **Other Costs.** The Requesting Department is responsible for all reasonable costs incurred from outside vendors while providing investigative services, including but not limited to transcription fees.

13. **JOINT TRAINING AND COMMUNITY EVENTS.** The Departments shall work cooperatively to identify and attend joint training and community events which benefit the Departments and/or the community.

14. **IMMUNITIES.**

- A. **The parties.** Notwithstanding any other portions of this Agreement, nothing contained herein is intended to preclude the parties and their insurers from asserting the limitations, defenses, and immunities contained within applicable law. To the extent indemnification is available and enforceable, the parties or their insurers shall not be liable in indemnity, contribution, or otherwise for an amount greater than the limits of liability set forth in established law. The parties agree to maintain appropriate liability insurance policies.
- B. **Oneida Police Department.** With the exception of those noted in Sec. 4, all immunities from liability, and exemptions from laws, ordinances, and regulations, which Oneida Police Officers possess in their own jurisdiction shall be effective in the City's jurisdiction in which the Nation's Officers are providing assistance, unless otherwise prohibited by law. The provisions of 25 U.S.C. § 5321, et seq., and/or 5361, et seq., and the Federal Tort Claims Act apply to acts and omissions by Oneida Police Department Officers.
- C. **Green Bay Police Department.** Nothing contained herein is intended to preclude the Green Bay Police Department or its Insurers from asserting the limitations, defenses, and immunities contained within Wis. Stats. § 345.05 and 893.80 any other applicable provision of law.

15. **INDEMNIFICATION.**

- A. **General Indemnification.** Except as otherwise provided for in Paragraph 15.B herein, each party is legally responsible for the acts or omissions of its own employees, agents, or assigns with respect to their activities and performance under this Agreement. The Nation shall

protect and defend, and indemnify and hold harmless the City, City's Police Chief, the Green Bay Police Department and their respective employees, agents, or officers, from any and all claims, judgments, or liabilities arising from the acts or omissions of Oneida Police Department Officers. The City shall protect and defend, and indemnify and hold harmless the Nation, Nation's Police Chief, the Oneida Police Department and their respective employees, agents, or officers, from any and all claims, judgments, or liabilities arising from the acts or omissions of Green Bay Police Department Officers. The parties shall be responsible for any and all liability arising from the acts or omissions of their own officers, to the extent provided by law. Under no circumstances shall a party be liable for acts or omissions of the officers or employees of the other party.

B. Indemnification for Investigative Services. The Requesting Department shall hold harmless, defend and indemnify the Responding Department from and against any and all claims, damages, liabilities and expenses of any type whatsoever, including reasonable attorney's fees, arising out of services provided pursuant to Paragraph 10 of this Agreement whether resulting from property damage, bodily injury or death, or personal injury, except to the extent that such claims, damages, liabilities and expenses arise from the Responding Department's intentional tort, malicious act or willful act.

C. These obligations shall survive the termination of the Agreement.

- 16. DISPUTE RESOLUTION.** The Dispute Resolution provision of the Cooperative Governance Agreement Between the Oneida Nation and the City of Green Bay shall apply to this Agreement. The Police Chief of either Department may initiate dispute resolution pursuant to this Agreement by following the Dispute Resolution process in accordance with the Cooperative Governance Agreement Between the Oneida Nation and the City of Green Bay.
- 17. ENTIRE AGREEMENT.** This Agreement and any attachments herein referenced contains the entire agreement between the parties on the subject of law enforcement mutual aid.
- 18. AMENDMENT.** Either party may propose amendments to this Agreement at any time. No amendment or modification of this Agreement will be effective unless the amendment or modification is reduced to writing and agreed to and executed by both parties. The parties may agree to non-binding mediation for disputes regarding proposed amendments, but such disputes shall not be otherwise be subject to dispute resolution or arbitration.
- 19. ASSIGNMENT.** Neither this Agreement nor the provisions herein may be assigned without the written consent of both parties.

20. TERMINATION. This Agreement may only be terminated upon the termination of the Cooperative Governance Agreement Between the Oneida Nation and the City of Green Bay.

21. NOTICE. Notice provided under this Agreement will be in writing and must be sent by Certified Mail, Return Receipt Requested, to the parties at the following addresses, unless otherwise stated in this Agreement:

ONEIDA NATION

Police Chief
Oneida Police Department
P.O. Box 365
Oneida, Wisconsin 54155

CITY OF GREEN BAY

Police Chief
Green Bay Police Department
307 S. Adams Street
Green Bay, Wisconsin 54301

22. SEVERABILITY. If any clause, provision or section of this Agreement is ruled invalid or unenforceable by any court of competent jurisdiction, such holding will not invalidate or render unenforceable any of the remaining clauses, provisions or sections of this Agreement.

[Remainder of page intentionally left blank.]

IN WITNESS WHEREOF the parties have set their hands and seal on the date(s) below listed.

ONEIDA NATION

CITY OF GREEN BAY

By: _____
Tehassi Tasi Hill, Chairman
Date: _____

By: _____
Eric Genrich, Mayor
Date: _____

By: _____
Lisa Liggins, Secretary
Date: _____

By: _____
Celestine Jeffreys, City Clerk
Date: _____

By: _____
Eric H. Boulanger, Chief of Police
Date: _____

By: _____
Andrew Smith, Chief of Police
Date: _____

Seal of the
Oneida Nation

Seal of the
City of Green Bay



Report to the
Finance Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # K.5

To receive and place on file the report of the Claims Committee.

The Council may convene in closed session pursuant to Section 19.85(1) (g), Wis. Stats., for the purpose of conferring with legal counsel for the governmental body who is rendering oral or written advice concerning strategy to be adopted by the body with respect to litigation in which it is or is likely to become involved. The Council will thereafter reconvene in open session pursuant to Section 19.85(2), Wis. Stats., to take action on items discussed in closed session, if appropriate, and to consider the remainder of the agenda.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

- I. CONFIDENTIAL Claims Committee Rpt February 09, 2021



Report to the
Improvement and Service Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # L.I

To approve the report of the Traffic Engineer regarding the need for a barrier on Bellevue Street running north from Lilac Lane and implement the following recommendations from the report. (Ald. Galvin)

A. Remove the existing advance northbound curve and southbound turn warning signs on Bellevue St approaching Lilac Ln.

B. Install an advance northbound Turn left sign (MUTCD Code W1-1L) with supplemental Speed Advisory plaque (MUTCD Code W13-1P) and advance southbound Turn right sign (MUTCD Code W1-1R) between 150 and 200 ft in advance of Lilac Ln on Bellevue St.

C. Install a minimum of 6 chevron signs (3 in each direction) (MUTCD Code W1-8), spaced each approximately 80 ft, on the outside of the turn left (northbound) and turn right (southbound) conditions on Bellevue St approaching and through the Lilac Ln intersection.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

1. Ald. Galvin_ Late Communications
2. M Bellevue-Lilac Traffic Barrier.FINAL.djah

From: [Jaime Fuge](#)
To: [Steven Grenier](#)
Cc: [Jamie Destiche](#); [Elizabeth Nadolski-Spears](#)
Subject: FW: Late Communications
Date: Wednesday, November 11, 2020 4:21:21 PM

Hi,

Please see below the communications for I&S from yesterday's meeting.

Thank you,
Jaime

From: District Four
Sent: Wednesday, November 11, 2020 4:16 PM
To: Jaime Fuge <Jaime.Fuge@greenbaywi.gov>
Subject: Re: Late Communications

Yes I do Jamie and I apologize for not sending them earlier.

1. For the Bike, Ped, Traffic committee, I would like a marked crossing at the intersection of E Mason At and Goodell St for crossing Mason At
2. For I&S, I would like to have a traffic barrier installed on Bellevue St. running north from Lilac St.

On November 11, 2020, at 1:25 PM, Jaime Fuge <Jaime.Fuge@greenbaywi.gov> wrote:

Hi,

Do you have the late communications from 11/10 to distribute to the appropriate committees?

Thank you,
Jaime

MEMORANDUM



Department of Public Works | Traffic Division

To: Improvement and Services (I&S) Committee
Public Works Director Steven Grenier, P.E.

From: Traffic Engineer David J.A. Hansen, P.E., PTOE

Re: **Traffic Barrier Request**
Bellevue Street north of Lilac Lane

Date: Thursday, January 28, 2021

This memorandum serves as a response to the motion on Wednesday, December 9, 2020 by the I&S Committee to refer to staff for a study to have a traffic barrier installed on Bellevue Street running north from Lilac Lane. (Ald. Galvin – District 4).

This memo will be presented at Wednesday, February 10, 2021 I&S meeting.

Existing Site Conditions

The segment of Bellevue St near Lilac Ln is located on the east side of the City of Green Bay, in Aldermanic District 4 (Ald. Galvin). See Figure 1 for General Location, Figures 2a-2d for Aerial Views and Figure 3 for an Intersection View.

Figure 1 – General Location

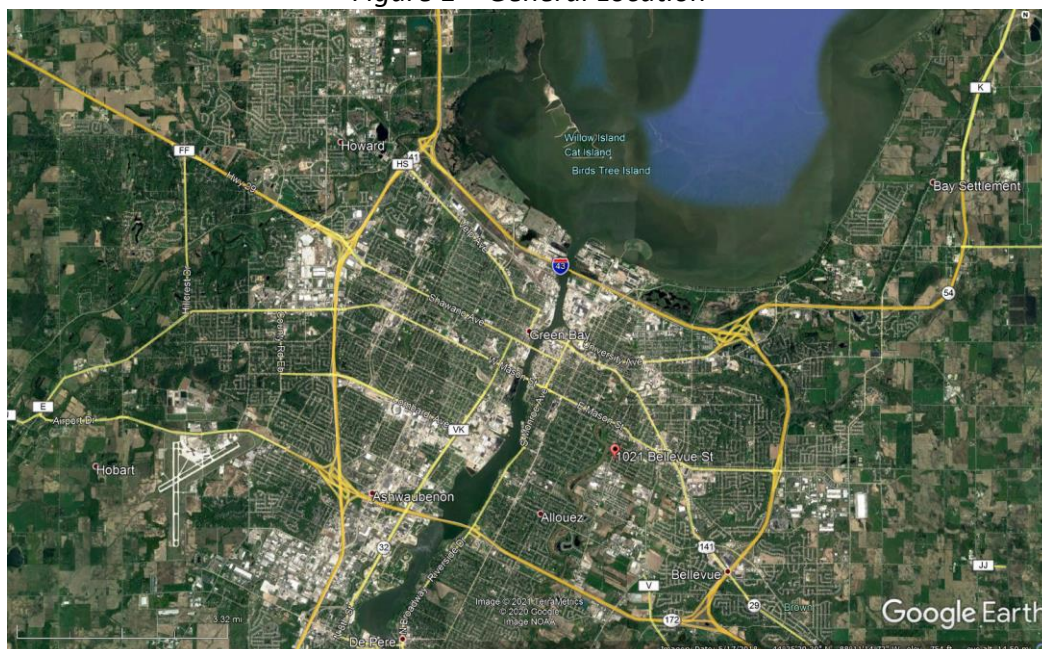


Figure 2a – Aerial View Looking North

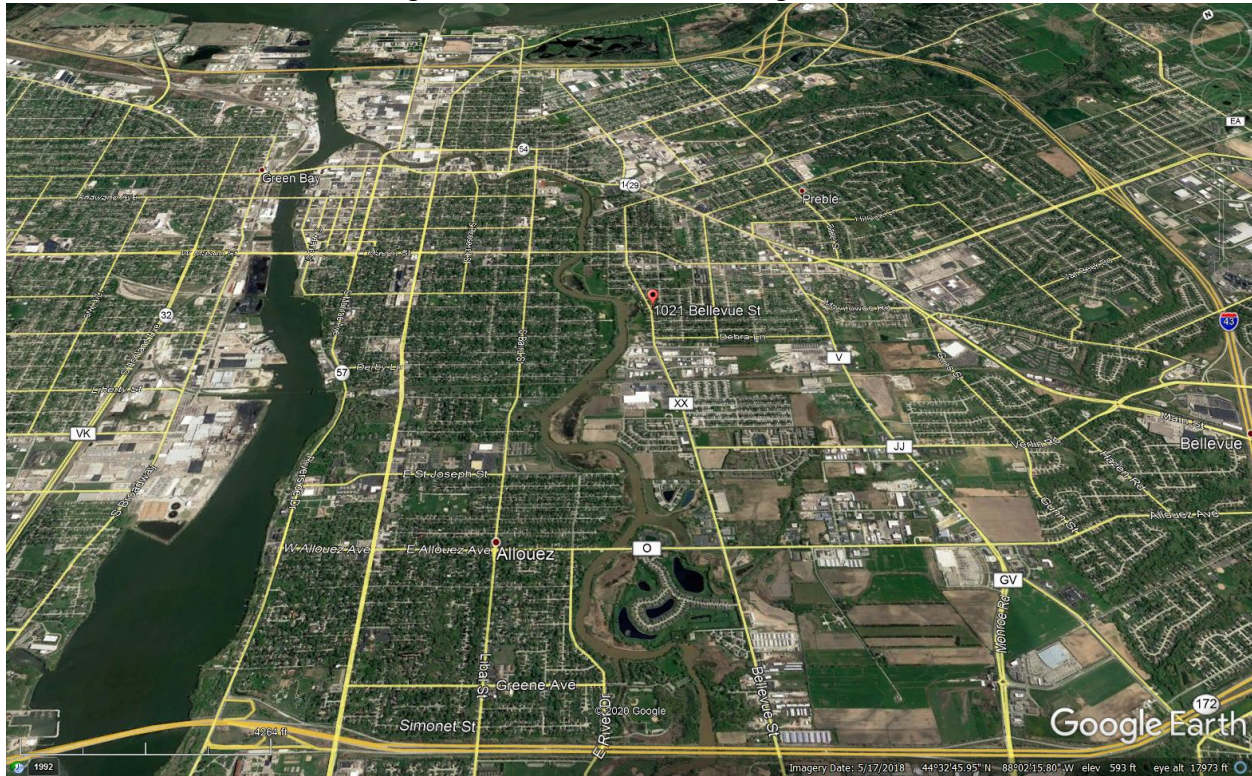


Figure 2b – Aerial View Looking South

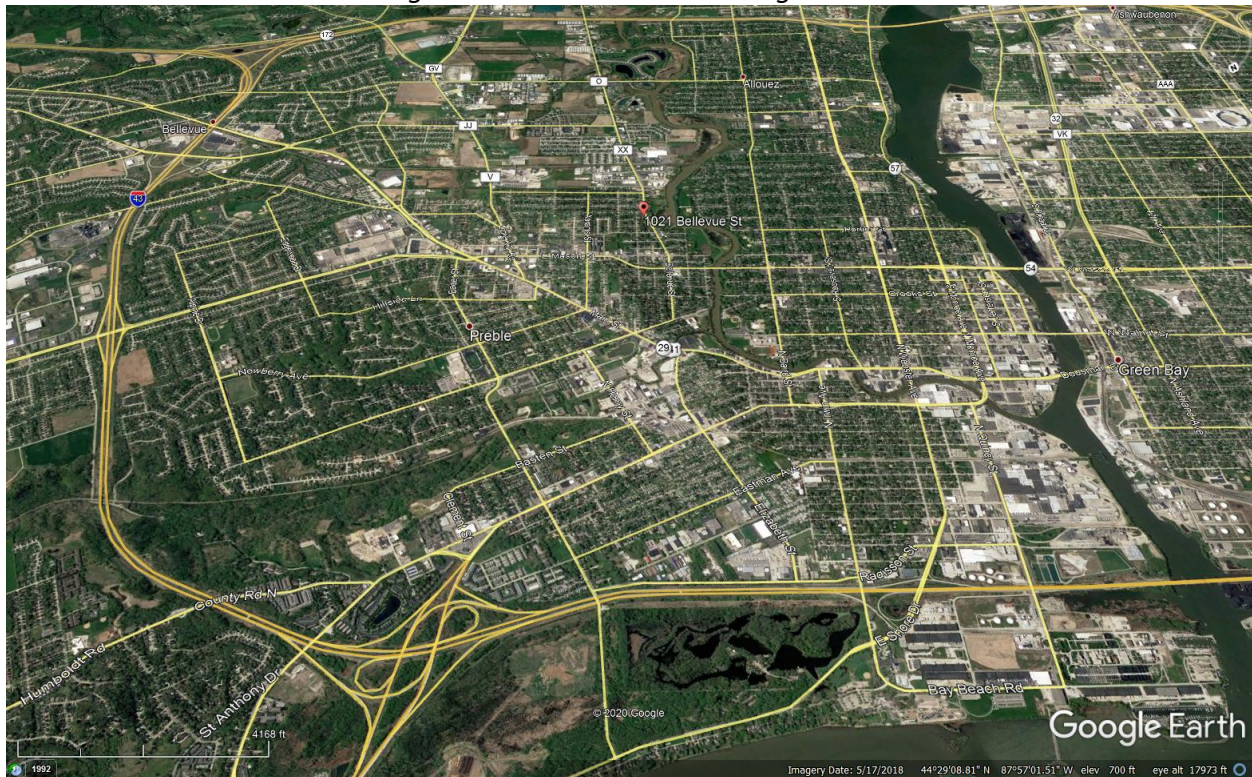


Figure 2c – Aerial View Looking East

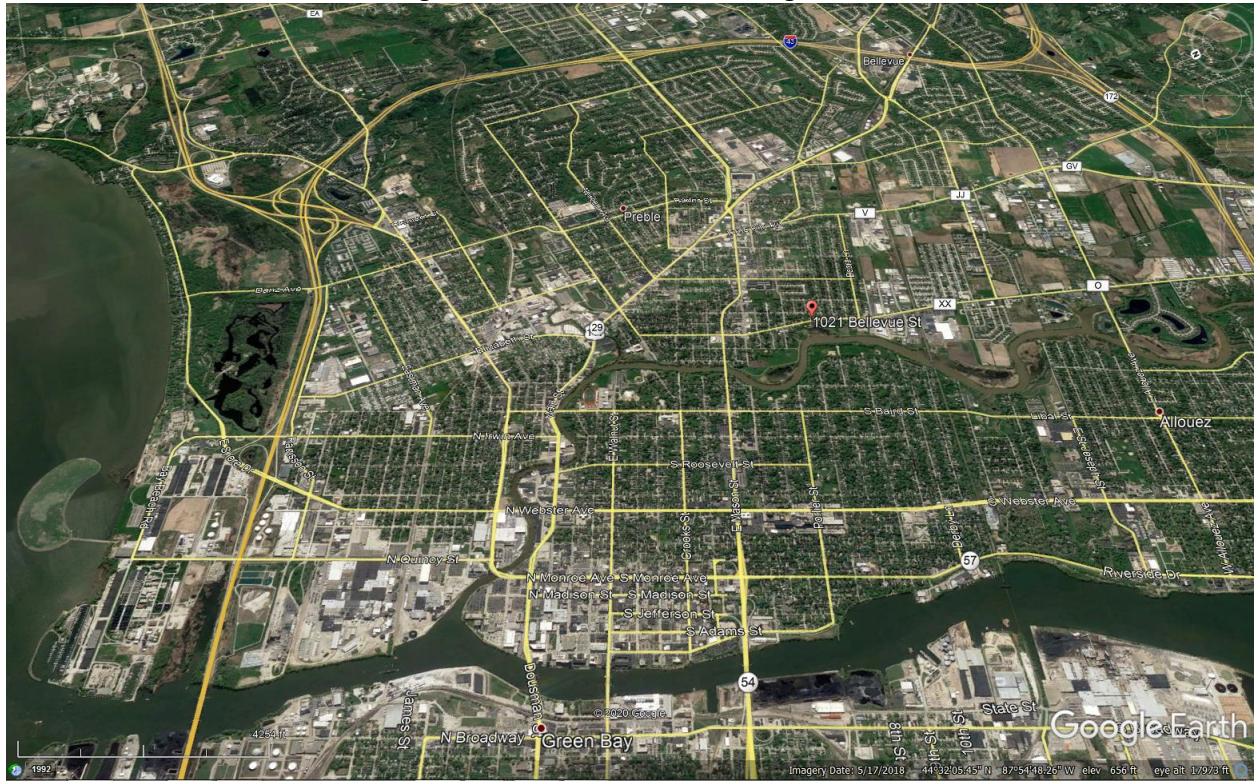


Figure 2d – Aerial View Looking West

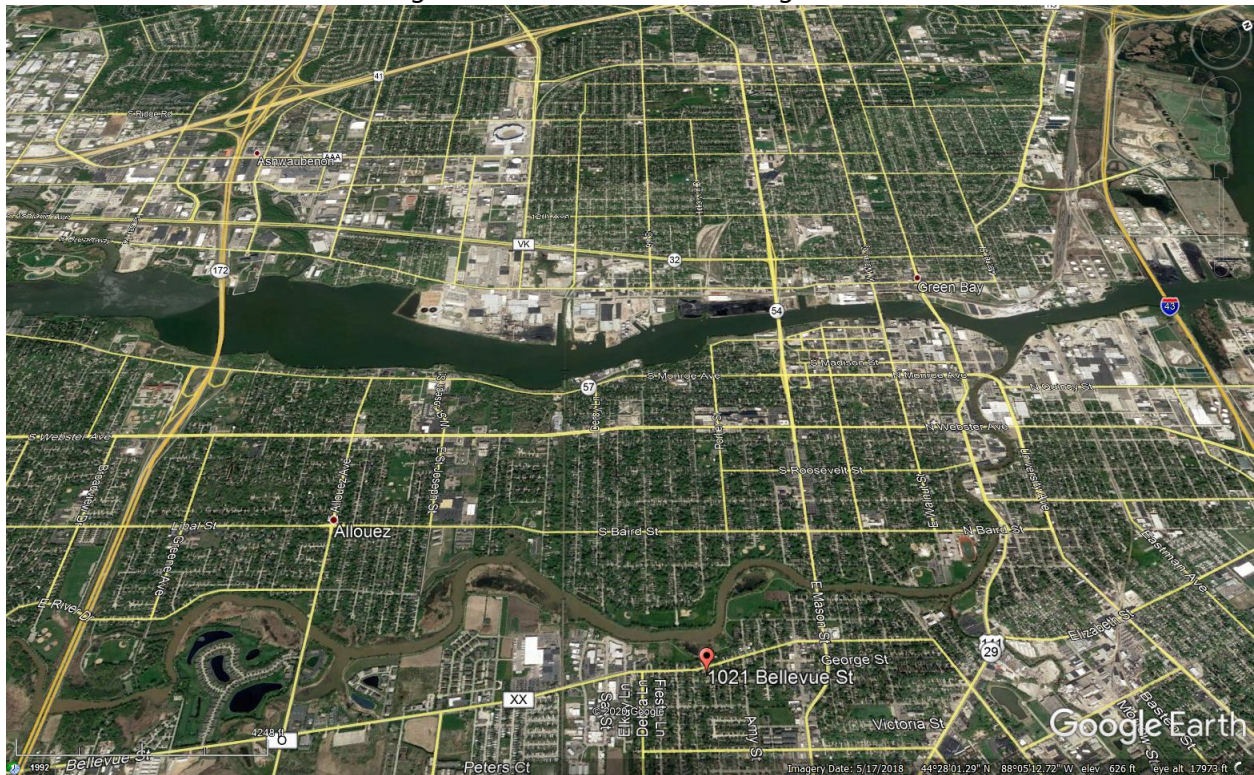


Figure 3 –Intersection View (North is right)



Bellevue St is an urban minor arterial street with a posted speed of 25 mph. It carries around 7,900 vehicles per day and has a straight alignment except at Lilac Ln where it takes a 17 degree turn to the left in the northbound direction. Similar bends in the roadway occur about 2,000 feet north and 1,200 feet south of the subject turn. Note that during the crash research, no run-off-road crashes occurred at these two locations.

Single and multi-family residential homes abut the roadway. Bellevue St has an asphaltic surface and consists of a single travel lane in each direction and parking lanes on both sides of the street. Roadway width is 42 ft. Parking is not restricted. Sidewalk exists along both sides of Bellevue St. A painted dashed centerline along Bellevue St exists except in advance and through the Lilac Ln curve where it is a double yellow centerline. Street lights exist on the west side of Bellevue St with spacing approximately 300 feet. Lights are rated at 150 W (14,000 lumens). No crosswalks exist at Lilac Ln. The roadway is relatively flat with no major grade changes.

Recent Crash Event

The request for a traffic barrier is presumably associated with a relatively recent one-motorist crash that took place on Bellevue St just north of Lilac Ln on Saturday, October 24, 2020 at 1:19 AM. A northbound motorist failed to negotiate the left turn of Bellevue St, drove over the curb continuing straight on grass and hit a tree in front of 1029 Bellevue St. The motorist continued moving north and hit a vehicle parked at the address. The motorist's vehicle then rolled over and crashed into the residence of 1023 Bellevue St. The motorist finally came to a stop, facing east upside down. The struck parked vehicle at 1029 Bellevue St was pushed into another parked vehicle at 1023 Bellevue St. The motorist was transported to a local hospital to treat injuries received during the crash. Skid marks from the errant vehicle can be seen in a video

shot on December 4, 2020, and images shown in Figures 5 and 6 noting they do not start until just before the vehicle hit the curb.

Based on the crash report, the driver was exceeding the speed limit and operating the motor vehicle in an aggressive and reckless manner. The motorist was charged with operating while under the influence of drugs/alcohol/medications, operating while suspended, unreasonable and imprudent speed, and reckless driving-endangering safety.

See Figure 4 for a diagram of the manner of collision and Figures 5 and 6 for crash site photos.

Figure 4 – Manner of Collision



Figure 5 –Northbound Bellevue St at Lilac Ln Showing Skid Marks



Figure 6 –Northbound Bellevue St at 1035 Showing Tire Divots to Struck Tree



Other Crash History

On Thursday, March 30, 2017, a single northbound motorist was traveling too fast for conditions (wet/snow on road), spun out clockwise, then struck a utility pole with the rear of the vehicle near 1021 Bellevue St. 1021 is the left side of a duplex, where 1023, the site of the 2020 crash, is the right side of that duplex. No injuries resulted from the crash. The motorist was cited for driving too fast for conditions.

Existing Curve-Related Traffic Control Devices

Northbound

1. Advance Curve Left warning sign, placed 600 ft south of the curve
2. Double yellow centerline

Southbound

1. Advance Turn Right warning sign with 25 mph plaque, placed 410 ft north of the curve
2. Double yellow centerline

Discussion

The recent crash that occurred on northbound Bellevue St at Lilac Ln is the only one of that nature that happened during the review period. At similar upstream and downstream locations, no run-off-road crashes have occurred. Appropriate mitigation measures, if any, should focus more on if there are any signing and/or marking improvements that could or should be implemented rather than resorting to high-cost measures such as installing beam guard.

In review of the Manual on Uniform Traffic Control Devices (MUTCD) and its Wisconsin supplement, Section 2C.06 (Horizontal Alignment Warning Signs) and Section 2C.07 (Horizontal Alignment Signs) provide standards and guidance on the proper turn warning signs and delineators. The existing curve and turn related traffic control devices on Bellevue St at Lilac Ln are not compliant with these MUTCD sections, as existing advance warning signs have been placed too far from the curve. Additionally, the northbound advance warning sign is a “curve” sign and should be a “turn” sign per Paragraph 2 of Section 2C.07 since the posted speed is 30 mph or less. The 85th percentile speed is presumably around 30-35 mph; therefore it is recommended to use between 5-10 mph speed reduction criteria for sign placement. MUTCD Table 2C-4 recommends 150-200 ft advance warning placement. Table 2C-5, Horizontal Alignment Sign Selection, stipulates optional, recommended, and required placements of these signs. Given the speed and turn conditions, the advance warning signs with advisory speed plaques are recommended by the MUTCD while placement of chevrons or one-direction large arrows are optional. At present, there are no one-direction large arrows or chevrons present at the turn.

Figure 7 shows a layout of warning turn signs and chevrons.

An aerial photograph of a residential neighborhood. The map shows a grid of streets including Bellevue St, Heyman St, Cypress Ln, Lilac Ln, Juniper Dr, Festal N, and Irene St. A large green field and a blue pond are visible on the left side. Several red circles with numbers are overlaid on the map: a '1' on Bellevue St near the top, a '3' on Bellevue St below it, a '2' on Bellevue St below that, another '2' on Bellevue St further down, a '3' on Bellevue St near the bottom, and a '1' on Festal N near the bottom left.



1



2



Back to back for both NB & SB Traffic



3


$$1 \text{ in} = 100 \text{ ft}$$

Conclusions

1. The primary mitigative measure to prevent the recent crash was for the motorist to make the decision not to drive since they were impaired and without a valid driver's license. They should not have been operating a motor vehicle.
2. The existing northbound advance warning sign is non-compliant, as the sign image should be a turn and not a curve. It is also placed too far from the turn at Lilac Ln.
3. The existing southbound advance warning sign assembly message is correct, but it is placed too far from the turn at Lilac Ln.
4. The existing double yellow centerline is the appropriate centerline marking on Bellevue St at Lilac Ln.
5. Given there is history of two run-off-road crashes within a five-year period, consideration should be given to adding optional items such as chevrons at the turn at Lilac Ln.
6. Other mitigative measures should be taken prior to placement of a traffic barrier (beam guard) at the subject location.

Recommendations

1. Remove the existing advance northbound curve and southbound turn warning signs on Bellevue St approaching Lilac Ln.
2. Install an advance northbound Turn left sign (MUTCD Code W1-1L) with supplemental Speed Advisory plaque (MUTCD Code W13-1P) and advance southbound Turn right sign (MUTCD Code W1-1R) between 150 and 200 ft in advance of Lilac Ln on Bellevue St.
3. Install a minimum of 6 chevron signs (3 in each direction) (MUTCD Code W1-8), spaced each approximately 80 ft, on the outside of the turn left (northbound) and turn right (southbound) conditions on Bellevue St approaching and through the Lilac Ln intersection.



Report to the
Improvement and Service Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # L.2

To receive and place on file the list of streets proposed for resurfacing and reconstruction in 2021 Capital Improvement Program and utilization of Vehicle Registration Fee proceeds. (Ald. Wery)

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

1. Memo_I&S_Wheel Tax Uses_2021 Program_SGrenier_02-10-21
2. Resurfacing 2021
3. Reconstruction 2021



Inter-Office Memo

Date: February 10, 2021

To: Improvement & Services Committee

From: Steve Grenier, Director of Public Works

Re: Vehicle Registration Fee Uses - 2021

As part of the annual financial analysis and bonding request associated with the Department of Public Works Capital Improvement Program (CIP), we have determined that the following needs for 2021 exist:

Payment of Special Assessments for Pavement:

Gray Street	\$ 66,875.88
S. Jackson Street (North Segment)	\$ 221,864.14
S. Jackson Street (South Segment)	\$ 230,977.99
Cass Street (done with Jackson)	\$ 10,989.50
Lawe Street (done with Jackson)	\$ 9,147.74
S. Maple Avenue	\$ 82,143.67
Resurfacing 2020	\$ 620,881.49
Total	\$ 1,242,880.41

In addition to covering special assessments for pavement which were previously billed to property owners, DPW has been charged with increasing the amount of road projects resurfaced and/or reconstructed. Between 2010 and 2019, reconstruction projects have ranged from a high of 15,510 lineal feet to a low of 0 lineal feet, averaging 5,978 lineal feet. By way of comparison, the 2019 program contained 6,000 lineal feet of reconstructed street. Between 2010 and 2019, resurfacing projects have ranged from a high of 20,920 lineal feet to a low of 12,970 lineal feet, averaging 16,960 lineal feet. In 2019, the resurfacing program contained 20,920 lineal feet of resurfacing streets.

The proposed 2021 program significantly increases the amount of road projects being completed within the City. The program, as submitted, has 10,330 lf of reconstruction streets and 21,166 lf of resurfacing streets. This program represents an increase in road reconstruction/resurfacing projects of 37.3 percent above the 2010-2019 average, and an increase of 16.8 percent over the 2019 program.

To help offset the cost of the increase in program, DPW has proposed using all remaining funds in the vehicle registration fee fund for program increase. Based upon actual funds collected since program inception, we expect to receive approximately \$1,825,000 in vehicle registration fees. This money will be applied as indicated below:

Elimination of Special Assessments for Pavement: \$1,242,880
Increase in Resurfacing/Reconstruction Program: \$582,120

For comparison purposes, the total increase in program from 2019 to 2021 is approximately 4,500 lf. The S. Jackson Street (South Segment) project in the 2021 program is approximately 3,600 lf and has an estimated pavement cost of \$660,000. This analysis does not take into account the increase in construction material costs from 2019 to 2021. The expected financial need for the increased program size is much larger than the contribution from the Vehicle Registration Fee fund.

Staff has applied the entire amount of \$1,825,000 anticipated to be generated within the Vehicle Registration Fee fund toward covering the special assessments for pavement construction and to increasing the resurfacing/reconstruction program. This action is consistent with the direction provided by Common Council in February 2020, which provides the new baseline level of funding required to support a program of this size.

Resurfacing 2021

<u>Alder</u> <u>district</u>	<u>Street Section</u>
2	Harvest Road - Finger Road to Crest Lane
2	Edgewood Court- Edgewood Drive to cul-de-sac west
2	Edgewood Drive- Hillside Lane to Edgewood Court
3	Guns Street - City Limits to Main Street
5	Proper Street - Wegner Street to Elizabeth Street
5	Irene Street-Crooks Street to Main Street
6	Farlin Avenue-Day Street to Elizabeth Street
10	Division Street - N Platten St to Wilson Ave
10	Division Street - N. Oneida Street to Gray Street
10	Murphy Drive - Dousman Street to Nancy Avenue
10	Oregon Street-N. Platten Street to Gray Street
10	North Platten - Dousman Street to Oregon Street
10	North Oneida Street - Division Street to Dousman Street
10	David Drive - Dousman Street to Nancy Avenue
11	Forest Glen Drive- Argonne Drive to Arnold Drive
11	Careful Drive- Argonne Drive to Arnold Drive
11	Sahara Drive- Careful Drive to Kennedy Drive
11	Aspen Lane- Burns Avenue(W) to Burns Ave
11	Southview Lane - Careful Drive to Kennedy Drive
11	Blithe Street - Badger Street to Christiana Street
11	Christiana Street - Blithe Street to Regan Street
11	Regan Street - Christiana Street to Badger Street
10	Division Street - Wilson Avenue to North Oneida Street

1/19/2021

Reconstruction 2021

Street Section

S. Jackson Street - Bodart Street to S. City Limits

Gray Street - Dousman Street to Mather Street

S. Maple Avenue - Howard Street to 810' south of School Place



Report to the
Improvement and Service Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # L.3

To approve the request by Georgia-Pacific to lease property at 1100 West Mason Street to the City of Green Bay on a month-to-month basis to be used by the Department of Public Works for operations at the West Side Garage.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

- I. Green Bay, WI - First Amendment to Amended and Restated Lease

FIRST AMENDMENT TO AMENDED AND RESTATED PARKING LOT LEASE

THIS FIRST AMENDMENT TO AMENDED AND RESTATED PARKING LOT LEASE (this "**Amendment**") is entered into as of the ____ day of November, 2020, by and between **GEORGIA-PACIFIC CONSUMER OPERATIONS LLC**, a Delaware limited liability company, as successor to Fort James Operating Company, a Virginia corporation, ("**Lessor**") and **CITY OF GREEN BAY, WISCONSIN**, a Wisconsin municipal corporation, acting by and through its authorized representative ("**Lessee**").

RECITALS

A. Lessor and Lessee are parties to that certain Amended and Restated Parking Lot Lease dated April 1, 2006 (the "**Lease**").

B. Lessor terminated the Lease effective March 31, 2020 in that certain notice letter dated September 27, 2019 (the "**Termination Notice**").

C. Lessor and Lessee acknowledge and agree that the Termination Notice has been rescinded and that the parties desire to amend the Lease as provided herein.

D. All references herein and in the Lease to "this Lease", "this Agreement", "herein", "hereby", and the like shall mean the Lease as amended by this Amendment.

AGREEMENT

In consideration of the mutual covenants of the parties contained herein, and other valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree to amend the Lease as follows:

1. **Defined Terms.** Defined and capitalized terms in this Amendment will have the same meaning as defined and capitalized in the Lease, unless otherwise indicated in this Amendment.

2. **Rescission.** Lessee hereby rescinds the delivery of its Termination Notice and Lessor hereby acknowledges, agrees and accepts such rescission such that the Termination Notice shall be null and void and of no further force and effect.

3. **Rent.** Commencing on April 1, 2020, Lessee shall pay rent monthly in the amount of ONE HUNDRED SIXTY-SIX AND 67/100ths Dollars (\$166.67) on or before the 1st day of each calendar month. Tenant shall pay such rent by check to the following address: 133 Peachtree Street NE, Atlanta, Georgia 30303, Attention: Corporate Real Estate.

4. **Term; Renewal.** Notwithstanding anything to the contrary in Section 4 of the Lease, Lessor and Lessee hereby agree that commencing on April 1, 2020, the Term of this Lease

shall extend through December 31, 2020, and thereafter shall automatically renew on a month-to-month basis.

5. **Right to Terminate.** Notwithstanding anything to the contrary in Section 5 of the Lease, Lessor and Lessee hereby agree that either party shall have the right to terminate this Lease at any time upon providing thirty (30) days prior written notice to the other party, which shall state the effective date of termination which shall be no less than thirty (30) days after the date of the written notice.

6. **Miscellaneous.**

(a) **Ratification.** Except as expressly amended herein, the terms, covenants and conditions of the Lease shall remain in full force and effect without modification or amendment, and the parties hereto ratify and reaffirm the same in its entirety. The term “**Lease**” shall mean the Lease as amended by this Amendment.

(b) **Entire Agreement.** The Lease, as amended by this Amendment, contains the entire agreement of the parties with respect to the subject matter thereof and hereof, and all representations, warranties, inducements, promises or agreements, oral or otherwise, between the parties not embodied in the Lease, as amended by this Amendment, shall be of no force or effect.

(c) **Conflict.** In the event of a conflict between the terms of this Amendment and the Lease, the terms of this Amendment shall control.

(d) **Multiple Counterparts.** This Amendment may be executed in a number of identical counterparts. If so executed, each of such counterparts shall be deemed an original for all purposes, and all such counterparts shall, collectively, constitute one Amendment.

(e) **Facsimile or PDF Signatures.** For purposes of this Amendment, signatures delivered by facsimile or as a PDF attached to an e-mail shall be as binding as originals upon the parties so signing.

(f) **Headings.** The use of headings, captions and numbers of the contents of particular sections are inserted only for the convenience of identifying and indexing various provisions in this Amendment and shall not be construed as a part of this Amendment or as a limitation on the scope of any of the terms or provisions of this Amendment.

(g) **Parties.** This Amendment shall be binding upon the parties hereto and their respective successors and permitted assigns.

REMAINDER OF PAGE INTENTIONALLY LEFT BLANK.

IN WITNESS TO THE FOREGOING, the parties have set their hands effective as of the day and year set forth above.

LESSOR:

**GEORGIA-PACIFIC CONSUMER
OPERATIONS LLC**, a Delaware limited liability
company

By: _____
Name: Michael E. Cruz
Title: Vice President – Real Estate

LESSEE:

CITY OF WISCONSIN, a municipal corporation

By: _____
Name: _____
Title: _____



Report to the
Improvement and Service Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # L.4

To approve the request by Whitney Townhomes, LLC to enter into an agreement for Department of Public Works collection of sanitation tipper carts on their private road located in the block bounded by Webster Avenue, Pine Street, Van Buren Street, and Cherry Street.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

None



Report to the
Improvement and Service Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # L.5

To approve the request by Department of Public Works to award a contract for bridge inspection services for 2021-2022 to Ayres Associates in the amount of \$42,652.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

1. Bridge and Structure Inspection Services 2021-22_Ayres
2. Collins Proposal City Green Bay Bridge Inspection



Bridge and Structure Inspection Services

2021 & 2022

City of Green Bay

January 22, 2021

Ingenuity, Integrity, and Intelligence.

www.AyresAssociates.com



January 22, 2021

Kayla Wasielewski, Civil Engineer
City of Green Bay, Department of Public Works
Via email: kaylaw@greenbaywi.gov

Re: 2021 & 2022 Bridge and Structure Inspections

Dear Ms. Wasielewski:

Thank you for the opportunity to submit this proposal for professional services for the inspection of bridges and structures in the City of Green Bay.

Our structural engineering discipline started with founder Owen Ayres himself, and we've spent decades building and reinforcing our team's unparalleled breadth of knowledge and experience in structural design and inspection. We've continued Owen's legacy with an unyielding commitment to safety, quality, and attention to detail. No matter the project, our partners know they can rely on us to deliver results that endure; that represent the best and safest use of a structure; and that demonstrate the most intelligent use of time, resources, and budget. Our services include:

- Bridges, Buildings, Dams, Culverts, & Pedestrian Structures
- Routine, In-Depth, Underwater, Scour, & Movable Span Inspections
- Damage Assessment/Natural Disaster Emergency Response
- Dam & Gate Inspection
- Miscellaneous Structures – Walls, Poles, Signs, & Foundations
- Fracture Critical Members
- Bridge Load Rating & Analysis
- Feasibility Studies & Rehabilitation Design

Ayres is prepared to staff your project with an inspection team that meets the requirements of the National Bridge Inspection Standards (Code of Federal Regulations Part 650 Subpart C) and WisDOT's Structure Inspection Manual. The project manager will be Cory Thomson, PE, ITL, a transportation engineer with 18 years of design, inspection, and project management experience. He will be assisted by other qualified inspection team leaders that have attended the required NHI courses and are approved by WisDOT. Resumes for these staff members can be found attached to this submittal.

Thank you for considering our qualifications. We look forward to collaborating with you on your upcoming inspection projects. If you have any questions or need more information, please feel free to contact us.

Sincerely,

Ayres Associates Inc



Cory L. Thomson, PE, ITL
Project Manager
920.327.7851 | ThomsonC@AyresAssociates.com



Troy B. Robillard, PE
Manager – Transportation Services-Green Bay
920.327.7827 | RobillardT@AyresAssociates.com



Firm Information

With a team of 300+ innovative problem-solvers nationwide, Ayres stands with integrity behind thousands of projects that strengthen communities and our country's infrastructure, economy, and environment. Our offices are in Wisconsin (Green Bay, Eau Claire, Madison, River Falls, and Waukesha), Florida, Colorado, and Wyoming. Our corporate headquarters are located at 3433 Oakwood Hills Parkway, Eau Claire, WI 54701.

Clients notice our project managers' ability to translate and transform every detail into actionable, understandable, smoothly coordinated pieces of a successful project. Side-by-side with our client partners, our project managers serve as the confident, communicative navigators at the helm of each project.

Consultant Information

Firm Legal Name

Ayres Associates Inc

Location of Local Office

3376 Packerland Drive
Ashwaubenon, WI 54115

Website

www.AyresAssociates.com

Contact Person's Information

Cory Thomson, PE, ITL
O: 920.327.7851
C: 920.412.8755
ThomsonC@AyresAssociates.com

Year Established

1959

Type of Ownership

Employee-owned corporation

Our services include:

- Structural engineering/inspections
- Transportation/traffic engineering
- Construction observation and administration
- Surveying
- Environmental management
- Architecture
- Grant writing and planning
- Civil site design
- Water resource engineering
- Landscape architecture
- Aerial mapping
- Subsurface utility engineering



“A special thanks to Cory Thomson and the team from Ayres Associates for all of the on-site supervision and contract administration. We would like to note how great of a job they did handling all of the coordination efforts (both with the contractors and general public) that were needed to get the project done efficiently and safely.”

Chad Shefchik

Sturgeon Bay City Engineer

Project Understanding

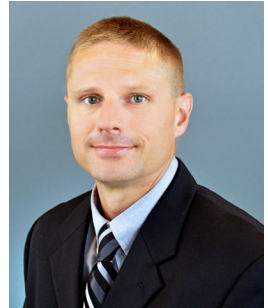
Project Description

The project includes the inspection of bridges and structures within the City of Green Bay in 2021 and 2022. In 2021, seven structures are in need of inspection. Two bridges are not part of WisDOT's Highway Structure Information System (HSIS) and will not need to be entered into HSIS. Five structures will be inspected to meet the requirements of the National Bridge Inspection Standards (Code of Federal Regulations Part 650 Subpart C) and WisDOT's Structure Inspection Manual. One of those five bridges is a movable bascule bridge. Another will need a Scour Plan of Action completed.

In 2022, 30 structures will need to be inspected to meet NBIS requirements and WisDOT's Structure Inspection Manual, including six bridges that need a underwater profiles, one movable bascule bridge that needs a fracture critical/in-depth inspection, and one bridge that needs a Scour Plan of Action completed.

The project may also include a post-flood inspection of one structure in 2021 or 2022.

Ayres is prepared to staff your project with an inspection team that meets NBIS and WisDOT requirements. Your project manager will be **Cory Thomson, PE, ITL**. Cory has 18 years of experience in structural inspection, design and construction, and project management. He will be assisted by other qualified inspection team leaders that have attended the required NHI courses and are approved by WisDOT.



The project will include field inspection of bridges as described above and associated reporting. The inspection team will mobilize to each bridge site with equipment typical of the required inspections. The reports for the required structures will be processed using WisDOT's HSIS and the non-HSIS structures will be processed using a general inspection report that follows WisDOT's HSIS format.



“They provide professional services and require minimal oversight. When issues arise, they offer simple and solid advice on how to address them. When asked to take on additional work, they step up to the plate and deliver.”

Richard King

Oregon Department of
Transportation Local Agency Bridge
Inspection Engineer

Firm Qualifications

Ayres has inspected more than 18,000 bridges and performed more than 3,000 underwater inspections nationwide. We've been doing routine and underwater bridge inspections in Wisconsin since 1971. As a firm, we've completed bridge inspections for 90 county/city/village/town clients in Wisconsin. Ayres is also the Bridge Inspection Program Manager for the following counties: Door, Kewaunee, Calumet, Menominee, Walworth, and Polk.

Qualifications and resumes for the staff members we propose to complete the structure inspection of the bridges within the City of Green Bay can be found in our Project Team section, beginning on Page 7.

Ayres' structural inspectors offer time-tested expertise and trustworthy assessment to be sure your structures remain durable and safe. Our inspectors are well-trained in the latest industry standards and continuing education and are fully capable of completing the inspections for the City of Green Bay.

Scope of Services

Ayres will provide the following scope of services:

- Notify the City of Green Bay of the bridge inspection schedule in the month prior to the month the inspections are due.
- The inspections shall conform to and be in accordance with Wisconsin Statutes 84.17 and Trans 212 Standards for Inspections of Bridges in the State of Wisconsin. The inspections shall also be in conformance with the National Bridge Inspection Standards (NBIS) and procedures set out in the Wisconsin Department of Transportation, State of Wisconsin Structure Inspection Manual.
- Mobilize to each bridge an inspection team that meets the WisDOT requirement and the NBIS to complete routine inspections of structures, including a movable inspection in 2021 and a movable and fracture critical inspection in 2022.
- Obtain a minimum of 12 photos for each bridge to record the conditions and deficiencies apparent at the time of inspection.
- Complete underwater profiles and scour plan of action of the structures identified by City of Green Bay.
- Provide data entry in the Highway Structures Information System (HSIS) for the necessary inspections.
- Generate an element report for the non-HSIS structures.
- Generate a summary of recommendations for each bridge.
- Complete a post flood inspection of B-05-0154 as directed by the City of Green Bay.
- Provide digital copies of the inspection forms and photos to the City of Green Bay.



“The level of safety precaution that Ayres took in conducting this type of inspection made us feel very confident.

You could see immediately that the inspectors knew what they were doing – that they had done this before. With that level of expertise and attention to detail, it was obvious we had teamed with the right people.”

David Jauregui

New Mexico State University's
department head of civil engineering

Similar Projects

Ayres has bridge inspection experience for counties throughout Wisconsin. Following is a list of our firm's experience in northeast Wisconsin and elsewhere in the state, along with in nearby Michigan. We invite you to contact the following references for a firsthand account of the quality of our inspection services – and dedication to our clients.

City of Racine

Client: City of Racine, Wisconsin

Contact Information: John Rooney, Commissioner of Public Works,
262.636.9191, John.Rooney@cityofracine.org

Contracts have included inspections in 2010, 2012, 2013, 2014, 2016, 2017, 2018, 2019, and 2020 for routine inspection of 24 bridges, movable and fracture critical inspections for two bridges, and underwater inspection of four bridges.

City of Manitowoc

Client: City of Manitowoc, Wisconsin

Contact Information: Greg Minikel, Engineering Division Manager,
920.686.6910, gminikel@manitowoc.org

Contracts have included inspections in 2007, 2013, 2014, 2016, 2018, and 2020 for routine, fracture critical, movable, and in-depth bridge inspections. The routine inspections involve 10 bridges.

Calumet County

Client: Calumet County, Wisconsin, Highway Department

Contact Information: Brian Glaeser, Highway Commissioner,
920.849.1434, Glaeser.Brian@co.calumet.wi.us

Contracts have included inspections every year from 2012 through 2021, including routine inspection of 54 bridges, as well as underwater, initial, and damage inspections. Ayres provides inspection program manager services.

City of Sheboygan

Client: City of Sheboygan, Wisconsin

Contact Information: David Biebel, Director of Public Works,
920.459.3366, dbiebel@ci.sheboygan.wi.us

Contracts have involved inspections in 2005, 2007, 2011, 2012, 2013, 2015, 2017, and 2019 and have included routine inspection, as well as underwater inspection of five bridges, fracture critical inspections on the 8th Street Bridge over the Sheboygan River, and movable bridge inspections.

Kewaunee County

Client: Kewaunee County, Wisconsin, Highway Department

Contact Information: Todd Every, Highway Commissioner, 920.388.3707, everyt@kewauneeco.org

Contracts have involved inspections in 1998, 2013, 2014-2015, 2016-2017, 2018-2019, and 2020-2021, including the routine inspection of 75 bridges, the inspection of approximately 50 bridges that do not qualify for the National Bridge Inventory, fracture critical inspections, and underwater inspections.



2020 Kewaunee County Routine Inspection

Door County

Client: Door County, Wisconsin

Contact Information: John Kolodziej, Highway Commissioner, 920.746.2500, kolodzie@co.door.wi.us

Contracts have involved inspections in 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, 2018, and 2019, involving routine inspection of nine bridges, as well as the initial inspection of one bridge.



2019 Door County Inspection

Menominee County

Client: Menominee County, Michigan, Road Commission

Contact Information: Darrell Moilanen, Former Engineer/Manager, 877.867.9444

Contracts have involved inspections in 1999, 2001, 2002, 2003, 2005, 2007, 2009, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, and 2019, involving routine inspections of 71 bridges, as well as underwater and initial inspection services.



2019 Menominee County, MI, Routine Inspection

Iron County

Client: Iron County, Michigan, Road Commission

Contact Information: Doug Tomasoski, Superintendent-Manager, 906.265.6686, doug@ironcountyroads.com

Contracts have involved inspections every year from 2010 through 2020. Services have included routine and fracture critical inspections, scour analysis, and load rating.



2020 Iron County, MI, Inspection



“Every expectation was met or exceeded in a professional manner. There were no problems of any kind, and every aspect of the relationship was smooth.”

Mark Alder

Project Manager,
Rodney P. Kinney Associates

Project Team

Many firms can do the work. What makes the difference is the people who you want to work with. Throughout the country, from busy cities to remote, mountainous areas, our team members have managed or participated in numerous contracts requiring NBIS inspections on varying schedules. We're accustomed to travel and completing this work whether it's near or far.

Not only are we well-trained, but our key staff members also teach others throughout the country. They're involved in federal research projects and teach Federal Highway Administration-National Highway Institute (FHWA-NHI) bridge inspection courses such as 130055, the two-week Safety Inspection of In-Service Bridges; and 130078, Fracture Critical Inspection Techniques for Steel Bridges.

Resumes for the primary Ayres team members working on your project can be found on the pages that follow.



Cory Thomson, PE, ITL

Project Manager

Cory has 13 years of experience with Ayres and five years with another firm. He brings a wide range of experience in structural inspection; construction observation; and design on freeway, rural roadway, and municipal street projects. Cory's structural inspection experience includes topside and underwater inspection of a variety of bridges as well as ancillary structure inspection as a qualified inspection team leader in Wisconsin, Michigan, and Florida. He has the knowledge and experience to complete and prepare the associated reports for state and local government agencies.

As a construction project engineer, Cory provides full on-site construction observation services, including quality control testing, erosion control review, traffic control review, public involvement, and quantity measurement and documentation. Cory provides services in the design phase as well, including project management, roadway design, and urban street and utility design.

Total Experience

18 Years

Registrations

Registered Professional Engineer, WI, MI, AZ, FL

Certifications/Training

WisDOT Structure Inspection Refresher Training, 2019

Bridge Inspection Refresher Course, FHWA, NHI, 2018

Inspection of Fracture Critical Bridge Members, NHI, 2016

Underwater Bridge Inspection, NHI, 2014

WisDOT Bridge Inspection Update Training, 2014

Inspection Team Leader, WI, 2005

Safety Inspection of In-Service Bridges Certificate, FHWA, NHI, 2005

Education

BS, Civil Engineering, University of Wisconsin-Platteville

Select Experience

- Town of Green Bay 2020 Bridge Inspections, Brown County, WI
- Calumet County Bridge Inspections 2020, Calumet County, WI
- Town of New Denmark 2020 Bridge Inspections, Brown County, WI
- Town of Luxemburg - Bridge Inspection 2020, Luxemburg, WI
- Racine County 2020 Bridge Inspections, Racine County, WI
- Iron County 2020 Routine Inspections, Iron River, MI
- Gogebic County 2020 Routine Inspections, Gogebic County, MI
- Walworth County 2020 Routine Bridge Inspections, Walworth County, WI
- Kewaunee County Bridge Inspection 2020, Kewaunee, WI
- Menominee County Bridge Inspection 2020, Keshena, WI
- Menominee County 2020 Interim Bridge Inspections, Menominee County, MI
- Chippewa County 2020 Interim Bridge Inspections, Sault Ste. Marie, MI
- MDOT Statewide Movable Bridges Underwater Inspection, Various Locations, MI
- Door County 2020 Routine Bridge Inspections, Door County, WI
- City of Manitowoc 2020 Routine Bridge Inspections, Manitowoc County, WI
- Winnebago County 2020 Bridge Inspection, Winnebago County, WI
- Chippewa County Caribou Lake Dam Inspection 2019, De Tour Village, MI
- Menominee County Bridge Inspections 2019, Menominee County, MI
- Kewaunee County Bridge Inspections 2018-19, Kewaunee County, WI
- City of Racine Bridge Inspection 2018, Racine, WI
- City of Watertown 6-Month Routine Bridge Inspection 2016, Watertown, WI
- City of Manitowoc Movable Bridge Inspection 2016, Manitowoc, WI
- City of Sheboygan Bridge Inspection 2015, Sheboygan, WI
- Delta County Bridge Inspections (2013-2014), Delta County, MI



Dan Sydow, PE

QA/QC

In his nearly 20-year career at Ayres, Dan has enjoyed the challenges along his path to the opportunity to manage our talented structural engineers and bridge inspectors. Dan's project responsibilities include project management and engineering for highway and pedestrian bridges, buildings, dams, retaining walls, tunnels, existing structure assessments and renovations, and structural repairs.

Dan has designed hundreds of bridge replacements and rehabilitations in 10 states and in nearly all of Wisconsin's counties. His building experience includes a variety education, office, industrial, government, residential, recreational, fleet maintenance, and public utility facilities.

As a structural engineer, his responsibilities include project management and engineering of various types of highway, railroad, and pedestrian bridges and related structures, including long-span bridges, curved bridges, and highly skewed bridges; bridge rehabilitation; and structural repairs. His bridge experience involves mostly local government and Wisconsin Department of Transportation (WisDOT) projects.

Select Experience

- City of Racine – 2020 Bridge Inspections, Racine, WI
- Green Bay North Webster Avenue (University Avenue to Radisson Street) Reconstruction, Green Bay, WI
- Chippewa County 190th Avenue Bridge Inspection and Load Rating, Bloomer, WI
- Chippewa Falls Irvine Park Bridge Inspection, Chippewa Falls, WI
- Yuma County, AZ, Bridge Load Rating and Steel In-Depth Inspection Project, Yuma County, AZ
- Forest County Potawatomi Community Structural Roof Inspections, Crandon, WI
- City of Kenosha, Poerio Park Pedestrian Bridge Replacement - Design Services, Kenosha, WI
- Gordon Correctional Center Bridge Replacement over the Eau Claire River, Gordon, WI
- UW-Eau Claire Chippewa River Pedestrian Bridge Study, Eau Claire, WI
- Rock CTH "J" over Turtle Creek Bridge Replacement, Rock County, WI
- Old STH 73 Bridge over Crawfish River, Dodge County, WI
- Clark County, CTH "N" over Branch of South Fork of Eau Claire River Bridge, Clark County, WI

Total Experience

19 Years

Registrations

Registered Professional Engineer, WI, MI, IL, CO

Education

BS, Civil and Environmental Engineering, University of Wisconsin-Madison

Memberships

American Public Works Association

American Society of Civil Engineers

Society of American Military Engineers



Rick Maslyn, ITL

Inspection Team Leader

Rick brings 35 years of experience, having inspected many large, complex, and fracture critical bridges throughout the country. His recent experience includes inspections of many large bridges throughout Florida, including the signature cable-stayed Sunshine Skyway Bridge near St. Petersburg, several large bridges in Jacksonville, and high-level structures in remote, forested areas in Oregon using an under-bridge inspection vehicle. For these projects, Rick has led teams as small as two to as large as 16, the current size of Ayres' Structural Inspection Group. As supervisor of this group, Rick has managed large-scale inspection projects for many years, constantly refining the group's skills to do the work better and more efficiently.

Total Experience

35 Years

Certifications/Training

WisDOT Structure Inspection Refresher Training, 2019

Bridge Inspection Refresher Course, FHWA, NHI, 2018

Inspection Team Leader, WI, 2011

Inspection and Maintenance of Ancillary Highway Structures (NHI 130087), 2011

Underwater Bridge Inspection, FHWA, NHI, 2011

Certified Bridge Inspector, NICET, Level 4, NICET, 2010

Stream Stability and Scour at Highway Bridges Certification (NHI135047), 2009

National Highway Institute (NHI) Certified Instructor, 2008

FHWA NHI 130099A Bridge Inspection Nondestructive Evaluation Seminar, 1998

Movable Bridge Inspection Seminar, 1997

Inspection of Fracture Critical Bridge Members, NHI, 1993

Safety Inspection of In-Service Bridges Certificate, FHWA, NHI, 1992

Engineering Concepts for Bridge Inspectors, FHWA, NHI Certificate, 1992

Select Experience

- City of Racine 2020 Movable/Fracture Critical Bridge Inspections, Racine, WI
- City of Titusville – Bridge Inspection 2020, Titusville, FL
- Seminole County 2020 Bridge Inspections, Seminole County, FL
- City of Albany 2015 Bridge Inspections, Albany, OR
- Walt Disney World Property-wide Resort Bridge Inspection (2013-2014), Kissimmee, FL
- Kennedy Space Center Bridge Inspections (2013), Orsino, FL
- Kennedy Space Center Bridge Inspections (2011-2012), Orsino, FL
- City of Racine Bridge Inspection 2012 (Non-movables), Racine, WI
- Wisconsin DOT Statewide Underwater Bridge Inspection, Tomahawk, WI
- Winnebago CTH "K" Bridge Inspection (2012), Eureka, WI
- Village of Hartland Bridge Inspection (2012), Hartland, WI
- City of Racine State Street Bridge Inspection 2012, Racine, WI
- Menominee County Bridge Load Ratings 2012, Stephenson, WI
- City of Racine Main Street Bridge Inspection 2012, Racine, WI
- Chippewa County Bridge Inspections (2011), Sault Ste Marie, MI
- Menominee County Bridge Inspections (2011), Menominee County, MI
- Bridge Repair, Routine Inspection, and Maintenance, Florida DOT District 7 (2003-2008), Various Locations, FL
- Utah Routine Bridge Inspections, Various Locations, UT
- Oregon DOT Area 3 (2016-2018 Inspections), Salem, OR
- Oregon DOT Area 3 (2015-2016 Inspections), Salem, OR
- Oregon DOT Area 3 (2012-13 Inspections), Salem, OR
- Oregon DOT Area 3 Inspection (2010-2011), Salem, OR
- JAXPORT Structural Inspections, Jacksonville, FL
- Walt Disney World Resort Property-wide DOT Bridge Inspection, Orlando, FL
- City of Albany June 2009 Bridge Inspections, Albany, OR
- UF & Shands Pedestrian Bridge Inspection, Jacksonville, FL



Stephanie Baribeau, ITL

Inspection Team Leader

Stephanie joined Ayres' structural inspection group in 2017. She assists on topside and underwater inspections for highway bridges, overhead signs, dams, and other structures for state departments of transportation, counties, and municipalities. Her duties include topside and underwater bridge and dam inspection, climbing inspection of various structures, and preparing related reports. Stephanie efficiently produces inspection reports using online applications, word processing programs, spreadsheets, and CADD. She communicates updates to staff and clients regarding progress on structural inspection projects.

Total Experience

3 Years

Certifications/Training

Inspection Team Leader, WI, 2019

Safety Inspection of In-Service Bridges Certificate, FHWA, NHI, 2018

PADI Open Water Scuba Diver, 2018

Level 1 Rope Access Technician, SPRAT, 2018

Education

BS, Civil Engineering, University of Wisconsin-Platteville

Select Experience

- City of Racine 2020 Bridge Inspections, Racine, WI
- City of Burlington 2020 Bridge Inspections, Burlington, WI
- Winnebago County 2020 Bridge Inspection, Winnebago County, WI
- Menominee County Bridge Inspections (2019), Menominee County, MI
- Kewaunee County Bridge Inspections 2018-19, Kewaunee County, WI
- Ontonagon County Bridge Inspection 2018, Ontonagon, MI
- City of Ironwood Bridge Inspection 2018, Ironwood, MI
- City of Manitowoc Movable Bridge Inspection 2018, Manitowoc, WI
- Calumet County Routine Bridge Inspection 2018, Chilton, WI
- Walworth County 2018 Bridge Inspection, Walworth County, WI
- Iron County, MI, Biennial Bridge Inspections (2018), Iron County, MI
- City of Racine Bridge Inspection 2018, Racine, WI
- City of Racine Bridge Inspection 2017, Racine, WI
- Walworth County 3-Year Routine Bridge Inspections, Walworth County, WI
- WisDOT Structure Underwater Dive Inspections and Structure Inspection (2016-2018), Eau Claire, WI
- WisDOT Structure Underwater Dive Inspections and Structure Inspection (2016-2018), Chippewa Falls, WI
- Menominee County Routine Bridge Inspection 2017, Stephenson, MI
- City of Sault Ste Marie Bridge Inspection 2017, Sault Ste Marie, MI
- Ontonagon County Bridge Safety Inspection 2017, Ontonagon County, MI
- City of Menominee Bridge Inspection 2017, Menominee, MI
- City of Stephenson Routine Bridge Inspections (2017), Stephenson, MI
- Jefferson County Bridge Inspection 2016-17, Jefferson County, WI
- Kewaunee County Bridge Inspection 2016-17, Kewaunee, WI
- Kalamazoo County Bridge Inspections (Sub to Fleis & Vandenbrink), Kalamazoo County,
- City of Ironwood Bridge Inspections, Gogebic County, MI
- MDOT Underwater Bridge Safety Inspection of Large Deck, Movable, and Region-Owned Structures 2014-17, Statewide, MI



Joseph Bluma

Inspection Team Leader

Joe joined Ayres' structural engineering staff in June 2017, bringing two summers of experience as a student engineer trainee intern with the Wisconsin Department of Transportation. He has experience in construction inspection and administration on structural design projects, including the Hale Interchange in Milwaukee County and the Pilgrim Road and Dousman/Golden Lake Bridges in Waukesha County.

Joe's responsibilities include assisting with the engineering and inspection of various types of highway, railroad, and pedestrian bridges and related structures, including long-span bridges, curved and highly skewed bridges, and sign and pedestrian bridges; bridge rehabilitation and structural repairs; foundations and retaining structures; manholes; dams; and other miscellaneous structures.

Total Experience

3 Years

Certifications/Training

Safety Inspection of In-Service Bridges Certificate, FHWA, NHI, 2020

PADI Open Water Scuba Diver, 2015

Education

BS, Civil Engineering, University of Wisconsin-Platteville

Memberships

American Society of Civil Engineers

Select Experience

- City of Racine 2020 Movable/Fracture Critical and Routine Bridge Inspections, Racine, WI
- Kewaunee County Routine Bridge Inspections 2020-2021, Kewaunee County, WI
- Town of Casco Bridge Inspections 2020 and 2021, Casco, WI
- Town of Franklin Bridge Inspections 2020 and 2021, Franklin, WI
- City of Algoma Bridge Inspection 2020, Algoma, WI
- Town of West Kewaunee Bridge Inspection 2020, West Kewaunee, WI
- Town of Carlton Bridge Inspection 2020, Carlton, WI
- Town of Luxemburg Bridge Inspection 2020, Luxemburg, WI
- Town of Montpelier Bridge Inspection 2020, Montpelier, WI
- Douglas County 2020 Routine Inspections, Douglas County, WI
- City of Burlington 2020 Bridge Inspections, Burlington, WI
- City of Ironwood Bridge Inspections, Gogebic County, MI
- Iron County 2020 Interim Inspections, Iron River, MI
- Walworth County 2020 Routine Bridge Inspection, Walworth County, WI
- Iron County Interim Bridge Inspection 2019, Iron River, MI
- City of Superior Barker's Island Bridge Inspection and Load Rating 2019, Superior, WI
- Door County Routine Bridge Inspection 2018, Sturgeon Bay, WI
- City of Manitowoc Routine Bridge Inspection 2018, Manitowoc, WI
- Jefferson County Bridge Inspection 2018-19, Jefferson, WI
- Menominee County Routine Bridge Inspection 2018, Keshena, WI



“The project went extremely well. ... I just want to thank you again on the super work you did on the specs and prints. The project went smoothly due to accurate and well-planned documents that you ... provided.”

Steve Gering

Assistant Director of Facilities,
UW-Green Bay

Proposed Schedule & Fee

Our anticipated time schedule to complete the City's bridge and structure inspections is outlined below.

2021 Bridge and Structure Inspections

February

- Prepare field inspection reports for movable inspection of B-05-0311
- Prepare field equipment and inspection vehicle
- Hold inspection team meeting to review project scope and task

March

- Provide the City of Green Bay 48-hour notice of the movable bridge inspection of B-05-0311
- Complete movable inspection of B-05-0311

April

- Complete draft report in HSIS
- Complete internal QC review of draft report and address any comments
- Finalize report and provide digital copy of report and photos to City of Green Bay

May

- Prepare and complete scour plan of action for P-05-0728

September

- Prepare field inspection reports
- Prepare field equipment and inspection vehicle
- Hold inspection team meeting to review project scope and task
- Coordinate with the City of Green Bay

October

- Complete routine inspections of the bridges directed by City of Green Bay

November

- Complete draft reports of HSIS and non-HSIS structures
- Complete internal QC review of draft reports and address any comments
- Finalize reports and provide digital copy of report and photos to City of Green Bay

Additional

- Complete interim post-flood inspection of B-05-0154 as required

2022 Bridge and Structure Inspections

September

- Prepare field inspection reports
- Prepare field equipment and inspection vehicle
- Hold inspection team meeting to review project scope and task
- Coordinate use of snoop truck with WisDOT
- Coordinate use of barge/boat provided by the City of Green Bay
- Coordinate with the City of Green Bay and traffic control regarding lane closures set-up

October

- Complete routine inspections including UW-Profile of the bridges directed by City of Green Bay
- Complete fracture critical, movable, and routine inspection of B-05-0311
- Provide the City of Green Bay 48-hour notice of the movable bridge inspection of B-05-0311
- Provide 48-hour advance notice to the City of Green Bay to use the barge/boat provided by the City for the following inspections: B-05-0141, B-05-0154, B-05-0255, B-05-0275, B-05-0285, and B-05-0376

November

- Complete draft reports of HSIS and non-HSIS structures
- Complete internal QC review of draft reports and address any comments
- Finalize reports and provide digital copy of report and photos to City of Green Bay

Additional

- Complete interim post-flood inspection of B-05-0154 as required

Fee

Ayres will perform the above services for the unit rates shown in the Consultant Contract Fee Breakdown that is part of this submittal.



“Literally, we didn’t hear about the project. It didn’t make news. It was silent. That’s what everybody wants – no problems.”

Doug Martin

Utility Engineer,
Village of Ashwaubenon

Assumptions and Exceptions

Assumptions

Ayres will coordinate with the CN Railroad regarding the access, right-of-way agreement, flagmen, and railroad liability insurance for the inspection of Bay Port Drive (Atkinson Drive) over CN Rail (B-05-0225). All costs associated with permit fees and flagmen will be the responsibility of the City of Green Bay.

Exceptions to Conditions of the City’s Standard Agreement

The City of Green Bay’s Standard Agreement for Professional Services is acceptable by Ayres for use in this project if the following changes are made. We believe we can come to an agreement on contract language as we have done for past contracts with the City.

5. INDEMNIFICATION (HOLD HARMLESS) AGREEMENT

Consultant hereby agrees to indemnify, defend and hold harmless the City, its elected and appointed officials, officers, employees, agents, representatives and volunteers, and each of them, from and against any and all suits, actions, legal or administrative proceedings, claims, demands, damages, liabilities, interest, attorneys’ fees, costs and expenses of whatsoever kind or nature in any manner directly or indirectly caused, occasioned, or contributed to in whole or in part or claimed to be caused, occasioned, or contributed to in whole or in part, by reason of any act, omission, fault, or negligence, whether active or passive, of Consultant or of anyone acting under its direction or control or on its behalf **that are not related to professional services (it being expressly understood and agreed that Consultant’s indemnification obligations for Consultant’s professional services are solely covered in the following paragraph)**, even if liability is also sought to be imposed on City, its elected and appointed officials, officers, employees, agents, representatives and volunteers. The obligation to indemnify, defend and hold harmless the City, its elected and appointed officials, officers, employees, agents, representatives and volunteers, and each of them, shall be applicable **unless liability results from the sole except to the extent that liability results from the** negligence of the City, its elected and appointed officials, officers, employees, agents, representatives and volunteers.

Consultant will indemnify and hold harmless the City for any claims by reason of its negligent acts, errors or omissions for professional services. The obligation to indemnify and hold harmless the City, its elected and

appointed officials, officers, employees, agents, representatives and volunteers and each of them, shall be applicable except to the extent the liability results from the negligence of the City, its elected and appointed officials, officers, employees, agents, representatives and volunteers.

Consultant shall reimburse the City, its elected and appointed officials, officers, employees, agent or authorized representatives or volunteers for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided.

In the event that Consultant employs other persons, firms, corporations or entities (sub-contractor) as part of the work covered by this Agreement, it shall be Consultant's responsibility to require and confirm that each sub-contractor enters into an Indemnity Agreement ~~in favor of the City, its elected and appointed officials, officers, employees, agents, representatives and volunteers~~, which is identical to this Indemnity Agreement.

This indemnity provision shall survive the termination or expiration of this Agreement.

8. ACCESS/UTILITIES

The City will arrange access to the site, as necessary, for Consultant to complete the work. Consultant will take reasonable precautions to minimize any damage to the site due to its operation. Site restoration is not included unless specifically requested by the City. Consultant is responsible for locating public utilities and agrees to indemnify and save the City harmless from all claims, suits, losses, cost and expenses including attorney's fees as a result of any personal injury, death or property damage occurring from damage to public utilities **arising from the negligence of the Consultant**. Consultant shall coordinate with a private locating service for locating utilities on private property.

Addendum Acknowledgment



Department of Public Works

ADDENDUM NO. 1

REQUEST FOR PROPOSAL – BRIDGE AND
STRUCTURE INSPECTION SERVICES 2021 & 2022
Engineering Division
Department of Public Works
City of Green Bay

January 14, 2021

Proposals due: January 22, 2021

This Addendum is issued to modify, explain or correct the original drawings and specifications and is hereby made part of the Contract Documents. This addendum must be signed and attached to the Consultant's proposal.

(Pages: 4 including cover sheet)

Consultant's Signature

SIGN AND ATTACH THIS ADDENDUM TO THE BIDDER'S PROPOSAL

James M. Brunette, P.E.
Assistant Director of Public Works

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REQUEST FOR PROPOSALS – BRIDGE AND
STRUCTURE INSPECTION SERVICES 2021 & 2022

100 North Jefferson Street ❖ Room 300 ❖ Green Bay, WI 54301-5026 ❖ www.greenbaywi.gov/publicworks
Administration/Engineering/Traffic: 920.448.3100 ❖ Operations: 920.448.3535 ❖ Parking: 920.448.3431 ❖ Fax: 920.448.3102

THE FOLLOWING ARE ANSWERS TO QUESTIONS RECEIVED IN RESPONSE TO THE REQUEST FOR PROPOSALS:

Q: Are load ratings anticipated as part of this Contract?

A: No load ratings are required.

Q: 007: Porlier Pier: The map calls out a railroad bridge further south of Porlier Street which structure needs to be inspected?

A: The map is labeled correctly. The old railroad bridge, 'Porlier Pier' is what is to be inspected.



Q: What level of reporting is required for the general inspection of non-HSI bridges 007 and 008 if they cannot be entered into HSI?

A: The consultant will be responsible for providing a general report of the structure. The report shall include a description of any maintenance items and their priority status. The report shall identify the general condition of the superstructure, deck, substructure and any other pertinent structure elements. The report shall also contain no fewer than 12 photos of each structure inspected.

THE FOLLOWING ARE REVISIONS AND CLARIFICATIONS TO THE SCOPE OF SERVICES IN THE REQUEST FOR PROPOSALS:

- Six (6) of the structures identified for routine inspections in 2022 are eligible for opting-in to qualify for extension of the routine bridge inspections from 24 months to 48 months. The City/County will be applying to extend the routine cycle of the following six (6) structures: B-05-0275: Baird Street over East River; B-05-0304: Morrow Street over Baird Creek; B-05-0314: Nicolet Drive (CTH A) over Mahon Creek; B-05-0315: Lake

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REQUEST FOR PROPOSALS – BRIDGE AND
STRUCTURE INSPECTION SERVICES 2021 & 2022

Largo Drive over Mahon Creek; B-05-0317: Maloney Road over Wequiock Creek; B-05-0329: Main Street (USH 141/STH 29) over Baird Creek. If the extension is approved these structures would not require routine inspections until 2024; thus no longer requiring inspection as part of this Contract. A revised Consultant Contract Fee Breakdown with a deduct cost for the six (6) structures is attached to this addenda, A-4. In the event the routine inspections for these structures is extended the cost deduct from the Contract total shall apply.

Consultant Contract Fee Breakdown (Revised)

2021

Quantity	Inspection Type	Unit Price	Total Cost
4 EA	Routine Bridge Inspections	\$ 582 /EA	\$ 2,328
2 EA	Non-HSI Routine Bridge Inspections	\$ 986 /EA	\$ 1,972
1 LS	Moveable Bridge Inspection	\$ 6,084 /LS	\$ 6,084
1 EA	Scour Plan of Action	\$ 520 /EA	\$ 520
2021 Inspection Total Cost			\$10,904

2022

Quantity	Inspection Type	Unit Price	Total Cost
30 EA	Routine Bridge Inspections	\$ 556 /EA	\$ 16,680
6 EA	UW-Profiles	\$ 40 /EA	\$ 240
1 EA	Fracture Critical Inspection	\$ 7,400 /EA	\$ 7,400
1 LS	Moveable Bridge Inspection	\$ 1,650 /LS	\$ 1,650
1 EA	Scour Plan of Action	\$ 294 /EA	\$ 294
2022 Inspection Total Cost			\$ 26,264

2022 Routine Inspection Extension (Deduct)

Quantity	Inspection Type	Unit Price	Total Cost
6 EA	Routine Bridge Inspections	(\$ 556 /EA)	(\$ 3,336)
Deduct cost for (6) Routine Inspections			(\$ 3,336)

As Needed - Post Flood Inspection

Quantity	Inspection Type	Unit Price	Total Cost
1 EA	Post Flood Inspection B-5-154	\$1,050 /EA	\$ 1,050
Post Flood Inspection (Per Occurance)			\$ 1,050

City of Green Bay Wisconsin



REQUEST FOR PROPOSAL BRIDGE AND STRUCTURE INSPECTION SERVICES 2021&2022

January 4, 2021



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A

FIRM INFORMATION

Firm Name: Collins Engineers, Inc.
Address: 2149 Velp Avenue, Suite 203
Howard, WI 54303

Contact: Steven Miller, P.E.
email: smiller@collinsengr.com
Phone: 920-252-2418

B

PROJECT UNDERSTANDING & APPROACH

The City of Green Bay (City) has requested proposals for completing bridge inspections and other work in the 2021 and 2022 calendar years. The bridges requiring inspections are located within the City of Green Bay, Brown County, Wisconsin. In 2021, the services will consist of:

- 4 WisDOT bridge inspections
- 2 non-HSI bridge inspections
- 1 movable bridge inspection (B-05-311)
- scour plan of action for P-05-0728.

In 2022, the services will consist of:

- 30 WisDOT routine bridge inspections
- 1 fracture critical inspection (B-05-0311)
- 1 movable bridge inspection (B-05-0311)
- underwater profiles of 6 bridges
- scour plan of action for P-5-0718.

Collins understands that the City is currently applying to extend the routine cycle of six 2022 bridges from 24-month to 48-month cycles and can easily incorporate any scope revisions into our services.

Collins Engineers, Inc. (Collins) is committed to delivering safe, thorough, and cost-effective bridge inspections for the City of Green Bay. For this project, the City will receive a quality-minded and responsive project approach from start to finish. Our approach to this project has been broken down into the following main project tasks:

PLANNING AND PREPARATION

Prior to mobilizing for the inspections, Collins staff will collect and review all available pertinent information for each structure. These reviews allow our team leader(s) to formulate a plan for inspecting each bridge, including any features or structural configurations that may need special attention. The proposed bridges have unique coordination requirements including City-owned barges, railroad flagging, Wisconsin DOT reach-all, and traffic control scheduling. Collins successfully completed this and other work on City of Green Bay bridges in the past and understands the unique challenges associated with inspecting these structures. We know who to contact and when to contact them for each required service.



Our inspection team leader(s) will examine the available design plans, previous inspection reports and maintenance recommendations for all of the bridges.

Collins' Team Leaders will place emphasis on identifying any previously noted deficiencies or repairs that have been made. Our review during this phase will consist of identifying the location, arrangement, and specifics of each bridge so that a thorough understanding can be established. After reviewing the previous inspection and inventory records, Collins staff will prepare an inspection plan for each of the bridges. The inspection plan allows Collins staff to efficiently and safely complete the fieldwork. The complexity and detail in the inspection plan will vary in relation to the bridge. A routine bridge inspection plan is less detailed

than a movable bridge inspection plan.

BRIDGE INSPECTIONS

Collins' staff perform similar bridge inspection services for the Wisconsin Department of Transportation, Cities and Counties throughout the State. We understand that the overall goal of the City's bridge program is to ensure public safety and to maintain its bridges in good condition. To accomplish this goal, the City requires an effective project team with considerable field inspection experience, a team that understands local municipal concerns and a team that is experienced in WisDOT and FHWA policies and procedures. Collins will perform all bridge inspection work in conformance with WisDOT and NBIS requirements, and the current AASHTO Manual for Bridge Element Inspection as required.

Routine Inspections

Collins will investigate each of the City's bridges to establish its condition and to ensure its continued safe operation. The experience of our proposed staff with bridge inspections will ensure that all elements of the structure are being assessed. Our team will perform NBI and element level inspections in accordance with the WisDOT Structure Inspection Manual and other references.

ROUTINE BRIDGE INSPECTIONS

The City will benefit from a Collins Team that will:

- Perform inspections by local WisDOT Certified Bridge Inspectors
- Address any Critical Findings in a timely manner
- Accurately document NBI and Element Level Condition Ratings
- Note any conditions that may require re-rating of the structure
- Perform all required inspection tasks in accordance with the most current state policies and procedures

- NBI level ratings will be assigned to the deck, superstructure, substructure and culvert elements (as applicable). An appraisal of the waterway and roadways will also be made.
- Element level ratings will be completed for each of the bridges identified elements. Any identified element defects will be documented with written descriptions and photos as needed. Our inspectors will verify that all elements describing the structure are correct and complete. Missing elements will be added to the inspection report, and the correct units, quantities, elements and other inspection information will be verified.
-
- The portion of UW-Profile inspections and scour plans of action that requires site visits will be completed at the same time as the routine inspections.

- One of the inspector's most important goals during a bridge inspection is to ensure that any defects or conditions that may affect public safety are identified and acted upon. These can include regular maintenance items but can also include items that require more immediate attention. Although uncommon, a critical finding is defined as "a structural or safety related deficiency that requires immediate follow-up inspection or action". Collins will assure that any identified critical findings are acted upon with the utmost of attention and in accordance with WisDOT procedures. Unsafe deficiencies require the bridge to be closed as soon as possible. Serious deficiencies require a partial closure. Collins critical findings procedure will be in accordance with the Wisconsin DOT Technical Memorandum on critical findings dated June 2019. This document describes the notification process in detail, as well as documentation required in the event of a critical finding. The notification process starts with Collins' staff notifying the City's Program Manager.



Leo Frigo Bridge Damage

Prior to leaving the project site, we will review all notes and the bridge inspection forms to ensure that the information gathered is complete and accurate. We will also check all photographs taken to ensure clarity and that all necessary photographs were taken. Cameras will be downloaded daily so photos are not accidentally lost or deleted.

Moveable Inspections

Bridge B-05-311, Main Street over the Fox River is a 5 span, 770-foot-long bridge. Four of the five spans have prestressed concrete superstructures. The remaining span consists of twin bascule leafs. This moveable span requires an inspection every 12 months. All of the structural, mechanical, hydraulic and electrical components for the bridges will be inspected.

Collins certified team leaders will perform the moveable bridge inspection in accordance with Wisconsin DOT procedures. Mr. Schroeder is our proposed moveable team leader. He is a Civil/Structural Engineer with over 20 years of experience in structural engineering. He has performed over 2,000 routine, moveable, fracture critical, and underwater bridge inspections for various DOTs and local government agencies. As part of these previous inspections, he has prepared inspection reports, condition assessments, maintenance recommendations, and calculated load ratings. His inspection capabilities are supplemented by being an American Welding Society Certified Welding Inspector (CWI) and a Society of Professional Rope Access Technicians (SPRAT) Level II certified climber. In the unlikely event that Mr. Schroeder is not available, Collins has a second moveable team leader, Mr. Terrence Browne. This depth of staffing for this specialty inspection provides the City with confidence that Collins will successfully complete the work.

- Structural Inspection will include all accessible portions of superstructure and substructure elements within the movable spans. The inspections will identify and quantify any damage, cracking, settlement, steel corrosion, and deteriorated concrete as applicable.

- **Electrical Inspection** - The proposed inspection will be cursory in nature following WisDOT procedures. The electrical components and panels will be visually inspected and operationally tested for proper operation by our subcontractor (anticipated to be Faith Technologies) electricians. Faith electricians will open up panels, operate equipment in conjunction with our inspection. Bridge operators will perform bridge operations during the inspection for evaluation. Major components to be inspected will include traffic gates, traffic barriers, navigation lighting, traffic control signals, relays, contactors, starters, panels, control consoles, electric motors, shoe brakes, conduit, wiring, droop cables, submarine cables, service lighting & receptacles, span position equipment, and limit switches.
- **Engine Generator Inspection** - will include if applicable, an operational check of the system, inspection of housings, fuel tanks, batteries, switches and other components.
- **Hydraulics Inspection** - will include if applicable, inspection and ratings of any accumulators, valves, hydraulic cylinders, pumps, rotary motors, plumbing, hydraulic fluids and other components.
- **Mechanical Inspection** - The proposed inspection will be cursory in nature following WisDOT procedures. The existing machinery has numerous locations at which wear occurs and can be measured. Points of observable wear are at the gear tooth meshes and measurable wear occurs at the shaft journal to bearing bushing interfaces.



MOVABLE INSPECTIONS

- Movable inspection will be performed on B-05-0311 in 2021 and 2022.

Movable inspection includes electrical, engine generator, hydraulic, and mechanical reports per WisDOT requirements.

Collins will produce and input detailed element-level reports into the Wisconsin Highway Structure Information System (HSIS) for the applicable structural portions of the bridge.

WisDOT Form's for moveable bridges will also be completed and submitted along with the typical structural inspection report. Moveable bridge forms include:

- DT Form 2014, Moveable Bridge Electrical Inspection Report
- DT Form 2015, Moveable Bridge Engine Generator Inspection Report
- DT Form 2016, Moveable Bridge Hydraulic Inspection Report
- DT Form 2017, Moveable Bridge Mechanical Inspection Report

Each report generated for this project will be reviewed by the team leader who participated in the inspection and will be sealed by those with responsible charge over the work.

Collins will utilize the inspection results for each bridge and the record of observed defects to evaluate the functional components. This evaluation may include comparisons against past records, judgments, and/or extrapolations. Evaluation results will be included in the inspection report, and recommendations for maintenance and repairs will be provided for both bridges, as appropriate, that will extend the structure's service life.

Fracture Critical Inspection

Bridge B-05-311, Main Street over the Fox River is a 5 span, 770-foot-long fracture critical bridge. Four of the five spans have prestressed concrete superstructures. The remaining span consists of twin bascule leafs that contain Fracture Critical Members (FCMs). In addition to a routine inspection, bridges with FCMs require a fracture critical inspection every 24 months. Collins certified team leaders will perform the up close and tactile fracture critical inspections with access provided by a WisDOT supplied snooper vehicle.

Many of the defects (cracking etc.) in steel members emanate in, and around, stress concentrations due to welding components together. Collins' proposed fracture critical team leader is a Certified Weld Inspector (CWI). Additionally, these same defects often require the use of non-destructive testing (NDT) equipment to supplement the inspection. Collins owns and knows how to use any needed NDT equipment to complete this work.

WisDOT requires team leaders who perform fracture critical inspections to have taken and passed *NHI Course 130078, "Fracture Critical Inspection Techniques for Steel Bridges"*. All of Collins proposed team leaders have taken and passed this course and are **certified by WisDOT to perform fracture critical inspections**. Additionally, Collins has taught this course nationwide on a regular basis as a consultant for the FHWA.



Main Street over Fox River

FRACTURE CRITICAL INSPECTIONS

The Collins Team has:

- Team Leaders who have successfully completed the NHI Course 130078
- Team leaders certified by WisDOT to perform fracture critical inspections
- A local program manager who has regularly taught NHI Course 130078
- Certified Weld Inspectors

Post Flood Inspection(s)

Bridge B-05-154, East Mason Street over the East River is a 2 span, 170-foot-long continuous steel deck girder bridge. Due to high water levels, the river has contacted the deck girders in the past. Should the City's probe indicate water levels have reached the girders, the bridge will require a post flood inspection prior to re-opening the structure to traffic. Collins will perform this inspection as an interim inspection on an as-needed basis.

Collins certified team leaders will perform the interim inspection by completing a hydrographic survey of the channel to compare the current channel to the 2020 underwater dive inspection hydrographic survey, as well as perform a cursory inspection of accessible above water components. The field inspection will be completed within 24 hours of notice of a high-water event.



East Mason St over East River

DOCUMENTATION AND REPORTING

Inspection data acquired in the field will be documented while on-site in a Field Inspection Booklet specially prepared for each bridge site. The Field Inspection Booklet will contain forms for recording all structural deficiencies, and relevant condition information. These forms will be supplemented by sketches drawn in the field that graphically depict typical and anomalous conditions. Furthermore, the Field Inspection Booklets will contain a checklist that must be completed prior to leaving the bridge site. This checklist is a quality assurance tool used to ensure that each bridge is evaluated thoroughly, uniformly, and cost effectively.

Field measurements and photographs will be taken of any condition that warrants the re-rating of a structure for load carrying capacity and or highlights the observations noted during the applicable inspections performed at each site. Additionally, WisDOT requires photographic records of any significant defects (e.g. Condition State 3 or 4) discovered during routine inspections. The Collins team will contact the City as soon as possible if any critical rating is found and provide written and photographic documentation as soon as practical.

Collins will also take the various general photographs required for each inspection. The general photos include roadway approach views, upstream and downstream waterway views, bridge elevations, substructure and deck underside photos.

INSPECTION REPORT PREPARATION AND RECOMMENDATIONS

Collins will prepare a comprehensive inspection report which documents the overall condition of each bridge element inspected. Our staff will include sketches prepared as necessary to detail specific findings that may require substantiation. A separate report will be prepared for each bridge. All required inspection forms appropriate to the type of inspection required will be completed and entered in HSIS.

MAINTENANCE RECOMMENDATIONS

Bridge maintenance and safety are key issues that governments face daily. Major unforeseen repair costs, inconvenience to the traveling public and the safety of the public are important considerations for bridge owners. The Collins Team understands the consequences of failures in undetected parts of bridge structures, and we appreciate the insights gained and the problems that can be avoided simply by having a fully integrated picture of the structure in question.

The structure inspection process is the foundation of the entire structure management system. Information obtained during the inspection process is used for determining needed maintenance and repairs, for prioritizing rehabilitations and replacements, and for allocating resources. For each bridge inspected, Collins will document and input into HSIS any detailed element-based preventative maintenance actions and recommendations required for each bridge.

TRAFFIC CONTROL, INSPECTION ACCESS, AND SUPPORT EQUIPMENT

To ensure the safety of our inspection teams and the traveling public, Collins will carefully conduct and coordinate any required traffic control with the City, sub-consultants, CN Railroad, and law enforcement agencies. All lane closures will follow City and MUTCD requirements. Having completed these inspections in previous years, Collins is familiar with what each agency will require and the advance notice needed to coordinate access. We understand that residents expect the bridges to be available and closures have an impact on the public.

Collins understands that three of the City's bridges will require use of a WisDOT provided snoopers / reach-all truck to provide for access to the underside of bridges. Our inspections for these structures will be scheduled to work with the availability of WisDOT operators and equipment. Additionally, Collins will provide for and schedule any needed traffic control at these structures or other structures. Per City requirements, closure will be scheduled between 9:00 am and 3:30 pm.

Collins owns and maintains a complete inventory of inspection equipment to support this project including inspection vehicles, boats, ladders, waders, non-destructive testing equipment, sounding hammers, tape measures, rulers, sounding poles, digital cameras, personal protective equipment and various other equipment necessary to complete the work for this project.



Collins staff working with WisDOT staff

Collins may, however, also request the use of the City-owned barge in order to complete the inspection of six bridges along the East River.

NOTIFICATIONS AND COORDINATION

Our proposed Local Inspection Manager, Mr. Steve Miller, will be the City's single point-of-contact and is available to respond quickly to the City's needs. We are fully confident in our staff's ability to achieve the City's objectives on this project, and we recognize the necessity of close coordination with all parties including WisDOT, railroads, industry, the USCG, local law enforcement and others.

Collins will work closely with the City of Green Bay in preparing the final inspection schedule, and we will keep the City informed of our progress. Should field inspection operations reveal conditions that are judged unsafe or critical by the Bridge Inspection Team Leader, the Team Leader will immediately notify the City's Project Manager and others as required. Each field crew is equipped with a cellular telephone to facilitate this notification.

QUALITY CONTROL/QUALITY ASSURANCE

Collins understands the importance of quality bridge inspections to accurately rate the condition of each bridge. Information obtained during these inspections is used in determining needed maintenance and repairs. The prioritization and allocation of multi-million-dollar rehabilitation and replacement projects are sometimes made based solely on inspection data. The accuracy and consistency of the inspection and documentation is vital for ensuring public safety and determining programming and funding for bridge inspection programs.

Collins has a companywide Quality Assurance Manual. This manual covers a wide variety of topics, including our quality assurance organization, management responsibilities, document control, project plans and other information. These procedures are used by Collins staff on all assignments to ensure that the project deliverables are completed correctly. In addition, Collins as the prime consultant, will verify that our subconsultants work follow the same quality control standards. If requested, a copy of this document will be provided to the City of Green Bay.

As Collins' Local Inspection Manager, Mr. Miller will be responsible for oversight of the project. He will have the responsibility of ensuring that this project is performed efficiently and effectively. It will be his responsibility to ensure that all inspection dates, coordination is being performed and that the quality control and assurance procedures are being performed. He will be the point of contact for Collins' services.





C

FIRM / TEAM QUALIFICATIONS

Ensuring the safety of the traveling public and maintaining the reliability of the bridge infrastructure are the primary goals of the national bridge inspection program.. Collins has assembled a team with the skill and experience necessary to assist the City in completing inspections of its bridges. Our team includes Faith Technologies, Inc. who has provided quality electrical inspections on numerous moveable bridges in the Fox Valley and surrounding municipalities.

COLLINS ENGINEERS, INC.

Collins is a multi-disciplinary engineering firm specializing in structural inspections, load ratings, design and analysis. Our bridge inspection experience includes NBI and element level inspections; fracture critical inspections; underwater dive inspections, emergency inspections; and in-depth inspections for analysis.



Our staff is familiar in managing projects with varying complexity, from single bridge inspections to large statewide inspection projects that include several hundred bridges. Collins also has experience in managing municipal bridge inspection programs in Wisconsin.

Collins is a recognized national leader in bridge inspection techniques as evidenced by our long-standing contracts with FHWA and various state agencies to develop and provide training to state, municipal, and consultant inspectors. Collins' instructors have extensive experience in adult learning techniques and the technical competence to conduct in-depth training. More importantly, they are active inspectors in the field, passing along their knowledge to other team members and contributing to the successful completion of projects. Collins has developed or provided training for the following courses:

<i>Course</i>		<i>Developed</i>	<i>Trained</i>
NHI 130078	Fracture Critical Inspection Techniques for Steel Bridges		◆
NHI 130099A	Bridge Inspection Nondestructive Evaluation Seminar (BINS)	◆	◆
NHI 134029	Bridge Maintenance Training		◆
NHI 134067	Inspection of Bridge Rehabilitation Projects	◆	◆
NHI 130091A	Underwater Bridge Inspection	◆	◆
NHI 130091B	Underwater Bridge Repair, Rehab and Countermeasures	◆	◆
Wisconsin DOT	Bridge Inspection Update for Element Level Inspections	◆	◆
Wisconsin DOT	Bridge Construction Inspection	◆	◆

D PROJECT EXPERIENCE

CITY OF GREEN BAY BRIDGE INSPECTIONS

Owner	Contact	Location	Dates
City of Green Bay	Steve Grenier, Director of Public Works (920) 448-3100	Green Bay, Wisconsin	2014, 2015, 2016, 2019, 2020

Collins performed the routine above water and underwater inspection of five bridges and the fracture critical inspection of the Main Street over the Fox River in the City of Green Bay in 2014. Again in 2016 and 2020, Collins performed the routine inspection of all 29 City bridges and the fracture critical inspection of the Main Street over the Fox River. The inspections included probing and underwater inspection, profile development, and fracture critical inspections in conformance with NBIS requirements, the current AASHTO Manual for Bridge Element Inspection, and the State of Wisconsin Bridge Maintenance and Inspection Manual. Structure types consisted of a two-leaf steel bascule bridge; prestressed concrete box girders; steel deck girders and many other types. In addition to inspections, a Ground Penetrating Rad (GPR) investigation and Load Rating of the Henry Street Bridge over Baird Creek (P-05-591) was performed.

Collins inspections on City of Green Bay Bridges

2020	2019	2016	2014
29	5	29	5
Bridges	Bridges	Bridges	Bridges



WISCONSIN DEPARTMENT OF NATURAL RESOURCES BRIDGE INSPECTIONS

Owner	Contact	Location	Dates
Wisconsin Department of Natural Resources	Jessica Peterson, Project Manager (920) 662-5132	Green Bay, Wisconsin	2019, 2020

Collins completed the routine bridge inspections for 300 NBI route and trail bridges owned by the Wisconsin Department of Natural Resources (DNR). Inspection types included routine and underwater, as well as underwater probing and profile development activities. Structure types included timber, steel, and concrete.

Collins conducted a detailed field review and visual inspection of each bridge. NBI and Element level ratings were assigned to each element on the bridge in accordance with DNR requirements.

Field measurements and photos of conditions warranting where critical conditions were encountered. Typical photos for all bridges and representative photos for condition state 3 and 4 elements were also provided. For each structure, inspection data, photos, and other information were entered into a DNR developed inspection form, as well as Wisconsin HSIS when applicable.



BROWN COUNTY BRIDGE INSPECTIONS

Owner	Contact	Location	Dates
Brown County DPW	William Berg, Project Manager (920) 662-2171	Howard, Wisconsin	2018

Collins completed the routine bridge inspections for 73 bridges owned by Brown County and municipalities within Brown County, WI. Inspection types included routine, interim, and fracture critical inspections, as well as underwater probing and profile development activities.

Collins conducted a detailed field review and visual inspection of each bridge. NBI and Element level ratings were assigned to each element on the bridge in accordance with the NBIS and WisDOT Manual.



Field measurements and photos of conditions warranting the re-rating of a bridge for load carrying capacity or where critical conditions were encountered, were also made. Typical photos for all bridges and representative photos for condition state 3 and 4 elements were also provided. For each structure, inspection data, photos, and other information were entered into the Wisconsin HSIS.

CITY OF MANITOWOC MOVEABLE INSPECTIONS

Owner	Contact	Location	Dates
City of Manitowoc	Gregory Minikel, Project Manager (920) 686-6910	Manitowoc, Wisconsin	2020

Collins performed the inspection of four moveable bridges in Manitowoc, Wisconsin. All work was performed in accordance with the Wisconsin Structure Inspection Manual and was led by a Wisconsin Certified Inspection Team Leader.

Inspection reports including all applicable Wisconsin moveable DT forms were prepared and entered into the Wisconsin Highway Structure Inspection System (HSIS) and a summary of reports were sent to the City along with a summary of repair recommendations. An electrical inspection was performed by Faith Technologies as a subconsultant to Collins.



MILWAUKEE COUNTY BRIDGE PROGRAM

Owner	Contact	Location	Dates
Milwaukee County Dept. of Transportation	Andrea Weddle-Henning, Project Manager (414) 257-5929	Milwaukee, Wisconsin	2011 - Present

Collins provided the overall management and inspection of Milwaukee County's bridges. Collins work included coordination with Milwaukee County, WisDOT, FHWA and local municipalities to assure that the inspection and inventory of the county's structures was in accordance with state and federal requirements. Work also included scheduling of inspections, preparation of bridge program funding applications, QA/QC of local inspection programs, bridge file administration, monthly progress meetings and other related work.



For the bridge inspection task, Collins performed the routine and other inspections of 106 County owned bridges during the last four inspection cycles. All inspection and inventory information were entered into the WisDOT HSI System. Collins also inspected and developed a database for the county's monotube signal structures. In addition to the inspection tasks, we ensured that all 265 bridges located in 14 municipalities within Milwaukee County were inspected and reported within FHWA guidelines and provided on-call load rating and structural engineering services to Milwaukee County.

CITY OF TWO RIVERS BRIDGE INSPECTIONS

Owner	Contact	Location	Dates
City of Two Rivers	Scott Ahl, Department of Public Works (920) 793-5539	Two Rivers, Wisconsin	2006 - 2018

Collins has provided the City of Two Rivers with bridge inspection services on City-owned bridges for several inspection cycles. Services have included routine, fracture critical, moveable and underwater inspections. All inspection findings were input into the HSIS system for WisDOT.

Collins inspections on City of Two Rivers Bridges

2018	2016	2015	2012
4 Bridges	4 Bridges	4 Bridges	3 Bridges
2011	2010	2008	2006
3 Bridges	4 Bridges	4 Bridges	4 Bridges



CITY OF APPLETON BRIDGE INSPECTIONS

Owner	Contact	Location	Dates
City of Appleton	Chad Weyenberg, Project Manager (920) 832-5580	Appleton, Wisconsin	2015 - 2020

Collins has provided various types of bridge inspections for the City of Appleton under three contracts including:

- Inspection of two movable bridges for five (5) years with Faith Technologies Inc. as the electrical subconsultant (2016 – 2020)
- Underwater inspection of 11 bridges (2015). Level I / II inspections were performed utilizing scuba equipment.
- Routine, fracture critical and interim inspections of 48 bridges and structures in 2016 and 2018.
- Services include bridge inventory updates, 5-year maintenance plan recommendations and other work. Inspections included underwater probing and profile development activities. For each structure, inspection data and photos were entered into the Wisconsin HSIS.
- Collins coordinated with WisDOT as needed to utilize their snoopers vehicle for bridges that required this type of access. Likewise, Collins owned boats were used when necessary to inspect under bridge elements where wading was not possible.



E TEAM MEMBERS

Collins has carefully selected the most qualified experts to serve on this City of Green Bay project. Each selected team member lives and works in Wisconsin, has demonstrated technical expertise in bridge inspection and thoroughly understands the work to be done. The following individuals are proposed for this project.

STEVEN J. MILLER, P.E. -COLLINS		Local Inspection Manager	
Education B.S., Civil Engineering, Michigan Technological University, 1986 A.A.S., Engineering Science, Monroe Community College, 1984 Additional Studies: Masters Level Courses in Structural Stability and Project Management		Training ▪ WisDOT Bridge Inspection Update Training, 2014 ▪ FHWA-NHI Course 130053 Bridge Inspection Refresher Training, 2018 ▪ FHWA-NHI Course 130078 – Fracture Critical Inspection Techniques for Steel Bridges, 2013 ▪ FHWA-NHI Course 130055 – Safety Inspection of In-Service Bridges (80-Hr.), 2004 ▪ FHWA-NHI Course 130099A – Bridge Inspection Nondestructive Evaluation Seminar (BINS), 2016	
Years of Experience – 32			
Professional Engineer Wisconsin			
Certifications WisDOT Bridge Inspection Team Leader WisDOT Bridge Inspection Program Manager			

Mr. Miller is proposed as Collins Local Inspection Manager for this project. Steve has over 32 years of experience, nearly all of which relates to bridge design and inspection. He has designed nearly 100 bridges either for rehabilitation or replacement. His most recent bridge inspection experience includes the overall management of Milwaukee County's bridge inspection program, including overseeing municipal and consultant bridge inspections, quality assurance / quality control, bridge funding and other work. His recent experience also includes management of bridge inspection work for the Brown County, the City of Appleton and the City of Two Rivers bridge inspection projects. These projects include routine, fracture critical, moveable and underwater diving bridge inspections. During his career he has inspected numerous bridges and has a firm understanding of the technical and operational aspects of bridge inspection work. Mr. Miller is also is a certified instructor who has regularly taught NHI Course 130078, Fracture Critical Inspection of Steel Bridges and other NHI bridge inspection courses.

As a project manager he has proven experience in managing a project from start to finish. Steve will be the City's single point of contact and will be available to respond quickly to the City's needs. Because the City's satisfaction is of utmost importance to our team, he will make coordination and responsiveness to the City his top priorities.

We are fully confident in our team's ability to satisfy the City's objectives on this project, and we recognize the necessity of close coordination with all project team members. Steve will be responsible for developing the project work plan, coordinating the inspection teams' tasks, controlling and monitoring the progress of the project, and assuring that the project is performed to the satisfaction of the City of Green Bay.



BRIAN SCHROEDER, P.E.- COLLINS

Inspection Team Leader / Moveable

Education

M.S., Welding Engineering, Ohio State University, 2012

B.S., Civil Engineering, North Dakota State University, 1999

Years of Experience – 20

Professional Engineer

Wisconsin

Certifications

WisDOT Certified Bridge Inspection Team Leader

AWS Certified Welding Inspector (#07030611)

Training

- FHWA-NHI Course 130053 – Bridge Inspection Refresher Training (3-Day), 2019
- FHWA-NHI Course 130091 – Underwater Bridge Inspection, 2011
- FHWA-NHI Course 130087 – Inspection and Maintenance of Ancillary Highway Structures, 2011
- FHWA-NHI Course 135047 – Stream Stability and Scour at Highway Bridges for Bridge Inspectors, 2009
- FHWA-NHI Course 130078 – Fracture Critical Inspection Techniques for Steel Bridges, 2008
- FHWA-NHI Course 130055 - Safety Inspection of In-Service Bridges (80-Hr.), 2002

Mr. Schroeder is a Civil/Structural Engineer with over 20 years of experience in structural engineering. He has performed over 2,000 routine, moveable, fracture critical, and underwater bridge inspections for various DOTs and local government agencies. As part of these inspections, he has prepared inspection reports, condition assessments, maintenance recommendations, and calculated load ratings. His inspection capabilities are supplemented by being an American Welding Society Certified Welding Inspector (CWI) and a Society of Professional Rope Access Technicians (SPRAT) Level II certified climber.

In addition to bridges, Mr. Schroeder has experience assessing the condition of dams, hydraulic steel structures, pedestrian bridges, retaining walls, and bleachers. For these structures, their condition was reported using forms Mr. Schroeder developed and supplemented with an extensive log of photos.

JON WITTROCK, P.E.- COLLINS

Inspection Team Leader/ Project Manager

Education

B.S., Civil Engineering, Marquette University, 2010

Years of Experience – 11

Professional Engineer

Wisconsin

Certifications

WisDOT Certified Bridge Inspection Team Leader

AWS Certified Welding Inspector (#14041471)

Society of Professional Rope Access Technician (SPRAT) – Level I

Training

- WisDOT Bridge Inspection Update Training, 2019
- Nondestructive Testing ASNT Certified – Limited Level II Ultrasonic Testing, 2015
- FHWA-NHI Course 130078 – Fracture Critical Inspection Techniques for Steel Bridges, 2012
- FHWA-NHI Course 130053 - Bridge Inspection Refresher Training, 2013
- FHWA-NHI Course 130055 – Safety Inspection of In-Service Bridges (80-Hr.), 2015
- FHWA-NHI Course 130091 – Underwater Bridge Inspection, 2013
- FHWA-NHI Course 130099A – Bridge Inspection Nondestructive Evaluation Seminar (BINS), 2016

Mr. Wittrock is a Civil/Structural Engineer with 11 years of experience in performing underwater bridge inspections; routine and in-depth above water bridge inspection; ancillary sign structure inspection; waterfront inspections; and miscellaneous structural steel inspections. His inspection capabilities are supplemented by being a Certified Welding Inspector as well as Level II Ultrasonic Testing certified. Climbing inspections are supplemented by being certified at Level II, by the Society of Professional Rope Access Technicians (SPRAT).



EUGENE HIETPAS- COLLINS

Inspection Team Leader

Education

B.S., Civil Engineering, University of Wisconsin - Platteville, 2002

Years of Experience – 18

Certifications

WisDOT Certified Bridge Inspection Team Leader

Training

- FHWA-NHI Course 130112A – NDE for Concrete Bridge Elements, 2020
- FHWA-NHI Course 13011 – Nondestructive Evaluation Fundamentals for Bridge Inspection, 2020
- FHWA-NHI Course 130055 – Safety Inspection of In-Service Bridges (80-Hr.), 2020
- FHWA-NHI Course 130087 – Inspection and Maintenance of Ancillary Highway Structures, 2019

Mr. Hietpas has over 18 years of experience as a project manager and a construction inspector on WisDOT projects. His experience as a project manager includes work on small to medium bridge projects, underwater scour repair projects, noise wall projects, urban retrofit projects, and medium reconstruction projects. In the past six years, Mr. Hietpas has been the Project Lead for numerous roadway construction projects in northeast Wisconsin. Throughout these projects, he has been a part of 65 bridge structures including slab spans, tube girder, steel girder and structures built on prestressed concrete girders. Mr. Hietpas' role in bridge construction supplements his experience as a Wisconsin bridge inspection team leader. In the last several years, Mr. Hietpas has experience assessing the condition of bridges throughout Wisconsin for the Wisconsin Department of Transportation, the Wisconsin DNR, as well as numerous local municipalities.

ADDITIONAL STAFF

In addition to our local inspection manager and team leaders, Collins has numerous inspection team members both locally and companywide who are available to supplement our inspection team as needed. Collins has over 250 employees' company-wide including 36 in Wisconsin. Collins' staff includes:

CERTIFICATIONS	Number of Staff	
	WI OFFICES	COMPANYWIDE
NBIS Bridge Inspection Team Leaders	8	79
Fracture Critical Team Leaders	5	66
Certified Welding Inspector (CWI)	5	12
SPRAT Rope Access Certified	3	26

COMMITMENT OF STAFF

There are many factors that have an influence on a project's success. The ultimate measure of a project's success, however, is client satisfaction, and the City of Green Bay's satisfaction will be a top priority. We understand that project success starts with staffing a quality team and we are committing the above individuals to the City. As Collins' Local Inspection Manager, Mr. Miller will be responsible for the oversight and quality of the project. He will have the responsibility to ensure that this project is performed both efficiently and effectively. It will be his responsibility to ensure not only that the project team is *"doing the right things,"* but to ensure that the project team *"does things right the first time."* Per your anticipated schedule, our team members shown above are available and committed to this project starting in February 2021.



F SCHEDULE

The early planning of this project will be critical to completing the project on time. One of the first tasks that will be completed by our project manager will be to arrange for the moveable inspection and reporting on the Main Street Bridge (B-05-311). This inspection must be completed by the end of March 2021. Likewise, the 2021 and 2022 routine inspection work will be planned and scheduled well in advance of our team's mobilization for the field work.

Based on the RFP for the project, it is estimated that a contract will be awarded in early February 2021, and all work shall be completed by late-November 2022. For the purposes of this proposal, bridges were partitioned into several groups based on various factors including previous inspection dates, WisDOT reach-all availability, and other factors. The timeline provided below is based on this information and other noted factors.

Work Task/Deliverables	Date
Contract Award	February 5, 2021
Begin Moveable and 2021 Routine Bridge Inspection Planning	Week of February 15, 2021
Moveable Inspection of Main Street Bascule Bridge Work Group 2 (B-05-311)	Week of March 15, 2021
Submit Inspection Report of Main Street Bascule Bridge Work Group 2 (B-05-311)	March 31, 2021
Mobilize for 2021 Routine Bridge Inspection Work Group 1 (007, 008, P-05-719, P-05-721, P-05-728, & P-05-731)	October 4, 2021
Submit Inspection Reports for 2021 Routine Work Group 1- including P-05-0728 Scour POA	October 29, 2021
Mobilize for 2022 Routine Bridge Inspection Work Group 4 (30 Bridges)	October 3, 2022
Submit Inspection Reports for 2020 Routine Work Group 4 including P-05-0718 Scour POA (30 Bridges)	October 31, 2022
Moveable Inspection of Main Street Bascule Bridge Work Group 5 (B-05-311)	Week of March 7, 2022
Submit Inspection Report of Main Street Bascule Bridge Work Group 5 (B-05-311)	March 31, 2022
As-needed Post-Flood Inspection Group 3 and Group 7 (B-05-154)	As-Needed (within 24 hours of notice of high water event)

The schedule shown is tentative and depends on weather, City equipment and WisDOT operators and equipment. Regardless of those factors, Collins will strive to meet the City's schedule and we expect no issues with completing our work within the allotted schedule.

G FEE COMPUTATION

Collins estimated costs for performing this work are a maximum actual fee, not to exceed \$51,170.00 (\$46,850 if six 2022 bridges are excluded from the contract). A schedule of costs, including the costs of labor, expenses and other direct costs are included as an attachment to this proposal. Our cost estimate is based on the following assumptions:

- Routine Inspection work will be completed with a two-person inspection team.
- Moveable inspections will be completed with a two-person inspection team supplemented by subconsultants
- Underwater profile activities are required for 6 bridges (per WisDOT HSIS)
- Hotel and per-diem costs are based on GSA government rates for Green Bay, Wisconsin.
- Coordination with railroads including railroad flagging will be required. Costs for railroad flagging and permitting are estimated to be \$2,100 based on one 8-hour day of flagging and permit costs.
- Collins will coordinate with WisDOT to schedule a WisDOT owned/operated reach-all truck for inspection of Bridges (B-05-0311, B-05-0018 & B-05-0225) in 2022.

H HOURLY FEE SCHEDULE

Collins hourly fee schedule is included in the cost estimate attachment to this proposal.

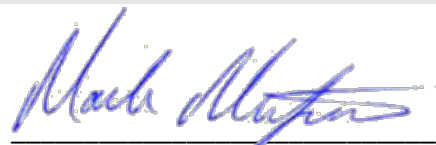
I EXCEPTIONS OR ADDITIONS

Collins currently carries \$5,000,000 per claim/\$10,000,000 aggregate limits on our Professional Liability in order to meet the requirements of some of our clients. Our professional liability carrier does not offer a deductible lower than \$250,000 for these limits.

J PROPOSAL SIGNATURE



Steven J. Miller, P.E.
Assistant Regional Manager/ Local Inspection Manager



Mark J. Mutziger, P.E.
Vice President – Regional Manager



**PROJECT COST ESTIMATE
(INCLUDING HOURLY FEE SCHEDULE)**

Consultant Contract Fee Breakdown
2021/2022 Bridge Inspections
City of Green Bay, WI

2021

Quantity	Inspection Type	Unit Price	Total Cost
4 EA	Routine Bridge Inspections	\$730.00	\$2,920.00
2 EA	Non-HSI Routine Bridge Inspections	\$680.00	\$1,360.00
1 LS	Moveable Bridge Inspection	\$7,240.00	\$7,240.00
1 EA	Scour Plan of Action	\$580.00	\$580.00
2021 Inspection Total Cost			\$12,100.00

2022

Quantity	Inspection Type	Unit Price	Total Cost
30 EA	Routine Bridge Inspections	\$720.00	\$21,600.00
6 EA	UW-Profiles	\$150.00	\$900.00
1 EA	Fracture Critical Inspection	\$6,680.00	\$6,680.00
1 EA	Moveable Bridge Inspection	\$7,240.00	\$7,240.00
1 EA	Scour Plan of Action	\$580.00	\$580.00
2022 Inspection Total Cost			\$37,000.00

2022 Routine Inspection Extension (Deduct)

Quantity	Inspection Type	Unit Price	Total Cost
6 EA	Routine Bridge Inspections	(\$720.00)	(\$4,320.00)
Post Flood Inspection (Per Occurance)			(\$4,320.00)

As Needed - Post Flood Inspection

Quantity	Inspection Type	Unit Price	Total Cost
1 EA	Post Flood Inspection B-5-154	\$2,070.00	\$2,070.00
Post Flood Inspection (Per Occurance)			\$2,070.00

Project Total	\$51,170.00
Total minus Extension Deduct	\$46,850.00

Consultant Contract Fee Breakdown (Hours + Direct Costs)

2021/2022 Bridge Inspections

City of Green Bay, WI

2021

Quantity	Inspection Type	Labor	Miles	Mileage Cost (\$0.56/mile)	Days Per Diem	Per Diem Cost (\$55/day)	Hotel Nights	Hotel Cost (\$100/night)	Miscellaneous Items*	Miscellaneous Item Description	Unit Cost
4 EA	Routine Bridge Inspections	\$2,904.08	30	\$16.80	0	\$0.00	0	\$0.00	\$0.00		\$730.00
2 EA	Non-HSI Routine Bridge Inspections	\$1,339.92	20	\$11.20	0	\$0.00	0	\$0.00	\$0.00		\$680.00
1 LS	Moveable Bridge Inspections	\$5,254.24	660	\$369.60	4	\$220.00	2	\$200.00	\$1,200.00	Electrical Sub-consultant	\$7,240.00
1 EA	Scour Plan of Action	\$575.32	0	\$0.00	0	\$0.00	0	\$0.00	\$0.00		\$580.00
2021 Inspection Total Cost		\$10,073.56	710	\$397.60	4	\$220.00	2	\$200.00	\$1,200.00		

2022

Quantity	Inspection Type	Labor	Miles	Mileage Cost (\$0.56/mile)	Days Per Diem	Per Diem Cost (\$55/day)	Hotel Nights	Hotel Cost (\$100/night)	Miscellaneous Items	Miscellaneous Item Description	Unit Cost
30 EA	Routine Bridge Inspections	\$16,685.28	200	\$112.00	0	\$0.00	0	\$0.00	\$4,750.00	Traffic Control, Railroad Permitting	\$720.00
6 EA	UW-Profiles	\$885.92	0	\$0.00	0	\$0.00	0	\$0.00	\$0.00		\$150.00
1 EA	Fracture Critical Inspection	\$3,892.92	290	\$162.40	4	\$220.00	2	\$200.00	\$2,200.00	Traffic Control	\$6,680.00
1 EA	Moveable Bridge Inspections	\$5,254.24	660	\$369.60	4	\$220.00	2	\$200.00	\$1,200.00	Electrical Sub-consultant	\$7,240.00
1 EA	Scour Plan of Action	\$575.32	0	\$0.00	0	\$0.00	0	\$0.00	\$0.00		\$580.00
2022 Inspection Total Cost		\$27,293.68	1150	\$644.00	8	\$440.00	4	\$400.00	\$8,150.00		

As Needed - Post Flood Inspection

Quantity	Inspection Type	Labor	Miles	Mileage Cost (\$0.56/mile)	Days Per Diem	Per Diem Cost (\$55/day)	Hotel Nights	Hotel Cost (\$100/night)	Miscellaneous Items	Miscellaneous Item Description	Unit Cost
2 EA	Post Flood Inspection B-5-154	\$3,576.80	480	\$268.80	0	\$0.00	0	\$0.00	\$300.00	15' Boat Rental	\$2,070.00
Post Flood Inspection (Per Occurance)		\$3,576.80	480	\$268.80	0	\$0.00	0	\$0.00	\$300.00		

Summary of Staff Hours and Direct Labor Costs
2021/2022 Bridge Inspections
City of Green Bay, WI

Classification		Project Manager		Movable Team Leader		Avg Team Leader		Avg Team Member			
Avg. Hourly Wage		\$253.68		\$175.72		\$132.36		\$91.88		Total Direct Labor	
Task	Activity Code	Hours	Dollars	Hours	Dollars	Hours	Dollars	Hours	Dollars	Hours	Dollars
2021 Routines	Inspection	0	\$0.00	0	\$0.00	8	\$1,058.88	8	\$735.04	16	\$1,793.92
	Reporting	0	\$0.00	0	\$0.00	2	\$264.72	4	\$367.52	6	\$632.24
	QA/Admin	1	\$253.68	0	\$0.00	0	\$0.00	0	\$0.00	1	\$253.68
	Mob	0	\$0.00	0	\$0.00	1	\$132.36	1	\$91.88	2	\$224.24
2021 Non-HSI Routines	Inspection	0	\$0.00	0	\$0.00	3	\$397.08	3	\$275.64	6	\$672.72
	Reporting	0	\$0.00	0	\$0.00	1	\$132.36	2	\$183.76	3	\$316.12
	QA/Admin	0.5	\$126.84	0	\$0.00	0	\$0.00	0	\$0.00	0.5	\$126.84
	Mob	0	\$0.00	0	\$0.00	1	\$132.36	1	\$91.88	2	\$224.24
2021/2022 Moveable (Total)	Inspection	0	\$0.00	16	\$2,811.52	0	\$0.00	16	\$1,470.08	32	\$4,281.60
	Reporting	0	\$0.00	8	\$1,405.76	0	\$0.00	16	\$1,470.08	24	\$2,875.84
	QA/Admin	2	\$507.36	0	\$0.00	0	\$0.00	0	\$0.00	2	\$507.36
	Mob	0	\$0.00	12	\$2,108.64	0	\$0.00	8	\$735.04	20	\$2,843.68
2021/2022 Scour POA	Inspection	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
	Reporting	0	\$0.00	0	\$0.00	4	\$529.44	4	\$367.52	8	\$896.96
	QA/Admin	1	\$253.68	0	\$0.00	0	\$0.00	0	\$0.00	1	\$253.68
	Mob	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
2021/2022 Flood (per Occurance)	Inspection	0	\$0.00	0	\$0.00	8	\$1,058.88	8	\$735.04	16	\$1,793.92
	Reporting	0	\$0.00	0	\$0.00	2	\$264.72	4	\$367.52	6	\$632.24
	QA/Admin	1	\$253.68	0	\$0.00	0	\$0.00	0	\$0.00	1	\$253.68
	Mob	0	\$0.00	0	\$0.00	4	\$529.44	4	\$367.52	8	\$896.96
2022 Routine/Boat/Non-FC	Inspection	0	\$0.00	0	\$0.00	42	\$5,559.12	42	\$3,858.96	84	\$9,418.08
	Reporting	0	\$0.00	0	\$0.00	8	\$1,058.88	30	\$2,756.40	38	\$3,815.28
	QA/Admin	3	\$761.04	0	\$0.00	0	\$0.00	0	\$0.00	3	\$761.04
	Mob	0	\$0.00	0	\$0.00	12	\$1,588.32	12	\$1,102.56	24	\$2,690.88
2022 UW Profiles	Inspection	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
	Reporting	0	\$0.00	0	\$0.00	2	\$264.72	4	\$367.52	6	\$632.24
	QA/Admin	1	\$253.68	0	\$0.00	0	\$0.00	0	\$0.00	1	\$253.68
	Mob	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00
2022 FC (B-5-311)	Inspection	0	\$0.00	0	\$0.00	6	\$794.16	6	\$551.28	12	\$1,345.44
	Reporting	0	\$0.00	0	\$0.00	3	\$397.08	6	\$551.28	9	\$948.36
	QA/Admin	1	\$253.68	0	\$0.00	0	\$0.00	0	\$0.00	1	\$253.68
	Mob	0	\$0.00	0	\$0.00	6	\$794.16	6	\$551.28	12	\$1,345.44
TOTAL:		10.5	\$2,663.64	36	\$6,325.92	113	\$14,956.68	185	\$16,997.80	344.5	\$40,944.04
										Total	\$40,944.04

Direct Expenses by Item
2021/2022 Bridge Inspections
City of Green Bay, WI

Inspection				
Item	Unit Amount	Unit Type	Rate	Total Expenses
				\$0.00
Mileage	2300	miles	\$0.560	\$1,288.00
Hotel	6	days	\$100.000	\$600.00
Per Diem	12	days	\$55.000	\$660.00
Boat Rental	2	Days	\$150.000	\$300.00
FAITH Technologies - Moveable Electrical	2	EA	\$1,200.000	\$2,400.00
Traffic Control Main Street	2	Single Lane Closure (EA)	\$1,100.000	\$2,200.00
Traffic Control - Atkinson over CNRR	1	Single Lane Closure (EA)	\$1,350.000	\$1,350.00
Traffic Control- Ashland over 6th Street	1	Single Lane Closure (EA)	\$1,300.000	\$1,300.00
Railroad Permitting Etc.	1	LS	\$2,100.000	\$2,100.00
TOTAL				\$12,198.00

SHEET TOTAL	\$12,198.00
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Consultant Direct Labor Rates
COLLINS ENGINEERS, INC.
City of Green Bay Bridge Inspections
Green Bay , WI
Brown County

Employee Name(a)	Classification(b)	Current Rate(c)	% Pay Increase(d)	New Pay Rate(e)	Date of Increase(f)	% Work at Current Rate(g)	% Work at Increased Rate(h)	Weighted Average Hourly Rate(i)	Overhead	Fixed Fee	Invoiced Rate
Steve Miller	Local Inspection Manager	\$81.84	3.00%	\$84.30	1/1/2022	25.00%	75.00%	\$ 83.69	\$ 151.20	\$ 18.79	\$253.68
Brian Schroeder	Movable Team Leader	\$57.11	3.00%	\$58.82	1/1/2022	50.00%	50.00%	\$ 57.97	\$ 104.73	\$ 13.02	\$175.72
Jon Wittrock	Team Leader 1	\$50.88	3.00%	\$52.41	1/1/2022	25.00%	75.00%	\$ 52.03	\$ 94.00	\$ 11.68	\$157.71
Marc Stern	Team Leader 2	\$38.27	3.00%	\$39.42	1/1/2022	25.00%	75.00%	\$ 39.13	\$ 70.70	\$ 8.79	\$118.62
Eugene Heitpas	Team Leader 3	\$39.64	3.00%	\$40.83	1/1/2022	25.00%	75.00%	\$ 40.53	\$ 73.23	\$ 9.10	\$122.86
Rich Miller	Team Leader 4	\$42.02	3.00%	\$43.28	1/1/2022	25.00%	75.00%	\$ 42.97	\$ 77.63	\$ 9.65	\$130.25
Matt Courtney	Team Member 1	\$31.42	3.00%	\$32.36	1/1/2022	25.00%	75.00%	\$ 32.13	\$ 58.05	\$ 7.21	\$ 97.39
Gonzalo Couto Lain	Team Member 2	\$27.86	3.00%	\$28.70	1/1/2022	25.00%	75.00%	\$ 28.49	\$ 51.47	\$ 6.40	\$ 86.36

Contract Completion Date: 12/31/2022

ADDENDUM NO. 1



Department of Public Works

ADDENDUM NO. 1

REQUEST FOR PROPOSAL – BRIDGE AND
STRUCTURE INSPECTION SERVICES 2021 & 2022

Engineering Division
Department of Public Works
City of Green Bay

January 14, 2021

Proposals due: January 22, 2021

This Addendum is issued to modify, explain or correct the original drawings and specifications and is hereby made part of the Contract Documents. This addendum must be signed and attached to the Consultant's proposal.

(Pages: 4 including cover sheet)

Consultant's Signature

SIGN AND ATTACH THIS ADDENDUM TO THE BIDDER'S PROPOSAL

James M. Brunette, P.E.
Assistant Director of Public Works

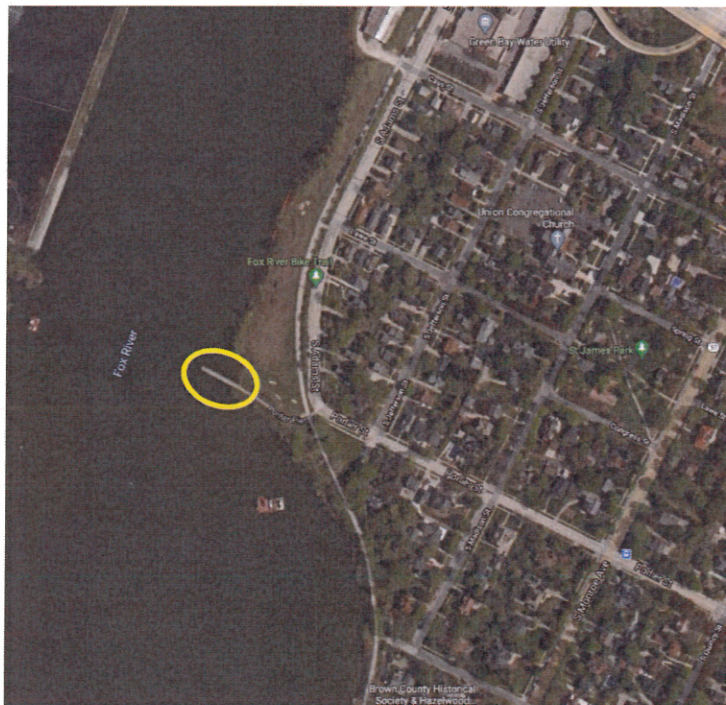
THE FOLLOWING ARE ANSWERS TO QUESTIONS RECEIVED IN RESPONSE TO THE REQUEST FOR PROPOSALS:

Q: Are load ratings anticipated as part of this Contract?

A: No load ratings are required.

Q: 007: Porlier Pier: The map calls out a railroad bridge further south of Porlier Street which structure needs to be inspected?

A: The map is labeled correctly. The old railroad bridge, 'Porlier Pier' is what is to be inspected.



Q: What level of reporting is required for the general inspection of non-HSI bridges 007 and 008 if they cannot be entered into HSI?

A: The consultant will be responsible for providing a general report of the structure. The report shall include a description of any maintenance items and their priority status. The report shall identify the general condition of the superstructure, deck, substructure and any other pertinent structure elements. The report shall also contain no fewer than 12 photos of each structure inspected.

THE FOLLOWING ARE REVISIONS AND CLARIFICATIONS TO THE SCOPE OF SERVICES IN THE REQUEST FOR PROPOSALS:

- Six (6) of the structures identified for routine inspections in 2022 are eligible for opting-in to qualify for extension of the routine bridge inspections from 24 months to 48 months. The City/County will be applying to extend the routine cycle of the following six (6) structures: B-05-0275: Baird Street over East River; B-05-0304: Morrow Street over Baird Creek; B-05-0314: Nicolet Drive (CTH A) over Mahon Creek; B-05-0315: Lake

Largo Drive over Mahon Creek; B-05-0317: Maloney Road over Wequiock Creek; B-05-0329: Main Street (USH 141/STH 29) over Baird Creek. If the extension is approved these structures would not require routine inspections until 2024; thus no longer requiring inspection as part of this Contract. A revised Consultant Contract Fee Breakdown with a deduct cost for the six (6) structures is attached to this addenda, A-4. In the event the routine inspections for these structures is extended the cost deduct from the Contract total shall apply.

Consultant Contract Fee Breakdown (Revised)

2021

Quantity	Inspection Type	Unit Price	Total Cost
4 EA	Routine Bridge Inspections	\$ /EA	\$
2 EA	Non-HSI Routine Bridge Inspections	\$ /EA	\$
1 LS	Moveable Bridge Inspection	\$ /LS	\$
1 EA	Scour Plan of Action	\$ /EA	\$
2021 Inspection Total Cost			\$

2022

Quantity	Inspection Type	Unit Price	Total Cost
30 EA	Routine Bridge Inspections	\$ /EA	\$
6 EA	UW-Profiles	\$ /EA	\$
1 EA	Fracture Critical Inspection	\$ /EA	\$
1 LS	Moveable Bridge Inspection	\$ /LS	\$
1 EA	Scour Plan of Action	\$ /EA	\$
2022 Inspection Total Cost			\$

2022 Routine Inspection Extension (Deduct)

Quantity	Inspection Type	Unit Price	Total Cost
6 EA	Routine Bridge Inspections	(\$ /EA)	(\$)
Deduct cost for (6) Routine Inspections			(\$)

As Needed - Post Flood Inspection

Quantity	Inspection Type	Unit Price	Total Cost
1 EA	Post Flood Inspection B-5-154	\$ /EA	\$
Post Flood Inspection (Per Occurance)			\$



Report to the
Improvement and Service Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # L.6

To receive and place on file the proposed revisions to Section 8.11, Green Bay Municipal Code, Noxious Weeds and Maintenance of Vegetation.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

1. Sec 8.11 Summary of Comments
2. WISCONSIN_GREEN
BAY_Sec._8.11.____Noxious_weeds_and_maintenance_of_vegetation_updated draft_1_6_2021 JBH
MS

Section 8.11 Summary of Comments

Summary of Comments provided by Sustainability Committee members and Staff regarding proposed amendments to section 8.11 Noxious Weeds and Maintenance of Vegetation

8.11 (1)

- Comment to consider a separate Sec. for the establishment of natural gardens and to have this Sec. relate to only the maintenance.
- Recommendation to remove "...which may exceed the height of typical gardens."

8.11 (2)

- Findings - Recommendation to include language for supporting a healthy and diverse pollinator community.
- Recommendation to remove "...harboring of debris or trash."
- Would read as:
Findings. The City finds that it is in the public interest to ensure the proper maintenance of vegetation in order to prevent the growth of unmanaged vegetation which can lead to nuisance conditions or the emergence of rank growth or conditions, which may adversely affect public health and safety. The City further finds it is in the public interests to encourage a diversity of landscape treatments throughout the City, particularly those landscape elements that support the preservation, restoration, and management of native plant communities, **which support a healthy pollinator community**, and soil and water conservation.

8.11 (3) (a)

- Definition of *Destroy*: Recommendation to replace the word **weed** with the term vegetation.
- Recommendation to further define the term **weed** in the list of definitions, since it is used in several areas of the code.

8.11 (3)(d) Definition of *Noxious weeds or grasses* - Comment & recommendation to include the word *invasive* and have it read **Noxious or Invasive weeds or grasses** and also include Chapter NR 40 Invasive species rule. Justification for this is that in 8.11 (6)(b)4 we refer to this invasive terminology and when people are looking up noxious or invasive weeds or grasses, the WDNR invasive weeds website is the authority they most likely will be looking to.

- Recommendation include list Chapter NR40 and 66.0407(1)(b), Wis stat 66.0407 in the definition

8.11 (3)(i) Definition of *Unmanaged vegetation growth*- recommendation to include turf grass. Definition would read:

Unmanaged vegetation growth means an unmaintained area of in which any grass, **turf grass**, hay, weeds, brush or other vegetation has grown to a height of over eight inches as a result of the absence of active cutting, mowing, or other maintenance. This definition shall not include

vegetation located on agricultural land; vegetation found on shoreland within 35 feet of the ordinary high-water mark; Vegetation found within environmentally sensitive areas such as steep slopes, drainage ways, wetlands, and protective buffer areas.

8.11 (3)(f) Definition of *Planned natural landscaping area*

- Comments received regarding height of vegetation

Planned natural landscaping area means a planned, intentional and maintained planting area in which all or some of the selected vegetation may exceed eight inches (8") in height at maturity, and which may include without limitation trees, native plants as defined in this section, or plantings associated with a rain garden.

8.11 (4)(a) *Unmanaged vegetation growth prohibited*

- Question raised on if this only applies in residential areas.
- MS: This part of the ordinance mainly applies to residential areas. It would also apply to non-residential land adjoining or adjacent to residential use lots.

A person owning, occupying, or controlling any lot in residential use, or any lot or property adjacent to or adjoining a lot in residential use, shall mow, cut, or otherwise control and remove any unmanaged vegetation growth on the land.

8.11 (6)(a) Planned natural landscaping areas

- Three comments were received that disagreed with "300 SF or 5% of the gross area of the lot, whichever is greater". Two reviewers misinterpreted the meaning of this requirement and MS followed up with those members with clarification.
- One comment was received that opposed the required registration.
- One comment asked about the role of the Weed Commissioner and his/hers level of landscaping plan approval.
 - MS: Weed Commissioner role is involved in enforcement of code; not plan approval.
- Two comments asked about how and why a plan would potentially be denied.
 - MS: A plan not meeting the requirements outlined in 8.11(a)i-iv and 8.11(b)i-iv; would potentially be denied. City Staff would review plan and work with applicant on understanding plan requirements.
- One comment sees value in having residents submit plans in order to inventory planned natural landscapes to make the monitoring function of the weed commissioner more efficient and to have the ability to document via GIS the number and location of pollinator gardens, rain gardens, etc. in the city.

8.11 (6)(b)(ii) Planned natural landscaping areas

- Comment/question regarding fencing height in the case of property having a privacy fence. Would a 3' feet fence for an edging requirement apply in that situation? See MS rewrite suggestion.

Edging required. A Planned Natural Landscaping Area must have a distinct and clearly defined border. The border may be any combination of mowed grass, fencing of up to 3' in height, **a permitted fence installed along a property line,** or natural materials neatly arranged to create appearance of an edge to contain the Planned Natural Landscaping Area.

8.11 (6)(b)(iv) Location and Dimensions of the Natural Planting Area

- MS: Language recommendation to accommodate property having fences along a property line
- 2. Natural Planting Areas shall be no closer than three feet (3') to any property line. Where the planned natural landscaping abuts a permitted fence along a side or rear property line, no setback shall be required.

General Comments from City Staff Proposed amendments of sec 8.11 were discussed at Development Team meeting, sent to departments for staff review, and conversations were held with individual staff members. The comments below are from individual staff and are not a consensus of all that participated in providing feedback.

1. How will the City address noxious weeds and invasive species on city-owned parcels?
2. Not in favor of required registration for planned natural landscape plans.
3. Right of Way ordinance must be looked at to determine if plantings would be permitted in street terrace.
4. Procedures have been made clearer with the amendments.
5. Could language be added for areas with rat abatement issues?
6. Could a plan be denied for only using one species of native plant? Should language be added to specify a diversity of native vegetation in a plan?
7. The problems usually creep in when parcel ownership takes over.
8. Add incentives for those who implement naturalized landscapes with tax credit, etc.

Sec. 8.11. - Noxious weeds and maintenance of vegetation.

- (1) *Purpose.* It is the purpose of this section to prohibit the uncontrolled growth of vegetation and to control noxious weeds, while permitting the planting and maintenance of planned natural landscaping that add diversity and richness to the City's environment~~the quality of life. It is a further purpose of this section to balance the need to ensure proper management of vegetation growth with the aesthetic, community, and environmental benefits of fostering the appropriate use of naturalized and native plant landscaping, which may exceed the height of typical garden or lawn plantings.~~
- (2) *Findings.* The City finds that it is in the public interest to ensure~~are reasonable expectations regarding the proper maintenance of vegetation on any lot or parcel of land. It is in the public's interests to provide standards regarding the maintenance of vegetation because vegetation which is not in order to prevent the growth of unmanaged vegetation which can decrease the value of nearby properties and lead to nuisance conditions such as the harboring of debris or trash, or the emergence of rank growth or conditions, which may adversely affect, threaten the public health and safety. #The City further finds it is also in the public's interests to encourage a diversity of landscaping treatments throughout the City, particularly those landscape elements that encourage support the preservation, restoration, and management of native plant communities, which support a healthy pollinator community, and which can be economical, low-maintenance and effective in soil and water conservation. The city enacts this section to balance these competing interests.~~
- (32) *Definitions.*
- (a) *Destroy* means the complete killing of weeds or the killing of weed plants above the surface of the ground by the use of hand-pulling, chemicals, cutting, tillage, cropping system, or any or all of these in effective combination, at a time and in a manner as will effectually prevent the weed plants from continual growth, maturing to bloom or flower stage.
- (b) *Garden* means a cultivated area dedicated to growing vegetables, fruits, annual and perennial plants, ornamental grasses, or and ground cover in a well-defined location with a defined edge or border.
- (c) *Native plants* means those grasses (including prairie grasses), sedges (solid, triangular-stemmed plants resembling grasses), and forbs (flowering broadleaf plants) that are native to or naturalized to the state~~State of Wisconsin~~. Native plants for purposes of this section shall do not include noxious weeds or noxious grasses as defined herein.
- (d) *Noxious or Invasive weeds* ~~weeds, or grasses~~ means any plant listed under § 23.235(1)(a) or 66.0407(1)(b), Wis. Stats., Chapter NR 40 Invasive species rule, and shall also include Arctium spp. (burdock), Cirsium and Carduus spp. (thistle), Ambrosia spp. (ragweed), Alliaria petiolata (garlic mustard), Plantago lanceolata (buckhornribwort), Rhamnus cathartica (common buckthorn), and Toxicodendron radicans (poison ivy).
- (e) *Ornamental grasses and groundcovers* means grasses and groundcovers not indigenous to Wisconsin that are not native to or naturalized to the State of Wisconsin. For purposes of this section, o~~Ornamental grasses do shall~~ not include common turf grasses, and or noxious weeds or grasses as defined herein.
- (f) *Planned natural landscaping area* means a planned, intentional and maintained planting area of native plants, ornamental grasses and groundcovers, rain gardens, shrubs and trees in which all or some of the selected vegetation may exceed~~s~~ eight inches (8") in height at maturity, and which may include without limitation trees, native plants as defined in this section, or plantings associated with a rain garden. ~~Planned natural landscaping does not include any species of turf~~

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Commented [MS4]: Sustainability Commission recommends replacing word weed with the term vegetation.

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Commented [MS5]: Recommendation include list Chapter NR40 and 66.0407(1)(b), Wis stat 66.0407 in the definition

Commented [MS6]: Expand the definition; what is nuisance versus noxious

Updated January 6, 2021

~~grasses and is not intended to allow a property owner to ignore lawn care duties. Planned natural landscaping does not include gardens.~~

- (g) ~~Rain garden means a native plant garden that is designed not only to aesthetically improve properties, but also to reduce the amount of storm water and accompanying pollutants from entering streams, rivers and lakes.~~ means an excavated area that is back-filled with a prepared or amended soil mixture, which may or may not be covered with a mulch layer, which is planted with a diversity of woody or herbaceous vegetation, to which stormwater is directed to promote infiltration or evapotranspiration.
- (h) ~~Turf grasses~~ means those grasses commonly used in regularly cut or mowed lawns or play active recreation areas, and includes without limitation bluegrass, fescue or rye grass blends ~~or any~~ and other similar grasses.
- (i) ~~Unmanaged plant-vegetation growth~~ means an unmaintained area of in which any grass, turf grass, hay, weeds, brush or other ~~offensive~~ vegetation which has grown to a height of over ~~nine~~ eight inches as a result of the absence of active cutting, mowing, or other maintenance. ~~This definition shall but does not include:~~

~~1.—Gardens,~~

~~2.—Plants~~ vegetation located on agricultural land: vegetation found;

~~3.—Plants located~~ on shoreland within 35 feet of the ordinary high-water mark;

~~4.—Plants located~~ vegetation found within environmentally sensitive areas such as steep slopes, drainage ways, wetlands, and protective buffer areas ~~s, s, or~~

~~5.—Planned natural landscaping that is wholly contained within the parcel on which it is planted and maintained.~~

(3) *Control of noxious weeds.*

(a) ~~The City Clerk shall annually on or before May 15 publish as required by state law a notice that every person is required by law to destroy all noxious weeds on lands in the City which he/she owns, occupies or controls. A joint notice with other towns or municipalities may be utilized.~~

~~(b) As provided for in § 66.0407(2), Wis. Stats., the City shall require that all noxious weeds shall be destroyed prior to the time in which such plants would mature to the bloom or flower state.~~

~~(c) The growth of noxious weeds in excess of eight inches in height from the ground surface shall be prohibited within the City corporate limits.~~ A person owning, occupying, or controlling land shall destroy all noxious weeds on the land. The person having immediate charge of any public lands shall destroy all noxious weeds on the lands.

~~(d)~~ —If a person neglects to destroy all noxious weeds as required under par. (a), the weed commissioner shall destroy or have destroyed the noxious weeds. The cost of destroying the weeds shall be charged and assessed in the manner provided by § 66.0517(3)(b)1, Wis. Stats.

(4) *Unmanaged plant-vegetation growth prohibited.*

(a) A person owning, occupying, or controlling any ~~residential lot in residential use,~~ or ~~any lot or property adjacent to or adjoining a residential lot in residential use,~~ shall mow, cut, or otherwise control and remove any unmanaged plant-vegetation growth on the land.

(b) If a person neglects to cut and/or remove unmanaged plant growth as required under paragraph (a), the weed commissioner shall cut down and remove or cause to be cut down and remove the unmanaged plant growth. The cost of cutting and removing the unmanaged plant growth shall be charged and assessed in the manner provided by § 66.0627(2), Wis. Stats.

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Updated January 6, 2021

(5) *Appeal.* Any property owner wishing to contest a charge assessed under subsection section (3) or (4) above may appeal the. Charge to the Improvement and Services Committee. The appeal shall be made in writing and submitted to the City Clerk within 30 days of the date on which the unmanaged vegetation growth or noxious weeds or grasses were cut or destroyed. The Improvement and Services Committee may uphold, modify or cancel the charge. This procedure for administrative review shall not be governed by ch. 68, Wis. Stats.

(65) *Planned natural landscaping areas.*

(a) Registration Required. AAny person-owner of record of a property, and any tenant upon signed, written consent of the owner of record of a property, wishing to maintain amay implement a planned natural landscaping area on their property may register their property upon registration with the Ddepartment of Ppublic Wworks. Up to four (4) Planned Natural Landscaping Areas may be permitted on any one property, with a maximum cumulative surface area of 300 SF or five percent of the gross area of the lot, whichever is greater. The registration shall include the following information:

i. A plan of the property drawn to scale, indicating the location of all property boundaries, structures, sidewalks, driveways, and roadways, and the boundaries of the proposed Planned Natural Landscaping Area. A boundary survey shall not be required. Property boundaries and other information may be indicated on an aerial photograph or other suitable and readily available base map.

ii. A clear description, illustration, or photograph of the type(s) of edging proposed, including materials, height, and proposed placement

iii. A planting plan indicating the plant species or seed mix(es) to be used

iv. Any proposed change in grade or excavation required beyond standard excavation and soil replacement for establishment of the Planned Natural Landscaping Area.

(b) Planned natural landscaping areas shall adhere to the following standardsguidelines:

i. Types of plantings.

1. Plantings may include forbs, grasses, edible plants, shrubs, or trees.

2. Plantings may be designed as rain gardens with plantings and grading specifically designed to receive and infiltrate rainwater or clear water flows.

3. Plantings shall be deliberately selected and arranged as part of a coherent overall plan. Overgrowth of conventional turf grasses or weeds, or any other unmanaged vegetation growth, shall not constitute a Planned Natural Landscaping Area.

4. No species identified on the Wisconsin Department of Natural Resources Regulated Invasive Plants list, whether designated as Prohibited or Restricted, shall be permitted.

ii. Edging required. A Planned Natural Landscaping Area must have a distinct and clearly defined border. The border may be any combination of mowed grass, fencing of up to 3' in height, a permitted fence installed along a property line, or natural materials neatly arranged to create appearance of an edge to contain the Planned Natural Landscaping Area.

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Commented [MS9]: Use this this language to replace: No arbitrary maximum cumulative surface area or number of planted area should be set by the City. Comment received from ND.

Commented [MS10]: Sustainability Commission voted to recommend removing this sentence.

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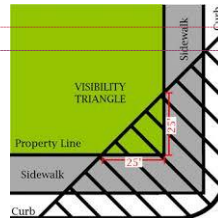
iii. **Plant height at maturity.** Plant height shall be maintained at the appropriate maximum height at maturity for the specific species. University of Wisconsin Horticulture, Division of Extension shall be consulted in the event of dispute as to appropriate maximum height.

iv. Location and Dimensions of the Natural Planting Area.

1. Natural Planting Areas are strictly prohibited within City rights-of-way and street terraces.

2. Natural Planting Areas shall be no closer than three feet (3') to any property line. ~~Where the planned natural landscaping abuts a permitted fence along a side or rear property line, no setback shall be required.~~

3. Natural Planting Areas shall not obstruct the visibility triangle at intersections, with the visibility triangle incorporating the area within a triangle formed by the intersection of the street right-of-way lines, as illustrated in Figure 146-1.



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~~1. Turf grass is to be eliminated and the native plants, trees and shrubs are to be planted through transplanting or seed by humans or mechanical means.~~

~~2. Setbacks:~~

~~a. Three feet from front lot line when adjacent to a public sidewalk and zero feet from front lot line if there is no public sidewalk.~~

~~b. Three feet from rear and side lot lines.~~

~~c. No setback is required on side and rear lot lines if there is a fence along the lot lines, or the native landscaping abuts a neighboring planned natural landscaping area public park/open space, or is adjacent to a natural area.~~

~~d. The setback area should be regularly cut turf grass, garden beds, trees, shrubs, mulch, wood chips or landscape stone.~~

~~e. Planned natural landscaping is to be cut to a maximum height of nine inches once annually by July 15.~~

(c) Review and Enforcement.

i. The City may at any time determine that a planned natural landscaping area is in violation of the terms of this section if the **Weed Commissioner** finds an ongoing violation of the terms and conditions of the registered Plan, or if the Weed Commissioner determines that the planned natural landscaping area is harboring vermin or other pests. Upon such determination of the Weed Commissioner, a Citation shall be issued to the property owner and any tenant who has made application for a Planned Natural Landscaping Area.

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ii. Appeal.

1. The subject of the Citation may appeal the determination to the Improvement and Services Committee. Any appeal shall be made in writing within ten (10) business days of receipt of the Citation and filed with the City Clerk.

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Updated January 6, 2021

2. The Improvement and Services Committee shall hear any appeal and recommend action to the Common Council, which shall have the authority to affirm, reverse, or modify the Improvement and Services Committee recommendation and issue a final decision.

3. In the event of non-compliance with a Citation or Common Council decision upon appeal, the City may enter and cut or otherwise maintain the area subject to the determination, in accordance with the provisions of Subsection (3)(d) above.

~~Complaint notification. Any person who registers a parcel as natural landscaping with the department of public works shall receive a notice that the weed commissioner intends to take action on the parcel under this section ten business days before any action is taken. If the registered parcel owner objects within ten business days after the notice was issued, the improvement and services committee shall recommend whether the parcel is a planned natural landscaping exempt from subsection 8.11(4) to the common council. The common council shall affirm or reverse the improvement and service committee's recommendation and issue a final decision.~~

(6) Appeal. Any property owner wishing to contest a charge assessed under this section may appeal to the improvement and services committee. The appeal shall be in writing and submitted to the city clerk within 30 days of the date on which the unmanaged plant growth and/or noxious weeds were cut and/or destroyed. The committee may uphold, modify or cancel the charge. This procedure for administrative review shall not be governed by ch. 68, Wis. Stats. [Check with Vanessa](#)

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Report to the
Improvement and Service Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # L.7

To approve the report of the Purchasing Manager to award to Bobcat Plus for a Utility Terrain Vehicle with tracks for the sum of \$28,622. Bobcat Plus was the only vendor to meet the specifications of RFB 2021-04.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

- I. 02-10-21 IS Agenda_Purchasing



CITY OF GREEN BAY - PURCHASING DIVISION

TO: I & S Committee
FR: Calvin Winters, Procurement Manager
DT: February 10, 2021
RE: Purchasing Report
Cc: Steve Grenier, Jamie Destiche

Report of the Purchasing Manager:

1. Approval of award to Bobcat Plus for a Utility Terrain Vehicle with tracks for the sum of \$28,622.00. Bobcat Plus was the only vendor to meet the specifications of RFB 2021-04.

CITY OF GREEN BAY BID SUMMARY**RFB #2021-04****Utility Terrain Vehicle with Tracks**

Dept: PRF	Req #	VENDOR #1	VENDOR #2	VENDOR #3
Planholders:	CC #760-765-020	Bobcat Plus Inc	Jim's Golf Cars	Riesterer & Schnell Inc.
Issued: 1/13/21	Due: 2/3/2021 2pm	De Pere, WI	De Pere, WI	Hortonville, WI
DESCRIPTION				
2020/2021 Model Year Utility Terrain Vehicle:	\$ 15,723.00	\$ 16,660.50	\$ 18,638.17	
Machine Manufacturer and Model Bid	2021 Bobcat UV34 Diesel	2021 Club Car Carryall 1500 w/ Kubota Diesel Engine	2021 John Deere XUV865M	
2020/2021 Model Year Tracks for UTV	\$ 12,899.00	\$ 12,645.00	\$ 5,444.00	
Tracks Manufactuerer and Model Bid	2021 Mattracks M3-UR-HD Plus	2021 Mattracks M3-UR HD	John Deere 324L	
Total For UTV and Tracks	\$ 28,622.00	\$ 29,305.50	\$ 24,082.17	
Warranty:	1 Year, 1000 hours	2 year, 2000 hours	12 month, 1000 hours	
Lead time:	12 weeks	11 weeks	90 days	
Notes	Labor to install tracks extra	Does not meet all specifications	Does not meet all specficiations	



Report to the
Improvement and Service Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

AGENDA ITEM # L.8

To approve the award of the contract GREEN BAY WATER UTILITY ADDITION / RENOVATION to the low responsive bidder, Miron Construction Co., Inc., in the amount of \$4,339,725.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

1. Memo_Recommend Award 2-4-2021
2. Bid Summary - Public GREEN BAY WATER UTILITY ADDITION-RENOVATION



Green Bay Water Utility

MEMORANDUM

Date: February 4, 2021

To: Trista Hobbs, PE

From: Kristin Romanowicz, PE

RE: Green Bay Water Utility Addition/Renovation

We recommend award of this contract to Miron Construction Co, Inc. for the Base Bid amount of \$4,339,725.00.

CITY OF GREEN BAY, WISCONSIN
SUMMARY OF BIDS FOR CONTRACT

GREEN BAY WATER UTILITY ADDITION / RENOVATION

Tuesday, February 2, 2021

Contractor	Base Bid	Alt 1	Bid Bond
MIRON CONSTRUCTION CO., INC.	\$4,339,725	-\$9,574	5%
FRANK O. ZEISE CONSTRUCTION CO., INC.	\$4,523,200	-\$4,200	5%
MIKE KOENIG CONSTRUCTION CO., INC.	\$4,629,050	-\$7,000	5%
C.D. SMITH CONSTRUCTION	\$4,678,500	-\$15,000	5%
HOWARD IMMEL INC.	\$4,796,900	-\$9,659	5%
Any questions, call 920-448-3100			



Report to the
Improvement and Service Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # L.9

To receive and place on file the report of actions taken by Department of Public Works

A. Granting of Licenses

I. Sidewalk Builder

- a. Absolute Concrete LLC
- b. Larry Van Rite Trucking & Excavating

2. Tree & Brush Trimmer

- a. AI Tree Service, Inc.
- b. Consciously Fresh Tree Service LLC
- c. Economy Tree Service LLC

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

None



Report to the
Improvement and Service Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # L.10

To order in the improvements constructed and levy assessments for the following:

ASPHALT RESURFACING

GUNS ROAD – Main Street to south City limits

HARVEST ROAD – Finger Road to Crest Lane

IRENE STREET – Crooks Street to Main Street

CONCRETE PAVEMENT

GRAY STREET – Dousman Street to Mather Street

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

None



Report to the
Protection and Policy Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # M.I

To approve a request by The Sardine Can at 128. S Broadway Ave. to extend their license premises to parking lot for one day special events on June 9, 2021, June 30, 2021, July 21, 2021, August 11, 2021 and September 1, 2021, subject to complaint.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

- I. 2021 Block Party Letter - updated



Report to the
Protection and Policy Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # M.2

To approve an application for a "Class A" Liquor Class "A" Beer license by Gerczak's Liquor & Catering, LLC at 1244 Velp with a license premises description as "I room retail store-liquor on shelves, beer cave, fridge units, backroom (app 300 sq feet) (Previously licensed as J&D Gerczak Liq & Catering, LLC), with the approval of the proper authorities.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

1. CLASS A LICENSE STIPULATION.BOURDELAISR.360-1244VELP
2. application-1244VELP



Report to the
Protection and Policy Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # M.3

To approve a resolution for the City of Green Bay to adopt the Brown County All-Hazard Mitigation Plan.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

1. Resolution - Adopt Brown Co All Hazards Mitigation Plan
2. 2020 All Hazard Draft Ch 4 FINAL
3. 2020 All Hazard Draft Ch 2 FINAL
4. 2020 All Hazard Draft Ch 1 FINAL
5. 2020 All Hazard Draft Ch 5 FINAL
6. 2020 All Hazard Draft Ch 3 FINAL

**RESOLUTION ADOPTING BROWN COUNTY
ALL HAZARDS MITIGATION PLAN**

February 2, 2021

BY THE COMMON COUNCIL OF THE CITY OF GREEN BAY:

WHEREAS, the City of Green Bay recognizes that natural hazards pose a threat to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted all hazards mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the County Board of Brown County has adopted the Brown County All Hazard Mitigation Plan as its official plan; and

WHEREAS, the City of Green Bay has reviewed such plan and recommends approval thereof for the City of Green Bay;

NOW, THEREFORE BE IT RESOLVED, that the Common Council of the City of Green Bay hereby adopts the *2020 Brown County All Hazards Mitigation Plan*, a copy of which is on file with the City Clerk, as its official plan and directs that a copy of the same be forwarded to the Brown County Emergency Management Department.

BE IT FURTHER RESOLVED, that upon approval of the *2020 Brown County All Hazards Mitigation Plan*, the Brown County Emergency Management Department will submit the adopted plan to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval, as required under the Hazard Mitigation Grant Program.

Adopted _____

Approved _____

Mayor

Clerk

CHAPTER 4 MITIGATION STRATEGIES

INTRODUCTION

The Disaster Mitigation Act of 2000 defines mitigation as a "sustained action that reduces or eliminates long-term risk to people and property from natural hazards and their effects." Mitigation planning is the systematic process of learning about the hazards that can affect the county, setting clear goals, identifying appropriate actions and following through with an effective mitigation strategy. Mitigation encourages long-term reduction of hazard vulnerability and can reduce the enormous costs associated with a disaster including costs to property owners and to public agencies. Mitigation can also protect critical community facilities, reduce exposure to liability, and minimize community disruption.

This chapter outlines the general goals to be achieved through the implementation of this all hazard mitigation plan. The natural hazards discussed in this chapter are listed in the order of priority as determined by the All Hazard Plan Steering Committee. For each natural hazard, there is list of mitigation strategies (actions and projects), noted with implementation status, along with potential stakeholders and a timetable for implementation. A summary of the recommended mitigation strategies can be found in Table 4.1 at the end of this chapter.

PROGRESS SINCE LAST UPDATE

Since the previous Hazard Mitigation Plan was approved and adopted in 2012, Brown County has been actively pursuing many of the mitigation efforts that were identified as either efforts that were underway or that were already in place. Below is a summary of the mitigation efforts that were identified in the previous plan and their current status.

- *Floodplain mapping and zoning completed and enforced:* This effort is a continually evolving effort. Brown County adopted the most recent (2009) FEMA FIRM Map and regularly adopts and updates the official floodplain zoning map based on approved flood studies. Brown County Zoning administers floodplain zoning in the unincorporated areas of the county. This has also been done by many of the incorporated communities that administer floodplain zoning.
- *Stormwater management and detention activities instituted:* Many Brown County communities have adopted storm water management ordinances. The State of Wisconsin also regulates storm water via NR 216 (Storm Water Discharge Permits) and NR 151 (Runoff Management).
- *Monitoring, warning, and evacuation procedures maintained and communicated:* These procedures are not always static. Things around the county change and so to should the procedures involving monitoring, warning, and evacuating people in the event of a hazard. These procedures may be on file but the training and communication of these procedures is always needed.
- *Building codes established and enforced:* All entities that administer building permits and enforce building code regulations have a building inspector on staff or contract for their services. Building inspectors must be certified/licensed by the State of Wisconsin.

- *Land use controls adopted and enforced:* Many land use controls are in place at the state, county, and local levels. Having land use controls can be a powerful tool to achieve an end goal but they are only good if they are administered consistently. Most hazards don't understand political boundaries and therefore it takes multi-jurisdictional cooperation and coordination to mitigate some hazards. All Brown County agencies that administer land use control codes and ordinances could coordinate more.
- *Capital improvement plans prepared and referenced:* Brown County and the local municipalities use various forms of a capital improvement plan. These plans are typically updated every year to include new projects.
- *Incident response exercises scheduled and assessed:* Brown County Emergency Management keeps up to date on required exercises.
- *Intergovernmental cooperation partnerships established and maintained:* Intergovernmental cooperation is critical to the prevention and mitigation efforts when hazards do occur.
- *Education pieces prepared and distributed:* While the education pieces were prepared and distributed, they should also be reviewed and updated periodically.
- *Disaster plan prepared, distributed, and followed:* Brown County has an Emergency Operations Plan.

CURRENT MITIGATION EFFORTS

In the preparation of this all hazard mitigation plan for Brown County, it is important to understand that many mitigation activities are already underway and/or in place. Brown County, local communities, hospitals, and schools have been very proactive in attempting to mitigate the impacts of natural hazards by adopting and using their own individual emergency response plans. A list of those plans can be found in Chapter 3. The following list highlights some of the mitigation activities currently being undertaken throughout the county by these entities.

- Floodplain mapping and zoning.
- In accordance with NR 115 (Shoreland Zoning) and NR 116 (Floodplain Management Program) Brown County and the local municipal governments enforce the adopted ordinances.
- Brown County and the communities served by public sewer, are required to have Municipal Separate Storm Sewer System (MS4) permits to comply with Wisconsin Administrative Code, NR 216. While this is water quality focused it is directly linked to stormwater management.
- Storm water management requirements:
 - Some local municipal governments have adopted and enforce storm water management ordinances.
- Monitoring, warning, and evacuation procedures maintained and communicated
- Building codes established and enforced

- Land use controls adopted and enforced
- Capital improvement plans prepared and referenced
- Incident response exercises scheduled and assessed
- Intergovernmental cooperation partnerships established and maintained
- Education pieces prepared and distributed
- Disaster plans prepared, distributed, and followed

Primary Mitigation Goals

PMG1 - To preserve life and minimize the potential for injuries or death.

PMG2 - To preserve and enhance the quality of life throughout Brown County by identifying potential property damage risks and recommending appropriate mitigation strategies to minimize potential property damage.

PMG3 - To identify potential funding sources for mitigation projects and form the basis for grant applications.

PMG4 - Coordinate mitigation efforts through communication and collaboration between jurisdictions and all departments.

PMG5 - Develop and implement plans and programs to identify and reduce a hazard's risk (e.g. Emergency action plans, Power Restoration Plans, Post-Hazard Evaluation and Action Plan, etc.).

PMG6 - Identify areas of greatest impact from hazards (e.g. High-water marks, repetitive loss, etc.).

Secondary Mitigation Goals

SMG1 - Implement policies and programs designed to reduce or eliminate the impacts of natural hazards.

SMG2 - Collect and utilize data to improve mitigation strategies.

SMG3 - Build and support local capacity and commitment to improve implementation of mitigation strategies.

SMG4 - Continue enforcement measures to reduce the impacts of natural hazards.

SMG5 - Utilize natural resource protection measures as a means to reduce the impacts of natural hazards.

SMG6 - Incorporate Green Infrastructure (GI) and Low Impact Development (LID) mitigation strategies to the impacts of natural hazards.

SMG7 - Continue training, education and outreach programs to improve disaster response and overall education of hazard planning and mitigation.

MITIGATION CATEGORIES

To establish a framework for the development of mitigation strategies to address the goals listed above, a clear understanding of what techniques should be considered during the planning process was necessary. The following six broad mitigation categories served as that basis in the formulation of mitigation strategies for each of the natural hazards addressed in this plan.

Prevention

Prevention activities are intended to keep issues associated with hazard events from getting worse. They are particularly effective in limiting Brown County's and each community's future vulnerability, especially in areas where development has not occurred, or capital improvements have not been substantial. Examples of prevention activities include:

Planning and Zoning

- Suggest municipalities adopt Brown County All-Hazard Mitigation Plan into local municipality plans or ordinances when no local plan exists.
- Ensure that there are adequate groundwater wellhead protection plans in place that are utilized.

Hazard Mapping

- Develop a mapping system with data that maps hazardous materials (open air and/or closed storage). These materials could have adverse impacts to the community and natural environment during a natural disaster or emergency. Develop a database and map to identify and track all hazardous material located within the region.

Building Codes

- Review and update building codes to ensure that structures are built to a standard that will endure most hazard events.

Studies/Data Collection and Analysis

- Continue to maintain hazardous material locations to the extent possible.

Open Space Preservation

- Obtain and preserve open spaces within key areas of Brown County.
- Develop an action plan to identify priority parcels and potential funding sources to purchase vulnerable property.
- Continue to maintain and enforce Chapter 22 (Shorelands and Wetlands) of the Brown County Code of Ordinances.
- Continue to maintain the Brown County Sewage Plan.
- Continue to maintain and enforce Chapter 21 (Land Division and Subdivision) of the Brown County Code of Ordinance.

Floodplain Regulations

- Obtain and preserve open spaces within the floodplain. Develop an action plan to identify priority parcels and potential funding sources to purchase vulnerable property.
- Continue to maintain and enforce Chapter 23 (Floodplains) of the Brown County Code of Ordinances.

Storm Water Management

- Several sections of the urbanized areas flood after heavy rain events causing damage to infrastructure and property. Develop a mapping system and database that identifies areas where flooding occurs on a more frequent basis. This process would help place drainage ways into a future Capital Improvement Plan (CIP.)

Drainage System Maintenance

- Address aging storm water infrastructure that needs maintenance to protect the natural waterways. Develop a plan to identify priority maintenance and replace areas.
- Develop funding sources to purchase, maintain, and protect the natural drainage systems. When parcels near watercourse and navigable waterways are slated to be developed the municipalities should attempt to purchase and protect the public access to these natural amenities. Develop a plan that identifies priority parcels and potential funding sources.

Capital Improvements Programing

- Develop ability to manage grass and forest fires for municipalities that have vast woodlands. Acquire equipment to properly control forest fires and grass fires.

Riverine Setbacks

- Continue to enforce development restrictions for steep slope areas and areas that drain to other natural resource features such as waterway or wetlands.

Property Protection

Property protection measures are intended to enable structures to better withstand hazard events, remove structures from hazardous locations, or provide insurance to cover potential losses. Examples include:

Acquisition

- Develop funding sources to purchase, relocate, elevate, or retrofit structures located within the floodplain. Develop a plan and/or asset map to help residents and businesses leverage any available public or private funding.

Relocation

- Develop a plan to relocate residential areas outside of flood zones and limit future development in area for natural and recreational uses, particularly in areas where structures are repeatedly damaged during flood events.
- Develop funding sources to purchase, relocate, elevate, or retrofit structures located within the floodplain. Develop a plan and/or asset map to help residents and businesses leverage any available public or private funding.

Building Elevation

- Develop funding sources to purchase, relocate, elevate, or retrofit structures located within the floodplain. Develop a plan and/or asset map to help residents and businesses leverage any available public or private funding.

Critical Facilities Protection or "Hardening"

- Develop funding sources to purchase, relocate, elevate, or retrofit structures located within the floodplain. Develop a plan and/or asset map to help residents and businesses leverage any available public or private funding.

Retrofitting (i.e., wind proofing, flood proofing, seismic design standards, etc.)

- Develop funding sources to purchase, relocate, elevate, or retrofit structures located within the floodplain. Develop a plan and/or asset map to help residents and businesses leverage any available public or private funding.

Insurance

- Develop funding sources to purchase, relocate, elevate, or retrofit structures located within the floodplain. Develop a plan and/or asset map to help residents and businesses leverage any available public or private funding.

Safe Room Construction

- Develop funding sources to purchase, relocate, elevate, or retrofit structures located within the floodplain. Develop a plan and/or asset map to help residents and businesses leverage any available public or private funding.

Natural Resource Protection

Natural resource protection activities reduce the impact of hazards by preserving or restoring the function of environmental systems. In some cases, natural systems may include high hazard areas such as floodplains, steep sloped areas or barrier islands. Thus, natural resource protection measures can serve the dual purpose of protecting lives and property while enhancing environmental goals such as improved water quality or recreational opportunities. Parks, recreation or conservation agencies and organizations often implement natural resource protection measures. Examples include:

Floodplain Protection

- Many rivers, including Suamico River, north and west branches of Suamico River, and Potters Creek, have multiple tributaries with Flood Zone A that require protection.

Riparian Buffers

- Utilize riparian buffers to improve water quality in both urban and rural settings.

Fire Resistant Landscaping

- Encourage the use of landscaping that is fire proof and fire resistant for residential and commercial properties that develop in area to prevent fast spread of future fires.

Best Management Practices

- Create an educational campaign to inform the public on best management practices on their private property.

Fuel Breaks

- Hazards associated with fuel lines, gas meters and control panels include breaking of unprotected pipes (especially at the entry point through walls or fuel tank structures), leaking fuel causing an environmental and fire hazard and the inability of pressure relief devices to operate properly if submerged during a flood.
- Each piece of equipment should be kept above the DFE, Placed in protected shafts and have some flexibility.

Erosion and Sediment Control

- Create a county-wide system where there is equal environmentally sensitive area protection for all natural resources at the municipality level in addition to the existing county level. Identify potential funding sources to enforce regional erosion and sediment control measures.

Wetland Preservation and Restoration

- Continue to work with the WI DNR to protect wetlands through the administration of NR 115, NR 121, the 2040 Brown County Sewage Plan, and CH 21 (Land Division and Subdivision) of the Brown County Code of Ordinances

Habitat Preservation

- Develop protections for woodlands that may be vulnerable to any natural disaster.

Slope Stabilization

- Development of structures near steep slope may lead to erosion and structural collapse. Strongly enforce required environmentally sensitive area setbacks and encourage use of vegetation that stabilizes soil and slopes.

Structural Projects

Structural mitigation projects are intended to lessen the impact of a hazard by physically modifying the environment. These mitigation measures are usually designed by engineers and maintained by public entities. Most of the examples provided herein are aimed at stormwater and flood management projects. Examples include:

Reservoirs

- Storage of floodwaters in reservoirs causes the broadest range of flood-modifying effects such as reduction in flood flow rate, extent of area flooded, timing, etc. Except in the area immediately downstream from the dam, however, storage may not provide as high a degree of relief from flood damage in specific areas as may be achieved by other more localized tools.
- Flood storage may function alone, in groups, or with other mitigation strategies.
- Create an inventory of all reservoirs in Brown County and monitor their condition on an annual basis.

Levees/Dikes/Floodwalls

- Dikes, levees, and floodwalls protect a portion of the floodplain from flooding, up to a design level. These works may have adverse as well as beneficial effects. They can increase the height of the flood immediately upstream, across the stream, and downstream by reducing the amount of floodplain area available for overbank floodwater conveyance and/or storage. **Although they may be effective for the emergency, they should not be considered as permanent flood protection measures.**
- A list of dams and levees is maintained by the DNR. Conditions of these facilities should be monitored annually.

Detention/Retention

- Onsite detention measures can provide temporary storage of urban runoff waters, extending the period of runoff with the intent of reducing flood peaks. The temporary storage of runoff may also result in increased infiltration.
- Effective implementation of these measures includes providing for continuous maintenance, determining the drainage area to be served by a single structure, and determining the effects of detention on the timing of runoff in different segments of the watershed.

Channel Modification

- Channel modification may be necessary for certain areas, however; altering the natural course of a waterway may have negative impacts to areas upstream and downstream and it can negatively impact the local ecology.
- Acquisition of all permits from federal, state, county, and local entities must be obtained prior to any alteration to a navigable waterway.

Storm Sewer Construction

- Areas like CTH G, located east from CTH GV, in Ledgeview flood periodically due to undersized storm water pipes under the street. Properly sized storm water pipes and crossings to allows sufficient water flow to prevent flooding during heavy rain and snow melt events should be considered.

Shoreline Protection

- Seawalls, bulkheads, and revetments are designed to protect development along coastal areas by restricting wave impacts.
- Breakwaters and jetties are designed to protect harbors and navigationchannels from wave action or to stabilize inlets.
- Groyne fields or segmented offshore brakewaters provide shoreline protection by trapping sand.
- Beach nourishment and building sand dunes are often a cost effective, quasi-natural mentod of restoring eroding beaches and protecting existing development.

Emergency Services

Although not typically considered a “mitigation technique,” efficient emergency response can significantly reduce injuries and loss of life associated with hazards. These actions are typically taken immediately prior to, during, or in response to a hazard event. Examples include:

Warning Systems

- Improve safety during a hazard event by continuing to install tornado siren systems on future fire station structures.
- Continue to develop new warning systems that can be broadcast to the public through various forms of media (i.e. television, social media, county website).

Search and Rescue

- Adequately funding police and fire departments to purchase necessary seach and rescue equipment can help minimize loss of life.
- Maintain/continue ongoing training for search and rescue personel.

Evacuation Planning and Management

- Keep emergency actions plans up-to-date.

Flood "Fighting" Techniques

- Continue utilizing flood forecasting systems for major waterways such as the East River and the Fox River to monitor and plan for necessary mitigation and or evacuation of key areas.
- Continue to coordinate issuing flood watches and warnings with local media to notify residents of the potential for dangerous conditions in their area. The success of issuing these watches and warnings depends on the strength of the emergency action plan and the implementing organization's ability to respond before the flood occurs.

Public Information and Awareness

Public Information and Awareness activities are used to advise residents, business owners, potential property buyers, visitors and government officials about hazards, hazardous areas and mitigation techniques they can use to protect themselves and their property. These public awareness measures should be available in languages spoken by residents of Brown County. Measures used to educate and inform the public include:

Outreach and Education

- Continue to engage local stakeholders for annual updates on emergency actions plans, public health plans, or other related documents.
- Maintain a contact list for the distribution of educational materials.
- Schedule periodic educational seminars/training for emergency management personnel.
- Continue to work with local school districts on the implementation of emergency action plans.

Speaker Series, Demonstration Events

- Coordinate with State and Federal agencies to provide demonstration or training events.

Informing the Public

- Continue to use local news stations, local new papers, and county and local social media accounts to keep the public informed of current and potential hazards.

Real Estate Disclosure

- Real Estate disclosures in Wisconsin require property owners and their agents (realtors) to disclose any condition or defect that would result in a significant negative effect on the property value, that would significantly impair the health or safety of future occupants, or that would significantly shorten or negatively affect the normal life of the property.

Training

- All emergency management personnel need to continue to attend training events and stay current on any license or certifications.

MITIGATION STRATEGIES (ACTIONS AND PROJECTS)

Top hazard concerns were identified for each individual community from a broader range of possible incidents, including natural hazards. Nearly every participating community identified severe weather incidents as their top hazard concern. Vulnerability also was assessed on a countywide basis using the following parameters to determine an overall priority rating that was based on past events to include costs, frequency of occurrence, warning time, geographic extent, likely adverse impact, and future occurrences. The designation of high, medium, or low priority was determined based on whether or not that activity was already being done, the need to expand an activity, cost to implement, the time period to implement, whether or not the strategy is connected to another natural hazard, and the level of impact if implemented.

The mitigation strategies identified in this plan are listed below in order of priority as determined by the All Hazards Mitigation Plan Steering Committee. It was determined that some of the mitigation strategies were crossing between several natural hazard categories or were based in cooperation that was better suited for a countywide strategy section that precedes the natural hazards.

Prioritized Mitigation Measures by Hazard						
All Hazards/Countywide						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
1.1	Utilize digital media (social media & text) for emergency alerts.	PMG1 SMG1 SMG3	BC EM BC LIO BC Administration Local EM Personnel	Ongoing	H	Brown County currently uses digital media platforms for various emergency alerts. Digital media will continue to evolve and improve. Its imperative that Brown County and the local units of government keep up.
	Countywide					
1.2	Maintain intergovernmental cooperation agreements with neighboring communities and private businesses for acquisition of necessary equipment for disaster clean-up	PMG1 PMG4 SMG1 SMG3	BC EM, Local Governments	Ongoing	H	Cooperation between county departments, local governments, and other organizations is crucial to the health safety and welfare of Brown County citizens.
	Countywide					
1.3	Bury utility lines when possible	PMG1 PMG2 PMG3 PMG4	BC, Local Muni's	Ongoing	L	While this mitigation measure has its benefits it also has its drawbacks i.e. cost. When projects are proposed underground utilities should be considered by both the County and the local municipalities.
	County, Local Municipalities					

1.4	Include driver safety strategies for severe weather events in driver education classes and materials.	PMG1 PMG5	State DOT	Ongoing	L	While this is not under Brown County's jurisdiction, it is an important measure that can be taken to keep people safe when learning to drive.
	Statewide					
1.5	Continue to maintain GIS data that is utilized by E 911 personnel in responding to emergencies.	PMG5 SMG2	BC LIO, WI Cartographers Office, Local GIS Professionals	Ongoing	M	Developing and maintaining a GIS system takes a massive amount of time and expertise. Critical data used by BC EM professionals includes: Address Points, Street Centerlines, Police and Fire Boundary layers, Critical Facilities
	County					
1.6	Develop an implementation plan for the Water Storage Capacity Needs for the Lower Fox River Basin study.	PMG1 PMG2 PMG4 PMG5 PMG6	BC Planning, BC Land and Water Conservation, BC EM, BC Administration	5 years	H	Link to the Study: https://www.outagamie.org/home/showdocument?id=73817 Finding funding for this project is critical to achieving the potential flood mitigation benefits associated with this study. (Cost is high)
	Brown County, Outagamie County, Communities within the Lower Fox River Watershed					
1.7	Continue delivery of federal emergency assistance when a Presidential Disaster is declared or when FEMA declares a county eligible for aid.	PMG3	BC EM	Ongoing	H	Maintaining eligibility for disaster relief funding is critical. (Cost is low)

Winter Storms, Heavy Snow, Blizzards, Ice						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
2.1	Inventory plowing and sanding equipment for use during winter emergencies	PMG4 SMG1	BC EM, BC DPW, Local DPW's, Private Co.'s	Annually especially during winter	H	This is largely a function of DPW departments to ensure they are prepared for winter emergencies. Needs should be identified and included in capital improvement plans. (Cost could be high depending on needs)
	Countywide					
2.2	Maintain lines of communication between governments, support agencies, police, fire, EMS, hospitals, and DPW's	PMG1 PMG4 SMG1 SMG7	BC EM, BC DPW, Local DPW's, Hospitals, Police and Fire	Ongoing	H	Facilitated by BC EM with support from County Executive. During large or prolonged winter emergencies coordination between agencies is critical to the preservation of life and property. (Cost is low)
	Countywide					
2.3	Utilize BC Emergency Operations Plan for coordination of public safety, support agencies, and resource acquisition	PMG4 PMG5 SMG1 SMG7	EM Dept, BC Sheriff, Police and Fire, Hospitals	Ongoing	H	Keep the BC Emergency Operations Plan up-to-date and staff trained on utilizing this plan. (Cost is low)
	Countywide					
2.4	Prepare and distribute winter safety information to the media and vulnerable populations.	PMG5 SMG1 SMG7	BC EM, UW-Extension, BC Health and Human Services, Homeless Shelters	Annually	L	Local news channels and other agencies like UW-Extension, BC Health and Human Services, local homeless shelters and BC EM can partner to keep the vulnerable populations in Brown County safe. (Cost is low)
	Countywide					
2.5	Produce and distribute emergency preparedness information for winter weather hazards on the roads	PMG5 SMG1 SMG7	BC EM, WisDOT, BC Sheriff, Local Police Depts.	Ongoing	L	Coordinate with WisDOT and local news outlets on the distribution of emergency preparedness information. (Cost is low)
	Countywide					
2.6	Continue tree trimming programs	PMG2 SMG1	Local Forestry or DPW's, BC Parks, BC Highway, Utility Companies	Ongoing	M	Brown County, Local municipalities, and utility companies should continue tree trimming programs to prevent power outages. Can be part of local and county budgets. (Cost depends on need per agency)
	Countywide					
2.7	Develop/enforce restrictions on planting large or fast-growing trees near power lines	PMG5 SMG1 SMG4	Local Muni's	Ongoing	L	UW-Extension can be a helpful resource. Communities can also coordinate with utility companies for the location of future power lines. (Cost is low)
	Local Municipalities					
2.8	Identify key locations and install snow fencing to limit blowing and drifting of snow	PMG1 PMG2 PMG4	All DPW's	Ongoing	M	Snow fencing can be an effective measure to deter snow and ice accumulation on roadways. (Cost is low)
	Brown County and Local Municipalities					

Flooding (Stormwater, Riverine, Storm Water, Flash)						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
3.1	Monitor NWS flood forecast	PMG4 SMG2 SMG7	BC EM	Ongoing	H	Coordinate with NWS and Local meteorologists to determine when flood watches and warnings could be issued. (Cost is low)
	Countywide					
3.2	Maintain congregate care facility procedures	PMG1 PMG4	EM Dept., Non-govt Agencies	Ongoing	M	See Brown County Evacuation Plan. (Cost is low)
	Countywide					
3.3	Maintain and update emergency procedures for gas and electricity cut-off and sandbagging	PMG2 PMG5 SMG1 SMG7	BC EM, BC Highway Department	Ongoing	M	A copy of each utility company's emergency plan should be updated and on file with BC EM. (Cost is low)
	Countywide					
3.4	Maintain ordinances for proper land use planning codes and ordinances.	PMG5 SMG1 SMG3 SMG6 SMG7	County and Local Planning and Zoning Departments	Ongoing	M	This includes shoreland zoning, floodplain zoning, comprehensive plans, and other regulatory codes and ordinances. (Cost is moderate)
	Brown County, Local Municipalities					
3.5	Enforce environmentally sensitive area regulations that preserve natural resources adjacent to and in defined floodplains	PMG4 PMG6 SMG1 SMG4 SMG5 SMG6	County and Local Planning and Zoning Departments	Ongoing	M	Keep the Brown County Sewage Plan and the Brown County Subdivision Ordinances up to date. (Cost is moderate)
	Countywide					
3.6	Inventory and assess areas throughout both the rural and urban Brown County that have repeated flooding problems and identify Green Infrastructure and Low Impact Development Strategies to minimize future events.	PMG1 PMG2 PMG3 PMG6 SMG1	EM Dept., BC Planning, BC DPW, Local Municipalities	Ongoing	M	Knowing which areas experience repetitive flooding issues can help decisionmakers focus funding on those key areas. (Cost is moderate)
	Repetitive flood areas					
3.7	Maintain storm water management plans and ordinances that are consistent with the State of Wisconsin minimum requirements.	PMG2 SMG1 SMG4	Local municipalities	Ongoing	M	Storm water management requirements currently reside at the local level for most Brown County Communities. Brown County ensures that storm water management is addressed during the land division review process in all villages and towns. (Cost is Moderate)
	Local municipalities					
3.8	Incorporate FEMA approved changes to the floodplain maps to better determine areas and facilities susceptible to recurring flooding.	PMG2 PMG6 SMG1 SMG2 SMG3	BC Zoning, BC LIO	Ongoing	M	This effort has been valuable for numerous citizens and professionals around Brown County. (Cost is low)
	Countywide					

3.9	Implement a rural drainage improvement program that would include ditch, bridge, and culvert maintenance and improvements.	PMG5	County and local DPW Departments	1-5 years	L	This would be a useful program to maintain drainage systems to prevent possible water backups and flooding of both public and private property. (Cost depends on amount of maintenance)
	Countywide, Local Municipalities					
3.10	Promote the sale of flood insurance to residents with flood prone properties throughout the county.	PMG5 SMG7	BC Zoning Local Municipalities	Ongoing	L	This is important for people living in areas mapped on the FEMA FIRM maps. It is also important for people living in areas that have not been studied but are near a waterway. (Cost is low)
	Countywide in flood prone areas					
3.11	Implement floodproofing techniques such as elevation, relocation, barrier construction, and wet flood-proofing for residents, businesses and critical facilities.	PMG1 PMG2 SMG1	Local Municipalities, BC EM	Ongoing	M	Identifying all areas that are within mapped floodplains and that are in a floodplain based on elevation can help identify if structures or other critical facilities are at risk. (Cost is low)
	Countywide in flood prone areas					

Thunderstorms and Lightning						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
4.1	Continue to utilize radio and television for public awareness	PMG1 PMG4 SMG1 SMG7	BC EM, Local TV and Radio Stations	Ongoing	H	An effective process is already in place using area radio and TV stations. (Low cost)
	Brown County					
4.2	Educate public on severe weather safety procedures	PMG1 PMG4 SMG1 SMG7	BC EM, UW-Extension, BC Human Services, BC Health, Schools, Local weather professionals	Ongoing	H	Schools have weather related safety drills every year. The schools often coordinate the drills with educational materials focused on severe weather.
	Countywide					New materials are available periodically and should be used as much as possible.
4.3	Make weather radios available through local communities and Brown County EM Office	PMG1 SMG1	BC EM, BC Sheriff, BC Human Services, BC Health	Ongoing	L	While many people have cell phones and receive weather alerts on them, weather radios can still be used when cell phones don't have service.
	Countywide					
4.5	Install safe shelters at county and local parks and campgrounds	PMG1 PMG3 SMG1 SMG6	BC Parks, Local Municipalities, BC EM, BC Public Safety	Reviewed in 2009	M	Improvements were included in both Brown County's and the local communities Capital Improvements Plans. If there are improvements that are still planned but not yet constructed, the Dept. of Commerce's CDBG program may provide funds for this type of improvement.
	Brown County, Local Municipalities					
4.6	Install lightning protection on communication infrastructure and other critical facilities	PMG2	Telecommunications companies, BC Facilities Management, BC EM	Ongoing	L	New communication towers are constructed frequently. Each tower should include lightning and grounding protection equipment.
	Countywide					
4.7	Encourage use of fire and wind resistant construction materials and techniques	PMG1 PMG2 PMG3 PMG6 SMG1	BC EM, UW-Extension, Local Building Inspectors, Local Zoning Administrators	Ongoing	L	On-going education through residential and commercial building associations.
	Local Municipalities					State Building Code, Local Municipal Building Codes
4.8	Provide information to builders and owners of manufactured homes about use of tie-downs with ground anchors	PMG1 PMG2 SMG7	BC EM, UW-Extension, Local Building Inspectors, BC Home Builders Assoc.,	Ongoing	L	Most lending institutions and loan programs require the use of tie-downs and ground anchors.
	Local Municipalities					Review local building code for tie-down requirement.

Tornadoes and High Winds						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
5.1	Maintain and enhance early warning system for tornadoes	PMG1 SMG1	BC EM, BC Sheriff, Public Safety, Local News Stations	Ongoing	H	Continue to use notifications that reach the public via any and all media platforms. (Cost is moderate)
	Countywide					
5.2	Distribute tornado warning procedures to BC school districts	PMG4 PMG5 SMG1 SMG7	BC EM, BC Sheriff, UW-Extension, Local Schools	Annually	H	Promote Tornado Awareness Week. While this is typically a one-week awareness timeframe, tornado preparedness information should be available during tornado season (April – September). (Cost is low)
	Countywide					
5.3	Promote tornado safety public information through partnerships with NWS and BC Severe Weather Spotters	PMG4 PMG5 SMG1 SMG7	BC EM, Sheriff, UW-Extension, NWS	Ongoing	M	Public education can be carried out by a number of different agencies to help prevent loss of life during tornado and high wind events. (Cost is low)
	Countywide					
5.4	Increase the number of sirens to reach more county residents	PMG1 SMG1	BC EM, Local Muni's	Ongoing	H	Priority locations may include mobile home parks, large public gathering areas, rural public parks, and new subdivisions. (Cost is moderate)
	Countywide					
5.5	Assist schools, businesses, public facility managers, and individuals to determine "best available" tornado safety area.	PMG5 SMG1 SMG7	BC EM, Local Fire Depts.	Ongoing	M	Currently handled by BC EM. Could include the local fire departments and any other entity that may be able to assist. (Cost is low)
	Countywide					
5.6	Develop and maintain a comprehensive safety plan for every publicly owned building	PMG5 SMG1 SMG7	BC EM, Risk Manners, Facilities Managers	1-5 years	M	Risk managers and facilities managers should facilitate the development of plans for each facility. (Cost is moderate)
	Countywide, Local municipalities					
5.7	Require new residential development (w/o basement) to incorporate safe shelter space.	PMG1 PMG6 SMG1	State and Municipal Building Code, Planning Depts, BC EM	Ongoing	M	Educate developers and community leaders on the importance of safe shelters. (Cost may be high)
	Local Municipalities					
5.8	Improve mobile home safety through requiring tie-downs.	PMG1 PMG2 SMG1	State and Municipal Building Code, Local Building Inspectors	1-5 years	M	To prevent catastrophic damage to mobile homes, all building codes need to be amended to include requirements for tiedowns. (Cost is low)
	Local Municipalities					
5.9	Establish agreements with neighboring counties and with private businesses to acquire heavy equipment and to dispose of waste after a disaster.	PMG4 SMG3	BC EM, BC Port and Solid Waste, County Executive	As Needed	H	These agreements already exist however, if something were to change these agreements should be reviewed and amended appropriately.(Cost is low)
	Brown County, Outagamie County, Winnebago County					

5.10	Develop/enforce restrictions on planting large or fast-growing trees near power lines	PMG2 SMG1 SMG4	Local Municipalities	Ongoing	L	UW-Extension can be a helpful resource. Communities can also coordinate with utility companies for the location of future power lines. (Cost is low)
	Countywide					
5.11	Continue tree trimming programs	PMG2 SMG1	BC Parks, BC Highway, Local Forestry and/or DPW's	Ongoing	M	Tree trimming should be done annually to prevent power outages. (Cost may be high depending on how much tree trimming needs to be done)
	Countywide, Local municipalities					
5.12	Install high wind warning devices at key locations and bridges	PMG1 PMG2 PMG6	State, County, Local DPW's	Ongoing	L	Most signs should be in place. If new locations are identified, the jurisdiction responsible for maintenance of the facility should be contacted and made aware of the need for these warning devices. (Cost is low)
	Countywide					

Extreme Temperatures						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
6.1	Encourage social service entities and energy providers to expand programs to assist "at risk" populations.	PMG1 PMG4 PMG5 SMG1	BC Social Services, WPS	Ongoing	H	Utility payment assistance and acquisition of appliances can keep people in homes and out of homeless shelters or on the street. (Cost is moderate)
	Countywide					
6.2	Establish centers with proper amenities including transportation availability.	PMG1 PMG4 PMG5 SMG1	Public and private transportation providers, BC EM	As needed	L	Emergency cooling and heating centers can be set up if needed. Brown County Emergency Management can coordinate with other entities as host sites. (Cost is low)
	Countywide					
6.3	Maintain agreements with area facilities to serve as heating or cooling centers.	PMG2 PMG4 PMG5 SMG1	BC Administration, BC EM, Red Cross, Private Entities	As needed	L	These facilities include the Resch Center, Bay Park Square Mall, Brown County Libraries, and local libraries. Additional facilities as agreements are established. (Cost is low)
	Various locations					

Dam Failures						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
.1	Ensure Lamers Packerland Drive Dam is maintained and functioning properly as stated in the Emergency Action Plan	PMG1 PMG2 PMG5 SMG1	BC EM, Ashwaubenon Public Works	Ongoing	H	This is one of the only dams in Brown County that has a high risk rating if the dam were to fail. Maintaining this dam is extremely important for residents and businesses located down stream (Cost is moderate)
	Lamers Packerland Dam					
7.2	Create emergency procedures brochures and distribute them to all property owners within the potential risk area downstream of a dam.	PMG1 PMG2 PMG5 PMG6 SMG1 SMG7	BC EM, BC Zoning	Ongoing	M	Most dams in Brown County do not pose a serious risk to life or property, however, property owners should know that they are down stream from a dam and there is potential for their property to be impacted if the dam were to fail. Single purpose GIS map may help inform people of their risk. (Cost is low)
	Areas down stream of known dams					
7.3	Monitor water levels and communicate those conditions as necessary.	SMG1 SMG2	Dam Owners, WDNR, ACOE	Ongoing	L	(Cost is low)
	Countywide					

Coastal Hazards						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
8.1	Monitor natural features along the Bay of Green Bay for deterioration.	PMG2 PMG6 SMG2	BC Zoning, WI Sea Grant, Local Municipalities, WDNR	Ongoing	M	Many agencies keep track of various aspects of coastal resources. UWGB may be a good resource for collecting and tracking coastal deterioration. (Cost is high)
	Town of Green Bay, Town of Scott, City of Green Bay, Village of Howard, Village of Suamico					
8.2	Maintain maps indicating past incidences and areas most susceptible to future hazards.	PMG6 SMG2 SMG3	BC LIO, UWGB, WI Sea Grant	Ongoing	M	This effort would be similar to the mapping created for flooding events that cause road closures that was created by the BC LIO. (Cost is moderate)
	Town of Green Bay, Town of Scott, City of Green Bay, Village of Howard, Village of Suamico					
8.3	Maintain current land use regulations that permit to building structures within vulnerable coastal areas.	PMG2 SMG1 SMG4	BC Zoning, BC Planning, Local Municipalities	Ongoing	H	This should help to reduce loss of property and loss of life if proper precautions and enforced. (Cost is low)
	Brown County, Town of Green Bay, Town of Scott, City of Green Bay, Village of Howard, Village of Suamico					
8.4	Work with the Coast Guard to monitor drifting ice that can damage shore structures and destroy vegetation, move sand or stones from beaches, or dump sand, rock or other debris on beaches.	PMG6 SMG2	Coast Guard, BC EM, NWS	Ongoing	L	This is a long term monitoring project that could help to identify and/or predict future coastal hazards. (Cost is moderate)
	Bay of Green Bay					
8.5	Construction of riprap to manage bluff erosion.	PMG2	Private property owners, BC Parks, BC DPW	As needed	L	Private property owners may have a desire to install riprap barriers to help protect their property from erosion. Brown County and the local municipalities may also be interested in these types of projects. In both cases, WDNR is the primary point of contact for discussing such project and identifying what if any permits will be required. (Cost is high)
	Brown County, Town of Green Bay, Town of Scott, City of Green Bay, Village of Howard, Village of Suamico					

Drought						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
9.1	Implement and enforce water usage regulations/ordinances for both urban and rural water users.	PMG2 PMG5 SMG1 SMG4	Local Municipalities	1-5 years	L	Droughts in NE WI do occur however, access to freshwater is typically not an issue. It would be important to have water usage regulations in place to use when the conditions require them. (Cost is moderate)
	Local Municipalities					
9.2	Utilize such entities as UW-Extension, Brown County Land and Water Conservation, etc. for proper irrigation methods and ground water movement.	PMG1 PMG4 SMG7	UW-Extension, UWGB, BC Land and Water Conservation	Ongoing	M	Educational efforts are typically best if sustained for long periods of time or indefinitely. (Cost is low)
	Rural Brown County					
9.3	Ensure adequate wellhead protection plans are in place and utilized.	PMG1 PMG5 SMG1 SMG4	BC Land and Water Conservation, BC Zoning, WDNR	Ongoing	M	Measures already in place. (Cost is low)
	Non-sewered areas of Brown County					
9.4	Assist farmer with purchasing crop insurance.	PMG5 SMG1 SMG7	UW-Extension, USDA, BC Land and Water Conservation	Ongoing	L	An information brochure or information on websites should be adequate. (Cost is low)
	Rural Brown County					

Fires – Forest and Wildland						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
10.1	Notifying media outlets on burning restrictions being issued	PMG2 PMG4	DNR, Local Law Enforcement, Local New Channels, BC EM	Ongoing	H	If there are burn restriction, notification of the public is paramount in helping to prevent fires from occurring. (Cost is low)
	Countywide					
10.2	Adopt and enforce burning permit ordinances.	PMG1 PMG2 PMG5 SMG4	Local Municipalities	Ongoing	H	Brown County does not issue permits for open burning, but residents MUST notify the local fire department prior to open burning to ensure that there is no “burning ban” or “burning restrictions” in place. This measure would require that the municipalities issue a permit for anyone wishing to conduct open burning. (Cost is moderate)
	Local Municipalities					
10.3	Keep mutual aid fire protection agreements up-to-date and ensure that they include provisions for wildfires.	PMG4 SMG1	Local Municipalities	Ongoing	M	Mutual aid fire protection agreements are in place around Brown County. These agreements can change on occasion and it is imperative that changes to agreements are sent to BC EM and County Dispatchers. (Cost is low)
	Countywide					
10.4	Prevent or alleviate wildfires through property maintenance surrounding power lines and efficient response to fallen power lines.	PMG2 SMG7	WPS, ATC, Private Property Owners	Ongoing	M	WPS and ATC need to continually remind property owners of the importance of maintaining areas surrounding power lines. (Cost is moderate)
	Along utility lines					
10.5	Identify and map areas that are most susceptible to wildland fires	PMG2 PMG6 SMG2 SMG3	BC Planning	1-5 years	L	This may be possible if Brown County can coordinate with WDNR to determine what areas are most susceptible to fires. (Cost is moderate)
	Countywide					
10.6	Utilize zoning and subdivision ordinances to limit or restrict development on or in areas that are most susceptible to fires.	PMG2 PMG5 SMG1 SMG3 SMG4	Municipal zoning administrators, BC Planning	1-5 years	L	Each community will need to determine if this is a priority that necessitates changes to local municipal codes/ordinances. (Cost is moderate)
	Local Municipalities					

Fog						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
11.1	Encourage news media to broadcast emergency information concerning fog.	PMG1 PMG4 SMG7	BC EM, NWS, Local New Stations	As needed	H	Brown County EM should coordinate with the NWS and the local news stations to issue fog advisories as needed. (Cost is low)
	Countywide					
11.2	Install fog warning devices at intersections and on bridges most susceptible to fog occurrences.	PMG1 PMG2 PMG6 SMG1	BC DPW, Local DPW's	Ongoing	M	Bridges and low-lying areas are prone to fog. Installing warning devices in these locations is recommended. (Cost is low)
	Various location as determined by past fog events.					
11.3	Install and maintain pavement reflectors and reflective stripping along heavily traveled roads most susceptible to fog.	PMG1 PMG2 SMG1	WisDOT, BC DWP, Local DPWs	As needed	M	Striping and reflective materials should be kept to standards recommended by WisDOT. (Cost is low)
	Various location as determined appropriate.					

Storm: Hail						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
12.1	Continue distribution of hail insurance options such as the Federal Crop Insurance Corporations (FCIC) through the UW-Extension office.	PMG2 PMG4 SMG7	UW Extension	Ongoing	L	Hail storms in Brown County are rare and hail storms that do cause damage are very rare. However, when hail does pose a threat, NE WI business and residents are often unprepared and damage can be extensive. (Cost is low)
	Countywide					
12.2	Documentation of hail damage will be the responsibility of the Brown County Emergency Management Board, comprised of county and federal agricultural agency representatives.	PMG3 PMG6 SMG7	BC EM, BC Land and Water Conservation, Local municipalities	As needed	H	While hail events don't happen often, the damage they cause must be documented quickly and efficiently. Potential to use ArcGIS to collect damage information (Cost is moderate)
	Countywide					

Man Made Hazards

Utility Failure

#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
13.1	Provide information to residents on preparedness planning for utility failures on the county website, Facebook and Twitter		BC EM, Public Health	Ongoing	M	(Cost is low)
13.2	Identify which county owned facilities have back-up power systems and ensure they are working and tested regularly.		County and Local EM and Facilities	1-5 years	M	(Cost is low)

Hazardous Materials Incidents

#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
14.1	Update the LEPC off-site plans to ensure thoroughness and currency.		LEPC and BC and Local EM Departments	Ongoing	H	(Cost is low)
14.2	Maintain a strong LEPC committee with diverse representation.		LEPC and BC and Local EM Departments	Ongoing	H	(Cost is low)

Manure Spill Incidents

#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
15.1	Provide public information to livestock products regarding mitigation measures to protect against the hazards of a commercial manure spill.		BC Land and Water Conservation	Ongoing	M	(Cost is low)
15.2	Continue enforcement and update as necessary Chapter 26 (Animal Waste Management) of the Brown County Code of Ordinances.		BC Land and Water Conservation	Ongoing	M	(Cost is low)

Public Health Incidents

#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
16.1	Provide high-quality, coordinated public information in support of the PHEP Plan for periods of public health concerns.		BC Public Health, BC EM	Ongoing	M	Public health concern may include air quality alerts, communicable disease outbreaks and contaminated water supplies. Local public health will take the lead in informing, supervision, distribution of vaccines and all

						other related services (Cost varies depending on event)
16.2	Undertake training and document plans to provide mass medication distribution in response to public health threats.		BC and Local Public Health Depts.	Ongoing	M	Public health clinics to meet the needs of the population in adequate timeframes. (Cost is low)

Mass Casualty Incidents

#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
17.1	Continue exercise programs to ensure first response preparedness for mass casualty incidents.		Local Hospitals, Fire, Police, Other first responders	Ongoing	H	(Cost is low to moderate)
17.2	Mass fatality plan will be reviewed annually as part of Emergency Response Plan.		EM Departments, Public Health, Coroners	Ongoing / annual	M	(Cost is low)

Aircraft Incidents

#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
18.1	Support ongoing fire department and EMS training for aircraft incidents.		BC EM, Fire Departments, Austin Straubel International Airport	Ongoing	M	

Terrorism/Intentional Acts of Violence

#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
19.1	Provide Terrorism Liaison Officer training to appropriate individuals to create "eyes and ears" in the public so that they might report suspicious activities.		BC EM	Ongoing	L	Training is offered free and is provided by the state intelligence information center. (Cost is low)

Table 4.2: Local Jurisdiction Top Authorities, Policies, Programs and Resources

Municipality	Top Authorities	Staff Involved	Policies and Ordinances	Programs	Resources
C of De Pere	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	City Budget, BC EM
C of Green Bay	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	City Budget, BC EM
V of Allouez	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM
V of Ashwaubenon	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM
V of Bellevue	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM
V of Denmark	BC EM, Local Fire, Police, DPW, Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM
V of Hobart	BC EM, Local Fire, Police, DPW, Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM
V of Howard	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM
V of Pulaski	BC EM, Local Fire, Police, DPW, Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM

Table 4.2 continued

Municipality	Top Authorities	Staff Involved	Policies and Ordinances	Programs	Resources
V of Wrightstown	BC EM, Local Fire, Police, DPW, Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM
T of Eaton	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Glenmore	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Green Bay	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Holland	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Humboldt	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Lawrence	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Ledgeview	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM

Table 4.2 continued

Municipality	Top Authorities	Staff Involved	Policies and Ordinances	Programs	Resources
T of New Denmark	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Pittsfield	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Rockland	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Scott	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Wrightstown	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM

Table 4.3: Communities participating in the NFIP as of 7/30/2020		
Municipality	One Flood Protection Mitigation Action	Resources
Cities		
City of De Pere	Maintain protective measures such as sandbagging, protection of buildings and other structures, and emergency gas and electricity cutoff procedures. *	City Budget, BC EM
City of Green Bay	Utilize FEMA floodplain mapping with existing flood maps and data sources to better determine areas and facilities susceptible to recurring flooding. *	City Budget, BC EM
Villages		
Village of Allouez	Inventory and assess areas through both the rural and urban areas of Brown County that have repeated flash flooding problems and identify activities to remediate or rectify those locations. *	Village Budget, BC EM
Village of Ashwaubenon	Ensure the residents located within the flood zone have information on emergency procedures if the Ashwaubenon dam is compromised. *	Village Budget, BC EM
Village of Bellevue	Inventory and assess areas through both the rural and urban areas of Brown County that have repeated flash flooding problems and identify activities to remediate or rectify those locations. *	Village Budget, BC EM
Village of Hobart	Utilize FEMA floodplain mapping with existing flood maps and data sources to better determine areas and facilities susceptible to recurring flooding. *	Village Budget, BC EM
Village of Howard	Continue to monitor the National Weather Service flood forecasts. *	Village Budget, BC EM
Village of Pulaski	Implement a rural drainage program that would include ditch, bridge, and culvert maintenance and improvements. *	Village Budget, BC EM
Village of Suamico	Inventory and assess areas through both the rural and urban areas of Brown County that have repeated flash flooding problems and identify activities to remediate or rectify those locations. *	Village Budget, BC EM
Village of Wrightstown	Utilize FEMA floodplain mapping with existing flood maps and data sources to better determine areas and facilities susceptible to recurring flooding. *	Village Budget, BC EM

*NFIP Mitigation Measure

Table 4.4: Jurisdictions with Site Specific Mitigation Actions				
Municipality	Project Name	Project Location	Construction Type	Mitigation Benefits
City of Green Bay	Shipyards District to Seymour Park Green Infrastructure Corridor	City of Green Bay	Integrating Green infrastructure into redevelopment	Water quality and flood mitigation. This project is a high priority for the City and is planned to take place sometime in the next 1-9 years.
	Seymour Park Stormwater Management	City of Green Bay	Planning stages	Water quality and flood mitigation. This project is a high priority for the City and is planned to take place sometime in the next 1-5 years.
	Acquisition of hazard-properties along to East River and conversion to open space	City of Green Bay	Property acquisition	Elimination of repetitive loss properties. This project is a medium priority for the City and is planned to take place as funding is secured.
	Redesign and re-construction of 7 flood-prone areas of East River Recreational Trail to protect public trail from high water levels through green infrastructure and conventional storm water management	City of Green Bay	Design and reconstruction of public trail facilities utilizing Green Infrastructure and conventional storm water mgt approaches.	Protection of public property, water quality improvements, and flood mitigation. This project is a medium priority for the City and is planned to take place sometime in the next 1-5 years.
	Bay Beach wetland restoration, shoreline stabilization & storm water management to mitigate impact of high bay levels utilizing vegetative management, structural flood control and green infrastructure	City of Green Bay	Green Infrastructure, nature-based solutions, and conventional storm water management approaches.	Coastal flood mitigation, habitat restoration, and water quality improvements. This project is a high priority for the City and is planned to take place sometime in the next 1-5 years.
	South Bay Shore Dike Reinforcement	City of Green Bay	Continuation of project underway	Coastal flood mitigation, erosion prevention. This project is a high priority for the City and is planned to be completed in the next 1-5 years.
	Museum Way Storm Lift Station to reduce high water impacts to Antoinette area.	City of Green Bay	Construction a lift station.	Flood mitigation to low lying areas. This project is a high priority for the City. No timeline was provided
	Stormwater management and Green Infrastructure improvements to mitigate Ellis Creek high water impacts.	Ellis Creek: Main St. to Lime Kiln Rd.	Complete flood study, design and construct green infrastructure improvements.	Flood mitigation, water quality improvements. This project is a medium priority for the City. No timeline was provided
	Stormwater management solutions for the downtown area to address weather events along the Fox River (wind, seiche, rain).	Impact areas: E Mason to E Walnut, Fox River to Monroe Ave.	Identify stormwater management solution that may help alleviate flooding from seiche, wind, rain events	Flood mitigation, water quality improvements. This project is a medium priority for the City. No timeline was provided
	Mitigate Joliet Park parking lot flooding through shoreline stabilization and vegetative management on Bay of Green Bay.	Joliet Park	Shoreline stabilization and vegetative management	Flood mitigation and protecting public property. This project is a low priority for the City. No timeline was provided

Table 4.4: Continued				
Municipality	Project Name	Project Location	Construction Type	Mitigation Benefits
Village of Denmark	New/Expand Storm Warning Sirens	Village Hall	None. Includes standard AC siren with radio decoder, antenna and weatherproof cabinet. Siren is omni directional with 8hp continuous duty DC motors, siren heaters, batteries, dual pro chargers, battery blankets and magnetic starter in a NEMA 3R enclosure plus electrical service.	Existing and new developments in the village would be in range of the sirens. New sirens would meet FEMA recommended Alert Level for entire village.
	New/Expand Storm Warning Sirens	Corner of Wisconsin Ave and Grand Ave on east side of village	None. Includes standard AC siren with radio decoder, antenna and weatherproof cabinet. Siren is omni directional with 8hp continuous duty DC motors, siren heaters, batteries, dual pro chargers, battery blankets and magnetic starter in a NEMA 3R enclosure plus electrical service.	Existing and new developments in the village would be in range of the sirens. New sirens would meet FEMA recommended Alert Level for entire village.
Village of Pulaski	Ditch Cleaning: Middle Branch of Suamico River on North 4 th Avenue	North 4 th Avenue		
	Storm Sewer installation Fourth Avenue	4 th Avenue		
	Emergency power backup: Village Hall and Police Department	Village Hall		
	Emergency power backup Well #2	Well #2		
Village of Suamico	Improve Snow and Ice Control Measures	Village Wide	Adding an additional snowplow route in 2021 by delaying the sale of oldest snow plow.	Will reduce the amount of time necessary to clear roads during snow events.
	Flood Study	Shoreline Roads	Study to develop flood mitigation strategies along the Bay.	Reduce safety hazards for residents and emergency responders during sustained NE wind events.

Table 4.4: Continued				
Municipality	Project Name	Project Location	Construction Type	Mitigation Benefits
Village of Wrightstown	Emergency Response Plan	Village-Wide	None. Work in progress; requires participation by other entities such as local private and public schools.	Improvement in efforts to provide Public Safety aspects to residents and schools during possible incidents; hazardous spills, massive accidents, etc.
	Infrastructure replacement plan	Village Wide	None. Work in progress.	Create plan for sustainable infrastructure replacement avoid system failures
	Public Safety assessments	Village Wide	Assess growth and future Public Safety needs for the community	Define future growth needs and create plan to improve public safety resources
	Backup power for local EOC	Village Hall	Install natural gas generator and needed connections	Allow village hall to function through daily task and have sustainable EOC
Town of Ledgeview	Mystery Valley Flood Reduction	South of Dickinson & North of Oak Ridge	Dredging	Reduce Flooding and Increase water flow throughout Mystery Valley subdivision
	Dickinson Road Sewer Main	Dickinson Road: Monroe Road to East River Drive	Sewer improvements	Increase sewer capacity at Interceptor
	East River/Ledgeview Park Downed Tree Removal	East River: Ledgeview Road to Dickinson Road	Fallen Tree and Debris Removal	Remove Fallen Trees and Debris to increase flow and minimize flooding

Some communities did not provide community specific projects. Those communities include:

Town of Eaton,
Town of Glenmore
Town of Green Bay
Town of Holland
Town of Humboldt
Town of Lawrence

Town of Morrison
Town of New Denmark
Town of Pittsfield
Town of Rockland
Town of Scott
Town of Wrightstown

Village of Howard
Village of Hobart
Village of Bellevue
Village of Ashwaubenon
Village of Allouez
City of De Pere

Table 4.4: Continued				
Other Entity	Project Name	Project Location	Construction Type	Mitigation Benefits
Green Bay Metropolitan Sewerage District	Design and Install a permanent berm at the East River Lift Station.	Ledgeview (321 East River Drive)	Design and install a permanent berm at this location within the next 5 years	Will reduce the risk of damage and the frequent need to install temporary sand berms for flood protection.
The Nature Conservancy	Build flood storage on municipal riparian lands and floodplain areas of the East River	East River Watershed, floodplains and riparian zones	Identify opportunities for construction of flood water storage systems (e.g., wetlands, stormwater detention basins) on municipality owned lands within the East River floodplain	Minimize and mitigate flooding to areas within the East River watershed.
	Restore wetlands for flood protection	Countywide	Locate potentially restorable wetlands in Brown County that have high value for flood water storage; build partnerships and funding to restore the wetlands.	Minimize and mitigate flooding to areas around Brown County
	Rural road protection through culvert replacement program.	Countywide	Replace broken or undersized culverts to minimize road failure and overtopping.	Replacing broken or undersized culverts can help alleviate damage to infrastructure and minimize flooding issues adjacent to the culvert.
	Develop a floodplain and riparian lands protection program.	Countywide	Identify and preserve floodplains through acquisition and protection by the most appropriate municipality or partner organization.	Additional flood studies would be required to identify floodplain areas and codes/ordinances would need to be reviewed and amended to help preserve floodplains.
	Develop an East River Resiliency Collaborative	East River Watershed	Formalize a coalition of stakeholders from municipalities and other groups within the East River Watershed to collectively fund long-term, watershed-scale projects through multi-jurisdictional funding mechanisms	This creates a potential fundraising group that can help support other mitigation strategies focused on the East River Watershed.
	East River Community Resiliency Project	East River Watershed	Provide technical support and engage in planning efforts to develop flood mitigation strategies for the municipalities of the East River watershed	Project will be launching in 2021.
	East River Stormwater Infrastructure Improvements	East River Watershed	Stormwater system improvements (where feasible) to prioritize pre-treatment and retention using bioswales and phytoremediation	

Table 4.4: Continued				
Other Entity	Project Name	Project Location	Construction Type	Mitigation Benefits
The Nature Conservancy	Manure Management	Countywide	Provide support and outreach to Brown County farmers on using tools like NOAA's Runoff Risk Toolkit, to identify optimal times for manure application.	In progress. NOAA planned launch 2021. https://vlab.ncep.noaa.gov/web/noaa-runoff-risk/runoff-risk-background

CHAPTER 2 BROWN COUNTY PROFILE

INTRODUCTION

During the early stages of any planning project it is important to develop an understanding of the physical elements and social components of the planning area and how these elements could influence the contents and scope of the plan. This chapter of the Brown County All Hazards Mitigation Plan inventories and details the county's history, general physical composition, land cover and land use, demographics, development patterns, critical infrastructure, and emergency response resources.



The profile draws on data and information from the US Census Bureau; Wisconsin Department of Natural Resources; *Brown County Comprehensive Plan*; the *Brown County Farmland Preservation Plan*; watershed plans; FEMA regulations; infrastructure maps (sewer, water, etc.); and utility maps. Information used to prepare the maps in this chapter were drawn from the Brown County Land Information Office, Brown County Planning Commission, existing county plan documents, and the State of Wisconsin.

HISTORICAL AND CULTURAL SETTING

It is believed that human habitation of the area *that is currently known as* Brown County, may have existed near the Red Banks area along the east shore of the Bay of Green Bay as far back as 7000 B.C. Since then, many different Indian tribes have periodically inhabited the lands adjacent to the Bay of Green Bay and the Fox River. Prior to the 1600s, the Winnebago and Menomonee Indian tribes inhabited this area: however, by the mid-1600s, other tribes, such as the Ottawa, Huron, Fox, Sauk, Potawatomi, and Ojibwa, moved into the area as they were displaced from 297 acres of their ancestral lands further east. They in turn, displaced the Winnebago and Menomonee tribes. As a result of European settlers the Oneida tribe was relocated to the west side of Brown County from the State of New York.

Jean Nicolet has commonly been cited as being the first European to set foot in what would one day become the State of Wisconsin when he arrived at the Red Banks area in 1634. This event heralded a period of rapid change for the area adjacent to the bay and the Fox River as other French explorers and fur traders quickly followed Nicolet. By the mid-1600s, French missionaries also began to visit the area. These visits eventually became so numerous that in 1671 the first permanent European development, the St. Francis Xavier mission, was established along the Fox River near the De Pere rapids. In 1701, following this initial wave of French explorers, fur traders, and missionaries, the French government established a military stockade called Fort St. Francis in the area along the bay near the mouth of the Fox River where the Canadian National Railroad yards in the City of Green Bay are now located. By 1764, the first recorded settler, Augustin de Langlade, moved to this area and established a trading post.

Eventually, the French presence in this region gave way to British influences. In 1761, the French Fort St. Francis was rebuilt by the British and renamed Fort Edward Augustus. In 1763, France ceded the area to England. By the mid-1780s, the colony established by de

Langlade, which would eventually become part of the City of Green Bay, had reached a population of about 50 people.

In 1783, England ceded this region to the United States. However, it was not until after the War of 1812 that the British presence was erased when American pioneers from New England and New York outnumbered the original French-Canadian settlers. By 1812, the population of the settlement established by de Langlade had increased to about 250 people. In 1816, Fort Edward Augustus was once again rebuilt and renamed Fort Howard. At that point in time, the Fort Howard area was the second largest settlement in Wisconsin. By 1824, the settlement originally founded by de Langlade had reached a population of about 500 people with an additional 600 troops stationed at Fort Howard. In 1824, Brown County's first county courthouse was founded. In 1854, Green Bay incorporated as a city. Large-scale immigration into this area began by the late 1840s, so that by 1860 about 11,800 people inhabited the area identified today as Brown County.

Brown County was created in 1818 as part of the Michigan Territory, and at that time, it included much of Upper Michigan and all of Wisconsin from Lake Michigan to the Wisconsin River and south to Illinois. By the time the Wisconsin Territory was established in 1836, the southern one-third of Brown County had been removed to form new counties in the rapidly growing southeastern portion of the territory. When Wisconsin became a state in 1848, the counties of Door, Oconto, Outagamie, and Waupaca were created from Brown County. The following year, Kewaunee County was created. By 1853, Brown County had been reduced to 534 square miles when Shawano County was created. Brown County was formally established by congress in 1861.

Brown County's first communities, Navarino (which later became part of the City of Green Bay) and De Pere, were founded in 1829 along the shores of the Fox River near the Bay of Green Bay. Other early Brown County communities, Astor (which later became part of the City of Green Bay) and Wright (which later became the Village of Wrightstown), were also located along the Fox River. Jurisdictional changes continued with incorporation of the Town of Allouez as a village in 1986, the Towns of Bellevue and Hobart as villages in 2002, and the Town of Suamico as a village in 2003. The 24 municipalities of present-day Brown County include 2 cities, 9 villages, and 13 towns. Since its inception, the City of Green Bay has always been and continues to be Brown County's largest community.

PHYSICAL CHARACTERISTICS

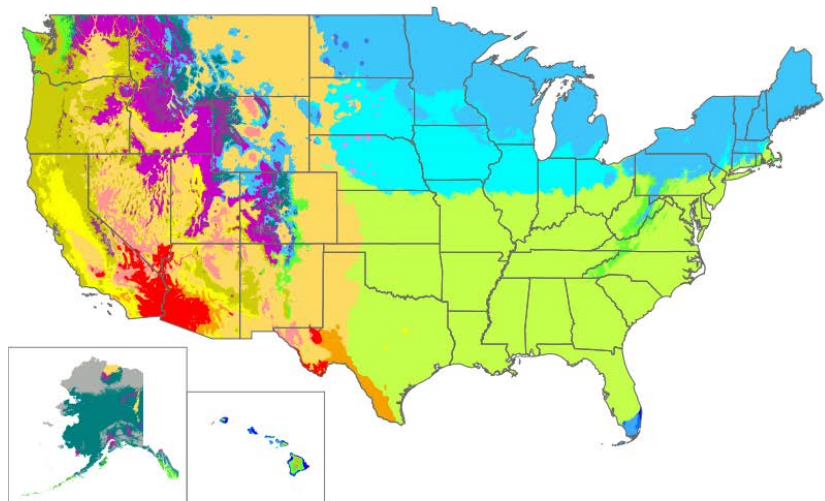
Climate

Using the widely accepted Koppen climate classifications, Brown County's climate is classified as "humid continental". This climate is a sub type of the more generalized Continental climate classification and is characterized by an extreme disparity between summer and winter temperatures that range from cold, snowy winters and warm summers

with periods of hot, humid conditions¹. According to the Midwestern Regional Climate Center, the average annual temperature for NE Wisconsin is 43.73 degrees (2017). The average annual temperature has been trending higher since records were kept in 1895. The increase in temperature over approximately 125 years was slightly more than two degrees. The Increase in both regional and global average temperature has been linked to many other climatological changes including the frequency and intensity of extreme weather events².

Precipitation is also an important element of the climate that can present important trends over time. Green Bay averages 29.53 inches of precipitation (rainfall) annually with an additional average of 51 inches of snowfall. The average annual precipitation has increased nearly 2.5 inches since 1895. The amount of precipitation generally increases during the spring and peaks in the summer months before falling though the fall and into the beginning of winter as depicted by the graph to the right³. Overall, the varied climate is favorable for many agricultural purposes however: more extreme weather events will pose issues for farmers as well as in more suburban and urban areas alike.

Köppen climate types of the United States



Köppen climate type

EF (Ice-cap)	Dsb (Warm-summer mediterranean continental)	Csa (Hot-summer mediterranean)
ET (Tundra)	Dsa (Hot-summer mediterranean continental)	BSk (Cold semi-arid)
Dfc (Subarctic)	Cfc (Subpolar oceanic)	BSh (Hot semi-arid)
Dfb (Warm-summer humid continental)	Cfb (Oceanic)	BWk (Cold desert)
Dfa (Hot-summer humid continental)	Cfa (Humid subtropical)	BWh (Hot desert)
Dwc (Subarctic)	Cwb (Subtropical highland)	Aw (Savanna)
Dwb (Warm-summer humid continental)	Cwa (Humid subtropical)	Am (Monsoon)
Dwa (Hot-summer humid continental)	Csc (Cold-summer mediterranean)	Af (Rainforest)
Dsc (Dry-summer subarctic)	Csb (Warm-summer mediterranean)	

*Isotherm used to distinguish temperate (C) and continental (D) climates is -3°C

Data sources: Köppen types calculated from data from PRISM Climate Group, Oregon State University, <http://prism.oregonstate.edu>; Outline map from US Census Bureau

Figure 1: Köppen Climate Types of the United States

Green Bay Climate Graph - Wisconsin Climate Chart

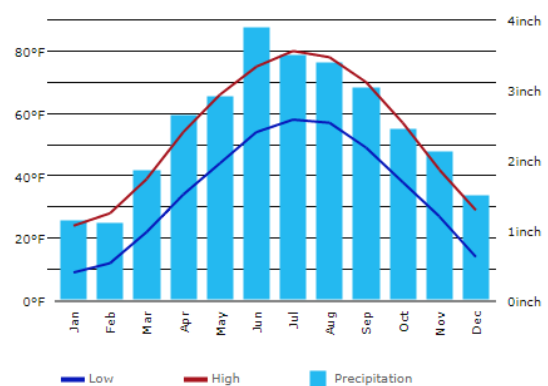


Table 1: Green Bay Climate Graph

¹ Encyclopedia Britannica: <https://www.britannica.com/science/humid-continental-climate>

² National Climate Assessment, GlobalChange.gov: <https://nca2014.globalchange.gov/highlights/report-findings/extreme-weather>

³ US Climate Data: <https://www.usclimatedata.com/climate/green-bay/wisconsin/united-states/uswi0288>

Geology

Brown County has three types of bedrock. The two more common types, as shown in the image to the right, are the Sinnipee Group (Green) and Dolomite (Tan). The third type of bedrock shown as the pink strip through the middle of Brown County is the Maquoketa Formation⁴. The local bedrock is at the heart of the most prominent landscape feature in the county. The Niagara Escarpment, is a prominent rock ridge that stretches nearly 1,000 miles in an arc across the Great Lakes region. This type of rock feature is associated with karst features consisting of cracked and fractured bedrock, such as limestone located close to the earth's surface. This bedrock is easily dissolved by water, and its cracks and layers allow water and pollutants to easily reach the groundwater. Sinkholes, shallow soils, sinking streams, and springs are commonly found in such areas. These features are located adjacent to the escarpment and more extensively in the Town of Green Bay, Town of Scott, Town of Ledgewood, and Town of Morrison.

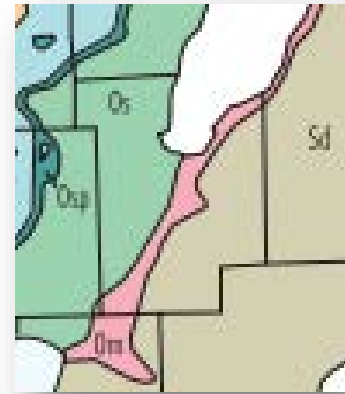


Figure 2: Brown County Bedrock

Soils

Soil properties are used to define/identify problems facing agriculture and land development. Of these, texture and composition are usually the most meaningful. Some information that can be gathered from the soil properties include fertility, bearing capacity, internal drainage, erodibility, slope stability, etc. can be made.

As stated in the 1974 Soil Survey of Brown County, most of the soils in Brown County formed in glacial till and lake sediment that were high in clay. These soils are generally rich, heavy soils common to gently rolling topography and are well suited to farming. In the northwestern part of Brown County, the soils are slightly lighter (containing higher sand content) but remain acceptable for farming. On the south and west sides of the Bay of Green Bay and scattered throughout the rest of the County, the soils are organic peat and are poorly suited for farming. The 1974 Soil Survey of Brown County also states that ten soil associations are located within Brown County. A soil association is a landscape that has a distinctive proportional pattern of soils. Soil associations are useful in that they provide a general idea of the soils in a county, facilitate simple comparisons, and provide a general indication of the suitability of large areas for various land uses.

Topography

The topography of much of Wisconsin was formed by glacial action. The topography that is familiar to us today is generally characterized by gently rolling moraines. The western two-thirds of Brown County include the roughly four-mile-wide Fox River Valley, a continuation of the same depression forming the Bay of Green Bay. This area slopes gently northeastward from Lake Winnebago in east central Wisconsin, drains to the bay, and is generally level to gently rolling. This lowland area contains many glacial landforms, including eskers, moraines, and remnants of extinct glacial lakes. During glacial times, the flat marshy land west and south of the bay had been covered by the bay. Most streams

⁴ Wisconsin Geological & Natural History Survey: <https://wgnhs.uwex.edu/>

in the area flow northeastward and parallel the escarpment to the bay. Most streams also possess shallow channels, except in a few instances where the streams have cut through softer underlying glacial landforms, such as the Fox River in Wrightstown.

Forming the eastern boundary of the Fox River Valley is the aforementioned Niagara Escarpment, which rises relatively abruptly as high as 300 feet above the valley floor. On top of the Niagara Escarpment is a narrow strip of level land. East of that is generally a slightly rolling plain that drains east and southeast toward Lake Michigan. The headwaters of a number of streams that drain to Lake Michigan are located within this area. However, gaps in the Niagara Escarpment allow two streams—Baird Creek and Bower Creek—to flow westward to the Bay of Green Bay. The area is generally well drained but has many small wet depressions in places. Due to its location between two lobes of the last glacier to advance through Wisconsin, the southeastern portion of the County is hilly and has many poorly drained depressions. This area, which extends into southeastern Wisconsin, is called the Kettle Moraine area of the state. Land relief within the County ranges from approximately 600 feet above sea level to approximately 1,000 feet above sea level. The low point in the County (580 feet) is located in the City of Green Bay where the Fox River enters the bay. The highest point in the County is located in the Town of Holland, southeast of the unincorporated community of Greenleaf, at an elevation of about 1,020 feet.

Hydrology

Groundwater

Brown County residents and businesses obtain freshwater from two main sources, groundwater aquifers and Lake Michigan. The City of De Pere, City of Green Bay, Village of Allouez, Village of Ashwaubenon, Village of Bellevue, Village of Howard, Village of Hobart, Village of Wrightstown, Town of Ledgeview, and Town of Scott obtain fresh water via pipeline from Lake Michigan. For all other communities within Brown County, groundwater wells tap into the underground aquifers.

Groundwater is harvested from four aquifers that vary in depth. Most private wells in Brown County utilize two shallower aquifers, while most public wells obtain water from the deeper St. Peter Sandstone aquifer. Brown County does have a few areas that are highly susceptible to groundwater contamination. This was evident in a large scale well contamination case in 2006 in the Town of Morrison where more than 34 percent of wells tested

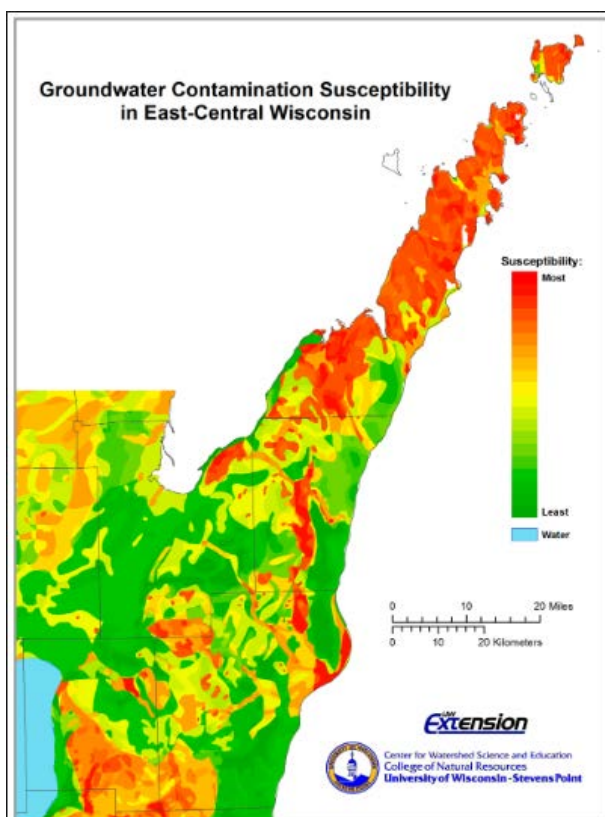


Figure 3: Groundwater Contamination Susceptibility

exceeded state drinking water standards⁵ for a hazardous substance. In addition to the Town of Morrison, the northern end of the Town of Green Bay also an area that is highly susceptible to groundwater contamination.

Based upon data obtained from the Wisconsin Department of Natural Resources' drinking water website, there are 144 (2019) "active" separate public water supply systems (systems which can be used by the general public and which are regulated by the DNR) within Brown County. Of the 144 active systems, 19 (2019) are municipal community systems while the remainder are primarily associated with parks, eating and drinking establishments, or food processing plants. There are approximately 7,515 (2012) documented, private potable wells used for human consumption, sanitary use, or for the preparation of food in Brown County. It is likely that additional undocumented wells (old, inactive, or otherwise unrecorded with the DNR) are located throughout Brown County.

Surface Waters

Brown County contains numerous significant surface water resources. The largest and most important are the Bay of Green Bay and the Fox River. Both of these water features have played an important role in the evolution of Brown County and the surrounding areas.



Figure 4: Bay of Green Bay

From an ecological perspective, the Bay of Green Bay is home to a variety of unique ecosystems which different wildlife including a unique feature called emergent wetlands. These wetlands are found along the west shore of the bay and are extremely important to local fisheries, waterfowl, and other native and migratory species.

Based upon a 2010 land use inventory undertaken by the Brown County Planning Commission, surface water features (including the Bay of Green Bay) encompassed approximately 55,552 acres or 14.1 percent of Brown County. The Fox River is the largest and most important river in northeastern Wisconsin. It is a navigable river that flows northward 155 miles from its headwaters in southern Green Lake County in east-central Wisconsin to the Bay of Green Bay. Its basin drains over 2,700 square miles of east-central and northeastern Wisconsin. In Brown County, it extends 19 miles from the Village of Wrightstown to its downstream end at Green Bay of Lake Michigan and drains about 311 square miles, or almost half of Brown County.

Other significant surface water resources in Brown County include its three named lakes: the small Lily, Middle, and Third Lakes located adjacent to one another in the eastern portion of the County, comprising approximately 50 acres. Also included are the numerous smaller rivers and streams, the biggest of which include Duck Creek, the East River, and the Suamico River.

⁵ Brown County Land and Water Conservation Department: <http://tinyurl.com/yy4b647x>

Floodplains

Floodplains are important areas that store floodwaters, reduce flood peaks and velocities, and reduce sedimentation. They also provide wildlife habitat and serve to filter out pollution from water. Like surface waters, the importance of floodplains is also recognized and is regulated by federal, state, and local governments. The State of Wisconsin mandates floodplain zoning for all communities under Wisconsin Administrative Code NR 116. These minimum standards must be implemented in order to meet eligibility requirements for federal flood insurance programs. As required by NR 116, Brown County has adopted and enforces Chapter 23 of the Brown County Code.

The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps (FIRM) for many of the larger rivers and streams, such as the East and Fox Rivers. The FIRM is a tool used by FEMA to identify Special Flood Hazard Areas (SFHA). Floodplains are a type of SFHA and are most commonly described as the area affected by the one percent chance flood event (100-year flood).⁶ The Brown County Planning Commission and many local communities often require flood studies and the mapping of floodplains prior to development adjacent to rivers and streams. The FEMA maps currently in effect, were approved as part of the official Brown County Floodplain Zoning map in 2009.

Wetlands

Wetlands are defined as “areas where water is at or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which have soils indicative of wet conditions.”⁷ Wetlands are a significant natural resource that serves several important functions including but not limited to: enhancing water quality by absorbing excess nutrients into the roots, stems, and leaves of its plants, and slowing the flow of water to let suspended pollutants settle out. Wetlands also help regulate storm water runoff, which minimizes floods and periods of low flow. Today many wetlands have been destroyed or degraded through development, farming, and grazing. The result of these activities can be seen along the southern and eastern shores of the Bay of Green Bay where significant reductions in wetlands has occurred. However, the wetlands along the west shore of the bay, while adversely impacted by adjacent development and past farming practices, still remain the largest wetlands complex within Brown County. Other relatively large areas of wetlands are located in the southeastern portion of the Town of Holland and the northern portion of the Towns of Scott and Green Bay.

The Wisconsin DNR Wetlands Inventory maps for Brown County identify wetlands throughout the entire County, which are primarily along its lakes, rivers, and streams. According to the Wisconsin Department of Natural Resources inventory, about 38,142 acres of Brown County, or just under 10 percent, was comprised of wetlands in 2020.

Watersheds

A watershed is a geographical area that is characterized by higher areas that form ridges that channel water to a lower area called a basin. Brown County is located within the Great Lakes-St. Lawrence drainage basin. Approximately one-fourth of the County is

⁶ FEMA Flood Zones: <https://www.fema.gov/flood-zones>

⁷ WDNR Wetland Mapping: <https://dnr.wi.gov/topic/wetlands/inventory.html>

drained by streams tributary to Lake Michigan, and the remainder of the area is drained by streams tributary to the Bay of Green Bay and through the bay to Lake Michigan. Portions of four river basins and ten watersheds are located within Brown County.

1. The East River Watershed encompasses about 203 square miles, or about 38 percent of the County. Major streams within this area include the East and Fox Rivers and Baird and Bower Creeks.
2. The Apple and Ashwaubenon Creeks Watershed encompass about 47 square miles, or about 9 percent of the County. Major streams within this area include Apple, Ashwaubenon, and Dutchman Creeks.
3. The Plum Creek Watershed encompasses about 13 square miles, or about 2 percent of the County. Major streams within this area include Plum Creek.
4. The Duck Creek Watershed encompasses about 48 square miles, or about 9 percent of the County. Major streams within this area include Duck and Trout Creeks.
5. The West Twin River Watershed encompasses about 75 square miles, or about 14 percent of the County. Major streams within this area include the Devils and Neshota Rivers, and King and Twin Hill Creeks.
6. The Kewaunee River Watershed encompasses about 27 square miles, or about 5 percent of the planning area. Major streams within this area include School Creek.
7. The Red River and Sturgeon Bay Watershed encompasses about 13 square miles, or about 2 percent of the planning area. Major streams within this area include Gilson Creek.
8. The Branch River Watershed encompasses about 40 square miles, or about 7 percent of the County. Major streams within this area include the Branch River.
9. The Lower Manitowoc River Watershed encompasses about 2 square miles, or about 1 percent of the County. Major streams within this area include Mud Creek.

DEMOGRAPHICS

In order to plan for any natural hazards that may occur within Brown County, it is important to gain an understanding of the population and housing characteristics for each community within the county. The population estimates provided by the Wisconsin Department of Administration (WDOA) and U.S. Bureau of the Census provide a clearer picture of where the largest population increases are expected to occur within the planning area. The increase in population will drive the need for new homes (single and multi-family) and the services associated with the new residents. The following sections summarize basic population and housing data for the 24 municipalities within the Brown County planning area.

Population

Table 2.1 indicates Brown County gained 21,349 new residents, an 8.6 percent increase from year 2000 to 2010. Since 2010 the WDOA estimates that the county gained approximately 12,655 people between 2010 and the most recent WDOA population estimate in 2018. Map Figure 2-2 highlights the population change by community from 2010 to 2018. WDOA is further projecting that Brown County will add an additional 41,730 residents from 2020 to 2040, which represents a 15.39 percent increase during this 20-year time period.

Brown County's largest community, the City of Green Bay, is estimated to experience an increase in population of 5,450 residents over the same 20 year period, which equates to 5.04 percent. The county's only other city, De Pere, is estimated to experience an increase in population of 5,020 residents over the same 20 year period, which equates to 19.12 percent. The county's villages that are anticipated to grow at the highest rate include Hobart at 45.37 percent, Lawrence at 45.35 percent and Ledgeview at 45.29 percent. In total, the incorporated communities will add 41,730 new residents by 2040 or 15.39 percent of the overall county increase in residents. Some of these figures may change due to annexations of surrounding fast growing towns.

The 13 towns are projected to add 20,000 new residents by 2040. This is 7.38 percent of the county's overall anticipated increase in residents.

Table 2.1: Population Comparison by Municipality, 2000-2030, Brown County, Wisconsin									
	Census	Census		WDOA Projections				Number Change	Percent Change
Municipality	2000	2010		2025	2030	2035	2040	2025-2040	2025-2040
Cities									
De Pere	20,559	23,800		27,950	29,550	30,700	31,280	3,330	11.91%
Green Bay	102,767	104,057		111,200	113,850	114,700	113,500	2,300	2.07%
Villages									
Allouez	15,443	13,975		14,150	14,200	14,030	13,600	- 550	-3.89%
Ashwaubenon	17,634	16,963		17,630	17,870	17,810	17,440	- 190	-1.08%
Bellevue	11,828	14,570		17,840	19,140	20,150	20,780	2,940	16.48%
Denmark	1,958	2,123		2,385	2,490	2,550	2,565	180	7.55%
Hobart*	5,090	6,182		9,705	10,810	11,750	12,480	2,775	28.59%
Howard	13,546	17,399		23,820	26,110	28,000	29,370	5,550	23.30%
Pulaski	3,013	3,321		4,010	4,210	4,335	4,385	375	9.35%
Suamico	8,686	11,346		14,430	15,650	16,620	17,290	2,860	19.82%
Wrightstown	1,934	2,676		3,540	3,830	4,055	4,210	670	18.93%

Table continued on next page

Towns									
Eaton	1,414	1,508		1,730	1,815	1,870	1,895	165	9.54%
Glenmore	1,187	1,135		1,175	1,190	1,185	1,160	- 15	-1.28%
Green Bay	1,772	2,035		2,385	2,530	2,625	2,675	290	12.16%
Holland	1,339	1,519		1,715	1,790	1,840	1,855	140	8.16%
Humboldt	1,338	1,311		1,375	1,395	1,390	1,365	- 10	-0.73%
Lawrence	1,548	4,284		6,195	6,900	7,505	7,965	1,770	28.57%
Ledgeview	3,363	6,555		9,710	10,810	11,760	12,480	2,770	28.53%
Morrison	1,651	1,599		1,670	1,695	1,695	1,665	- 5	-0.30%
New Denmark	1,482	1,541		1,715	1,780	1,820	1,825	110	6.41%
Pittsfield	2,433	2,608		2,960	3,090	3,165	3,190	230	7.77%
Rockland	1,522	1,734		2,075	2,210	2,310	2,370	295	14.22%
Scott	3,138	3,545		4,210	4,470	4,665	4,770	560	13.30%
Wrightstown	2,013	2,221		2,535	2,655	2,725	2,755	220	8.68%
Total	226,658	248,007		286,110	300,040	309,255	312,870	26,760	9.35%

*Includes Oneida Nation

Source: U.S. Bureau of the Census 2000 and 2010; WDOA Demographic Services Center 2019

Households

A household includes all the persons who occupy a housing unit as their usual place of residence.⁸ The number of households in Brown County has increased by 6,330 from 2010 to 2017 (Table 2.2). Map Figure 2-3 reflects the additional number of households from 2010 to 2017. In 2017, there were approximately 103,267 households in Brown County, up from 96,937 in 2010. From 2010 to 2017, both the City of Green Bay and the City of De Pere experienced a net loss in households, -350 and -26 respectively.

The 11 incorporated communities accounted for roughly 87 percent of the households in Brown County while the 13 Towns account for the remaining 13 percent in 2017. Of the 6,330 households that were added between 2010 and 2017, 4,688 (74 percent) were added within the cities and villages. This suggests that while the Cities and Villages contain the majority of the households in Brown County, the development of new households in the towns is slightly disproportionate as compared to the overall percentage of households.

Brown County has been following the national and state trend of fewer persons per household. In 1990, there were 2.69 persons per household. In 2000, that number had dropped to 2.60 persons per household. And in 2010, that number dropped again to 2.48 persons per household⁹. It is expected that the census conducted in 2020 will reveal that the trend is either staying close to 2.48 persons per household or further declining.

Housing Units

A *housing unit* is a house, an apartment, a mobile home or trailer, a group of rooms, or a single room occupied as a separate living quarters, or if vacant, intended for occupancy as separate living quarters. Separate living quarters are those in which the occupants live separately from any other individuals in the building and which have direct access from outside the building or through a common hall. For vacant units, the criteria of

⁸ US Census Bureau, Households and Persons Per Household:
<https://www.census.gov/quickfacts/fact/note/US/HSD410217>

⁹ US Census

separateness and direct access are applied to the intended occupants whenever possible.

Table 2.2 provides a housing unit comparison between 2010 and 2017 for Brown County and each of its 24 municipalities. Map Figure 2-4 provides a comparison by community for their respective housing unit changes for 2010 and 2017. In 2010, there were 103,238 housing units in Brown County. By 2017, that number increased to 108,200 which represents approximately 4.8 percent increase. Of the total number of housing units in 2017, 87.6 percent were located in one of the 11 incorporated communities. The villages of Hobart (1,105), Howard (1,081), and the Town of Ledgeview (628), lead the way in new housing units from 2010 to 2017. The towns took nearly 34 percent of the new housing units in Brown County during this same time period.

- When comparing Brown County's housing vacancy rates for 2000 and 2010, the vacancy rate increased from 3.2 percent to 4.3 percent.

Table 2.2: Population and Housing Comparison, 2000-2017, Brown County, Wisconsin									
	Persons			Households			Housing Units		
Municipality	2010	2017	Change	2010	2017	Change	2010	2017	Change
<u>Cities</u>									
De Pere	23,800	24,695	3.76%	857	833	-2.88%	8,831	9,869	10.52%
Green Bay	104,057	104,796	0.71%	42,909	42,559	-0.82%	46,693	45,038	-3.67%
<u>Villages</u>									
Allouez	13,975	13,898	-0.55%	5,322	5,366	0.82%	5,597	5,623	0.46%
Ashwaubenon	16,963	17,141	1.05%	7,365	7,608	3.19%	7,655	7,942	3.61%
Bellevue	14,570	15,373	5.51%	5,755	6,508	11.57%	6,187	6,712	7.82%
Denmark	2,123	2,066	-2.68%	8,425	9,475	11.08%	890	915	2.73%
Hobart*	6,182	8,178	32.29%	2,206	3,308	33.31%	2,349	3,454	31.99%
Howard	17,399	19,121	9.90%	6,561	7,670	14.46%	6,784	7,865	13.74%
Pulaski	3,321	3,335	0.42%	1,325	1,370	3.28%	1,392	1,510	7.81%
Suamico	11,346	12,222	7.72%	4,047	4,619	12.38%	4,170	4,735	11.93%
Wrightstown	2,676	3,138	17.26%	757	901	15.98%	994	1,162	14.46%
Table Continued on Next Page									

Towns									
Eaton	1,508	1,553	2.98%	538	580	7.24%	564	621	9.18%
Glenmore	1,135	1,148	1.15%	419	398	-5.28%	430	410	-4.88%
Green Bay	2,035	2,049	0.69%	745	851	12.46%	830	931	10.85%
Holland	1,519	1,417	-6.71%	534	514	-3.89%	534	523	-2.10%
Humboldt	1,311	1,346	2.67%	546	505	-8.12%	564	515	-9.51%
Lawrence	4,284	4,900	14.38%	1,441	1,787	19.36%	1,441	1,871	22.98%
Ledgeview	6,555	7,614	16.16%	2,313	2,851	18.87%	2,364	2,992	20.99%
Morrison	1,599	1,633	2.13%	571	607	5.93%	603	643	6.22%
New Denmark	1,541	1,538	-0.19%	581	575	-1.04%	601	604	0.50%
Pittsfield	2,608	2,722	4.37%	942	1,051	10.37%	1,024	1,092	6.23%
Rockland	1,734	1,904	9.80%	580	644	9.94%	612	660	7.27%
Scott	3,545	3,688	4.03%	1,258	1,533	17.94%	1,353	1,608	15.86%
Wrightstown	2,221	2,529	13.87%	940	1,154	18.54%	776	905	14.25%
Total	248,007	258,004	4.03%	96,937	103,267	6.53%	103,238	108,200	4.81%

*Includes Oneida Nation

Source: U.S. Bureau of the Census 2010; American Community Survey 2017.

Employment

As shown on Table 2.3 (next page), Brown County added 8,240 workers since 2010. The number and type of employment opportunities grew slightly as well. Brown County continues to enjoy a very diverse economy. In 2010, county's labor force was led by the Educational Services, Health Care, and Social Assistance sector with 20.64 percent of the work force. The manufacturing sector has historically been a strong sector and accounted for 17.85 percent of the labor force in 2010 while retail trade was the third largest sector with 16.6 percent. Ten years later, in 2020, the Educational Services, Health Care, and Social Assistance sector increased to a 20.90 percent share of the total workforce while Manufacturing and Retail Trade also saw growth as a percentage of the total workforce.

Table 2.3: Employment by Category, 2010 and 2017, Brown County, Wisconsin								
Employment category	Number Employed in 2010		Percentage Employed in 2010		Est. Number Employed in 2017		Est. Percentage Employed in 2017	Percent Change 2010-2017
Agriculture, Forestry, Fishing, Hunting, Mining		1,904		1.51%		2,347	1.75%	23.27%
Construction		6,233		4.96%		7,516	5.61%	20.58%
Manufacturing		22,456		17.85%		25,183	18.79%	12.14%
Wholesale Trade		4,420		3.51%		4,051	3.02%	-8.35%
Retail Trade		14,506		11.53%		15,582	11.63%	7.42%
Transportation & Warehousing, Utilities		8,776		6.98%		8,101	6.04%	-7.69%
Information		2,125		1.69%		1,807	1.35%	-14.96%
Finance, Insurance, real estate		9,806		7.80%		9,785	7.30%	-0.21%
Professional Services, Management, Administrative, Waste Management Services		8,628		6.86%		10,501	7.84%	21.71%
Educational Services, Health Care, and Social Assistance		25,965		20.64%		28,006	20.90%	7.86%
Arts, Entertainment, Recreation, Accommodation & Food Services		11,815		9.39%		12,400	9.25%	4.95%
Other		5,477		4.35%		4,865	3.63%	-11.17%
Public Administration		3,664		2.91%		3,871	2.89%	5.65%
Total		125,775		100%		134,015	100%	

Source: U.S. Census Bureau, American Community Survey

GEOGRAPHY

Community Size

Table 2.4 lists each Brown County municipality size in square miles. Brown County encompasses 616 square miles. Brown County communities account for approximately 534 of the 616 square miles which leaves approximately 82 square miles that comprise water features, Renard Isle, Little Tail Point, and Long Tail Point. Incorporated communities account for a little over 186 square miles or 30.25 percent of the total county.

Table 2.4: Municipality Size in Square Miles	
Municipality	Total Planning Area (Square Miles)
Cities	
De Pere	12.77
Green Bay	46.12
Villages	
Allouez	5.21
Ashwaubenon	12.86
Bellevue	14.38
Denmark	1.97
Hobart*	33.12
Howard	18.44
Pulaski	2.30
Suamico	35.75
Wrightstown	3.45
Towns	
Eaton	24.34
Glenmore	32.85
Green Bay	22.11
Holland	35.99
Humboldt	24.03
Lawrence	15.93
Ledgeview	17.22
Morrison	36.44
New Denmark	34.37
Pittsfield	32.03
Rockland	21.76
Scott	18.24
Wrightstown	32.95
Total	534.65

*Includes Oneida Nation

Source: U.S. Census Bureau, Brown County Planning Commission.

Land Use

Brown County encompasses approximately 342,546 acres. Of this, approximately 98,025 acres or 28.6 percent of the land mass of the county is developed. Approximately 250,944 acres or 73.2 percent of the land in the county is undeveloped. These undeveloped lands consist largely of agricultural lands, pastures, woodlands, and other natural features. A detailed inventory of land uses was completed in 2019 by Brown County Planning Commission staff. The land use information was then compiled into generalized land use categories and presented in Map Figure 2-5.



Residential Land

Residential land accounts for 47,706 acres, or 13.92 percent of the total area of Brown County. The majority of this land is single family residential. Other residential land uses in Brown County included two family residential, multi-family residential, group quarters, and mobile homes. Vacant residential land is also counted in this category.

Table 2.5: Brown County 2019 Land Use Inventory

Land Use	Acres	% of Total
Residential	47,706	13.92%
Commercial	4,964	1.44%
Industrial	6,873	2.0%
Transportation	26,905	7.9%
Communication/Utilities	1,576	0.46%
Institutional/Governmental	3,575	1.0%
Outdoor Recreation	11,129	3.2%
Agricultural	165,869	48.4%
Natural Areas	73,945	21.6%
Total	342,546	100.00%

Commercial Land

Although commercial land is scattered throughout the county, significant areas of commercial development can be seen along the Interstate 43 and 41, and State Highway 172; within the central business districts in cities and some villages; and lining commercial strip development along certain urban corridors such as East and West Mason Street. Total commercial land comprises of 4,964 acres, or 1.4 percent of Brown County.

Industrial Land

Industrial land covers 6,873 acres or 2 percent of Brown County. Although the majority of the industrial land is dedicated to manufacturing, significant proportions of the industrial land is dedicated to warehousing and storage. Traditionally, industrial lands are generally situated along rail corridors and along rivers. Within the past two decades, industrial parks have emerged around Brown County's cities and villages.

Transportation Land

The 26,905 acres or 7.9 percent of Brown County transportation land encompasses all modes of transportation. This includes roads, rail, air, marine, and non-motorized modes of moving people, goods, and services. It is the second largest category for developed land. Streets and roads constitute the majority of this land use, but off-street parking and rail and air related uses are also significant transportation land uses.

Communications and Utilities Land

Over 1,576 acres or 0.46 percent of land in Brown County is for communications and utilities uses. Some of the more significant communications/utilities related land uses (in terms of land mass occupied) in Brown County include landfills, recycling plants and other non-landfill disposal facilities, sewage treatment plants, electric power plants and substations, and water utility facilities. Other key uses which fall under this category include natural gas terminals, local telephone services, radio stations and towers.

Governmental and Institutional Land

Governmental and institutional land uses include public and private facilities for education, health or assembly, for cemeteries and related facilities, and for all government facilities used for administration or safety, except public utilities and areas of outdoor recreation. This category accounts for 3,575 acres or 1.0 percent of land within Brown County. Examples of institutional or governmental facilities in Brown County include city,

village and town halls; post offices; hospitals and clinics; municipal garages; fire stations; law enforcement facilities including prisons and jails, educational facilities, churches and cemeteries.

Park and Recreational Land

Park and recreational land uses include outdoor sports and general recreation, camping and picnicking facilities, nature exhibits, areas designated for the preservation of historic or cultural resources. Park and recreational land accounts for 11,129 acres or 3.2 percent of the land within Brown County and comprises the third largest developed land category in the county.

Agricultural Land

Agricultural land uses include farm buildings and accessories (barns, silos and sheds used for agricultural purposes), as well as lands devoted to animal husbandry and fish hatcheries/aquaculture. This category accounts for 169,869 acres or 48.4 percent of the land in Brown County.

Natural Features

Natural features include all other natural areas and environmentally sensitive areas not included in the above referenced undeveloped areas. This category accounts for 73,945 acres or 21.6 percent of the total land area in Brown County.

General Development Trends

The following development trends have been observed in Brown County. It is expected that these trends will influence the county's future growth and its preservation of natural and agricultural resources. All local municipalities in the county will need to address them within their planning processes. These basic development trends include:

- Current areas of higher density development will likely remain or increase in density while new areas outside established neighborhoods will develop at lower densities.
- Brown County can expect an increase in the number of dwelling units over the next several years.
- Brown County's natural features will continue to be impacted due to current and future development pressures throughout the county, increasing the potential for negative impacts.
- Commercial and industrial land uses will continue to be a prominent feature along main transportation corridors including Interstates 41 and 43, U.S. Highways 41 and 141, State Highways 32, 57, 54, 29, and 172.
- Brown County will experience an increased demand for services as the population's median age continues to increase.

CRITICAL COMMUNITY INFRASTRUCTURE (“CRITICAL FACILITIES”)

Critical facilities in the 2012 International Building Code (IBC) (Section 1604, General Design Requirements, Table 1604.5) and American Society of Engineers (ASCE) 7-10 (Section 1.2, Definitions and Notations, Table 1.5-1) are classified as Risk Category IV facilities. Risk Categories in building codes are assigned to reflect current understanding of the risk to human life, health, and welfare associated with damage or failure of a facility by nature of its occupancy or use. Risk Category IV, the highest risk category, includes buildings and structures that, if severely damaged, would reduce the availability of essential community services necessary to cope with an emergency. Risk Category IV buildings and structures include hospitals, police stations, fire stations, emergency communication centers, and similar emergency facilities, as well as ancillary structures required for the operation of these facilities during an emergency, and facilities containing extremely hazardous materials that would threaten the public if released (ASCE 2010, IBC 2012)¹⁰.



Table 2.6 lists the critical facility categories selected by the Brown County All Hazards Mitigation Plan Steering Committee. Figure 2.6 at the end of this chapter shows all critical facilities in the county classified by critical facility type.

Administrative Buildings	Post Office
Bridge	Pre-School / Day Care
Dam	Prison or Jail
Electric Power Facility	Radio / Television Station
Electric Power Plant	Radio / Television Transmission Towers / Antenna
Generation/Processing of Communication Utilities	School
Health Institution/Government Facility	School – Higher Education Facility
Hospital	Sewage Sludge or Water Supply Chemical Disposal
Long-Term Health Care Facility	Sewage Treatment Plant
Major Electric Power Transmission Lines	Sports Stadium / Arena
Military Installation	Telephone Terminal / Dispatch Center
Mobile Home Park	Transmission of Communication / Utilities
Natural Gas Substation	Water Supply Booster/Pumping Station
Natural Terminals Plant	Water Supply Filter Treatment Plant
Other Liquid Fuel Substation	Water Supply Storage Tank / Reservoir
Other Liquid Fuel Terminal Plant	Water Supply Well
Police / Fire Station / Office	

Source: Brown County All-Hazards Mitigation Plan Steering Committee

¹⁰ Mitigation Assessment Team Report, Definitions of Critical Facilities and Risk Categories:
<http://tinyurl.com/y32u829r>

Schools

Brown County has 12 school districts within the county. Four of those school districts do not have any facilities within Brown County: Brillion, Kaukauna, Luxemburg-Casco, and Reedsville. Table 2.7 references the number of facilities and Map Figure 2-7 displays boundaries of each of the 12 school districts. PreK-12 schools are also highlighted on the county critical facilities Map Figure 2-6 as “School” and institutions of higher education are displayed as “School - Higher Education”.

There are several private schools in Brown County that complement the local public schools. Some of the larger facilities include Notre Dame Academy, and Northeastern Wisconsin Lutheran High School.

SCHOOL DISTRICT	Facility Type	Number of Facilities within Brown County	Student Enrollment (2018-2019)
ASHWAUBENON	Public	5	3,313
	Private	3	257
DENMARK	Public	4	1,560
	Private	2	113
BRILLION	Public	-	-
	Private	-	-
DE PERE	Public	6	4,518
	Private	3	479
GREEN BAY	Public	37	20,391
	Private	18	3,399
HOWARD-SUAMICO	Public	9	6,103
	Private	1	307
KAUKAUNA	Public	-	-
	Private	-	-
PULASKI	Public	5	3,777
	Private	2	101
LUXEMBOURG-CASCO	Public	-	-
	Private	-	-
REEDSVILLE	Public	-	-
	Private	1	87
WEST DE PERE	Public	5	3,556
	Private	3	130
WRIGHTSTOWN	Public	3	1,367
	Private	2	84
TOTAL		121	49,542

Source: WI Department of Public Instruction, Brown County Planning Commission.

In addition to the area public school districts, Brown County also has a number of institutions of higher education. They include:

- University of Wisconsin-Green Bay
- Northeast Wisconsin Technical College
- St. Norbert College
- Bellin College of Nursing
- College of Menominee Nation
- Globe University
- ITT Technical Institute
- Rasmussen College



Brown County Public Facilities

Brown County owns a large number of public parks, administrative buildings, government offices, maintenance facilities, public works, and open spaces throughout the county. Several of these public facilities have been identified as critical facilities and are mapped on Map Figure 2-6.

Places of Interest

There are several sites in Brown County that are regional attractions that draw a large number of visitors for special events, as well as on a seasonal or year-round basis. These areas have been identified as locations for concern and specific mitigation strategies have been developed during the planning process to appropriately address problems resulting from natural disasters. These sites include:

Lambeau Field	 Credit: Somerville Architects
Resch Center	 Credit: Spancrete
Resch Expo Hall	 Credit: Nicholas Kozloski
Kress Events Center	 Credit: UWGB

N.E.W Zoo	 Credit: Google Maps (Streetview)
Brown County Adventure Park	 Credit: Brown County
Bay Park Square	 Credit: Greater Green Bay Convention & Visitors Bureau
Donald J Schneider Stadium	 Credit: Miron Construction
Mulva Family Fitness & Sports Center (St. Norbert College)	 Credit: St. Norbert College

Bay Beach Amusement Park	 Credit: Yelp
Bay Beach Wildlife Sanctuary	 Credit: Greater Green Bay Convention & Visitors Bureau
Brown County Fairgrounds	 Credit: Google Maps (Streetview)
Green Bay Botanical Gardens	 Credit: Green Bay Botanical Gardens
Oneida Casino	 Credit: Greater Green Bay Convention & Visitors Bureau

KI Convention Center	 Credit: KI Convention Center
National Railroad Museum	 Credit: Google Maps (Streetview)
Heritage Hill State Park	 Credit: Heritage Hill State Park
Weidner Center for the Performing Arts	 Credit: UWGB

Events

In addition to places of interest in Brown County, there are a number of short-term or day-long events held throughout the year that draw a large number of people and resources to one location. These events have been examined and appropriate mitigation strategies have been developed if a natural disaster were to occur during the events. These events include:

- Artstreet
- Bellin Run
- Celebrate De Pere
- Cellcom Green Bay Marathon
- Festival Foods Fireworks & Celebrate Americafest
- Hispanic Festival
- Native American Festival
- Pulaski Polka Days
- Oneida Nation Pow-Wwow
- BayCare Clinic Century
- Pilgrimage to the Shrine of Our Lady of Good Help
- Titledown Bicycle Tour

Transportation

The transportation system in Brown County provides the primary means by which people and goods move about the county. The county's transportation infrastructure is comprised of roads, bridges, railroads, airports, transit, and ports/marinas. The transportation infrastructure of the county is crucial for providing emergency services and evacuation before, during, and after a hazard event. Hazardous events can have other significant impacts on the transportation systems. Weather events such as heavy rain storms and winter storms that produce snow and ice can cause hazardous conditions which may produce traffic accidents or hazardous materials spills. Impacts to transportation infrastructure are evaluated for each hazard event in Chapter 3. Transportation facilities in Brown County, such as airport facilities, bridges, and bus facilities, are displayed on the county critical facilities map, Map Figure 2-6 and the county transportation network is displayed on Map Figure 2-8.

Roads

Brown County currently contains two interstate highways, two US highways, nine state highways, several county trunk highways, and many local streets. These streets and highways are currently the primary means of reaching the destinations around the County. There are 2,345 miles of road in Brown County. Of that total, 1,790 miles are under jurisdiction of the local communities and 361 miles are maintained by the county¹¹. For maps of county roads by functional class, please refer to the *Brown County Comprehensive Plan*.



Source: NBC 26 News

¹¹ WisDOT - <https://wisconsindot.gov/Documents/travel/road/hwy-maps/county-maps/brown.pdf>

Bridges

There are a significant number of bridges in Brown County when considering all overpasses for highways, roads, and streets, rail, and water bodies. Note: Bridges for the purposes of this plan also include culverts. Although a majority of these critical passageways are small, many are considered vital to the movement of people and goods around the county, particularly those that cross the Fox River. The following are some of the largest bridges in the county including the Leo Frigo (I 43), Main Street/Nitschke (Green Bay), Walnut Street (Green Bay), Mason Street/Tilleman (Green Bay), Claude Allouez (De Pere), STH 172, and STH 96 (Wrightstown).



Source: Fineart America

Railroads

Brown County has two railroads serving customers throughout the county including the Canadian National Railroad and the Escanaba and Lake Superior Railroad Company. Canadian National has three rail lines of which one runs from Green Bay to the Village of Luxemburg in Kewaunee County; the second runs from Green Bay to the Village of Denmark; and a third run stretches north-south from the Fox Valley north to the City of Oconto in Oconto County. The Escanaba and Lake Superior Railroad Company owns 335 miles of rail line that extends from Rockland, Michigan (just south of Ontonagon, MI) to Green Bay. In addition to the mainline, several branches exist including two branches, the 4.7-mile Stiles Junction to Oconto Falls and the 21-mile Crivitz to Marinette/Menominee line that are closer to Brown County.

Airports

Brown County is served by one major airport, the Austin Straubel International Airport. Austin Straubel International Airport is a cornerstone for economic activity in Northeast Wisconsin. The airport functions 24 hours a day, 365 days a year and offers both commercial and general aviation services. The airport is also responsible for employing approximately 2000 people in aviation related jobs within the region. The Airport is currently served by four major airlines (American Airlines, Delta, Frontier, and United) offering direct service to five cities with connections available to any destination in the world. Austin Straubel International Airport is also a regional base of operations for the Federal Aviation Administration and the Transportation Security Administration serving one-third of Wisconsin and the Upper Peninsula of Michigan.

Transit

The urbanized portion of Brown County is served by two public transit agencies (Green Bay Metro and the Oneida Transit System) and several private transit providers that primarily offer services to elderly and disabled residents of the area. Green Bay Metro operates 17 full service fixed routes and several limited service routes in the Cities of Green Bay and De Pere and the Villages of Allouez, Ashwaubenon, and Bellevue (see Figure 3-5 for Metro's fixed route system). Metro also connects with the Oneida Transit

System on the west side of Green Bay to enable people to transfer between the two systems.

Ports and Marinas

Brown County has one port, (Port of Green Bay) and 13 marinas with three of them in Green Bay: Metro Boat Launch, Green Bay Yachting Club, and the South Bay Marina. The City of De Pere also contains three boat launch facilities Boat Yard Marina, and the Allouez Yacht Harbor; River Place Yacht Club in Ashwaubenon; and the Shipyard Marine, Suamico Boat Launch, and Windjammer's Sailing Club in Suamico.

Dams

According to the Wisconsin Department of Natural Resources, Brown County has 52 dams of various sizes located throughout the county (Appendix G). Of those 52 dams, there are three large dams with a "high" hazard rating located in Ashwaubenon, Village of Suamico, and Town of Rockland. These three dams are known locally as the Macco Pond Dam, Blazie Investments Dam, and the Lamers Pond Dam. The remaining structures are large and small dams with "low" or no hazard ratings. Dams in Brown County are displayed on the county critical facilities map, Map Figure 2-6.

The Lamers Pond Dam in the Village of Ashwaubenon has an Emergency Action Plan (EAP) that was developed in 2002. The *Emergency Action Plan: Lamers Packerland Drive Detention Basin Control Structure* describes the dam hazard area; identifies those responsible for dam operation and implementation of the EAP; and describes the procedures for training participants, and reviewing, testing, and updating the EAP. No known EAP has been developed for the other two dams in the Town of Rockland and the Village of Suamico.

Lamers Pond Dam Description:

The Lamers Basin control structure is located on a tributary to Dutchman's Creek as it passes under Packerland Drive just north of Interstate Highway 172, in Section 5, T23N, R20E. The dam is formed by the Packerland Drive roadway, which is owned and operated by the Brown County Highway Department. The Village of Ashwaubenon constructed and operates the control structure, regulating discharges through the Packerland culvert system. The drainage area at the dam is approximately three square miles. The reservoir flood storage capacity is 55 acre-feet at the emergency spillway crest (top of Packerland Drive), elevation 661.1 feet. Downstream of the dam, this tributary winds through fully developed residential areas before its confluence with Dutchman's Creek near STH 172/41 interchange. The main components of the dam are:

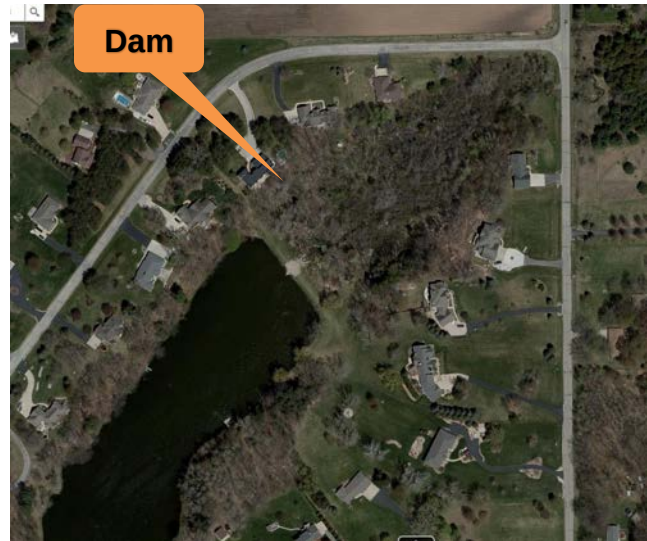
- Homogenous earth embankment, approximately 200 feet long at the toe, with a crest (top of road) elevation of 661.1 feet and an approximate structure height of 19 feet.
- Embankment slopes of 3H:1V, with a 76 feet wide road surface on the top (back of curb to back of curb).

- Basin outlet control structure which reduces the existing twin 54-inch culverts under Packerland Drive to twin 42-inch pipe outlets.
- Basin outlet control structure also includes a box configuration with a concrete weir overflow (elevation 651.3) and a low-flow fish gate with flowline at elevation 645.0.

The Brown County Highway Department and Village of Ashwaubenon replaced the single 60" culvert in 1998 with the twin 54" culvert which now exist under Packerland Drive.

Blaize Investments Dam Description:

This dam is located in the Village of Suamico on a tributary of the Suamico River. This dam is owned and maintained by the Hidden Lake Association. If the dam were to fail, infrastructure downstream such as the road could be in jeopardy of significant damage. The Hidden Lake Association and the Village of Suamico should coordinate their efforts to ensure that the dam is maintained properly and develop an EAP that describes appropriate actions during and after a possible dam failure and procedures for training participants, and reviewing, testing, and updating the EAP.



Macco Pond Dam/Springwater Dam Description:

This dam is located in the Town of Rockland on a tributary of the East River. The dam is located on private property and is identified as being owned/maintained by the property owners. The reservoir associated with this dam is not very large; however, if the dam were to fail, County Highway PP may be impacted as it would be the first impediment that the water met. There is also a private residence located immediately adjacent to the intersection of the waterway and County Highway PP which, depending on the elevation of the structures on site and the impacts of the water, could be impacted. The Town of Rockland and the property owners should follow the EAP that describes appropriate actions during and after a dam failure, procedures for training participants, and reviewing, testing, and updating the EAP.



Area Affected by a Breach or Major Flooding:

A detailed floodplain study was completed for the Lamers Pond Dam establishing floodplain limits for floodplain zoning. A 100-year storm event with dam “non-existent” was also performed to determine the area that would be inundated if the dam were not in place and future development were to occur throughout the drainage basin. This higher flow condition has been mapped as the regulated downstream floodplain. A limited dam failure analysis was also performed downstream of the detention basin. The results of that evaluation showed the “hydraulic shadow” to be well contained within the valley section and below all residences except as noted below. The “hydraulic shadow” ends within about 2,000 feet of Packerland Drive.

No FEMA flood data is available for the other two dams listed.

Population Affected by Lamers Pond Dam

Only one residence (a low-lying home with a walk-out basement on the left overbank just upstream of Shady Lane) may be subject to flooding during the 100-year flood. Otherwise, no other residences, buildings, or campgrounds would be inundated during flooding or by the failure of the structure. The 2020 total assessed value of the one residence is \$195,300.

Critical Facilities

No critical facilities, such as hospital, rescue and relief facilities, water supply facilities, hazardous waste facilities, or bridges, are in the hazard area. It was noted that with each of the three dams listed above, a County Highway is either the structure or is the first structure immediately downstream of the dam. All of which would be important roadways in their respective areas and if damaged, would cause major issues with local traffic and would require that emergency response personnel be aware of and plan alternate routes.

Communication Facilities

Brown County has an extensive communications infrastructure. Television, radio, newspapers, and broader electronic and print media serve as the primary means of notifying the public of hazard events in Brown County. These various types of communication facilities are displayed on the county critical facilities map, Map Figure 2-6. In addition to the traditional communication methods, hazard events are increasingly noticed by way of social media and can be distributed by way of text messages.

Newspaper

Brown County is served by one newspaper, the Green Bay Press-Gazette, which is a daily newspaper owned by Gannett Company, Inc.

Television

There are seven local broadcast television stations that service Brown County. Table 2.8 identifies each of these stations as well as their national affiliate and the location from which they broadcast.

Table 2.8: Broadcast Television Stations Serving Brown County, Wisconsin				
Name	Channel		Affiliate	Broadcast Location
WBAY-TV	2	2-1, 2-2, 2-3	ABC	Green Bay
WFRV-TV	5		CBS	Green Bay
WLUK-TV	11		Fox	Green Bay
WCWF	14		CW	Suring
WGBA	26	26-1, 26-2	NBC	Green Bay
WACY	32		MNT	Appleton
WPNE	38	38-1, 38-2, 38-3	PBS	Green Bay

Source: Wikipedia®, a registered trademark of the Wikimedia Foundation, Inc., 2019.

Radio

There are 42 FM and 17 AM radio stations that broadcast in or around Brown County. The following table lists these stations.

Table 2.9: Radio Stations, Source: radio-locator.com, 2019.			
WHID	88.1 FM	Green Bay, WI	Public Radio
WPNE	89.3 FM	Green Bay, WI	Public Radio
WORQ	90.1 FM	Green Bay, WI	Christian Contemporary
WPFF	90.5 FM	Sturgeon Bay, WI	Christian Contemporary
WOVM	91.1 FM	Appleton, WI	Adult Album Alternative
WEMY	91.5 FM	Green Bay, WI	Christian Contemporary
W221DA (WNCY)	92.1 FM	Howard, WI	Country
W226BD (WGEE)	93.1 FM	Green Bay, WI	Country
WGEE	93.5 FM	New London, WI	Country
WYDR	94.3 FM	Neenah-Menasha, WI	Adult Hits
WZOR	94.7 FM	Mishicot, WI	Rock
WKSZ	95.9 FM	De Pere, WI	Top-40
W245BS (WAUN)	96.9 FM	Green Bay, WI	Regional Mexican
WTAQ	97.5 FM	Glenmore, WI	News/Talk
WQLH	98.5 FM	Green Bay, WI	Hot AC
WOWN	99.3 FM	Shawano, WI	Classic Hits
WDKF	99.7 FM	Sturgeon Bay, WI	Country
WNCY	100.3 FM	Neenah-Menasha, WI	Country
WIXX	101.1 FM	Green Bay, WI	Top-40
W268BG (WRVM)	101.5 FM	Green Bay, WI	Religious
W270AJ (WNFL-AM)	101.9 FM	Green Bay, WI	Sports
WRVM	102.7 FM	Suring, WI	Religious
WOGB	103.1 FM	Reedsville, WI	Classic Hits
Table continued on next page			

WKZG	104.3 FM	Seymour, WI	Holiday (Adult Contemporary)
WPCK	104.9 FM	Denmark, WI	Christian Contemporary
WAPL	105.7 FM	Appleton, WI	Classic Rock
W292DR (WHBY-AM)	106.3 FM	Wrightstown, WI	News/Talk
WKRU	106.7 FM	Allouez, WI	Classic Rock
WDUZ	107.5 FM	Brillion, WI	Sports
WTMJ	620 AM	Milwaukee, WI	News/Talk
WCUB	980 AM	Two Rivers, WI	Country
WJOK	1050 AM	Kaukauna, WI	Religious
WHBY	1150 AM	Kimberly, WI	News/Talk
WNAM	1280 AM	Neenah-Menasha, WI	Nostalgia
WTAQ	1360 AM	Green Bay, WI	News/Talk
WDUZ	1400 AM	Green Bay, WI	Sports
WNFL	1440 AM	Green Bay, WI	Sports
WGBW	1590 AM	Denmark, WI	Oldies

Power Facilities

The power generating plants located in Brown County include both publicly- and privately-owned facilities. Various types of power facilities are mapped on the county critical facilities map, Map Figure 2-6.

Public Water Supply Systems

Based upon data obtained from the Wisconsin Department of Natural Resources' drinking water website, there are 130 separate public water systems within Brown County. These systems can be used by the general public and are regulated by the WDNR. In addition to public water systems, there are thousands of private wells in Brown County. Private residence obtain groundwater through a private well which the WDNR recommended testing on a regular basis to ensure the water is safe to drink and free of toxins such as nitrates, pesticides, heavy metals, and Volatile Organic Compounds (VOC).

The City of Green Bay, *Village of Hobart*, *Village of Wrightstown*, *Town of Scott*, and the Village of Ashwaubenon obtain their water from Lake Michigan through a pipeline originating near the City of Kewaunee. The City of De Pere and the villages of Allouez, Bellevue, and Howard and towns of Lawrence and Ledgeview comprise the Central Brown County Water Authority and are receiving water from Lake Michigan through a pipeline originating in the City of Manitowoc.

Wastewater Treatment Systems

Most of Brown County is served by Green Bay Metropolitan Sewerage District wastewater treatment system and is within the Brown County Sewer Service Area (SSA). The City of De Pere system was connected to the Green Bay Metropolitan Sewerage District wastewater treatment system in 2009. The SSA Plan identifies those areas eligible to receive sanitary sewer service so that wastewater treatment facilities can be designed to

provide adequate treatment capacity for the anticipated population growth in the sewer service area, while protecting sensitive natural areas and water quality.

Military Installations

Brown County has three military installations. The Army National Guard Unit is located on Military Avenue in Green Bay. The US Defense Logistics Agency is located on N Madison Street in the City of Green Bay and the Navy Operational Support Center is stationed in Ashwaubenon.

EPCRA Facilities

Emergency Planning and Community Right to Know Act (EPCRA) establishes requirements for Federal, State and local governments, Indian Tribes, and industry regarding emergency planning and “Community Right-to-Know” reporting on hazardous and toxic chemicals. The Community Right-to-Know provisions help increase the public’s knowledge and access to information on chemicals at individual facilities, their uses, and releases into the environment. States and communities, working with facilities, can use the information to improve chemical safety and protect public health and the environment. EPCRA facilities in Brown County are displayed on the county critical facilities map, Map Figure 2-6.

EMERGENCY SERVICES AND FACILITIES

Brown County Emergency Management provides county-wide communications for the public to police, fire, and emergency medical services. *These* emergency facilities are displayed on the county critical facilities map, Map Figure 2-6.

Police

The Brown County Sheriff’s Department, located in Bellevue, is a full service law enforcement agency that serves portions of Brown County that do not provide their own law enforcement/protection services, including Allouez, Bellevue, Eaton, Glenmore, Green Bay (town), Holland, Howard, Humboldt, Ledgeview, Morrison, New Denmark, Pittsfield, Rockland, Scott, Suamico, and Wrightstown (town). The communities of Allouez, Bellevue, Denmark, Howard, and Suamico also contract for additional police services from the sheriff’s department.

The remaining communities within Brown County provide their own law enforcement, including the Cities of De Pere and Green Bay, the Village of Ashwaubenon, and the Oneida Nation. The communities of Denmark, Hobart, Lawrence, Pulaski, and the Village of Wrightstown also provide their own law enforcement but contract with the sheriff’s department for backup service when necessary.

Fire, Rescue, and Emergency Medical Services

As with most counties in Wisconsin, Brown County does not provide fire, rescue services or emergency medical services. Fire services in Brown County are provided on an individual community basis or are obtained through contracts with neighboring communities. There are 18 fire districts in Brown County. They include Denmark (with service to Eaton, portions of Glenmore, and New Denmark in Brown County and Franklin in Manitowoc County); Hobart; Holland; Pulaski (with service to Pittsfield); Suamico; Wayside; Wrightstown (village); Lawrence; New Franken (a joint department between the towns of Green Bay, Humboldt, and Scott); Greenleaf (with service to the western half of

Rockland and to the Town of Wrightstown); Morrison (with service to the eastern half of Rockland, portions of Glenmore, and to Morrison); Ledgeview (with service to portions of Glenmore); De Pere (with service to Lawrence); Howard; and the City of Green Bay (with service provided to the Villages of Allouez and Bellevue). Lastly, Austin Straubel International Airport has a private contracted Fire Department (Protect), and many of the area paper mills and one chemical company have internalized Fire Brigades both structural and incipient.

The Federal and State governments define departments as *Career departments – 100% paid FTE with no part-time supplemental staffing*. Currently Green Bay is the only complete career department in Brown County. Combination departments – some career positions supplemented with paid on call or part-time coverage. Allouez, Ashwaubenon, Bellevue, Howard, and De Pere are officially combination departments. Volunteer – do not work duty shifts, receive no pay per call, or only receive a stipend for expenses per the IRS “*bright line*” test. Morrison, Holland Town, Greenleaf, New Franken, Pulaski, Hobart, Suamico and Lawrence fall into this category.

Rescue and emergency medical services are also provided on an individual community basis or are obtained through agreements/contracts with neighboring communities or private providers. As examples, most communities in Brown County rely upon County Rescue Services, a private provider located in the Village of Bellevue with additional stations in Howard, Suamico and Denmark that is supported by a joint partnership with Bellin and St. Vincent Hospitals. These communities include the towns of Eaton, Glenmore, Green Bay, Hobart, Holland, Howard, Humboldt, Morrison, Rockland, Scott, Suamico, Wrightstown (both village and town). The village of Allouez receives EMS from Green Bay Metro Fire Department while the village of Bellevue receives EMS from Brown County currently and is planning to switch to Green Bay Metro in 2022. The village of Ashwaubenon and cities of De Pere (with service to Lawrence and Ledgeview) and Green Bay provide their own rescue services.

Hospitals & Medical Clinics

Brown County has four hospitals serving the county and municipalities. They are the Aurora BayCare Medical Center on 2845 Greenbrier Road in Green Bay; HSHS St. Mary’s Hospital on 1726 Shawano Avenue in Green Bay; Bellin Hospital on 744 S. Webster Avenue in Green Bay; and HSHS St. Vincent Hospital on 835 S. Van Buren Street in Green Bay.

Large Hospitals:

- Aurora BayCare Medical Center – 2845 Greenbrier Road, Green Bay, WI.
- Bellin Hospital – 744 Webster Ave., Green Bay, WI.
- HSHS St. Vincent Hospital – 835 Van Buren St. Green Bay, WI.
- HSHS St. Mary’s Hospital Medical Center – 1726 Shawno Ave., Green Bay, WI

Clinics:

- N.E.W. Community Clinic – 622 Bodart St., Green Bay, WI
- Green Bay VA HCC (Huempfer) – 2851 University Ave. Green Bay, WI.

- BayCare Clinic – 1035 Kepler Dr., Green Bay, WI.
- Aurora BayCare Health Center – 3237 Voyager Dr., Green Bay, WI.
- Orthopedics & Sports Medicine BayCare Clinic – 1160 Kepler Dr., Green Bay, WI.
- New Clinic – NWTC Campus
- Prevea East Mason Health Center – 3021 Voyager Dr., Green Bay, WI.
- Prevea Washington Street Health Care – 102 N Washington St, Green Bay, WI.
- Aurora Health Center – 4070 Equestrian Rd., Green Bay, WI.
- BayCare Clinic – 164 N Broadway, Green Bay, WI.
- Prevea Allouez Health Center – 1821 S Webster Ave., Allouez, WI.
- Prevea Shawano Ave Health Center – 1727 Shawano Ave., Green Bay, WI.
- Aurora Health Center – 1565 Allouez Ave., Green Bay, WI.
- Prevea Pulaski Health Center – 940 Augustine St., Pulaski, WI.
- Aurora Health Center – 980 S St Augustine St., Pulaski, WI.
- Bellin Health Cardiology Associates – 723 S Wisconsin St., Pulaski WI.
- Aurora Health Center – 629 Solvang Wy., Denmark, WI.
- Bellin Health Denmark – 595 County Rd R, Denmark, WI.

Walk-in Clinics:

- Bellin Health Fast (Green Bay East) – 1976 Lime Kiln Rd., Green Bay, WI.
- Bellin Health Fast (Green Bay West) – 2015 Shawano Ave., Green Bay, WI.

Urgent Care:

- Aurora BayCare Urgent Care – 2845 Greenbrier Road, Green Bay, WI.
- Aurora BayCare Urgent Care – 2253 W Mason St., Green Bay, WI.
- Aurora Urgent Care – 1881 Chicago St., De Pere, WI.
- Bellin Health (Bellevue) – 3263 Eaton Rd., Bellevue, WI.
- Prevea Urgent Care – 2793 Lineville Rd., Green Bay, WI.
- Prevea Urgent Care – 2502 S Ashland Ave., Green Bay, WI.
- Prevea Urgent Care – 1601 Lawrence Dr., Green Bay, WI.
- Prevea Urgent Care – 3021 Voyager Dr. Green Bay, WI.
- Ashwaubenon Respiratory Clinic – 1630 Commanche Ave., Bellevue, WI.

It should be noted that this list was derived from an exhaustive online search and that this list may not include all facilities in Brown County. Some facilities may also have capabilities that would allow them to be adapted to shelter-in-place inpatient and victim

medical services. These facilities may be needed in the time of a community disaster that requires hospitals to activate surge capacity and/or should a hospital disaster occur that renders the facility inhospitable for patient occupancy. Elements of consideration for these critical facilities are those buildings that may have medical utilities (electrical generators, medical gas systems, life safety compartmentalization, imaging equipment, laboratory services, and surgical capabilities), physically large enough to provide critical mass, and/or are under the business auspice of the hospital.

Emergency Warning Systems

Most of the cities and villages in Brown County have emergency sirens to warn residents in the event of a tornado. There are 59 tornado sirens in the county. The county Dispatch Center is responsible for testing and activating the systems.

Emergency Operations Center

Brown County emergency response operations will be carried out at Brown County's designated Emergency Operations Center (EOC) in the City of Green Bay. The EOC has 24-hour per day operational capabilities.

Heavy Equipment Inventory

Brown County and each of the municipalities maintain a wide array of heavy equipment that could be available during specific emergency response situations. On certain projects and during times of an emergency, the county and communities will share specific pieces of equipment on a lease or rental basis.

Community	Emergency Contact	24-Hour Contact
Brown County	Paul Fontecchio, Public Works Director	920-492-4925
City of Green Bay	Steve Grenier, Public Works Director	920-448-3100
City of De Pere	Scott Thoresen, Public Works Director	920-339-4060
Oneida Tribe	Jacque Boyle, Public Works Manager	920-869-1059
Village of Allouez	Seah Gehin, Public Works Director	920-448-2800
Village of Ashwaubenon	Doug Martin, Director of Eng. & Utilities	920-492-2337
Village of Howard	Geoff Farr, Public Works Director	920-434-4060
Village of Bellevue	David Betts, Public Works Director	920-468-5507
Village of Hobart	Jerry Lancelle, Pub. Works Coordinator	920-869-3807
Village of Suamico	Andy Smits, Public Works Director	920-434-8410
Village of Denmark	Erika Thronson, Public Works Director	920-362-7982
Village of Pulaski	Joel Van Lannen, PW Team Leader	920-822-5192
Village of Wrightstown	Andy Vickman, Public Works Director	920-660-4337
GB Water Department	Andrea Hay, Dir. of Communications	920-621-7726
WPS Gas	Emergency Hotline	800-450-7280
WPS Electric	Emergency Hotline	800-450-7240
WPS Local Affairs	Scott Sheppard	920-380-3376

Private Contractors

Brown County and several communities work with the following major vendors to secure heavy equipment/vehicles when needed:

- Aring Equipment Company, Inc., 1800 N. Ashland Avenue, De Pere, WI 54115, 920-336-3601

- Badger Crane & Dragline, 1316 Russett Court, Green Bay, WI 54313, 920-662-7624
- Barlament Erection and Crane Rentals, 1575 Lineville Road, Green Bay, WI 54313, 920-434-3677
- Brooks Tractor Incorporated, 1031 Lawrence Drive, De Pere, WI 54115, 920-336-5711
- Fabco Equipment Inc., 600 Hansen Road, Green Bay, WI 54301, 920-498-8000
- 4 Star Equipment, Inc. 1273 Cornell Rd, Green Bay, WI 54313, 888-223-9300
- Kocken Construction Equipment, 780 Morris Ave., Green Bay, WI 54304, 920-494-7429
- Miller-Bradford & Risberg Inc., 3203 French Road, De Pere, WI 54115, 920-638-7448
- M&R Track Service, 310 E Clay St. #8, Wrightstown, WI 54180
- Riesterer & Schnell, Inc., N2909 State Highway 32, Pulaski, WI 54162, 920-822-3077
- Riesterer & Schnell, Inc., 3200 S. County Road P, Denmark, WI 54208, 920-863-2181
- Roland Machinery Company, 3275 French Road, De Pere, WI 54115, 920-532-0165
- RSC Rental Equipment, 3161 Market Street, Green Bay, WI 54304, 920-337-0777
- Service Motor Company, 3969 Champeau Road, New Franken, WI 54229, 920-468-7700
- Weyers Equipment, Inc., N1957 E. Frontage Road, Kaukauna, WI 54130, 920-766-1861

Bulk Fuel

The West Shore Pipeline that provided petroleum products to Green Bay originated in the Chicago area. This pipeline is no longer in service and the primary source of fuel has transitioned to shipping via the great lakes. The following is a list of bulk fuel providers that can be called upon in emergency scenarios.

- Kwik Trip – 1626 Oak St., La Crosse, WI 54603, Phone: 608-781-8988
- Titledown Oil – 1275 Glory Rd., Green Bay, WI 54304, Phone: 920-336-8983
- Packer City International – 611 Hansen Rd., Green Bay, WI 54304, Phone: 920-499-0878
- Halron Oil Company – 1618 State St., Green Bay, WI 54306, Phone: 920-436-4000
- Klemm Tank Lines – 2204 Pamperin Rd., Howard, WI, 54313, Phone: 920-434-6343
- Semfuel – 955 Challenger Dr., Green Bay, WI 54311, 800-236-5858

- Tilot Oil Company, 1121 McDonald St., Green Bay, WI 54303, Phone: 920-432-7711

It should also be noted that the Port of Green Bay has fuel storage on site and may be called upon if fuel from other sources is not an option.

OTHER INFORMATION

Additional pre- and post-disaster information may be needed during or after a disaster event. The following is some information that could be helpful.

Pre-Disaster

Elderly Housing

The elderly population is a demographic that may be exceptionally vulnerable to hazard events. Brown County has a large number of elderly housing facilities located throughout the county. Each of the individual facilities should maintain their own emergency preparedness and evacuation procedures. “Long-term Health Care Facilities” are displayed on the county critical facilities map, Map Figure 2.6.

Staging Areas

As stated in the Brown County Evacuation Plan, temporary collection points will be set up at the county polling places located within the evacuation area. Community Emergency Response Team (CERT) Volunteers will assist evacuees at these polling places. Transportation resources will be directed to the staging area as determined by officials in the incident command center. A list of polling places and evacuation routes are provided in the county’s evacuation plan.

Temporary Shelters

Temporary shelters, designed for short duration lodging, may be needed before, during, and after a hazard event to provide beds and basic sanitary facilities. Brown County has identified temporary emergency shelters located throughout the county that can provide interim housing for people evacuated from their homes. These shelters consist primarily of schools and churches, plus facilities such as the Red Cross building and other public owned buildings. A list of Brown County shelters can be found in the *Brown County Evacuation Plan*.

Agreements between public and private facilities and the Red Cross vary in number from year to year and are subject to verification of availability at the time of request.

Temporary Pet Shelters

Temporary pet shelters may also be needed before, during, and after a hazard event if people are required to evacuate their homes. It is important to provide a method to segregate the pets in the shelters. Aside from the Bay Area Humane Society, there are

no other temporary pet shelters in the county unless agreements are created with private entities.

Post-Disaster

Solid and Special Waste Landfills

Often, the remaining debris from a destructive storm event cannot be land filled in typical landfills. Therefore, it is important to know where the nearest subtitle-d solid and special waste landfills are located. A landfill of this nature cannot be found in Brown County. However, the Veolia Inc. landfill in Outagamie County and Waste Management's landfill near Whitelaw may be used as disposal sites in case of an emergency.

Long Term Shelters

Long term shelters may be needed if people are unable to return to their homes for an extended period after a hazard event. Brown County works with agencies to set up long term housing. Agencies like the Red Cross develop contracts with a variety of possible shelter locations however the facilities are subject to availability at the time they are requested. Housing arrangements for those residents permanently displaced by the natural disaster will be made primarily through the Brown County Department of Human Services or Integrated Community Services.

Long Term Pet Shelters

Humane Societies often serve as long-term pet sheltering facilities if needed after a hazard event. Bay Area Humane Society may be able to fill this role along with volunteer pet owners.

Planning Area

Brown County All Hazard Mitigation Plan

Brown County, WI

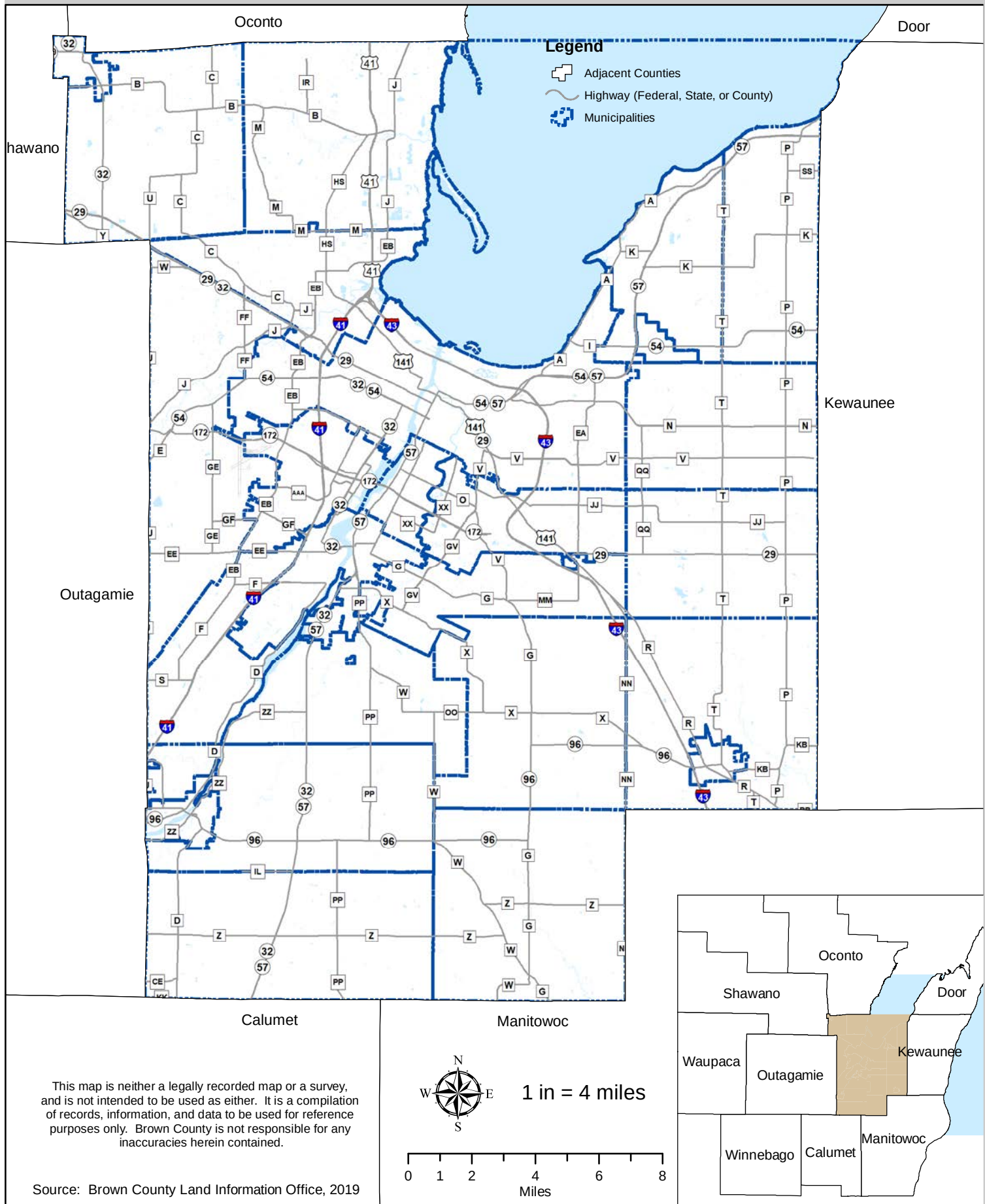


Figure 2-1

Population Percent Change 2010-2018

Brown County All Hazard Mitigation Plan

Brown County, WI

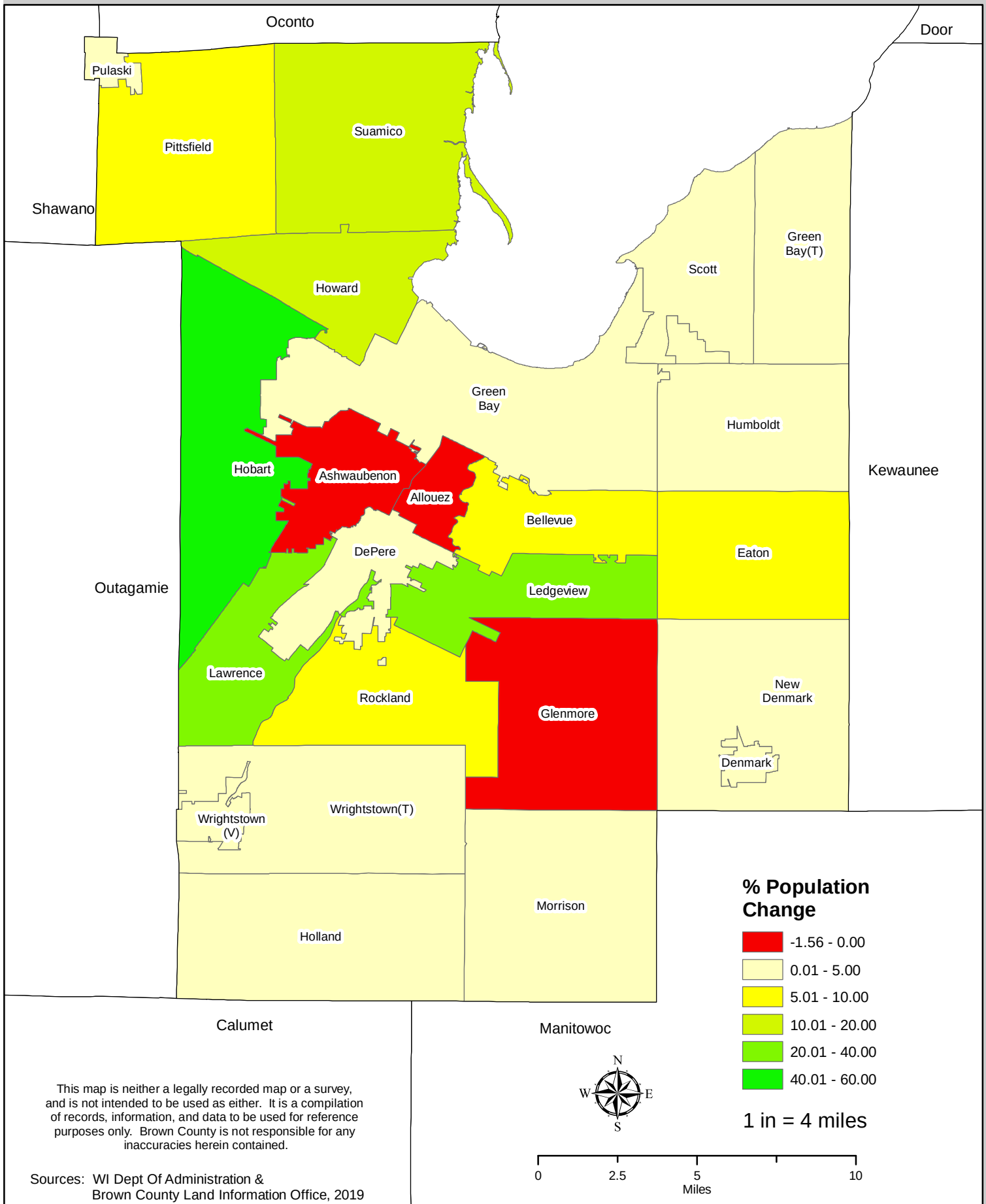
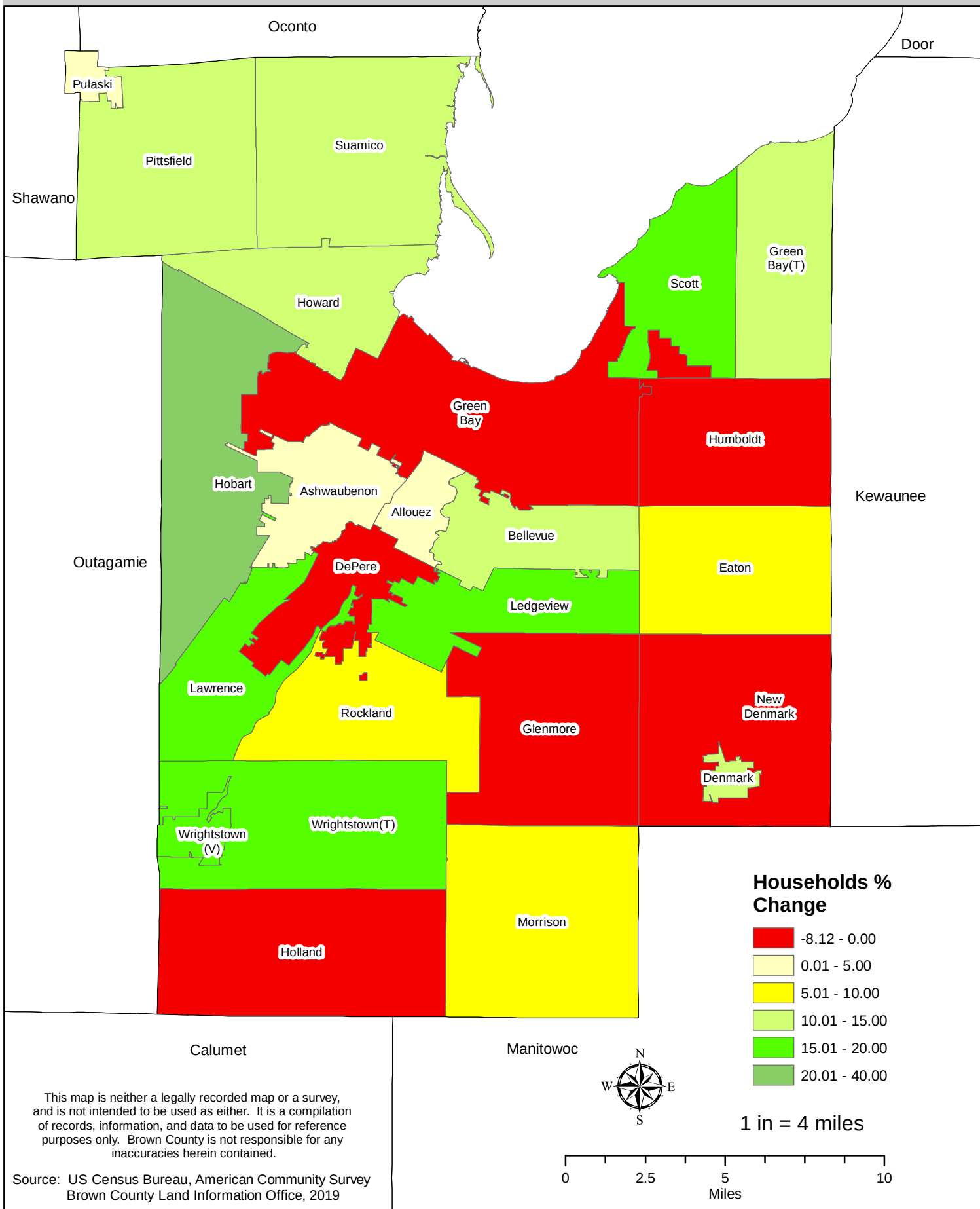


Figure 2-2

Households Percent Change 2010-2017

Brown County All Hazard Mitigation Plan

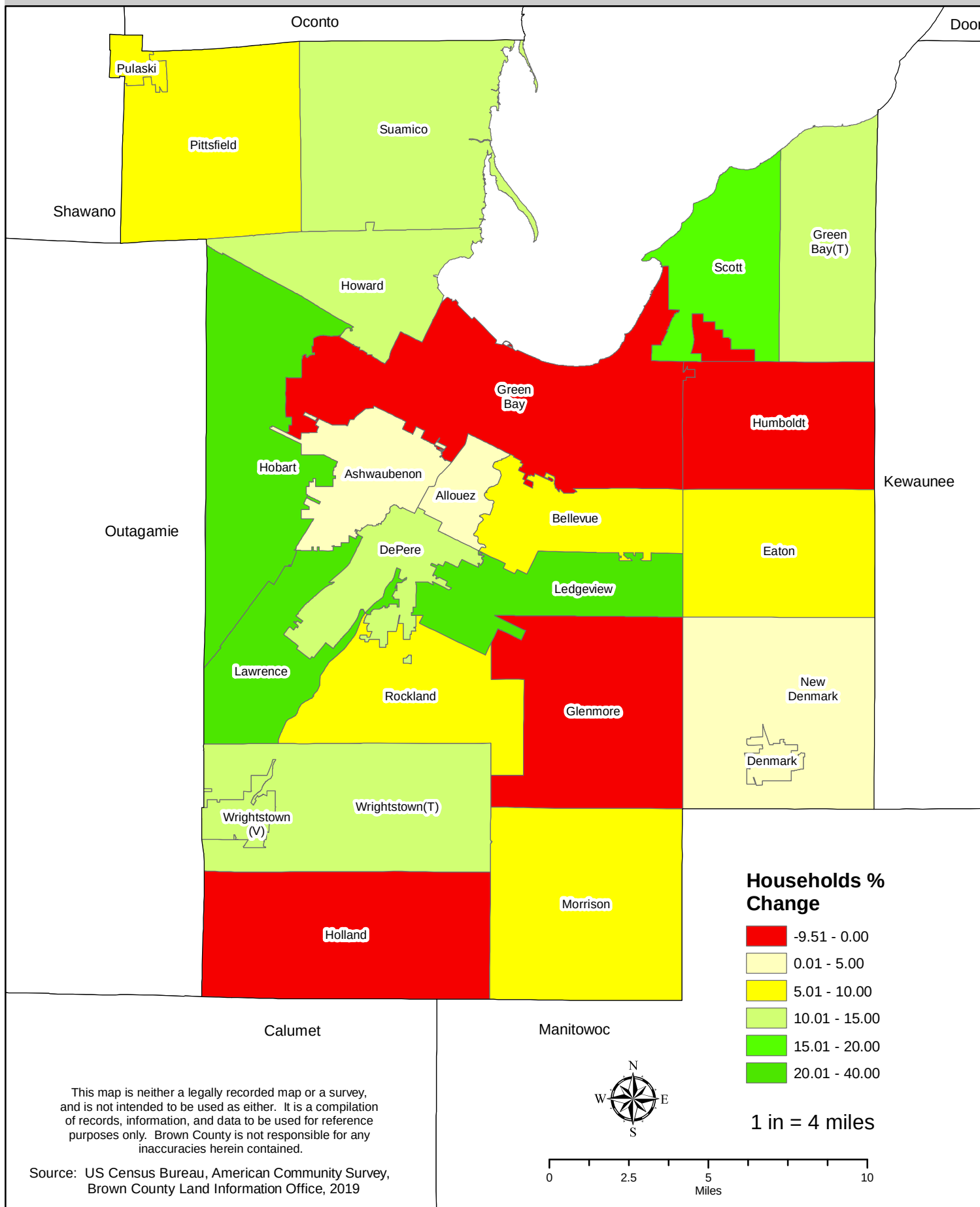
Brown County, WI



Housing Units Percent Change 2010-2017

Brown County All Hazard Mitigation Plan

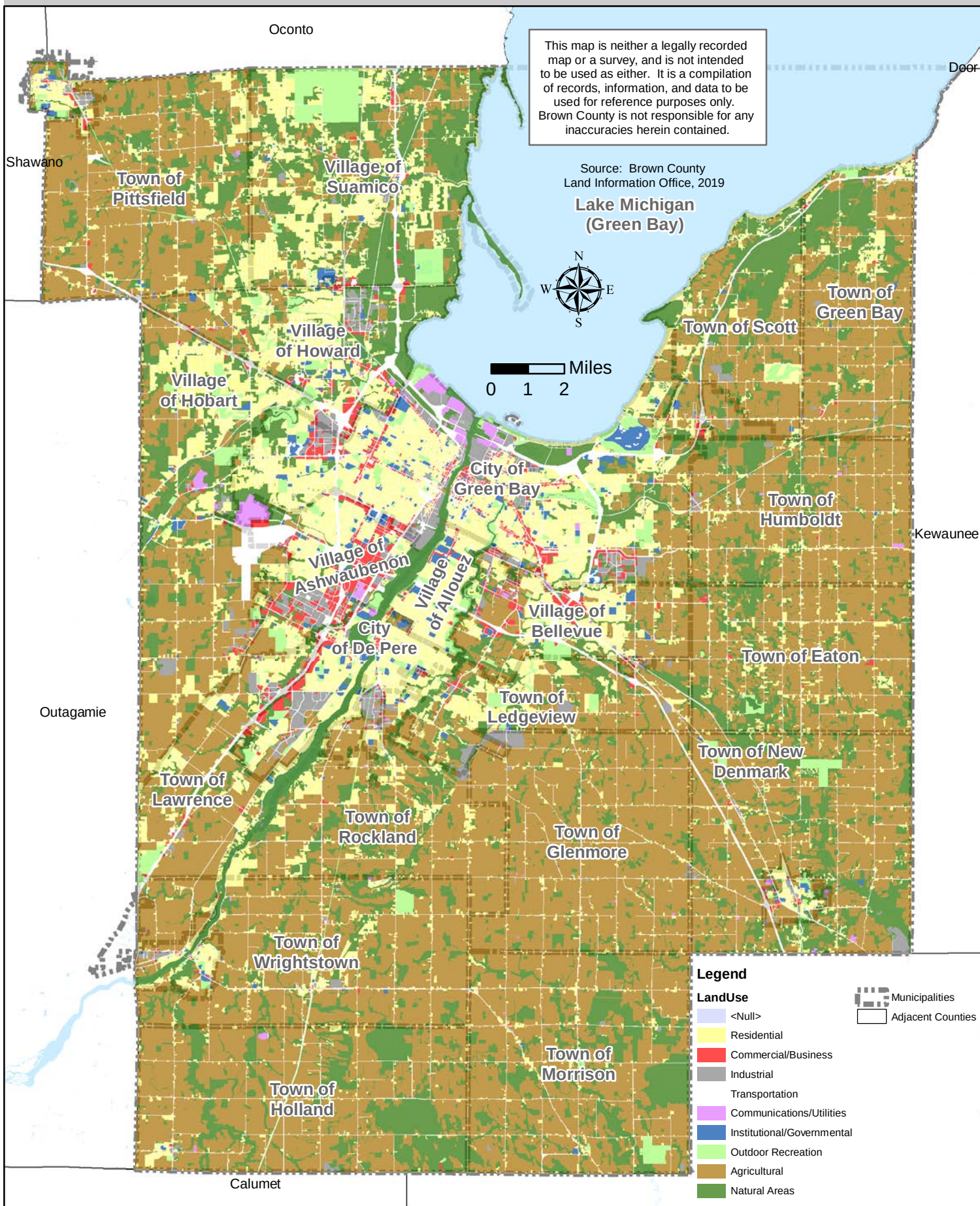
Brown County, WI



2019 Land Use

Brown County All Hazard Mitigation Plan

Brown County, WI



Critical Facilities

Brown County All Hazard Mitigation Plan

Brown County, WI

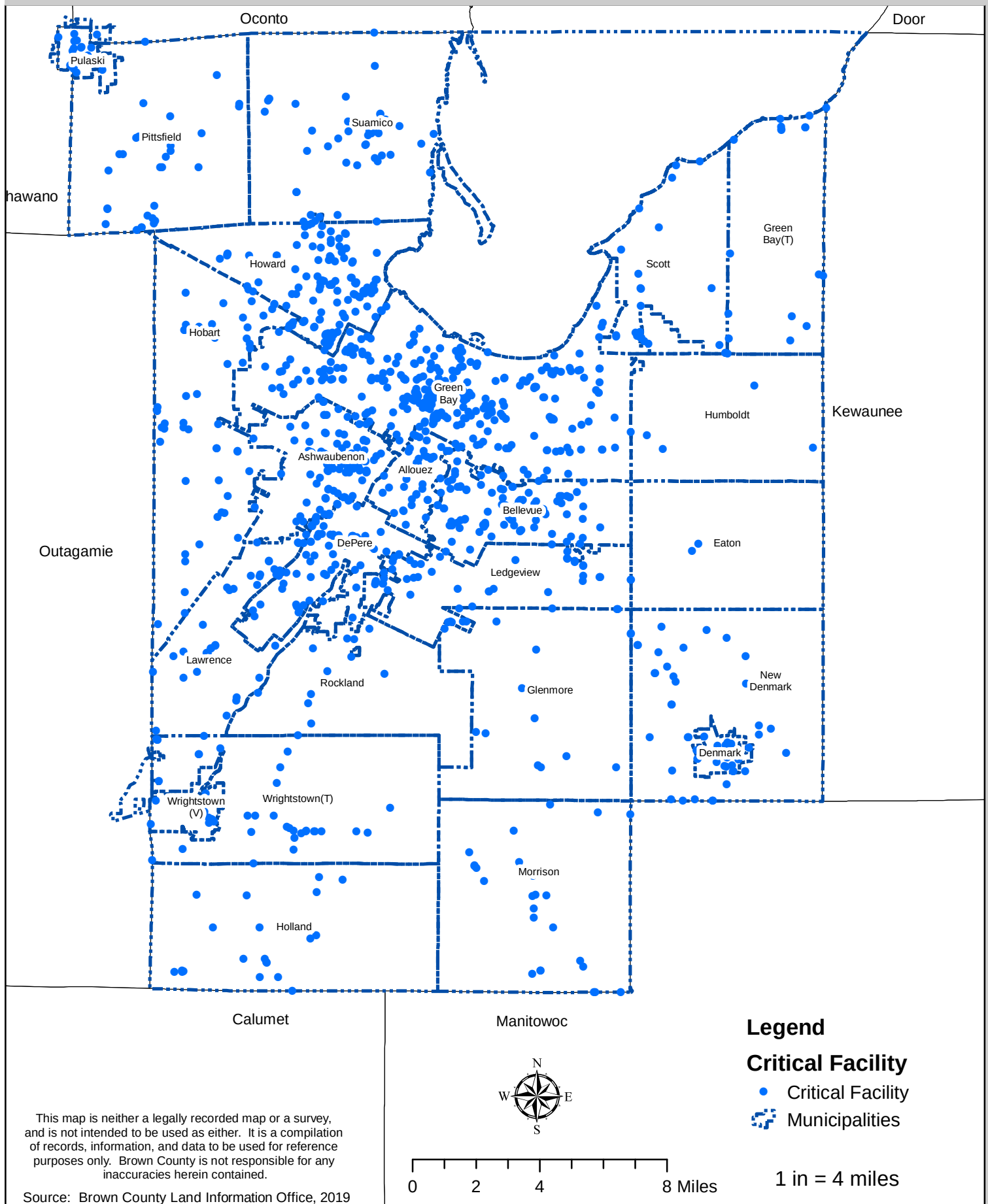


Figure 2-6

School District Boundaries

Brown County All Hazard Mitigation Plan

Brown County, WI

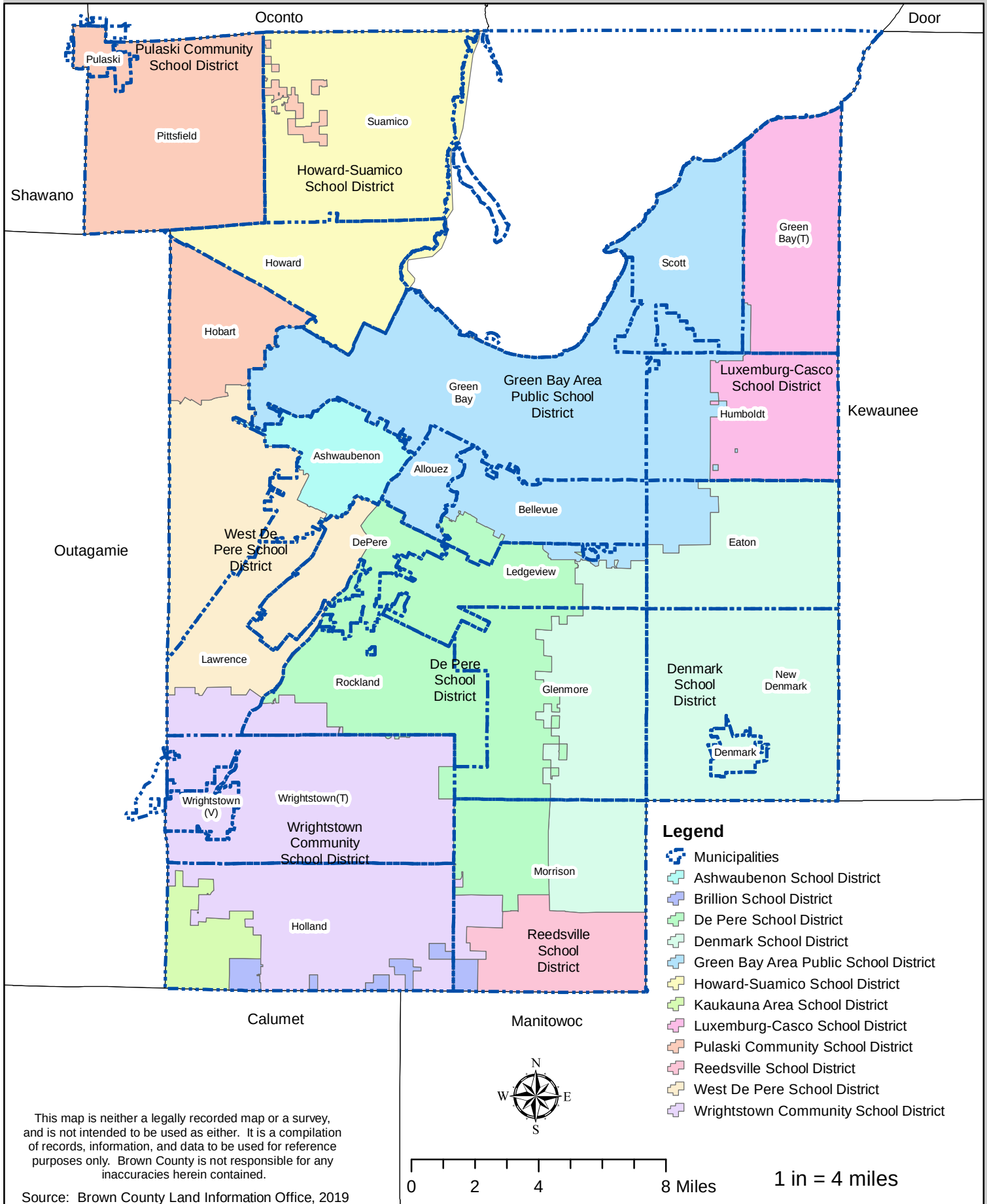


Figure 2-7

Transportation Network

Brown County All Hazard Mitigation Plan

Brown County, WI

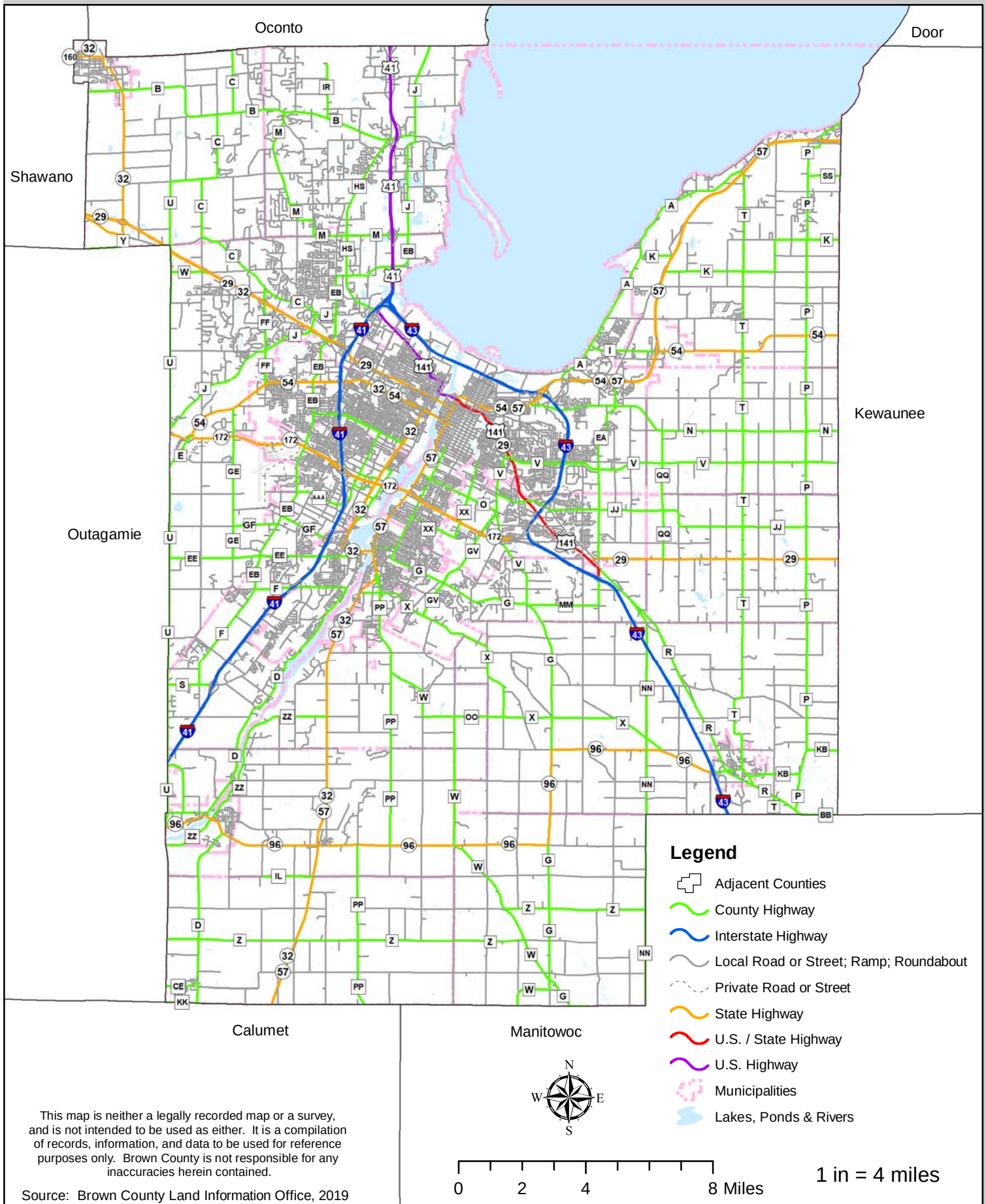


Figure 2-8

Brown County, Wisconsin 2020 All Hazards Mitigation Plan



Prepared by the Brown County All Hazard Plan Steering Committee
with Assistance from the Brown County Planning Commission
DATE: _____



Brown County, Wisconsin

Steering Committee Members

Angela Kowalzek-Adrians, NEW Water
Anna Destree, Brown County Public Health
Ben Risch, Wisconsin Public Service
Bob Mayer, American Red Cross
Bill Bosiacki, Brown County Zoning
Brian Uhl, Village of Ashwaubenon Public Safety
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Sam Martin, BC Emergency Management
Sara Lornson, City of De Pere Public Health
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Steve Grenier, City of Green Bay Department of Public Works

BROWN COUNTY ALL HAZARDS MITIGATION PLAN

ADOPTED: _____



Prepared by:

Brown County Planning Commission
305 E. Walnut St., Room 320
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The preparation of this document was financed with a grant from the State of Wisconsin Department of Military Affairs Division of Emergency Management (Project Number PDMC-PL-05-WI-2017-001) with local matching in-kind funds from Brown County.

RESOLUTION OF ADOPTION

Resolution No. _____

A RESOLUTION adopting the *Brown County All Hazards Mitigation Plan*.

WHEREAS, Brown County recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted all hazards mitigation plan is required as a condition of future grant funding for mitigation projects.

NOW, THEREFORE BE IT RESOLVED, that the County Board of Brown County, Wisconsin, hereby adopts the *Brown County All Hazards Mitigation Plan* as an official plan; and

BE IT FURTHER RESOLVED, that upon approval of the *Brown County All Hazards Mitigation Plan*, the Brown County Emergency Management Department will submit the adopted plan to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval, as required under the Hazard Mitigation Grant Program.

I HEREBY CERTIFY that the foregoing Resolution was duly passed by the County Board of Brown County, Wisconsin, on the _____ day of _____, 2020.

Dated _____, 2020. _____
County Executive

Dated _____, 2020. _____
County Clerk

Approved _____, 2020. _____
County Board Chair

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CHAPTER 1: INTRODUCTION AND PLANNING PROCESS

PURPOSE FOR THE PLAN

An update to the *Brown County All Hazards Mitigation Plan* began during January of 2019. A Steering Committee comprised of local and county officials and emergency management personnel guided the update process over a two year timeframe with professional planning support from the Brown County Planning Commission.

The plan's purpose is to evaluate the county's potential exposure to natural hazards and to identify appropriate mitigation strategies. Consistent with the Code of Federal Regulations (44 CFR Part 201.6), the county identified natural hazards and, although not required, the county also identified man made hazards. Based on these required components, this plan conforms to Federal All Hazards Mitigation Planning requirements.

Completion of the 2019 plan update will continue to allow Brown County Emergency Management personnel to identify areas of risk, assess the magnitude of the risk, and develop strategies to continue reducing risks. Through this process, the county can address issues related to incompatible land uses; identification and protection of critical facilities; and assess costs associated with natural disaster relief and rescue efforts. Completion and approval of the plan will also make Brown County eligible to apply for future disaster relief and mitigation project funds to implement applicable recommended mitigation strategies.

The following sections discuss the Disaster Mitigation Act of 2000 which led to the requirement for All Hazards Mitigation Plans as well as the funding of this planning effort to develop the five parts of this plan.

DISASTER MITIGATION ACT OF 2000

The development of the *Brown County, Wisconsin 2012 All Hazards Mitigation Plan* is in response to the enactment of the Disaster Mitigation Act (DMA) of 2000. The act attempts to stem the losses from disasters, reduce future public and private expenditures, and speed up response and recovery from disasters. The following is a summary of the parts of the Disaster Mitigation Act of 2000 that pertain to local governments and tribal organizations. The Act:

- Establishes a new requirement for local governments and tribal organizations to prepare an All Hazards Mitigation Plan in order to be eligible for funding from FEMA through the Pre-Disaster Mitigation Assistance Program and the Hazard Mitigation Grant Program.
- Establishes a requirement that natural hazards need to be addressed in the risk assessment/vulnerability analysis part of the All Hazards Mitigation Plan. Addressing man-made/technological hazards is encouraged, but not required.
- Authorizes up to seven percent of Hazard Mitigation Grant Program funds available to a state after a federal disaster to be used for development of state, local and tribal organization All Hazards Mitigation Plans.

- Established November 1, 2004, as the date by which local governments and tribal organizations are to prepare and adopt their respective plans in order to be eligible for the FEMA Hazard Mitigation Grant Program. This deadline was November 1, 2003 for the Pre-Disaster Mitigation Program.

The plan is being revised in 2019-2020 and is expected to remain current and eligible for funding for a period of time not exceeding 5 years.

PLANNING VISION

This plan utilizes the same three visionary elements to fulfill the requirements established through DMA 2000:

Reduce Hazard Risks and Impacts – This All Hazard Mitigation Plan assessed vulnerability of life and property to a broad range of potential natural hazards, and developed a prioritized range of mitigation strategies to reduce both risks and impacts.

Build on Existing Efforts – Many cities, villages, towns, school districts, and businesses, often lead by county personnel, have already engaged in mitigation and/or response *training and planning*. The intent of this plan is to maximize these efforts by inventorying, coordinating, and building on these efforts when possible, and developing new strategies to fill any gaps identified among existing efforts. This plan incorporates information and strategies from existing emergency response plans and other relevant public documents.

Share Information and Raise Awareness – Public engagement methods used in the preparation of this plan sought input from a diverse range of stakeholders including the general public and various public, private, and non-profit sector representatives. One of the most commonly heard messages throughout these planning meetings and workshops is the need for clear information and ongoing communication among all stakeholders. Mitigation strategies identified in this plan address the public information and communication component in a universal manner (regardless of hazard type) and within a hazard-specific context, as applicable.

PLANNING GOAL

Historically, Brown County had several federal disaster declarations for flooding, severe storms (including winter storms), and tornadoes. More generally, Wisconsin disasters over the same period incurred millions of dollars in Federal Emergency Management Agency (FEMA) expenditures. Most recently, Brown County has seen two of the wettest years in recorded history (2018 & 2019), near record water levels in the Great Lakes, both of which contributed to numerous flooding events causing millions of dollars in property damage and loss.

The goal of this plan is to meet the requirements established by the Disaster Mitigation Act of 2000, and to eliminate or reduce vulnerability to significant or repetitive damage from one or more hazards determined to have potential in Brown County, Wisconsin.

PLANNING PROCESS

Development of the *Brown County, Wisconsin 2020 All Hazards Mitigation Plan* was based on the planning requirements and guidance provided by the Federal Emergency Management Agency (FEMA) and the Wisconsin Department of Military Affairs, Wisconsin Emergency Management (WEM). *Through* following these requirements and guidance, the plan meets the requirements of the Disaster Mitigation Act of 2000.

Since the WEM guidance for All Hazards Mitigation Plans recommended that planning areas “be consistent with a community’s comprehensive planning boundary,” the planning area for the *Brown County, Wisconsin 2020 All Hazards Mitigation Plan* includes all of the County of Brown, encompassing the cities of Green Bay and De Pere; villages of Allouez, Ashwaubenon, Bellevue, Denmark, Hobart, Howard, Pulaski, Suamico, and Wrightstown; and towns of Eaton, Glenmore, Green Bay, Holland, Humboldt, Lawrence, Ledgeview, Morrison, New Denmark, Pittsfield, Rockland, Scott, and Wrightstown. By including the entirety of Brown County and all municipalities contained within, this plan is compliant with WEM.

PLANNING APPROACH

Brown County initiated development of this updated plan with a pre-planning meeting held in January, 2019. Brown County staff and representatives from each of the communities were invited to a meeting to inform them of the process and to encourage their input and participation during the plan development period.

Development of the plan was structured along a four-phase planning process:

Phase I: Start-Up, Assess Community Support

Phase II: Assess Risks

Phase III: Develop a Mitigation Plan

Phase IV: Implement the Mitigation Plan

STEERING COMMITTEE

Brown County established a Hazard Mitigation Plan Steering Committee to oversee the development of the plan. Committee members were selected from all county departments involved in emergency management issues (i.e. Emergency Management, Sheriff, Highway, Health, Planning, Zoning, and Water Utility), county officials, and local community emergency personnel. Because the plan focused on updates, the Steering Committee did not include representation from adjacent counties, however; draft copies of the plan were sent to the adjacent counties prior to FEMA approval, and a final copy was posted to the Brown County website. The Steering Committee was responsible for providing input, guiding the planning process, reviewing and commenting on draft chapters of the plan, and advocating for approval at the county level. Brown County’s Emergency Management Coordinator collected and distributed information along with the Brown County Planning Commission for Steering Committee meetings in addition to handling the administrative portion of the grant.

During the assessment of natural hazard conditions, the Steering Committee reviewed and adjusted the prioritized potential natural hazards facing Brown County. The committee’s risk assessment for natural hazards can be found in Table 3.1 of Chapter 3

of this plan. Based on the results of this exercise and analysis of past natural hazards, the Steering Committee prioritized and selected the natural hazards that were to be the focus of this plan:

The 2020 Brown County All Hazards Mitigation Plan Steering Committee held meetings on the following dates:

1. January 17, 2019
2. March 28, 2019
3. December 21, 2020

The Steering Committee was also invited to participate in three virtual workshop that were part of a secondary project that sought to develop mitigation strategies using green infrastructure, low impact development, and nature-based solutions. The three workshops associated with this project were held on the following dates:

1. September 8, 2020
2. September 11, 2020
3. September 18, 2020

INCORPORATED COMMUNITY INVOLVEMENT

The *Brown County All Hazards Mitigation Plan* covers all the unincorporated towns within the county. The plan enables those communities to be automatically eligible for pre and post disaster funding opportunities. The county's eleven incorporated communities (two cities and nine villages) will need to adopt the All Hazards Mitigation Plan as their own in order to be eligible for these pre and post disaster funding grants.

The county's incorporated communities were invited to participate in the development of the plan throughout the two year process. Through the Brown County Emergency Management Department and Brown County Planning and Land Services Department, each municipality in Brown County was informed of the update and invited to participate at various times throughout the planning process. Since the adoption of the 2012 Brown County All Hazards Mitigation Plan, Brown County Emergency Management personnel has worked closely with the local municipalities and the Brown County Land Information Office to keep important datasets up to date for the E-911 system. Datasets important to emergency personnel such as critical facilities, street centerlines, addresses, and police and fire zones are continually reviewed and updated as necessary. This constant communication between Brown County and the local municipalities has been critical to this update process.

A near final-draft plan summary was sent to each community in December 2020 to keep the municipalities updated with the planning process. A final plan was provided to the Brown County Board of Supervisors through the emergency management and planning committees to keep them informed of the progress being made on the development of the county's All Hazards Mitigation Plan. To ensure each municipality within Brown County had input regarding mitigation strategies applicable to their respective community, a request was sent to each town, village, and city requesting input on possible mitigation projects, with a focus being made on site specific issues that may be unique to each community. The results of that information were gathered and included in table 4.4 of this Plan.

Once a draft of the All Hazard Plan and Mitigation Strategies was completed, the document was shared with each municipality. Each of the incorporated communities were asked to review and comment during the same time WEM was reviewing the document. During their review each community was asked to ensure the plan addresses their specific mitigation needs and to provide feedback to the Steering Committee as necessary. Municipality involvement was utilized in order to allow communities to provide comments, to allow the communities to offer information that would increase the plan eligibility for pre and post disaster funding, and to allow the municipality an opportunity to adopt the plan.

RELATIONSHIP TO BROWN COUNTY EMERGENCY PLANS

Brown County has prepared and adopted an ***Emergency Operations Plan*** for the county as part of its overall preparedness strategy.

The ***Emergency Operations Plan*** addresses response training and all aspects of response from occurrence forward. The purpose of the County Emergency Operations Plan is to:

1. Facilitate the protection of lives, property and the environment in major disasters of any nature.
2. Coordinate response to disasters, assess damages, identify mitigation opportunities and implement recovery efforts.
3. Describe the county's relationship in support of local units of governments during response and recovery.
4. Serve as a coordinating document for supporting Internal Agency Plans (IAP) (i.e., Policy and Procedures.)
5. Reflect information collected, decisions made, and procedures developed in the planning process and during response.
6. Provide a link between the county and municipal plans.

The All Hazards Mitigation Plan is complementary to the EOP and seeks to reduce hazard risks and impacts on a pre-event basis through:

- Structural hazard control or protection measures;
- Retrofitting of facilities;
- Acquisition and relocation of repetitive loss structures;
- Development of mitigation standards, regulations, policies, and programs;
- Review, updating, and enforcement of building codes;
- Public awareness and education programs; and
- Development or improvement of warning systems.

PLAN ORGANIZATION

The 2020 *Brown County All Hazards Mitigation Plan* is divided into five chapters to specifically address each of FEMA's local mitigation plan requirements. The five chapters are as follows:

Chapter 1 – Introduction is the executive summary of the *Brown County All Hazards Mitigation Plan*. It provides the overarching vision, purpose, and regulatory context for preparing this plan. The chapter also provides a brief synopsis of the plan's main sections as outlined below.

Chapter 2 – County Profile of Brown County is its physical, social, economic, and political characteristics comprised mainly of the following:

Historical Setting	Schools
Climate	Public Facilities
Geology	Transportation
Topography and Soils	Utilities
Hydrology	Population and Housing
Land Cover and Land Use	Demographic Trends
Community Infrastructure	Economics and Labor
Emergency Response Resources	

Chapter 3 – Risk Assessment profiles a range of potential natural hazards that could pose a threat to Brown County. As appropriate, selected events that may originate outside of the county have been included if they could jeopardize safety and stability within the county. This chapter also assesses vulnerabilities to the potential hazards based on a variety of considerations. This resulting assessment was used with other factors to identify priorities for future mitigation efforts.

Chapter 4 – Mitigation Strategies are a series of goals, objectives, and action steps to mitigate the impacts of each hazard. Each strategy has a lead department(s) responsible for addressing that strategy and for setting benchmarks to measure progress toward implementation.

Chapter 5 – Plan Adoption and Maintenance describes the planning process in terms of its technical, political, and public engagement components. This section also sets the course for plan implementation and updating, measuring progress, and continued engagement of persons with a stake in this plan; e.g., residents, municipal governments, county government, businesses, non-profit organizations, and schools.

EXECUTIVE SUMMARY

BROWN COUNTY PROFILE SUMMARY (CHAPTER 2)

Located in eastern Wisconsin, Brown County sits at the mouth of the Fox River. Brown County is the fourth most populous county in Wisconsin with an estimated population of over 264,000 people¹. Of the 615 square miles that comprise the county, most of the population is concentrated in the central portion, while the south and eastern areas are largely rural. Brown County is becoming increasingly urbanized and has been one of the most rapidly growing counties in the State of Wisconsin in the past and current decade. Much of the new population growth is occurring in second and third ring suburbs around Green Bay such as Howard, Suamico, Bellevue, and Ledgeview, Lawrence, and Hobart. The county enjoys a diversified economy and is home to some of the region's largest employers such as Georgia-Pacific, Schneider National, Inc., Humana, and Green Bay Area School District.

As stated in the *1974 Soil Survey of Brown County*, most of the soils in the county formed of glacial till and lake sediment that are high in clay. Overall, the survey identifies ten soil associations in the county, and each is susceptible to erosion problems. Agriculture lands comprise nearly 50 percent of the county's total acreage. The local climate is characterized by cold, snowy winters and warm, humid summers. The growing season is approximately 152 days.

RISK ASSESSMENT SUMMARY (CHAPTER 3)

Natural hazards profiled by this plan include:

Severe Winter Storms
Extreme Temperatures
Fog
Coastal Hazards
Drought
Landslides
Agriculture

Severe Summer Storms
Flooding
Wild Fires
Agriculture
Earthquakes
Subsidence

Other hazards are discussed in this plan, but the natural hazards listed above are the primary focus.

The following information is provided for each hazard: a general description of the hazard, its event history in the county, vulnerability considerations, possible cascading effects, existing plans and programs to address the hazard, and known gaps and deficiencies in these programs.

¹ WI Department of Administration, Population Projections by County:
https://doa.wi.gov/DIR/Final_Ests_Co_2020.pdf

Chapter 3 includes a three-part assessment of hazard concerns in Brown County:

1) Critical Facilities by Jurisdiction: The plan includes a summary of critical facilities vulnerable to accidents or terrorism as identified by communities within Brown County. Community representatives used CBRNE principles (chemical, biological, radiological, nuclear, and explosives) to assess critical facility vulnerability within their own jurisdictions.

2) All Hazards by Jurisdiction: Community representatives also identified top hazard concerns for their individual communities from a broader range of possible incidents, including natural and man-made hazards. Nearly every participating community identified severe weather incidents as their top hazard concern.

3) Countywide Vulnerability and Priorities: Vulnerability was then assessed on a countywide basis using the following parameters to determine an overall priority rating: past events, frequency of occurrence, warning time, geographic extent, and likely adverse impact. This assessment yielded the following hazards listed by priority:

- | | |
|---|---------------------------------|
| 1) Blizzards | 11) Agriculture |
| 2) Heavy Snow Storms | 12) Coastal Hazards |
| 2) Stormwater Flooding | 13) Drought |
| 4) Ice Storms | 13) Forest Fires/wildland Fires |
| 5) Tornadoes/High Winds | 13) Fog |
| 5) Flooding (Flash, Riverine, and Lake) | 17) Subsidence |
| 7) Extreme Cold | 18) Hail Storms |
| 8) Lightning Storms/Thunderstorms | 18) Landslide |
| 9) Extreme Heat | 20) Earthquake |
| 10) Dam Failure Flooding | |

MITIGATION STRATEGIES SUMMARY (CHAPTER 4)

Mitigation goals, objectives, and strategies were developed to:

- Reduce risks and potential impacts of the specific hazard events noted above.
- Address gaps in current preparedness plans and programs.
- Deal with concerns of collaborating entities (public, private, and non-profit sector representatives).
- Build on existing efforts, when possible.
- Enhance communication, information sharing, and education, when possible.

An overarching set of goals were developed to be applicable to any or all hazard situations, namely 1) communication, information sharing, and education; and 2) public health protection. Individual strategies within each of these goals were ranked based on priority, an identification of any new vs. ongoing efforts, target implementation dates, lead and participating agencies, potential funding sources, and possible benchmarks for future evaluation.

PLAN ADOPTION AND MAINTENANCE SUMMARY (CHAPTER 5)

Plan Adoption Process

A Steering Committee comprised of local and county officials and emergency management personnel guided the plan development process over a 2-year timeframe with professional planning support from the Brown County Planning Commission. Wisconsin Emergency Management (WEM) and FEMA reviewed the county's draft All Hazards Mitigation Plan. Their comments are on file and were incorporated into the final draft of the plan. Development of the updated plan began in January 2019 and was approved by a resolution by the Brown County Board of Supervisors on January 20, 2020.

Public Review Process

The public was able to comment during the drafting of the plan and during the final draft review process. A request was sent to each community to solicit their input on potential hazard problems within their municipality and possible mitigation strategies to address those conditions. While many communities responded, many communities did not.

While WEM was reviewing the draft *Brown County All Hazards Mitigation Plan*, a draft was posted to the Brown County website and the link was provided to each of the communities. Steering Committee members and communities were directed to the site to review the document with a complete set of maps, and hard copies were located at three key locations throughout the county for review by the public.

Plan Implementation

Brown County's Office of Emergency Management will oversee the implementation, evaluation, and maintenance of the *Brown County All Hazards Mitigation Plan*. This plan incorporates many of the county's emergency operations plans already in place; therefore, the mitigation strategies and procedures overlap and are to act in conjunction with one another. The implementation of this All Hazards Plan will also satisfy the conditions and actions in other plans to include the *Brown County Comprehensive Plan*, capital improvements budget, and applicable ordinances. As local communities update their comprehensive plans and emergency operations procedures/plans, each municipality should reference the mitigation strategies outlined in this all hazard mitigation plan. In turn, updated mitigation actions created at the local level should be reviewed for inclusion in any future updates of the *Brown County All Hazards Mitigation Plan*.

Plan Evaluation

Each mitigation strategy includes a matrix for monitoring implementation progress. More detailed steps will be developed, as needed, for more complex initiatives. At minimum, the Brown County Office of Emergency Management's designated committee will meet with municipalities and implementation partners to evaluate progress for each mitigation strategy, compile summary progress reports, and promote findings through the media, County Board of Supervisors, county committees, and local communities on an annual basis. This collaborative implementation approach will also provide a forum for identifying additional mitigation gaps.

Plan Maintenance

Brown County Emergency Management will review the plan annually with an update completed every five years. Brown County Emergency Management staff will continue to coordinate with local municipalities and other agencies to implement mitigation projects. Newly identified mitigation needs will be addressed through the development of additional goals, objectives, or strategies, as applicable. If there are changes needed in the priorities for implementation, the rationale will be documented. Revisions and updates will be distributed to the oversight committee appointed by the Brown County Emergency Management Office, municipalities, and implementation partners such as local hospitals and the Red Cross for review and approval.

Plan revisions will be made available through the Brown County's Office of Emergency Management website for general public review and comment during the plan updating process. Public comment on revisions and updates also will be solicited through a comprehensive public outreach strategy (news releases, open houses, partnerships). Updates and revisions to the plan will also be a way to further promote the need for continued hazard preparedness at all levels. The updated plan will be submitted for approval by the Brown County Board of Supervisors, WEM, and FEMA every five years.

CHAPTER 5 PLAN ADOPTION AND MAINTENANCE

PLAN ADOPTION PROCESS

The *2020 Brown County All Hazards Mitigation Plan* was prepared to ensure Brown County and its communities stay in compliance with the Disaster Mitigation Act of 2000 and remain eligible for various funding sources. The plan is divided into five chapters that address all of FEMA's local mitigation plan requirements. A Steering Committee comprised of local and county officials and emergency management personnel guided the plan development process over a 24-month timeframe with professional planning support from the Brown County Planning Commission.

Wisconsin Emergency Management (WEM) and FEMA each had a role in reviewing the county's draft All Hazards Mitigation Plan. The *2020 Brown County All Hazards Mitigation Plan* was sent to WEM on _____ for their pre-review. WEM forwarded the plan on to the FEMA Regional Office for review and informal approval. Final comments were received from WEM and FEMA on _____ and included in the plan as appropriate. When the plan met FEMA's guidelines, the *2020 Brown County All Hazards Mitigation Plan* was adopted by resolution by the Brown County Board of Supervisors on _____. Incorporated communities were encouraged to adopt the plan as well but were not required to do so.

PUBLIC REVIEW PROCESS

The public was able to comment on the draft via a virtual public meeting held in December of 2020. The draft document was also shared with each community for review. Final Plans were also provided to the county's Executive Committee, Public Education and Information Committee of Brown County's Office of Emergency Management and the Planning, Development, and Transportation Committee of the Brown County Planning Commission to keep them abreast of the planning process and to encourage their input and comments. A series of e-mail requests were sent to each community to solicit their input on potential hazard problems within their municipality and possible mitigation strategies to address those conditions. A letter was sent to each of the county's eleven incorporated municipalities asking them to review the plan to ensure any issues specific to their community were included in the final plan. Any input received was incorporated into *Chapter 4: Mitigation Strategies* and as appropriate elsewhere in the document. The review did not include representation from adjacent counties.

While WEM and FEMA were reviewing the draft *Brown County All Hazards Mitigation Plan*, copies of the draft plan were provided to each member of the Steering Committee, a CD copy was provided to the communities, the plan could be viewed on the Brown County website and a hard copy located at three key locations throughout the county for review by the public.

Once the plan was reviewed by WEM and FEMA, their comments were integrated as appropriate into the plan as well as those received from the Steering Committee members and public. The public was allowed to provide comments and ask questions regarding the development of the all hazard mitigation plan throughout the entire development process. All comments received during the plan review process and open houses were considered for inclusion in this plan.

PLAN IMPLEMENTATION

Brown County's Office of Emergency Management will oversee the implementation, evaluation, and maintenance of the *2020 Brown County All Hazards Mitigation Plan*. This plan incorporates many of the emergency operations plans already in place; therefore, the mitigation strategies and procedures overlap and are to act in conjunction with one another. The implementation of this all

hazard plan will also satisfy the conditions and actions in the other plans to include the county's comprehensive plan, capital improvements budget, and applicable ordinances.

Table 4.1 in Chapter 4: *Mitigation Strategies* lists the strategies by natural hazard, along with priority, timeline for implementation, lead county department(s), and cost if known. Through the guidance and direction of the Office of Emergency Management, a committee will be created or an existing committee will be directed to oversee the implementation and maintenance of the hazard mitigation plan. This committee will communicate with the identified departments on their role in the implementation of the plan. A work plan will be created based on the mitigation strategies with those of highest priority receiving preference. Local communities will be asked to participate in the implementation and monitoring of the plan due to the fact that the broad scope of many of the strategies requires local participation. Assignment of roles and responsibilities will be handled under the direction of the committee set to implement the plan. Work will commence according to priority status of each mitigation strategy and available funding.

PLAN INTEGRATION MECHANISMS

Since the last plan there have been many methods that have been used to integrate components of the *2020 Brown County All Hazards Mitigation Plan*. The following summarizes some of the methods in place since the last plan, or that have been developed since the last plan:

Comprehensive Planning – Brown County municipalities facilitated the development, or update of 15 additional comprehensive plans since the last All Hazard Mitigation Plan was written. Each comprehensive plan included a section that identified environmentally sensitive areas, natural features, flood plains, and floodways to help create a better understanding of areas subject to flooding.

Capital Improvement Planning – Brown County municipalities facilitated the development capital improvement plans to provide improved emergency management services. Some of the improvements related to fire, tornado warning, storm water control, etc.

Environmentally Sensitive Area Education – Brown County residents are offered education and information on a daily basis regarding environmentally sensitive areas, including floodways, and floodplains. In 2020, a new informational flyer and booklet, explaining the hazards of developing near certain hazard areas was published to further enhance public awareness.

Storm Water Management Planning – Brown County municipalities facilitated the development of 4 additional storm water management plan ordinances since the last All Hazard Mitigation Plan was written, for a total of 11 municipalities. Storm water management plan reviews for all other municipalities are reviewed by Brown County at the time land is subdivided by way of a plat or certified survey map. The Brown County review was in place prior to the last All Hazard Mitigation Plan being written.

PLAN EVALUATION

Each mitigation strategy includes a matrix for monitoring implementation progress. In addition, more detailed steps will be developed, as needed, for more complex initiatives. On at least an annual basis, Brown County's Office of Emergency Management designated committee will meet with municipalities and implementation partners to evaluate progress for each mitigation strategy, compile summary progress report, and promote findings through the media, County Board of Supervisors, county committees, and local communities. This collaborative implementation approach will also provide a forum for identifying additional mitigation needs.

PLAN MAINTENANCE

Federal regulations require that local hazard mitigation plans be reviewed, revised if appropriate, and resubmitted for approval in order to remain eligible for benefits awarded under the Disaster Mitigation Act (44 CFR Section 201.6.d(3) and Section 201.7(d)(3)). This plan's format allows Brown County and Brown County municipalities to review and update sections when new data becomes available. New data can be easily incorporated, resulting in a plan that will remain current and relevant. BC Emergency Management intends to update the plan on a five-year cycle from the date of plan approval. This cycle may be accelerated to less than 5 years based on the following triggers:

- A presidential disaster declaration that impacts the planning area
- A hazard event that causes loss of life
- An update of a participating jurisdiction's comprehensive plan

It will not be the intent of the update process to develop a completely new hazard mitigation plan. Based on needs identified by the planning team, the update will, at a minimum, include the following elements:

- The update process will be convened through a new steering committee.
- The hazard risk assessment will be reviewed and, if necessary, updated using best available information and technologies.
- Action plans will be reviewed and revised to account for any actions completed, dropped, or changed and to account for changes in the risk assessment or planning partnership policies identified under other planning mechanisms (such as the comprehensive plan).
- The draft update will be sent to appropriate agencies and organizations for comment.
- The public will be given an opportunity to comment on the update prior to adoption.
- Partners' governing bodies will adopt their respective portions of the updated plan.

Because plan updates can require a year or more to complete, Brown County will initiate efforts to update the plan before it expires. Brown County will consider applying for funding to update the plan no later than 2 calendar years before plan expiration.

Plan revisions will be made available through the Brown County Emergency Management website for general public review and comment during the plan updating process. Public comment on revisions and updates also will be solicited through a comprehensive public outreach strategy as deemed appropriate by Brown County Emergency Management to include any of the following; new releases, open houses, posters, brochures, partnerships. Public outreach efforts for the plan updates will further use these opportunities to provide ongoing public education on hazard preparedness. The reviewed and updated plan will be submitted to the Brown County Board of Supervisors, WEM, and FEMA for approval as necessary or at a minimum, every five years.

IMPLEMENTATION

The implementation of the *Brown County All Hazards Mitigation Plan* will be the responsibility of several Brown County departments with assistance provided by officials and emergency personnel from local communities, schools, and hospitals. The County Executive, with consultation and input from the Brown County Board of Supervisors, will oversee implementation of the plan through implementation of the individual strategies outlined in this chapter.

Brown County Departments include:

Emergency Management	Department of Public Works	Planning
Facility Management	Zoning	Parks
Land Information Office	Public Safety	Solid Waste
Human Services	Aging and Disability	Land Conservation
UW-Extension	Sheriff	Health

APPENDIX

Appendix A – Steering Committee Agendas

The Brown County All Hazard Plan Steering Committee held meetings on the following dates:

1. January 17, 2019
2. March 28, 2019
3. December 21, 2020

The Steering Committee was also invited to participate in three virtual workshop that were part of a secondary project that sought to develop mitigation strategies using green infrastructure, low impact development, and nature-based solutions. The three workshops associated with this project were held on the following dates:

1. September 8, 2020
2. September 11, 2020
3. September 18, 2020

Due to the COVID-19 pandemic, most of the information and participation from the Steering Committee was done through email correspondence or virtually through an online platform.

AGENDA
BROWN COUNTY ALL-HAZARDS MITIGATION PLAN UPDATE
STEERING COMMITTEE
Thursday, January 17, 2019
Brown County Emergency Management Office
(Brown County Jail)
3030 Curry Lane, 2nd Floor
Green Bay, WI
1:30 p.m.

ROLL CALL:

Rich Annen	_____	Chuck Lamine	_____
Bill Bosiacki	_____	Jody Lemmens	_____
Tom Collins	_____	David Litton	_____
Anna Destree	_____	Lauri Maki	_____
Jeff DuMez	_____	Bob Mayer	_____
Chief Eric Dunning	_____	Kurt Minten	_____
Steve Grenier	_____	Michael Moore	_____
Matt Heyroth	_____	Jared Preston	_____
Justin Hewitt	_____	Michael Piacenti	_____
Lynn Kroll	_____	Stephanie School	_____
Tom Kujawa	_____	Dan Teaters	_____

1. Introductions.
2. Overview of the Plan and how the Plan is used.
3. Discuss Project Timeline and Purpose for Steering Committee Performing Update.
4. Discuss Information and Maps in Chapters 1 and 2 of the Plan.
5. Establish Future Meeting Dates.
6. Other matters.
7. Adjourn.

ANY PERSON WISHING TO ATTEND WHO, BECAUSE OF A DISABILITY, REQUIRES SPECIAL ACCOMMODATION SHOULD CONTACT THE BROWN COUNTY HUMAN RESOURCES OFFICE AT 448-4065 BY THE DAY BEFORE THE MEETING SO ARRANGEMENTS CAN BE MADE.

AGENDA
BROWN COUNTY ALL-HAZARDS MITIGATION PLAN UPDATE
STEERING COMMITTEE
Thursday March 28, 2019
Brown County Emergency Management Office
(Brown County Jail)
3030 Curry Lane, 2nd Floor
Green Bay, WI
1:30 p.m.

ROLL CALL:

Rich Annen	_____	Chuck Lamine	_____
Bill Bosiacki	_____	Jody Lemmens	_____
Tom Collins	_____	David Litton	_____
Anna Destree	_____	Lauri Maki	_____
Jeff DuMez	_____	Bob Mayer	_____
Chief Eric Dunning	_____	Kurt Minten	_____
Steve Grenier	_____	Michael Moore	_____
Matt Heyroth	_____	Jared Preston	_____
Justin Hewitt	_____	Michael Piacenti	_____
Lynn Kroll	_____	Stephanie School	_____
Tom Kujawa	_____	Dan Teaters	_____

1. Introductions.
2. Discuss the Committees review of Chapters 1 and 2 of the Plan.
3. Affirm list of natural hazards.
4. Generate list of man-made hazards and vulnerabilities.
5. Determine how hazards should be evaluated.
6. Confirm next meeting date: April ____, 2019.
7. Other matters.
8. Adjourn.

ANY PERSON WISHING TO ATTEND WHO, BECAUSE OF A DISABILITY, REQUIRES SPECIAL ACCOMMODATION SHOULD CONTACT THE BROWN COUNTY HUMAN RESOURCES OFFICE AT 448-4065 BY THE DAY BEFORE THE MEETING SO ARRANGEMENTS CAN BE MADE.

AGENDA
BROWN COUNTY ALL-HAZARDS MITIGATION PLAN UPDATE
STEERING COMMITTEE
December 21, 2020
Virtual Meeting via Zoom
2:00 p.m.

ROLL CALL:

Rich Annen
Bill Bosiacki
Tom Collins
Anna Destree
Jeff DuMez
Steve Grenier
Matt Heyroth
Justin Hewitt
Angela Kowalzek-Adrians
Jody Lemmens
David Litton

Sara Lornson
Lauri Maki
Bob Mayer
Kurt Minten
Michael Moore
Julia Noordyk
Michael Piacenti
Ben Risch
Stephanie School
Dan Teaters
Brian Uhl

Introductions.

Overview of GI LID project final report

Review and discuss Draft BC AHMP

Approvals
WI Emergency Management
BC Approval

Other matters.

Adjourn.

ANY PERSON WISHING TO ATTEND WHO, BECAUSE OF A DISABILITY, REQUIRES SPECIAL ACCOMMODATION SHOULD CONTACT THE BROWN COUNTY HUMAN RESOURCES OFFICE AT 448-4065 BY THE DAY BEFORE THE MEETING SO ARRANGEMENTS CAN BE MADE.



[All credit for photos used in this document go to Brown County, WI]

Recommendations for Integrating Green Infrastructure and All Hazard Mitigation Planning in Brown County, WI

December 2020

INTRODUCTION

The Disaster Mitigation Act (DMA) of 2000 requires state, local, and tribal governments to have a Federal Emergency Management Agency (FEMA)-approved hazard mitigation plan (HMP) to establish eligibility for FEMA's Hazard Mitigation Assistance (HMA) funding programs. The purpose of an HMP is to identify a set of strategies to mitigate the natural hazards that impact the community. Each plan must identify hazard vulnerabilities and impacts, and then outline actions to mitigate the vulnerabilities and impacts identified. HMPs must be updated every 5 years and can be amended throughout the 5-year plan lifecycle. Hazard mitigation actions should be integrated into local jurisdictional mechanisms and can include plans/policies, capital projects, development requirements, and programs.

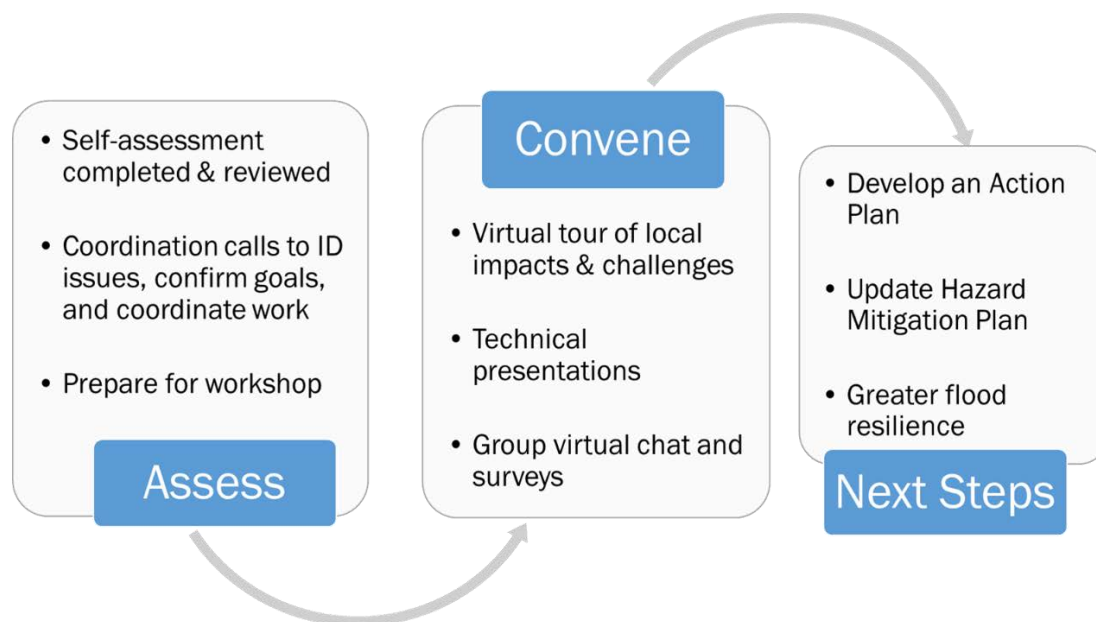
The frequency and severity of many risks, especially for flooding, is increasing with urbanization and changes in climate. As such, many local jurisdictions are adopting a proactive and integrated approach to anticipating and mitigating these risks. Failing to anticipate and mitigate potential risks early can increase the cost and liability to address the hazard risk later, especially after a hazard event has occurred. In addition, hazard preparedness is beginning to factor into local economic stability in terms of bond rating and desirability for businesses and residents to locate in the region. A proactive, integrated approach to hazard mitigation planning evaluates strategies that reduce risk while investing in co-benefits that increase environmental sustainability, economic value and local quality of life.

FEMA recently updated HMP Guidance to include provisions that allow for and incentivize integrated and green infrastructure/low impact development (GI/LID) approaches to hazard mitigation, including:

- More focus on integrated planning including natural resources.
- Future conditions considerations including impervious area expansion.
- Incentives to exceed the minimum plan content requirements - "Enhanced Plans" are eligible for more post-disaster funding.
- FEMA focus on resilience creates openness for local initiatives integrated into planning.
- In addition to FEMA, other state and federal agencies are more often prioritizing grant and loan funding for projects with co-benefits, such as GI/LID, that provide multiple community benefits.



This pilot project, which was sponsored by the U.S. Environmental Protection Agency (EPA) Office of Water and EPA Region 5, brought together representatives from EPA, Wisconsin Emergency Management, and FEMA to work with Brown County, Wisconsin and its local partners to examine options for integrating GI/LID into the county's All Hazard Mitigation Plan (AHMP). In providing this assistance to Brown County, EPA and its project consulting team used the following three stage process:



THREE STAGES OF TECHNICAL ASSISTANCE FOR BROWN COUNTY, WI

This report documents the key outcomes of technical assistance provided to Brown County to achieve the following goals:

- Identify the local flood and stormwater issues that could be addressed via hazard mitigation planning.
- Using local input, gauge the capacity/capability to address the flood and stormwater issues identified.
- Identify the gaps in capacity/capability.
- Enhance understanding of what makes a good mitigation project.
- Identify feasible actions that leverage the capacity/capability for integration into the Brown County AHMP.

EPA anticipates that this effort will provide an example that can be followed by other communities to integrate GI/LID into their local HMPs.

COMMUNITY CONTEXT

Brown County is located in east-central Wisconsin at the southern end of the bay of Green Bay on western Lake Michigan. The County has over 250,000 residents, with more than 100,000 of those residents living in the county seat of Green Bay, making it the fourth most populous county in Wisconsin. Urban development in Brown County is centered around Green Bay while the southern and eastern portions of the county are predominantly rural/agricultural. There are 13 townships, nine villages, and two cities in the county.



Brown County's location at the head of Green Bay and the mouth of Fox River has resulted in a long history as an economic and transportation crossroads for western Lake Michigan. Economic development in Brown County consists of a diverse group of industries led principally by paper and paper product manufacturers along the Fox River. Another important industry is cheese making — Green Bay is the largest cheese processing, concentrating, and shipping center in the U.S. Among the numerous other industries in Brown County are manufacturing, finance, transportation, and communications.

Geologically the county has been greatly influenced by glacial forces and the topography is generally categorized as gently rolling moraines. The western two-thirds of the county slopes northeastward where it drains into the Fox River before discharging into Green Bay. This drainage contains most of the Urban development in Brown County which is centered in and around the City of Green Bay and its adjacent communities with smaller areas of urban development in communities outside of this area. Drainage in rural areas is provided by natural stream channels often enhanced with agricultural drainage tile systems. In urban areas, stormwater sewer systems provide drainage of stormwater runoff into Green Bay. These systems exhibit a wide range of age, condition, and capacity. Throughout the county, older roadways are drained by way of a roadside ditch system while new construction contains modern stormwater infrastructure such as subsurface drainage systems and stormwater capture and treatment facilities.



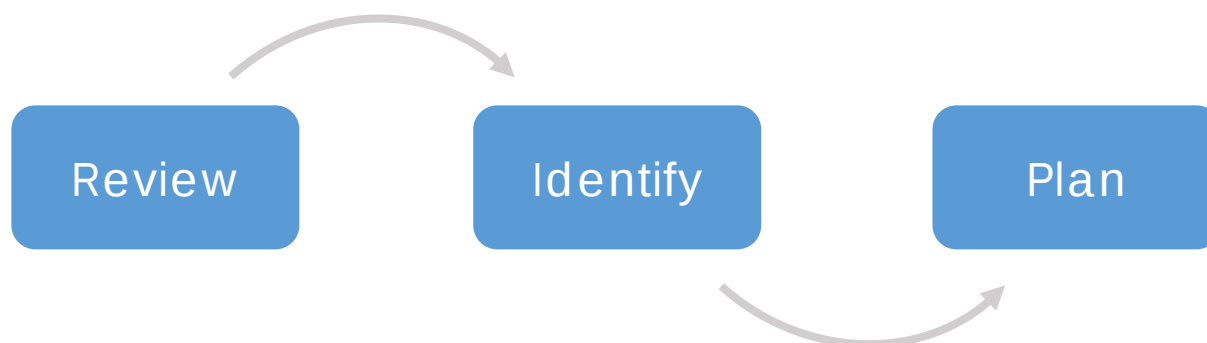
As part of updating the Brown County AHMP planners from the county and partner jurisdictions are assessing strategies for mitigating a wide diversity of identified hazards. Given the climate, development patterns, and shoreline/riverside setting of the county flooding impacts are a major hazard throughout the county and occur in response to a variety of causes including seiche, ice dams, snowmelt, riverine, and stormwater runoff. This flood risk was a high ranked hazard of concern for the planning area and is an emphasis of the Brown County AHMP Update.

COMMUNITY CONVENING

Brown County and AHMP partner representatives; state agency representatives; non-governmental organization representatives; FEMA staff; and EPA staff and consultants convened for a series of virtual workshops on September 8, 11, and 18, 2020. Workshop 1 provided a review of the flooding issues within Brown County which may be addressed by the Hazard Mitigation process. Workshop 2 focused on identifying green infrastructure solutions applicable to Brown County flooding issues and identifying possible alternatives to address them. Workshop 3 focused on building a set of action plan items that would lead to the integration of green infrastructure into Brown County's AHMP.



The ESRI Storymaps platform was used as the primary workshop delivery mechanism allowing facilitators to share information and graphics throughout each workshop while simultaneously providing workshop participants an opportunity to share information relevant to their respective community. Storymaps is a web-based application of ArcGIS that enables the sharing and building of maps and other data collaboratively. The Storymaps platform is particularly applicable to the virtual workshop setting. The three workshops followed a review-identify-plan process.



Workshop 1

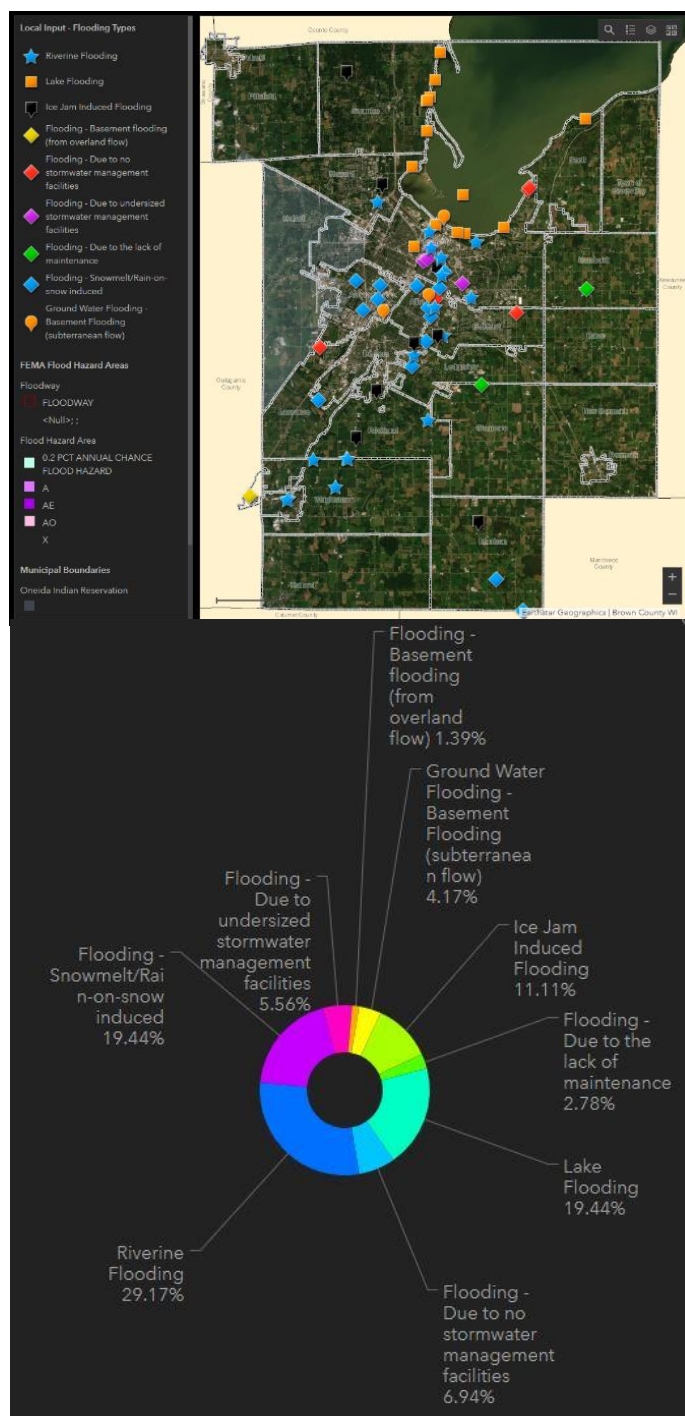
Workshop 1 was held on September 8, 2020, as a 2-hr virtual meeting. There were approximately 50 participants representing numerous communities throughout Brown County (see Appendix A for list of workshop attendees).

EPA Region 5 staff introduced the purpose of the workshops as a collaborative exploration of GI and its application within Brown County's AHMP update process.

The Brown County lead planner for the AHMP led off with a presentation of historical flooding problems throughout Brown County and detailed various flooding types and their causes. These included seiche, ice/snowmelt, coastal, and stormwater flooding. The presentation included a review of a county mapping application which tracks historic flooding incidents and provides a snapshot of the geographic distribution of flooding across the County.

Participants were then asked to provide information on known flooding issues within their respective communities. The ESRI ArcGIS StoryMaps application was used to collect this information via a survey link in which participants provided key information including; flooding type, impacted community, comments, representative photos, and other identifying information. For each entry participants were able to identify the flooding location via the mapping platform. This information was then uploaded to the story-mapping platform in real-time.

- Participants identified 50 individual locations of flooding issues geographically grouped according to flooding type
- Riverine flooding was the most reported flooding type at 29%
- Snowmelt/rain-on-snow and lake flooding were the next most common types reported at 19%
- Flooding due to the lack of, or undersized, stormwater management facilities were less reported at 7% and 6% of responses respectively.



Participants were then asked to complete a core capability exercise in the form of a web-based survey containing questions related to the capabilities to address stormwater flooding throughout the County. The first part of the core capabilities exercise focused on county-level capabilities where participants were asked to rate various stormwater capabilities in the county as either strengths or weaknesses. The second part of the exercise focused on the participant's local community and consisted of a yes/no response to a series of questions regarding each community's flood/stormwater programs and their relative core capacity.

Workshop 2

Workshop 2 was held on September 11, 2020 and followed the same general format as Workshop 1. The workshop began with a recap of the overall objectives of the workshops and a review of the results of Workshop 1. The facilitators provided an analysis of the core capability exercise responses provided by the workshop participants. The results highlighted several county scale strengths and challenges in the current policies and regulations in which flooding hazards are managed and mitigated. The following elements were rated as strengths or weaknesses by more than 60% of participant respondents. While other elements received a more even quantity of responses.

County-level Strengths

- Consistent regulations and practices to manage stormwater
- A good understanding of stormwater management issues by the public
- Future development within the county is managed so that flood hazards due to existing development are not increased
- Adequate capacity and resources to implement current stormwater management programs
- Floodplain management policies are consistent

County-level Challenges

- Stormwater management facilities are not always adequately sized and maintained
- Procuring funding for maintenance of publicly owned stormwater facilities
- Appropriating funding for the construction of needed new capital stormwater facilities
- Achieving public understanding of stormwater management and flood risks
- Gaining public and political support for the use of LID/GI and/or nature-based solutions (NBS) to manage stormwater



Local Capabilities

The core capabilities exercise also indicated occasional contrast between participants' perception of county level capacity and capability within their specific jurisdiction. Rather than a

strength/weakness response which was requested for the county level portion of the exercise, participants in the local core capabilities portion were asked to answer yes/no on a series of questions regarding their individual community's capacity to address hazards. Key results included the following:

- The local jurisdiction has an established stormwater utility to finance construction and operation of publicly owned stormwater collection and treatment systems (70% responded 'No')
- The floodplain program is coordinated with stormwater, source water, and other water resource programs (47% responded 'Yes')
- The local jurisdiction has a capital facilities program that can fund the construction of stormwater management facilities (58% responded 'Yes')

Some of the key findings from the capabilities exercise had a significant influence on the outcomes of this project. Most notable was the shift in focus from localized actions that target each planning partner individually, to more large scale, regional actions that would help address the significant variance in capability at the local level. A large variance in capacity/capability between the smaller towns/cities and the City of Green Bay/Brown County was identified by the core capability exercise. While this was not a surprise to the planning team, this finding did warrant a course correction in the focus of the discussion that followed Workshop 2.

The facilitator then provided a technical presentation on green infrastructure and its relevance to addressing stormwater flooding issues. The presentation included an overview of green infrastructure function and practices as well as information on the various benefits which green infrastructure provides in addition to its core function of protecting water quality. Particular focus was on the role which green infrastructure practices can serve in reducing overall stormwater runoff volumes and therefore reducing downstream flood impacts.

The presentation included a review of green infrastructure practices which may be applicable to Brown County. These included both urban practices such as permeable pavement, bioretention, and infiltration-based practices as well as practices applicable to rural/agricultural settings. Rural practices include many which are already incorporated into local watershed management plans serving the drainage areas in Brown County including wetland restoration, vegetated buffers, tile system management, and water and sediment control basins (WASCONBS). Finally, the presentation briefly reviewed program and policy elements necessary for the successful implementation of green infrastructure on a regional scale. These include stakeholder coordination, technical capacity, education and outreach, and funding/policy elements.



Workshop 3

Roughly 30 people convened virtually for Workshop 3 to support development of the Action Plan for integrating GI with the AHMP for Brown County. The group consisted of key stakeholders that could influence the incorporation of GI concepts into existing policies and future hazard mitigation projects.

As noted above, the results of the Workshop 2 core capabilities exercise resulted in a course correction for the content and focus of Workshop 3. The original game plan for Workshop 3 was to establish breakout groups organized by flood hazard problem type and similarity in core capability, with the objective of identifying clearly defined hazard mitigation actions for each planning partner to the Brown County Hazard Mitigation Plan. However, this approach was revised when it became apparent that the issues identified would be better addressed at the regional scale. So, the focus for discussion for Workshop 3 was shifted to how the issues identified could be addressed regionally. This discussion resulted in the identification of “countywide” actions that would benefit all planning partners to the Brown County Hazard Mitigation Plan. Area-wide actions are a best-management practice for multi-jurisdictional hazard mitigation plans and can be an effective way to build support for regional scale actions.

Participants in the action planning workshop identified 5 overarching actions that are important to Brown County and encompass the strengths, challenges, and opportunities discussed at the two earlier workshops for integrating GI into the AHMP.

Countywide Action Plan

1. Complete a comprehensive watershed master plan to regionalize the stormwater management program for Brown County
2. Develop a technical guidance manual on GI/LID Best Management Practices (BMP) for Brown County
3. Develop a public education and outreach program to promote the benefits and uses of GI/LID
4. Establish a funding coordination group within Brown County that can help identify and coordinate funding opportunities for GI/LID/NBS projects
5. Perform a comprehensive review of the local stormwater management codes and standards within Brown County

Countywide #1: Comprehensive Watershed Masterplan

Utilizing existing plans and programs as the foundation, complete a comprehensive watershed masterplan that looks at the feasibility and applicability to regionalize the stormwater management program for Brown County. This Master Plan will strive to answer the following questions:

- What are the current problems within Brown County (BC) in both a water quality and quantity context?
- What is the degree of consistency of adequate stormwater management codes and standards (including those needed to support GI) throughout the planning area and what are the barriers to implementing effective codes countywide?
- How will the identified problems change in the future based on projected growth if regulated to the current codes and standards within the county?
- How could the impacts of these identified problems (both current and future) be mitigated via various means, such as revisions to existing codes and standards to mitigate potential impacts that may occur due to new and redevelopment activities and projects?
- Estimated cost for that mitigation

Applies to New or Existing Assets	Lead & Support Agencies & Roles	Immediate Next Steps	Estimated Cost	Funding Sources	Success Measures	Timeframe	Priority
New and Existing	BC Planning (Lead), BC Land and Water Con., NEW Water, Local Governments, WDNR, ACOE, UWGB, Sea Grant, Oneida Tribe, NEWSC	Find funding sources to apply for grants, test political support	High	FEMA HMA grants (BRIC, HMGP), HUD (CDBG-DR and MIT), EDA Community Resilience Grants	The master plan will determine if this regional approach to stormwater management is feasible from a practical, financial, and political standpoint	Short-term	High/Medium

Countywide #2: Develop a Technical Guidance Manual

As an interim implementation measure to the completion of Countywide Action #1, develop a technical guidance manual that presents the appropriate GI/LID/NBS BMPs for Brown County. This manual will be utilized as an interim implementation tool to support the promotion, uses, and benefits of GI/LID/NBS practices to manage both stormwater quality and quantity.

Applies to New or Existing Assets	Lead & Support Agencies & Roles	Immediate Next Steps	Estimated Cost	Funding Sources	Success Measures	Timeframe	Priority
New and Existing	BC Planning (Lead), Sea Grant, New Water	Find funding sources to apply for grants, form an oversite committee	Medium	WI Coastal Management	Technical guidance manual will provide Brown County and local muni's with a resource tor GI/LID/NBS BMPs and lead to more GI/LID/NBS	Short-term	Low

Countywide #3: Public Education/Outreach Program

As an interim implementation measure to the completion of Countywide Action #1, develop a public education and outreach program that promotes the benefits and uses of GI/LID/NBS stormwater projects at the local and private property owner scales.

Applies to New or Existing Assets	Lead & Support Agencies & Roles	Immediate Next Steps	Estimated Cost	Funding Sources	Success Measures	Timeframe	Priority
New and Existing	NEWSC/UW Extension and the Leads (TBD), BC Planning, Muni's, Fox Watershed Alliance, New Water	Coordinate with support agencies, find funding sources to apply for grants	Medium	WI DNR – Surface Water Grant, WCMO, FEMA BRIC (C&CB)	NEWSC is a stormwater consortium that helps municipalities navigate MS4 requirements including education and outreach efforts; NEWSC could also be a good organization to help promote GI/LID/NBS	Short-term	Medium

Countywide #4: Funding Coordination Group

As an interim implementation measure to the completion of Countywide Action #1, establish a funding coordination group within Brown County that can help identify and coordinate funding opportunities for GI/LID/NBS stormwater management projects within the planning area.

Applies to New or Existing Assets	Lead & Support Agencies & Roles	Immediate Next Steps	Estimated Cost	Funding Sources	Success Measures	Timeframe	Priority
New and Existing	BC EM, BC Planning, BC Administration	Find funding sources to apply for grants	Low	Local funding	To secure funding for any of these countywide actions	Short-term	Medium

Countywide #5: Codes and Standards Review

Perform a comprehensive review of the local stormwater management codes and standards within Brown County to identify obstacles and/or barriers to the implementation and enforcement of GI/LID/NBS standards and practices for stormwater management. As an option under this action, Brown County's urban and urbanizing area communities could utilize the GI audit tool provided in "Tackling Barriers to Green Infrastructure, An Audit of Local Codes and Ordinance," to assess their capacity to support and promote GI during development and redevelopment projects.

Applies to New or Existing Assets	Lead & Support Agencies & Roles	Immediate Next Steps	Estimated Cost	Funding Sources	Success Measures	Timeframe	Priority
New and Existing	BC Planning, Local Municipal Planning Depts (Lead), WI Sea Grant	Find funding sources to apply for grants	Medium	FEMA (BRIC C&CB Grant)	Get all communities reviewed*	1-5 years	Medium/Low

* The audit tool already exists and has been used by the City of Green Bay. This audit can be done ASAP if desired by a local municipality.

Table Legend:

Applies to New or Existing Assets: Existing assets are the general building stock and/or critical facilities and infrastructure that currently exist within the planning area. New assets are the future building stock and/or critical facilities and infrastructure that have yet to be constructed.

Lead & Support Agencies & Roles: Agencies that will play a role in the implementation of the action. The lead agency will take the responsibility for implementation and oversight of the action while the support agency(s) with assuming a supporting role as determined by the lead agency. The lead agency has been underlined in the table.

Immediate Next Steps: What actions are needed to be taken by the lead and support agencies to get the action to a point of implementation.

Estimated Cost: Enter "High," "Medium" or "Low" as follows:

- High: Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed action.
- Medium: Could budget for under existing work-plan but would require a reapportionment of the budget or a budget amendment, or the cost of the action would have to be spread over multiple years.
- Low: Possible to fund under existing budget. Action is or can be part of an existing ongoing program.

Funding Sources: Identify funding sources for the action. If it is a grant, include the funding sources for the cost share. Refer to your fiscal capability assessment to identify possible sources of funding and refer to the table below for project eligibility for FEMA's hazard mitigation assistance grant program.

Success Measures: Measurement of success as it pertains to the implementation of the action. This can be either quantitative, measured by a metric, or qualitative, measured by subjective measures.

Time Frame: Indicate the timeline as "short-term" (1 to 5 years) or "long-term" (5 years or greater) or "ongoing" (a continual program).

Priority: Enter "High," "Medium" or "Low" as follows:

- High Priority: An action that meets multiple objectives, has benefits that exceed costs, and has a secured source of funding. Action can be completed in the short term (1 to 5 years).
- Medium Priority: An action that meets multiple objectives, has benefits that exceed costs, and is eligible for funding though no funding has yet been secured for it. Action can be completed in the short term (1 to 5 years), once funding is secured. Medium-priority actions become high-priority actions once funding is secured.
- Low Priority: An action that will mitigate the risk of a hazard, has benefits that do not exceed the costs or are difficult to quantify, has no secured source of funding, and is not eligible for any known grant funding. Action can be completed in the long term (1 to 10 years). "Wish-list" actions. They may be eligible for grant funding from programs that have not yet been identified.

NEXT STEPS



The countywide actions have been crafted and formatted so that they could easily be integrated into the Brown County AHMP. "Countywide" means that the entire planning area would benefit from the outcome of the action. The AHMP will include countywide actions for other hazards of concern addressed by the plan as well. While these actions are not jurisdiction specific, each entity participating in the multi-jurisdictional planning effort are encouraged to show their support for these actions by specifically including their endorsement of a specific countywide action in their individual action plans for their jurisdiction. For example, an action that could be incorporated into a jurisdiction specific action plan could read as follows:

Support the designated lead and partner agencies as needed in the implementation of the countywide actions identified in the Brown County All Hazard Mitigation Plan.

If a jurisdiction wants only to endorse certain countywide actions, but not all; the above statement could be crafted to only address those actions the jurisdiction wishes to endorse. As stated earlier, countywide actions can be a good platform from which to build consensus on regional scale actions. All jurisdictions participating in the Brown County hazard mitigation planning effort are encouraged to fully vet these 5 actions before including them in their individual action plans. It is important to note that there was consensus among those that participated in these workshops that the scale of the problem(s) to be addressed in the planning area warranted regional scale actions. In the future Brown County may want to pursue such regional scale actions in conjunction with regional and state agencies and other local partners.

The following text provides a comprehensive strategy for implementing these county-wide actions into the Brown County AHMP. The text draws on required plan components and best practices for development and maintenance of hazard mitigation plans while highlighting GI/LID/NBS elements identified during the workshop.

Plan Implementation/Maintenance Strategy

A hazard mitigation plan must present a plan maintenance process that includes the following (44 CFR Section 201.6(c)(4)):

- A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan over a 5-year cycle
- A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate
- A discussion on how the community will continue public participation in the plan maintenance process

While these points can be considered the “minimum” requirements for DMA planning compliance, a robust plan maintenance strategy is the key to keeping a plan dynamic, especially multi-jurisdictional scope plans like the Brown County planning effort. Therefore, it is recommended that the Brown County Hazard Mitigation Plan include the following plan implementation and maintenance strategy as a stand-alone chapter in the plan to emphasize its importance. The following strategy exceeds the 44 CFR section 201.6 requirements and meets the Community Rating System (CRS) plan maintenance requirements specified under activity 510.

Recommended Plan Text for Brown County

The following text should be included in the Brown County Hazard Mitigation Plan as a stand-alone chapter. Special note is made where GI/LID/NBS elements should be highlighted or reinforced.

This chapter details the formal process that will ensure that the hazard mitigation plan remains an active and relevant document and that the planning partners maintain their eligibility for applicable funding sources. The plan maintenance process includes a schedule for monitoring and evaluating the plan annually and producing an updated plan every five years.

This chapter also describes how public participation will be integrated throughout the plan maintenance and implementation process. It also explains how the mitigation strategies outlined in this plan will be incorporated into existing planning mechanisms and programs, such as comprehensive land-use planning processes, capital improvement planning, and building code enforcement and implementation.

The plan’s format allows sections to be reviewed and updated when new data become available, resulting in a plan that will remain current and relevant. Pursuant to 44CFR 201.6(c)(4)(i), the plan maintenance matrix shown in Table-1 provides a synopsis of responsibilities for the overall plan maintenance strategy, which are discussed in further detail in the sections below.

Table-1. Plan Maintenance Matrix

Task	Approach	Timeline	Lead Responsibility	Support Responsibility
Monitoring-Progress Reporting	Preparation of status updates and action implementation tracking as part of submission for annual progress report	January to January of each calendar year or upon full update to comprehensive plan or major disaster	Jurisdictional points of contact for each signatory to the plan	Jurisdictional implementation lead identified in the jurisdictional specific component of the plan
Evaluation	Annual progress reports will be evaluated by an oversight steering committee annually	Finalized progress report completed by March 1 of each year	Brown County	Jurisdictional implementation lead identified in the jurisdictional specific component of the plan
Update	Reconvene the planning partners, at a minimum, every 5 years to guide a full update to review and revise the plan	Every 5 years or upon full update to comprehensive plan or major disaster	Brown County and oversight steering committee	Jurisdictional points of contact for each signatory to the plan
Grant Monitoring and Coordination	Grant funding opportunities will be monitored via agency notifications, state associations and post-disaster response	Ongoing during the performance period of this plan	Brown County	Jurisdictional points of contact for each signatory to the plan
Plan Integration	Create a linkage between the hazard mitigation plan and individual jurisdictions' comprehensive plans or similar plans identified in the core capability assessments	Ongoing during the performance period of this plan as opportunities for integration become available, or according to timelines identified in the actions plans for each planning partner	Jurisdictional points of contact identified in Volume 2 annexes	Jurisdictional implementation lead identified in the jurisdictional specific component of the plan

Task	Approach	Timeline	Lead Responsibility	Support Responsibility
Continuing Public Involvement	Keep the website maintained and receive comments through it over the course of the plan; maintain planning partner links to the website; post county-wide progress report to the website	Ongoing during the performance period of the plan. Progress reports to be posted annually. Participating CRS communities are to provide the annual progress report to their governing bodies for their information	Brown County will maintain the overall hazard mitigation plan website and post the Countywide progress report annually (Each planning partner will provide a link to the website and post their individual progress report at their discretion. Participating CRS communities will follow protocol identified under step 10 of the 10-step CRS planning requirements)	Brown County and Jurisdictional implementation lead identified in Volume 2 annexes

Plan Monitoring-Annual Progress Reporting

Brown County will be the lead agency responsible for monitoring the plan, and each partner will support plan implementation by tracking the status of all recommended mitigation actions relevant to that partner. Staff or departments with primary responsibility are identified in each jurisdictional specific component of the plan.

The minimum task of each planning partner will be the monitoring of the progress of its individual action plan during a 12-month performance period. This review will include the following:

- The internal process for monitoring and evaluating the plan's processes will be evaluated as part of the annual progress reporting process
- Summary of any hazard events that occurred during the performance period and the impact these events had on the planning area
- Review of mitigation success stories
- Review of continuing public involvement [including the development of a countywide GI/LID/NBS education and outreach program]
- Brief discussion about why targeted strategies were not completed
- Re-evaluation of the action plan to determine if the timeline for identified projects needs to be amended (such as changing a long-term project to a short-term one because of new funding)
- Recommendations for new projects

- Changes in or potential for new funding options (grant opportunities)
- Impact of any other planning programs or actions that involve hazard mitigation

A template that shows the minimum level of detail that will be sought for preparing a progress report is provided in Appendix B. Brown County will oversee progress reporting and will have the discretionary authority on how to capture this information at least annually over the performance period of the plan. This information may be captured by various means available to the planning partnership. This report should be used as follows:

- Posted on the Brown County website page dedicated to the hazard mitigation plan
- Provided to the local media through available media outlets
- Presented to planning partner governing bodies to inform them of the progress of actions implemented during the reporting period
- Provided as part of the CRS annual re-certification package for planning partners that participate in the CRS. The CRS requires an annual recertification to be submitted by October 1 of every calendar year for which the community has not received a formal audit. To meet this recertification timeline, the planning team will strive to complete progress reports between June and September each year.



Uses of the progress report will be at the discretion of each planning partner. Annual progress reporting is not a requirement specified under 44 CFR. However, it may enhance the planning partners' opportunities for funding. While failure to implement this component of the plan maintenance strategy will not jeopardize a planning partner's compliance under the DMA, it may jeopardize its opportunity to partner and leverage funding opportunities with the other partners.

Plan Evaluation

Brown County has used a volunteer Steering Committee to oversee the update of the AHMP and made recommendations on key elements including the maintenance strategy. It was the Steering Committee's position that an oversight committee with representation similar to the initial Steering Committee should have an active role in the Plan maintenance strategy. Therefore, it is recommended that a Steering Committee remain a viable body involved in key elements of the Plan maintenance strategy. The new Steering Committee, managed by the Brown County Emergency Management Department, should strive to include representation from the planning partners, as well as other stakeholders in the planning area, at the discretion of Brown County.

The principal role of the Steering Committee in this plan maintenance strategy will be to provide a review forum to be used by Brown County and its planning partners to identify enhancements to be considered at the next update [such as the evaluation of a potential watershed master plan(s) for incorporation of GI/LID/NBS elements as part of flood hazard mitigation efforts]. Keeping a Steering

Committee intact will provide a head start on future updates. However, it should be noted that completion of the progress report is the responsibility of each planning partner, not the responsibility of the Steering Committee. It will be the Steering Committee's role to serve as a resource to all planning partners as needed to review the progress report in an effort to identify issues needing to be addressed by future plan updates.

Plan Update

Federal regulations require that local hazard mitigation plans be reviewed, revised if appropriate, and resubmitted for approval in order to remain eligible for benefits awarded under the Disaster Mitigation Act (44 CFR Section 201.6.d(3) and Section 201.7(d)(3)). This format allows all of the individual planning partners to review and update plan sections when new data become available. New data can be easily incorporated including newly recommended actions, resulting in a plan that will remain current and relevant. The County intends for planning partners to support updating the plan on a five-year cycle from the date of plan approval. This cycle may be accelerated to less than 5 years based on the following triggers:

- A presidential disaster declaration that impacts the planning area
- A hazard event that causes loss of life
- An update of a participating jurisdiction's comprehensive plan

It will not be the intent of the update process to develop a completely new hazard mitigation plan. Based on needs identified by the planning team, the update will, at a minimum, include the following elements:

- The update process will be convened through a new steering committee
- The hazard risk assessment will be reviewed and, if necessary, updated using best available information and technologies
- Action plans will be reviewed and revised to account for any actions completed, dropped, or changed and to account for changes in the risk assessment or planning partnership policies identified under other planning mechanisms (such as the comprehensive plan)
- The draft update will be sent to appropriate agencies and organizations for comment
- The public will be given an opportunity to comment on the update prior to adoption
- Partners' governing bodies will adopt their respective portions of the updated plan

Because plan updates can require a year or more to complete, Brown County will initiate efforts to update the plan before it expires. Brown County will consider applying for funding to update the plan no later than 2 calendar years before plan expiration.

Grant Monitoring and Coordination

Brown County will identify grant funding opportunities and send notifications to participating partner jurisdictions. This will include the organization of a GI/LID/NBS coordination group to identify grant opportunities related to these elements. Once these grant opportunities are identified, planning partners interested in pursuing a grant will convene in a short meeting to review the hazard mitigation plan and pursue a strategy to capture that grant funding including grant application. Brown County Emergency Management will assume lead responsibility for planning and facilitating grant

opportunity meetings. Review of the hazard mitigation plan at these meetings can include the following:

- Discussion of any hazard events that occurred during the prior year and their impact on the planning area
- Impact of potential grant opportunities on the implementation of mitigation actions
- Re-evaluation of the action plans to determine if the timeline for identified actions needs to be amended (such as changing a long-term action to a short-term action because of funding availability)
- Recommendations for new actions/removal of completed or unwarranted projects
- Impact of any other planning programs or initiatives that involve hazard mitigation

If multiple planning partners decide to pursue the same grant funding opportunity, partnerships can be formed to utilize the hazard mitigation plan in the grant application. Coordination should always include Brown County Emergency Management.

Incorporation into Other Planning Mechanisms

The information on hazard, risk, vulnerability, and mitigation contained in this plan is based on the best science and technology available at the time this plan was prepared. Note that the comprehensive plans of the planning partners are considered to be integral parts of the Brown County AHMP. The planning partners used their comprehensive plans, capital improvement plans, and the hazard mitigation plan as complementary documents that work together to achieve the goal of reducing risk exposure to the citizens of the planning area. An update to a comprehensive plan may trigger an update to the hazard mitigation plan.

All municipal planning partners are committed to creating a linkage between the hazard mitigation plan and their individual comprehensive plans by identifying a mitigation action as such and giving that action a high priority. Other planning processes and programs to be coordinated with the recommendations of the hazard mitigation plan include the following:

- Emergency response plans
- Training and exercise of emergency response plans
- Debris management plans
- Recovery plans
- Capital improvement programs
- Municipal codes [including GI/LID/NBS code reviews]
- Community design guidelines
- Green Infrastructure design guidelines
- Stormwater management programs
- Water system vulnerability assessments
- Community wildfire protection plans
- Comprehensive flood hazard management plans
- Resiliency plans
- Community Development Block Grant-Disaster Recovery action plans
- Public information/education plans

Some action items do not need to be implemented through regulation. Instead, these items can be implemented through the creation of new educational programs, continued interagency coordination, or improved public participation. As information becomes available from other planning mechanisms that can enhance this plan, that information will be incorporated via the update process.

Continuing Public Participation

The public outreach strategy used during development of the current update will provide a framework for public engagement through the plan maintenance process. It can be adapted for ongoing public outreach as determined to be feasible by the planning partnership such as for educating stakeholders on the potential application of green infrastructure. A steering committee similar to the one involved in developing this hazard mitigation plan update will be put in place to provide stakeholder input on plan maintenance activities.

The public will continue to be apprised of hazard mitigation activities through the website and reports on successful hazard mitigation actions provided to the media. Brown County will keep the website maintained, including monitoring the email address where members of the public can submit comments to the steering committee. This site will house the final plan and will be a one-stop shop for information regarding the plan, the partnership and plan implementation. Copies of the plan also will be distributed to the Brown County Library System.

Upon initiation of the next plan update process, a new public involvement strategy will be initiated, with guidance from the new steering committee. This strategy will be based on the needs and capabilities of the planning partnership at the time of the update. At a minimum, it will include the use of local media outlets.



Additional Resources

Community Rating System Frequently Asked Questions

www.floodsmart.gov/floodsmart/pages/crs/community_rating_system.jsp

FEMA Building Community Resilience with Nature-based Solutions

www.fema.gov/Riskmap-nature-based-solutions-guide-2020.pdf

FEMA Building Resilient Infrastructure and Communities (BRIC)

www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities

FEMA Flood Mitigation Assistance Grant Program

www.fema.gov/flood-mitigation-assistance-grant-program

FEMA Hazard Mitigation Grant Program

www.fema.gov/hazard-mitigation-grant-program

FEMA National Flood Insurance Program, Community Rating System

www.fema.gov/national-flood-insurance-program-community-rating-system

FEMA Pre-Disaster Mitigation Grant Program

www.fema.gov/pre-disaster-mitigation-grant-program

HUD Community Development Block Grant Disaster Recovery Program

<https://www.hudexchange.info/programs/cdbg-dr/>

Implementing Stormwater Infiltration Practices at Vacant Parcels & Brownfields

<http://www.epa.state.il.us/water/watershed/publications/implementing-stormwater-infiltration-practices.pdf>

National Association of City Transportation Officials (NACTO) Urban Street Stormwater Guide

<https://nacto.org/publication/urban-street-stormwater-guide/>

National Stormwater Calculator

<https://www.epa.gov/water-research/national-stormwater-calculator>

NOAA Resilience Grant Program

coast.noaa.gov/resilience-grant/

U.S. EPA Building Blocks for Sustainable Communities

<http://www.epa.gov/dced/buildingblocks.htm>

U.S. EPA Flood Resilience for Riverine and Coastal Communities Checklist

Tool helps communities adapt to climate change and plan for disaster resilience by auditing local plans, policies, and development regulations. For more information on flood resilience, visit:

www2.epa.gov/smartgrowth/flood-resilience-checklist

U.S. EPA Green Infrastructure Website

<http://www.epa.gov/green-infrastructure>

U.S. EPA Green Infrastructure Funding Sources

<https://www.epa.gov/green-infrastructure/green-infrastructure-funding-opportunities>

U.S. EPA Manage Flood Risk

www.epa.gov/green-infrastructure/manage-flood-risk

U.S. EPA Reference Documents on Incorporating Green Infrastructure into Brownfields Projects

https://www.epa.gov/sites/production/files/2015-07/documents/green_infrastructure-9-16-14.pdf

<http://www.epa.gov/green-infrastructure>

U.S. EPA Water Quality Scorecard: Incorporating Green Infrastructure Practices at the Municipal, Neighborhood, and Site Scale

<http://www.epa.gov/smartgrowth/water-quality-scorecard-incorporating-green-infrastructure-practices-municipal>

APPENDIX A – WORKSHOP ATTENDEES

9/8/20	9/11/20	9/18/20	Name	Title	Affiliation
•	•		Bertler, Joe	Fire Chief	Village of Suamico Fire Department
•			Bosiacki, Bill	Zoning Administrator	Brown County Zoning
•		•	Butry, Adam	Health, Safety, Security Coordinator	NEW Water (Green Bay Metropolitan Sewerage District)
•	•	•	Clements, Trevor	Principal Planner	Tetra Tech
•			Delzell, Sophie	Environmental Communications Specialist	Tetra Tech
•	•	•	DuMez, Jeff	GIS Coordinator / LIO	Brown County
•	•		Dunks, Steve	Zoning Administrator	Village of Suamico
•		•	Estrup, Cindy	Sergeant Emergency Manager	University of Wisconsin Green Bay
•	•	•	Flaner, Rob	Hazard Mitigation Program Manager	Tetra Tech
		•	Fuller, Trevor	Planning and Zoning Administrator	Village of Allouez
•	•	•	Garcia, Chris	Transportation Planner	Bay-Lake Regional Planning Commission
•	•	•	Genchanok, Yana	Environmental Engineer	EPA
•	•	•	Goo, Robert	Environmental Protection Specialist	US EPA
•	•	•	Grenier, Steve	Director of Public Works	City of Green Bay
•	•	•	Gresham, Kaylynn	Emergency Management Director	Oneida Nation
•	•	•	Grosshans, Jon	Community Planner	EPA
•			Hewitt, Justin	Project Specialist	Green Bay Water utility
•	•		Heyroth, Matt	Assistant Zoning Administrator	Brown County Planning and Land Services - Zoning
•			Jacobs, Meghan	Market Human Resources Manager	Bryant & Stratton College
•			Janke, Ed	Chief	Village of Howard

•			Juedes, Jesse	Supervisor	Town of Wrightstown
•	•		Kaster, Mike	Director of Engineering	Village of Howard
•	•		Koenig, Julie	Clerk	Town of Rockland
•	•	•	Kotenberg, Kurt	Warning Coordination Meteorologist	National Weather Service
•	•	•	Kowalzek-Adrians, Angela	Contract & Grant Specialist	NEW Water (Green Bay Metropolitan Sewerage District)
•			Kozak, Michelle	Chief of Emergency Management	Army Corp - Chicago
•	•		Kozloski, Nick	Lieutenant	ASHWAUBENON
•			Ladwig, Holly	211 and Program Investment Manager	Brown County United Way
•			Lange, Brad	Administrator	City of Green Bay
•	•	•	Maki, Lauri	Director	Brown County Emergency Management
•	•	•	Marsh, Janette	Nonpoint Source Specialist State and Tribal Programs	U.S. EPA Region 5
•			Massie, Joe	Communications Specialist	Brown County
•			Moore, Mike	Services Manager	Wisconsin Public Service
•	•	•	Mosso, Dacia	Associate Director of Environmental Sciences	Tetra Tech
•	•	•	Neumann, Blake	East River Resiliency Fellow	The Nature Conservancy
•		•	Neumeyer, Paul	Zoning Administrator	City of Green Bay
•	•	•	Noordyk, Julia	Water Quality and Coastal Community Specialist	UW Sea Grant
•		•	Pelch, Steve	Coordinator	North East Wisconsin Healthcare Emergency Readiness Coalition
•	•	•	Peltier, Cullen	Director	Brown County Public Safety Communications
•	•	•	Peterson, Cadence	Mitigation Planner	FEMA RV
•	•	•	Qualls, Nathan	Director of Technical Services	NEW Water (Green Bay Metropolitan Sewerage District)

•	•		Risch, Ben	Emergency Dispatch Supervisor	Wisconsin Public Service Corp
	•	•	Rowell, Andy	Public Works Director	Village of Bellevue
•	•	•	Sarau, Lisa	Staff Engineer	NEW Water (Green Bay Metropolitan Sewerage District)
•			School, Stephanie	Emergency Management Specialist	Hospital Sisters Health System (HSHS)
•	•	•	Smith, Jonathan	Senior Stormwater Engineer	Tetra Tech
	•	•	Smith, Madison	Planner	City of Green Bay
	•	•	Smudde, Jeff	Director of Environmental Programs	NEW Water (Green Bay Metropolitan Sewerage District)
		•	Sommers, Katie	State Hazard Mitigation Officer	WI Emergency Management
	•		Studer, Melissa	Senior Stormwater Engineer	Tetra Tech
•	•	•	Teaters, Dan	Senior Planner, Natural Resources & Land Division	Brown County Planning and Land Services
•	•	•	Tews, Randy	Deputy Chief	ASHWAUBENON
•			Treml, Ben	Regional Conservation Warden	WI - DNR
•	•	•	UsarekWitek, Magda	Project Planner/GIS Specialist	Tetra Tech
•	•		Vickman, Andy	Superintendent of Public Works and Utilities	Village of Wrightstown
•	•		Wescott, Patrick	Director of Operations	NEW Water (Green Bay Metropolitan Sewerage District)
•	•	•	Willemon, Genny	EMR Coordinator/Safety Chair, NEW HERC President	Brown County

APPENDIX B – PROGRESS REPORT TEMPLATE

2020 Brown County Hazard Mitigation Plan Annual Progress Report

Reporting Period: (Insert reporting period)

Background: Brown County and participating cities and special purpose districts in the county developed a hazard mitigation plan to reduce risk from all hazards by identifying resources, information, and strategies for risk reduction. The federal Disaster Mitigation Act requires state and local governments to develop hazard mitigation plans as a condition for federal disaster grant assistance. To prepare the plan, the participating partners organized resources, assessed risks from natural hazards within the county, developed planning goals and objectives, reviewed mitigation alternatives, and developed an action plan to address probable impacts from natural hazards. By completing this process, these jurisdictions maintained compliance with the Disaster Mitigation Act, achieving eligibility for mitigation grant funding opportunities afforded under the Robert T. Stafford Act. The plan can be viewed on-line at:

(Insert Website address)

Summary Overview of the Plan's Progress: The performance period for the *2020 Brown County Hazard Mitigation Plan* became effective in Month Year with the final approval of the plan by FEMA. The initial performance period for this plan will be 5 years, with an anticipated update to the plan to occur before Month Year. As of this reporting period, the performance period for this plan is considered to be ___% complete. The hazard mitigation plan has targeted ___ hazard mitigation actions to be pursued during the 5-year performance period. As of the reporting period, the following overall progress can be reported:

___ out of ___ actions (___ %) reported ongoing action toward completion.

___ out of ___ actions (___ %) were reported as being complete.

___ out of ___ actions (___ %) reported no action taken.

Purpose: The purpose of this report is to provide an annual update on the implementation of the action plan identified in the *2020 Brown County Hazard Mitigation Plan*. The objective is to ensure that there is a continuing and responsive planning process that will keep the hazard mitigation plan dynamic and responsive to the needs and capabilities of the partner jurisdictions. This report discusses the following:

- Natural hazard events that have occurred within the last year
- Changes in risk exposure within the planning area
- Mitigation success stories
- Review of the action plan
- Changes in capabilities that could impact plan implementation
- Recommendations for changes/enhancement.

The Hazard Mitigation Plan Steering Committee: The Hazard Mitigation Plan Steering Committee, made up of planning partners and stakeholders within the planning area, reviewed and approved this progress report at its annual meeting held on _____, 202_. It was determined through the plan's development process that a steering committee would remain in service to oversee maintenance of the plan. At a minimum, the Steering Committee will provide technical review and oversight on the development of the annual progress report. It is anticipated that there will be turnover in the membership annually, which will be documented in the progress reports. For this reporting period, the Steering Committee membership is as indicated in Table 1.

Table 1. Steering Committee Members

Name	Title	Jurisdiction/Agency

Natural Hazard Events within the Planning Area: During the reporting period, there were __ natural hazard events in the planning area that had a measurable impact on people or property. A summary of these events is as follows:

Changes in Risk Exposure in the Planning Area: *(Insert brief overview of any natural hazard event in the planning area that changed the probability of occurrence or ranking of risk for the hazards addressed in the hazard mitigation plan)*

Mitigation Success Stories: *(Insert brief overview of mitigation accomplishments during the reporting period)*

Review of the Action Plan: Table 2 reviews the action plan, reporting the status of each action. Reviewers of this report should refer to the hazard mitigation plan for more detailed descriptions of each action and the prioritization process.

Address the following in the "status" column of the following table:

- Was any element of the action carried out during the reporting period?
- If no action was completed, why?
- Is the timeline for implementation for the action still appropriate?
- If the action was completed, does it need to be changed or removed from the action plan?

Table 2. Action Plan Matrix

Action Taken? (Yes or No)	Time Line	Priority	Status	Status (X, O, ✓)
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		

Completion status legend:
✓ = Project Completed
O = Action ongoing toward completion
X = No progress at this time

Changes That May Impact Implementation of the Plan: (Insert brief overview of any significant changes in the planning area that would have a profound impact on the implementation of the plan. Specify any changes in technical, regulatory and financial capabilities identified during the plan's development)

Recommendations for Changes or Enhancements: Based on the review of this report by the Hazard Mitigation Plan Steering Committee, the following recommendations will be noted for future updates or revisions to the plan:

Public review notice: The contents of this report are considered to be public knowledge and have been prepared for total public disclosure. Copies of the report have been provided to the governing boards of all planning partners and to local media outlets and the report is posted on the Brown County Hazard Mitigation Plan website. Any questions or comments regarding the contents of this report should be directed to:

**Brown County Planning and Land Services
305 E. Walnut St.
Green Bay, WI 54301
Ph: 920 448-6480**

Appendix C – Final Plan Shared with Municipalities Letter

To be included after FEMA approval

LETTER Place holder

Appendix D – List of Critical Facilities

The following list of critical facilities was derived from the Brown County Land Information Office address points data set. The Brown County Land Information Office and Emergency Management Departments work closely together to identify infrastructure and various facilities round the county that qualify as critical facilities and include that information in the GIS system used by Emergency Management for emergency response. The following table include the Geographic ID number, the critical facility use, critical facility name (if applicable) and the municipality in which its located.

ID	Usage	Name	Municipality
8333	WATER TOWER	DE PERE WATER TOWER - E MATTHEW DR	CITY OF DE PERE
79768	Electric Power Substation	DEPERE ENERGY CENTER	CITY OF DE PERE
79773	Water Supply Storage Tanks/Reservoirs	DEPERE WATER PUMP 3	CITY OF DE PERE
79774	Water Supply Storage Tanks/Reservoirs	DEPERE WATER PUMP 4	CITY OF DE PERE
79775	WATER PUMP	DEPERE WATER PUMP 5	CITY OF DE PERE
79776	WATER PUMP	DEPERE WATER PUMP 6	CITY OF DE PERE
79820	ELDERLY CARE FACILITY	RENNES HEALTH CENTER-NH	CITY OF DE PERE
79839	Radio/Television Stations	WGEE RADIO TOWERS	CITY OF DE PERE
79841	ELECTRICAL SUBSTATION	WPS SUB STATION 13	CITY OF DE PERE
79842	ELECTRICAL SUBSTATION	WPS SUB STATION 15	CITY OF DE PERE
80523	DAM	DEPERE DAM	CITY OF DE PERE
80635	Bridge (road over road)	CLAUDE ALLOUEZ EAST OVER FRONT ST	CITY OF DE PERE
81596	SCHOOL & RED CROSS DESIGNATED SHELTER	SYBLE HOPP SCHOOL	CITY OF DE PERE
81597	ELEMENTARY SCHOOL	WESTWOOD ELEMENTARY	CITY OF DE PERE
81620	SCHOOL	WEST DEPERE HIGH SCHOOL	CITY OF DE PERE
81850	CARE-CHILD	CREEKSIDE CHRISTIAN MONTESSORI	CITY OF DE PERE
82050	CARE-CHILD	ENCOMPASS CHILD CARE	CITY OF DE PERE
82615	HEALTH	AURORA PHARMACY	CITY OF DE PERE
95402	CLINIC	AURORA HEALTH CENTER	CITY OF DE PERE
95590	SCHOOL & RED CROSS DESIGNATED SHELTER	DICKINSON ELEMENTARY SCHOOL	CITY OF DE PERE
95949	SCHOOL	NOTRE DAME ELEMENTARY	CITY OF DE PERE
95978	CHURCH	FIRST UNITED PRESBYTERIAN	CITY OF DE PERE
96232	SCHOOL	SNC BUSH ART CENTER	CITY OF DE PERE
96498	CLINIC	BELLIN HEALTH CENTER	CITY OF DE PERE
96562	RESIDENTIAL CARE HOMES	RENAISSANCE ASSISTED LIVING	CITY OF DE PERE

96699	SCHOOL	ALTMAYER ELEMENTARY	CITY OF DE PERE
97102	HIGH SCHOOL & RED CROSS DESIGNATED SHELTER	DEPERE HIGH SCHOOL	CITY OF DE PERE
97136	FIRE STATION	DPFD FIRE STATION 1	CITY OF DE PERE
97137	FIRE & AMBULANCE STATION	DPFD FIRE STATION 2	CITY OF DE PERE
97280	SCHOOL	FOX VIEW INTERMEDIATE SCHOOL	CITY OF DE PERE
97317	School	MONTESSORI CHILDRENS WORLD	CITY OF DE PERE
97352	RETAIL SALES	PREVEA CLINIC	CITY OF DE PERE
98112	Municipal Garage	DEPERE MSC	CITY OF DE PERE
98375	SCHOOL	OUR LADY OF LOURDES SCHOOL	CITY OF DE PERE
98425	POLICE STATION	DEPERE POLICE DEPT	CITY OF DE PERE
98435	POST OFFICE	POST OFFICE DEPERE	CITY OF DE PERE
98556	WASTEWATER TREATMENT DePere Facility	DE PERE SEWER PLANT - NEW Water DBF	CITY OF DE PERE
98615	SPORTS STADIUM	SNC SOCCER STADIUM	CITY OF DE PERE
98981	MIDDLE SCHOOL	WEST DEPERE MID SCHOOL	CITY OF DE PERE
189084	FIRE & AMBULANCE STATION	DEPERE FIRE STATION 1	CITY OF DE PERE
189085	FIRE STATION	DEPERE FIRE STATION 2	CITY OF DE PERE
244490	Bridge (railroad over road)	NA	CITY OF DE PERE
244496	Bridge (road over water)	NA	CITY OF DE PERE
244506	Bridge (road over road)	NA	CITY OF DE PERE
244507	Bridge (road over road)	NA	CITY OF DE PERE
244508	Bridge (road over water)	CLAUDE ALLOUEZ BRIDGE	CITY OF DE PERE
244509	Bridge (road over road)	STH 32-57 & CTH PP OVERPASS	CITY OF DE PERE
244510	Bridge (road over trail)	NA	CITY OF DE PERE
244511	Bridge (road over water)	I-41 & ASHWAUBENON CREEK	CITY OF DE PERE
244513	Bridge (road over water)	SCHEURING RD OVER ASHWAUBENON CREEK	CITY OF DE PERE
244563	Bridge (railroad over road)	NA	CITY OF DE PERE
244564	Bridge (road over water)	NA	CITY OF DE PERE
244636	Bridge (road over road)	I-41 & SCHEURING RD OVERPASS	CITY OF DE PERE
244750	Bridge (road over water)	NA	CITY OF DE PERE
244751	Bridge (road over water)	NA	CITY OF DE PERE
244753	Bridge (road over water)	NA	CITY OF DE PERE
244755	Bridge (road over water)	I-41 & ASHWAUBENON CREEK	CITY OF DE PERE
244756	Bridge (road over water)	NA	CITY OF DE PERE
245092	Bridge (road over road)	NA	CITY OF DE PERE

247900	Wastewater Facility (Lift Station)	NEW Water OPLS-LS	CITY OF DE PERE
252736	Dam	NA	CITY OF DE PERE
252753	Dam	NA	CITY OF DE PERE
252754	Dam	NA	CITY OF DE PERE
252755	Dam	NA	CITY OF DE PERE
252764	Dam	NA	CITY OF DE PERE
27799	GENERATION/PROCESSING OF COMMUNICATION/UTILITIE	NA	CITY OF GREEN BAY
28798	SUB-STATION	NA	CITY OF GREEN BAY
36787	CLINICS	NA	CITY OF GREEN BAY
37071	PRIMARY SCHOOLS	ALDO LEOPOLD SCHOOL MONROE ENTRANCE	CITY OF GREEN BAY
38171	Lift Station (Stormwater)	NA	CITY OF GREEN BAY
44603	Lift Station (Stormwater)	NA	CITY OF GREEN BAY
45504	Lift Station (Stormwater)	NA	CITY OF GREEN BAY
46427	Lift Station (Stormwater)	NA	CITY OF GREEN BAY
48380	PRE-SCHOOL/DAY CARE	ENCOMPASS CHILD CARE	CITY OF GREEN BAY
49051	ADMINISTRATIVE BUILDINGS	NA	CITY OF GREEN BAY
49684	CHURCHES/TEMPLES/SYNAGOGUES	NA	CITY OF GREEN BAY
51622	MUNICIPAL GARAGES	NA	CITY OF GREEN BAY
52352	TELEPHONE TERMINALS/DISPATCH CENT	NA	CITY OF GREEN BAY
52359	MUNICIPAL GARAGES	NA	CITY OF GREEN BAY
52415	FIRE STATION	GB FIRE STATION 3	CITY OF GREEN BAY
52911	Electric Power Substations	NA	CITY OF GREEN BAY
54687	PRIMARY SCHOOLS	LINCOLN ELEMENTARY SCHOOL SHAWANO ENTRANCE	CITY OF GREEN BAY
54998	ELECTRIC SUBSTATION	NA	CITY OF GREEN BAY
55155	Wastewater Treatment Plan?	NEW Water MS-PG	CITY OF GREEN BAY

55317	Electric Power Substation	WPS SUBSTATION	CITY OF GREEN BAY
55705	Administrative Building	NA	CITY OF GREEN BAY
56706	CHURCHES/TEMPLES/SYNAGOGUES	NA	CITY OF GREEN BAY
56728	WATER SUPPLY STORAGE TANKS/RESERVOIRS	NA	CITY OF GREEN BAY
60878	WATER WELL	NA	CITY OF GREEN BAY
61031	Wastewater Facility	NEW Water MS-14	CITY OF GREEN BAY
78859	Water Supply Storage Tanks/Reservoirs	WATER TOWER - S HURON	CITY OF GREEN BAY
79388	NA	AMERICAN FOODS GROUP	CITY OF GREEN BAY
79393	NA	EDEN BROOK-NH	CITY OF GREEN BAY
79863	PHONE COMPANY	ATT BUILDING	CITY OF GREEN BAY
79887	Clinic	BAYSHORE COUNSELING	CITY OF GREEN BAY
79893	HOSPITAL	BELLIN HOSPITAL	CITY OF GREEN BAY
79952	Radio/Television Transmission Towers/Antennae	CELLCOM TOWER SHOP	CITY OF GREEN BAY
80032	NA	GOLDEN HOUSE	CITY OF GREEN BAY
80035	CHURCH & RED CROSS DESIGNATED SHELTER	GRACE LUTHERAN CHURCH	CITY OF GREEN BAY
80055	POLICE STATION	HQ	CITY OF GREEN BAY
80180	Pre-School/Day Care	PRECIOUS MEMORIES CHILDCARE	CITY OF GREEN BAY
80183	NA	PRO CHEMICALS INC	CITY OF GREEN BAY
80224	CHURCH & RED CROSS DESIGNATED SHELTER	ST ELIZABETH SETON	CITY OF GREEN BAY
80225	CHURCH & RED CROSS DESIGNATED SHELTER	ST JAMES LUTHERAN CHURCH	CITY OF GREEN BAY
80228	HOSPITAL	ST MARYS HOSPITAL	CITY OF GREEN BAY
80229	CHURCH & RED CROSS DESIGNATED SHELTER	ST PETER PAUL CHURCH	CITY OF GREEN BAY
80248	Daycare	THREE SISTERS HEADSTART	CITY OF GREEN BAY

80258	CHURCH & RED CROSS DESIGNATED SHELTER	TRINITY LUTHERAN CHURCH	CITY OF GREEN BAY
80282	MEDICAL BUILDING	WEBSTER MEDICAL BLDG	CITY OF GREEN BAY
80302	FITNESS CENTER	YMCA	CITY OF GREEN BAY
80303	FITNESS CENTER	YWCA	CITY OF GREEN BAY
80758	ELDERLY CARE FACILITY	GRANCARE NURSING CTR- NH	CITY OF GREEN BAY
80868	COMMUNITY CENTER	SALVATION ARMY	CITY OF GREEN BAY
81130	CHILD CARE	PEACE NURSERY CTR	CITY OF GREEN BAY
81237	COMMUNICATIONS	ATT BUILDING	CITY OF GREEN BAY
81254	RADIO STATIONS & BROADCASTING	WQLH	CITY OF GREEN BAY
81265	TEXTILE GOODS	ASPIRO	CITY OF GREEN BAY
81280	CHEMICALS	US OIL TANKS	CITY OF GREEN BAY
81288	FEDERAL GOVERNMENT	SOCIAL SECURITY ADMINISTRATION	CITY OF GREEN BAY
81289	CBRF CLASS C 359	CARE FOR ALL AGES - NH	CITY OF GREEN BAY
81394	Hospital	BELLIN POWER PLANT	CITY OF GREEN BAY
81453	CHURCH & RED CROSS DESIGNATED SHELTER	CELEBRATION CHURCH	CITY OF GREEN BAY
81492	UTILITIES	UWGB PUMP STATION	CITY OF GREEN BAY
81502	ELDERLY CARE FACILITY	BORNEMANN NURSING HOME - NH	CITY OF GREEN BAY
81524	CLINIC	AURORA ORTHOPEDICS	CITY OF GREEN BAY
81599	HIGH SCHOOL & RED CROSS DESIGNATED SHELTER	EAST HIGH SCHOOL	CITY OF GREEN BAY
81600	SCHOOL & RED CROSS DESIGNATED SHELTER	EISENHOWER SCHOOL	CITY OF GREEN BAY
81601	SCHOOL & RED CROSS DESIGNATED SHELTER	ELMORE SCHOOL	CITY OF GREEN BAY
81602	SCHOOL & RED CROSS DESIGNATED SHELTER	FORT HOWARD SCHOOL	CITY OF GREEN BAY
81603	SCHOOL & RED CROSS DESIGNATED SHELTER	FRANKLIN MIDDLE SCHOOL	CITY OF GREEN BAY

81607	SCHOOL & RED CROSS DESIGNATED SHELTER	JEFFERSON SCHOOL	CITY OF GREEN BAY
81608	SCHOOL & RED CROSS DESIGNATED SHELTER	PREBLE HIGH SCHOOL	CITY OF GREEN BAY
81610	CHURCH, SCHOOL & RED CROSS DESIGNATED SHELTER	ST PAULS UNITED METHODIST	CITY OF GREEN BAY
81611	SCHOOL & RED CROSS DESIGNATED SHELTER	WASHINGTON MIDDLE SCHOOL	CITY OF GREEN BAY
81614	SCHOOL	ST PAUL LUTHERAN SCHOOL	CITY OF GREEN BAY
81615	SCHOOL	EDISON MIDDLE SCHOOL	CITY OF GREEN BAY
81616	SCHOOL & RED CROSS DESIGNATED SHELTER	DANZ SCHOOL	CITY OF GREEN BAY
81618	SCHOOL	NOTRE DAME ACADEMY	CITY OF GREEN BAY
81636	CHURCH	ST MARK LUTHERAN CHURCH	CITY OF GREEN BAY
81637	CHURCH & RED CROSS DESIGNATED SHELTER	ST PATRICKS PARISH	CITY OF GREEN BAY
81640	CHURCH & RED CROSS DESIGNATED SHELTER	ST WILLEBRORD PARISH	CITY OF GREEN BAY
81930	Radio/Television Stations	WNCY RADIO	CITY OF GREEN BAY
81989	CLINIC	PREVEA CLINIC	CITY OF GREEN BAY
82647	CHEMICALS	SEM STREAM	CITY OF GREEN BAY
83327	SCHOOL	NWTC ARTISAN CENTER	CITY OF GREEN BAY
83647	ELECTRIC POWER SUBSTATIONS	NA	CITY OF GREEN BAY
83680	UTILITIES	WEST SHORE PIPELINE CO	CITY OF GREEN BAY
83936	GENERATION/PROCESSING OF COMMUNICATION/UTILITIE	NA	CITY OF GREEN BAY
84075	SCHOOL	REDEEMER LUTHERAN SCHOOL	CITY OF GREEN BAY
84110	MEDICAL FACILITY	MEDICAL ARTS BUILDING	CITY OF GREEN BAY
84944	ELECTRIC POWER SUBSTATIONS	NA	CITY OF GREEN BAY
84949	DAY CARE	ROYAL MONTESSORI ACADEMY	CITY OF GREEN BAY
84964	MEDICAL CLINIC	DOUSMAN CLINIC	CITY OF GREEN BAY

85276	Daycare	EARLY LEARNING CENTER	CITY OF GREEN BAY
85293	CLINIC	NEW COMMUNITY CLINIC	CITY OF GREEN BAY
85334	Administrative Building	GB PACKAGING	CITY OF GREEN BAY
85514	SEWAGE TREATMENT PLANTS	NEW Water MS-CFB	CITY OF GREEN BAY
87116	Lift Station (Sanitary)	NA	CITY OF GREEN BAY
87167	WALK-IN CLINIC	PREVEA CLINIC	CITY OF GREEN BAY
87884	Pre-School/Day Care	ENCOMPASS CHILD CARE	CITY OF GREEN BAY
87885	Lift Station (Sanitary)	LOT 1 - LAMBEAU-SOUTHEAST	CITY OF GREEN BAY
87910	Radio/Television Transmission Towers/Antennae	ATT BUILDING	CITY OF GREEN BAY
88000	School	ST THOMAS MORE SCHOOL	CITY OF GREEN BAY
88627	HEATING & COOLING PLANT	UWGB HEATING PLANT	CITY OF GREEN BAY
88670	UNIVERSITY BUILDING	UWGB COFRIN HALL	CITY OF GREEN BAY
93346	SUBSTATION	WPS substation	CITY OF GREEN BAY
93531	PHYSICIANS & SURGEONS	NEW ENT SC	CITY OF GREEN BAY
93599	CLINIC	AURORA HEALTH CENTER	CITY OF GREEN BAY
94110	MEDICAL FACILITY	ASCEND HEALTH	CITY OF GREEN BAY
94195	ELECTRICAL SUBSTATION & SHED	WPS SUB STATION	CITY OF GREEN BAY
94465	CLINICS	NA	CITY OF GREEN BAY
94813	TRUCK STORAGE	DPW WAREHOUSE	CITY OF GREEN BAY
94927	CLINIC	EAST SIDE FAMILY PRACTICE	CITY OF GREEN BAY
94935	Pre-School/Day Care	I DO WISHES	CITY OF GREEN BAY
94981	COUNTY GOVERNMENT OFFICES	NORTHERN BUILDING	CITY OF GREEN BAY
95006	WELL STATION	GB WATER UTILITY	CITY OF GREEN BAY

95012	PAPER MILL	GEORGIA PACIFIC	CITY OF GREEN BAY
95035	DAY CARE 321	KINDERCARE	CITY OF GREEN BAY
95089	WELL STATION	GB WATER UTILITY	CITY OF GREEN BAY
95123	CONVERTING AREA-	GEORGIA PACIFIC	CITY OF GREEN BAY
95125	DOCTOR OFFICES	AURORA DIALYSIS	CITY OF GREEN BAY
95181	WELL STATION	GB WATER UTILITY	CITY OF GREEN BAY
95183	CHILD CARE	PARAGON COMUUNITY SERVICES	CITY OF GREEN BAY
95271	COLD STORAGE	AMERICOLD LOGISTICS	CITY OF GREEN BAY
95300	DAY CARE	ENCOMPASS CHILD CARE	CITY OF GREEN BAY
95321	WELL STATION	GB WATER UTILITY	CITY OF GREEN BAY
95349	CHILD CARE	ENCOMPASS CHILD CARE	CITY OF GREEN BAY
95370	CLINIC	PREVEA CLINIC	CITY OF GREEN BAY
95385	SCHOOL	LEONARDO DA VINCI SCHOOL	CITY OF GREEN BAY
95417	SCHOOL	CESA 7 HEAD START	CITY OF GREEN BAY
95423	CLINIC	AURORA HEALTH CENTER	CITY OF GREEN BAY
95449	BUSINESS	ATT BUILDING	CITY OF GREEN BAY
95460	SOCIAL SERVICE & WELFARE ORG	AGING RESOURCE CTR	CITY OF GREEN BAY
95498	HOSPITAL	AURORA SURGERY CTR	CITY OF GREEN BAY
95546	PHYSICIANS & SURGEONS	CARDIOLOGY ASSOCIATES	CITY OF GREEN BAY
95560	CLINICS	CLINICARE CONVENIENCE CLINIC	CITY OF GREEN BAY
95705	SCHOOL & RED CROSS DESIGNATED SHELTER	KING ELEMENTARY SCHOOL	CITY OF GREEN BAY
95718	SCHOOL & RED CROSS DESIGNATED SHELTER	LINCOLN ELEMENTARY SCHOOL	CITY OF GREEN BAY
95731	GOVERNMENT OFFICES	MEDICAL EXAMINER	CITY OF GREEN BAY

95782	SCHOOL & RED CROSS DESIGNATED SHELTER	RED SMITH ELEMENTARY SCHOOL	CITY OF GREEN BAY
95899	ELDERLY CARE FACILITY	BORNEMANN CBRF NORTH - NH	CITY OF GREEN BAY
95900	CHILD CARE SERVICE	BRIGHT BEGINNINGS CHILD CARE	CITY OF GREEN BAY
95905	DAY CARE	ENCOMPASS CHILD CARE	CITY OF GREEN BAY
95932	NURSING & CONVALESCENT HOMES	FREEDOM HOUSE MINISTRIES	CITY OF GREEN BAY
95952	SCHOOL & RED CROSS DESIGNATED SHELTER	SOUTHWEST HIGH SCHOOL	CITY OF GREEN BAY
95953	HIGH SCHOOL & RED CROSS DESIGNATED SHELTER	WEST HIGH SCHOOL	CITY OF GREEN BAY
95956	SCHOOL	NEW LUTHERAN HIGH SCHOOL	CITY OF GREEN BAY
95957	SCHOOL (K-8)	ALDO LEOPOLD SCHOOL	CITY OF GREEN BAY
95982	CHURCH & RED CROSS DESIGNATED SHELTER	INCARNATION LUTHERAN CHURCH	CITY OF GREEN BAY
96237	STATE GOVERNMENT-PUBLIC HEALTH	PUBLIC HEALTH	CITY OF GREEN BAY
96297	BUILDING IS USED AS A CHURCH	KINGDOM AGENDA CHURCH	CITY OF GREEN BAY
96479	GUEST HOME	ALTRUSA HOUSE	CITY OF GREEN BAY
96612	CHURCH & RED CROSS DESIGNATED SHELTER	FIRST UNITED METHODIST	CITY OF GREEN BAY
96623	CHURCH	SEVENTH DAY ADVENTIST CHURCH	CITY OF GREEN BAY
96719	ARMORY & RED CROSS DESIGNATED SHELTER	NATIONAL GUARD	CITY OF GREEN BAY
96752	ELEMENTARY SCHOOL & RED CROSS DESIGNATED SHELTER	BAIRD SCHOOL	CITY OF GREEN BAY
96798	Long Term Health Care Facility	SHELTER CARE	CITY OF GREEN BAY
96807	SCHOOL & RED CROSS DESIGNATED SHELTER	BEAUMONT SCHOOL	CITY OF GREEN BAY
96815	Sports Stadium/ Arenas	LAMBEAU - BELLIN HEALTH GATE	CITY OF GREEN BAY
96887	Prisons or Jails	HUBER JAIL	CITY OF GREEN BAY
96892	COURTHOUSE	COURTHOUSE	CITY OF GREEN BAY
96948	RECREATION CENTE	BOYS AND GIRLS CLUB	CITY OF GREEN BAY

96952	TELEVISION STATIONS & BROADCASTS	WFRV	CITY OF GREEN BAY
96953	SCHOOL & RED CROSS DESIGNATED SHELTER	CHAPPELL SCHOOL	CITY OF GREEN BAY
96987	RAILROAD	CN RAILROAD	CITY OF GREEN BAY
97139	MEDICAL OFFICE	ARBES DR PODIATRIST	CITY OF GREEN BAY
97190	MUNICIPAL GARAGE	GB STREET DEPT	CITY OF GREEN BAY
97288	PRE-SCHOOL	GARDEN OF EARLY LEARNING	CITY OF GREEN BAY
97302	SCHOOL & RED CROSS DESIGNATED SHELTER	GARDEN OF EARLY LEARNING	CITY OF GREEN BAY
97311	CITY HALL	CITY HALL GREEN BAY	CITY OF GREEN BAY
97313	Administrative Building	FIRE DEPT SHOP	CITY OF GREEN BAY
97334	FIRE STATION	GNFD FIRE STATION 1	CITY OF GREEN BAY
97335	FIRE & AMBULANCE STATION	GNFD FIRE STATION 2	CITY OF GREEN BAY
97336	FIRE & AMBULANCE STATION	GNFD FIRE STATION 3	CITY OF GREEN BAY
97337	FIRE STATION	GNFD FIRE STATION 4	CITY OF GREEN BAY
97338	FIRE & AMBULANCE STATION	GNFD FIRE STATION 5	CITY OF GREEN BAY
97339	FIRE & AMBULANCE STATION	GNFD FIRE STATION 6	CITY OF GREEN BAY
97340	FIRE & AMBULANCE STATION	GNFD FIRE STATION 7	CITY OF GREEN BAY
97397	CLINIC WITHIN HOSPITAL	GB ONCOLOGY	CITY OF GREEN BAY
97424	CLINIC	GB SURGICAL	CITY OF GREEN BAY
97428	PETROLEUM STORAGE	GB TERMINAL CORP	CITY OF GREEN BAY
97492	SCHOOL & RED CROSS DESIGNATED SHELTER	KELLER ELEMENTARY SCHOOL	CITY OF GREEN BAY
97543	SCHOOL & RED CROSS DESIGNATED SHELTER	HOWE ELEMENTARY SCHOOL	CITY OF GREEN BAY
97546	COUNTY GOVERNMENT-SOCIAL/HUMAN	SOPHIE BEAUMONT BUILDING	CITY OF GREEN BAY
97591	SCHOOL & RED CROSS DESIGNATED SHELTER	JACKSON ELEMENTARY SCHOOL	CITY OF GREEN BAY

97625	CARE-CHILD	JUST 4 KIDS CHILD CARE	CITY OF GREEN BAY
97645	SCHOOL & RED CROSS DESIGNATED SHELTER	KENNEDY ELEMENTARY SCHOOL	CITY OF GREEN BAY
97765	SCHOOL & RED CROSS DESIGNATED SHELTER	LOMBARDI SCHOOL	CITY OF GREEN BAY
97783	SCHOOL & RED CROSS DESIGNATED SHELTER	MAC ARTHUR SCHOOL	CITY OF GREEN BAY
97796	CARE-OTHER	CROSSROADS CARE CENTER - NH	CITY OF GREEN BAY
97797	SKILLED NURSING CARE	CROSSROADS CARE CENTER - NH	CITY OF GREEN BAY
97848	SEWER TREATMENT PLANT (236,000 customers served)	GB MET SEWER PLANT-NEW Water GBF	CITY OF GREEN BAY
97863	CLINIC	VA CLINIC	CITY OF GREEN BAY
98100	SCHOOLS	MARTIN ELEMENTARY SCHOOL	CITY OF GREEN BAY
98111	CLINICS	BELLIN HEALTH MRI	CITY OF GREEN BAY
98118	OFFICE 591	GB MUNICIPAL COURT	CITY OF GREEN BAY
98161	CARE-OTHER	CURATIVE CONNECTION	CITY OF GREEN BAY
98193	CARE-OTHER	NICOLET PSYCHIATRIC	CITY OF GREEN BAY
98194	SCHOOLS	NICOLET ELEMENTARY SCHOOL	CITY OF GREEN BAY
98207	TECH COLLEGE	NWTC	CITY OF GREEN BAY
98372	CLINIC	OSMS	CITY OF GREEN BAY
98433	POST OFFICES	POST OFFICE COFRIN	CITY OF GREEN BAY
98437	POST OFFICE	POST OFFICE MONROE	CITY OF GREEN BAY
98458	WAREHOUSE	PROCTOR AND GAMBLE	CITY OF GREEN BAY
98496	SOCIAL SERVICE & WELFARE ORGAN	RED CROSS	CITY OF GREEN BAY
98497	NON PROFIT	RED CROSS	CITY OF GREEN BAY
98537	CBRF 359 CLASS C	HOUSE OF HOPE	CITY OF GREEN BAY
98591	HOMELESS SHELTER	ST JOHNS SHELTER	CITY OF GREEN BAY

98643	CHILDCARE FACILITY	EARLY CHILDHOOD CENTER ST MARYS	CITY OF GREEN BAY
98675	SCHOOL & RED CROSS DESIGNATED SHELTER	ANN SULLIVAN SCHOOL	CITY OF GREEN BAY
98699	SCHOOL & RED CROSS DESIGNATED SHELTER	TANK ELEMENTARY SCHOOL	CITY OF GREEN BAY
98706	ROOMING HOUSE CB	ATTIC CORRECTIONAL	CITY OF GREEN BAY
98743	Administrative Building	MINOKA HILL SCHOOL	CITY OF GREEN BAY
98918	OILS-PETROLEUM-MANUFACTURERS	US OIL COMPANY	CITY OF GREEN BAY
98965	WATER UTILITY OFFICES	GB WATER UTILITY	CITY OF GREEN BAY
98983	CHURCH	WEST MORAVIAN CHURCH	CITY OF GREEN BAY
98998	ELECTRICAL UTILITY COMPANY	WPS CORPORATION	CITY OF GREEN BAY
99002	CLINIC	NEW COMMUNITY CLINIC	CITY OF GREEN BAY
99004	ELEMENTARY SCHOOL & RED CROSS DESIGNATED SHELTER	WILDER ELEMENTARY SCHOOL	CITY OF GREEN BAY
126264	Wastewater Facility (Lift Station)	NEW Water MS-09	CITY OF GREEN BAY
139685	COMMERCIAL STORAGE	NA	CITY OF GREEN BAY
189077	FIRE STATION	GB FIRE STATION 1	CITY OF GREEN BAY
189078	FIRE STATION	GB FIRE STATION 2	CITY OF GREEN BAY
189079	FIRE STATION	GB FIRE STATION 4	CITY OF GREEN BAY
189080	FIRE STATION	GB FIRE STATION 5	CITY OF GREEN BAY
189081	FIRE STATION	GB FIRE STATION 6	CITY OF GREEN BAY
189082	FIRE STATION	GB FIRE STATION 7	CITY OF GREEN BAY
201614	Administrative Building	HEAD START LEARNING CTR	CITY OF GREEN BAY
238277	ELECTRICAL SUBSTATION	NA	CITY OF GREEN BAY
244297	Bridge (road over water)	NA	CITY OF GREEN BAY
244298	Bridge (pedestrian over road)	NA	CITY OF GREEN BAY

244299	Bridge (road over water)	NA	CITY OF GREEN BAY
244300	Bridge (road over water)	NA	CITY OF GREEN BAY
244301	Bridge (railroad over road)	NA	CITY OF GREEN BAY
244313	Bridge (road over road)	NA	CITY OF GREEN BAY
244314	Bridge (road over water)	NA	CITY OF GREEN BAY
244372	Bridge (road over water)	NA	CITY OF GREEN BAY
244373	Bridge (road over water)	NA	CITY OF GREEN BAY
244374	Bridge (road over water)	NA	CITY OF GREEN BAY
244375	Bridge (road over road)	NA	CITY OF GREEN BAY
244376	Bridge (road over road)	NA	CITY OF GREEN BAY
244377	Bridge (road over road)	NA	CITY OF GREEN BAY
244378	Bridge (road over road)	NA	CITY OF GREEN BAY
244379	Bridge (road over water)	NA	CITY OF GREEN BAY
244380	Bridge (road over water)	NA	CITY OF GREEN BAY
244417	Bridge (road over road)	NA	CITY OF GREEN BAY
244425	Bridge (road over road)	NA	CITY OF GREEN BAY
244437	Bridge (road over water)	NA	CITY OF GREEN BAY
244438	Culvert (road over water)	NA	CITY OF GREEN BAY
244439	Bridge (road over road)	NA	CITY OF GREEN BAY
244440	Bridge (road over road)	NA	CITY OF GREEN BAY
244444	Bridge (road over railroad)	NA	CITY OF GREEN BAY
244445	Bridge (road over water)	NA	CITY OF GREEN BAY
244446	Bridge (road over water)	NA	CITY OF GREEN BAY

244451	Bridge (road over road)	NA	CITY OF GREEN BAY
244452	Bridge (road over water)	NA	CITY OF GREEN BAY
244453	Bridge (road over former rail yard)	NA	CITY OF GREEN BAY
244512	Bridge (road over road)	I-43 & GREENBRIER RD OVERPASS	CITY OF GREEN BAY
244535	Bridge (road over road, railroad, and water)	NA	CITY OF GREEN BAY
244536	Bridge (road over road, railroad, and water)	NA	CITY OF GREEN BAY
244537	Bridge (road over water)	NA	CITY OF GREEN BAY
244538	Bridge (road over water)	NA	CITY OF GREEN BAY
244539	Bridge (road over water)	NA	CITY OF GREEN BAY
244540	Bridge (road over water)	NA	CITY OF GREEN BAY
244541	Bridge (road over water)	NA	CITY OF GREEN BAY
244542	Bridge (road over water)	NA	CITY OF GREEN BAY
244543	Bridge (road over road)	I-43 & HUMBOLDT RD OVERPASS	CITY OF GREEN BAY
244544	Bridge (road over road)	NA	CITY OF GREEN BAY
244545	Bridge (road over road)	NA	CITY OF GREEN BAY
244550	Bridge (road over water)	NA	CITY OF GREEN BAY
244589	Bridge (road over water)	NA	CITY OF GREEN BAY
244590	Bridge (road over water)	NA	CITY OF GREEN BAY
244591	Bridge (road over water)	NA	CITY OF GREEN BAY
244592	Bridge (road over water and trail)	NA	CITY OF GREEN BAY
244593	Bridge (road over road)	NA	CITY OF GREEN BAY
244594	Bridge (road over road)	NA	CITY OF GREEN BAY
244595	Bridge (road over road)	NA	CITY OF GREEN BAY

244596	Bridge (road over road)	NA	CITY OF GREEN BAY
244597	Bridge (road over road)	NA	CITY OF GREEN BAY
244598	Bridge (road over road)	NA	CITY OF GREEN BAY
244599	Bridge (road over road)	NA	CITY OF GREEN BAY
244600	Bridge (road over road)	NA	CITY OF GREEN BAY
244601	Bridge (road over road)	NA	CITY OF GREEN BAY
244602	Bridge (road over road)	NA	CITY OF GREEN BAY
244603	Bridge (road over road)	NA	CITY OF GREEN BAY
244772	Bridge (railroad)	NA	CITY OF GREEN BAY
244773	Bridge (road)	NA	CITY OF GREEN BAY
244774	Bridge (road)	NA	CITY OF GREEN BAY
244775	Bridge (road)	NA	CITY OF GREEN BAY
244776	Bridge (road over road)	NA	CITY OF GREEN BAY
244777	Bridge (road over road)	NA	CITY OF GREEN BAY
244778	Bridge (road over road)	NA	CITY OF GREEN BAY
244779	Bridge (road over road)	NA	CITY OF GREEN BAY
244780	Bridge (railroad over water)	NA	CITY OF GREEN BAY
244781	Bridge (pedestrian over water)	EAST RIVER FOOTBRIDGE	CITY OF GREEN BAY
244782	Bridge (road over road)	NA	CITY OF GREEN BAY
244783	Bridge (road over road)	NA	CITY OF GREEN BAY
244784	Bridge (road over road)	NA	CITY OF GREEN BAY
244785	Bridge (road over road)	NA	CITY OF GREEN BAY
244786	Bridge (road over road)	NA	CITY OF GREEN BAY

244787	Bridge (road over water)	NA	CITY OF GREEN BAY
244788	Bridge (road over road)	NA	CITY OF GREEN BAY
244789	Bridge (road over road)	NA	CITY OF GREEN BAY
244793	Bridge (road over water)	NA	CITY OF GREEN BAY
244797	Bridge (road over water)	NA	CITY OF GREEN BAY
244798	Bridge (railroad over water)	NA	CITY OF GREEN BAY
244829	Bridge (railroad over water)	NA	CITY OF GREEN BAY
244830	Bridge (road over road)	I-43 & HUMBOLDT RD OVERPASS	CITY OF GREEN BAY
244831	Bridge (road over water)	NA	CITY OF GREEN BAY
244832	Bridge (road over road)	NA	CITY OF GREEN BAY
245493	Wastewater Facility (Lift Station?)	NEW Water MS-05	CITY OF GREEN BAY
245494	Wastewater Facility (Lift Station?)	NEW Water MS-06	CITY OF GREEN BAY
247092	Wastewater Facility	NEW Water MS-13	CITY OF GREEN BAY
252740	Dam	NA	CITY OF GREEN BAY
252748	Dike	NA	CITY OF GREEN BAY
252756	Dam	NA	CITY OF GREEN BAY
252759	Dam	NA	CITY OF GREEN BAY
252762	Dam	NA	CITY OF GREEN BAY
252765	Dam	NA	CITY OF GREEN BAY
252766	Dam	NA	CITY OF GREEN BAY
253501	Electrical substation	NA	CITY OF GREEN BAY
253908	Dike extending along bayshore	NA	CITY OF GREEN BAY
96888	PUBLIC SAFETY & COMMUNICATIONS	BC PUBLIC SAFETY	CITY OF GREEN BAY

78055	RED CROSS DESIGNATED SHELTER? (confirm)	NA	TOWN OF EATON
78313	Radio/Television Transmission Towers/Antennae	NA	TOWN OF EATON
81662	TOWN HALL	EATON TOWN HALL	TOWN OF EATON
97123	FIRE STATION	DNFD FIRE STATION 2	TOWN OF EATON
189074	FIRE STATION	DENMARK FIRE STATION 2	TOWN OF EATON
252767	Dam	NA	TOWN OF EATON
5837	COMMUNICATIONS TOWER	WFRV TOWER	TOWN OF GLENMORE
79858	ELECTRICAL SUBSTATION	WPS SUB STATION 10	TOWN OF GLENMORE
83941	RADIO TOWER	RADIO TOWER	TOWN OF GLENMORE
88345	RADIO/TELEVISION TRANSMISSION TOWERS/ANTENNAE	NA	TOWN OF GLENMORE
98483	RADIO TOWER	Radio Tower	TOWN OF GLENMORE
98551	BC RADIO TOWER	BC TOWER - SCRAYS HILL	TOWN OF GLENMORE
133493	RADIO TOWER	NA	TOWN OF GLENMORE
135961	RADIO TOWER - AVIATION	RADIO TOWER - FAA	TOWN OF GLENMORE
144910	TOWN HALL & RED CROSS DESIGNATED SHELTER	GLENMORE TOWN HALL	TOWN OF GLENMORE
144913	COMMUNICATIONS TOWER	NBC 26 TOWER	TOWN OF GLENMORE
144919	RADIO TOWER	WAPL FM RADIO TOWER	TOWN OF GLENMORE
244362	Bridge (road over water)	NA	TOWN OF GLENMORE
244572	Bridge (road over water)	NA	TOWN OF GLENMORE
244619	Bridge (road over water)	NA	TOWN OF GLENMORE
78309	CELL TOWER	NA	TOWN OF GREEN BAY
79399	TOWN HALL	TOWN OF GREEN BAY HALL	TOWN OF GREEN BAY
79400	ELECTRICAL SUBSTATION	WPS SUB STATION 3	TOWN OF GREEN BAY
81274	UTILITY TOWER	UTILITY TOWER	TOWN OF GREEN BAY
83940	RADIO TOWER	RADIO TOWER	TOWN OF GREEN BAY

85749	CELL TOWER	NA	TOWN OF GREEN BAY
94889	Pre-School/Day Care	DAY BY DAY DISCOVERIES CHILD CARE	TOWN OF GREEN BAY
98438	POST OFFICE	POST OFFICE NEW FRANKEN	TOWN OF GREEN BAY
244316	Bridge (road over water)	NA	TOWN OF GREEN BAY
244368	Bridge (road over water)	NA	TOWN OF GREEN BAY
244369	Bridge (road over water)	NA	TOWN OF GREEN BAY
244791	Bridge (road over road)	NA	TOWN OF GREEN BAY
244792	Bridge (road over road)	NA	TOWN OF GREEN BAY
244795	Bridge (road over water)	NA	TOWN OF GREEN BAY
247895	Wastewater Facility (Lift Station)	NEW Water EBS-LS-05-MS-17	TOWN OF GREEN BAY
247896	Wastewater Facility (Lift Station)	NEW Water EBS-LS-06	TOWN OF GREEN BAY
247897	Wastewater Facility (Lift Station)	NEW Water EBS-LS-07	TOWN OF GREEN BAY
247898	Wastewater Facility (Lift Station)	NEW Water EBS-LS-08	TOWN OF GREEN BAY
136	LIFT STATION	HOLLAND SANITARY LIFT STATION	TOWN OF HOLLAND
206	WATER TOWER	HOLLANDTOWN WATER TOWER	TOWN OF HOLLAND
82077	TOWN HALL	HOLLAND TOWN HALL	TOWN OF HOLLAND
85205	Primary Schools	NA	TOWN OF HOLLAND
95985	CHURCH & RED CROSS DESIGNATED SHELTER	ST CLARE PARISH	TOWN OF HOLLAND
97446	BC RADIO TOWER	BC TOWER - GREENLEAF	TOWN OF HOLLAND
97522	FIRE STATION	HOFD FIRE STATION	TOWN OF HOLLAND
189087	FIRE STATION	HOLLANDTOWN FIRE STATION	TOWN OF HOLLAND
244349	Bridge (road over water)	NA	TOWN OF HOLLAND
244351	Bridge (road over water)	NA	TOWN OF HOLLAND

244352	Bridge (road over water)	NA	TOWN OF HOLLAND
244353	Bridge (road over water)	NA	TOWN OF HOLLAND
244354	Bridge (road over water)	NA	TOWN OF HOLLAND
244355	Bridge (road over water)	NA	TOWN OF HOLLAND
244583	Bridge (road over water)	NA	TOWN OF HOLLAND
244584	Bridge (road over water)	NA	TOWN OF HOLLAND
244585	Bridge (road over water)	NA	TOWN OF HOLLAND
244586	Bridge (road over water)	NA	TOWN OF HOLLAND
244814	Bridge (road over water)	NA	TOWN OF HOLLAND
244815	Bridge (trail over water)	NA	TOWN OF HOLLAND
252743	Dam	NA	TOWN OF HOLLAND
252746	Dam	NA	TOWN OF HOLLAND
252749	Dam	NA	TOWN OF HOLLAND
97242	WATER FILTRATION PLANT	GB FILTRATION PLANT	TOWN OF HUMBOLDT
244367	Bridge (road over water)	NA	TOWN OF HUMBOLDT
244551	Bridge (road over water)	NA	TOWN OF HUMBOLDT
244794	Bridge (road over water)	NA	TOWN OF HUMBOLDT
244796	Culverts (road over water)	NA	TOWN OF HUMBOLDT
13372	Wastewater Facility	NEW Water MS-10	TOWN OF LAWRENCE
14841	TOWN UTILITY?	NA	TOWN OF LAWRENCE
78839	PIPELINE TERMINAL	NA	TOWN OF LAWRENCE
80405	ELECTRICAL SUBSTATION	WPS SUB STATION 6	TOWN OF LAWRENCE
83285	CLINIC	PREVEA CLINIC	TOWN OF LAWRENCE

97493	SCHOOL	HEMLOCK CREEK ELEMENTARY	TOWN OF LAWRENCE
97690	FIRE STATION	LWFD FIRE STATION 2	TOWN OF LAWRENCE
97691	FIRE STATION	LWFD FIRE STATION 1	TOWN OF LAWRENCE
189090	FIRE STATION	LAWRENCE FIRE STATION 2	TOWN OF LAWRENCE
189091	FIRE STATION	LAWRENCE FIRE STATION 1	TOWN OF LAWRENCE
244304	Bridge (road over water)	MID VALLEY DR & ASHWAUBENON CREEK	TOWN OF LAWRENCE
244305	Bridge (road over water)	NA	TOWN OF LAWRENCE
244306	Bridge (road over road)	NA	TOWN OF LAWRENCE
244318	Bridge (road over water)	NA	TOWN OF LAWRENCE
244335	Bridge (road over water)	NA	TOWN OF LAWRENCE
244336	Bridge (road over water)	NA	TOWN OF LAWRENCE
244514	Bridge (road over water)	NA	TOWN OF LAWRENCE
244566	Bridge (road over road)	NA	TOWN OF LAWRENCE
244621	Culverts (road over water)	NA	TOWN OF LAWRENCE
244635	Bridge (road over road)	I-41 & SCHEURING RD OVERPASS	TOWN OF LAWRENCE
244637	Bridge (road)	NA	TOWN OF LAWRENCE
244659	Bridge (road over water)	NA	TOWN OF LAWRENCE
244660	Bridge (road over water)	NA	TOWN OF LAWRENCE
244661	Bridge (road over road)	NA	TOWN OF LAWRENCE
244662	Bridge (road over water)	NA	TOWN OF LAWRENCE
244663	Culvert (road over water)	NA	TOWN OF LAWRENCE
244664	Bridge (road over water)	NA	TOWN OF LAWRENCE
244665	Bridge (road over water)	NA	TOWN OF LAWRENCE

244666	Bridge (road over water)	NA	TOWN OF LAWRENCE
244667	Culvert (road over water)	NA	TOWN OF LAWRENCE
244668	Bridge (road over water)	NA	TOWN OF LAWRENCE
244669	Culvert (road over water)	NA	TOWN OF LAWRENCE
244670	Culvert (road over water)	NA	TOWN OF LAWRENCE
244671	Culvert (road over water)	NA	TOWN OF LAWRENCE
244672	Culvert (road over water)	NA	TOWN OF LAWRENCE
244673	Culvert (road over water)	NA	TOWN OF LAWRENCE
252744	Dam	NA	TOWN OF LAWRENCE
252752	Dam	NA	TOWN OF LAWRENCE
82149	COMMERCIAL	SAGE MEADOWS	TOWN OF LAWRENCE
6003	SEWER & WATER INFRASTRUCTURE	LEDGEVIEW SANITARY DISTRICT	TOWN OF LEDGEVIEW
78977	SANITARY DIST	Ledgeview Sanitary District 2	TOWN OF LEDGEVIEW
79848	BUILDING	LEDGEVIEW NURSING HOME - CLSD	TOWN OF LEDGEVIEW
79855	ELECTRICAL SUBSTATION	WPS SUB STATION 7	TOWN OF LEDGEVIEW
81730	ELDERLY CARE FACILITY	CARATON COMMONS	TOWN OF LEDGEVIEW
81787	Long Term Health Care Facility	CARATON COMMONS	TOWN OF LEDGEVIEW
84608	MEDICAL CLINIC	MERCY FAMILY MEDICAL	TOWN OF LEDGEVIEW
85188	UTILITIES	CELLCOM TOWER	TOWN OF LEDGEVIEW
94825	ELEMENTARY SCHOOL	HERITAGE ELEMENTARY SCHOOL	TOWN OF LEDGEVIEW
95429	CLINIC	PREVEA CLINIC	TOWN OF LEDGEVIEW
95436	CLINIC	BELLIN HEALTH CENTER	TOWN OF LEDGEVIEW
96198	TOWER	WI PUBLIC RADIO-TV TOWER	TOWN OF LEDGEVIEW

96950	COMMUNICATIONS TOWER	WBAY TOWER	TOWN OF LEDGEVIEW
97181	MIDDLE SCHOOL	DEPERE MIDDLE SCHOOL	TOWN OF LEDGEVIEW
97276	UTILITIES	FOX 11 TOWER	TOWN OF LEDGEVIEW
97779	FIRE STATION	LVFD FIRE STATION 1	TOWN OF LEDGEVIEW
97780	FIRE STATION	LVFD FIRE STATION 2	TOWN OF LEDGEVIEW
189092	FIRE STATION	LEDGEVIEW FIRE STATION 1	TOWN OF LEDGEVIEW
189093	FIRE STATION	LEDGEVIEW FIRE STATION 2	TOWN OF LEDGEVIEW
244522	Culvert (road over water)	NA	TOWN OF LEDGEVIEW
244524	Bridge (road over road)	I-43 & CTH MM OVERPASS	TOWN OF LEDGEVIEW
244525	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244526	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244527	Bridge (road over road)	NA	TOWN OF LEDGEVIEW
244528	Bridge (road over road)	NA	TOWN OF LEDGEVIEW
244534	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244552	Bridge (road over road)	I-43 & PINE GROVE OVERPASS	TOWN OF LEDGEVIEW
244553	Bridge (road over road)	I-43 & PINE GROVE OVERPASS	TOWN OF LEDGEVIEW
244558	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244560	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244562	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244617	Bridge (road over road)	NA	TOWN OF LEDGEVIEW
244618	Bridge (road over road)	NA	TOWN OF LEDGEVIEW
244639	Culvert (road over water)	NA	TOWN OF LEDGEVIEW
244640	Bridge (road over road)	I-43 & CTH MM OVERPASS	TOWN OF LEDGEVIEW

244641	Culvert (road over water)	NA	TOWN OF LEDGEVIEW
244643	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244644	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244645	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244646	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244647	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244819	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244822	Culverts (road over water)	NA	TOWN OF LEDGEVIEW
247902	Sewerage district building	NEW Water MS-03	TOWN OF LEDGEVIEW
252745	Dam	NA	TOWN OF LEDGEVIEW
257908	Bridge (railroad over road and water)	NA	TOWN OF LEDGEVIEW
247899	Wastewater Facility (Lift Station)	NEW Water EBS-LS-09	TOWN OF LUXEMBURG (KEWAUNEE CO)
81623	K-8 SCHOOL & RED CROSS DESIGNATED SHELTER	ZION LUTHERAN SCHOOL OF WAYSIDE	TOWN OF MORRISON
96537	TOWN HALL	MORRISON TOWN HALL	TOWN OF MORRISON
96943	PHONE COMPANY	WAYSIDE TELEPHONE CO	TOWN OF MORRISON
98091	FIRE STATION	MOFD FIRE DEPT	TOWN OF MORRISON
98558	SEWAGE TREATMENT	MORRISON SEWAGE PLAN	TOWN OF MORRISON
99037	FIRE STATION	WSFD FIRE STATION	TOWN OF MORRISON
99047	School	MORRISON LUTHERAN SCHOOL	TOWN OF MORRISON
189094	FIRE STATION	MORRISON FIRE DEPT	TOWN OF MORRISON
189100	FIRE STATION	WAYSIDE FIRE STATION	TOWN OF MORRISON
244293	Bridge (road over water)	NA	TOWN OF MORRISON
244294	Bridge (road over water)	NA	TOWN OF MORRISON

244317	Bridge (road over water)	NA	TOWN OF MORRISON
244356	Bridge (road over water)	NA	TOWN OF MORRISON
244357	Bridge (road over water)	NA	TOWN OF MORRISON
244358	Bridge (road over water)	NA	TOWN OF MORRISON
244359	Bridge (road over water)	NA	TOWN OF MORRISON
244360	Bridge (road over water)	NA	TOWN OF MORRISON
244361	Bridge (road over water)	NA	TOWN OF MORRISON
244570	Bridge (road over water)	NA	TOWN OF MORRISON
244571	Bridge (road over water)	NA	TOWN OF MORRISON
244579	Bridge (road over water)	NA	TOWN OF MORRISON
244580	Bridge (road over water)	NA	TOWN OF MORRISON
244581	Bridge (road over water)	NA	TOWN OF MORRISON
244812	Bridge (road over water)	NA	TOWN OF MORRISON
244813	Bridge (road over water)	NA	TOWN OF MORRISON
80407	TOWERS MANUFACTURERS	AMERICAN TOWER CORP	TOWN OF NEW DENMARK
97090	BC RADIO TOWER	BC TOWER - DENMARK	TOWN OF NEW DENMARK
244363	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244364	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244365	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244366	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244554	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244555	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244556	Culvert (road over water)	NA	TOWN OF NEW DENMARK

244565	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244573	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244574	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244575	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244576	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244577	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244578	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244642	Culvert (road over water)	NA	TOWN OF NEW DENMARK
244649	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244650	Culvert (road over water)	NA	TOWN OF NEW DENMARK
244651	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244652	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244653	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244655	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244656	Culvert (road over water)	NA	TOWN OF NEW DENMARK
244657	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244658	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244807	Bridge (railroad over water)	NA	TOWN OF NEW DENMARK
244808	Bridge (road over trail)	NA	TOWN OF NEW DENMARK
244809	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244810	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244811	Bridge (road over water)	NA	TOWN OF NEW DENMARK
252734	Dam	NA	TOWN OF NEW DENMARK

252747	Dam	NA	TOWN OF NEW DENMARK
93244	CELL TOWER	NA	TOWN OF PITTSFIELD
93613	SCHOOL	LANNOME SCHOOL	TOWN OF PITTSFIELD
96555	CHURCH & RED CROSS DESIGNATED SHELTER	PEACE LUTHERAN CHURCH	TOWN OF PITTSFIELD
97258	BC RADIO TOWER	BC TOWER - FLINTVILLE	TOWN OF PITTSFIELD
98484	RADIO TOWER	WQLH RADIO TOWER	TOWN OF PITTSFIELD
230668	CELL TOWER	NA	TOWN OF PITTSFIELD
244320	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244321	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244322	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244323	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244324	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244325	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244387	Bridge (road over road)	NA	TOWN OF PITTSFIELD
244392	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244395	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244398	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244400	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244404	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244405	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244408	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244411	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244587	Bridge (road over road)	NA	TOWN OF PITTSFIELD

244674	Culvert (road over water)	NA	TOWN OF PITTSFIELD
244675	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244676	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244759	Culverts (road over water)	NA	TOWN OF PITTSFIELD
244760	Bridge (trail over water)	NA	TOWN OF PITTSFIELD
244761	Bridge (trail over water)	NA	TOWN OF PITTSFIELD
249092	LIFT STATION	LIFT STATION 11919	TOWN OF PITTSFIELD
249093	LIFT STATION	PITTSFIELD LIFT STATION - KUNESH RD	TOWN OF PITTSFIELD
5525	SUBSTATION	OLD MARTIN RD SUBSTATION	TOWN OF ROCKLAND
98523	CITY GOVERNMENT-EXECUTIVE OFFI	ROCKLAND TOWN HALL	TOWN OF ROCKLAND
244343	Bridge (road over water)	NA	TOWN OF ROCKLAND
244677	Bridge (road over water)	NA	TOWN OF ROCKLAND
244678	Bridge (road over water)	NA	TOWN OF ROCKLAND
244679	Bridge (road over water)	NA	TOWN OF ROCKLAND
244818	Bridge (road over water)	NA	TOWN OF ROCKLAND
244820	Bridge (road over water)	NA	TOWN OF ROCKLAND
244824	Bridge (road over water)	NA	TOWN OF ROCKLAND
252735	Dam	NA	TOWN OF ROCKLAND
252737	Dam	NA	TOWN OF ROCKLAND
80428	Water Supply Booster/Pumping Stations	SCOTT SANITARY DIST	TOWN OF SCOTT
82079	TOWN HALL	SCOTT TOWN HALL	TOWN OF SCOTT
93478	CHURCH & RED CROSS DESIGNATED SHELTER	ST KILLIANS CHURCH	TOWN OF SCOTT
97254	GOVERNMENT OFFICES	US FISH AND WILDLIFE SERVICE	TOWN OF SCOTT
98177	FIRE STATION	NFFD FIRE STATION	TOWN OF SCOTT
98550	WATER UTILITY	WATER TOWER - SCOTT	TOWN OF SCOTT

98976	SCHOOL & RED CROSS DESIGNATED SHELTER	WEQUIOCK SCHOOL	TOWN OF SCOTT
134764	Wastewater Facility	NEW Water MS-14A	TOWN OF SCOTT
167136	TOWN UTILITY (PRV STATION)	NEW Water MS-15	TOWN OF SCOTT
189095	FIRE STATION	NEW FRANKEN FIRE DEPARTMENT	TOWN OF SCOTT
244370	Bridge (road over water)	NA	TOWN OF SCOTT
244371	Bridge (road over water)	NA	TOWN OF SCOTT
244790	Bridge (road over water)	NA	TOWN OF SCOTT
247891	Wastewater Facility (Lift Station)	NEW Water EBS-LS-01-MS-16	TOWN OF SCOTT
247892	Wastewater Facility (Lift Station)	NEW Water EBS-LS-02	TOWN OF SCOTT
247893	Wastewater Facility (Lift Station)	NEW Water EBS-LS-03	TOWN OF SCOTT
247894	Wastewater Facility (Lift Station)	NEW Water EBS-LS-04	TOWN OF SCOTT
78306	Water Supply Storage Tanks/Reservoirs	WRIGHTSTOWN SANITARY	TOWN OF WRIGHTSTOWN
79409	SEWAGE PLANT	WRIGHTSTOWN SEWAGE PLANT	TOWN OF WRIGHTSTOWN
80448	TOWN HALL	WRIGHTSTOWN TOWN HALL	TOWN OF WRIGHTSTOWN
93556	SCHOOLS	ST MARYS SCHOOL	TOWN OF WRIGHTSTOWN
97328	FIRE STATION	GREENLEAF FIRE STATION	TOWN OF WRIGHTSTOWN
97447	FIRE DEPT WATER SOURCE	FILL SITE - GREENLEAF	TOWN OF WRIGHTSTOWN
98436	POST OFFICE	POST OFFICE GREENLEAF	TOWN OF WRIGHTSTOWN
120165	SEWERAGE LIFT STATION	GREENLEAF SEWERAGE LIFT STATION	TOWN OF WRIGHTSTOWN
189076	FIRE STATION	GLFD FIRE STATION	TOWN OF WRIGHTSTOWN
227467	COMMUNICATION TOWER	NA	TOWN OF WRIGHTSTOWN
244337	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244338	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244339	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244340	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244341	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244342	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN

244344	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244345	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244347	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244348	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244350	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244546	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244557	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244567	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244568	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244569	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244582	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244816	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244817	Bridge (railroad over water)	NA	TOWN OF WRIGHTSTOWN
252761	Dam	NA	TOWN OF WRIGHTSTOWN
18480	MUNICIPAL FACILITIES	NA	VILLAGE OF ALLOUEZ
18925	WATER TOWER	NA	VILLAGE OF ALLOUEZ
22126	WATER SUPPLY BOOSTER/PUMPING STATIONS	NA	VILLAGE OF ALLOUEZ
79434	POLICE STATION	ALLOUEZ PUBLIC SAFETY	VILLAGE OF ALLOUEZ
79438	PSYCH CLINIC	BELLIN PSYCHIATRIC	VILLAGE OF ALLOUEZ
79442	CHURCH & RED CROSS DESIGNATED SHELTER	FIRST BIBLE BAPTIST	VILLAGE OF ALLOUEZ
79452	CLINIC	PREVEA CLINIC	VILLAGE OF ALLOUEZ
81372	VILLAGE HALL	ALLOUEZ VILLAGE HALL	VILLAGE OF ALLOUEZ
81592	SCHOOL	RESURRECTION SCHOOL	VILLAGE OF ALLOUEZ

82400	CLINIC	BAY AREA NEPHROLOGY	VILLAGE OF ALLOUEZ
84067	Administrative Building	ALLOUEZ COMMUNITY CENTER	VILLAGE OF ALLOUEZ
86187	PRE-SCHOOL/DAY CARE	RIVERSIDE CHRISTIAN CHILD CARE	VILLAGE OF ALLOUEZ
95412	ELDERLY CARE FACILITY	ODD FELLOWS HOME - NH	VILLAGE OF ALLOUEZ
95595	ELEMENTARY SCHOOL & RED CROSS DESIGNATED SHELTER	DOTY ELEMENTARY SCHOOL	VILLAGE OF ALLOUEZ
95851	SCHOOL & RED CROSS DESIGNATED SHELTER	WEBSTER ELEMENTARY SCHOOL	VILLAGE OF ALLOUEZ
95897	ELDERLY CARE FACILITY	BISHOPS COURT - NH	VILLAGE OF ALLOUEZ
97341	FIRE STATION & PUBLIC SAFETY	GNFD FIRE STATION 8	VILLAGE OF ALLOUEZ
97653	DIALYSIS CLINIC	DAVITA DIALYSIS CTR	VILLAGE OF ALLOUEZ
97700	SCHOOL & RED CROSS DESIGNATED SHELTER	LANGLADE ELEMENTARY	VILLAGE OF ALLOUEZ
98649	DIALYSIS CLINIC	DIALYSIS CENTER	VILLAGE OF ALLOUEZ
138234	MUNICIPAL WELL	ALLOUEZ WELL 4	VILLAGE OF ALLOUEZ
140093	Water Supply Wells	ALLOUEZ WELL 7	VILLAGE OF ALLOUEZ
189083	FIRE STATION & PUBLIC SAFETY	GB FIRE STATION 8	VILLAGE OF ALLOUEZ
244315	Bridge (road over water)	NA	VILLAGE OF ALLOUEZ
244457	Bridge (road over road)	NA	VILLAGE OF ALLOUEZ
244458	Bridge (road over road)	NA	VILLAGE OF ALLOUEZ
244491	Bridge (road over road)	NA	VILLAGE OF ALLOUEZ
244492	Bridge (road over road)	NA	VILLAGE OF ALLOUEZ
244493	Bridge (road over road)	NA	VILLAGE OF ALLOUEZ
244517	Bridge (railroad over road and trail)	NA	VILLAGE OF ALLOUEZ
244547	Bridge (railroad over water)	NA	VILLAGE OF ALLOUEZ
244548	Bridge (road over water)	NA	VILLAGE OF ALLOUEZ

244608	Bridge (road over water)	NA	VILLAGE OF ALLOUEZ
244609	Bridge (road over water)	NA	VILLAGE OF ALLOUEZ
244723	Bridge (road over railroad)	NA	VILLAGE OF ALLOUEZ
244725	Bridge (railroad over road)	NA	VILLAGE OF ALLOUEZ
244727	Bridge (railroad over water)	NA	VILLAGE OF ALLOUEZ
244728	Bridge (railroad over water)	NA	VILLAGE OF ALLOUEZ
245492	Wastewater Facility (Lift Station?)	NEW Water MS-04	VILLAGE OF ALLOUEZ
248291	Dialysis clinic	ST VINCENT REGIONAL DIALYSIS	VILLAGE OF ALLOUEZ
86808	ELDERLY CARE FACILITY	WYNDEMERE MEMORY CARE	VILLAGE OF ALLOUEZ
284387	SCHOOL	RESURRECTION CHURCH	VILLAGE OF ALLOUEZ
17193	Pipeline facility?	PIPELINE	VILLAGE OF ASHWAUBENON
18608	ELECTRICAL SUBSTATION	NA	VILLAGE OF ASHWAUBENON
27487	FIRE STATION	AFFD STATION 2	VILLAGE OF ASHWAUBENON
79472	WATER TOWER	ASHWAUBENON WATER TOWER 2	VILLAGE OF ASHWAUBENON
79475	WATER WELL	ASHWAUBENON WATER WELL 3	VILLAGE OF ASHWAUBENON
79478	WATER WELL	ASHWAUBENON WATER WELL 5	VILLAGE OF ASHWAUBENON
79523	Daycare	CORMIER EARLY EDUCATION CTR	VILLAGE OF ASHWAUBENON
79603	Military Installations	NAVAL RESERVE CENTER	VILLAGE OF ASHWAUBENON
79607	COLD STORAGE WAREHOUSE	NORTHLAND COLD STORAGE	VILLAGE OF ASHWAUBENON
79622	CHURCH & RED CROSS DESIGNATED SHELTER	PILGRIM CONGREGATION	VILLAGE OF ASHWAUBENON
81322	Airport	AIR HOST	VILLAGE OF ASHWAUBENON
81594	SCHOOL & RED CROSS DESIGNATED SHELTER	VALLEY VIEW SCHOOL	VILLAGE OF ASHWAUBENON
81621	SCHOOL	PARKVIEW MIDDLE SCHOOL	VILLAGE OF ASHWAUBENON

81653	ARENA	RESCH CENTER	VILLAGE OF ASHWAUBENON
82790	CARE-CHILD	STEPPING STONES CHILD CARE	VILLAGE OF ASHWAUBENON
82797	ELDERLY CARE FACILITY	WOODSIDE HAVEN - NH	VILLAGE OF ASHWAUBENON
83495	SCHOOL	ST JOSEPH SCHOOL	VILLAGE OF ASHWAUBENON
84287	MEDICAL CLINIC	BAYCARE CLINIC	VILLAGE OF ASHWAUBENON
84351	PREK - 8TH PRIVATE SCHOOL	ENTERPRISE ACADEMY	VILLAGE OF ASHWAUBENON
84781	CLINIC	BELLIN FAST CARE	VILLAGE OF ASHWAUBENON
85349	CLINIC	BELLIN HEALTH CARE SERVICES	VILLAGE OF ASHWAUBENON
87744	NA	PREVEA PLASTIC SURGERY CENTER	VILLAGE OF ASHWAUBENON
87816	NA	BAYCARE CLINIC	VILLAGE OF ASHWAUBENON
94897	WATER TOWER	ASHWAUBENON WATER TOWER 1	VILLAGE OF ASHWAUBENON
94898	PUBLIC SAFETY DEPT	ASHWAUBENON PUBLIC SAFETY	VILLAGE OF ASHWAUBENON
95434	CLINIC	PREVEA CLINIC	VILLAGE OF ASHWAUBENON
95765	SCHOOL & RED CROSS DESIGNATED SHELTER	PIONEER ELEMENTARY SCHOOL	VILLAGE OF ASHWAUBENON
95896	CHILD CARE SERVICE	ASHWAUBENON DAY CARE	VILLAGE OF ASHWAUBENON
95902	CHILD CARE SERVICE	KINDERCARE	VILLAGE OF ASHWAUBENON
95907	CHILD CARE SERVICE	KIDZ IN MOTION	VILLAGE OF ASHWAUBENON
96604	CLINIC	BELLIN HEALTH - TITLETOWN	VILLAGE OF ASHWAUBENON
96726	FIRE & AMBULANCE STATION	ASHWAUBENON PS STATION 1	VILLAGE OF ASHWAUBENON
96727	FIRE STATION	ASHWAUBENON PS STATION 2	VILLAGE OF ASHWAUBENON
96731	Arena Stadium	CORNERSTONE COMMUNITY CTR	VILLAGE OF ASHWAUBENON
96916	CLINIC	BELLIN CANCER CENTER	VILLAGE OF ASHWAUBENON
96951	COMMERCIALS-RADIO & TELEVISION	NBC 26	VILLAGE OF ASHWAUBENON

97232	NA	BILLIE KRESS CENTER	VILLAGE OF ASHWAUBENON
97275	TV STATION	FOX 11	VILLAGE OF ASHWAUBENON
97305	UTILITIES	WPS GATE STATION	VILLAGE OF ASHWAUBENON
97417	RADIOLOGY CLINIC	GB RADIOLOGY	VILLAGE OF ASHWAUBENON
98110	CLINIC	BELLIN HEALTH MRI	VILLAGE OF ASHWAUBENON
98913	Military Installations	ARMY RESERVE CENTER	VILLAGE OF ASHWAUBENON
98996	DOT	DEPT OF TRANS	VILLAGE OF ASHWAUBENON
101861	Administrative Building	ASHW VILLAGE GARAGE	VILLAGE OF ASHWAUBENON
189070	FIRE STATION	AFFD STATION 1	VILLAGE OF ASHWAUBENON
244302	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244303	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244307	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244308	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244309	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244386	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244441	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244442	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244461	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244465	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244470	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244471	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244472	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244473	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON

244474	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244475	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244476	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244477	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244478	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244479	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244480	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244481	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244482	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244483	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244484	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244485	Bridge (over road and railroad)	NA	VILLAGE OF ASHWAUBENON
244486	Bridge (over road and railroad)	NA	VILLAGE OF ASHWAUBENON
244487	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244488	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244489	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244498	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244499	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244500	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244501	Bridge (road over road and railroad)	NA	VILLAGE OF ASHWAUBENON
244502	Bridge (road over road and railroad)	NA	VILLAGE OF ASHWAUBENON
244503	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244504	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON

244505	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244604	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244605	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244606	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244607	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244626	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244627	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244628	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244629	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244630	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244631	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244632	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244633	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244769	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244770	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244771	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244825	Bridge (railroad over water)	NA	VILLAGE OF ASHWAUBENON
244826	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
247491	Wastewater Facility	NEW Water MS-13A	VILLAGE OF ASHWAUBENON
247492	Wastewater Facility	NEW Water MS-13B	VILLAGE OF ASHWAUBENON
247493	Wastewater Facility	NEW Water MS-13C	VILLAGE OF ASHWAUBENON
247494	Wastewater Facility	NEW Water MS-13D	VILLAGE OF ASHWAUBENON
252760	Dam	NA	VILLAGE OF ASHWAUBENON

257907	Bridge (railroad over water)	NA	VILLAGE OF ASHWAUBENON
98539	ELDERLY CARE FACILITY	MAPLE RIDGE MGM HEALTHCARE - NH	VILLAGE OF ASHWAUBENON
13386	VILLAGE UTILITY?	NA	VILLAGE OF BELLEVUE
16772	Water Supply Storage Tanks/Reservoirs	Water Tower	VILLAGE OF BELLEVUE
19987	SANITARY DISTRICT BUILDING	BELLEVUE WELL 2	VILLAGE OF BELLEVUE
20144	WATER TOWER	NA	VILLAGE OF BELLEVUE
22230	Wastewater Facility (Lift Station?)	NEW Water MS-01	VILLAGE OF BELLEVUE
25521	Radio/Television Stations	MIDWEST COMMUNICATIONS	VILLAGE OF BELLEVUE
62708	LONG-TERM HEALTH CARE FACILITIES	NA	VILLAGE OF BELLEVUE
79681	Administrative Building	BELLEVUE WATER DEPT	VILLAGE OF BELLEVUE
79686	ELDERLY CARE FACILITY	CENTURY RIDGE	VILLAGE OF BELLEVUE
79687	EMS	COUNTY RESCUE STATION 1	VILLAGE OF BELLEVUE
79695	NA	VETERANS ASSISTANCE FOUNDATION	VILLAGE OF BELLEVUE
79741	ELECTRICAL SUBSTATION	WPS SUB STATION	VILLAGE OF BELLEVUE
79742	ELECTRICAL SUBSTATION	WPS SUB STATION	VILLAGE OF BELLEVUE
80642	CHILD CARE	TINY TOWN CHILD CARE	VILLAGE OF BELLEVUE
81491	ELDERLY CARE FACILITY	CENTURY RIDGE - NH	VILLAGE OF BELLEVUE
81650	APARTMENTS	BELLEVUE RETIREMENT - NH	VILLAGE OF BELLEVUE
82083	CARE-CHILD	KINDER CARE	VILLAGE OF BELLEVUE
84306	CARE-CHILD	STAY N PLAY CHILD CARE	VILLAGE OF BELLEVUE
87995	Long Term Health Care Facility	PATIENT PINES ASSISTED LIVING - 1721	VILLAGE OF BELLEVUE
96000	College or University	BELLIN COLLEGE OF NURSING	VILLAGE OF BELLEVUE
96073	MEDICAL CLINIC	BELLIN HEALTH GENERATIONS	VILLAGE OF BELLEVUE

96905	FIRE STATION	BVFD FIRE STATION 1	VILLAGE OF BELLEVUE
96906	FIRE STATION	BVFD FIRE STATION 2	VILLAGE OF BELLEVUE
97456	CARE-CHILD	CENTERPIECE	VILLAGE OF BELLEVUE
97828	SCHOOL & RED CROSS DESIGNATED SHELTER	MCAULIFFE SCHOOL	VILLAGE OF BELLEVUE
98592	SHERIFFS DEPT	BCSO	VILLAGE OF BELLEVUE
189071	FIRE STATION	BELLEVUE FIRE STATION 1	VILLAGE OF BELLEVUE
189072	FIRE STATION	BELLEVUE FIRE STATION 2	VILLAGE OF BELLEVUE
198777	AMBULANCE STATION	CR STATION 1	VILLAGE OF BELLEVUE
244295	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244296	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244495	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244497	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244515	Bridge (road over road)	I-43 & MANITOWOC RD OVERPASS	VILLAGE OF BELLEVUE
244519	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244520	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244521	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244523	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244529	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244530	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244531	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244532	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244533	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244549	Bridge (road over road)	NA	VILLAGE OF BELLEVUE

244610	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244611	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244612	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244613	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244614	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244615	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244616	Bridge (railroad over road)	NA	VILLAGE OF BELLEVUE
244634	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244680	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244681	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244682	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244683	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244684	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244686	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244687	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244688	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244689	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244690	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244691	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244692	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244693	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244694	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244695	Culvert (road over water)	NA	VILLAGE OF BELLEVUE

244696	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244697	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244698	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244699	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244700	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244701	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244702	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244703	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244704	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244705	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244706	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244707	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244799	Bridge (pedestrian over water)	NA	VILLAGE OF BELLEVUE
244800	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244801	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244802	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244803	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244804	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244805	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244806	Bridge (railroad over road)	NA	VILLAGE OF BELLEVUE
244827	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244828	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
245491	LIFT STATION (WASTEWATER FACILITY)	NEW Water MS-02	VILLAGE OF BELLEVUE

253906	Water tower	BELLEVUE WATER TOWER	VILLAGE OF BELLEVUE
258707	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
2961	CHURCH & RED CROSS DESIGNATED SHELTER	OUR SAVIORS LUTHERAN CHURCH	VILLAGE OF DENMARK
3691	WATER SYSTEM	VIL OF DENMARK WATER	VILLAGE OF DENMARK
3757	SCHOOL	DENMARK ELEMENTARY SCHOOL	VILLAGE OF DENMARK
78128	HEALTH CENTER	BELLIN HEALTH CENTER	VILLAGE OF DENMARK
78778	COMMERCIAL	PRO GAS	VILLAGE OF DENMARK
79378	WATER UTILITY	DENMARK WATER DEPT	VILLAGE OF DENMARK
79745	VILLAGE HALL	DENMARK VILLAGE HALL	VILLAGE OF DENMARK
81595	SCHOOL & RED CROSS DESIGNATED SHELTER	DENMARK MIDDLE SCHOOL	VILLAGE OF DENMARK
81933	SCHOOL & RED CROSS DESIGNATED SHELTER	DENMARK HIGH SCHOOL	VILLAGE OF DENMARK
93636	CLINIC	AURORA HEALTH CENTER	VILLAGE OF DENMARK
93696	CHURCH	ALL SAINTS RECTORY	VILLAGE OF DENMARK
96139	CARE-CHILD	DENMARK EARLY CHILDHOOD CTR	VILLAGE OF DENMARK
97089	WATER RESOURCE	FILL SITE - DENMARK - WATER TOWER	VILLAGE OF DENMARK
97122	FIRE STATION	DNFD FIRE STATION 1	VILLAGE OF DENMARK
97306	UTILITIES	WPS GATE STATION	VILLAGE OF DENMARK
98434	POST OFFICE	POST OFFICE DENMARK	VILLAGE OF DENMARK
98557	GOVERNMENT	DENMARK SEWAGE PLANT	VILLAGE OF DENMARK
98939	AMBULANCE SERVICE	COUNTY RESCUE STATION 4	VILLAGE OF DENMARK
189073	FIRE STATION	DENMARK FIRE STATION 1	VILLAGE OF DENMARK
198780	AMBULANCE SERVICE	CR STATION 4	VILLAGE OF DENMARK
244559	Bridge (road over road)	NA	VILLAGE OF DENMARK

244561	Bridge (road over trail)	NA	VILLAGE OF DENMARK
244638	Bridge (road over road)	NA	VILLAGE OF DENMARK
244708	Bridge (road over road)	NA	VILLAGE OF DENMARK
63127	OUTDOOR RECREATION	NA	VILLAGE OF HOBART
64365	WATER TOWER	NA	VILLAGE OF HOBART
78254	FIRE STATION	HOBART FIRE STATION 2	VILLAGE OF HOBART
81612	SCHOOL	HILLCREST SCHOOL	VILLAGE OF HOBART
84357	RADIO/TELEVISION TRANSMISSION TOWERS/ANTENNAE	NA	VILLAGE OF HOBART
88545	WELL	HOBART WATER WELL	VILLAGE OF HOBART
93451	CHURCH & RED CROSS DESIGNATED SHELTER	ST JOSEPH PARISH	VILLAGE OF HOBART
96474	MUNICIPAL OFFICES	HOBART VILLAGE OFFICE	VILLAGE OF HOBART
96681	AIRPORT FIRE STATION	ARFF	VILLAGE OF HOBART
97483	FIRE STATION	HBFD FIRE STATION 1	VILLAGE OF HOBART
97484	FIRE STATION	HBFD FIRE STATION 2	VILLAGE OF HOBART
98136	OTHER USES	TRANS CANADA ANR PIPELINE	VILLAGE OF HOBART
98235	CLINIC	ONEIDA COMMUNITY HEALTH	VILLAGE OF HOBART
98273	ADMINISTRATIVE BUILDING (Oneida)	ONEIDA HOUSING AUTHORITY	VILLAGE OF HOBART
98307	Pre-School/Day Care	ONEIDA CHILD CARE	VILLAGE OF HOBART
98308	TRIBAL CIVIC CENTER	ONEIDA CIVIC CENTER	VILLAGE OF HOBART
98309	TRIBAL	ONEIDA LAND MANAGEMENT	VILLAGE OF HOBART
98311	POLICE STATION	ONEIDA POLICE	VILLAGE OF HOBART
98333	Administrative Building	ONEIDA VETERANS DEPARTMENT	VILLAGE OF HOBART
138854	WATER WELL	NA	VILLAGE OF HOBART

187070	AIRPORT FIRE STATION	AIRPORT FIRE	VILLAGE OF HOBART
189086	FIRE STATION	HOBART FIRE STATION 1	VILLAGE OF HOBART
244330	Bridge (road over water)	NA	VILLAGE OF HOBART
244334	Bridge (road over water)	NA	VILLAGE OF HOBART
244384	Bridge (road over water)	NA	VILLAGE OF HOBART
244443	Bridge (road over water)	NA	VILLAGE OF HOBART
244450	Bridge (road over water)	NA	VILLAGE OF HOBART
244454	Bridge (road over water)	NA	VILLAGE OF HOBART
244455	Bridge (road over water)	NA	VILLAGE OF HOBART
244456	Bridge (road over water)	NA	VILLAGE OF HOBART
244516	Bridge (road over water)	NA	VILLAGE OF HOBART
244620	Bridge (road over water)	NA	VILLAGE OF HOBART
244711	Culvert (road over water)	NA	VILLAGE OF HOBART
244712	Bridge (road over water)	NA	VILLAGE OF HOBART
244713	Bridge (road over water)	NA	VILLAGE OF HOBART
244714	Bridge (road over water)	NA	VILLAGE OF HOBART
244715	Bridge (road over water)	NA	VILLAGE OF HOBART
244716	Bridge (road over water)	NA	VILLAGE OF HOBART
244717	Culvert (road over water)	NA	VILLAGE OF HOBART
244718	Culvert (road over water)	NA	VILLAGE OF HOBART
244719	Bridge (road over water)	NA	VILLAGE OF HOBART
244720	Bridge (road over water)	NA	VILLAGE OF HOBART
244721	Culvert (road over water)	NA	VILLAGE OF HOBART

244722	Culvert (road over water)	NA	VILLAGE OF HOBART
244767	Bridge (former railroad over water)	NA	VILLAGE OF HOBART
244768	Bridge (road over water)	NA	VILLAGE OF HOBART
244823	Bridge (road over water)	NA	VILLAGE OF HOBART
247901	Wastewater Facility (Lift Station?)	NEW Water MS-07	VILLAGE OF HOBART
252741	Dam	NA	VILLAGE OF HOBART
252742	Dam	NA	VILLAGE OF HOBART
252750	Dam	NA	VILLAGE OF HOBART
252751	Dam	NA	VILLAGE OF HOBART
252763	Dam	NA	VILLAGE OF HOBART
65511	GAS GATE STATION	WPS GATE STATION	VILLAGE OF HOWARD
66139	CHURCHES/TEMPLES/SYNAGOGUES	NA	VILLAGE OF HOWARD
80318	PRESCHOOL	BIG APPLE PRESCHOOL	VILLAGE OF HOWARD
80320	ELDERLY CARE FACILITY	CARDINAL RIDGE-NH	VILLAGE OF HOWARD
80324	DAYCARE	CUDDLE CARE DAY CARE	VILLAGE OF HOWARD
80341	PUBLIC WORKS	HOWARD PUBLIC WORKS	VILLAGE OF HOWARD
80395	ELECTRICAL SUBSTATION	WPS SUB STATION 2	VILLAGE OF HOWARD
80396	ELECTRICAL SUBSTATION	WPS SUB STATION 5	VILLAGE OF HOWARD
80931	CLINIC	PREVEA CLINIC	VILLAGE OF HOWARD
81543	AMBULANCE BASE	COUNTY RESCUE STATION 2	VILLAGE OF HOWARD
83210	UTILITIES	WPS SUB STATION	VILLAGE OF HOWARD
83494	CHURCH & RED CROSS DESIGNATED SHELTER	ST JOHN THE BAPTIST - NEW CHURCH	VILLAGE OF HOWARD
83848	ELDERLY CARE FACILITY	ALPHA SENIOR CONCEPTS	VILLAGE OF HOWARD

93626	UTILITIES	WPS SUB STATION 9	VILLAGE OF HOWARD
95000	WELL STATION	GB WATER UTILITY	VILLAGE OF HOWARD
95532	CLINIC	BELLIN HEALTH CENTER	VILLAGE OF HOWARD
95909	CHILD CARE SERVICE	STARTING POINT DAYCARE	VILLAGE OF HOWARD
95959	SCHOOL	LINEVILLE INTERMEDIATE SCHOOL	VILLAGE OF HOWARD
95979	CHURCH	GOOD SHEPHERD LUTHERAN CHURCH	VILLAGE OF HOWARD
96602	ELDERLY CARE FACILITY	TENDER HEARTS ASSISTED LIVING	VILLAGE OF HOWARD
96794	SCHOOLS	BAYVIEW MIDDLE SCHOOL	VILLAGE OF HOWARD
96972	CHURCH & RED CROSS DESIGNATED SHELTER	HOPE COMMUNITY CHURCH	VILLAGE OF HOWARD
97265	SCHOOL	FOREST GLEN ELEMENTARY SCHOOL	VILLAGE OF HOWARD
97304	UTILITIES	WPS GATE STATION	VILLAGE OF HOWARD
97539	SCHOOLS	HOWARD ELEMENTARY SCHOOL	VILLAGE OF HOWARD
97550	FIRE STATION	HWFD FIRE STATION 1	VILLAGE OF HOWARD
97551	FIRE STATION	HWFD FIRE STATION 2	VILLAGE OF HOWARD
97836	SCHOOL	MEADOWBROOK ELEMENTARY	VILLAGE OF HOWARD
98959	WATER TOWER	WATER TOWER - HOWARD	VILLAGE OF HOWARD
98960	WATER TOWER	WATER TOWER - HOWARD	VILLAGE OF HOWARD
115939	COMMERCIAL BUILDING	NSIGHT TELE SERVICES	VILLAGE OF HOWARD
144360	WATER TOWER	WATER TOWER - HOWARD	VILLAGE OF HOWARD
189088	FIRE STATION	HOWARD FIRE STATION 1	VILLAGE OF HOWARD
189089	FIRE STATION	HOWARD FIRE STATION 2	VILLAGE OF HOWARD
198778	AMBULANCE STATION	CR STATION 2	VILLAGE OF HOWARD
244291	MUNICIPAL WELL	HOWARD WELL 2	VILLAGE OF HOWARD

244292	MUNICIPAL WELL	HOWARD WELL 3	VILLAGE OF HOWARD
244310	Bridge (road over road, railroad and water)	NA	VILLAGE OF HOWARD
244311	Bridge (road over road)	NA	VILLAGE OF HOWARD
244312	Bridge (trail over road)	NA	VILLAGE OF HOWARD
244381	Bridge (road over water)	NA	VILLAGE OF HOWARD
244382	Bridge (road over water)	NA	VILLAGE OF HOWARD
244383	Bridge (road over water)	NA	VILLAGE OF HOWARD
244385	Bridge (road over water)	NA	VILLAGE OF HOWARD
244388	Bridge (road)	NA	VILLAGE OF HOWARD
244403	Bridge (trail over road)	NA	VILLAGE OF HOWARD
244406	Bridge (road over water)	NA	VILLAGE OF HOWARD
244407	Bridge (road over road)	NA	VILLAGE OF HOWARD
244409	Bridge (road over water)	NA	VILLAGE OF HOWARD
244410	Bridge (road over water)	NA	VILLAGE OF HOWARD
244412	Bridge (road over water)	NA	VILLAGE OF HOWARD
244413	Bridge (road over water)	NA	VILLAGE OF HOWARD
244414	Bridge (road over water)	NA	VILLAGE OF HOWARD
244415	Bridge (road over water)	NA	VILLAGE OF HOWARD
244416	Bridge (road over water)	NA	VILLAGE OF HOWARD
244418	Bridge (trail over road)	NA	VILLAGE OF HOWARD
244419	Bridge (road over road)	NA	VILLAGE OF HOWARD
244420	Bridge (road over road)	NA	VILLAGE OF HOWARD
244421	Bridge (road over railroad)	NA	VILLAGE OF HOWARD

244422	Bridge (road over railroad)	NA	VILLAGE OF HOWARD
244423	Bridge (road over water)	NA	VILLAGE OF HOWARD
244424	Bridge (road)	NA	VILLAGE OF HOWARD
244426	Bridge (road over road)	NA	VILLAGE OF HOWARD
244427	Bridge (road over road)	NA	VILLAGE OF HOWARD
244428	Culvert (road over water)	NA	VILLAGE OF HOWARD
244429	Culvert (road over water)	NA	VILLAGE OF HOWARD
244430	Culvert (road over water)	NA	VILLAGE OF HOWARD
244432	Bridge (road over road)	NA	VILLAGE OF HOWARD
244433	Bridge (road over road)	NA	VILLAGE OF HOWARD
244434	Bridge (road over road)	NA	VILLAGE OF HOWARD
244435	Bridge (road over road, railroad and water)	NA	VILLAGE OF HOWARD
244436	Bridge (road over road, railroad and water)	NA	VILLAGE OF HOWARD
244447	Bridge (road over water)	NA	VILLAGE OF HOWARD
244448	Bridge (road over water)	NA	VILLAGE OF HOWARD
244449	Bridge (road over road)	NA	VILLAGE OF HOWARD
244588	Bridge (road over water)	NA	VILLAGE OF HOWARD
244625	Bridge (road over road)	NA	VILLAGE OF HOWARD
244730	Culvert (road over water)	NA	VILLAGE OF HOWARD
244731	Bridge (road over water)	NA	VILLAGE OF HOWARD
244732	Bridge (road over water)	NA	VILLAGE OF HOWARD
244733	Bridge (road over water)	NA	VILLAGE OF HOWARD
244734	Bridge (road over water)	NA	VILLAGE OF HOWARD

244735	Bridge (road over trail)	NA	VILLAGE OF HOWARD
244736	Bridge (road over trail)	NA	VILLAGE OF HOWARD
244737	Bridge (road over water)	NA	VILLAGE OF HOWARD
244738	Bridge (road over water)	NA	VILLAGE OF HOWARD
244739	Bridge (road over water)	NA	VILLAGE OF HOWARD
244740	Bridge (road over water)	NA	VILLAGE OF HOWARD
244741	Bridge (road over water)	NA	VILLAGE OF HOWARD
244742	Bridge (road over water)	NA	VILLAGE OF HOWARD
244743	Bridge (road over water)	NA	VILLAGE OF HOWARD
244744	Bridge (road over water)	NA	VILLAGE OF HOWARD
244745	Bridge (railroad over water)	NA	VILLAGE OF HOWARD
244746	Bridge (road over water)	NA	VILLAGE OF HOWARD
244747	Culvert (road over water)	NA	VILLAGE OF HOWARD
244748	Bridge (road over road)	NA	VILLAGE OF HOWARD
244749	Bridge (road over water)	NA	VILLAGE OF HOWARD
244762	Bridge (railroad over water)	NA	VILLAGE OF HOWARD
244763	Bridge (road over water)	NA	VILLAGE OF HOWARD
244766	Bridge (trail over railroad)	NA	VILLAGE OF HOWARD
244833	Bridge (road over road)	NA	VILLAGE OF HOWARD
244834	Bridge (road over road)	NA	VILLAGE OF HOWARD
244835	Bridge (road over road)	NA	VILLAGE OF HOWARD
244836	Bridge (road over road)	NA	VILLAGE OF HOWARD
244837	Bridge (road over road)	NA	VILLAGE OF HOWARD

247091	Wastewater Facility (Lift Station) & restrooms	NEW Water MS-08-AND Pamperin Park restrooms	VILLAGE OF HOWARD
247495	Wastewater Facility	NEW Water MS-22	VILLAGE OF HOWARD
249492	LIFT STATION	HOWARD LIFT STATION ON LAKEVIEW DR	VILLAGE OF HOWARD
249493	LIFT STATION	HOWARD LIFT STATION ON RIVERVIEW DR	VILLAGE OF HOWARD
249494	LIFT STATION	HOWARD LIFT STATION ON VALLEY LN	VILLAGE OF HOWARD
252738	Dam	NA	VILLAGE OF HOWARD
252739	Dam	NA	VILLAGE OF HOWARD
257107	Bridge (road over road, railroad and water)	NA	VILLAGE OF HOWARD
257108	Bridge (road over road, railroad and water)	NA	VILLAGE OF HOWARD
257109	Bridge (road over road, railroad and water)	NA	VILLAGE OF HOWARD
257110	Bridge (road over road)	NA	VILLAGE OF HOWARD
257111	Bridge (road over road)	NA	VILLAGE OF HOWARD
257112	Bridge (road over road)	NA	VILLAGE OF HOWARD
257113	Bridge (road over road)	NA	VILLAGE OF HOWARD
257114	Bridge (road over road)	NA	VILLAGE OF HOWARD
257115	Bridge (road over road)	NA	VILLAGE OF HOWARD
257116	Bridge (road over road)	NA	VILLAGE OF HOWARD
257507	Bridge (road over water)	NA	VILLAGE OF HOWARD
257508	Bridge (railroad over water)	NA	VILLAGE OF HOWARD
257509	Bridge (railroad over water)	NA	VILLAGE OF HOWARD
257510	Bridge (road over road)	NA	VILLAGE OF HOWARD
257511	Bridge (road over road and railroad)	NA	VILLAGE OF HOWARD
257512	Bridge (road over railroad)	NA	VILLAGE OF HOWARD

257513	Bridge (road over railroad)	NA	VILLAGE OF HOWARD
258708	Bridge (road over road)	NA	VILLAGE OF HOWARD
259107	Bridge (railroad over water)	NA	VILLAGE OF HOWARD
74195	GENERATION/PROCESSING OF COMMUNICATION/UTILITIE	NA	VILLAGE OF PULASKI
77107	Electric Power Substation	NA	VILLAGE OF PULASKI
80417	WATER DEPT	PULASKI WATER DEPT	VILLAGE OF PULASKI
80598	Long Term Health Care Facility	THE PINES - NH	VILLAGE OF PULASKI
80623	CLINIC	PREVEA CLINIC PULASKI	VILLAGE OF PULASKI
88053	OIL TANKS	OLSON OIL TANKS	VILLAGE OF PULASKI
93543	PUBLIC UTILITIES	PULASKI WATER AND SEWER	VILLAGE OF PULASKI
93583	CLINIC	AURORA HEALTH CENTER	VILLAGE OF PULASKI
93614	SCHOOL	PULASKI MIDDLE SCHOOL	VILLAGE OF PULASKI
93618	SCHOOL & RED CROSS DESIGNATED SHELTER	PULASKI HIGH SCHOOL	VILLAGE OF PULASKI
95954	SCHOOL & RED CROSS DESIGNATED SHELTER	ASSUMPTION BVM SCHOOL	VILLAGE OF PULASKI
97282	CHURCH	ASSUMPTION RECTORY	VILLAGE OF PULASKI
98408	FIRE STATION	PULASKI FIRE STATION	VILLAGE OF PULASKI
98428	CHILD CARE SERVICE	ENCOMPASS CHILD CARE	VILLAGE OF PULASKI
98440	POST OFFICE	POST OFFICE PULASKI	VILLAGE OF PULASKI
189096	FIRE STATION	PFFD FIRE STATION	VILLAGE OF PULASKI
244757	Bridge (road over water)	NA	VILLAGE OF PULASKI
244758	Bridge (road over water)	NA	VILLAGE OF PULASKI
247496	Wastewater Facility	NEW Water MS-23	VILLAGE OF PULASKI
253907	WATER TOWER	PULASKI WATER DEPT	VILLAGE OF PULASKI

72086	LIFT STATION	SUAMICO LIFT STATION 7	VILLAGE OF SUAMICO
72393	Utility building?	NA	VILLAGE OF SUAMICO
79311	PRE-SCHOOL/DAY CARE	TENDER HEART LEARNING	VILLAGE OF SUAMICO
80439	CHURCH & RED CROSS DESIGNATED SHELTER	ST BENEDICT CHURCH	VILLAGE OF SUAMICO
80444	ELECTRICAL SUB STATION	WPS SUB STATION 8	VILLAGE OF SUAMICO
81544	AMBULANCE / RESCUE SQUAD	COUNTY RESCUE STATION 3	VILLAGE OF SUAMICO
81560	CLINIC	AURORA HEALTH CENTER	VILLAGE OF SUAMICO
82084	CARE-CHILD	KINDER CARE	VILLAGE OF SUAMICO
83385	CLINIC	BELLIN FAST CARE	VILLAGE OF SUAMICO
83600	CARE-CHILD	TINY TOWN CHILD CARE	VILLAGE OF SUAMICO
85750	GOVERNMENT	SUAMICO VILLAGE HALL	VILLAGE OF SUAMICO
86348	CHURCH	PILGRIM LUTHERAN CHURCH	VILLAGE OF SUAMICO
93622	CHURCH & RED CROSS DESIGNATED SHELTER	ST EDWARD AND ISIDORE CHURCH	VILLAGE OF SUAMICO
93641	CARE-CHILD	SHINING STARS DAYCARE	VILLAGE OF SUAMICO
95910	CHILD CARE SERVICE	TEDDY BEAR DAY CARE	VILLAGE OF SUAMICO
96771	SCHOOL	BAY HARBOR ELEMENTARY	VILLAGE OF SUAMICO
96782	HIGH SCHOOL & RED CROSS DESIGNATED SHELTER	BAY PORT HIGH SCHOOL	VILLAGE OF SUAMICO
98441	POST OFFICE	POST OFFICE SUAMICO	VILLAGE OF SUAMICO
98673	FIRE STATION	SMFD STATION 1	VILLAGE OF SUAMICO
98674	FIRE STATION	SMFD STATION 2	VILLAGE OF SUAMICO
98963	GOVERNMENT	WATER TOWER - SUAMICO	VILLAGE OF SUAMICO
98964	SANITARY DISTRICT BUILDING	SUAMICO WATER TREATMENT PLANT	VILLAGE OF SUAMICO
189097	FIRE STATION	SUAMICO FIRE STATION 1	VILLAGE OF SUAMICO

189098	FIRE STATION	SUAMICO FIRE STATION 2	VILLAGE OF SUAMICO
198779	AMBULANCE / RESCUE SQUAD	CR STATION 3	VILLAGE OF SUAMICO
244319	Bridge (road over road and water)	NA	VILLAGE OF SUAMICO
244326	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244327	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244328	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244329	Bridge (road over road and water)	NA	VILLAGE OF SUAMICO
244389	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244390	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244391	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244393	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244394	Bridge (road over railroad)	NA	VILLAGE OF SUAMICO
244396	Bridge (road over railroad)	NA	VILLAGE OF SUAMICO
244397	Bridge (road over road)	NA	VILLAGE OF SUAMICO
244399	Bridge (road over road)	NA	VILLAGE OF SUAMICO
244401	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244402	Bridge (road over road)	NA	VILLAGE OF SUAMICO
244624	Bridge (road over road)	NA	VILLAGE OF SUAMICO
244709	Bridge (road over road)	NA	VILLAGE OF SUAMICO
244710	Bridge (road over road)	NA	VILLAGE OF SUAMICO
244764	Bridge (railroad over water)	NA	VILLAGE OF SUAMICO
244765	Bridge (road over water)	NA	VILLAGE OF SUAMICO
249495	LIFT STATION	SUAMICO LIFT STATION 2	VILLAGE OF SUAMICO

252757	Dam	NA	VILLAGE OF SUAMICO
1726	MUNICIPAL SERVICES / PD	WRIGHTSTOWN POLICE DEPARTMENT	VILLAGE OF WRIGHTSTOWN
2769	WATER TOWER	VIL OF WRIGHTSTOWN WATER TOWER	VILLAGE OF WRIGHTSTOWN
78311	WATER TOWER	NA	VILLAGE OF WRIGHTSTOWN
79411	PHONE COMPANY	ATT BUILDING	VILLAGE OF WRIGHTSTOWN
79418	DAY CARE	KIDS CARE	VILLAGE OF WRIGHTSTOWN
80564	SEWAGE PLANT	WRIGHTS PUBLIC WORKS	VILLAGE OF WRIGHTSTOWN
81349	CLINIC	BELLIN HEALTH WRIGHTSTOWN	VILLAGE OF WRIGHTSTOWN
81591	MIDDLE SCHOOL	WRIGHTSTOWN MIDDLE SCHOOL	VILLAGE OF WRIGHTSTOWN
82064	SCHOOL	ST JOHN LUTHERAN SCHOOL	VILLAGE OF WRIGHTSTOWN
84115	VILLAGE HALL	WRIGHTSTOWN VILLAGE HALL	VILLAGE OF WRIGHTSTOWN
94826	HIGH SCHOOL & RED CROSS DESIGNATED SHELTER	WRIGHTSTOWN HIGH SCHOOL	VILLAGE OF WRIGHTSTOWN
95947	ELEMENTARY SCHOOL	WRIGHTSTOWN ELEMENTARY SCHOOL	VILLAGE OF WRIGHTSTOWN
97821	RESIDENTIAL	MATTHEWS SENIOR LIVING	VILLAGE OF WRIGHTSTOWN
98442	POST OFFICE	POST OFFICE WRIGHTSTOWN	VILLAGE OF WRIGHTSTOWN
98989	FIRE STATION	WFFD FIRE STATION	VILLAGE OF WRIGHTSTOWN
99030	CHILD CARE	WRIGHTCARE CHILD CARE	VILLAGE OF WRIGHTSTOWN
189099	FIRE STATION	WRIGHTSTOWN FIRE STATION	VILLAGE OF WRIGHTSTOWN
244346	Bridge (road over water)	NA	VILLAGE OF WRIGHTSTOWN
244648	Bridge (road over water)	NA	VILLAGE OF WRIGHTSTOWN
252758	Dam	NA	VILLAGE OF WRIGHTSTOWN

Appendix E – BC Shoreland Zoning Code

CHAPTER 22
(Revised 10-4-2016)

SHORELANDS AND WETLANDS

STATUTORY AUTHORIZATION, FINDING OF FACT, STATEMENT OF PURPOSE AND TITLE

22.01 STATUTORY AUTHORIZATION. This ordinance (Chapter 22) for shoreland protection is adopted pursuant to the authorization set forth in s. 59.692, Wis. Stats., to implement ss. 59.692, 59.694, & 281.31, Wis. Stats., and Ch. NR 115 of the Wisconsin Administrative Code. These rules and laws shall apply until amended and then shall apply as amended.

22.02 FINDING OF FACT. Uncontrolled use of the shorelands and pollution of the navigable waters of Brown County would adversely affect the public health, safety, convenience, and general welfare and impair the tax base. The legislature of Wisconsin has delegated responsibility to the counties to further the maintenance of safe and healthful conditions; prevent and control water pollution; protect spawning grounds, fish and aquatic life; control building sites, placement of structures and land uses; and to preserve shore cover and natural beauty. This responsibility is hereby recognized by Brown County, Wisconsin.

22.03 PURPOSE AND INTENT (s. NR 115.01). For the purpose of promoting the public health, safety, convenience and welfare, and promote and protect the public trust in navigable waters this ordinance has been established to:

- (1) Further the maintenance of safe and healthful conditions and prevent and control water pollution through:
 - (a) Establishing minimum lot sizes to provide adequate area for private on-site waste treatment systems.
 - (b) Controlling filling and grading to prevent serious soil erosion problems.
 - (c) Limiting impervious surfaces to control runoff which carries pollutants.
- (2) Protect spawning grounds, fish and aquatic life through:
 - (a) Preserving wetlands and other fish and aquatic habitat.
 - (b) Regulating pollution sources.
 - (c) Controlling shoreline alterations, dredging and lagooning.
- (3) Control building sites, placement of structures and land uses through:
 - (a) Prohibiting certain uses detrimental to the shoreland area.
 - (b) Setting minimum lot sizes and widths.
 - (c) Setting minimum building setbacks from waterways.
 - (d) Setting the maximum height of near shore structures.
- (4) Preserve and restore shoreland vegetation and natural scenic beauty through:
 - (a) Restricting the removal of natural shoreland cover.

- (b) Preventing shoreline encroachment by structures.
- (c) Controlling shoreland excavation and other earth moving activities.
- (d) Regulating the use and placement of boathouses and other structures.

22.04 TITLE. This ordinance constituting Chapter 22 of the Brown County Code, shall be known, cited and referred to as: The Shorelands and Wetlands Ordinance for Brown County, Wisconsin.

GENERAL PROVISIONS

22.05 AREAS TO BE REGULATED. Areas regulated by this ordinance shall include all the lands (referred to herein as "shorelands") in the unincorporated areas of Brown County which are:

- (1) Within 1,000 feet of the ordinary high-water mark of navigable lakes, ponds or flowages. (s. NR 115.03(8).) Lakes, ponds or flowages in Brown County shall be presumed to be navigable if they are listed in the Wisconsin Department of Natural Resources ("Department") publication FH-800 2009 "Wisconsin Lakes" book available electronically at the following web site: <http://dnr.wi.gov/org/water/fhp/lakes/lakemap/> or are shown on United States Geological Survey quadrangle maps (1:24,000 scale), or other zoning base maps.
- (2) Within 300 feet of the ordinary high-water mark of navigable rivers or streams, or to the landward side of the floodplain, whichever distance is greater. (s. NR 115.03(8).) Rivers and streams in Brown County shall be presumed to be navigable if they are designated as perennial waterways or intermittent waterways on United States Geological Survey quadrangle maps. (1:24,000) Flood hazard boundary maps, flood insurance rate maps, flood boundary- floodway maps, county soil survey maps or other existing county floodplain zoning maps shall be used to delineate floodplain areas.
- (3) Determinations of navigability and ordinary high-water mark location shall initially be made by the zoning administrator. When questions arise, the zoning administrator may contact the appropriate office of the Department for a final determination of navigability or ordinary high-water mark. The county may work with surveyors with regard to s. 59.692(1h), Wis. Stats. Field locating the ordinary high-water mark on the Bay of Green Bay ("Bay") shall not exceed the elevation of 583 feet, IGLD85 unless deemed appropriate by the zoning administrator to set higher based on site conditions per the definition of ordinary high-water mark in this ordinance. The all-time historic high water elevation of the Bay is 582.35 feet, IGLD85 as calculated by the Army Corps of Engineers (USACOE).
- (4) Under s. 281.31(2m), Wis. Stats., notwithstanding any other provision of law or administrative rule promulgated thereunder, this ordinance does not apply to:
 - (a) Lands adjacent to farm drainage ditches if:
 - 1. Such lands are not adjacent to a natural navigable stream or river.
 - 2. Those parts of such drainage ditches adjacent to such lands were not navigable streams before ditching.
 - (b) Lands adjacent to artificially constructed drainage ditches, ponds or stormwater retention basins that are not hydrologically connected to a natural navigable water body.
- (5) The Brown County Private Sewage System Ordinance (Chapter 11 of this Code), The Floodplains Ordinance for Brown County, Wisconsin (Chapter 23 of this Code) and the Brown

County Land Division and Subdivision Ordinance (Chapter 21 of this Code), as referred to in this ordinance, have been adopted separately and are applicable throughout Brown County where there is jurisdiction.

- (6) The provisions of this ordinance apply to the county's regulation of the use and development of unincorporated shoreland areas. Unless specifically exempted by law, all cities, villages, towns, counties and, when s. 13.48 (13), Wis. Stats., applies, state agencies are required to comply with, and obtain all necessary permits under, local shoreland ordinances. The construction, reconstruction, maintenance or repair of state highways and bridges carried out under the direction and supervision of the Wisconsin Department of Transportation is not subject to local shoreland zoning ordinances if s. 30.2022 (1), Wis. Stats., applies. (s. NR 115.02.) Shoreland zoning requirements in annexed or incorporated areas are provided in ss. 61.353 and 62.233, Wis. Stats.

22.06 SHORELAND WETLAND ZONING MAPS. The most recent version of the Wisconsin Wetland Inventory as depicted on the Department of Natural Resources Surface Water Data Viewer is made part of this ordinance. The maps can be viewed at: <http://dnrmaps.wi.gov/SL/Viewer.html?Viewer=SWDV&runWorkflow=Wetland> and the data will also be available on the county GIS.

22.07 COMPLIANCE (NR 115.04). The use of any land or water, the size, shape and placement of lots, the use, size, type and location of structures on lots, the installation and maintenance of water supply and waste disposal facilities, the filling, grading, lagooning, dredging of any lands, the cutting of shoreland vegetation, the subdivision of lots, shall be in full compliance with the terms of this ordinance and other applicable local, state or federal regulations. (However, see Section 22.46 of this ordinance for standards applicable to nonconforming uses.) Buildings, signs and other structures shall require a permit unless otherwise expressly excluded by a provision of this ordinance. Property owners, builders and contractors are responsible for compliance with the terms of this ordinance.

22.08 MUNICIPALITIES AND STATE AGENCIES REGULATED. Unless specifically exempted by law, all cities, villages, towns, and counties are required to comply with this ordinance and obtain all necessary permits. The construction, reconstruction, maintenance and repair of state highways and bridges by the Wisconsin Department of Transportation are exempt when s. 30.2022(1), Wis. Stats., applies.

22.09 ABROGATION AND GREATER RESTRICTIONS. The provisions of this ordinance supersede all the provisions of any county zoning ordinance adopted under s. 59.69, Wis. Stats., which relate to shorelands. In other words if a zoning standard only applies to lands that lie within the shoreland and applies because the lands are in shoreland, then this ordinance supersedes those provisions. However, where an ordinance adopted under a statute other than s. 59.692, Wis. Stats., does not solely relate to shorelands and is more restrictive than this ordinance, for example a floodplain ordinance, that ordinance shall continue in full force and effect to the extent of the greater restrictions, but not otherwise.

- (1) (s. 59.692(2)(a), Wis. Stats.) This ordinance shall not require approval or be subject to disapproval by any town or town board.
- (2) (s. 59.692(2)(b), Wis. Stats.) If an existing town ordinance relating to shorelands is more restrictive than this ordinance or any amendments thereto, the town ordinance continues in all respects to the extent of the greater restrictions, but not otherwise.
- (3) This ordinance is not intended to repeal, abrogate or impair any existing deed restrictions,

covenants or easements. However, where this ordinance imposes greater restrictions, the provisions of this ordinance shall prevail.

- (4) The following provisions of The Floodplains Ordinance for Brown County (Chapter 23) are hereby incorporated by reference; these provisions shall only apply to the shoreland area where they impose greater restrictions than this ordinance otherwise imposes.
- (5) (s. 59.692(1k)(a)1., Wis. Stats.) This ordinance may establish standards to regulate matters that are not regulated in NR 115, but that further the purposes of shoreland zoning as described in section 22.03 of this ordinance.
- (6) (s. 59.692(1k)(a)1., Wis. Stats.) Counties may not establish shoreland zoning standards in a shoreland zoning ordinance that does any of the following:
 - (a) Requires approval to install or maintain outdoor lighting in shorelands, imposes any fee or mitigation requirement to install or maintain outdoor lighting in shorelands, or otherwise prohibits or regulates outdoor lighting in shorelands if the lighting is designed or intended for residential use.
 - (b) Requires any inspection or upgrade of a structure before the sale or other transfer of the structure may be made.
- (7) (s. 59.692(7), Wis. Stats.) The construction and maintenance of a facility is considered to satisfy the requirements of this ordinance if:
 - (a) The Department has issued all required permits or approvals authorizing the construction or maintenance under ch. 30, 31, 281, or 283 of the Wisconsin Statutes.

For purposes hereof, a "facility" means any property or equipment of a public utility, as defined in s. 196.01(5), Wis. Stats., or a cooperative association organized under ch. 185, Wis. Stats., for the purpose of producing or furnishing heat, light, or power to its members only, that is used for the transmission, delivery, or furnishing of natural gas, heat, light, or power.

22.10 INTERPRETATION (59.69(13)). In their interpretation and application, the provisions of this ordinance shall be held to be minimum requirements and shall be liberally construed in favor of the county and shall not be deemed a limitation or repeal of any other powers granted by Wisconsin Statutes. Where a provision of this ordinance is required by statute and a standard in Ch. NR 115, Wis. Adm. Code, and where the ordinance provision is unclear, the provision shall be interpreted in light of the statute and Ch. NR 115 standards in effect on the date of the adoption of this ordinance or in effect on the date of the most recent text amendment to this ordinance.

22.11 SEVERABILITY. If any portion of this ordinance is adjudged unconstitutional or invalid by a court of competent jurisdiction, the remainder of this ordinance shall not be affected.

LAND DIVISION AND SANITARY REGULATIONS

22.12 LAND DIVISION REVIEW (s. NR 115.05(2)). The county shall review, pursuant to s. 236.45, Wis. Stats., all land divisions in shoreland areas which create three or more parcels or building sites of five acres each or less within a five-year period. In such review the following factors shall be considered:

- (1) Hazards to the health, safety or welfare of future residents.
- (2) Proper relationship to adjoining areas.
- (3) Public access to navigable waters, as required by law.
- (4) Adequate storm drainage facilities.
- (5) Conformity to state law and administrative code provisions.

22.13 PLANNED UNIT DEVELOPMENT (s. NR 115.05(1)(a)4.).

- (1) **PURPOSE.** The Planned Unit Development is intended to permit smaller non-riparian lots where the physical layout of the lots is so arranged as to better assure the control of pollution and preservation of ground cover than would be expected if the lots were developed with the normal lot sizes and setbacks and without special conditions placed upon the Planned Unit Development at the time of its approval. A condition of all Planned Residential Unit Development is the preservation of certain open space, preferably on the shoreland, in perpetuity.
- (2) **REQUIREMENTS FOR PLANNED UNIT DEVELOPMENT.** The Brown County Planning and Land Services Department may at its discretion, upon its own motion or upon petition, approve a Planned Unit Development Overlay District upon finding, that all of the following facts exist:
 - (a) **Area.** The area proposed for the Planned Unit Development shall be at least 2 acres in size or have a minimum of 200 feet of frontage on navigable water.
 - (b) **Lots.** Any proposed lot in the Planned Unit Development that does not meet the minimum size standards of sections 22.16 and 22.17 of this ordinance shall be a non-riparian lot.
 - (c) **Lot sizes, widths, setbacks, and vegetation removal.** When considering approval of a Planned Unit Development the governing body shall consider whether proposed lot sizes, widths, and setbacks are of adequate size and distance to prevent pollution or erosion along streets or other public ways and waterways. Increased shoreland setbacks shall be a condition of approval as a way of minimizing adverse impacts of development. Shore cover provisions in section 22.33 of this ordinance shall apply except that maximum width of a lake frontage opening shall be 100 feet and minimum vegetative buffer depth shall be increased to offset the impact of the proposed development.

SANITARY REGULATIONS

22.14 SANITARY REGULATIONS (NR 115.05(3)).

- (1) The county shall adopt sanitary regulations for the protection of health and the preservation and enhancement of water quality.
 - (a) Where public water supply systems are not available, private well construction shall be required to conform to Ch. NR 812, Wis. Adm. Code.
 - (b) Where a public sewage collection and treatment system is not available, design and construction of private on-site waste treatment system shall, prior to July 1, 1980, be required to comply with Ch. SPS 383, Wis. Adm. Code, and after June 30, 1980, be

governed by a private sewage system ordinance adopted by the county under s. 59.70(5), Wis. Stats.

DIMENSIONS OF BUILDING SITES

22.15 PURPOSE (s. NR 115.05(1)(a)).

- (1) Minimum lot sizes in the shoreland area shall be established to afford protection against danger to health, safety and welfare, and protection against pollution of the adjacent body of water.

22.16 LOTS SERVED BY PUBLIC SANITARY SEWER (s. NR 115.05(1)(a)1.).

- (1) The minimum lot area shall be 10,000 sq. ft. and the minimum average lot width shall be 65 feet with at least 65 feet of frontage at the ordinary high-water mark.

22.17 LOTS NOT SERVED BY PUBLIC SANITARY SEWER (s. NR 115.05(1)(a)2.).

- (1) The minimum lot area shall be 20,000 sq. ft. and the minimum average lot width shall be 100 feet with at least 100 feet of frontage at the ordinary high-water mark.

22.18 SUBSTANDARD LOTS (s. NR 115.05(1)(a)3). A legally created lot or parcel that met minimum area and minimum average width requirements when created, but does not meet current lot size requirements, may be used as a building site if all of the following apply:

- (1) The substandard lot or parcel was never reconfigured or combined with another lot or parcel by plat, survey, or consolidation by the owner into one property tax parcel.
- (2) The substandard lot or parcel has never been developed with one or more of its structures placed partly upon an adjacent lot or parcel.
- (3) The substandard lot or parcel is developed to comply with all other ordinance requirements.

Note: The intent of this provision is to allow lots that were legally created that currently do not meet the minimum lot width and area requirements to be considered a building site provided all ordinance requirements can be met. Substandard lots that have been reconfigured by a certified survey map or consolidated into one legal description with the Register of Deeds, which result in a larger (closer to conforming) lot should be allowed to be utilized as a building site. Additionally, lots that have a legal description for each substandard lot on record with the Register of Deeds but have one tax parcel number assigned by the Real Property Lister or Assessor for taxing/assessing purposes should be considered separate building sites and should not be considered consolidated. Lots that have had development over the lot lines should be combined with a legal description and recorded with a new deed prior to new development occurring.

22.19 HEIGHT (s. NR 115.05(1)(f)). To protect and preserve wildlife habitat and natural scenic beauty, on or after February 1, 2012, a county may not permit any construction that results in a structure taller than 35 feet within 75 feet of the ordinary high-water mark of any navigable waters.

- (1) Height Measurement: The maximum 35 foot measurement shall be made from the highest grade elevation next to the foundation as measured to the midpoint of the roof line.

IMPERVIOUS SURFACE STANDARDS

22.20 PURPOSE (s. NR 115.05(1)(e)). Establish impervious surface standards to protect water quality, fish and wildlife habitat and to protect against pollution of navigable waters. County impervious surface standards shall apply to the construction, reconstruction, expansion, replacement or relocation of any impervious surface on a riparian lot or parcel and any nonriparian lot or parcel that is located entirely within 300 feet of the ordinary high-water mark of any navigable waterway.

22.21 CALCULATION OF PERCENTAGE OF IMPERVIOUS SURFACE (s. NR 115.05(1)(e)1m.). Percentage of impervious surface shall be calculated by dividing the surface area of the existing and proposed impervious surfaces on the portion of a lot or parcel that is within 300 feet of the ordinary high-water mark by the total surface area of that lot or parcel, and multiplied by 100. Impervious surfaces described in section 22.25 of this ordinance shall be excluded from the calculation of impervious surface on the lot or parcel. If an outlot lies between the ordinary high water mark and the developable lot or parcel and both are in common ownership, the lot or parcel and the outlot shall be considered one lot or parcel for the purposes of calculating the percentage of impervious surface.

Note: For properties that have been “condominiumized” the impervious surface calculations apply to the entire property. The property is still under one legal description and the proposed expansion to a unit is not the only impervious surface calculated since the regulation states lot or parcel and not a unit. It will be important to remember also that mitigation applies to the property as a whole and not just to the portion of the frontage that might be in front of the unit impacted.

22.22 IMPERVIOUS SURFACE STANDARD (s. NR 115.05(1)(e)2.). Except as allowed in sections 22.23 through 22.25 of this ordinance allow up to 15% impervious surface on the portion of a lot or parcel that is within 300 feet of the ordinary high-water mark.

22.23 IMPERVIOUS SURFACE STANDARD FOR HIGHLY DEVELOPED SHORELINES. (s. NR 115.05(1)(e)2m. and s. 59.692(1k)(am)2, Wis. Stats.). The county at its discretion may adopt an ordinance for highly developed shorelines allowing up to 30% for residential land use and up to 40% for commercial, industrial or business land uses for lands that meet one of the following standards:

- (1) The highly developed shoreline is identified as an Urbanized Area or Urban Cluster in the 2010 US Census or has a commercial, industrial, or business land use as of January 31, 2013.
- (2) After conducting a hearing and receiving approval by the Department, the county has established a map of additional areas of highly developed shorelines that are at least 500 feet in length and meet one of the following criteria:
 - (a) The majority of the lots are developed with more than 30% of impervious surface area.
 - (b) Located on a lake served by a sewerage system as defined in NR 110.03(30), Wis. Adm. Code.
 - (c) The majority of the lots contain less than 20,000 square feet in area.
 - (d) The highly developed shoreline is identified on the Green Bay MPO 2045 Metropolitan Planning Area Boundary approved by WisDOT June 16, 2014.
 - (e) The highly developed shoreline is also identified on the HDS map created on 6/15/16 or as amended to reflect areas that match any of (a), (b) or (c) above.

22.24 MAXIMUM IMPERVIOUS SURFACE (s. NR 115.05(1)(e)3.). A property may exceed the impervious surface standard under sections 22.22 or 22.23 of this ordinance provided the following standards are met:

- (1) For properties where the impervious surface standard applies under section 22.22 of this ordinance, a property owner may have more than 15% impervious surface but not more than 30% impervious surface on the portion of a lot or parcel that is within 300 feet of the ordinary high-water mark.
- (2) For properties on shorelands where the impervious surface standard for highly developed shorelines applies under section 22.23 of this ordinance, a property owner may have more than 30% impervious surface but not more than 40% impervious surface for residential land uses. For commercial, industrial or business land uses, a property owner may have more than 40% impervious surface but not more than 60% impervious surface.
- (3) For properties that exceed the standard under sections 22.22 or 22.23 of this ordinance but do not exceed the maximum standard under sections 22.24(1) or 22.24(2) of this ordinance, a permit can be issued for development with a mitigation plan that meets the standards found in section 22.51 of this ordinance.

22.25 TREATED IMPERVIOUS SURFACES (s. NR 115.05(1)(e)3m. and s. 59.692(1k)(a)5, Wis. Stats.). Impervious surfaces that can be documented to show they meet either of the following standards shall be excluded from the impervious surface calculations under section 22.21 of this ordinance.

- (1) The impervious surface is treated by devices such as stormwater ponds, constructed wetlands, infiltration basins, rain gardens, bio-swales or other engineered systems.
- (2) The runoff from the impervious surface discharges to an internally drained pervious area that retains the runoff on or off the parcel and allows infiltration into the soil.

22.26 EXISTING IMPERVIOUS SURFACES (s. NR 115.05(1)(e)4.). For existing impervious surfaces that were lawfully placed when constructed but that do not comply with the impervious surface standard in section 22.22 of this ordinance or the maximum impervious surface standard in section 22.24 of this ordinance, the property owner may do any of the following:

- (1) Maintain and repair the existing impervious surfaces.
- (2) Replace existing impervious surfaces with similar surfaces within the existing building envelope.
- (3) Relocate or modify an existing impervious surface with similar or different impervious surface, provided that the relocation or modification does not result in an increase in the percentage of impervious surface that existed on the effective date of this ordinance and the impervious surface meets the applicable setback requirements in sections 22.27 or 22.28 hereof.

NOTE: The impervious surface standards set forth herein shall not be construed to supersede other provisions of this ordinance. All of the provisions of this ordinance still apply to new or existing development.

SETBACKS FROM THE WATER

22.27 BUILDING SETBACKS (s. NR 115.05(1)(b)). Permitted building setbacks shall be established to conform to health, safety and welfare requirements, preserve natural beauty, reduce flood

hazards and avoid water pollution.

- (1) **SHORELAND SETBACK (s. NR 115.05(1)(b)1.).** Unless exempt under section 22.27(2), or reduced under section 22.28 of this ordinance, a setback of 75 feet from the ordinary high-water mark of any navigable waters to the nearest part of a building or structure shall be required for all buildings and structures.
- (2) **EXEMPT STRUCTURES (s. NR 115.05(1)(b)1m. and s. 59.692(1k)(a)(6), Wis. Stats.).** All of the following structures are exempt from the shoreland setback standards in Subsection (1), above:
 - (a) Boathouses located entirely above the ordinary high-water mark and entirely within the access and viewing corridor that do not contain plumbing and are not used for human habitation. The roof of a boathouse may be used as a deck provided that:
 1. The boathouse has a flat roof.
 2. The roof has no side walls or screens.
 3. The roof may have a railing that meets the Department of Safety and Professional Services standards.
 - (b) Shoreland Permit – Special. Open sided and screened structures such as gazebos, decks, patios and screen houses in the shoreland setback area that satisfy the requirements in s. 59.692(1v), Wis. Stats.
 1. The part of the structure that is nearest to the water is located at least 35 feet landward from the ordinary-high water mark.
 2. The floor area of all the structures in the shoreland setback area will not exceed 200 square feet.
 3. The structure that is the subject of the request for special zoning permission has no sides or has open or screened sides.
 4. The county must approve a plan that will be implemented by the owner of the property to preserve or establish a vegetative buffer zone that covers at least 70% of the half of the shoreland setback area that is nearest to the water.
 - (c) Broadcast signal receivers, including satellite dishes or antennas that are one meter or less in diameter and satellite earth station antennas that are two meters or less in diameter.
 - (d) Utility transmission and distribution lines, poles, towers, water towers, pumping stations, well pumphouse covers, private on-site wastewater treatment systems that comply with Ch. SPS 383, Wis. Adm. Code and other utility structures that have no feasible alternative location outside of the minimum setback and that employ best management practices to infiltrate or otherwise control storm water runoff from the structure.
 - (e) Stairways, walkways, and rail systems that are necessary to provide pedestrian access to the shoreline and are a maximum of 60 inches in width.
 - (f) Devices or systems used to treat runoff from impervious surfaces.
- (3) **EXISTING EXEMPT STRUCTURES (s. 59.692(1k)(a)2m., Wis. Stats.).** Existing exempt structures may be maintained, repaired, replaced, restored, rebuilt and remodeled provided the activity does not expand the footprint and does not go beyond the three-dimensional building envelope of the existing structure. The county may allow expansion of a structure beyond the existing footprint if the expansion is necessary to comply with applicable state or federal requirements.

NOTE: Section 59.692(1k)(a)2m., Wis. Stats., prohibits the county from requiring any approval or imposing any fee or mitigation requirement for the activities specified in section 22.27(3) hereof. However, it is important to note that property owners may be required to obtain permits or

approvals and the county may impose fees under Brown County Ordinances it adopted pursuant to other statutory requirements, such as floodplain zoning, general zoning, sanitary codes, building codes, or even stormwater erosion control.

22.28 REDUCED BUILDING SETBACKS (NR 115.05(1)(b)1. and (s. 59.692(1n), Wis. Stats.) A setback less than the 75' required setback from the ordinary high water mark shall be permitted for a proposed principal structure and shall be determined as follows:

- (1) Where there are existing principal structures in both directions, the setback shall equal the average of the distances the two existing principal structures are set back from the ordinary high water mark provided all of the following are met:
 - (a) Both of the existing principal structures are located on adjacent lot to the proposed principal structure.
 - (b) Both of the existing principal structures are located within 250' of the proposed principal structure and are the closest structure.
 - (c) Both of the existing principal structures are located less than 75' from the ordinary high water mark.
 - (d) The average setback shall not be reduced to less than 35' from the ordinary high water mark of any navigable water.

Note: s. 59.692(1d)(a), Wis. Stats., requires counties to adopt the standards consistent with Section 22.28(1) or reducing the shoreland setback.

- (2) Where this is an existing principal structure in only one direction, the setback shall equal the distance the existing principal structure is set back from the ordinary high water mark and the required setback of 75' from the ordinary high water mark provided all of the following are met:
 - (a) The existing principal structure is located on adjacent lot to the proposed principal structure.
 - (b) The existing principal structure is located within 250' of the proposed principal structure and is the closest structure.
 - (c) The existing principal structure is located less than 75' from the ordinary high water mark.
 - (d) The average setback shall not be reduced to less than 35' from the ordinary high water mark of any navigable water.

22.29 FLOODPLAIN STRUCTURES (s. NR 115.05(1)(b)2.). Buildings and structures to be constructed or placed in a floodplain shall be required to comply with any applicable floodplain zoning ordinance.

22.30 CRITICAL SLOPE SETBACK. All residential, commercial or industrial structures shall be set back a minimum of 20 feet from the top ridgeline of a 20% or greater slope measured to the foundation and must comply with the ordinary high-water mark required setbacks of this ordinance, whichever is greater. Elevation change will be analyzed to determine how steep or significant the slope is to decide the applicability of this section. Decks, patios, stairways, fences, gazebos, screen houses, pools, boathouses and storage sheds can be located within the 20 foot setback but must not exceed a building footprint of 500 square feet. If a geotechnical study is completed for the proposed area, a shoreland permit may be issued for a structure within the 20 foot setback subject to being constructed following the recommendations of the study. A certificate of compliance will need to be completed by the responsible architect or engineer after construction and prior to occupancy. This certificate must be returned to the Zoning Office within 60 days of completion of the project.

(1) Special exceptions. A special exception permit shall be required for the following:

(a) For any proposed encroachment into the critical slope setback not identified in section 22.30 of this ordinance.

22.31 SHORELAND PERMIT- AGRICULTURAL. The following uses shall be permitted within the Shoreland District or as defined by the Brown County Land Conservation Department on their most current hazard maps to the extent that they are not prohibited in a particular area by any underlying zoning ordinance. The hazard maps can be found at the Brown County Land and Water Conservation Department or on its website.

(1) Agricultural uses are permitted providing they comply with the provisions of this ordinance.

(a) A minimum of 35 feet of land free of row crops and seeded to grass, alfalfa, or other close-growing crop shall be maintained between the farmed area and the edge of the navigable stream; navigable stream crossings shall be permitted for livestock and shall be of a design deemed appropriate by the Brown County Land Conservation Department. A farmer may be exempt from this section if soil and water conservation practices are deemed sufficient and no pollution is occurring in the opinion of the Brown County Land Conservation Department.

(b) If there is a pollution problem resulting from the grazing or pasturing of livestock, the farmer/operator will be required to erect a fence no closer than 16-1/2 feet of the edge of the navigable stream or otherwise abate the pollution in such a manner as may be determined by the Brown County Land Conservation Department. If a fence has to be erected, provision will be allowed for watering livestock in the navigable stream.

REMOVAL OF SHORE COVER - VEGETATION

22.32 PURPOSE (s. NR 115.05(1)(c)1.). To protect natural scenic beauty, fish and wildlife habitat, and water quality, a county shall regulate removal of vegetation in shoreland areas, consistent with the following: The County shall establish ordinance standards that consider sound forestry and soil conservation practices and the effect of vegetation removal on water quality, including soil erosion, and the flow of effluents, sediments and nutrients.

22.33 ACTIVITIES ALLOWED WITHIN VEGETATIVE BUFFER ZONE (s. NR 115.05(1)(c)2.). To protect water quality, fish and wildlife habitat and natural scenic beauty, and to promote preservation and restoration of native vegetation, the county shall designate land that extends from the ordinary high water mark to a minimum of 35 feet inland as a vegetative buffer zone and prohibit removal of vegetation in the vegetative buffer zone except as allowed in section 22.34 hereof.

22.34 SHORELINE CUTTING. Tree and shrubbery cutting in an area parallel to the ordinary high-water mark, and extending 35 feet inland from all points along the ordinary high-water mark, shall be limited in accordance with the following provisions:

(1) The county may allow routine maintenance of vegetation.

(2) The county may allow removal of trees and shrubs in the vegetative buffer zone to create access and viewing corridors. Per s. 59.692(1f)(b), Wis. Stats, the viewing corridor may be at least 35 feet wide for every 100 feet of shoreline frontage. The viewing corridor may run contiguously for the entire maximum width or shoreline frontage owned.

(3) The county may allow removal of trees and shrubs in the vegetative buffer zone on a parcel

with ten or more acres of forested land consistent with “generally accepted forestry management practices” as defined in s. NR 1.25 (2)(b), and described in Department Publication “Wisconsin Forest Management Guidelines” (Publication FR-226), provided that vegetation removal be consistent with these practices.

- (4) The county may authorize by permit additional vegetation management activities in the vegetative buffer zone. The permit issued under this Subsection shall require that all management activities comply with detailed plans approved by the county and designed to control erosion by limiting sedimentation into the waterbody, to improve the plant community by replanting in the same area, and to maintain and monitor the newly restored area. The permit also shall require an enforceable restriction to preserve the newly restored area.
- (5) The county may allow removal of vegetation within the vegetative buffer zone to manage exotic or invasive species, damaged vegetation, vegetation that must be removed to control disease, or vegetation creating an imminent safety hazard, provided that any vegetation removed be replaced by replanting in the same area as soon as practicable.

Note: Wis. Stats., § 59.692(1f)(a) prohibits the county from requiring a property owner to establish a vegetative buffer zone on previously developed land or expand an existing vegetative buffer zone. However, as part of the County’s shoreland mitigation standards, the establishment or expansion of the vegetative buffer may remain an option.

22.35 MINIMUM STANDARD OF A VEGETATIVE BUFFER. Planting Densities. The table below describes planting standards for two major shoreland types: woodland, and barrens/dry prairie/wet prairie. The woodland has a nearly complete canopy of trees while the barrens/prairie and wetland are more open. Plant numbers are to be calculated based on the area in square feet to be reestablished and the appropriate density. The area to be reestablished shall be calculated for each layer.

(1) Shoreland Buffer Planting Standards (Table 1)

	Woodland Buffer		Wetland / Prairie Buffer	
Layer	Minimum number of species	Density per 100 square feet	Minimum number of species	Density per 100 square feet
Tree Canopy*	3	1	1	0.2
Shrub Understory**	4	2	2	0.5
Groundcover Plant Plugs***	1	50 Must be Mulched	5	70 Must be Mulched
Groundcover Seeding	1	Varies Grass 4oz./1000sqft. Forbs 3oz./1000sqft.	5	Varies Grass 4oz./1000sqft. Forbs 3oz./1000sqft.

- * Tree must be ≥ 2 years old and 18" tall or taller
- ** Shrubs must be 1 Liter container size or larger
- *** Plugs must be 3" tall or 1" dia.

(2) Types of Vegetation Buffer Establishment.

- (a) Avoidance- Your buffer may be totally intact or undisturbed. If that is the case, your affidavit will simply state that you will not disturb the area and will remain compliant with placement of your viewing corridor. The area designated as Vegetative Buffer must meet the density requirements of (Table 1).
 - (b) Accelerated Recovery (enhancement) - This method entails actually installing some plant materials to achieve proper vegetation density, outlined in (Table 1). Simply stated, you will be filling in areas that are too thin or where the vegetation is missing.
 - (c) Accelerated Recovery (creation) - This method is used when no buffer exists. The area in question may have been graded to bare soil or the site may have been mowed for many years. Creation will involve planting groundcover, shrubs and trees after removal of existing vegetation.
- (3) Brown County Native Plant List. Species of plants must be selected from the Brown County Native Plant List and approved for shoreline buffers by the Brown County Zoning Administrator. Substitutions must be approved by the Brown County Zoning Administrator. Substitutions to the list will be allowed in the event of lack of plant stock or seed availability on a case-by-case basis. All plants may be transplanted from areas outside of the buffer zone. The following link to the Wisconsin Botanical Information System shall be used to determine Brown County native plants. County: Brown, Origin: Native.
<http://www.botany.wisc.edu/herb/Countysearch.html>
- (4) Shoreland Buffer Plan Requirements. When restoration of a shoreland buffer is chosen as a mitigation option, a restoration plan shall be completed by an engineer, landscape architect, surveyor or other licensed contractor acceptable by the Brown County Zoning Administrator. Said Plan must be approved by the county and shall include:
- (a) Name and address of property owner.
 - (b) Property address and legal description.
 - (c) Extent of the shoreland buffer.
 - (d) Scale (e.g. 1 inch = 10 feet) or as approved by reviewer.
 - (e) North arrow.
 - (f) Ordinary high water mark (OHWM) location.
 - (g) Location of all structures in the shoreland buffer zone.
 - (h) Viewing and access corridor.
 - (i) Boundary of the shoreland buffer zone.
 - (j) Existing trees, shrubs, and native ground cover.
 - (k) Areas to be planted with trees, shrubs, and groundcovers.
 - (l) Implementation schedule.
 - (m) A plant species list; indicate if you are requesting substitutions from the prepared list.

- (n) Erosion control practices (to be installed prior to and during buffer establishment).
 - (o) Water diversions and channelized flow areas.
 - (p) Buffer maintenance (weeding, replanting).
- (5) Certificate of Completion. No later than 2 years after issuance of the shoreland permit, the property owner shall complete the mitigation practices and shall certify in writing to the Brown County Zoning Administrator that the required mitigation has been completed. As part of the certification, the property owner shall submit photos documenting the mitigation measures and the Brown County Planning and Land Services Department staff may conduct an on-site compliance inspection. If the project for which the permit was issued was never completed then the implementation of the mitigation plan will not be required. An affidavit of correction to that effect shall be recorded on to the deed at the property owner's expense.
 - (6) Subsequent Development. Shoreland permit applications shall require additional mitigation and will be dependent on the scope of the project.

FILLING, GRADING, LAGOONING, DREDGING, DITCHING AND EXCAVATING

22.36 GENERAL STANDARDS (s. NR 115.05(1)(d)). Filling, grading, lagooning, dredging, ditching and excavating may be permitted only in accordance with the provisions of s. NR 115.04, the requirements of Ch. 30, Wis. Stats., and other state and federal laws where applicable, and only if done in a manner designed to minimize erosion, sedimentation and impairment of fish and wildlife habitat and natural scenic beauty. Erosion control is required as per Best Management Practices. Filling, grading, lagooning, dredging, ditching or excavating which does not require a permit under section 22.37 of this ordinance may be permitted in the shoreland area provided that:

- (1) It is done in a manner designed to minimize erosion, sedimentation and impairment of fish and wildlife habitat.
- (2) Filling, grading, lagooning, dredging, ditching or excavating in a shoreland-wetland district meets the requirements of sections 22.41(2) and 22.41(3) of this ordinance.
- (3) All applicable federal, state and local authority is obtained in addition to a permit under this ordinance.
- (4) Any fill placed in the shoreland area is protected against erosion by the use of riprap, vegetative cover or a bulkhead.

22.37 PERMIT REQUIRED.

- (1) Filling, grading, lagooning, dredging, ditching and excavating. Erosion control is required as per Best Management Practices. A permit is required for any shoreland area as defined in this ordinance and on which there is either:
 - (a) At least 1,000 square feet of filling, grading and excavating.
 - (b) Filling of more than 500 square feet within 100 feet of any shoreland wetland. A 35 foot setback is required on wetlands.
 - (c) Not more than 20,000 square feet of filling, grading and excavating within 100 feet of navigable water.

- (2) Special exceptions. A special exception permit shall be required for the following:
- (a) For any filling, grading and excavating of any area within the shoreland district which is within 100 feet horizontal distance of navigable water and on which there is:
 - 1. Filling, grading and excavating greater than 20,000 square feet.
 - (b) For any construction or dredging commenced on any artificial waterway, canal, ditch, lagoon, pond, lake or similar waterway which is within 300 feet landward of the ordinary high-water mark of a navigable body of water or where the purpose is the ultimate connection with a navigable body of water.
 - (c) This subsection (2) does not apply to soil conservation practices such as terraces, runoff diversions, grassed waterways, waste storage facilities, and channel restoration, which are used for sediment reduction. All projects designed by other Brown County Departments, DNR, USF & WS, NRCS, and other governmental departments will not require a special exception permit, only a shoreland permit will be required. The shoreland permit fee will be waived when the agency designing the project will have direct supervision over the construction. A letter must be provided to this office by that agency upon completion indicating the project was completed as permitted. The DOT is exempt from permit requirements when section 30.12(4)(a), Wisconsin Statutes, applies.
 - (d) Municipal projects designed by licensed architects or engineers will not require a special exception permit, only a shoreland permit will be required.
- (3) Conditions. In issuance of a shoreland permit or in granting a special exception permit for filling or grading, the Board of Adjustments or Brown County Zoning Office may attach the following conditions in addition to the provisions specified in Section 22.58 that:
- (a) The smallest amount of bare ground be exposed for as short a time as feasible.
 - (b) Temporary ground cover such as mulch be used and permanent cover such as sod be planted.
 - (c) Diversions, silting basins, terraces, and other methods to trap sediment be used.
 - (d) Fill is stabilized according to accepted engineering standards.
 - (e) Fill will not restrict a floodway or destroy the storage capacity of a floodplain.
 - (f) Sides of a channel or artificial watercourse be stabilized to prevent slumping.
 - (g) Sides of channels or artificial watercourses be constructed with side slopes of two units horizontal distance to one unit vertical or flatter, unless bulkheads or rip rapping are provided.
 - (h) In shoreland areas with no floodplain mapped a minimum 35 foot no fill area is required from the ordinary high-water mark. If floodplain analysis is submitted and approved by the Department the 35 foot no fill area may be reduced.

22.38 PERMIT CONDITIONS. In granting a special exception permit under section 22.37(2), the Board of Adjustment shall attach the following conditions, where appropriate, in addition to those provisions specified in sections 22.58(2) and 22.58(3):

- (1) The smallest amount of bare ground shall be exposed for as short a time as feasible.
- (2) Temporary ground cover (such as mulch or jute netting) shall be used and permanent vegetative cover shall be established.

- (3) Diversion berms or bales, silting basins, terraces, filter fabric fencing, and other methods shall be used to prevent erosion.
- (4) Lagoons shall be constructed to avoid fish trap conditions.
- (5) Fill shall be stabilized according to accepted engineering standards.
- (6) Filling shall comply with any local floodplain zoning ordinance and shall not restrict a floodway or destroy the flood storage capacity of a floodplain.
- (7) Channels or artificial watercourses shall be constructed with side slopes of two units horizontal distance to one unit vertical or flatter which shall be promptly vegetated, unless bulkheads or riprap are provided.

SHORELAND-WETLAND DISTRICT

22.39 DESIGNATION (s. NR. 115.04). This district shall include all shorelands within the jurisdiction of this ordinance which are designated as wetlands on the most recent version of the Wisconsin Wetland Inventory as depicted on the Department of Natural Resources Surface Water Data Viewer.

- (1) Locating shoreland-wetland boundaries. (s. NR 115.04(b)2.) Where an apparent discrepancy exists between the shoreland-wetland district boundary shown on the Wisconsin Wetland Inventory Maps and actual field conditions, the zoning administrator shall contact the appropriate office of the Department to determine if the shoreland-wetland district boundary as mapped is in error. If Department staff concur with the zoning administrator that a particular area was incorrectly mapped as a wetland or meets the wetland definition, the zoning administrator shall have the authority to immediately grant or deny a zoning permit in accordance with the regulations applicable to the correct zoning district. In order to correct wetland mapping errors on the official zoning map, an official zoning map amendment must be initiated within a reasonable period of time.

22.40 PURPOSE. This district is created to maintain safe and healthful conditions, to prevent water pollution, to protect fish spawning grounds and wildlife habitat, to preserve shore cover and natural beauty and to control building and development in wetlands whenever possible. When development is permitted in a wetland, the development should occur in a manner that minimizes adverse impacts upon the wetland.

22.41 PERMITTED USES (s. NR 115.04(3)). The following uses shall be allowed, subject to general shoreland zoning regulations contained in this ordinance, the provisions of Chs. 30, 31, and 281.36, Wis. Stats., and the provisions of other applicable local, state and federal laws:

- (1) Activities and uses which do not require the issuance of a shoreland permit, but which must be carried out without any filling, flooding, draining, dredging, ditching, tiling or excavating except as allowed under sections 22.41(2) or 22.41(3) of this ordinance.
 - (a) Hiking, fishing, trapping, hunting, swimming, and boating.
 - (b) The harvesting of wild crops, such as marsh hay, ferns, moss, wild rice, berries, tree fruits, and tree seeds, in a manner that is not injurious to the natural reproduction of such crops.

- (c) The pasturing of livestock.
 - (d) The cultivation of agricultural crops.
 - (e) The practice of silviculture, including the planting, thinning, and harvesting of timber.
 - (f) The construction or maintenance of duck blinds.
- (2) Uses which do not require the issuance of a shoreland permit and which may include limited filling, flooding, draining, dredging, ditching, tiling, or excavating but only to the extent specifically provided below:
- (a) Temporary water level stabilization measures necessary to alleviate abnormally wet or dry conditions that would have an adverse impact on silvicultural activities if not corrected.
 - (b) The cultivation of cranberries including flooding, dike and dam construction or ditching necessary for the growing and harvesting of cranberries.
 - (c) The maintenance and repair of existing agricultural drainage systems including ditching, tiling, dredging, excavating and filling necessary to maintain the level of drainage required to continue the existing agricultural use. This includes the minimum filling necessary for disposal of dredged spoil adjacent to the drainage system provided that dredged spoil is placed on existing spoil banks where possible.
 - (d) The construction or maintenance of fences for the pasturing of livestock, including limited excavating and filling necessary for such construction or maintenance.
 - (e) The construction or maintenance of piers, docks or walkways built on pilings, including limited excavating and filling necessary for such construction and maintenance.
 - (f) The maintenance, repair, replacement or reconstruction of existing town and county highways and bridges, including limited excavating and filling necessary for such maintenance, repair, replacement or reconstruction.
- (3) Uses which require the issuance of a shoreland permit under section 22.56-(shoreland permits) and which may include limited filling, flooding, draining, dredging, ditching, tiling or excavating, but only to the extent specifically provided below:
- (a) The construction and maintenance of roads which are necessary to conduct silvicultural activities or agricultural cultivation provided that:
 - 1. The road cannot, as a practical matter, be located outside the wetland.
 - 2. The road is designed and constructed to minimize adverse impact upon the natural functions of the wetland enumerated in section 22.43(2).
 - 3. The road is designed and constructed with the minimum cross-sectional area practical to serve the intended use.
 - 4. Road construction activities are carried out in the immediate area of the roadbed only.
 - (b) The construction or maintenance of nonresidential buildings provided that:
 - 1. The building is essential for and used solely in conjunction with the raising of waterfowl, minnows or other wetland or aquatic animals; or some other use permitted in the shoreland-wetland district.
 - 2. The building cannot, as a practical matter, be located outside the wetland.
 - 3. Such building is not designed for human habitation and does not exceed 500 square feet in floor area.

4. Only limited filling or excavating necessary to provide structural support for the building is authorized.
- (c) The establishment of public and private parks and recreation areas, natural and outdoor education areas, historic and scientific areas, wildlife refuges, game bird and animal farms, fur animal farms, fish hatcheries, and public boat launching ramps and attendant access roads, provided that:
1. Any private development is used exclusively for the permitted use and the applicant has received a permit or license under Ch. 29, Wis. Stats., where applicable.
 2. Filling or excavating necessary for the construction or maintenance of public boat launching ramps or attendant access roads is allowed only where such construction or maintenance meets the criteria in section 22.41(3)(a)1- 4.
 3. Ditching, excavating, dredging, or dike and dam construction in public and private parks and recreation areas, natural and outdoor education areas, historic and scientific areas, wildlife refuges, game bird and animal farms, fur animal farms, and fish hatcheries is allowed only for the purpose of improving wildlife habitat and to otherwise enhance wetland values.
- (d) The construction or maintenance of electric, gas, telephone, water and sewer transmission and distribution facilities, by public utilities and cooperative associations organized for the purpose of producing or furnishing heat, light, power or water to their members and the construction or maintenance of railroad lines provided that:
1. The transmission and distribution facilities and railroad lines cannot, as a practical matter, be located outside the wetland.
 2. Such construction or maintenance is done in a manner designed to minimize adverse impact upon the natural functions of the wetland enumerated in section 22.43(2).

22.42 PROHIBITED USES (s. NR 115.04(4)). Any use not listed in sections 22.41(1), 22.41(2) or 22.41(3) of this ordinance is prohibited, unless the wetland or portion of the wetland has been rezoned by amendment of this ordinance in accordance with section 22.43 of this ordinance and s. 59. 69(5)(e), Wis. Stats.

22.43 REZONING OF LANDS IN THE SHORELAND-WETLAND DISTRICT (s. NR 115.04(2)).

- (1) For all proposed text and map amendments to the shoreland-wetland provisions of this ordinance, the appropriate district office of the Department shall be provided with the following:
 - (a) A copy of every petition for a text or map amendment to the shoreland-wetland provisions of this ordinance, within five days of the filing of such petition with the county clerk. Such petition shall include a copy of the Wisconsin Wetland Inventory Map adopted as part of this ordinance describing any proposed rezoning of a shoreland-wetland.
 - (b) Written notice of the public hearing to be held on a proposed amendment at least 10 days prior to such hearing.
 - (c) A copy of the county zoning agency's findings and recommendations on each proposed amendment within 10 days after the submission of those findings and recommendations to the county board.

- (d) Written notice of the county board's decision on the proposed amendment within 10 days after it is issued.
- (2) A wetland or a portion thereof, in the shoreland-wetland district shall not be rezoned if the proposed rezoning may result in a significant adverse impact upon any of the following:
- (a) Storm and flood water storage capacity.
 - (b) Maintenance of dry season stream flow, the discharge of groundwater to a wetland, the recharge of groundwater from a wetland to another area, or the flow of groundwater through a wetland.
 - (c) Filtering or storage of sediments, nutrients, heavy metals or organic compounds that would otherwise drain into navigable waters.
 - (d) Shoreline protection against soil erosion.
 - (e) Fish spawning, breeding, nursery or feeding grounds.
 - (f) Wildlife habitat.
 - (g) Wetlands both within the boundary of designated areas of special natural resource interest and those wetlands which are in proximity to or have a direct hydrologic connection to such designated areas as defined in s. NR 103.04 which can be accessed at the following web site: <http://www.legis.state.wi.us/rsb/code/nr/nr103.pdf>.
- (3) If the Department notifies the county zoning agency that a proposed text or map amendment to the shoreland-wetland provisions of this ordinance may have a significant adverse impact upon any of the criteria listed in section 22.43(2) of this ordinance, that amendment, if approved by the county board, shall contain the following provision:

"This amendment shall not take effect until more than 30 days have elapsed after written notice of the county board's approval of this amendment is mailed to the Department of Natural Resources. During that 30 day period the Department of Natural Resources may notify the county board that it will adopt a superseding shoreland ordinance for the county under s. 59.692(6), Wis. Stats. If the Department does so notify the county board, the effect of this amendment shall be stayed until the s. 59.692(6) adoption procedure is completed or otherwise terminated."

NONCONFORMING USES AND STRUCTURES

22.44 DISCONTINUED NONCONFORMING USE (s. NR. 115.05(1)(g)3.). If a nonconforming use is discontinued for a period of 12 months, any future use of the building, structure or property shall conform to this ordinance.

22.45 MAINTENANCE, REPAIR, REPLACEMENT OR VERTICAL EXPANSION OF NONCONFORMING STRUCTURES (s. 59.692(1k)(a)2., 4. and (b), Wis. Stats.). An existing structure that was lawfully placed when constructed but that does not comply with the required shoreland setback may be maintained, repaired, replaced, restored, rebuilt or remodeled if the activity does not expand the footprint of the nonconforming structure. Further, an existing structure that was lawfully placed when constructed but that does not comply with the required shoreland setback may be vertically expanded unless the vertical expansion would extend more than 35 feet above grade level. The county may allow expansion of a structure beyond the existing footprint if the expansion is necessary to comply with applicable state or federal

requirements.

22.46 LATERAL EXPANSION OF NONCONFORMING PRINCIPAL STRUCTURE WITHIN THE SETBACK (s. NR 115.05(1)(g)5.). An existing principal structure that was lawfully placed when constructed but that does not comply with the required building setback per sections 22.27 and 22.28 of this ordinance may be expanded laterally, provided that all of the following requirements are met:

- (1) The use of the structure has not been discontinued for a period of 12 months or more if a nonconforming use.
- (2) The existing principal structure is at least 35 feet from the ordinary high-water mark.
- (3) Lateral expansions are limited to a maximum of 200 square feet over the life of the structure. No portions of the expansion may be closer to the ordinary high-water mark than the closest point of the existing principal structure.
- (4) The county shall issue a permit that requires a mitigation plan that shall be approved by the county and implemented by the property owner by the date specified in the permit. The mitigation plan shall meet the standards found in section 22.51 hereof.
- (5) All other provisions of this ordinance shall be met.

22.47 EXPANSION OF A NONCONFORMING PRINCIPAL STRUCTURE BEYOND SETBACK (s. NR 115.05(1)(g)5m.). An existing principal structure that was lawfully placed when constructed but that does not comply with the required building setback under section 22.24(1) of this ordinance, may be expanded horizontally, landward or vertically provided that the expanded area meets the building setback requirements per section 22.27(1) or 22.28 hereof and that all other provisions of this ordinance are met. A mitigation plan is not required solely for expansion under this section, but may be required per section 22.22 of this ordinance.

22.48 RELOCATION OF NONCONFORMING PRINCIPAL STRUCTURE (s. NR 115.05(1)(g)6.). An existing principal structure that was lawfully placed when constructed but that does not comply with the required building setback per sections 22.27(1) and 22.28 of this ordinance may be relocated on the property provided that all of the following requirements are met:

- (1) The use of the structure has not been discontinued for a period of 12 months or more if a nonconforming use.
- (2) The existing principal structure is at least 35 feet from the ordinary high-water mark.
- (3) No portion of the relocated structure is located any closer to the ordinary high-water mark than the closest point of the existing principal structure.
- (4) The county determines that no other location is available on the property to build a principal structure of a comparable size to the structure proposed for relocation that will result in compliance with the shoreland setback requirement per section 22.27(1) hereof.
- (5) The county shall issue a permit that requires a mitigation plan that shall be approved by the county and implemented by the property owner by the date specified in the permit. The mitigation plan shall meet the standards found in section 22.51 of this ordinance and include enforceable obligations of the property owner to establish or maintain measures that the county determines are adequate to offset the impacts of the permitted expansion on water quality, near-shore aquatic habitat, upland wildlife habitat and natural scenic beauty. The mitigation measures shall be proportional to the amount and impacts of the replaced or

relocated structure being permitted. The obligations of the property owner under the mitigation plan shall be evidenced by an instrument recorded in the office of the Brown County Register of Deeds.

(6) All other provisions of this ordinance shall be met.

22.49 MAINTENANCE, REPAIR, REPLACEMENT OR VERTICAL EXPANSION OF STRUCTURES THAT WERE AUTHORIZED BY VARIANCE (s. 59.692(1k)(a)2. and (a)4., Wis. Stats.). A structure of which any part has been authorized to be located within the shoreland setback area by a variance granted before July 15, 2015 may be maintained, repaired, replaced, restored, rebuilt or remodeled if the activity does not expand the footprint of the authorized structure. Additionally, the structure may be vertically expanded unless the vertical expansion would extend more than 35 feet above grade level. The county may allow expansion of a structure beyond the existing footprint if the expansion is necessary to comply with applicable state or federal requirements.

22.50 WET BOATHOUSES. The maintenance and repair of nonconforming boathouses which extend beyond the ordinary high-water mark of any navigable waters shall be required to comply with s. 30.121, Wis. Stats.

MITIGATION

22.51 MITIGATION (s. 59.692(1v), Wis. Stats., and s. NR 115.05(1)(e)3., (g)5., & (g)6.). When the county issues a permit requiring mitigation under sections 22.27(2)(b), 22.24, 22.47, or 22.49 of this ordinance, the property owner must submit a complete permit application that is reviewed and approved by the county. Existing buffer zones may be used to meet the mitigation point totals. The following mitigation practices may be used to obtain a minimum of 3 points.

(1) Mitigation Options –Maintenance of Existing or Establishment of Buffers.

- (a) Primary Active Buffer Zone – Shore buffer zone within 35 feet of the ordinary high-water mark, including trees, shrubbery, ground cover and other natural vegetation, and subject to no mowing is permitted other than the allowable viewing corridor. 3 points.
- (b) Passive Buffer Zone – Shoreland vegetation buffer area within 35 feet of the ordinary high-water mark, including un-mowed grass or other ground cover vegetation, but without the tree and shrub layers required to meet the 3 point mitigation standard. 2 points.
- (c) Side Lot Buffer Zone – A 10 foot wide side lot buffer zone including trees, shrubbery, ground cover and other natural vegetation extending along a side lot line for a depth of at least 75 feet from the ordinary high-water mark. 1 point. The side lot buffer area is subject to the condition of no mowing is permitted. Points for side lot line buffers may be additive, for a maximum of 2 points, if buffer areas exist and are maintained along both side lot lines.

(2) Mitigation Alternative Option.

- (a) At the discretion of the Brown County Zoning Administrator, up to three additional mitigation points may be approved for restoration or protection activities that are likely to provide significant benefits to meet the objectives of this ordinance. Examples may include but are not limited to construction of a storm water detention basin or implementation of other storm water management plan activities, replacement of seawalls with bio-engineered structures, rain gardens, bio swales, water diversion of

overland flow or removal of artificial sand beaches in compliance with all applicable statutes and provisions set forth in the Wisconsin Administrative Code. Up to 3 points.

- (b) Factors to be considered in making the determination of number of points and approval of alternative mitigation practices include, but are not limited to:

1. Runoff diversion and/or retention.
2. Lot configuration.
3. Parcel size.
4. Location of impervious areas.
5. Sensitivity and level of development of the waterbody.
6. Significance toward meeting ordinance objectives.
7. Type, density and filtering capacity of vegetation/ground cover.
8. Replacement of a failing private on-site wastewater treatment system with a code compliant system as permitted by current standards.
9. Removal of existing impervious areas and structures.

22.52 MITIGATION PLAN. The application shall include the minimum of the following and comply with all requirements as described in section 22.35 of this ordinance:

- (1) A site plan that describes the proposed mitigation measures shall be designed and implemented to restore natural functions lost through development and human activities. The mitigation measures shall be proportional in scope to the impacts on water quality, near-shore aquatic habitat, upland wildlife habitat and natural scenic beauty.
 - (a) The plan shall be designed by an engineer, landscape architect, surveyor or other licensed contractor acceptable by the Brown County Zoning Administrator to offset the increased impervious surface as calculated by the county. The Brown County Zoning Administrator may determine that the mitigation area will be described by a metes and bounds description and staked on the lot by a professional land surveyor.
 - (b) An implementation schedule and enforceable obligation on the property owner to establish and maintain the mitigation measures shall be recorded in the office of the Brown County Register of Deeds.
- (2) The approved mitigation measures must be started within 1 year of the permit issue date. All plantings and any other activities must be completed within 2 years of the permit issue date.

22.53 RECORDING REQUIREMENT. The affidavit described in 22.52 of this ordinance, as modified by the county during the permitting process, must be recorded in the office of the Brown County Register of Deeds in order for the permit to be effective so that work may commence. If the affidavit is not recorded no permit shall be issued.

ADMINISTRATIVE PROVISIONS

22.54 PLANNING, DEVELOPMENT & TRANSPORTATION COMMITTEE.

- (1) The committee shall oversee the functions of the zoning office; review and make recommendations to the Board of Adjustments of all proposed amendments to the shorelands and wetlands zoning ordinance map and text; and maintain a complete public record of all its proceedings as defined in s. 236.02(1), Wis. Stats., and required by s. 59.692(3), Wis. Stats.
- (2) The Planning, Development and Transportation Committee shall not grant variances or special exceptions to the terms of the ordinance.

22.55 ZONING OFFICE (s. NR 115.05(4)). There is hereby created the Brown County Zoning Office as authorized by s. 59.69, Wis. Stats. and a Brown County Board of Adjustment as authorized by s. 59.694, Wis. Stats. The appointment of a Zoning Administrator and such additional staff may occur as the workload may require. The Zoning Office shall exercise the following duties and powers:

- (1) Advise applicants as to the provisions of this ordinance and assist them in preparing permit applications and appeal forms.
- (2) Issue permits and certificates of compliance and inspect properties for compliance with this ordinance. A system of permits shall remain in place for new construction, development, reconstruction, structural alteration or moving of buildings and structures. A copy of applications shall be required to be filed in the office of the Brown County Zoning Administrator, unless prohibited by s. 59.692(1k), Wis. Stats.
- (3) Keep records of all permits issued, inspections made, work approved and other official actions.
- (4) A variance procedure which authorizes the Brown County Board of Adjustment to grant such variance from the terms of this ordinance as will not be contrary to the public interest where, owing to special conditions and the adoption of this ordinance, a literal enforcement of the provisions of this ordinance will result in unnecessary hardship. Provide copies of variances, special exceptions and decisions on appeals for map or text interpretations and map or text amendments within 10 days after they are granted or denied to the appropriate office of the Department.
- (5) Have access to any structure or premises between 7:30 a.m. and 4:30 p.m. for the purpose of performing his/her duties. Regular inspection of permitted work in progress to ensure conformity of finished structures with the terms of this ordinance.
- (6) Investigate and report violations of this ordinance to the appropriate Brown County Zoning Committee and the district attorney or corporation counsel as necessary.

22.56 SHORELAND PERMITS.

- (1) When required. Except where another section of this ordinance specifically exempts certain types of development from this requirement (as in sections 22.41(1) and 22.41(2)) hereof, a shoreland permit shall be obtained from the Brown County Zoning Administrator before any new development, as defined in section 22.64(h) of this ordinance, or any change in the use of an existing building or structure, is initiated.
- (2) Application. An application for a shoreland permit shall be made to the Brown County Zoning Administrator upon forms furnished by the county.
 - (a) Erosion control is required as per Best Management Practices.
- (3) Fees. As established in the annual county budget.
- (4) Expiration of permit. Shoreland permits shall expire 2 years from date of issuance.

22.57 RELAXATION OF STANDARDS FOR PERSONS WITH DISABILITIES APPLIES TO ALL SHORELAND AREAS. The Brown County Zoning office may issue a shoreland permit to relax the standards of this ordinance in order to provide reasonable accommodation of persons with disabilities as required by provisions of federal and state law. Such relaxation shall be consistent

with federal guidelines for accommodation of persons with disabilities and shall, where practicable, be terminated when the facility is no longer in use by a disabled person. A person applying for a permit for construction under this section shall establish the nature and extent of the disability and that the relaxation requested is the minimum necessary to provide reasonable use of the facility.

22.58 SPECIAL EXCEPTION PERMITS.

- (1) Application for a special exception permit. Any use listed as a special exception in this ordinance shall be permitted only after an application has been submitted to the zoning administrator and a special exception permit has been granted by the Brown County Board of Adjustment.
- (2) Standards applicable to all special exceptions. In passing upon a special exception permit, the Brown County Board of Adjustment shall evaluate the effect of the proposed use upon:
 - (a) The maintenance of safe and healthful conditions.
 - (b) The prevention and control of water pollution including sedimentation.
 - (c) Compliance with local floodplain zoning ordinances and opportunity for damage to adjacent properties due to altered surface water drainage.
 - (d) The erosion potential of the site based upon degree and direction of slope, soil type and vegetative cover.
 - (e) The location of the site with respect to existing or future access roads.
 - (f) The need of the proposed use for a shoreland location.
 - (g) Its compatibility with uses on adjacent land.
 - (h) The amount of liquid and solid wastes to be generated and the adequacy of the proposed disposal systems.
 - (i) Location factors under which:
 1. Domestic uses shall be generally preferred.
 2. Uses not inherently a source of pollution within an area shall be preferred over uses that are or may be a pollution source.
 3. Use locations within an area tending to minimize the possibility of pollution shall be preferred over use locations tending to increase that possibility.
- (3) Conditions attached to special exceptions. Upon consideration of the factors listed above, the Board of Adjustment shall attach such conditions, in addition to those required elsewhere in this ordinance, as are necessary to further the purposes of this ordinance. Violations of any of these conditions shall be deemed a violation of this ordinance. Such conditions may include specifications for, without limitation because of specific enumeration: type of shore cover; specific sewage disposal and water supply facilities; landscaping and planting screens; period of operation; operational control; sureties; deed restrictions; location of piers, docks, parking and signs; and type of construction. To secure information upon which to base its determination, the Brown County Board of Adjustment may require the applicant to furnish, in addition to the information required for a shoreland permit, the following information:
 - (a) A plan of the area showing surface contours, soil types, ordinary high-water marks, ground water conditions, subsurface geology and vegetative cover.
 - (b) Location of buildings, parking areas, traffic access, driveways, walkways, piers, open

space and landscaping.

- (c) Plans of buildings, sewage disposal facilities, water supply systems and arrangement of operations.
 - (d) Specifications for areas of proposed filling, grading, lagooning or dredging.
 - (e) Other pertinent information necessary to determine if the proposed use meets the requirements of this ordinance.
- (4) Notice, public hearing and decision. Before acting upon an application for a special exception permit, the Board of Adjustment shall hold a public hearing. Notice of such public hearing, specifying the time, place and matters to come before the board, shall be given as a Class Two notice under Ch. 985, Wis. Stats. Such notice shall be provided to the appropriate district office of the Department at least 10 days prior to the hearing. The Brown County Board of Adjustment shall state in writing the grounds for granting or refusing a special exception permit.
- (5) Recording. When a special exception permit is approved, an appropriate record shall be made of the land use and structures permitted and such permit shall be applicable solely to the structures, use and property so described. A copy of any decision on a special exception permit shall be provided to the appropriate district office of the Department within 10 days after it is granted or denied.
- (6) Revocation. Where the conditions of a special exception permit are violated, the special exception permit shall be revoked by the Brown County Board of Adjustment.

22.59 VARIANCES.

- (1) Decision. The Brown County Board of Adjustment may grant upon appeal a variance from the dimensional standards of this ordinance where an applicant convincingly demonstrates that:
- (a) Literal enforcement of the provisions of this ordinance will result in unnecessary hardship on the applicant.
 - (b) The hardship is due to special conditions unique to the property.
 - (c) Such variance is not contrary to the public interest.
 - (d) The request represents the minimum relief necessary to relieve unnecessary burdens.
- (2) Notice, hearing and decision. Before acting on an application for a variance, the Brown County Board of Adjustment shall hold a public hearing. Notice of such hearing specifying the time, place and matters of concern, shall be given a Class Two notice under Ch. 985, Wis. Stats. Such notice shall be provided to the appropriate district office of the Department at least 10 days prior to the hearing. The Brown County Board of Adjustment shall state in writing the reasons for granting or refusing a variance and shall provide a copy of such decision to the appropriate Department office within 10 days of the decision.

22.60 BOARD OF ADJUSTMENT. The County Executive shall appoint the Brown County Board of Adjustment consisting of 3 members and 2 alternates under s. 59.694(2), Wis. Stats. The county board shall adopt such rules for the conduct of the business of the Brown County Board of Adjustment as required by s. 59.694(3), Wis. Stats.

- (1) Powers and duties.

- (a) The Brown County Board of Adjustment shall adopt such additional rules as it deems necessary and may exercise all of the powers conferred on such boards by s. 59.694(3), Wis. Stats.
 - (b) It shall hear and decide appeals where it is alleged there is error in any order, requirements, decision or determination made by an administrative official in the enforcement or administration of this ordinance.
 - (c) It shall hear and decide applications for special exception permits pursuant to section 22.58 hereof.
 - (d) It may grant a variance from the dimensional standards of this ordinance pursuant to section 22.59 hereof.
 - (e) In granting a special exception permit or variance, the board may not impose conditions which are more restrictive than any of the specific standards in this ordinance. Where this ordinance is silent as to the extent of restriction, the Brown County Board of Adjustment may impose any reasonable permit conditions to affect the purpose of this ordinance.
- (2) Appeals to the Brown County Board of Adjustment. Appeals to the Brown County Board of Adjustment may be made by any person aggrieved or by an officer, department, board or bureau of the county affected by any decision of the Zoning Administrator or other Administrative Officer. Such appeal shall be made within a reasonable time, as provided by the rules of the Board of Adjustment by filing with the officer whose decision is in question, and with the Brown County Board of Adjustment, a notice of appeal specifying the reasons for the appeal. The Brown County Zoning Administrator or other officer whose decision is in question shall promptly transmit to the board all the papers constituting the record concerning the matter appealed.
- (3) Hearing appeals and applications for variances and special exception permits.
- (a) The Brown County Board of Adjustment shall fix a reasonable time for a hearing on the appeal or application. Said Board shall give public notice thereof by publishing a Class 2 notice under Ch. 985, Wis. Stats, specifying the date, time and place of the hearing and the matters to come before it. Notice shall be mailed to the parties in interest. Written notice shall be given to the appropriate district office of the Department at least 10 days prior to hearings on proposed shoreland variances, special exceptions (conditional uses), and appeals for map or text interpretations.
 - (b) A decision regarding the appeal or application shall be made as soon as practical. Copies of all decisions on shoreland variances, special exceptions (conditional uses), and appeals for map or text interpretations shall be submitted to the appropriate district office of the Department within 10 days after they are granted or denied.
 - (c) The final disposition of an appeal or application to the Brown County Board of Adjustment shall be in the form of a written resolution or order signed by the chairman and secretary of said Board. Such resolution shall state the specific facts which are the basis of the Brown County Board of Adjustment's determination and shall either affirm, reverse, vary or modify the order, requirement, decision or determination appealed, in whole or in part, dismiss the appeal for lack of jurisdiction or prosecution or grant the application.
 - (d) At the public hearing, any party may appear in person or by agent or by attorney.

22.61 FEES. As established in the annual county budget.

ORDINANCE CHANGES

22.62 CHANGES AND AMENDMENTS. The county board may from time to time, alter, supplement or change the boundaries of use districts and the regulations contained in this ordinance in accordance with the requirements of s. 59.692, Wis. Stats., ch. NR 115, Wis. Adm. Code and section 22.44 of this ordinance where applicable.

- (1) Amendments to this ordinance may be made on petition of any interested party as provided in s. 59.692, Wis. Stats.
- (2) Every petition for a text or map amendment filed with the county clerk shall be referred to the county zoning agency. A copy of each petition shall be mailed to the appropriate office of the Department within five days of the filing of the petition with the county clerk. Written notice of the public hearing to be held on a proposed amendment shall be provided to the appropriate district office of the Department at least 10 days prior to the hearing.
- (3) A copy of the county board's decision on each proposed amendment shall be forwarded to the appropriate district office of the Department within 10 days after the decision is issued.

VIOLATIONS

22.63 ENFORCEMENT AND PENALTIES.

- (1) Any violation of the provisions of this ordinance by any person, firm, association, corporation (including building contractors) or his/her or their agent is hereby declared to be unlawful. A violator shall, upon conviction, forfeit to the county a penalty as specified under Chapter 30 of the Brown County Code. Each day during which such violation exists shall constitute a separate offense.
- (2) Every violation of this ordinance is a public nuisance, and the creation thereof may be enjoined and maintenance thereof may be abated by action at suit of the county, the state, or any citizen thereof. Any such violator may be required to forfeit as specified under Chapter 30 of the Brown County Code. Each day during which such violation exists shall constitute a separate offense.

EXPLANATION OF TERMS AND WORDS

22.64 DEFINITIONS.

- (1) For the purpose of administering and enforcing this ordinance, the terms or words used herein shall be interpreted as follows: Words used in the present tense include the future; words in the singular number include the plural number; and words in the plural number include the singular number. The word "shall" is mandatory, not permissive. All distances, unless otherwise specified, shall be measured horizontally.
- (2) The following terms or words used in this ordinance mean:
 - (a) "ACCESS AND VIEWING CORRIDOR" – means a strip of vegetated land that allows safe pedestrian access to the shore through the vegetative buffer zone.

- (b) "ACCESSORY STRUCTURE OR USE" - means a detached subordinate structure or a use which is clearly incidental to, and customarily found in connection with, the principal structure or use to which it is related, and which is located on the same lot as the principal structure or use.
- (c) "AGRICULTURAL PRACTICE" - has the meaning found in s. 281.16 (1)(b), Wis. Stats.

NOTE: Section 281.16 (1)(b), Wis. Stats., defines "agricultural practice" to mean "beekeeping; commercial feedlots; dairying; egg production; floriculture; fish or fur farming; grazing; livestock raising; orchards; poultry raising; raising of grain, grass, mint and seed crops; raising of fruits, nuts and berries; sod farming; placing land in federal programs in return for payments in kind; owning land, at least 35 acres of which is enrolled in the conservation reserve program under 16 USC 3831 to 3836; and vegetable raising."

- (d) "BOATHOUSE" - means a permanent structure used for the storage of watercraft and associated materials and includes all structures which are totally enclosed, have roofs or walls or any combination of these structural parts.
- (e) "BUILDING ENVELOPE" - means the three dimensional space within which a structure is built.
- (f) "COUNTY ZONING AGENCY" - means that committee or commission created or designated by the county board under s. 59.69(2)(a), Wis. Stats., to act in all matters pertaining to county planning and zoning.
- (g) "DEPARTMENT" - means the Department of Natural Resources.
- (h) "DEVELOPMENT" - means any man-made change to improved or unimproved real estate, including, but not limited to the construction of buildings, structures or accessory structures; the construction of additions or substantial alterations to buildings, structures or accessory structures; the placement of mobile homes; ditching, lagooning, dredging, filling, grading, paving, excavation or drilling operations, and the deposition or extraction of earthen materials.
- (i) "DISABLED" - means having a physical or mental impairment that substantially limits one or more major life activities.
- (j) "DRAINAGE SYSTEM" - means one or more artificial ditches, tile drains or similar devices which collect surface runoff or groundwater and convey it to a point of discharge.
- (k) "EXISTING DEVELOPMENT PATTERN" - means that principal structures exist within 250 feet of a proposed principal structure on each lot in both directions along the shoreline.
- (l) "FLOODPLAIN" - means the land which has been or may be hereafter covered by flood water during the regional flood as shown on the county's official floodplain zoning maps. The regional flood is based upon a statistical analysis of stream flow records available for the watershed or an analysis of rainfall and runoff characteristics in the general watershed region, or both. The flood frequency of the regional flood is once in every 100 years. In any given year, there is a one % chance that the regional flood may occur.

NOTE: "Floodway" is defined in s. NR 116.03 (22) to mean "the channel of a river or stream, and those portions of the floodplain adjoining the channel required to carry the regional flood discharge."

- (m) "IMPERVIOUS SURFACE" - means an area that releases as runoff all or a majority of the precipitation that falls on it. "Impervious surface" excludes frozen soil but includes rooftops, sidewalks, driveways, parking lots, and streets unless specifically designed, constructed, and maintained to be pervious. Roadways as defined in s. 340.01(54), Wis.

Adm. Code, or sidewalks as defined in s. 340.01(58), Wis. Adm. Code, are not considered impervious surfaces.

- (n) "MITIGATION" - means balancing measures that are designed, implemented and function to restore natural functions and values that are otherwise lost through development and human activities.
- (o) "NAVIGABLE WATERS" - means Lake Superior, Lake Michigan, all natural inland lakes within Wisconsin and all streams, ponds, sloughs, flowages and other waters within the territorial limits of this state, including the Wisconsin portion of boundary waters, which are navigable under the laws of this state. Under s. 281.31(2)(d), Wis. Stats., notwithstanding any other provision of law or administrative rule promulgated thereunder, shoreland ordinances required under s. 59.692, Wis. Stats., and ch. NR 115, Wis. Adm. Code, do not apply to lands adjacent to:
 - 1. Farm drainage ditches where such lands are not adjacent to a natural navigable stream or river and such lands were not navigable streams before ditching; and
 - 2. Artificially constructed drainage ditches, ponds or stormwater retention basins that are not hydrologically connected to a natural navigable water body.
- (p) "ORDINARY HIGH-WATER MARK" - means the point on the bank or shore up to which the presence and action of surface water is so continuous as to leave a distinctive mark such as by erosion, destruction or prevention of terrestrial vegetation, predominance of aquatic vegetation, or other easily recognized characteristics. Field locating the ordinary high-water mark on the Bay of Green Bay shall not exceed the elevation of 583 feet, IGLD85 unless deemed appropriate by the zoning administrator to set higher based on site conditions per this definition of ordinary high-water mark. The all-time historic high water elevation of the Bay is 582.35 feet, IGLD85 as calculated by the Army Corps of Engineers (USACOE).
- (q) "REGIONAL FLOOD" - means a flood determined to be representative of large floods known to have generally occurred in Wisconsin and which may be expected to occur on a particular stream because of like physical characteristics, once in every 100 years.
- (r) "REASONABLE ACCOMMODATION" - means allowing a disabled person to deviate from the strict requirements of this ordinance if an accommodation is necessary and reasonable, in order not to unlawfully discriminate against the disabled person and to allow them equal housing opportunity.

NOTE: Federal courts have interpreted the "reasonable accommodations" requirement in the Federal Fair Housing Act to mean that an accommodation is reasonable "if it does not cause any undue hardship or fiscal or administrative burdens on the municipality, or does not undermine the basic purpose that the zoning ordinance seeks to achieve." Oxford House, Inc. v. Town of Babylon, 819 F. Supp. 1179, 1186 (E.D.N.Y. 1993)

- (s) "ROUTINE MAINTENANCE OF VEGETATION" – means normally accepted horticultural practices that do not result in the loss of any layer of existing vegetation and do not require earth disturbance.
- (t) "SHORELANDS" and "SHORELAND ZONE" - have the meaning found in s.59.692 (1)(b), Wis. Stats.

NOTE: Section 59.692 (1)(b), Wis. Stats., defines "shorelands" to mean "the area within the following distances from the ordinary high-water mark of navigable waters, as defined under s. 281.31 (2)(d), Wis. Stats.:

- 1. One thousand feet from a lake, pond or flowage. If the navigable water is a

glacial pothole lake, this distance shall be measured from the ordinary high-water mark of the lake.

2. Three hundred feet from a river or stream or to the landward side of the floodplain, whichever distance is greater.

- (u) "SHORELAND-SETBACK" – also known as the “shoreland setback area” in s.59.692(1)(bn), Wis. Stats., means an area in a shoreland that is within a certain distance of the ordinary high-water mark in which the construction or placement of buildings or structures has been limited or prohibited under an ordinance enacted under section 59.692, Wis. Stats.
- (v) "SHORELAND-WETLAND DISTRICT" - means the zoning district, created as a part of this shoreland zoning ordinance, comprised of shorelands that are designated as wetlands on the wetland maps which have been adopted and made a part of this ordinance.
- (w) "SPECIAL EXCEPTION (CONDITIONAL USE)" - means a use which is permitted by this ordinance provided that certain conditions specified in the ordinance are met and that a permit is granted by the Board of Adjustment or, where appropriate, the planning and zoning committee or county board.
- (x) "STRUCTURE" - means any man-made object with form, shape and utility, that is constructed or otherwise erected, attached to or permanently or temporarily placed, either upon the ground, a river bed, stream bed or lake bed or upon another structure. For the purpose of this chapter, the term “structure” includes garages, sheds, boathouses, sidewalks, walkways, retaining walls, porches, fire pits, patios, and decks, but does not include landscaping or earthwork including graded areas, filled areas, ditches, berms, or earthen terraces. The term “structure” does not include small objects that are easily moved by hand, such as canoes, kayaks, lawn chairs, portable grills, portable picnic tables, temporary snow fences, small temporary fences around individual plants or small groups of plants to prevent animal herbivory, bird feeders, birdhouses and birdbaths.
- (y) "UNNECESSARY HARDSHIP" - means that circumstance where special conditions, which were not self-created, affect a particular property and make strict conformity with restrictions governing area, setbacks, frontage, height or density unnecessarily burdensome or unreasonable in light of the purposes of this ordinance.
- (z) "VARIANCE" - means an authorization granted by the Brown County Board of Adjustment to construct, alter or use a building or structure in a manner that deviates from the dimensional standards of this ordinance.
- (aa) "VEGETATIVE BUFFER ZONE" – means an area along, and parallel to, the ordinary high-water mark, 35 feet from the water’s edge, that is either undisturbed or restored with native vegetation that provides or will provide natural features and functions for fish and wildlife habitat, water quality protection, and natural scenic beauty. This area may change based on mitigation measures designed by a professional landscape architect or professional stormwater engineer to compensate for and be proportional in scope to the impacts on the lot.
- (bb) "WETLAND" - has th found in s 23.32 (1), Wis. Stats. Means 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.”

CHAPTER 3 THREATS AND HAZARDS RISK ASSESSMENT

This chapter been prepared to identify the hazards believed to pose the greatest risk to the residents of Brown County; to profile the extent and severity of past county hazards; and to assess the vulnerability of the county to the risk of future hazard events. Through the risk assessment process, emergency management personnel will be able to more effectively evaluate potential hazard mitigation measures and develop useful strategies to address the risks associated with the identified hazards.

HAZARD IDENTIFICATION

Although Brown County could potentially be at risk from several distinct hazards, this plan narrows the scope of the hazards to those that pose the greatest risk to residents and facilities of the county. Identification of the hazards was based on a priority ranking of the many different natural and man-made/technological hazards previously identified in the *2012 Brown County All Hazards Mitigation Plan*. The natural and man-made/technological hazards included in this list were first identified in the *Resource Guide to All Hazards Mitigation Planning in Wisconsin* that was prepared by the Association of Wisconsin Regional Planning Commissions through funding provided by the State of Wisconsin Department of Military Affairs, Wisconsin Emergency Management, and the Federal Emergency Management Agency.

The following is a list of the hazards considered by the Steering Committee.

Natural Hazards

- Lightning Storm/Thunderstorm
- Heavy Snow Storm
- Ice Storm
- Tornadoes/High Winds
- Blizzards
- Stormwater Flooding
- Flooding (Flash, Ravine, Lake)
- Extreme Cold
- Extreme Heat
- Fog
- Hail Storms
- Dam Failure Flooding
- Forest Fires
- Wildland Fires
- Coastal Hazards
- Agriculture
- Drought
- Earthquake
- Landslide
- Subsidence



Flooding



Tornados



Winter Storms



Wild Fires



Thunderstorms



Drought

HAZARDS RISK ASSESSMENT SURVEY

Members of Brown County's previous 2007 and 2012 All Hazards Mitigation Plan Steering Committee created a *Natural Hazard Identification and Risk Assessment Matrix*. Each Steering Committee member was asked to assign a risk rating (1 = low, 2 = moderate, and 3 = high) to the various risk assessment criteria for each natural hazard. The total number of points for each of the identified natural hazards was then calculated. Members of the 2019 Committee reviewed the results for updates but did not propose significant changes.

The Steering Committee members combined the following natural hazards:

- Lightning Storms and Thunderstorms as "Lightning Storms/Thunderstorms" (exclusive occurrence was deemed to be rare in Brown County);
- Tornado and High Winds as "Tornado/High Winds" (deemed that their assessment and mitigation actions would be the same in Brown County);
- Flash Flooding, Riverine Flooding, and Lake Flooding as "Flooding (Flash, Riverine, and Lake)" (deemed that their assessment and mitigation actions would be the same in Brown County).

Table 3.1: Risk Assessment Ranking for Natural Hazards, Brown County, Wisconsin

Rank	Natural Hazard	Risk Assessment Ranking Total
1	Blizzards	32
2	Heavy Snow Storms	31
2	Stormwater Flooding	31
4	Ice Storms	30
5	Tornadoes/High Winds	28
5	Flooding (Flash, Riverine, and Lake)	28
7	Extreme Cold	26
8	Lightning Storms/Thunderstorms	23
9	Extreme Heat	22
10	Dam Failure Flooding	20
11	Agricultural	18
12	Coastal Hazards	17
13	Drought	16
13	Forest Fires	16
13	Wildland Fires	16
13	Fog	16
17	Subsidence	15
18	Hail Storms	14
18	Landslide	14
20	Earthquake	13

Source: Brown County Hazards Mitigation Plan Steering Committee, 2019,

NATURAL HAZARDS - HISTORICAL SUMMARY

Past hazards statistics assisted the Steering Committee in determining the natural hazards to be evaluated in the plan. The National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC) publishes National Weather Service (NWS) data describing past weather events and the resulting deaths, injuries and damages associated with each hazard event. This data is available at the county level. While the data is advertised as being available beginning in January, 1950, a considerable portion of the data for several of the hazard events is only available as early as the 1990's. This plan only utilized the data from January 1, 1990 through September of 2018. Descriptions of individual natural hazard events are located in the risk and vulnerability assessment in the portion of this chapter.

Frequency

The data from the NCDC shows that of the 388 discernible events recorded from January 1, 1990 through September of 2019, thunderstorms and associated high winds are the most frequently occurring natural hazard event with 103 events recorded. This was followed by hail (73 events), winter storms (36 events), heavy snow (23 events), and strong winds (19 events) to round out the top five¹. Table 3.2 shows the frequency of all reported natural hazards occurring in Brown County between January 1, 1990 and September of 2018.

Deaths

From January, 1990 through June of 2019, deaths caused by natural hazard events occurred mostly from cold weather events. There were 5 deaths associated with cold/wind chill events occurring on one occasion in 1996, 2009, 2013, 2016, and 2018².

**TABLE 3.2: NATURAL HAZARD OCCURRENCES
1990-JUNE 2019, BROWN COUNTY,
WISCONSIN**

NATURAL HAZARD	Total
BLIZZARD	7
COLD/WIND CHILL	14
DENSE FOG	12
DROUGHT	4
DUST DEVIL	2
EXCESSIVE HEAT	6
EXTREME COLD/WIND CHILL	4
FLASH FLOOD	14
FLOOD	10
FUNNEL CLOUD	6
HAIL	73
HEAT	10
HEAVY RAIN	28
HEAVY SNOW	22
HIGH WIND	9
ICE STORM	2
LIGHTNING	14
STRONG WIND	21
THUNDERSTORM WIND	104
TORNADO	13
WINTER STORM	38
WINTER WEATHER	12
TOTAL	425

Source: NOAA National Climatic Data Center, 2019.

¹ NOAA: <http://tinyurl.com/y38yykxg>

² NOAA: <http://tinyurl.com/y38yykxg>

Injuries

Six injuries occurred in Brown County from January, 1990 through September, 2018. Three injuries were the result of a heat wave in 2006 while one injury occurred from each of the following events: an ice storm in 1996, winds associated with a thunderstorm in 1996, and a strong wind event in 2008.

Property Damage

The most damaging event during this same time frame, in terms of property damage, was a tornado in 2013 that resulted in approximately two million dollars in damage. Other event categories that have caused significant property damage in Brown County have been floods, flash floods, high winds, and thunderstorms. Lightning storms and winter storms have also resulted in more significant property damages.

Crop Damage

The most damaging event from January 1, 1990 through June of 2019, in terms of crop damage, was associated with thunderstorm winds. Other events like floods and tornados have undoubtedly caused crop damage/loss, however, no reported losses were documented with NOAA.

NATURAL HAZARDS PRIORITIZATION

The purpose of rating the potential risks associated with each natural hazard and reviewing past hazard event data is to address those natural hazards posing the greatest threat to residents and to property. Based on the assessment of past data, the Steering Committee identified the following updated natural hazards to be the focus of the plan assessment, goals, objectives and strategies:



Winter Storms

- including heavy snow, ice, and blizzards involving high winds



Lightning Storms & Thunderstorms



Tornadoes & High Winds



Flooding

- including flash, ravine, and lake



Extreme Cold



Extreme Heat



Fog



Hail



Dam Failure Flooding



Fires

- includes Forest and Wildfires



Stormwater Flooding



Coastal Hazards



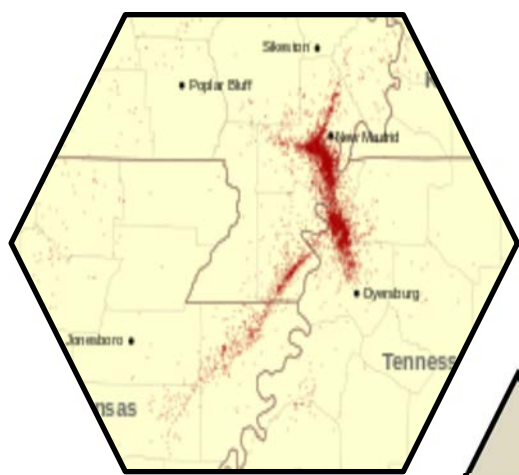
Drought

OTHER NATURAL HAZARDS POSING NO SIGNIFICANT RISK

The following natural hazards were determined by the Steering Committee to have a minimal chance of occurring, to pose minimal risk to the safety of residents or property, or to offer very limited mitigation options. These natural hazards are excluded from the full assessment, but they are briefly discussed here to meet the comprehensive requirements for developing a hazards mitigation plan under Federal law.

Earthquakes

According to the U.S. Geological Survey (USGS), there have been five documented and recognized earthquake events in Wisconsin. The closest of these to Brown County occurred in Clintonville in March 20, 2012, being a magnitude of 1.5 on the on the Richter Scale. The other events appear to have occurred near Iola and were documented between July and September of 2018. The four events that occurred near Iola were small ranging from 1.3 to 1.5 magnitude.³



The nearest active earthquake fault outside of Wisconsin is the New Madrid Fault, which stretches from northeast Arkansas to southern Illinois. Brown County falls within the lowest earthquake hazard shaking area. This represents the levels of horizontal shaking which have a 1-in-50 chance of being exceeded in a 50-year period. Similarly, Brown County falls within a 0%g-force to 1%g-force peak ground acceleration (PGA) zone as shown on the USGS PGA values map with a 10 percent chance of being exceeded over 50 years. Therefore, Brown County is considered unlikely to be substantially affected by earthquakes in the long-term future. The threat to Brown County from an earthquake is considered very low.

³ USGS interactive Earthquake map: <http://tinyurl.com/yxwtpv9j>

If a tremor or earthquake was to occur anywhere in the county, damage to structures and infrastructure could be substantial due to the fact that construction design standards in the immediate geographic area do not require buildings to be designed and constructed to meet standards consistent with an area prone to earthquake activity. Obviously, the more urbanized and densely populated areas within Brown County would experience much greater losses, injuries, and possibly deaths if an earthquake were to occur. According to the Wisconsin Department of Revenue, the 2018 Equalized Value of Brown County is \$21,829,376,900, up from \$18,157,652,100 in 2011. The cities of Green Bay and De Pere accounted for \$8,721,374,700, an increase of \$1,047,440,800 since 2011. The six villages contribute another \$9,361,555,400, up from \$7,609,428,300 in 2011, while the 13 towns accounted for the remaining \$3,712,890,100 as compared to \$2,874,289,900 in 2011⁴.

The area's economy could also be significantly impacted for extended periods of time given the area's dependence on a transportation system that is not designed to withstand a significant seismic event. The cost to rebuild infrastructure and the loss of company revenues and employee wages has the potential to be significant to not just the County but rather, it has the potential to impact the state and region. County and local municipal officials would certainly need to seek financial assistance and equipment and manpower needs from the state and federal levels to deal with a seismic event in Brown County.

Landslides

The term "landslide" includes a wide range of ground movement, including rock falls, deep failure of slopes and shallow debris flows. Although gravity acting on an overly steep slope is the primary reason for a landslide, there can be other contributing factors such as erosion by rivers, excess weight from the accumulation of rain or snow, or man-made and other structures stressing weak slopes to the point of failure. In some cases, slope material that becomes saturated with water may develop a debris flow or mudflow.

The U.S. Geological Survey *Landslide Overview Map of the Conterminous United States*⁵ identifies moderate landslide susceptibility risks for parts of Brown County and the remainder of the county is considered at low risk. The majority of the land formations within Brown County does not include features that pose a landslide risk. While there are areas of the county that have steep slopes (greater than 20% grade) the soils involved pose more of a gradual erosion risk as opposed to the sudden, large-scale movement of ground associated with landslide hazards. Areas with the steepest slopes tend to be zoned as conservancy districts by the various local jurisdictions in the planning area and are protected from unsuitable development, further minimizing any related hazard risks. Hillside erosion (minor landslides) within the county is very uncommon and results from man-made impacts such as the removal of vegetation. Hillside erosion has not posed substantial risk to life or property and has been largely mitigated through subdivision law, site plan review, and erosion control plans for construction sites.

⁴ WI DOR – 2018 Statement of Changes in Equalized Values by Class and Item, <https://www.revenue.wi.gov/SLFReportsassessor/2018socBRO.pdf>

⁵ <https://pubs.usgs.gov/pp/p1183/figures/map.jpg>

There are no records of substantial damage or injury from large landslides within Brown County and these hazard threats are considered low.

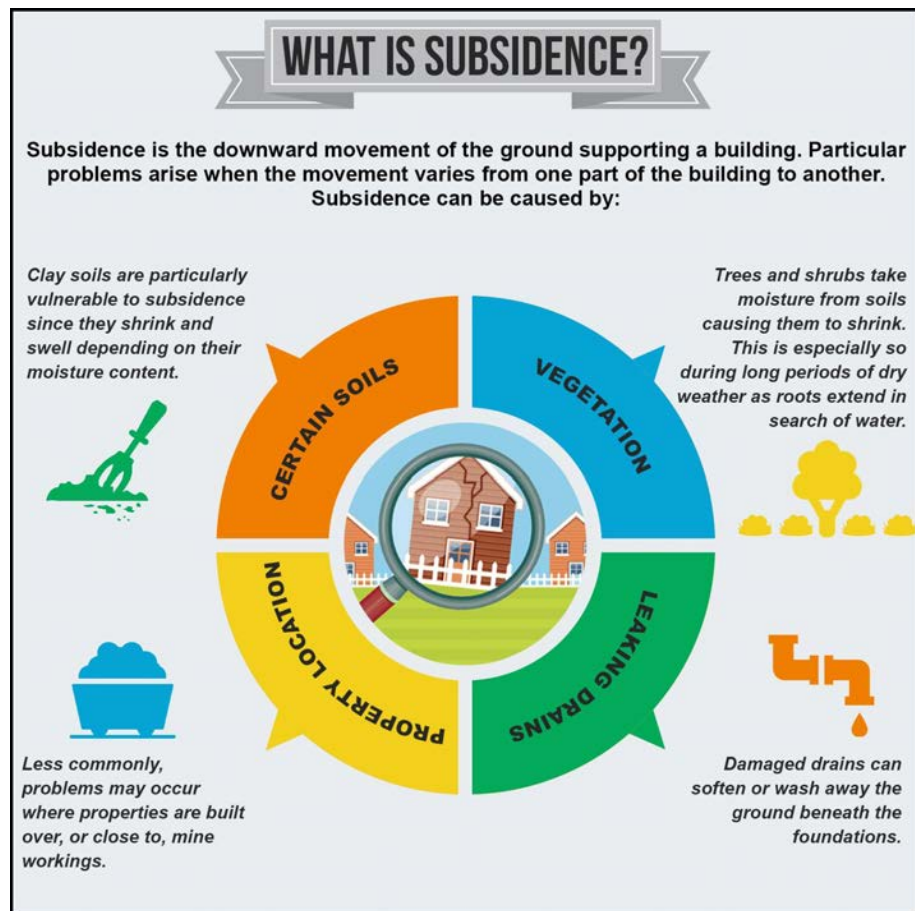
Subsidence

Land subsidence is a gradual settling or sudden sinking of the Earth's surface owing to subsurface movement of earth materials⁶. The principal causes of land subsidence include: aquifer-system compaction, drainage of organic soils, underground mining, hydrocompaction, natural compaction, sinkholes, and thawing permafrost. More than 80 percent of the identified subsidence in the Nation is a consequence of exploitation of underground water. The increasing development of land and the pressure that it has on water resources threatens to exacerbate existing land-subsidence problems and could initiate new ones.

Brown County is not an area of excessively karst topography but certain karst features and groundwater usage for purposes of providing potable drinking water, industrial usage or agricultural production should be monitored since this could lead to land subsidence, particularly in the southeastern areas of Brown County where groundwater contamination has already occurred.

The more densely populated areas of Brown County do not rely on groundwater for a water supply. Many of the surrounding communities in central Brown County obtain their water supply from Lake Michigan.

There are no records of substantial damage or injury from large land subsidence within Brown County and these hazard threats are considered low.



⁶ Land Subsidence: <https://water.usgs.gov/ogw/subsidence.html>

Agricultural Hazards

Agriculture accounts for the largest and most expansive (geographically) land uses and one of the top contributors to the local and regional economy. Natural hazards such as; drought, excessive heat, floods, severe thunderstorms, tornadoes, and fires have the potential to impact the agriculture business. Although agricultural losses are not particularly common in Brown County the potential for widespread impacts/losses is present.

In addition to natural hazards, biological factors such as animal diseases and crop pests (insects and weeds) can pose significant threats for Brown County farmers and associated businesses. Significant efforts on a global scale have been dedicated toward improving livestock conditions and boosting crop yields to keep up with the growing demand for food and other agricultural products.

An emerging issue associated with flooding disasters across the United States are large scale farms that include manure pits or lagoons. Manure pits/lagoons pose a significant risk if not designed and maintained properly and if the location for the manure pit/lagoon is not chosen with all due respect to water ways and flood prone areas. With the number of large scale farming operations in the state of Wisconsin and in Brown County it is important for individuals at the local, county, and state level to consider the potential impacts of these facilities if a disaster were to occur.



Figure 1: Manure pit/lagoon near a river before and after flooding event. Source: NPR

HAZARD PROFILES

Hazard profiles are intended to describe the frequency, severity, and probability of future natural and man-made/technological hazards that could have an impact on Brown County. These hazard profiles attempt to historically describe the cause and characteristics of each natural and man-made/technological hazard and how they have impacted the population, infrastructure, and environment of the county. These potential risks are evaluated to determine their likelihood of reoccurrence and to gauge the negative impacts to the existing (or planned) population and property that could occur as a result of these hazards.

Although this assessment will attempt to focus on the risk potential to the overall planning area, critical facilities are of particular concern. These entities provide essential products and services to the public that are necessary to preserve health, welfare, and quality of life of residents of Brown County, plus fulfill important public safety, emergency response, and/or disaster recovery functions.

A profile of both natural and manmade hazards are provided in their respective sections as follows. For the purposes of this plan, some hazards have been grouped into logically related hazard topics in order to better organize and describe the extent of the potential risk and vulnerability. The assessment for natural hazards follows in this order: flooding (including flash, riverine, and lake); tornadoes/high winds; lightning and thunderstorms, winter storms (including heavy snow storms, ice storms, and blizzards); storm water flooding; extreme cold; extreme heat; fog, hailstorms, dam failure flooding, forest fires, wildland fires, coastal hazards, and drought.

NATURAL HAZARDS

A natural hazard is an event that occurs naturally and causes harm to humans – or to other things that we care about, though usually the focus is on humans (which, we might note, is anthropocentric)⁷. The following hazards have been identified by the Steering Committee that pose a risk to Brown County residents.



⁷ Penn State College of Earth and Mineral Sciences - <https://www.e-education.psu.edu/geog30/node/378>

Flooding

Flooding is one of the more imminent natural disasters that Brown County residents face on an annual basis. A flood is an event that creates general or temporary conditions of partial or complete inundation of normally dry land areas from:

- The overflow of inland or tidal waters;
- The unusual and rapid accumulation or runoff of surface waters from any source;
- Mudslides (i.e., mudflows) which are proximately caused by flooding and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.⁸

A flood event will inundate floodplain areas adjacent to waterways. Floodplains are characterized as lowlands adjacent to rivers and lakes. Most flood-related injuries and deaths occur when people are swept away by flood currents, and the majority of property damage is caused from sediment-laden floodwaters.

The severity of flooding is determined by rainfall intensity (or other water source) and duration. A large amount of rainfall over a short time span can result in flash flood conditions. However, several factors beyond intensity and duration also come into play. For instance, a small amount of rain can cause flooding in areas where the soil is saturated or in areas of impermeable surfaces such as large parking lots, paved roadways, or other impervious developed areas. Topography and ground cover are also contributing factors for floods. Water runoff is greater in areas with steep slopes and little or no vegetative ground cover.



City of Green Bay Flooding
Figure 2 Source: Brown County Planning

History

Sixteen flood and flash flood events have been reported by the National Climatic Data Center as having occurred in the planning area since January 1, 1990.

June 16, 1996

Heavy rainfall fell across most of central and east central Wisconsin, as well as parts of northeast Wisconsin from June 16 through 18, 1996. Amounts over the three-day period ranged from two to seven inches in most locales. Runoff from the heavy rainfall caused rivers to rise substantially, with several peaking well above flood stage. Several streets, parks, campgrounds and county roads were flooded, and a few roads were washed out. Crop damage estimates amounted to at least 56 million dollars over the entire 15-county area.

⁸ FEMA - <https://www.fema.gov/flood-or-flooding>

March 31, 1998

Thunderstorms with locally heavy rain caused the Duck Creek to rise above flood stage late on March 31. The flooding continued into early April. Flooding was confined to areas adjacent to the creek, but no damage was reported.

April 1, 1998

The flooding that occurred in early April was a carryover from the excessive precipitation that fell in late March. Duck Creek in Howard reached 17.85 feet, just above flood stage, on April 1, 1998.

September 26, 1998

Numerous thunderstorms with large hail, heavy rain, and strong winds rumbled across northern and east central Wisconsin during the early morning of September 26, 1998. Local flooding in Howard occurred after 3 inches of rain fell in only 2 hours, accompanied by large hail and strong winds resulting in 5,000 dollars in property damage.

July 8, 2000

A nearly stationary front covering Wisconsin combined with upper air support and abundant moisture produced a prolonged period of thunderstorms. A few of the storms contained high winds and hail but flooding from heavy rainfall caused the majority of the problems. Flooding of roads and/or basements was reported in Green Bay and De Pere. Small streams and creeks overflowed their banks and rural areas suffered some crop damage. Green Bay received 4.12 inches of rain on July 8, 2000 and 4.65 inches of rain in a 24-hour period spanning July 7 - 8. These totals set a new rainfall record for July 8, 2000 and for the month of July 2000. The previous record 24-hour total was 4.39 inches set on July 23, 1912. At least 25,000 customers lost electrical power.

July 30, 2003

This flooding event resulted in two areas in Brown County that were impacted and are identified separately in the NOAA data. The event included flash flooding resulting from storms associated with a cold front that moved southeast into a warm and unstable air mass. Early storms produced large hail and some wind damage before an east to west boundary formed in the Appleton area, providing the focus for training on thunderstorms and flooding. Heavy rain resulted in flash flooding that left 2 to 3 feet of water over many roads. Manhole covers popped off on streets in the Green Bay area. The downtown mall in Green Bay had to be evacuated as water started to flow into the lower levels from the street.

March 5, 2004

A late winter storm moved across southern Wisconsin and produced a large area of heavy precipitation across northeast and north central Wisconsin. Heavy snow fell across the north and rain fell across much of the east central part of the state. Significant snowmelt due to warm temperatures earlier in the week combined with over an inch of rain from the storm system in east central Wisconsin to produce flooding. Widespread lowland flooding was observed along the East River from De Pere to Allouez and a few intersections became flooded and had to be closed.

March 28, 2005

Well above normal temperatures during the last week of the month resulted in considerable snowmelt. Rainfall combined with runoff from melted snow, causing minor flooding on several rivers.

July 15, 2010

Heavy rainfall caused Apple Creek to rise about 2.5 feet above flood stage at the Apple Creek Campground. Brown County officials had to evacuate 28 people from the campground where water was up to 5 feet deep.

August 20, 2010

Thunderstorms produced torrential rains in Green Bay. Lombardi Avenue was closed between Oneida Street and Holmgren Way due to three feet of water and stalled cars on the road. Storm and isolated sanitary sewer backups occurred in this area, causing some damage to basements. In just ten minutes 0.88 inch of rain fell at Austin Straubel Airport, 0.54 inch of that fell in just four minutes.

September 26, 2010

Heavy rain fell over extreme northwest Brown County, causing flash flooding in Pulaski where a storm total of 3.97 inches of rain fell. Some roads in the area flooded, including State Highway 32, and a small creek that is normally about 1 foot deep was flowing at a depth of eight or nine feet.

September 8, 2015

Heavy rain developed as low pressure moved across Wisconsin. The heaviest rain fell during the morning. The highest rainfall totals were 3.50 inches in Allouez and 3.15 inches near Kaukauna (Outagamie Co.). Green Bay received 2.50 inches of rain, including 0.81 inch in just 15 minutes.

July 22, 2017

Scattered thunderstorms that formed ahead of an approaching cold front brought high winds that downed trees and heavily damaged a farm building in Oconto County, and produced torrential rainfall that flooded intersections in Green Bay.

September 8, 2018

Severe thunderstorms produced torrential rainfall that caused urban flooding and flash flooding in parts of the Green Bay area and Fox Valley. There were numerous reports of 2 to 4 inches of rain, along with a few even higher totals.

September 17, 2018

Thunderstorms brought a period of torrential rainfall to eastern Brown County, causing flash flooding on the east side of Green Bay and in Bellevue. About 50 people had to be rescued from cars that became trapped in flooded intersections. Employees and customers of some businesses had to shelter in place due to high water in their parking lots and surrounding streets. The ground floor of some buildings flooded, including a Green Bay Metro Fire Department station.

More than 100 people were evacuated from seven buildings, including residents of a 48-unit apartment building that housed mostly elderly people. The basement of the building flooded, leaving electrical services underwater. More than 70 people were left homeless for the night and stayed overnight at a local church.

Storm Events Source: NOAA Storm Events Database – Flooding and Flash Flooding

Vulnerability

Past floods are indicative of what can happen in the future, and flood studies and mitigation plans are based on the risk of future flooding. Flood studies extrapolate from historical records to determine the statistical potential that storms and floods of a certain magnitude will recur.

The probability of reoccurrence is expressed in percentages as the chance of a flood of a specific extent occurring in any given year. The most widely adopted design and regulatory standard for floods in the United States is the 1-percent annual chance flood and this is the standard formally adopted by FEMA.

The 1-percent annual flood, also known as the base flood, has a 1 percent chance of occurring in any particular year. It is also often referred to as the “100-year flood” since its probability of occurrence suggests it should only reoccur once every 100 years. This expression is, however, merely a simple and general way to express the statistical likelihood of a flood with actual recurrences varying from place to place.

These terms are often misunderstood. Frequently, people interpret the 50-year flood definition to mean occurring “once every 50 years,” which is incorrect. From a probability standpoint, a 50-year flood has a one in 50 (two percent) chance of occurring in any given year. In reality, a 50-year flood could occur two times in the same year, two years in a

row, or four times over the course of 50 years. On the other hand, it is possible for 100 years to pass without having a 50-year flood event. The term “50-year flood” has caused much confusion for people not familiar with statistics. Another way of looking at it is in the context that a base flood will happen during the life of a 30-year mortgage, a 26 percent chance.

The official floodplain study for insurance and regulatory purposes is the *Flood Insurance Study* by the Federal Emergency Management Agency (FEMA). Flood Insurance Studies have been prepared for Brown County (for unincorporated areas); for the cities of Green Bay and De Pere, the villages of Ashwaubenon, Allouez, Bellevue, and Howard. Flood Insurance Rate Maps (FIRMs) were updated for the unincorporated areas of Brown County and for the City of Green Bay in 2009.

FEMA uses the “base” flood as the basis for its regulatory requirements and flood insurance rate setting. This Hazards Mitigation Plan also uses the base flood for planning purposes. The base flood is the one percent chance flood, or the 100-year flood.

Even these numbers do not convey the true flood risk because they focus on the larger, less frequent floods. If a house is low enough, it may be subject to the 10- or 25-year flood. During a typical 30-year mortgage, a house may have a 26 percent chance of being hit by the 100-year flood, but the odds are 96 percent (nearly guaranteed) that a 10-year flood will occur during the 30-year mortgage period. Compare those odds to the only five percent chance that the house will catch on fire during the same 30-year mortgage period.

Another term used is the “500-year flood,” which has a 0.2 percent chance of occurring in any given year. While the odds of it occurring are more remote, the “500-year flood” is the national standard used for protecting critical facilities, such as hospitals and power plants.

Within the long-range future (20 to 30 years), Brown County is considered to have a **high** probability of sustaining a 100-year flood. This probability is based on observation of past flooding events (and the extent of those events) by the Hazards Mitigation Plan Steering Committee and is consistent with the odds that a “base” flood will happen during the life of a 30-year mortgage.

Impacts

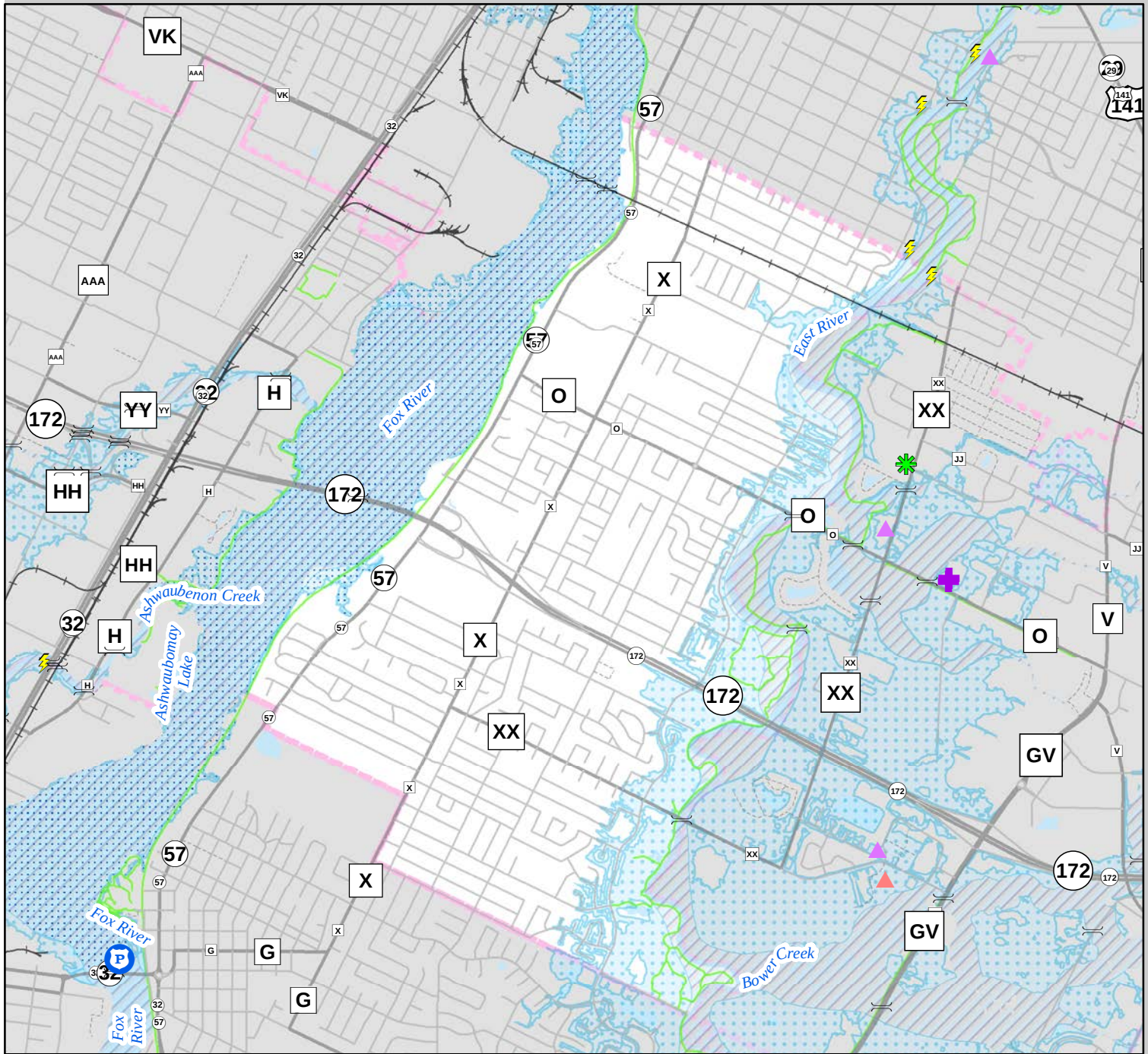
The following describes the various impacts that flooding has on the county.

Critical Facilities

Brown County Emergency Management and the Land Information Office coordinated with the local communities to confirm the type and location of the critical facilities as defined by the Steering Committee. The number of critical facilities that could be impacted by flooding was determined by using data collected in GIS and overlaying that information with the FEMA flood data. Using this method, 159 critical facilities were found in the 100-year floodplain. However, the 500-year flood is considered the most appropriate protection level for critical facilities. The following maps show the location of critical facilities within the areas of the county susceptible to the one percent chance event.

Brown County Critical Facilities within 100 Year Floodplain

Village of Allouez



Map 3.01

Legend

- | | | | | | |
|--|------------|--|----------------|--|----------------|
| | Business | | Other Landmark | | EMS |
| | Adult Care | | Utility | | Police Station |
| | Child Care | | Bridge | | |

Flood Hazard Areas

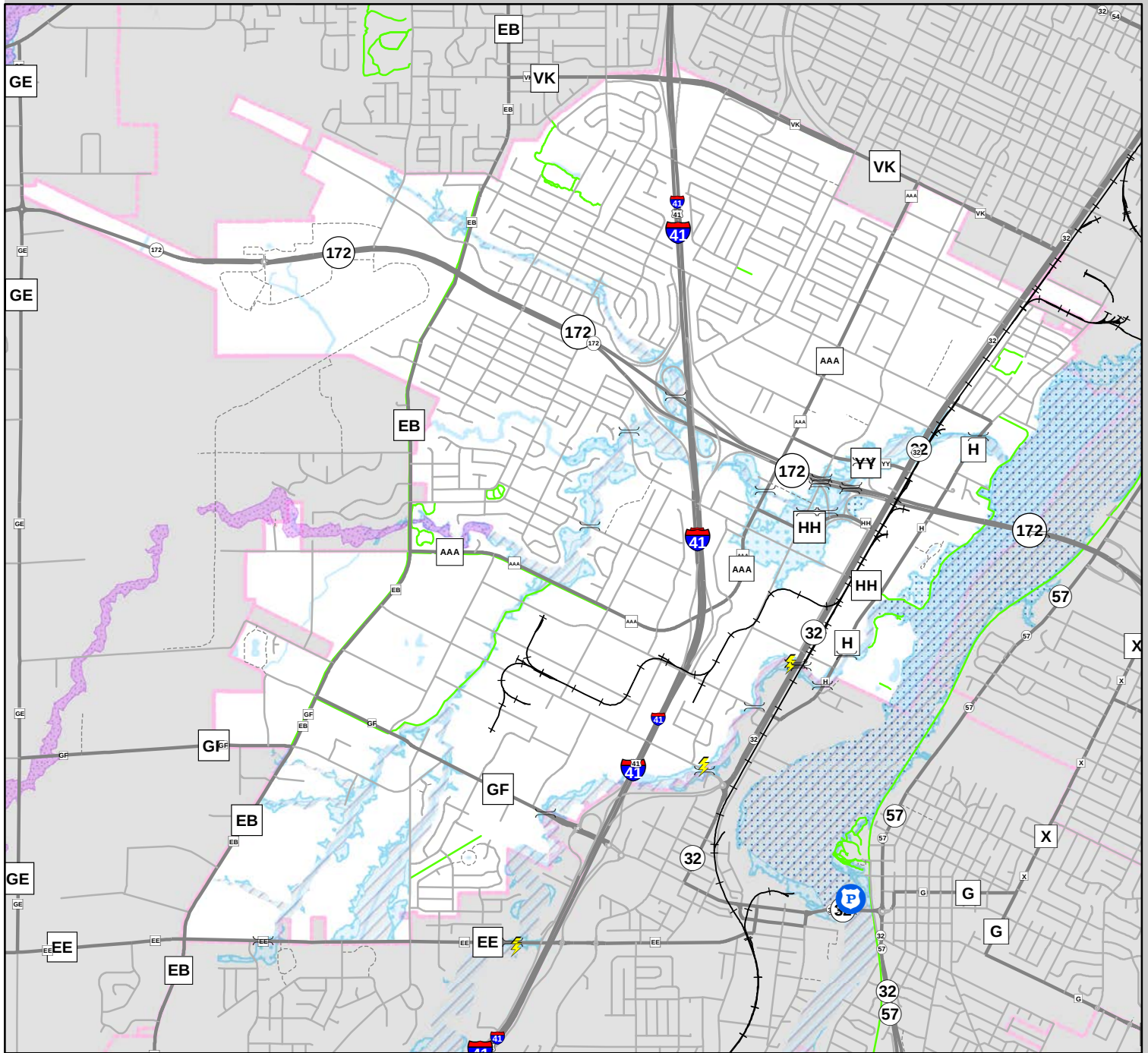
- Zone AE (100 year floodplain with Base Flood Elevation determined)
- Floodway Areas in Zone AE



0 0.3 0.6
Miles

Brown County Critical Facilities within 100 Year Floodplain

Village of Ashwaubenon



Map 3.02

Legend

- | | | |
|--|----------------|--|
| | Other Landmark | Flood Hazard |
| | Utility | Zone A (100 year floodplain, No Base Flood elevation determined) |
| | Bridge | Zone AE (100 year floodplain with Base Flood Elevation determined) |
| | Police Station | Floodway Areas in Zone AE |



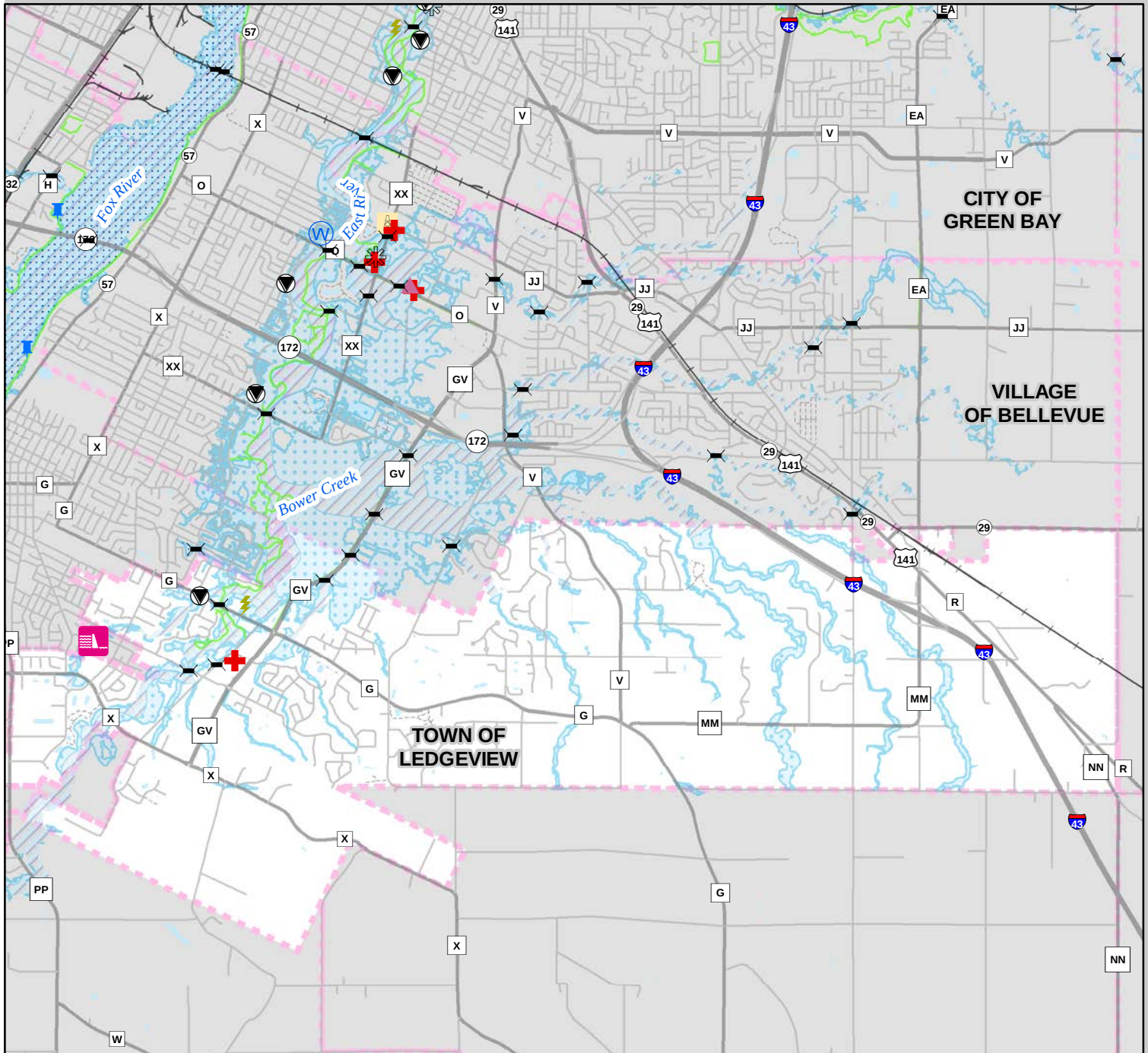
0 0.5 1
Miles

Source: Brown County Land Information Office, 2019

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Brown County Critical Facilities within 100 Year Floodplain

Town of Ledgeview



Map 3.03

Legend

Critical Facilities

- Bridges
- Clinics
- Dams
- Docking Facilities; Docking facilities

- Electric Power Plants; Electric Power Substations; Major Electric Power Transmission Lines R/W
- Lift Station; Sanitary Lift Station; Sewage Treatment Plants; Sewer Lift Station; Storm Lift Station

- Police/Fire Stations/Offices
- Pre-School/Day Care
- Radio/Television Stations
- Water Supply Booster/Pumping Stations; Water Supply Wells

Flood Hazard Areas

- Zone A (100 year floodplain, No Base Flood elevation determined)
- Zone AE (100 year floodplain with Base Flood Elevation determined)
- Floodway Areas in Zone AE



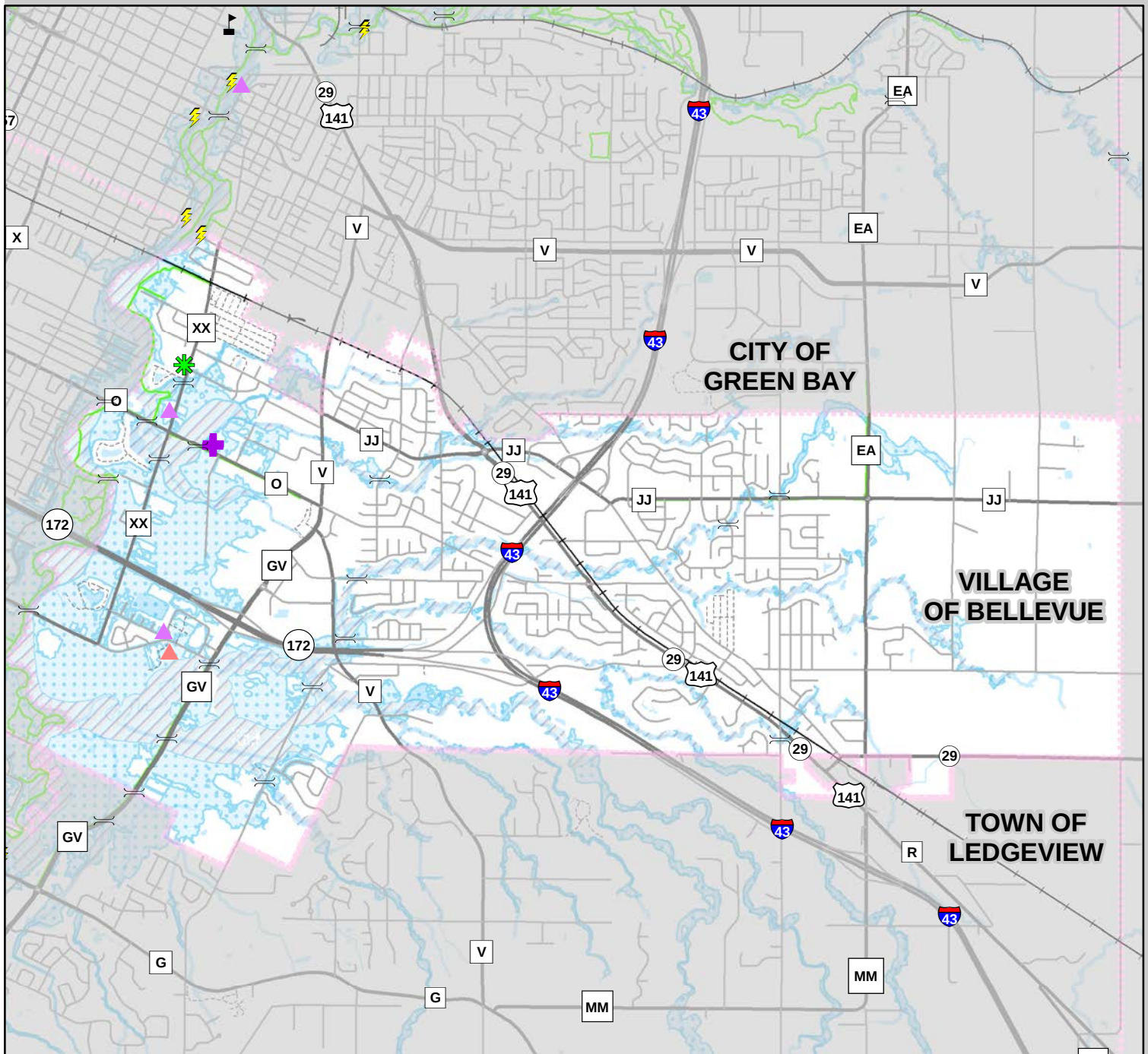
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0 0.5 1
Miles

Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Village of Bellevue



Map 3.04

Legend

- | | | |
|--|------------|--|
|  | Business | Flood Hazard |
|  | Adult Care |  Zone A (100 year floodplain, No Base Flood elevation determined) |
|  | Child Care |  Zone AE (100 year floodplain with Base Flood Elevation determined) |
|  | School |  Floodway Areas in Zone AE |
|  | Utility | |
|  | Bridge | |
|  | EMS | |



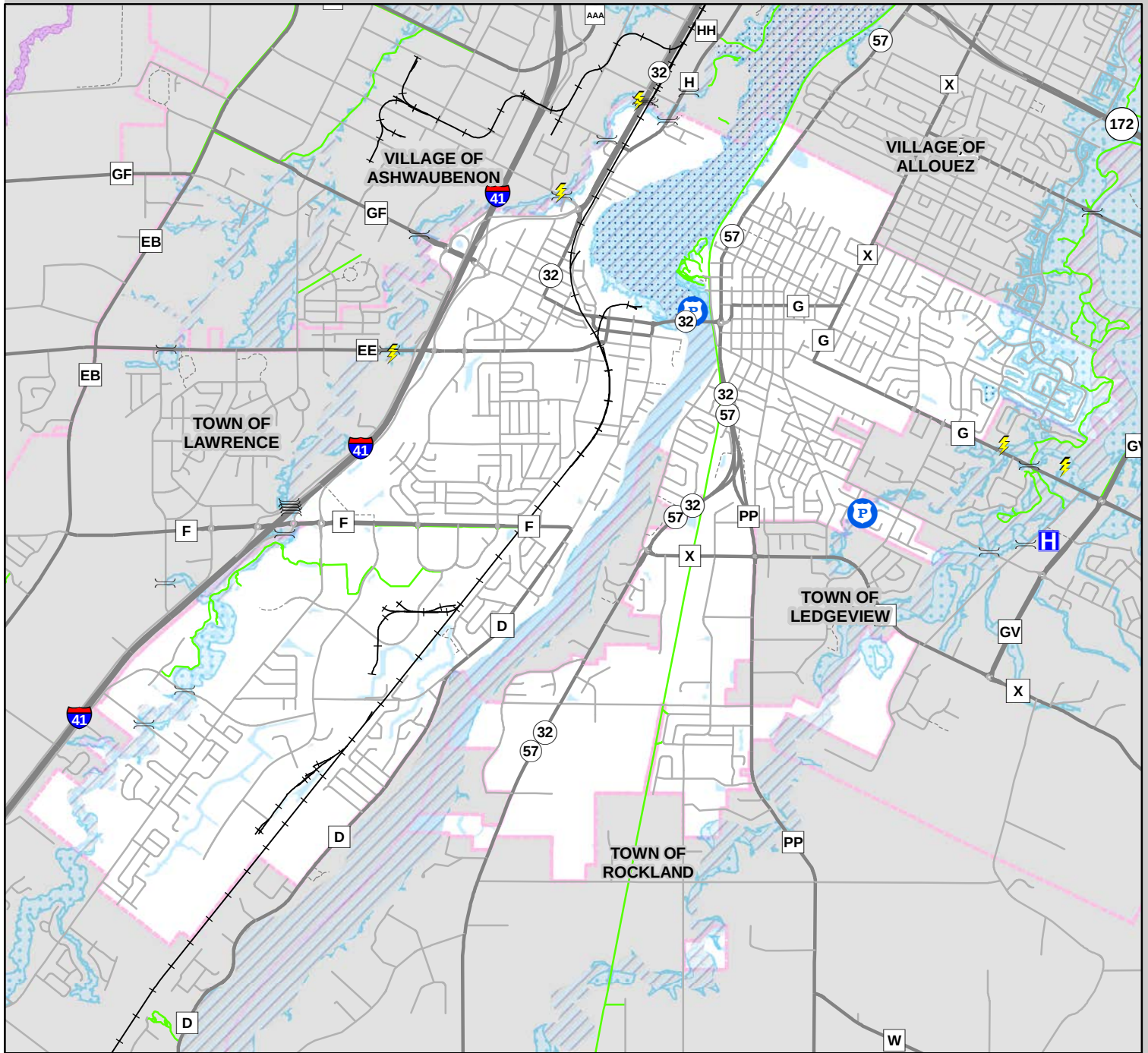
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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

City of De Pere



Map 3.05

Legend

-  Hospital/Clinic
-  Other Landmark
-  Utility
-  Bridge
-  Police Station

Flood Hazard Areas

-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE



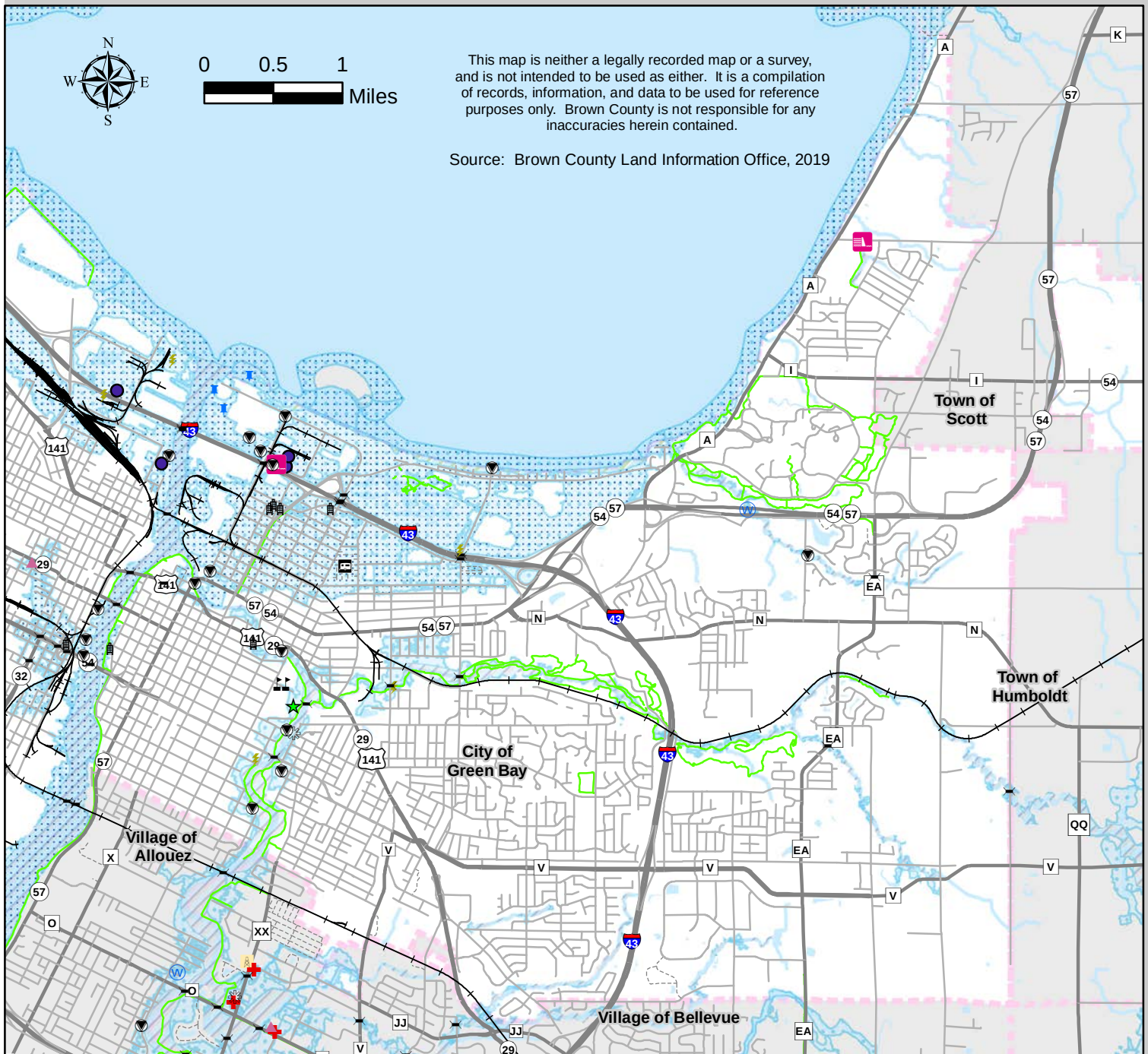
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Miles

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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

City of Green Bay East



Legend

Critical Facilities

-  Administrative Buildings
-  Bridges
-  Clinics
-  Dams
-  Docking Facilities; Docking facilities

-  Electric Power Plants; Electric Power Substations; Major Electric Power Transmission Lines R/W
-  Lift Station; Sanitary Lift Station; Sewage Treatment Plants; Sewer Lift Station; Storm Lift Station
-  Mobile Home Park
-  Other Liquid Fuel Substations; Other Liquid Fuel Terminal Plants

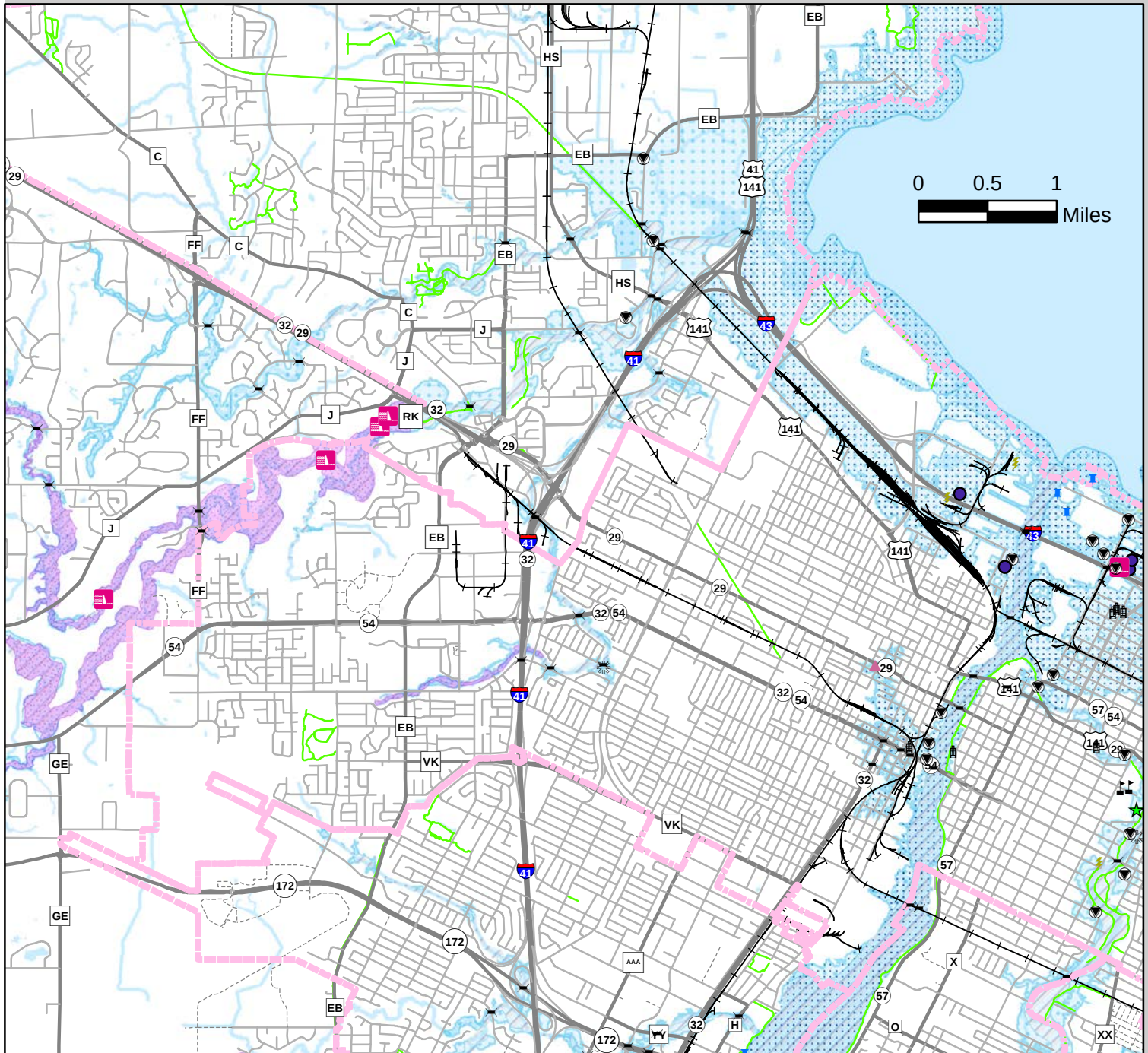
-  Police/Fire Stations/Offices
-  Pre-School/Day Care
-  Radio/Television Stations
-  School; Secondary Schools
-  Sports stadium / arena
-  Water Supply Booster/Pumping Stations; Water Supply Wells

Flood Hazard Areas

-  AO,
-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE

Brown County Critical Facilities within 100 Year Floodplain

City of Green Bay West



Map 3.07

Legend

Critical Facilities

- Administrative Buildings
- Bridges
- Dams
- Docking Facilities; Docking facilities
- Electric Power Plants; Electric Power Substations; Major Electric Power Transmission Lines R/W
- Lift Station; Sanitary Lift Station; Sewage Treatment Plants; Sewer Lift Station; Storm Lift Station

- Other Liquid Fuel Substations; Other Liquid Fuel Terminal Plants
- Police/Fire Stations/Offices
- Pre-School/Day Care
- School; Secondary Schools
- Sports stadium / arena

Flood Hazard Areas

- AO,
- Zone A (100 year floodplain, No Base Flood elevation determined)
- Zone AE (100 year floodplain with Base Flood Elevation determined)
- Floodway Areas in Zone AE

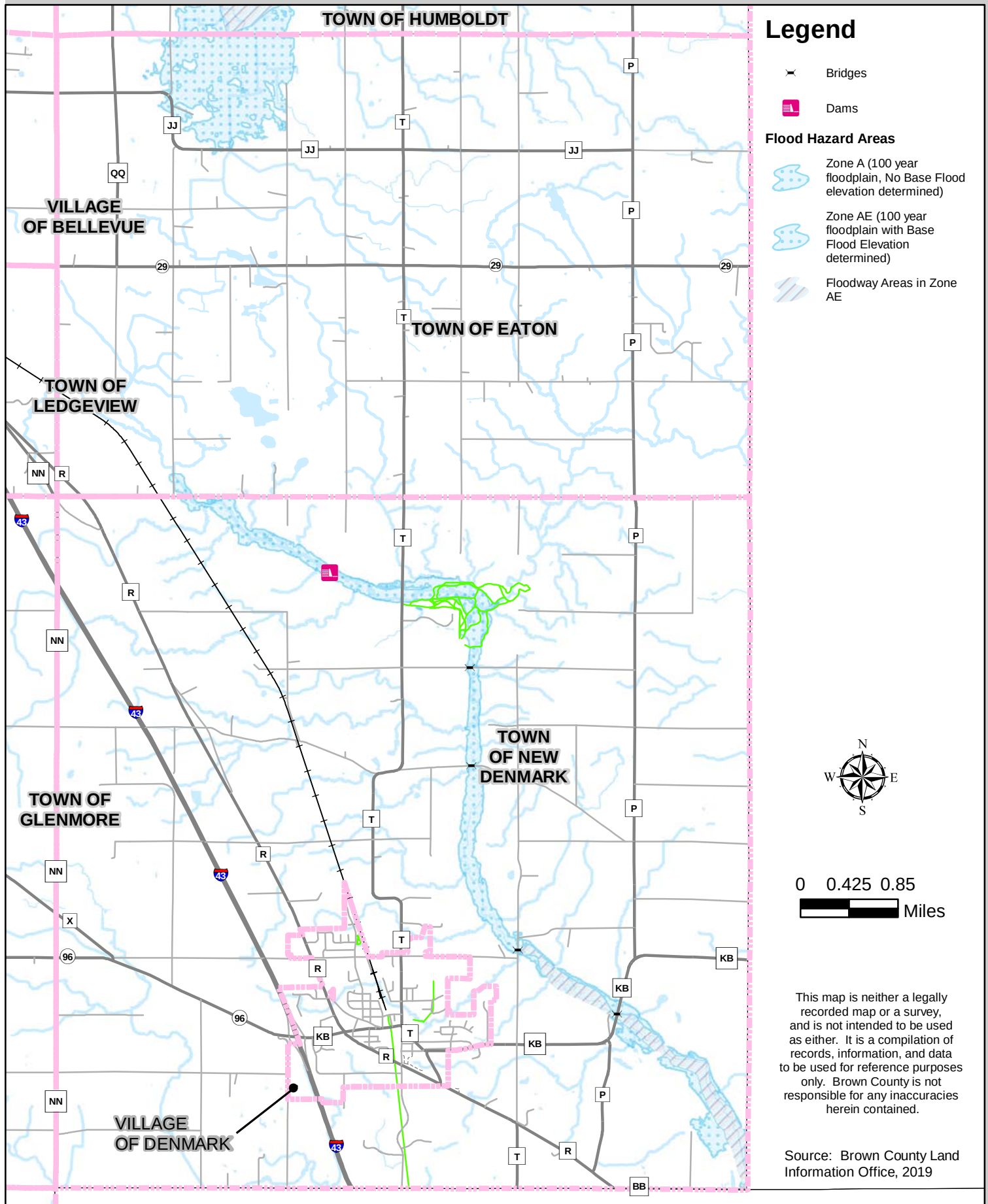


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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Town of Eaton, Town of New Denmark, Village of Denmark

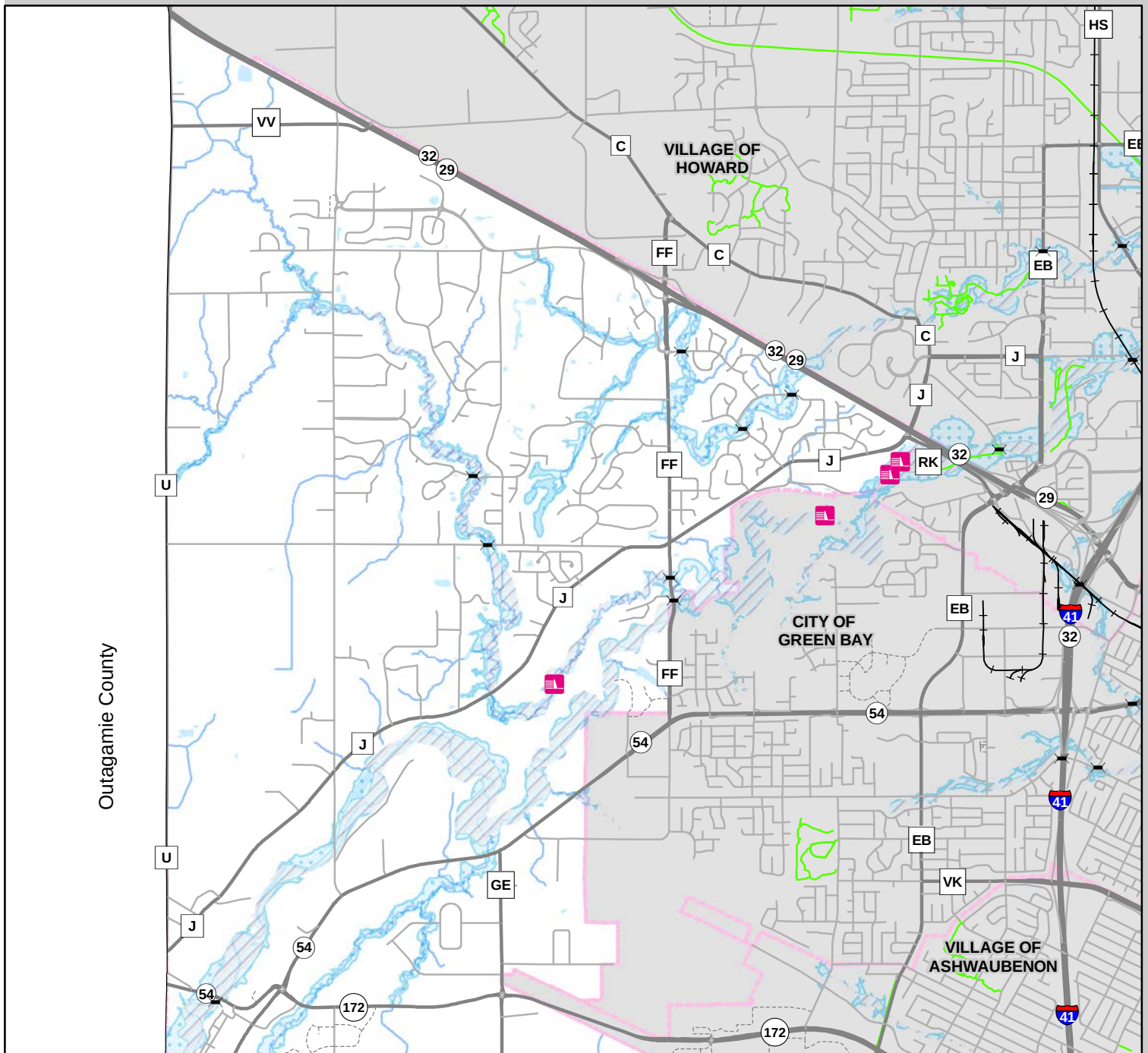


A map of the Town of Glenmore, showing a network of roads and water bodies. The town's boundary is outlined in pink. Major roads include a vertical road labeled 'G' and a horizontal road labeled '96'. Other roads are marked with 'X', 'NN', 'W', and 'OO'. Water bodies are shown in blue. The text 'TOWN OF GLENMORE' is prominently displayed in the center-right. The map is surrounded by grey areas, likely representing other towns or land parcels.

Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Village of Hobart North



Map 3.10

Legend

Critical Facilities Flood Hazard

-  Bridges
-  Dams
-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE



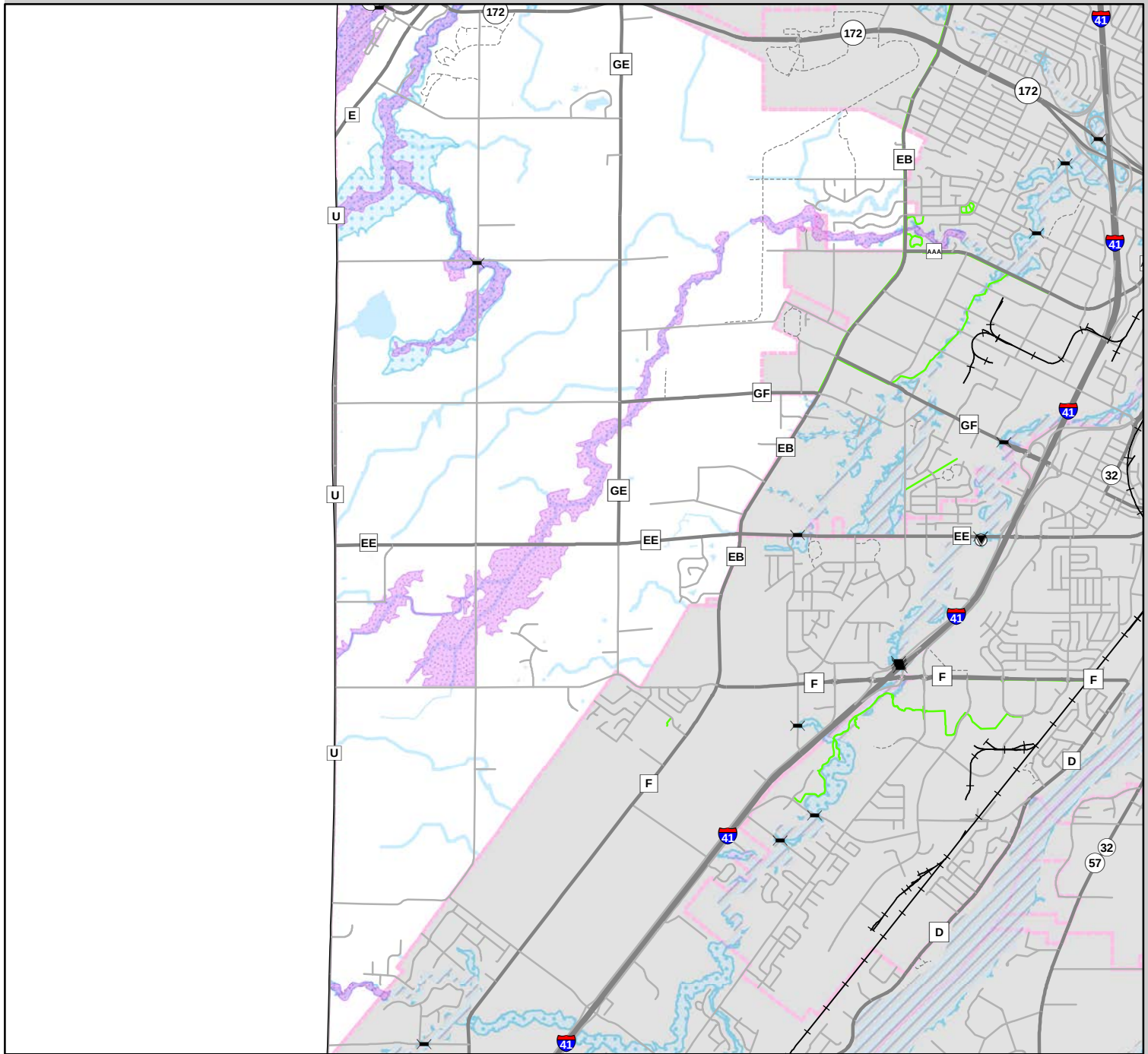
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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Village of Hobart South



Legend

Critical Facilities

-  Bridges
-  Lift Station; Sanitary Lift Station; Sewage
-  Treatment Plants; Sewer Lift Station; Storm Lift Station

Flood Hazard Areas

-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE



0 0.5 1
Miles

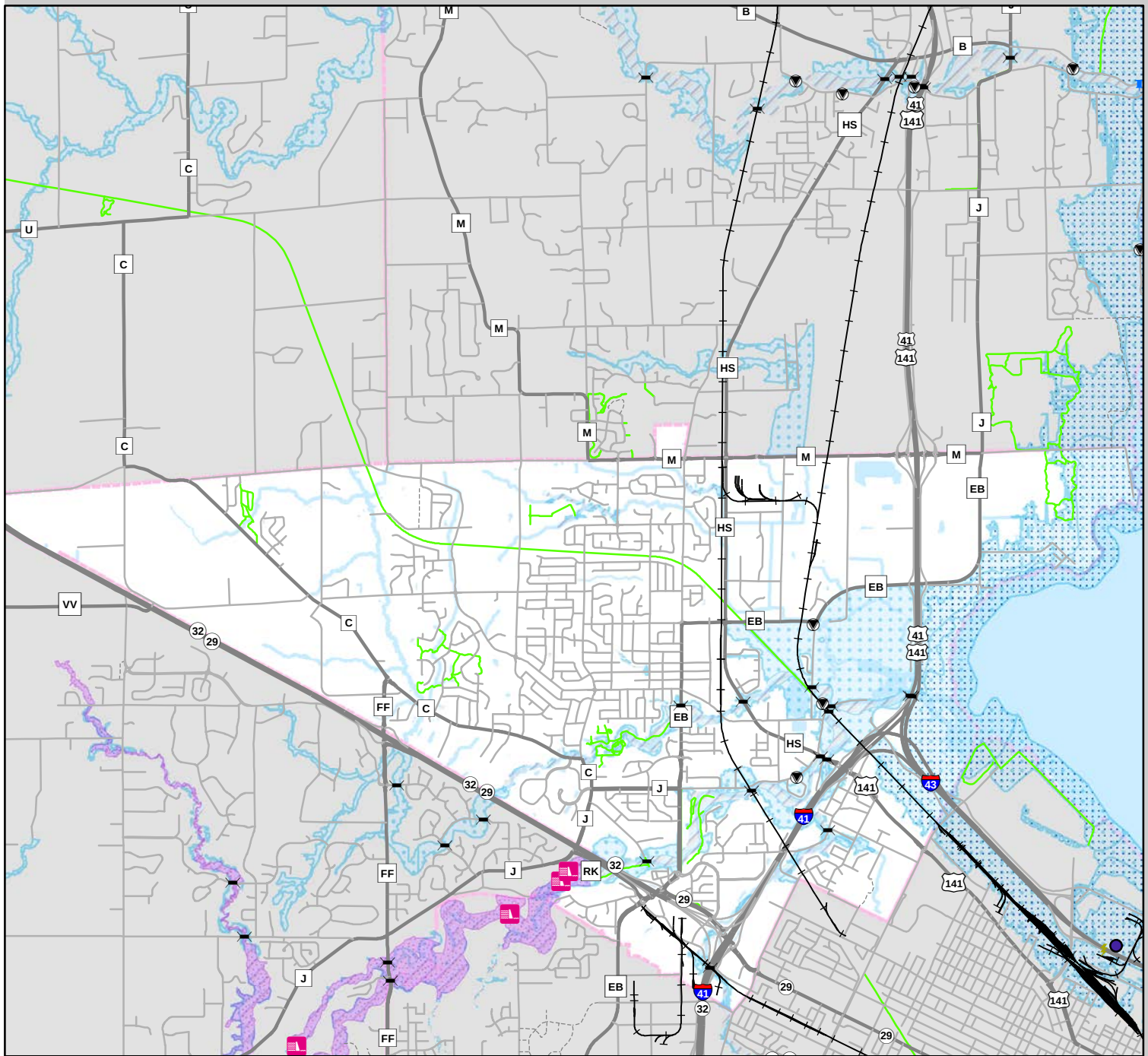
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Source: Brown County Land Information Office, 2019

Map 3-11

Brown County Critical Facilities within 100 Year Floodplain

Village of Howard



Legend

Critical Facilities

-  Bridges
-  Dams
-  Docking Facilities; Docking facilities

-  Electric Power Plants; Power Substations; Electric Power Transmission Lines R/W
-  Lift Station; Sanitary Lift Station; Sewage Treatment Plants; Sewer Lift Station; Storm Lift Station
-  Liquid Fuel Substations and Fuel Terminal Plants

Flood Hazard Areas

-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE



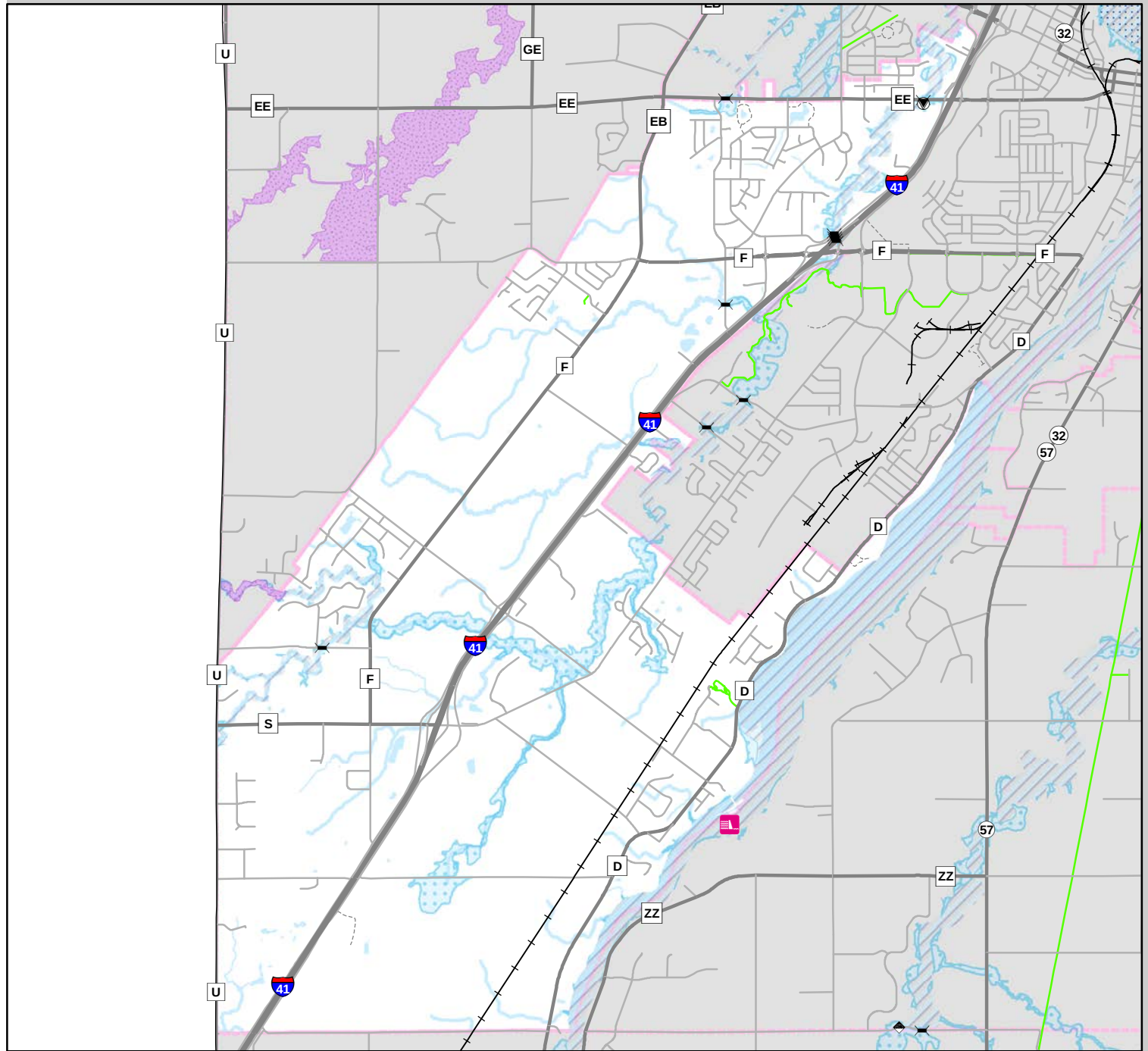
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Miles

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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Town of Lawrence



Map 3-13

Legend

Critical Facilities

-  Bridges
-  Dams
-  Flooding Site
-  Lift Station; Sanitary Lift Station; Sewage Treatment Plants; Sewer Lift Station; Storm Lift Station

Flood Hazard Areas

-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE



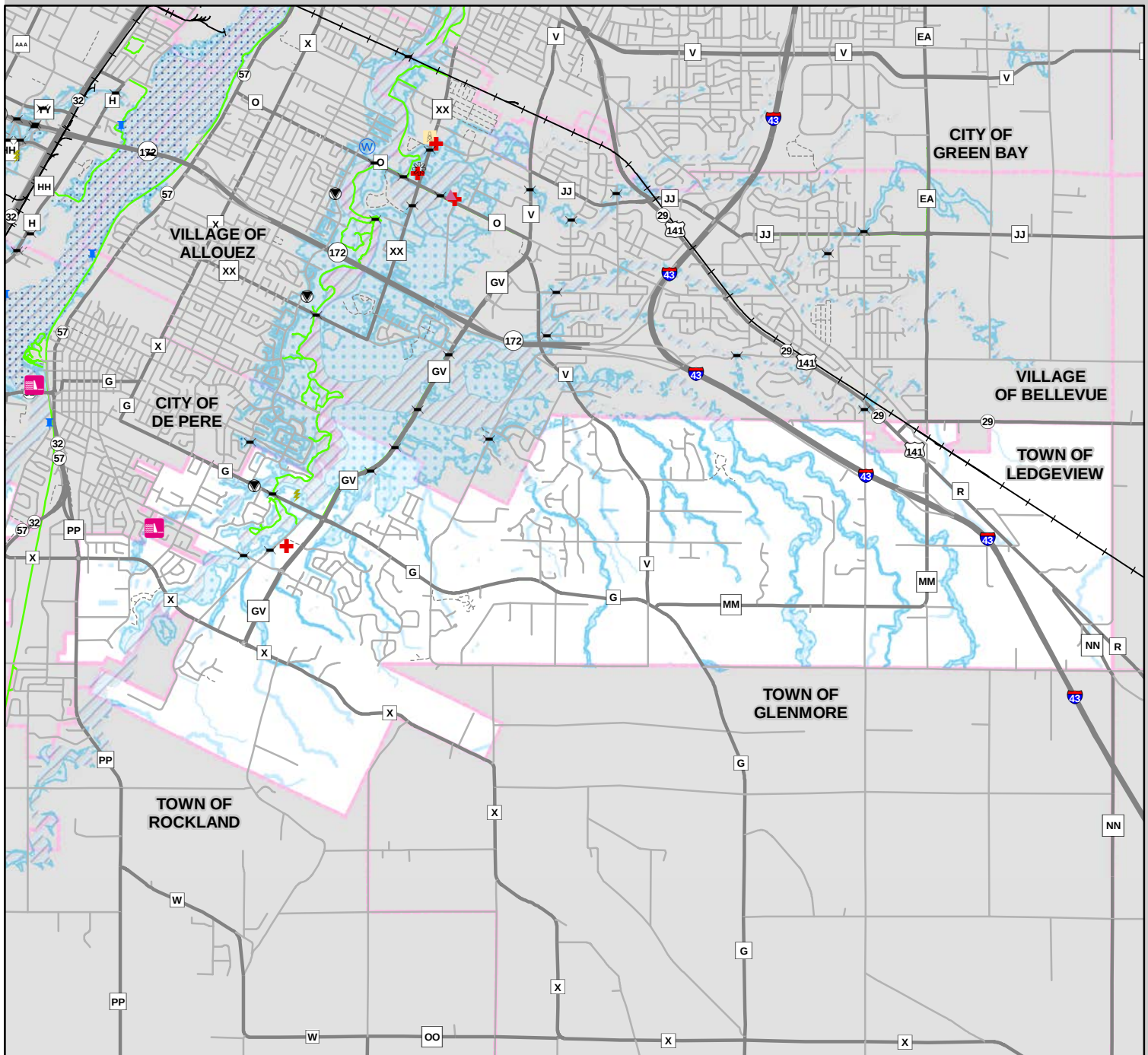
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Miles

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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Town of Ledgeview



Map 3-14

Legend

Critical Facilities

- ✕ Bridges
- ✚ Clinics
- 🏰 Dams
- ⚓ Docking Facilities; Docking facilities

- ⚡ Electric Power Plants; Power Substations; Electric Power Transmission Lines R/W
- 🚰 Lift Station; Sanitary Lift Station; Sewage Treatment Plants; Sewer Lift Station; Storm Lift Station
- 🚒 Police/Fire Stations/Offices



Pre-School/Day Care



Radio/Television Stations



Water Supply Booster/Pumping Stations; Water Supply Wells

Flood Hazard Areas

- 🌊 Zone A (100 year floodplain, No Base Flood elevation determined)
- 🌊 Zone AE (100 year floodplain with Base Flood Elevation determined)
- 🌊 Floodway Areas in Zone AE



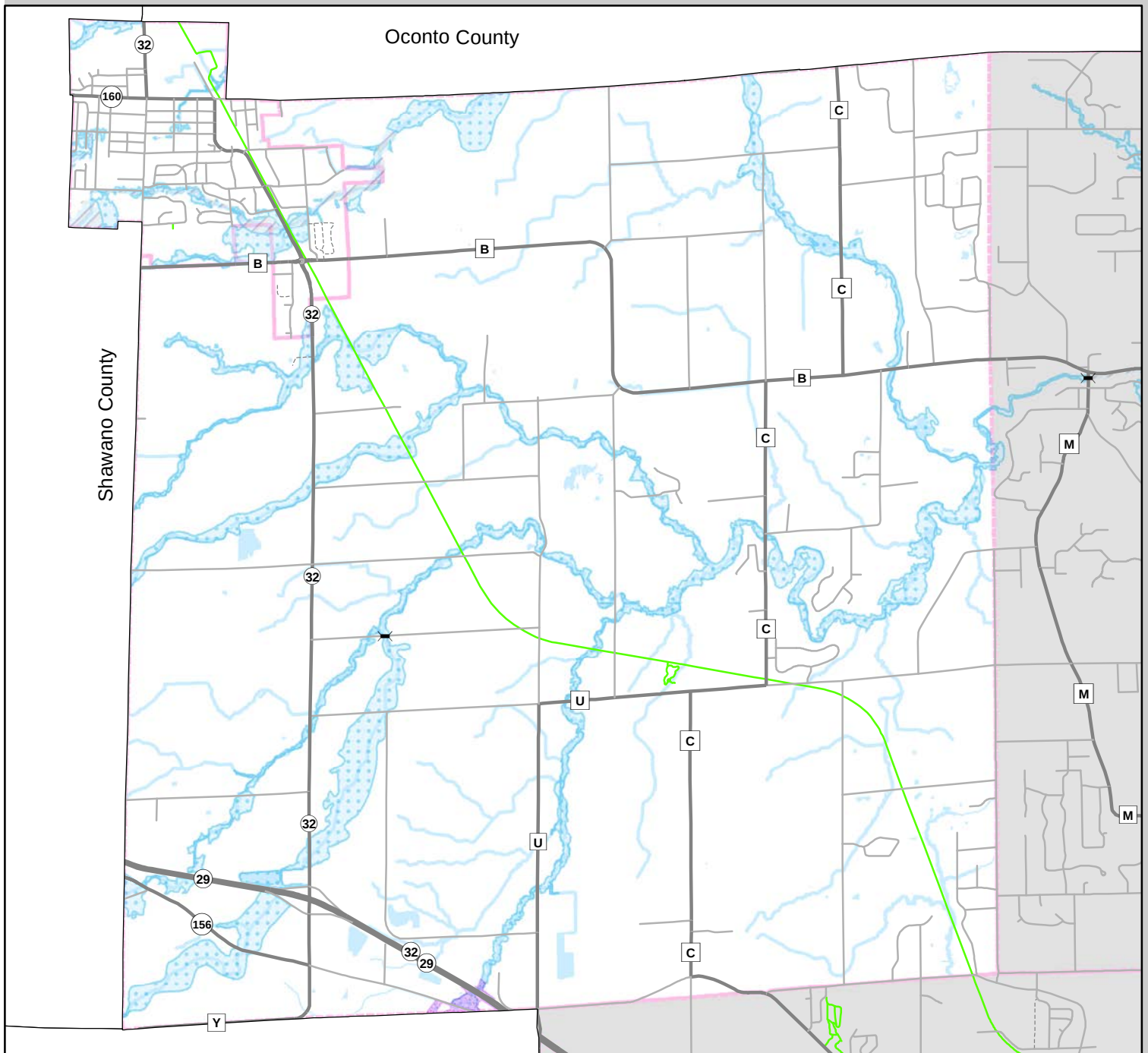
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0 0.5 1
Miles

Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

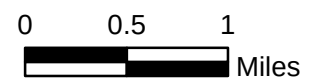
Village of Pulaski and Town of Pittsfield



Legend

Critical Facilities Flood Hazard

-  Bridges
-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE

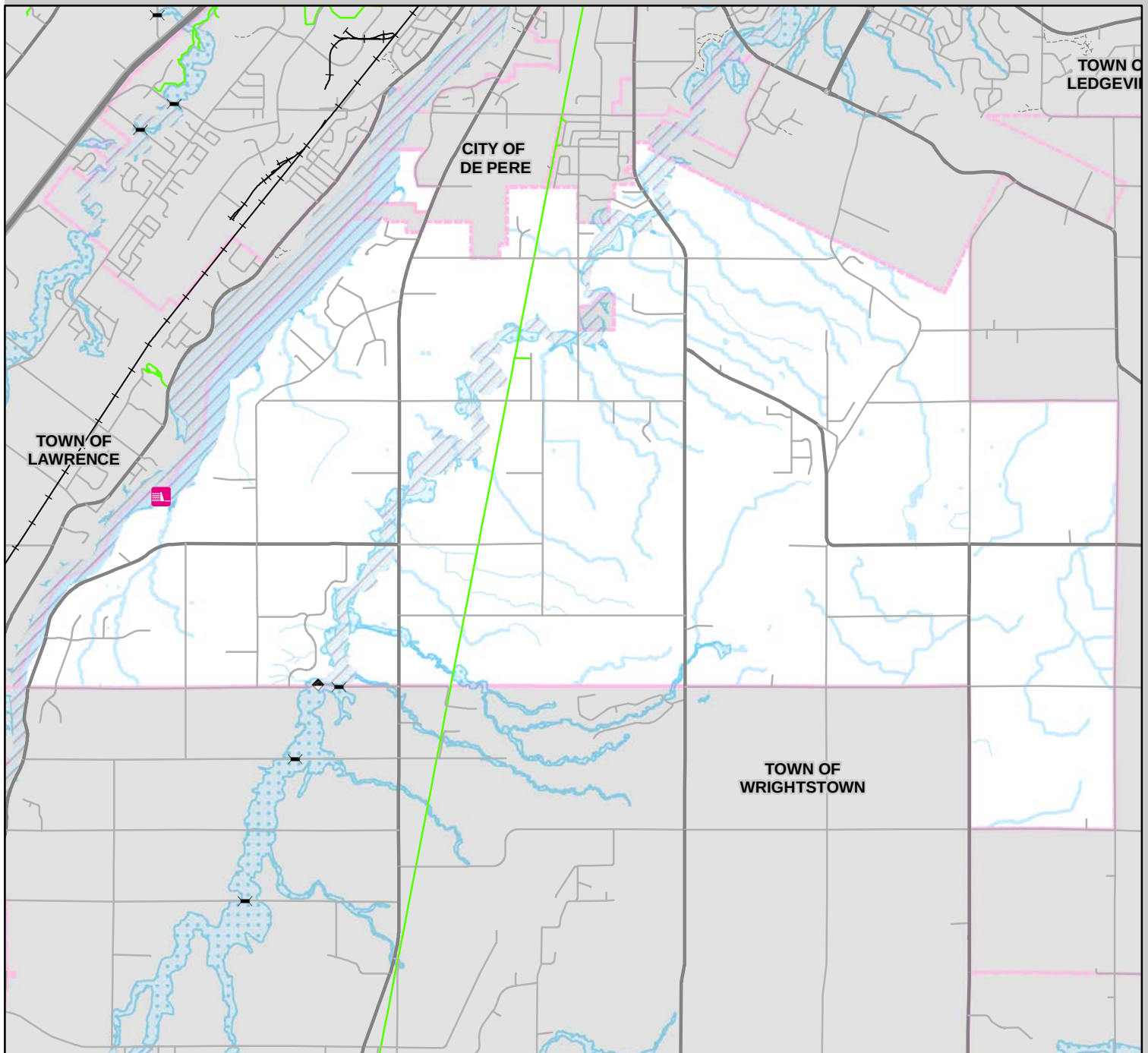


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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Town of Rockland



Map 3-16

Legend

Critical Facilities

-  Bridges
-  Dams
-  Flooding Site

Flood Hazard Areas

-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE



0 0.5 1
Miles

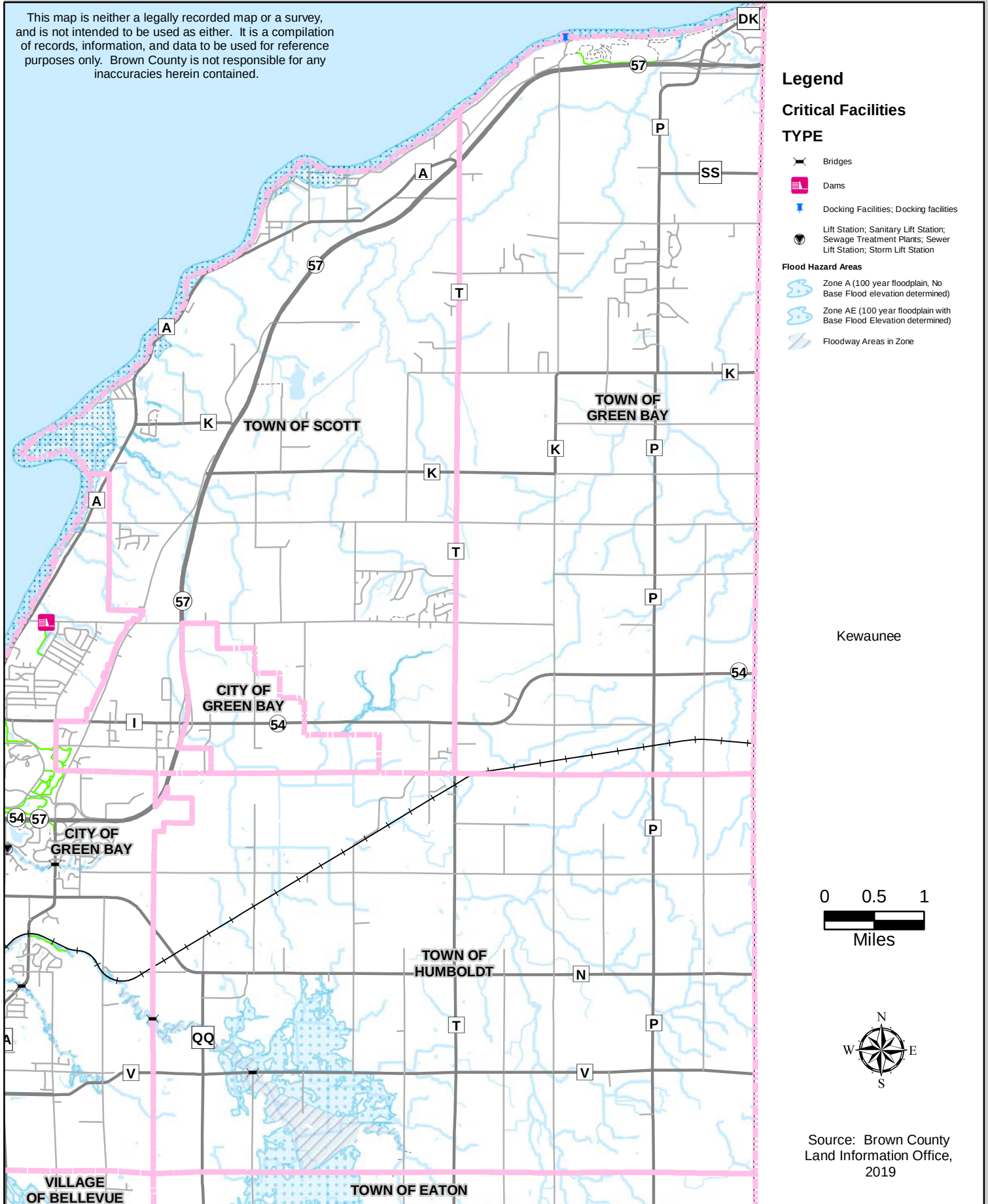
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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

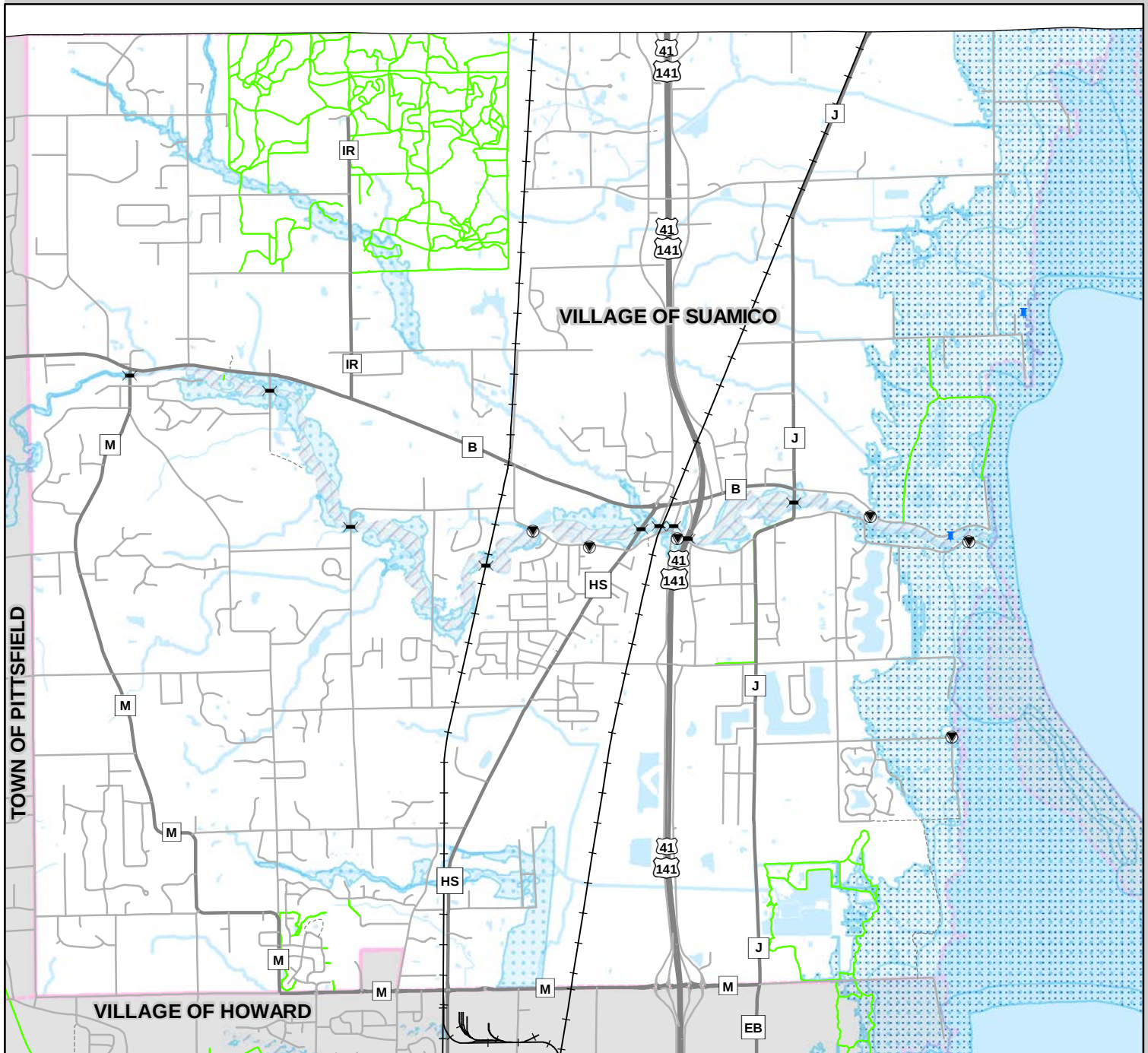
Town of Green Bay, Town of Scott, Town of Humboldt

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Brown County Critical Facilities within 100 Year Floodplain

Village of Suamico



Map 3.18

Legend

Critical Facilities

- Bridges
- Docking Facilities; Docking facilities
- Lift Station; Sanitary Lift Station; Sewage Treatment Plants; Sewer
- Lift Station; Storm Lift Station

Flood Hazard Areas

- Zone A (100 year floodplain, No Base Flood elevation determined)
- Zone AE (100 year floodplain with Base Flood Elevation determined)
- Floodway Areas in Zone AE



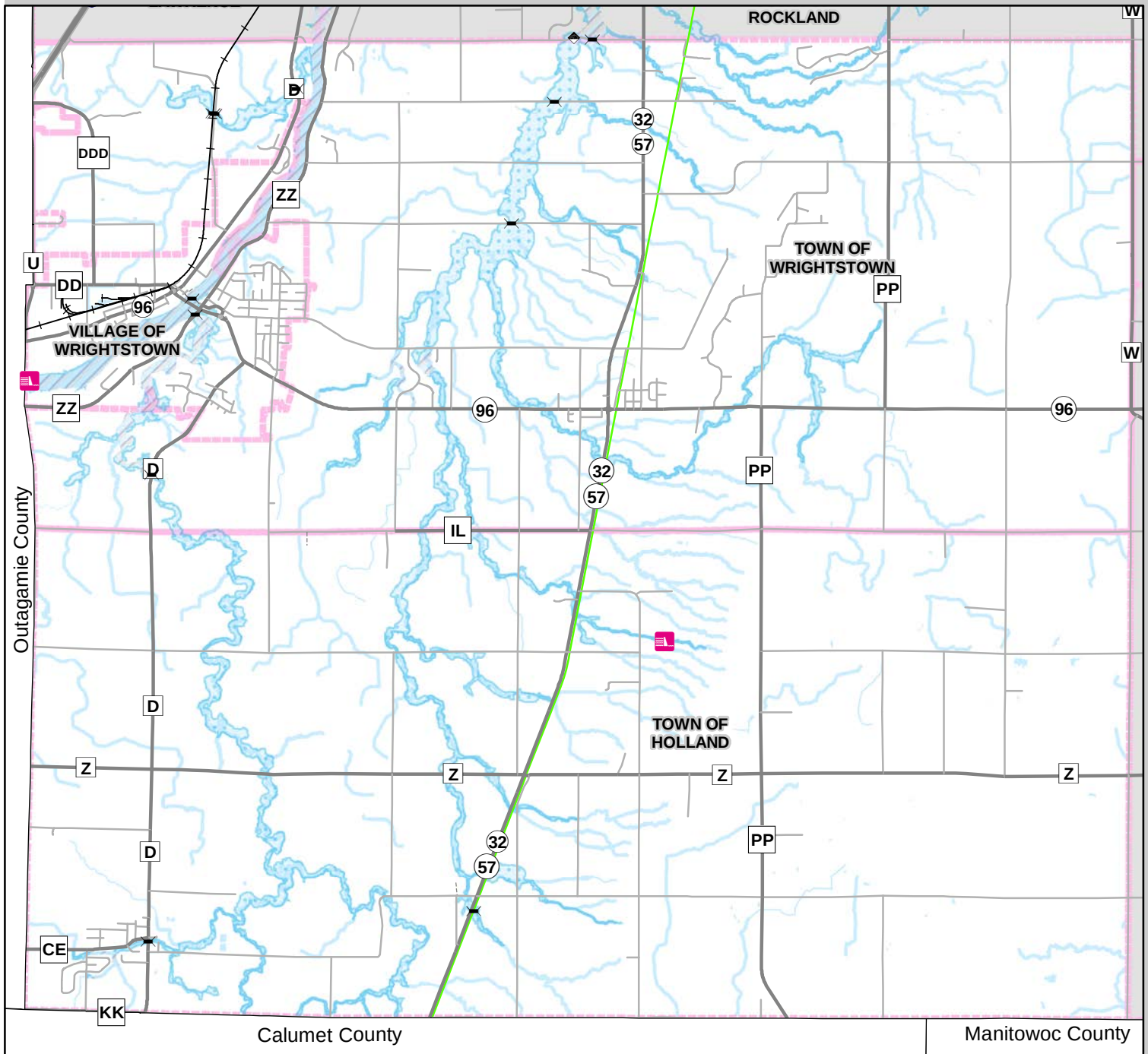
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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Village of Wrightstown and Towns of Wrightstown and Holland



Map 3.19

Legend

Critical Facilities

- Bridges
- Dams
- Flooding Site

Flood Hazard Areas

- Zone A (100 year floodplain, No Base Flood elevation determined)
- Zone AE (100 year floodplain with Base Flood Elevation determined)
- Floodway Areas in Zone AE



0 0.5 1
Miles

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Source: Brown County Land Information Office, 2019

Public Health

While health problems associated with flooding are often not reported, three general types of health hazards accompany floods. The first hazard comes from the water itself. Floodwaters carry whatever was on the ground that the upstream runoff picked up, including dirt, oil, animal waste, and lawn, farm and industrial chemicals. Pastures and areas where livestock are kept can contribute polluted waters to the receiving streams. Floodwaters saturate the ground, which leads to infiltration into sanitary sewer lines. When wastewater treatment plants are flooded, raw sewage can flow from the facility. Infiltration and lack of treatment lead to overloaded sewer lines, which back up into low-lying areas and some homes. Raw sewage can be a breeding ground for bacteria, such as *E. coli* and other disease causing agents.

The second type of health hazard is presented after floodwaters have receded. Stagnant pools become breeding grounds for mosquitoes, and wet areas of a building that have not been thoroughly cleaned, propagate mold and mildew. A building that is not cleaned properly is especially a health hazard for small children and the elderly. Health hazards occur when heating ducts in a forced-air system are not properly cleaned after inundation. When the furnace or air conditioner is turned on, the sediments left in the ducts are circulated throughout the building and are breathed in by the occupants. If the water system loses pressure, a boil order may be issued to protect people and animals from contaminated water.

The third health hazard occurs from the long-term psychological impact of having been through a flood and seeing one's home damaged and irreplaceable keepsakes destroyed. The cost and labor needed to repair a flood-damaged home puts a severe strain on people, especially the unprepared and the uninsured. The resulting stress on those impacted takes its toll in the form of aggravated physical and mental health problems. In some cases, stress-induced hypertension, heart disease and certain cancers have been linked with traumatic events.

Safety

A frequent cause of flood fatalities occur from drowning, which can occur when a vehicle is swept into deep water and the occupants become trapped in the vehicle. Flood victims have frequently put themselves in harm's way by ignoring warnings about travel or by believing that a washed out bridge is still intact.

People have died of heart attacks from exertion during their efforts to minimize the effect of the flood. Electrocution can cause deaths during a flooding event, claiming lives in flooded areas that carry a live current created when electrical components short out. Floods can damage gas lines, floors, and stairs, creating secondary hazards such as gas leaks, unsafe structures and fires. Fires are especially damaging in areas made inaccessible to firefighting equipment by high water or flood-related road or bridge damage.

Infrastructure

Infrastructure flooding impacts include damage to roads and bridges, and sewer, water, and electrical systems. Localized infrastructure impacts include street, road,

and shoulder washouts; culvert damage; storm sewer and sanitary sewer failures; public utility damage; damage to emergency vehicles; and trail and road damage in parks. Much of this damage could lead to public service interruptions.

Transportation Route Interruptions

Loss of road access is a major flood ramification that affects all residents and businesses within the region, not just those who own property in the floodplain. Oftentimes, the inability to travel freely is only temporary, perhaps lasting several hours. The loss of transportation may last months after the disaster. When roads, bridges, or railroads are washed out by a flood, it can be weeks or months before they are repaired and usable.

A key evacuation consideration is an evaluation of the roads that have the potential for flooding and remaining submerged for long periods. This will determine how emergency personnel will enter the area to begin rescue operations and to deliver vital goods and services to residents of the area affected.

A review of the Flood Insurance Rate Map and Brown County's critical facility layer identified 113 bridge or other stream crossing sites that could potentially become inundated during a base flood. A listing of the 1 bridge or other stream crossing sites that could potentially become submerged during a base flood is listed below.

A bridge does not have to be inundated to be damaged or to cut off an evacuation route. In some cases, the bridge is above water but the access road may be flooded. In other cases, the bridge or culvert can be washed out. This is especially dangerous for a person utilizing a flooded road assuming passage is possible because the bridge is still intact.

In addition to the bridges within the floodplain, there are bridges and culverts in areas that are not included in the Flood Insurance Rate Map 100-year flood zones. Most of these areas are located along small tributary streams or are in areas that have not undergone a detailed flood study.

Table 3.3: Bridge Crossings in the 100-Year Floodplain, Brown County, Wisconsin		
Municipality	Street	Water Body
Municipality *	Street	Water Crossing
City of Green Bay	7th Street	Unnamed Tributary
Village of Ashwaubenon	Ashwaubomay Park	Ashwaubenon Creek
Village of Hobart	Brookwood Circle	Trout Creek
City of Green Bay	Chantel Street	Unnamed Tributary
Village of Ashwaubenon	Circle Drive	Dutchman Creek
City of De Pere	Creamery Road	Ashwaubenon Creek
Village of Ashwaubenon	CTH AAA/S Oneida Street	Dutchman Creek
Town of Holland	CTH D	Unnamed Tributary
Town of Wrightstown	CTH D/Lost Dauphin Road	Apple Creek
Town of Wrightstown	CTH D/Plum Road	Plum Creek
City of Green Bay	CTH EA/S Huron Road	Baird Creek

Town of Lawrence	CTH EE/Grant Street	Unnamed Tributary
Village of Hobart	CTH FF/Hillcrest Drive	Duck Creek
Village of Hobart	CTH FF/Hillcrest Drive	Trout Creek
Town of Morrison	CTH G/Dickinson Road	Branch River
Town of Morrison	CTH G/Dickinson Road	Branch River
Village of Ashwaubenon	CTH GF/W Main Avenue	Ashwaubenon Creek
Village of Bellevue	CTH GV	Unnamed Tributary
Town of Ledgeview	CTH GV	Unnamed Tributary
Town of Ledgeview	CTH GV	Unnamed Tributary
City of De Pere	CTH H/Fort Howard Avenue	Ashwaubenon Creek
Village of Ashwaubenon	CTH H/S Broadway	Dutchman Creek
Village of Suamico	CTH HS	Suamico River
Village of Howard	CTH HS/Velp Avenue	Unnamed Tributary
Village of Howard	CTH HS/Velp Avenue	Duck Creek
Village of Howard	CTH HS/Velp Avenue	Beaver Dam Creek
Village of Suamico	CTH J/Lakeview Drive	Suamico River
Town of New Denmark	CTH KB	Neshota River
Village of Suamico	CTH M	Suamico River
Village of Allouez	CTH O/Allouez Avenue	East River
Village of Bellevue	CTH O/Allouez Avenue	Unnamed Tributary
Village of Bellevue	CTH O/Allouez Avenue	East River
Town of Humboldt	CTH V/Finger Road	Baird Creek
Village of Bellevue	CTH V/Lime Kiln Road	Unnamed Tributary
Village of Bellevue	CTH XX/Bellevue Street	Unnamed Tributary
Village of Wrightstown	CTH ZZ/Washington Street	Plum Creek
Village of Bellevue	Daly Drive	Unnamed Tributary
City of Green Bay	Danz Avenue	Baird Creek
Village of Bellevue	Dorset Drive	Unnamed Tributary
City of Green Bay	E Mason Street	East River
Town of Holland	Fox River Trail	East River
Village of Bellevue	Glenmore Road	Unnamed Tributary
Town of Lawrence	Grant Street/CTH EE	Ashwaubenon Creek
Village of Bellevue	Guns Street	Unnamed Tributary
Village of Ashwaubenon	Hansen Road	Dutchman Creek
Village of Bellevue	Hazen Road	Unnamed Tributary
Town of Morrison	Hill Road	Branch River
Village of Ashwaubenon	Holmgren Way	Dutchman Creek
City of De Pere	I41 NB	Ashwaubenon Creek
Village of Howard	I41 SB	Beaver Dam Creek
City of De Pere	I41 SB	Ashwaubenon Creek
City of De Pere	I41 SB (Off Ramp)	Ashwaubenon Creek

City of Green Bay	I43	Fox River
Village of Hobart	Indian Trail	Unnamed Tributary
Village of Bellevue	Klondike Road	Sorenson Creek
Village of Howard	Lakeview Drive	Unnamed Tributary
Town of New Denmark	Langes Corner Road	Neshota River
Town of Ledgeview	Ledgeview Road	East River
CITY OF DE PERE	Main Avenue	Fox River
City of De Pere	Main Avenue	Fox River
City of Green Bay	Main Street	Fox River
Town of Wrightstown	Mallard Road	East River
Town of New Denmark	Maribel Road	Neshota River
Village of Howard	Memorial Drive	Beaver Dam Creek
Town of Lawrence	Mid Valley Drive	Ashwaubenon Creek
City of Green Bay	N Henry Street	Baird Creek
City of Green Bay	N Huron Road	Unnamed Tributary
Village of Hobart	Navajo Trail	Unnamed Tributary
Town of Lawrence	Noah Road	S Branch of Ashwaubenon Creek
Village of Bellevue	Ontario Road	Unnamed Tributary
Town of New Denmark	Park Road	Neshota River
Village of Ashwaubenon	Parkview Road	Ashwaubenon Creek
Town of Wrightstown	Partridge Road	East River
City of Green Bay	Pedestrian Bridge	East River
Village of Bellevue	Pedestrian Bridge	East River
Village of Ashwaubenon	Pilgrim Way/CTH YY	Dutchman Creek
Town of Lawrence	Quarry Park Drive	Hemlock Creek
Village of Allouez	Railroad	East River
Village of Allouez	Railroad	Fox River
Village of Allouez	Railroad	Fox River
Village of Howard	Railroad	Duck Creek
Village of Howard	Railroad	Duck Creek
Village of Suamico	Railroad	Suamico River
City of Green Bay	Railroad	Fox River
Town of Wrightstown	Railroad	Apple Creek
Village of Howard	Riverview Drive	Duck Creek
Town of Wrightstown	Rosin Road	Apple Creek
Town of Humboldt	S Northview Road	Baird Creek
Village of Hobart	seminole Trail	Unnamed Tributary
Village of Suamico	Side Street	Suamico River
City of De Pere	Southbridge Road	Ashwaubenon Creek
Village of Suamico	St Pats Road	Suamico River
Village of Ashwaubenon	STH 172	Unnamed Tributary

Village of Ashwaubenon	STH 172	Fox River
Village of Ashwaubenon	STH 172 EB	Dutchman Creek
Village of Ashwaubenon	STH 172 WB	Dutchman Creek
City of Green Bay	STH 54/East Mason	Fox River
Village of Hobart	STH 54/W Mason St	Duck Creek
Village of Wrightstown	STH 96/Broadway Street	Fox River
Village of Suamico	Stream Road	Suamico River
Town of Pittsfield	Town Hall Road	Unnamed Tributary
Village of Bellevue	Town Hall Road	Spring Creek
Village of Hobart	Trout Creek Road	Trout Creek
Village of Howard	US41/US141	Duck Creek
Village of Howard	US41/US141	Duck Creek
Village of Suamico	US41/US141 NB	Suamico River
Village of Suamico	US41/US141 SB	Suamico River
Village of Ashwaubenon	Vanderperren Way (Off Ramp)	Dutchman Creek
Village of Hobart	W Adam Drive	Unnamed Tributary
Village of Suamico	W Deerfield Avenue	Suamico River
City of Green Bay	Walnut Street	Fox River
Town of Morrison	Wayside Road	Branch River
Town of Wrightstown	Wrightstown Road	East River

Source: Brown County Planning Commission via GIS analysis

Economic

Business and Industry Disruptions

Flooding damage to businesses and industry is not as easy to identify as critical facilities. Even minor damage may result in businesses or industry closures. Businesses or industry damages or disruptions may also include loss of inventories, inaccessibility to customers or employees, and often times, employees are busy protecting or cleaning up their flooded homes and are unable to come to work

Farming

According to the 2010 Brown County Land Use Inventory, approximately 49.5 percent of Brown County is agricultural use. Brown County updated the land use inventory in 2019 which indicated that there was a slight reduction in the amount of agricultural land (48.2 percent). Crop damage and loss often occurs due to flooding, which leads to large financial losses and loss of projected income to the agricultural community.

Tourism

The tourism industry can be impacted by natural disasters such as a flood. Most notable is a recent story on Wisconsin Public Radio from September of 2018, which discussed and noted the impacts of heavy rains across the state. Heavy rains and high lake and stream levels lead to the closure of outdoor recreation facilities (parks & trails) road closures that disrupted trade.

Other industries that are oftentimes negatively impacted include boating/charter fishing, golfing, and eco-tourism. Boating and charter fishing would be impacted because of the relatively unstable conditions on Lake Michigan and on area rivers making this activity unsafe. Golfing would be impacted because of anticipated erosion, flooding, and other damage on area golf courses. Eco-tourism visitors are seeking outdoor interaction with nature, which may be unwelcoming after flooding due to inaccessibility in many saturated areas. Transportation to tourist destinations in the area could also be impacted, and hotels and restaurants could sustain damage under severe flooding conditions.

Other

Public expenditures on flood fighting, sandbags, fire, and police calls, clean up, and on repairs to damaged public property affect all residents of the planning area, not just those in the floodplain. Federal assistance is not always available for smaller, more localized floods, and it cannot be counted on in the future. In addition, public agencies are required to purchase insurance on flood prone buildings. The amount of insurance that should be carried is deducted from disaster assistance payments.

Areas at Greatest Risk

The area inundated by the base flood is the “base floodplain.” FEMA maps (called Flood Insurance Rate Maps, or FIRMs) also call this the Special Flood Hazard Area, or “A Zone.”

Areas affected by flood hazards in the planning area include areas adjacent to rivers, creeks, lakes and other bodies of water. These bodies of water include The Bay of Green Bay; Fox River; East River, Suamico River, Duck Creek, Ashwaubenon Creek, Plum Creek, Dutchman Creek, Lily Lake, Middle Lake, Third Lake; and numerous other small rivers and streams.

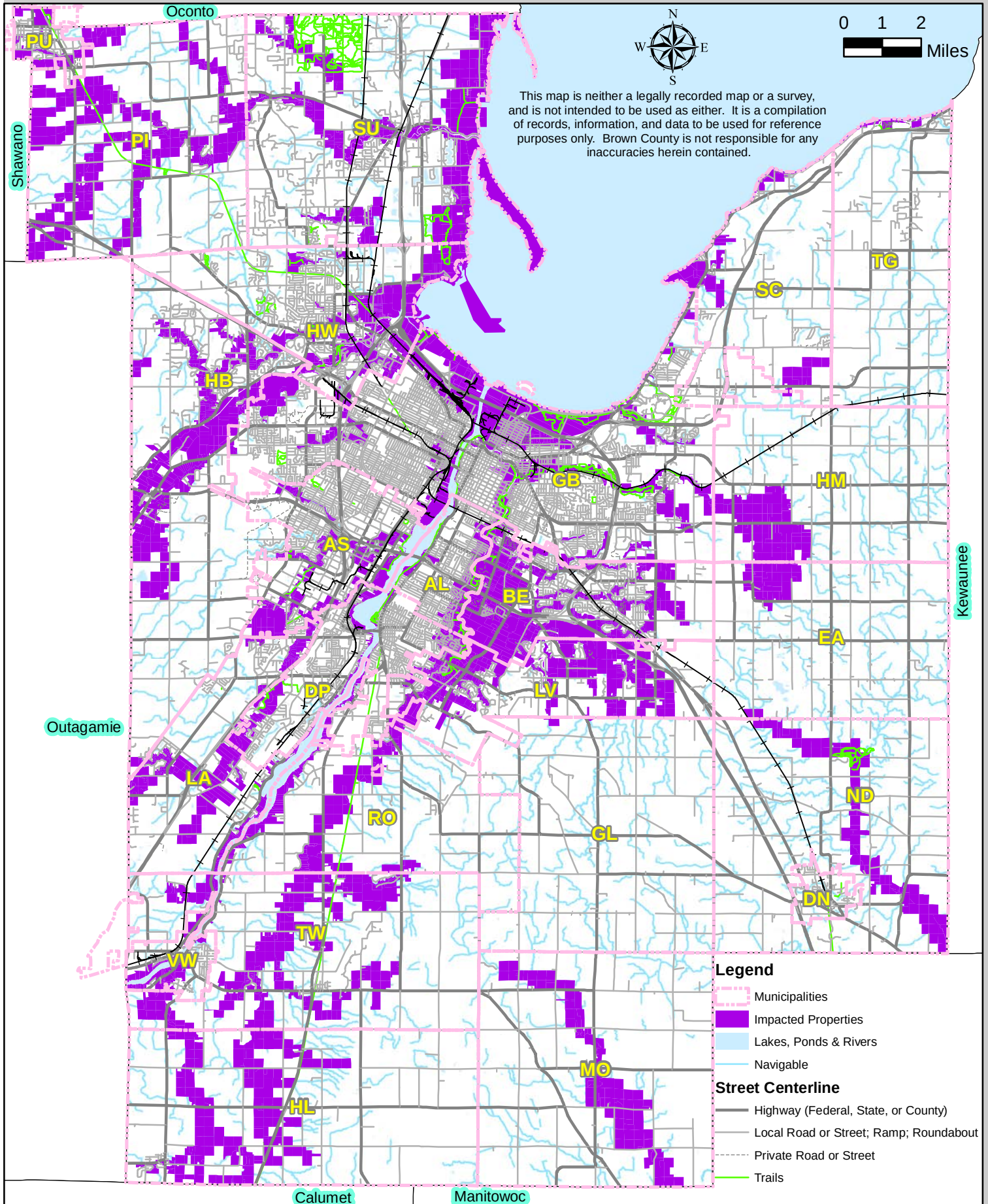
The central part of the floodplain is referred to as the “floodway.” The floodway is the channel and that portion of the adjacent floodplain that must remain open to permit passage of the base flood. Floodwaters generally are deepest and swiftest in the floodway, and anything in this area is in the greatest danger during a flood. The remainder of the floodplain is called the “fringe,” where water may be shallower and slower.

Floodplains (including floodways and flood fringes) are subject to special development regulations, as explained at the end of this section. The following maps highlight the location and breadth of properties susceptible to the 100 year or 1 percent storm event.

Property Impacted by the 0.2 Percent (500 year) Flood

Brown County All Hazard Mitigation Plan

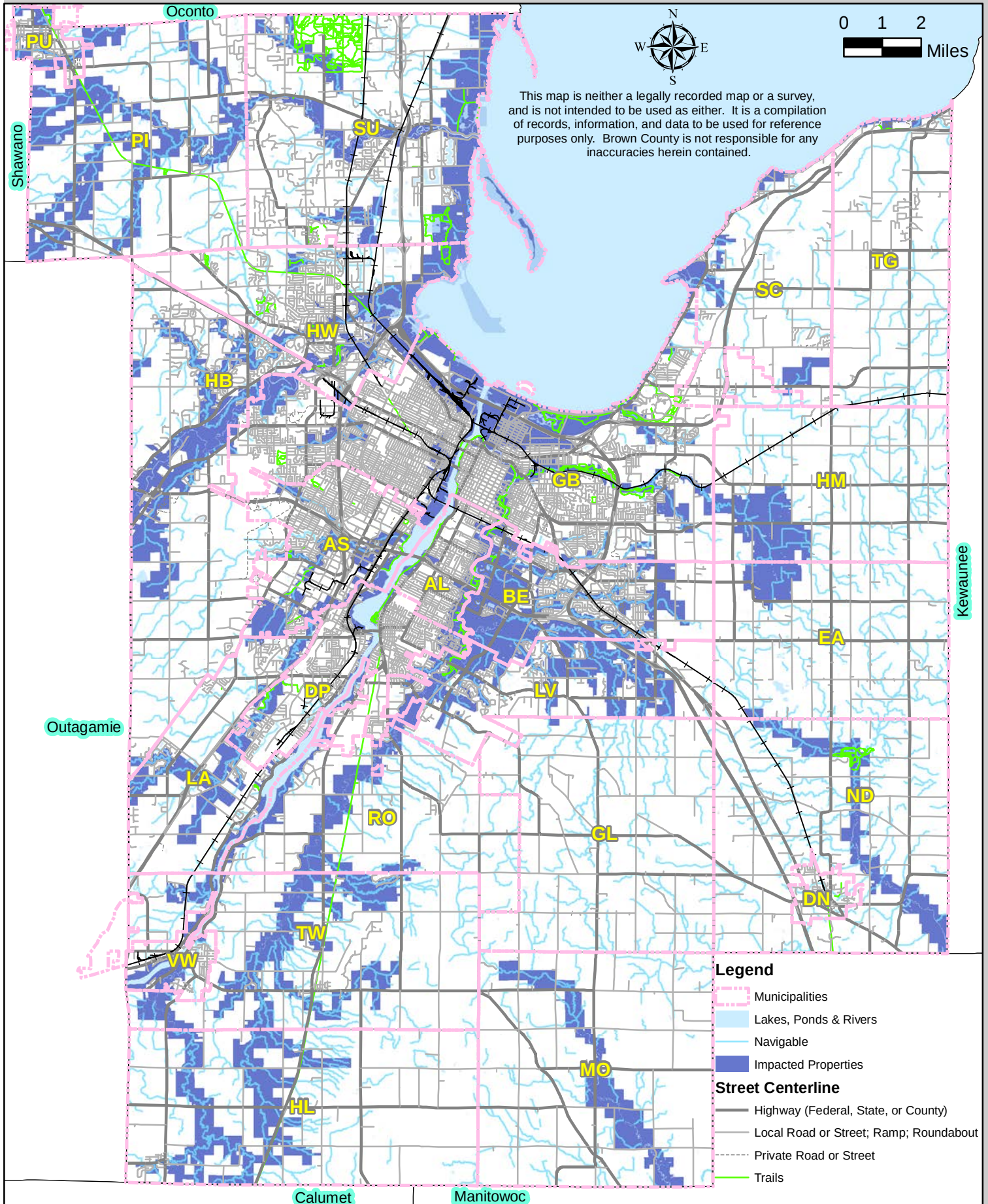
Brown County, WI



Property Impacted by the 1 Percent (100 year) Flood

Brown County All Hazard Mitigation Plan

Brown County, WI



Impact to Existing and Future Buildings

The cities of Green Bay and De Pere; the villages of Ashwaubenon, Allouez, Bellevue, Hobart, Howard, Suamico, and the towns of Lawrence, Ledgeview, Pittsfield, and Scott each had buildings on over 300 parcels potentially impacted by the base flood. The following table provides a breakdown of all Brown County communities and the number of impacted parcels and the total value based on those parcels. There are numerous vacant parcels located within the base floodplain that have potential for development that would be subject to floodplain zoning restrictions.

Table 3.4: Potential Flood Impact Based on FEMA Flood Mapping		
Municipality	Parcels Impacted	Total Value*
City of De Pere	653	\$232,937,900.00
City of Green Bay	4059	\$786,842,600.00
Town of Eaton	42	\$4,029,200.00
Town of Glenmore	5	\$855,100.00
Town of Green Bay	192	\$52,827,100.00
Town of Holland	223	\$24,175,400.00
Town of Humboldt	101	\$8,996,300.00
Town of Lawrence	481	\$125,025,700.00
Town of Ledgeview	811	\$287,292,300.00
Town of Morrison	94	\$9,253,300.00
Town of New Denmark	88	\$8,657,700.00
Town of Pittsfield	321	\$44,117,300.00
Town of Rockland	167	\$49,345,600.00
Town of Scott	343	\$75,049,000.00
Town of Wrightstown	287	\$35,056,800.00
Village of Allouez	729	\$125,655,700.00
Village of Ashwaubenon	563	\$328,626,900.00
Village of Bellevue	1249	\$426,431,700.00
Village of Hobart	466	\$93,457,600.00
Village of Howard	783	\$185,785,300.00
Village of Pulaski	178	\$28,291,300.00
Village of Suamico	765	\$128,553,900.00
Village of Wrightstown	159	\$21,805,300.00
Total	12759	\$3,083,069,000.00

*Values are based on 2019 Brown County tax parcels total value

Brown County is the third fastest growing county in the State of Wisconsin as a percentage of population growth⁹. According to Wisconsin Department of Administration calculations, the Brown County population is expected to grow by 41,730 residents between the years 2020 and 2040. Based on an average of 2.46 persons per household, these new residents will need an additional 16,963 housing units within the 20-year time period. The result will be a need for more than 8,482 acres for new residential development with an average lot size of one-half acre. The fastest growing communities within this planning period are the Towns of Ledgeview and Lawrence and the Village of Hobart. Future acreage calculations, based on residential land use projections, were also made for future commercial and industrial development in the county. By 2040, there will be a need for an additional 758 acres for commercial businesses and another 1,022 acres for industrial operations. In comparison, the county will continue to lose agriculture land to accommodate these other land uses. It is expected that Brown County will lose approximately 10,494 acres of farmland during the same time period¹⁰. With Brown County's rapid growth in residential, business, and public facilities (structures and recreational areas), some of the development will occur in areas susceptible to flooding. The flood-plain designation does not eliminate construction but defines the risks of having a 26 percent chance of experiencing a flood during the life of a 30-year mortgage compared to a 9 percent chance of a fire.

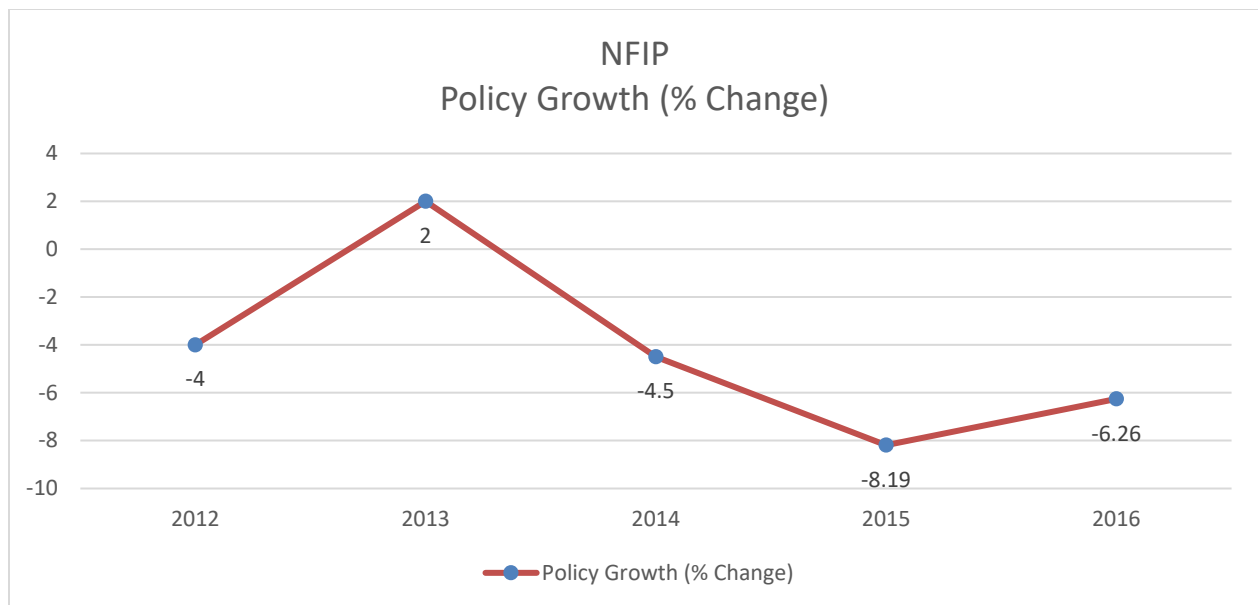
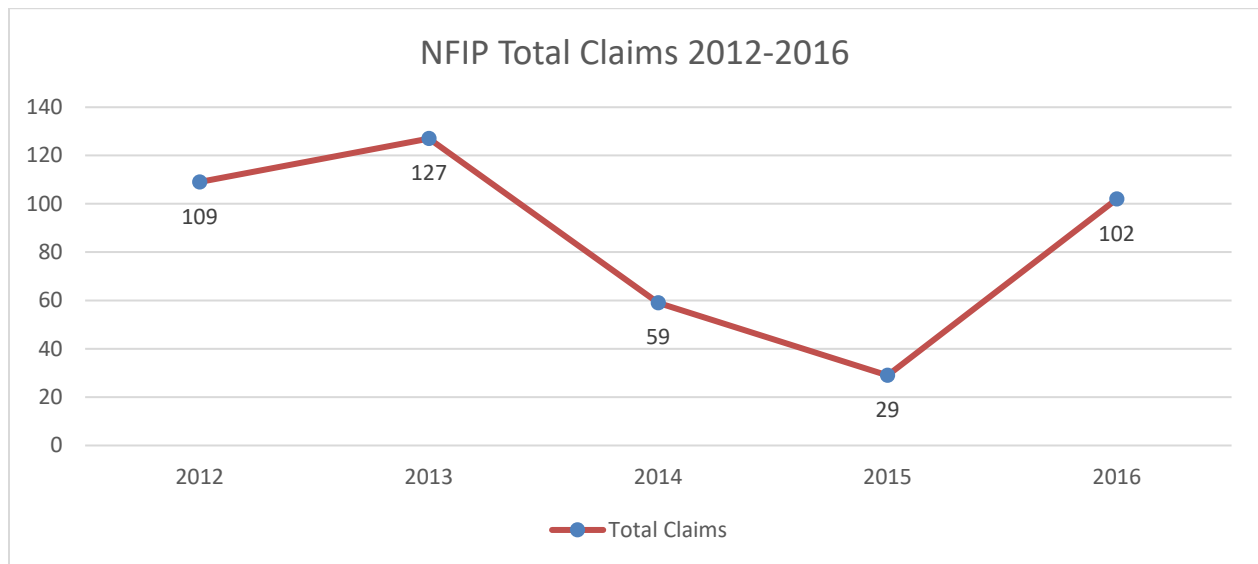
Flood-risk maps for Brown County were reviewed by residents and local officials, and then approved by the Brown County Board of Directors in 2009. The maps are the result of five years of work by the Federal Emergency Management Agency and Wisconsin Department of Natural Resources, which were directed by the U.S. Department of Homeland Security to modernize flood-risk maps into a countywide format. The updated maps from 2009 were used as a tool to prepare this hazards mitigation plan. The maps reflect the best information available in identifying high-risk areas within each community. Any changes to the floodplain maps during the review process will impact critical facilities and flood-risk assessment for future development in the county. Map revisions will be noted and incorporated during the updating of this hazards mitigation plan.

A majority of the county's floodplains can be found along the southern rim on the bay of Green Bay of Lake Michigan (densely developed areas of the county) and along the East River and other smaller tributaries in the Village of Bellevue and the Town of Ledgeview where development is occurring at a fast pace. The 2009 FEMA maps have not seemed to have had any effect on the pace of development in areas designated as floodplains over the last 10 years. Given these trends/observations, it is estimated that there will still be significant growth in and adjacent to flood-prone areas. The improved value of structures located in designated floodplains was over \$2.3 billion in 2019. With continued residential, commercial, and industrial development occurring in Brown County, there is potential for an increase in the value of existing buildings within these areas due to redevelopment efforts.

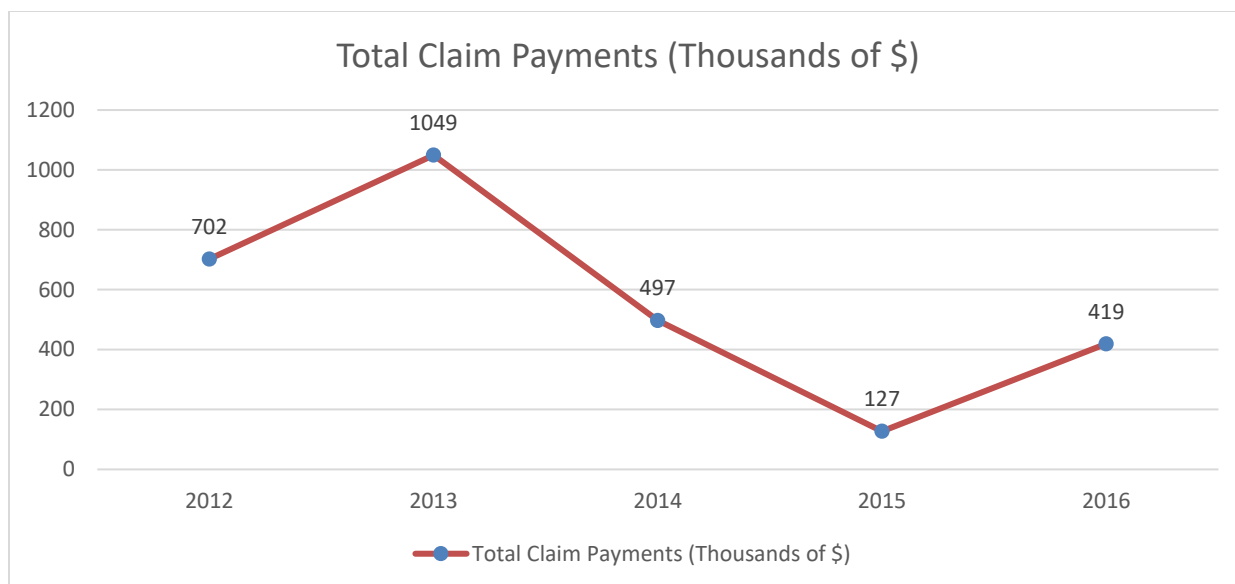
⁹ Brown County Population: <http://worldpopulationreview.com/us-counties/wi/>

¹⁰ Brown County Comprehensive Plan Update 2020

A review of FEMA NFIP claim data revealed that the state of Wisconsin had an average of 85 claims on an annual basis from 2012-2016. During this same time period the number of policies and the total claim payments typically declined with the exception of 2013 where both saw growth¹¹.



¹¹ FEMA.gov – Policy and Claim Statistics for Flood Insurance



Repetitive Loss Properties

Repetitive loss properties are those that have sustained flood damage on two or more separate occasions over a ten-year period and the cost of repairs from the flood damage meets or exceeds 25 percent of the market value of the property before the damage occurred.

Brown County has 12 repetitive loss properties which vary in use from residential to commercial. Due to privacy concerns the data has been generalized by community in the following table and the property locations were used to derive values from the Brown County Treasurer office.

Community	# of Properties	Total Improved Value*	Total Value*
V of Ashwaubenon	1	138,500	195,300
C of Green Bay	7	497,700	645,000
V of Howard	2	173,000	218,500
V of Suamico	1	92,100	128,700
T of Holland	1	141,400	180,900

*Values based on 2020 tax information – Brown County Treasurer's Office.

Relationships to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Fire. Fire can occur due to compromised infrastructure such as electrical and natural gas systems. In addition, fire trucks are unable to pump water if floodwaters are deep enough to reach the tailpipe of the truck.

Hazardous Materials. Hazardous material releases can occur due to improper storage of materials in floodplains.

Infectious Disease. Infectious disease outbreaks are possible during prolonged flood events in areas sensitive to disease vectors.

Wastewater Treatment Plant Failure. Wastewater treatment plant failure can occur if facilities are not adequately protected from flooding, excessive clearwater inflow and infiltration into the system, or protection is weakened.

Transportation Disruption. Disruptions of transportation routes via roads, bridges, railroads, and water can be disrupted due to inundation and/or substantial flow velocities.

Power Outages. Power outages can occur if portions of the electrical grid are damaged by floodwaters.

Plans and Programs

Emergency Operations Plan. The *Brown County Emergency Operations Plan* outlines procedures for the County in response to a variety of hazards. During a flood event the Emergency Management Director works with local officials to ensure public health and safety and maintain transportation routes.

National Flood Insurance Program (NFIP). In 1968, Congress created the National Flood Insurance Program in response to the rising costs of taxpayer funded disaster relief. The Federal Emergency Management Agency (FEMA), Mitigation Division manages the NFIP, and oversees the floodplain management components of the program, with state coordination through the Wisconsin DNR.

National Weather Service. The National Weather Service in Green Bay provides weather, hydrologic, and climate forecasts and warnings for northeastern Wisconsin.

Sewer Service Area Review. Development in floodplains, wetlands, and other environmentally sensitive areas has been limited through such mechanisms as the sewer service extension review process.

Floodplain Ordinance. Brown County regulates development within the floodplain through its Floodplain Ordinance. The Floodplain Ordinance, which is Chapter 23 of the Brown County Code of Ordinances, can be found in Appendix E. This ordinance can be a useful tool in keeping inappropriate development out of many flood hazard zones in the planning area. Floodplain overlay zoning ordinances (where they exist in local jurisdictions within the planning area) can also help to deter development in flood hazard zones.

Provisions of Plans and Policies that Regulate Development

Various local comprehensive plans produced for local communities in Brown County have addressed regulation of development in floodplains, watersheds, and natural resource areas in various ways. Most of these plans addressed this in their goals, objectives, and policies in the natural resources chapter (or equivalent) in the plan; and through the general plan design chapter of the plan.

Brown County addresses regulation of development in floodplains, watersheds, and natural resource areas in the 2004 Brown County Comprehensive Plan. The following is a list of communities in Brown County with a comprehensive plan and the year of plan adoption:

Town of Eaton	2012	Village of Allouez	2015
Town of Glenmore	2016	Village of Ashwaubenon	2016
Town of Green Bay	2019	Village of Bellevue	2012
Town of Holland	2019	Village of Hobart	2006
Town of Humboldt	2006	Village of Howard	2012
Town of Lawrence	2016	Village of Suamico	2016
Town of Ledgeview	2015	Village of Pulaski	2017
Town of Morrison	2016	Village of Denmark	2020
Town of New Denmark	2020	Village of Wrightstown	2016
Town of Pittsfield	2019	City of De Pere	2010
Town of Scott	2006	City of Green Bay	2002
Town of Wrightstown	2018		

The Brown County Planning Commission (BCPC) has tools to limit development within the FEMA flood hazard zones in the planning area. BCPC develops sewer service area plans for Brown County Sewer Service Area and takes into account preservation of natural features and minimization of future development in flood hazard areas near bodies of water. BCPC reviews proposals for development in Brown County for consistency with the sewer service area plan.

Gaps and Deficiencies

As detailed above, some structures that are susceptible to repetitive loss remain in the floodplain placing the structures at high risk of total loss. Filling within the floodplain for land reclamation is also an issue that continues to be of concern. As state and federal funds become available, Brown County should work with local municipalities to purchase floodplain structures and advocate for limiting or banning the filling of floodplain areas.

Tornadoes/High Winds

A tornado is characterized by a rapidly rotating column of air spawned by a cumulonimbus cloud. When a tornado forms and drops to the ground, it can create significant damage and loss of life. A tornado is a relatively short-lived storm and is nearly always visible as a funnel, although its lower end does not always necessarily touch the ground. Wind speeds vary greatly in tornados and are hard to measure. However, more sophisticated measuring tools are being developed and climatologists and meteorologists know that wind speeds within a tornado can be between 40 and 300 plus miles per hour.

A tornado path averages about five miles and will typically last about 10 minutes in length. The width of a tornado can vary greatly from about 300 feet all the way up to a mile or more in width¹². Some thunderstorm complexes can have formed groups of two or more funnels traveling together. On average, tornadoes move between 25 and 45 miles per hour, but speeds over land of up to 70 miles per hour have been recorded.



Figure 3 Source: American Museum of Natural History

Table 3.4 shows the Enhanced Fujita Scale, which has been recognized as the acceptable tornado magnitude measurement rating. In 2007 the Fujita scale was updated to the Enhanced F Scale (EF Scale) for operational use in the United States¹³. The EF Scale accounts for different degrees of damage that occur with different types of structures, as well as damage to things other than structures. The scale was revised to reflect better examinations of tornado damage surveys to align wind speeds more closely with associated storm damage.

The destructive power of a tornado results primarily from high wind velocities and sudden changes in pressure. Since tornadoes are generally associated with severe storm systems, they are usually accompanied by other “hazardous” conditions including; hail, torrential rain, and intense lightning. Depending on their intensity, tornadoes can uproot trees, down power lines and destroy buildings. Flying debris can cause serious injury and death. Tornado damage is categorized by determining damage to structures and other features such as described in the following figure.



Figure 4 Source: National Weather Service - Tuscaloosa-Birmingham Tornado

¹² <https://www.encyclopedia.com/earth-and-environment/atmosphere-and-weather/weather-and-climate-terms-and-concepts/tornado>

¹³ <http://www.spc.noaa.gov/fag/tornado/f-scale.html>



F0 Light: Chimneys are damaged, tree branches are broken, shallow-rooted trees are toppled.



F1 Moderate: Roof surfaces are peeled off, windows are broken, some tree trunks are snapped, unanchored mobile homes are overturned, attached garages may be destroyed.



F2 Considerable: Roof structures are damaged, mobile homes are destroyed, debris becomes airborne (**missiles** are generated), large trees are snapped or uprooted.



F3 Severe: Roofs and some walls are torn from structures, some small buildings are destroyed, non-reinforced masonry buildings are destroyed, most trees in forest are uprooted.



F4 Devastating: Well-constructed houses are destroyed, some structures are lifted from foundations and blown some distance, cars are blown some distance, large debris becomes airborne.

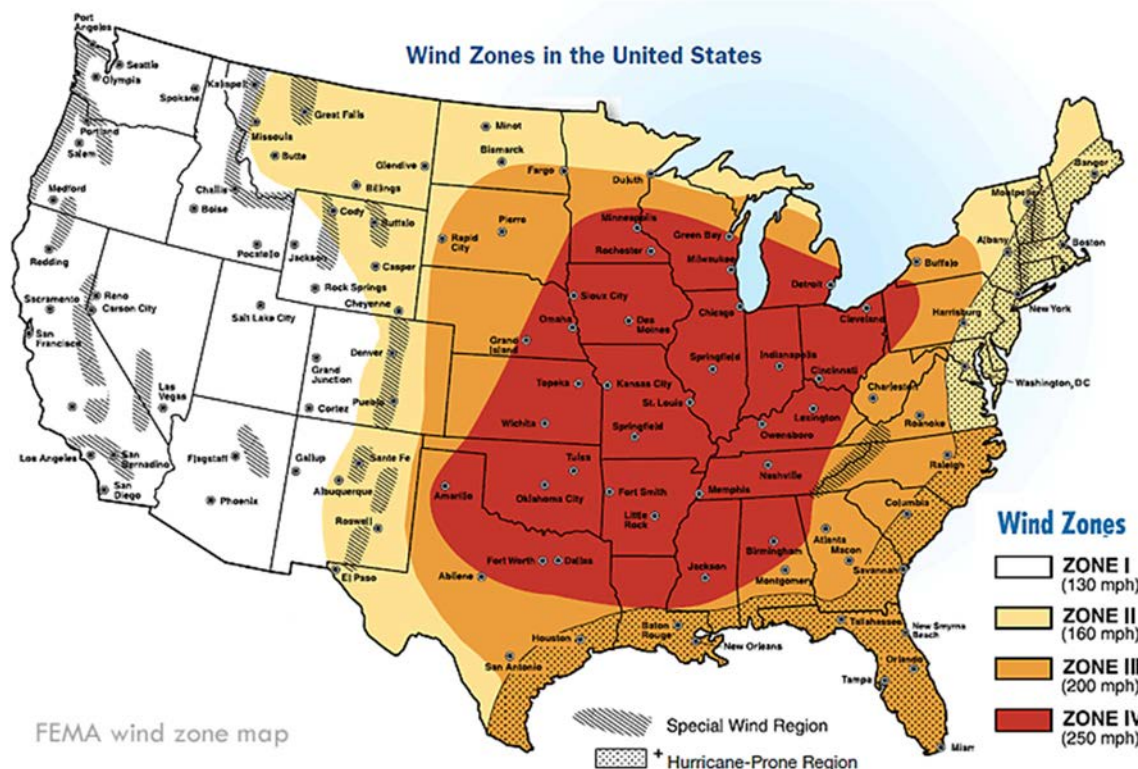


F5 Incredible: Strong frame houses are lifted from foundations, reinforced concrete structures are damaged, automobile-sized missiles become airborne, trees are completely debarked.

F0, F1, AND F2 IMAGES COURTESY OF ANDREW DEVANAS, FLORIDA DIVISION OF EMERGENCY MANAGEMENT
F3, F4, AND F5 IMAGES COURTESY OF NOAA, NATIONAL SEVERE STORMS LABORATORY (NSSL)

Figure 5 Source: FEMA, Understanding the Hazards

Based on 50 plus years of tornado history and more than 100 years of hurricane history, the United States has been divided into four zones that geographically reflect the number and strength of extreme windstorms. FEMA Wind Zone IV, which includes most of the southern two-thirds of Wisconsin, has experienced the most and the strongest tornado activity that has affected the entire U.S., with wind speeds of up to 250 miles per hour being recorded at some point. This zone includes the entirety of Brown County.



Wisconsin lies along the northern edge of the nation's maximum frequency belt for tornadoes (commonly known as "tornado alley"), which extends northeastward from Oklahoma into Iowa and then across to Michigan and Ohio. Generally, the southern and western portions of Wisconsin have a higher frequency of tornadoes; however, every county in Wisconsin is susceptible to tornado damage. Tornadoes have occurred in Wisconsin in every month except February.

Wisconsin's tornado season runs from the beginning of April through September. The most severe tornadoes statewide typically occur during the months of April, May and June. Many tornadoes strike in late afternoon or early evening. However, tornadoes have occurred during other times of the day. Personal property damage, deaths and injuries have and will continue to occur due to tornado events in Wisconsin.

History

According to National Weather Service, a department of NOAA, Brown County has experienced 28 tornadoes since data was kept in 1950. The following map is a state wide count of Tornado activity in the state of Wisconsin since 1844 through 2014.

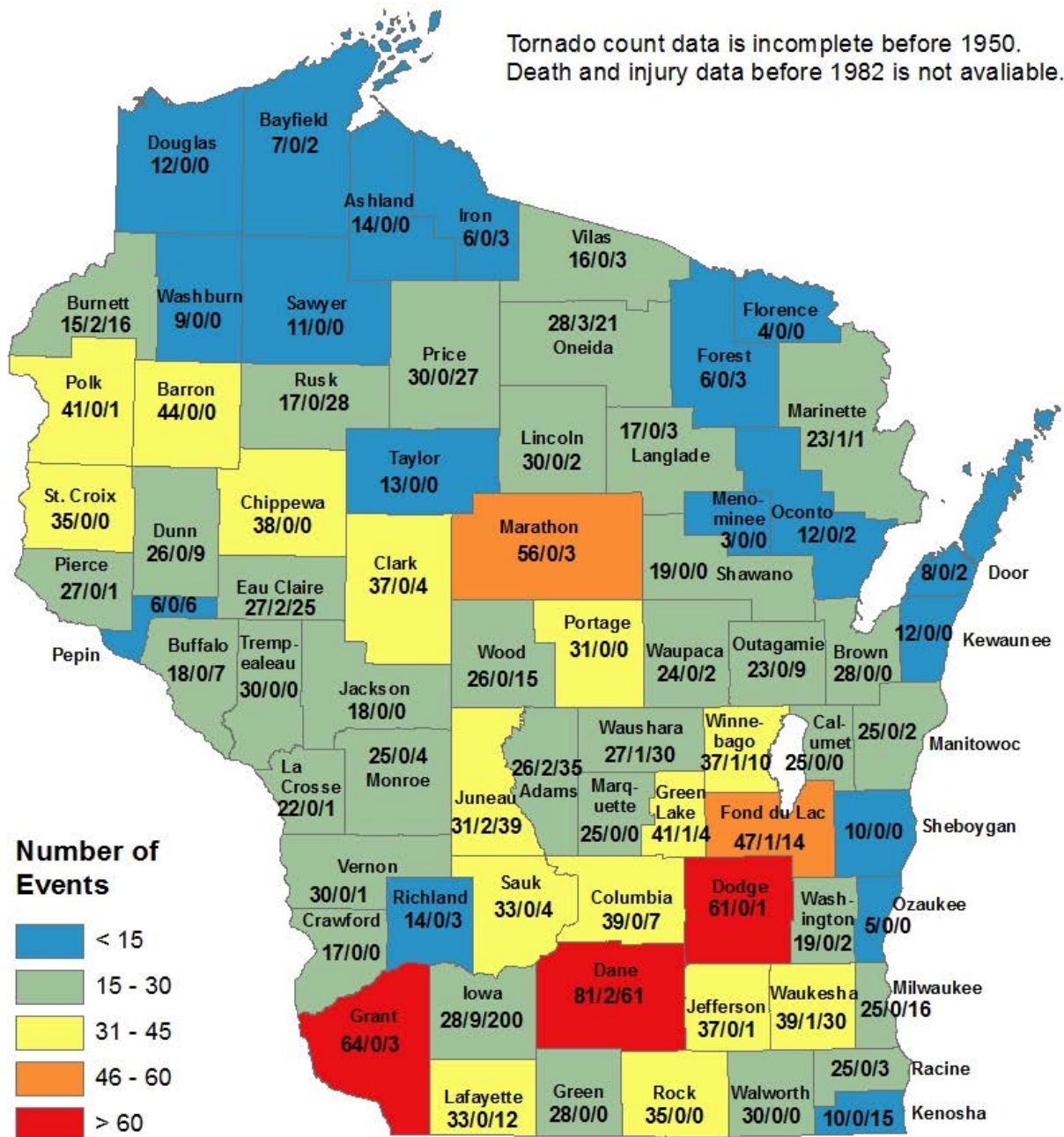


Wisconsin Tornado Events 1844 - 2014

Events / # Deaths / # Injuries



Tornado count data is incomplete before 1950.
Death and injury data before 1982 is not available.



Tornadoes 1990-Present

May 16, 1992

The F1 tornado was 1 mile long and 100 yards wide and caused 250,000 dollars in property damage.

June 17, 1992

The F0 tornado was 23 yards wide.

June 23, 2004

The F0 tornado was 10 yards wide and occurred in Green Bay.

August 18, 2005

The F1 tornado was 1 mile long and 100 yards wide and caused 10,000 dollars in property damage in Wrightstown.

September 13, 2005

The F0 tornado was 2 miles long and 50 yards wide and caused 5,000 dollars in property damage in De Pere.

August 20, 2010

The EF1 tornado touched down 2 miles southeast of Greenleaf, where several trees were snapped and uprooted. The tornado then destroyed a relatively new barn. Pieces of the barn were strewn over 100 yards from the site. About 50 to 100 yards on either side of the damaged barn small outbuildings and trees were untouched. The tornado, estimated to be approximately 75 feet wide, continued east-northeast to another farm and heavily damaged another building. Large parts of the metal roof were thrown over 200 yards. Numerous trees along the path were snapped or uprooted. Estimated maximum winds were 90 mph.

The tornado was on the ground for 1.28 miles before dissipating just north of the Holland State Wildlife Area.

April 10, 2011

A brief tornado touched down about a mile and a half south of Greenleaf. The tornado damaged the tops of two silos then ripped the roof off a barn. Average path width was 75 yards.

August 6, 2013

The EF0 tornado that developed 2.7 miles east-northeast of Mackville in Outagamie County at 12:40 am CDT moved into Brown County, entering near Highway 41, 1.8 miles northwest of Wrightstown. The tornado first hit the Apple Creek Campground, snapping 50 trees and knocking over two camping trailers. As the tornado moved across the southern part of the county, at least 70 homes sustained at least minor damage, many from fallen trees. A large, free-standing garage was heavily damaged when the tornadic winds blew in two garage doors, causing the roof to be ripped off. The tornado proceeded on to Manitowoc County. Average path width of the tornado in Brown County was 175 yards and the tornado was on the ground for 15.22 miles.

August 6, 2013

This tornado is associated with the above tornado, however, the storm, at one point, produced winds that caused enough damage that it was upgraded to an EF1. The tornado dissipated about 3 miles west of Morrison. The average path width of the tornado in Brown County was 125 yards and was on the ground for 7.84 miles.

August 6, 2013

The EF1 tornado that touched down in Outagamie County, 3.5 miles east of Greenville, briefly moved across far southwest Brown County near Holland. A few trees were knocked over by the tornado in Brown County. The average path width was 150 yards and was on the ground for 1.48 miles before moving into Calumet County.

August 6, 2013

A EF1 tornado formed in eastern Brown County and moved east-southeast into Kewaunee County. A couple dozen trees were damaged and uprooted before it moved into Kewaunee County. Average path width in Brown County was 75 yards and the tornado was on the ground for 5.53 miles.

June 15, 2015

A weak, brief tornado produced very minor (EF0) damage near Glenmore, about eight miles southeast of Green Bay. A swing set was toppled, and a small metal shed was pushed 20 feet. The tornado was approximately 25 yards wide and was on the ground for 0.35 miles.

June 14, 2017

A weak tornado caused minor tree damage. Average path width in Brown County was 50 yards and the tornado was on the ground for 1.21 miles.

Storm Events Source: NOAA Storm Events Database – Tornadoes

Funnel Clouds and Waterspouts 1990-Present

July 5, 1994

A funnel cloud was reported in Denmark at 3:40pm on July 5, 1994.

July 29, 1996

Numerous cold-air funnels were observed around Green Bay, especially southeast of the city. A couple of the funnel clouds could be seen from the Green Bay National Weather Service office.

August 31, 1996

Weak thunderstorms developing along a lake breeze boundary spawned several funnel clouds in the Bellevue and Langes Corners areas. The funnel clouds prompted approximately 150 calls to the Brown County sheriff department.

July 7, 2010

A funnel cloud was spotted near Interstate 43 just north of Denmark.

April 10, 2011

A funnel cloud was spotted at Cooperstown Road near Denmark.

June 15, 2015

A funnel cloud was observed near Shirley, Town of Glenmore, as it moved southeast.

June 17, 2017

A narrow funnel cloud formed north of Denmark in eastern Brown County. The funnel was visible from other nearby counties.

Storm Events Source: NOAA Storm Events Database – Funnel Clouds & Waterspouts

High Winds/Strong Winds 1990-Present

April 6, 1997

A strong cold front ushered in wind gusts over 50 mph across much of northeast Wisconsin. Winds were measured as high as 54 mph in Green Bay. Many trees were reported down, signs were blown over and power was lost in several locations across northeast Wisconsin. A few houses sustained damage from fallen trees. The high wind event caused 149,000 dollars over property damage over a 22-county area.

March 9, 1998

Strong winds developed as a winter storm, which brought snow to northeast and central Wisconsin, moved away from the state. Official wind gusts reached 45 mph in Green Bay. The strong winds knocked some power poles down and blew tree limbs onto power lines, causing power outages. The wind also whipped the new snow around, producing low visibilities. The high wind event caused 15,000 dollars in property damage over a 9-county area.

July 28, 1998

Strong winds, which developed from a strong pressure difference in the wake of a departing thunderstorm complex, produced damage across parts of central and east central Wisconsin. Trees and power lines were knocked down in many locations. Significant wind damage to structures appeared to be limited to Outagamie and Brown counties. In West De Pere, a storage building collapsed and the roof was taken off about half of another storage building. A tree fell onto a house in De Pere, crashing through a bedroom window. Other measured wind gusts included 55 mph in Green Bay. The high wind event caused 30,000 dollars in property damage across a 13-county area.

November 10, 1998

An intense area of low pressure moved across the Midwest on November 10, 1998, producing very high winds, rain, and snow across the region. The low, which tracked from central Iowa to western Lake Superior, resulted in record minimum pressures in Iowa and Minnesota and an unusually widespread high wind event across Wisconsin. The strong winds lasted for much of the day. Trees, street signs and power poles were damaged or destroyed by the strong winds across northeast, central and north central Wisconsin. Numerous semi-trailers were blown over on area highways, necessitating the closure of the Tower Bridge (Interstate 43) in Green Bay. Trees and power poles were blown down in many locations across the region. The wind was also responsible for numerous power outages across the region. Some areas were without power for nearly 3 days. A strong gust of 65 mph was recorded in Suamico, and one of 63 mph was recorded in Green Bay. The high wind event caused 1,000,000 dollars in property damage across a 22-county area.

March 17, 1999

Strong west to northwest winds developed across much of Wisconsin as an intense area of low pressure moved from southern Lake Superior to near Lake Huron. The strong winds began in the early afternoon of the March 17, 1999 and continued until very early on the 18th. Numerous gusts near 50 mph were recorded across central and east central Wisconsin including 48 mph in Green Bay. Strong winds in Green Bay knocked out electricity to 3,200 homes and downed a large tree limb along a busy street.

December 26, 1999

Strong winds developed behind a cold front as the front moved through Wisconsin. Numerous gusts in the 40 to 50 mph range were recorded across north central, northeast, central, and east central Wisconsin.

March 25, 2000

Strong winds blew as sinking air behind a cold front brought stronger winds from higher levels of the atmosphere down to the surface. Sustained winds were mainly 30 to 40 mph with gusts in the 40 to 50 mph range.

April 5, 2000

Strong winds blew across central and east central Wisconsin behind a strong cold front. Sustained winds were mainly in the 25 to 35 mph range.

April 20, 2000

A tight surface pressure gradient caused strong winds to blow across northeast and east central Wisconsin. Sustained winds were mainly in the 25 to 35 mph range with some gusts over 45 mph.

June 21, 2000

Strong winds behind a cold front caused broken tree limbs and branches to fall onto power lines. Between 2,000 and 3,000 customers lost electrical power in parts of central and east central Wisconsin. Strong winds downed five small trees at the Green Bay Botanical Garden. Peak gusts were in the 35 mph to 45 mph range across the 15-county area.

February 25, 2001

Strong winds developed across central and east central Wisconsin on the backside of an intense winter storm system that was moving away from the state. A 44 mph wind gust was recorded in Green Bay.

April 7, 2001

A strong low-pressure system dragged an occluded front through Wisconsin as the low moved northeast across Minnesota. High winds behind the front downed numerous trees, tree limbs and power poles across central, east central, and northeast Wisconsin.

October 25, 2001

An area of low pressure intensified as it moved toward the upper Great Lakes, producing strong winds across northeast. The strong winds began in northeast Wisconsin on the morning of October 25, 2001 and continued throughout most of the morning of the 26th. Several tractor-trailers were overturned in the Fox River Valley as the strong winds blew. A 45 mph wind gust was recorded in Green Bay. Heavy, wet snow caused tree branches to break across north central Wisconsin.

December 5, 2001

A powerful cold front moved through central and eastern Wisconsin during the late afternoon and evening. Gusty winds accompanied showers and thunderstorms ahead of the front and continued as cold air moved into the region after the frontal passage. The strong winds behind the front downed trees and power lines across northeast and north central Wisconsin, knocking out power to about 4,000 customers.

February 11, 2002

An intense low-pressure system moved across southern Canada bringing colder air into Wisconsin. Gusts of 40 mph or higher were reported at several locations from the evening of the February 11, 2002 into the morning hours of the 12th. Strong winds blew a light pole onto power lines in Green Bay, causing 2,600 customers to lose electrical service.

March 9, 2002

Strong winds developed across northeast Wisconsin in the wake of a departing low-pressure system. Wind gusts over 40 mph were common during the afternoon and evening of the March 9, 2002 into the early morning hours of the 10th. High winds knocked down tree limbs and power poles causing numerous power outages. Gusts to 54 mph were recorded in Green Bay.

May 9, 2002

A cold front passed through Wisconsin as low pressure over the northern part of the state strengthened and moved toward southern Ontario. Strong west winds developed as the low intensified. Gusts of 45 mph or higher were reported at several locations. A 46 mph wind gust was recorded in Green Bay. The strong winds downed trees that blocked roads and knocked down utility lines.

November 30, 2002

Very cold air, behind a strong cold front, traveling over the warmer waters of Lake Superior caused heavy lake effect snow showers. Winds behind the front were strong during the morning and early afternoon hours. A 44 mph wind gust was recorded in Green Bay.

October 11, 2003

Strong winds that accompanied a cold front downed a few trees and some power lines in parts of central and east central Wisconsin. The high wind event caused 9,000 dollars in property damage over a 3-county area.

November 13, 2005

Strong south to southwest winds developed as a deep low-pressure system moved across northwest Wisconsin and Lake Superior. The winds caused scattered power outages, broke tree branches and tore shingles from roofs. Wind speeds of 64 mph were recorded in Bellevue. The high wind event caused 2,500 dollars in property damage over a 3-county area.

May 11, 2006

An unusually strong low-pressure system for the month of May moved north across Michigan and produced heavy rain and high winds in northeast and north central Wisconsin. The high winds downed power lines, and knocked down and uprooted trees. In Brown County around 800 customers lost power and one house was damaged when a tree fell on it. The heavy rainfall that accompanied the high winds resulted in some lowland flooding in the town of Ledgeview. The high wind event caused 39,000 dollars in property damage over a 4-county area.

May 17, 2008

Strong winds caused rafters to collapse at a construction site in Green Bay. A worker, who was setting the rafters at a Habitat for Humanity home, was injured around 1140 AM CST. The ASOS at Austin Straubel International Airport recorded

February 10, 2009

As an occluded front passed through Wisconsin, winds as high as 55 mph occurred at isolated locations in the east-central part of the state. The strong winds tore shingles from a house and a church in Brown County.

October 26, 2010

A number of trees were knocked down throughout the county, some falling on homes and cars. One tree fell through a home and severely damaged the building.

October 14, 2014

Strong winds blew across east central Wisconsin, producing several measured gusts around 50 mph, as low pressure passed east of the state. The winds associated with the low may have been enhanced by a gravity wave. The strong winds downed numerous trees, branches, and power lines. More than 14,000 customers were without power at the height of the event.

December 23, 2015

Widespread winds of 35 to 45 mph affected central, north central, and east central Wisconsin. The strong winds blew down some trees, numerous tree branches were knocked down and thousands lost power. Some of the strongest wind gusts included: 59 mph near Whitefish Dunes State Park (Door Co.), 52 mph at Algoma (Kewaunee Co.), 51 mph in Green Bay (Brown Co.), and 46 mph near Appleton (Outagamie Co.).

February 24, 2019

A fierce, late-winter storm produced heavy snow, freezing rain, and high winds across much of central and northern Wisconsin on February 23-24 as an area of low pressure rapidly deepened across the Great Lakes. The combination of ice, snow, and strong winds caused power outages and tree damage in many locations. Measured wind gusts in the 50 mph to 60 mph range were recorded at many locations, including: 60 mph in Green Bay (Brown Co.); 58 mph in Wausau (Marathon Co.); 57 mph in Kewaunee (Kewaunee Co.); 56 mph in Omro (Winnebago Co.); 53 mph near Zittau (Winnebago Co.), near Monico (Oneida Co.), in Marshfield (Wood Co.), and in Rhinelander (Oneida Co.); 52 mph in Wisconsin Rapids (Wood Co.) and in Manitowoc (Manitowoc Co.); and 51 mph in Appleton (Outagamie Co.) and in Wautoma (Waushara Co.).

Storm Events Source: NOAA Storm Events Database – Strong Winds & High Winds

Vulnerability

Wisconsin lies along the northern edge of the nation's maximum frequency belt for tornadoes, an area better known as "tornado alley." According to NOAA's National Climatic Data Center, this area extends northeastward from Oklahoma into Iowa and then across to Michigan and Ohio. Generally, the southern and western portions of the state have been subject to a higher frequency of tornadoes; however, every county is susceptible to a tornado related disaster.

In considering other tornado-like occurrences, which includes waterspouts, funnel clouds, and high winds, on average. Brown County has had 28 verified tornadoes over the 69-year period from 1950 through 2019, or an average of about one tornado every two and a half years.

Tornadoes have no defined hazard area within Brown County and events do not follow or have a specific area of increased frequency.

Impacts

The following describes the various impacts that tornadoes have on the county.

Critical Facilities

Hospitals can see increases in patient load following tornadoes. Schools can sustain damage, and if they do not sustain damage, they often function as temporary shelters in the aftermath of tornadoes. Police and fire departments often see an increased workload during and after tornadoes.

Any critical facility in the county is capable of being hit. However, schools are a main concern for two reasons: (1) they have large numbers of people present, either during school or as a storm shelter; and (2) they have large span areas, such as gyms and theaters.

Public Health

The major health hazard from tornadoes involves physical injury from flying debris or being in a collapsed building or mobile home. Based on national statistics approximately 1000 tornadoes occur in the United States every year¹⁴. The 1000 tornadoes cause an average of 1,500 injuries and 80 deaths¹⁵.

Flying debris is most typically the main culprit of both injuries and deaths associated with tornadoes while people becoming airborne due to the wind is also a factor. Following a tornado, damaged buildings are a potential health hazard due to instability, electrical system damage, gas leaks, and hazardous materials. Sewage and water lines may also be damaged from tornadoes.

Safety

Although tornadoes in the county have not been the cause of any deaths, as mentioned above, tornadoes can and do kill about 80 people a year within the US. There were approximately 24,478 tornadoes¹⁶ causing thousands of fatalities in the United States from 2000 to 2018. Of the 24,478 tornadoes, 382 were considered killer tornadoes¹⁷ of which five were in the State of Wisconsin with none of the five occurring in Brown County. The number of people who live in mobile homes is far smaller than the number of people who live in permanent homes. However, mobile home deaths represent over 38 percent of the totals deaths sustained from tornado events. Due to their vulnerability, this plan has

RV Parks and Campgrounds

Brown County is home to four facilities open to RVs and/or campers; Apple Creek Campground, Bay Shore Park, Brown County Fairgrounds, and Shady Acres Campsites. Apple Creek Campground has 152 sites, Bay Shore Park has 88 sites, the Brown County Fairgrounds can accommodate 50 RV sites, and Shady Acres Campsites can accommodate 25 big rig and tent sites.

Although RVers and campers are encouraged to own a NOAA weather radio, in the event of severe weather, the county parks department will notify patrons of the Brown County owned and operated sites of the situation.

Infrastructure

Similar to severe thunderstorms, street signs are frequently in disrepair after tornadoes, and debris often litter streets and highways following a tornado, requiring clean up. Downed trees and power lines caused by tornadoes can be problematic in terms of impacting infrastructure (transportation) as well as critical facilities.

¹⁴ Annual Disaster/Death Statistics for US Storms - <https://www.depts.ttu.edu/nwi/research/DebrisImpact/Reports/DDS.pdf>

¹⁵ www.nssl.noaa.gov

¹⁶ NOAA Storm Prediction Center - <https://www.spc.noaa.gov/climo/online/monthly/newm.html#2000>

¹⁷ NOAA Storm Prediction Center - <https://www.spc.noaa.gov/climo/torn/fatalmap.php#viewDiv>

Buildings

Although tornadoes strike at random making all buildings vulnerable, there are three types of structures that are most likely to suffer damage. These structure types include mobile homes, homes constructed on crawlspaces (because they are more susceptible to lift), and buildings with large spans (such as airplane hangars, gymnasiums and factories).

Structures within the direct path of a tornado vortex are often reduced to rubble. However, structures adjacent to the path of the tornado are often severely damaged by high winds flowing into the tornado vortex (these winds are known as inflow winds). It is here, adjacent to the tornado's path, where the building type and construction techniques are critical to the structure's survival.

According to research conducted by FEMA following an unusually destructive tornado in May of 1999 in parts of Kansas and Oklahoma¹⁸, failure for many residential structures occurred where residential framing was attached to the foundation or when nails were the primary connectors between the roofing and the walls. The study also found that roof geometry plays a significant role in a building's performance. The research further indicated that the failure of garage doors, commercial overhead doors, residential entry doors, or large windows caused a significant number of catastrophic building failures. Finally, this research found that manufactured homes built upon permanent foundations performed better than those that were not on solid foundations.

Economic

The major impact of a tornado on the local economy is damage to businesses and infrastructure. A heavily damaged business, especially one that was barely making a profit, often times must close due to the loss.

Infrastructure damage is usually limited to above ground utilities, such as power lines. Damage to utility lines can usually be repaired or replaced relatively quickly. Damage to roads and railroads is usually localized; if these facilities cannot be repaired promptly, alternate transportation routes are usually available.

Public expenditures include police and fire department calls, search and rescue, shelters, and emergency protection measures. The largest public expenses are for repairs to public facilities and clean up and disposal of debris. Most public facilities are insured, so the economic impact on the local treasury is likely to be small. However, clean up and disposal can be a larger problem, especially if there is limited landfill capacity near the damage site.

The agricultural sector can also experience economic losses as winds in excess of 39 miles per hour can damage crops during the growing season.

¹⁸ Midwest Tornadoes of May 3, 1999 Observations, Recommendations, and Technical Guidance

Other

Clean up and disposal after a tornado can pose health and safety risks to emergency responders and recovery workers. During cleanup activities physical, chemical and biological hazards may be present. Challenges faced by emergency response and recovery workers include electrocution, falls, chemical hazards, fire, and physical hazards associated to injury from falling or flying debris, among others.¹⁹

Areas at Greatest Risk

Tornadoes have no defined hazard area within Brown County, however, mobile homes are at greatest risk during tornadoes and high winds. An F1 tornado might cause minor damage to a site-built house; but could do significant damage to a manufactured home, especially an older model or one that is not connected to anchors.

RV Parks, campgrounds, and marinas are also at significant risk from tornadoes and high winds.

Potential Losses

The “worst case scenario” when considering a tornado event in Brown County would be the loss of a life. Through detailed and accurate weather forecasting and better warning systems, the likelihood of there being any loss of life from a tornado has decreased, however, it is still possible that people could die. Other scenarios that would cause extreme or worst case scenarios include a direct hit on the Brown County Emergency Management Center. If there were damage or disruption to the emergency management center communication equipment it would severely impair the response to a disaster.

Due to the vulnerability of manufactured homes, a direct hit at one of the mobile home communities in the county would likely include a significant amount of damage and an increased chance for serious injuries and death. Mobile home parks are shown as land use code 180 on Brown County’s land use inventory completed in 2019.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Flooding. Heavy rain and thunderstorms can cause flooding that can disrupt emergency response, transportation, and communication before, during, or after a tornado. Flooding can further exacerbate the aftereffects of a tornado that has caused property damage, loss of life, and personal injury. Flooding can further disrupt transportation, communication, and emergency services, and threaten public health and safety. Essential public infrastructure and services such as power, water supply systems and sanitary systems can be compromised as well.

¹⁹ Centers for Disease Control and Prevention: Emergency Response Resources:
<https://www.cdc.gov/niosh/topics/emres/tornado.html>

Plans and Programs

Emergency Operations Plan. The *Brown County Emergency Operations Plan* outlines procedures for the County in response to a variety of hazards. During the course of a flood event in Brown County, the Emergency Management Director works with local officials to ensure public health and safety and maintain transportation routes.

Severe Storm Spotters Network. This program, sponsored by the National Weather Service (NWS), enlists the help of trained volunteers to identify, evaluate, and report severe weather events to the NWS. No tornado warning is given unless the storm has been spotted by someone or is confirmed by NWS radar reports. Brown County has several trained severe weather spotters, many of whom report directly to their respective public safety offices when severe weather is observed.

Tornado Warning System. Most of the cities and villages in Brown County have emergency sirens to warn residents in the event of a tornado. There are a total of 60 (as of November 2019) tornado sirens in the county. The Brown County Public Safety Communications center is responsible for testing and activating the systems. A map of the siren locations and their associated sound shed can be seen on the following page.

Shelter Opening Plan. Emergency Support Function (ESF) 8 addresses the procedures for opening shelters.

Gaps and Deficiencies

A significant number of homes in the county lack basements that would provide shelter in the event of a tornado or damaging winds from a severe thunderstorm. If there is a residential, commercial, or industrial facility that does not have a basement they should develop an action plan that include directions for individuals to take shelter.

Local radio and television stations do provide warnings but are effective only if tuned to one of the local stations.

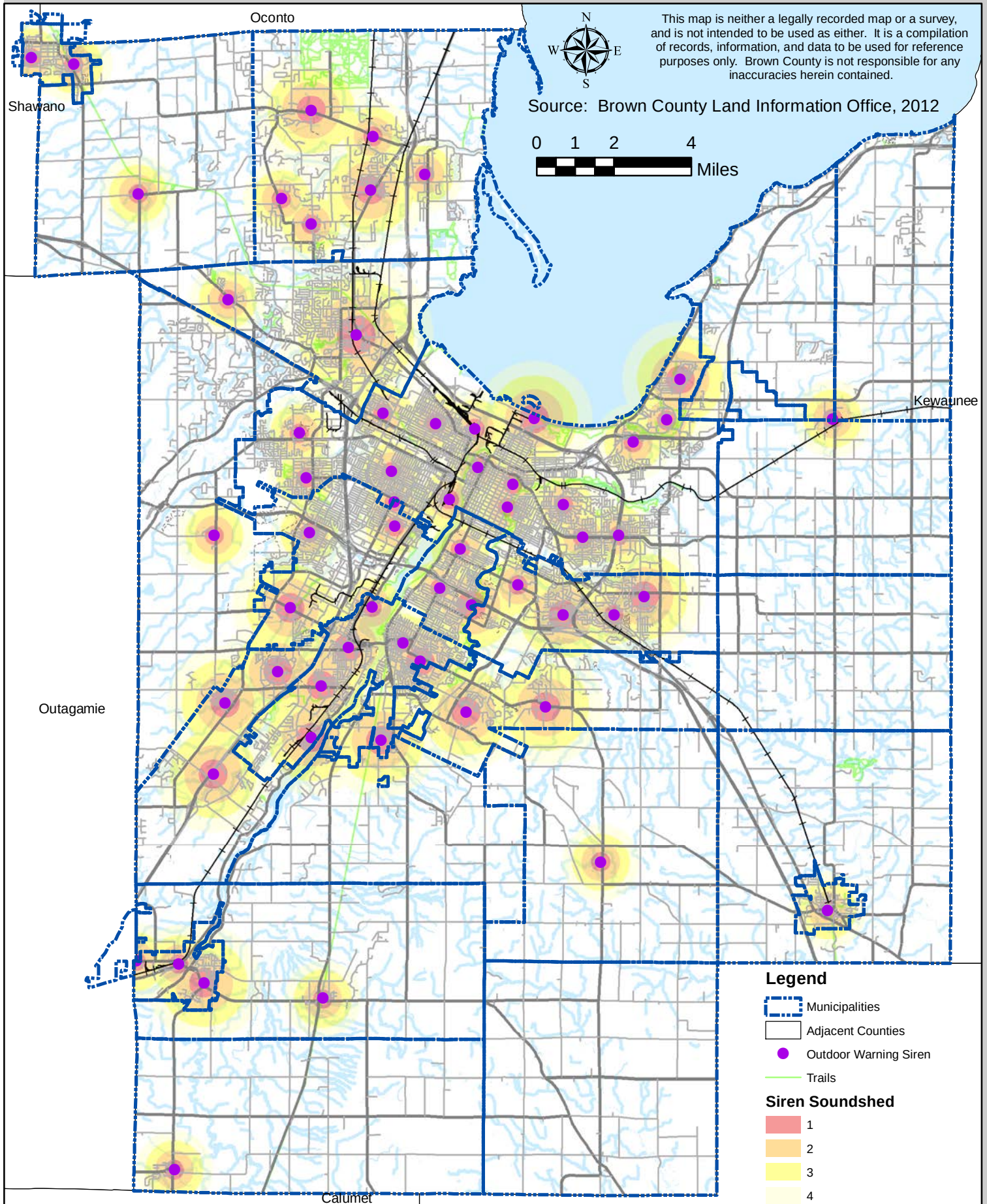
A majority of the power lines in the county are above ground and subject to damage from wind and falling tree limbs. There are community requirements to manage trees near power lines and the larger lines typically have large easements that keep trees far enough away to reduce the chance of damage during tornados and high wind events.

Not all of the county's 60 tornado siren systems have a generator that will enable them to work during a power failure.

Outdoor Warning Sirens

Brown County All Hazard Mitigation Plan

Brown County, WI



Lightning and Thunderstorms

Lightning, which occurs during all thunderstorms, can strike anywhere. Generated by the buildup of charged ions in a thundercloud, the discharge of a lightning bolt interacts with the best conducting object or surface on the ground. The air in the channel of a lightning strike reaches temperatures higher than 50,000 degrees Fahrenheit. The rapid heating and cooling of the air near the channel causes a shock wave that produces thunder. The death toll from lightning strikes is relatively low; however, a sizeable percentage of fires are the result of a lightning striking structures, woodlands, grassy areas, or even industrial sites containing highly combustible substances.

Thunderstorms are most likely to happen in the spring and summer months and during the afternoon and evening hours but can occur throughout the year and at all hours. The biggest threats from thunderstorms are flash flooding and lightning. In most cases, flash flooding occurs in small drainage areas where water quickly accumulates before it drains to the floodplains. When taken together, these local drainage problems can be as great a problem as flooding in the mapped floodplains. Other threats from thunderstorms include downburst winds, high winds, hail, and tornadoes.



The National Severe Storms Laboratory identifies a thunderstorm as severe if any of the following conditions are met: wind gusts in excess of 57.5 miles per hour, hail one inch or greater, and or if it produces a tornado²⁰. Compared with other atmospheric hazards (such as tropical cyclones and winter low-pressure systems), individual thunderstorms affect relatively small geographic areas. The average thunderstorm system is approximately 15 miles in diameter, covers 75 square miles, and lasts less than 30 minutes at a single location. However, weather monitoring reports indicate that coherent thunderstorm systems can travel intact for distances in excess of 600 miles.

History

According to the National Climatic Data Center, Brown County has experienced 14 significant lightning events and 103 significant thunderstorm wind events since January 1, 1990.

²⁰ <https://www.denmarkw.nssl.noaa.gov/education/svrwx101/thunderstorms/>

Lightning

Table 3.6: Lightning Strike Events since January 1990, Brown County, WI					
Location	Date	Deaths	Injuries	Crop Damage	Property Damage
Green Bay	7/29/96	0	0	0	\$20,000
Green Bay	6/29/97	0	0	0	\$20,000
Green Bay	9/16/97	0	0	0	\$10,000
De Pere	6/25/98	0	0	0	-
Holland	6/25/98	0	0	0	-
Green Bay	6/6/99	0	0	0	\$100,000
Green Bay	7/31/99	0	0	0	\$40,000
Ashwaubenon	7/8/00	0	0	0	-
Green Bay	9/14/04	0	0	0	-
Denmark	5/30/06	0	0	0	-
Green Bay	4/6/10	0	0	0	\$500
Little Rapids	7/25/12	0	0	0	\$5,000
Allouez	9/4/14	0	0	0	\$15,000
Suamico	8/2/15	0	0	0	\$25,000
Total		0	0	0	\$280,500

Source: NOAA National Climatic Data Center; June, 2019.

Thunderstorm Wind

Table 3.7: Thunderstorm Wind Events, Brown County, WI						
Location	Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
BROWN COUNTY	9/9/1991	0	0	0	0	0
BROWN COUNTY	6/17/1992	0	0	0	0	0
GREEN BAY	4/24/1994	0	0	0	50000	0
GREEN BAY	4/24/1994	0	0	0	50000	0
ALLOUEZ	7/23/1994	0	0	0	5000	0
BELLEVUE	7/23/1994	52	0	0	500000	0
DENMARK	7/23/1994	0	0	0	5000	5000
NEW FRANKEN	7/31/1995	0	0	0	0	0
GREEN BAY	8/11/1995	52	0	0	0	0
GREEN BAY	8/11/1995	52	0	0	0	0
GREEN BAY	5/21/1996	51	0	0	0	0
GREEN BAY	8/7/1996		0	0	2000	0
PULASKI	8/25/1996		0	0	1000	0
SUAMICO	8/25/1996		0	1	10000	0
ANSTON	6/25/1998		0	0	3000	0
SUAMICO	6/25/1998		0	0	10000	0
HOWARD	6/25/1998		0	0	1000	0
SUAMICO	6/25/1998	61	0	0	0	0
SUAMICO	6/25/1998	50	0	0	1000	0
HOWARD	9/26/1998	50	0	0	0	0

ASHWAUBENON	6/6/1999	54	0	0	0	0
ASHWAUBENON	6/6/1999	50	0	0	0	0
GREEN BAY	6/6/1999	50	0	0	0	0
DE PERE	6/6/1999	50	0	0	0	0
CHAMPION	6/6/1999	50	0	0	0	0
GREEN BAY	7/30/1999	50	0	0	0	0
ASHWAUBENON	4/23/2001	50	0	0	0	0
CHAMPION	6/30/2001	50	0	0	0	0
DE PERE	9/7/2001	50	0	0	0	0
GREEN BAY	9/7/2001	50	0	0	0	0
COUNTYWIDE	7/30/2002	50	0	0	0	0
GREEN BAY	8/6/2003	50	0	0	0	0
GREEN BAY	8/21/2003	50	0	0	0	0
GREEN BAY	8/27/2004	52	0	0	0	0
GREEN BAY	10/23/2004	52	0	0	0	0
ALLOUEZ	6/7/2005	55	0	0	0	0
BELLEVUE	6/10/2005	57	0	0	0	0
ASHWAUBENON	6/11/2005	50	0	0	0	0
HOWARD	9/13/2005	55	0	0	0	0
WRIGHTSTOWN	9/13/2005	56	0	0	0	0
ASHWAUBENON	9/13/2005	70	0	0	50000	0
DE PERE	9/13/2005	65	0	0	30000	0
GREEN BAY	9/13/2005	59	0	0	50000	0
SUAMICO	5/28/2006	50	0	0	0	0
ASHWAUBENON	7/24/2006	50	0	0	0	0
GREEN BAY	7/30/2006	55	0	0	0	0
CHAMPION	7/30/2006	50	0	0	0	0
DE PERE	9/8/2006	52	0	0	0	0
ASHWAUBENON	7/5/2007	52	0	0	0	0
SUAMICO	7/18/2007	52	0	0	0	0
GREEN BAY	7/18/2007	70	0	0	237000	0
GREEN BAY	4/25/2008	52	0	0	0	0
DE PERE NICOLET ARPT	6/12/2008	56	0	0	0	0
DENMARK	6/12/2008	52	0	0	0	0
ASKEATON	7/12/2008	52	0	0	1000	0
(GRB)STRAUBEL FLD GR	7/29/2008	50	0	0	0	0
GREEN BAY	7/14/2010	52	0	0	0	0
BELLEVUE	8/20/2010	54	0	0	0	0
GREENLEAF	8/20/2010	74	0	0	0	0
ASKEATON	4/10/2011	61	0	0	0	0

GREEN BAY	5/22/2011	52	0	0	0	0
CORMIER	5/22/2011	52	0	0	0	0
GREEN BAY	7/18/2011	52	0	0	10000	0
WRIGHTSTOWN	9/2/2011	68	0	0	10000	0
CORMIER	9/2/2011	50	0	0	0	0
KUNESH	9/2/2011	50	0	0	0	0
FLINTVILLE	9/2/2011	50	0	0	0	0
KUNESH	7/9/2012	56	0	0	0	0
DENMARK	8/7/2013	51	0	0	0	0
CORMIER	8/21/2013	70	0	0	50000	0
ASHWAUBENON	8/21/2013	54	0	0	0	0
GREEN BAY	9/7/2013	52	0	0	0	0
BELLEVUE	9/7/2013	52	0	0	0	0
SUAMICO	7/13/2015	52	0	0	0	0
GREEN BAY	7/18/2015	52	0	0	0	0
DENMARK	7/18/2015	52	0	0	0	0
ASHWAUBENON	8/14/2015	56	0	0	6500	0
GREEN BAY	8/14/2015	56	0	0	6500	0
ASHWAUBENON	8/14/2015	54	0	0	0	0
DE PERE	8/14/2015	52	0	0	3000	0
SUAMICO	8/14/2015	52	0	0	5000	0
CORMIER	8/14/2015	52	0	0	7000	0
GREEN BAY	6/5/2016	52	0	0	0	0
WRIGHTSTOWN	6/5/2016	52	0	0	0	0
ASHWAUBENON	6/5/2016	52	0	0	75000	0
DE PERE	6/10/2016	52	0	0	0	0
GREEN BAY	7/21/2016	52	0	0	0	0
GREEN BAY	5/17/2017	52	0	0	0	0
LITTLE RAPIDS	6/14/2017	56	0	0	0	0
DE PERE	6/14/2017	61	0	0	10000	0
ALLOUEZ	6/14/2017	52	0	0	0	0
BAY SETTLEMENT	6/14/2017	52	0	0	0	0
PULASKI	6/14/2017	56	0	0	0	0
ANSTON	7/15/2017	52	0	0	0	0
ASHWAUBENON	7/15/2017	56	0	0	1000	0
PULASKI	7/18/2017	52	0	0	0	0
GREEN BAY	7/1/2018	52	0	0	0	0
GREEN BAY	7/1/2018	52	0	0	10000	0
ASHWAUBENON	7/1/2018	52	0	0	0	0
GREEN BAY	8/27/2018	52	0	0	0	0
DE PERE	8/28/2018	52	0	0	5000	0

SUAMICO	9/17/2018	52	0	0	0	0
BELLEVUE	9/17/2018	50	0	0	5000	0

Source: NOAA National Climatic Data Center; June 2019.

Vulnerability

One hundred and seventeen lightning and/or thunderstorm wind events have occurred in Brown County between 1990 and February of 2019. As with many places around the US, Brown County residents are susceptible to lightning strikes and thunderstorm wind events. Trees and taller structures such as buildings and communication towers are most susceptible to lightning strikes.

Impacts

The following describes the various impacts that lightning and thunderstorms have on the county.

Critical Facilities

Hospitals can see increases in patient load with storms that produce cloud to ground lightning strikes. Schools can sustain damage, and if they do not sustain damage, they can function as temporary shelters in the aftermath of severe thunderstorms. Police and fire departments often see an increased workload during and after lightning storms and/or severe thunderstorms. Emergency operations can be disrupted as lightning storms and thunderstorms can affect radio communications, taking into consideration that antennas are a prime target for lightning.

Public Health

No health implications are attributable to lightning and thunderstorms. There is the potential for tetanus and other diseases that may arise from injuries sustained while navigating or cleaning up damaged property. In the case of lightning storms, when lightning strikes a person, serious burns or death are common outcomes. For those who survive a lightning strike, their injuries can possibly lead to permanent disabilities. Many lightning strike survivors suffer serious, long-term effects, including memory loss, sleep disorders, depression and fatigue.

Safety

Lightning and thunderstorms rarely cause loss of life and or injuries. From 1990 through February of 2019, lightning has been responsible for zero deaths and zero injuries in Brown County²¹. High winds associated with a storm can injure and kill people. Thankfully, since 1990 there has only been one reported injury and zero deaths reported²².

Most lightning and thunderstorm deaths can be prevented through safe practices. The first step to avoid injuries and death is to understand what a severe thunderstorm watch is and secondly, what a severe thunderstorm warning is. The following is a description of both a severe thunderstorm watch and a severe thunderstorm warning.

²¹ NOAA Storm Events Database – Lightning

²² NOAA Storm Events Database – Thunderstorm Wind

- Severe Thunderstorm Watch - Severe thunderstorms are possible in and near the watch area. Stay informed and be ready to act if a severe thunderstorm warning is issued.
- Severe Thunderstorm Warning - Severe weather has been reported by spotters or indicated by radar. Warnings indicate imminent danger to life and property.

If a thunderstorm is in the area the best action to take is seeking shelter inside a building. A building will provide protection against the majority of the possible hazards associated with a thunderstorm that have the potential to cause bodily harm.

Infrastructure

Street signs often face disrepair after severe thunderstorms, and debris often litters streets and highways requiring some clean up. Downed trees caused by lightning and thunderstorms can also cause property damage and be problematic for transportation.

Buildings

Damage to mobile homes from thunderstorms is possible and can be significant. Garages are also frequently damaged by thunderstorms. Wind and water damage can result when windows are broken by flying debris or hail. Lightning can cause direct damage to structures (especially those without lightning protection systems) and can set off fires that may lead to further damage.

Economic

Thunderstorms can have an impact on many sectors of the economy including agriculture, private businesses, and government services. While damage is usually not significant, some storms can cause costly repairs.

Crop damage from lightning and thunderstorms occurs quite frequently. While typically not significant, anything from high winds, hail, or flooding can impact a field or part thereof. Agricultural buildings and livestock are also susceptible to thunderstorm damage depending on the severity of the storm.

Impacts to businesses from lightning and thunderstorms can include damage to the main structure or to ancillary structures and signs. A business may be impacted by transportation limitations due to road closures as well.

Thunderstorms can also affect utilities. Power lines, transformers, and the poles supporting power lines can be knocked out by lightning or knocked down by wind and debris. Telephone lines and radio communications can be disrupted as well.

Transportation facilities such as airports, shipping ports, and roads can be negatively impacted by thunderstorms. Airplanes can be delayed for takeoff when thunderstorms are present and diverted to nearby airports for landing. There is potential for an airplane to crash when hit by downbursts or lightning. Shipping ports could also experience issues with high winds and lightning affecting tall structures. Thunderstorms can knock trees and branches into the road and if strong enough, may knock down power lines which can make roads impassable.

Areas at Greatest Risk

Based on review of the historic patterns of lightning and thunderstorms, there are no specific jurisdictions that have unusual risks (meaning higher than average for the entire county). The events are relatively uniform throughout Brown County.

Estimation of Potential Losses

No estimation of potential losses can be derived as there is no defined hazard area. Lightning and thunderstorms can occur anywhere in Brown County.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard including the following:

Flooding. Thunderstorms can cause flooding that can disrupt emergency response, transportation and communication.

Lightning - Lightning can cause property damage, loss of life, and personal injury, disrupt transportation, communication, and emergency services, and threaten public health and safety, as well as pose significant threat to essential public infrastructure and services such as power, water supply systems and sanitary systems.

Hailstorms. Lightning and thunderstorms are often accompanied by hailstorms. Hail can cause significant property damage including total destruction of a roof, vegetation loss, and vehicular damage.

Plans and Programs

Severe Storm Spotters Network. This program, sponsored by the National Weather Service (NWS), enlists the help of trained volunteers to identify, evaluate, and report severe weather events to the NWS. No tornado warning is given unless the storm has been spotted by someone or is confirmed by NWS radar reports. Brown County has several trained severe weather spotters, many of whom report directly to their respective public safety offices when severe weather is observed.

Gaps and Deficiencies

Redundancy is needed on communications towers.

Local radio and television stations do provide warnings but are effective only if viewers are tuned to one of the local stations.

Most of the power lines in the county are above ground and are subject to damage from wind and falling tree limbs. There are community requirements to manage trees near power lines.

Winter Storms

Winter storms in Wisconsin are caused by Canadian and Arctic cold fronts that push cold arctic air deep into the interior of the United States. These storms can vary in size and strength, and can include heavy snowstorms, blizzards, freezing rain, sleet, ice storms, and blowing and drifting snow conditions. Winter storms can include extremely cold temperatures accompanied by strong winds that result in wind chills dangerous enough to cause bodily injury such as frostbite, hypothermia, and death. Winter storms can occur as a single event or they can combine with other events to create multi hazard storms. For example, a moderate snowfall could create severe conditions if it were followed by a freezing rain and extremely cold temperatures. The aftermath of a winter storm can impact a community or region for weeks, and even months.



A variety of weather phenomena and conditions can occur during winter storms. For purposes of classification, the following are National Weather Service approved descriptions of winter storm elements:

Heavy Snowfall – the accumulation of six or more inches of snow in a 12-hour period, or eight or more inches in a 24-hour period.

Winter Storm – the occurrence of heavy snowfall accompanied by significant blowing snow, low wind chills, sleet or freezing rain.

Blizzard – the occurrence of sustained wind speeds in excess of 35 miles per hour accompanied by heavy snowfall or large amounts of blowing or drifting snow.

Ice Storm – an occurrence where rain falls from warmer upper layers of the atmosphere to the colder ground, freezing upon contact with the ground and exposed objects near the ground.

Freezing drizzle/freezing rain – the effect of drizzle or rain freezing upon impact on objects that have a temperature of 32 degrees Fahrenheit or below.

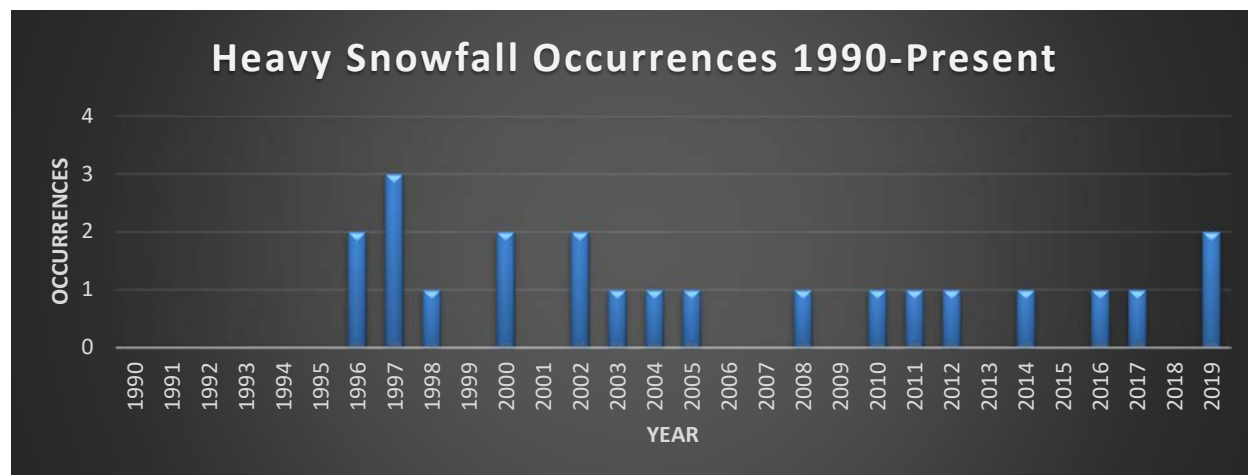
Sleet – solid grains or pellets of ice formed by the freezing of raindrops or the refreezing of largely melted snowflakes. This ice does not cling to surfaces.

Wind chill – an apparent temperature that describes the combined effect of wind and low air temperatures on exposed skin.²³

Much of the snowfall in Wisconsin occurs in small amounts of between one and three inches per occurrence. Heavy snowfalls producing at least eight to ten inches of accumulation fluctuate in their occurrence. As shown in the graph below, there are years

²³ National Weather Service

where no heavy snowfalls occurred while other years the occurrences were between one and three times.



True blizzards do occur in Wisconsin and have the potential to take a life. Oftentimes, blizzard conditions exist during heavy snowstorms when gusty winds cause severe blowing and drifting of snow. The state of Wisconsin experience 259 blizzard events since January of 1990. During the same time period, Brown County experienced 7 blizzard events²⁴.

Table 3.8: Brown County
Blizzard Events

1/29/1996
1/2/1999
2/16/2006
12/8/2009
12/11/2010
12/28/2015
4/15/2018

Both ice and sleet storms can occur at any time throughout the winter season from October into April. Early- and late-season ice and sleet storms generally occur in northern Wisconsin, however, the majority of these storms occur in the southern part of the state. During these events, if the storm produces a half inch of rain that freezes on trees and utility wires, extensive damage can occur especially if accompanied by winds that compound the effects of the added weight of the ice.

Winter storms present a serious threat to the health and safety of affected citizens and can result in significant damage to property and loss of life. This can occur when the heavy snow or accumulated ice causes structural collapse of buildings, downs power lines, severely affects electrical power distribution, cuts off people from assistance or services, and severely impacts travel conditions. Difficult and dangerous driving conditions caused by winter storms can result in large numbers of traffic accidents where motorists suffer varying injuries and possible death. These winter storm deaths are not accounted for in the statistics maintained by the National Climatic Data Center.

History

According to National Climatic Data Center, Brown County has experienced 57 winter storm events since January 1, 1990. These events included Blizzards, Winter Storms, and Winter Weather events.²⁵

²⁴ NOAA Storm Event Database - Blizzard

²⁵ NOAA Storm Event Database - Blizzards, Winter Storms, and Winter Weather



Vulnerability

On average, over the past 29 years (since 1990), Brown County has typically experienced about two significant winter storm events per year. Some areas in Wisconsin are more vulnerable to winter storms including northern portions of the state as well as areas adjacent to the shore of Lake Michigan. These areas often have higher moisture content from the Great Lakes which can produce prolonged winter storm events. Data collected by the national weather service was compiled to show the average snowfall across Wisconsin in the following map.

Impacts

The following describes the various impacts that winter storms have on the county.

Critical Facilities

Town and county road crews have an increased burden during and winter months. In some cases, winter storms can be so severe that these crews have to be called off the roads for safety purposes.

During winter storm events, hospitals and clinics may see and treat patients for frostbite, vehicular accident injuries, injuries associated with slips and falls, and injuries resulting from the shoveling of heavy snow (heart attacks). As is the case for any business, hospital and clinic employees may have difficulty getting to work because of the storm, which increases the workload for the staff who is already there (double shifts, etc.).

Police and rescue crews also see more activity during winter storms. More vehicular accidents require more resources from the County Sheriff and local Police departments and if there are injuries involved, it also required EMT's to respond as well. Utility and telephone companies have to respond to downed electrical and telephone lines, especially in the case of ice storms. And, schools may need to have early dismissal or cancel classes altogether.

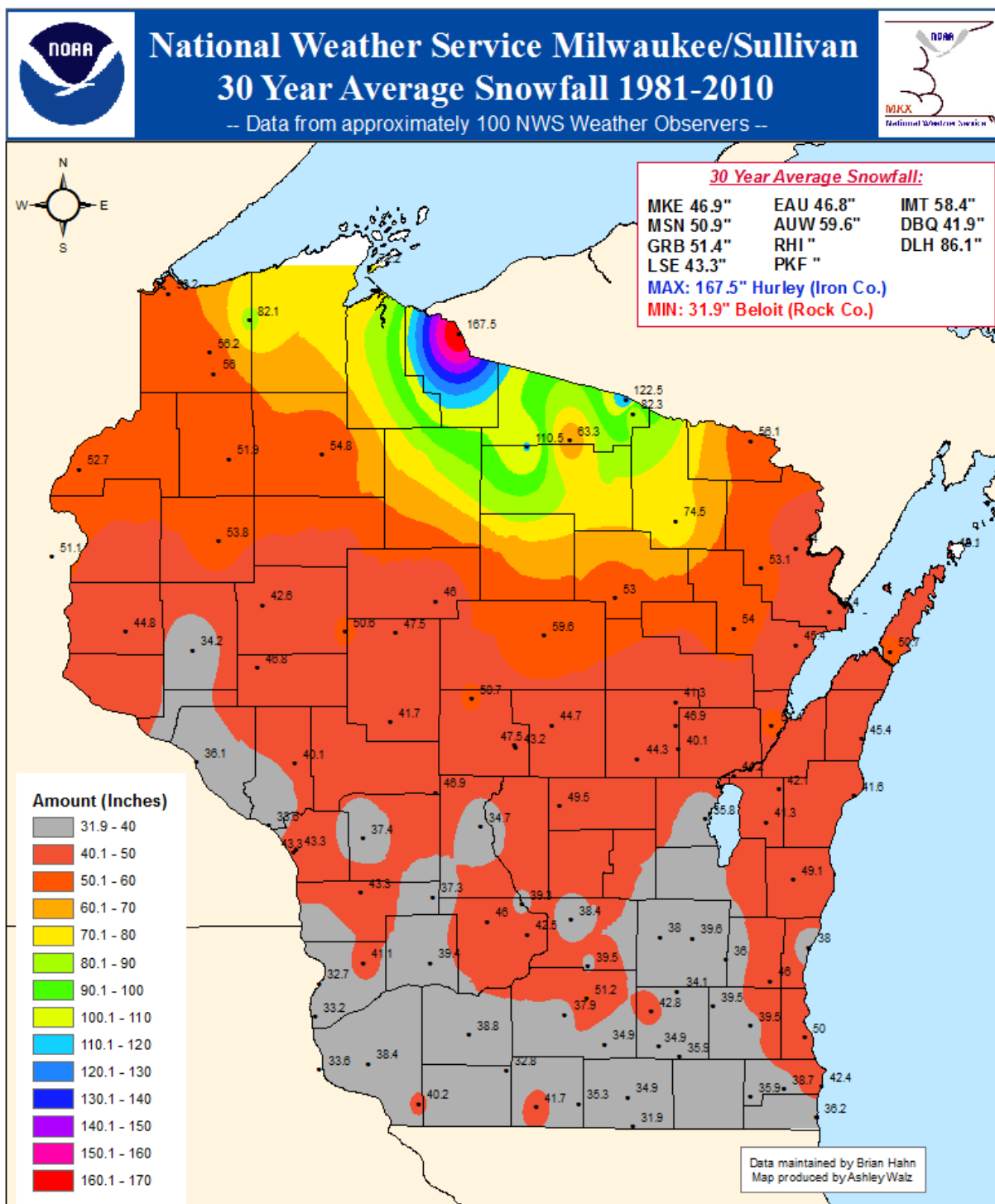


Figure 6 Source: Wisconsin State Climatology Office

Public Health

Most injuries caused by winter storms result from vehicle accidents. Frostbite and hypothermia occur frequently when these storms combine with extreme cold (these health concerns are discussed more under the extreme cold hazard). Heart attacks and back injuries from shoveling snow are also a public health concern.

Mental health is also a concern during the winter months. Many people that live in the Great Lakes region experience the known seasons including summer, spring, fall, and winter. There are individuals that suffer from depression during the winter months due to the lack of natural light and long hours spent indoors. This condition is known as Seasonal Affective Disorder. For many people the winter months make it harder to get outdoors and exercise regularly. Exercise is well known amongst health and wellness professionals to have positive effects both physically and mentally. Without exercise it can be hard to find healthy ways to relieve stress.

Safety

Winter storms can produce weather related hazards, including hazardous driving and walking conditions and injuries from shoveling snow. In some winter storm events, extreme cold from low temperatures, wind chill, and loss of heat due to power outages can create safety concerns. There are a number of agencies including the Centers for Disease Control and Prevention (CDC) that provide information on how to stay safe in the cold and how to improve your chances of survival in the event that someone may get stranded in cold.

Infrastructure

The major impacts of winter storms on infrastructure are to utilities and roads. Power lines and tree limbs can be coated with heavy ice in some winter storms, resulting in disrupted power and telephone service, often for days. Cable and satellite television services can also be negatively impacted in certain winter storm events. In the case of transportation, even small accumulations of ice can be extremely dangerous to motorists and pedestrians. Bridges and overpasses are particularly dangerous because they freeze before other surfaces.

Buildings

Occasionally, heavy snow or accumulated ice will cause structural collapse of buildings (particularly roofs), but most buildings are now constructed with low temperatures, snow loads, and ice storms in mind. Despite the changes to requirements for new construction, older buildings may still be susceptible to winter conditions as was seen in 2018 when a massive snow storm caused several structural roof failures in Brown County.

It should be noted that new construction that utilizes new materials and construction methods is typically more energy efficient and helps to minimize the effects of extreme winter weather.

Economic

Loss of power often means that businesses and manufacturing concerns must close down. Loss of access due to snow or ice covered roads can have a similar effect, especially when trucks cannot travel on major thoroughfares to make “just in time”

deliveries to businesses and industries in the county. The effects are particularly difficult when the storm is widespread.

Typically, crops are either not planted or are harvested and are not at risk of winter storms. However, farmers that own large numbers of livestock can be negatively impacted by winter weather if it is extreme or if it occurs over a long period of time.

Areas at Greatest Risk

Winter storms have no defined hazard area within the county. The events are relatively uniform throughout Brown County.

Estimation of Potential Losses

No estimation of potential losses can be derived as there is no defined hazard area. Winter storms can occur anywhere in Brown County.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Extreme Cold. Extreme cold and wind chill effects can greatly exacerbate any winter storm event.

Flooding. Heavy snows and snowmelt can cause flooding that can disrupt emergency response, transportation, and communication.

Plans and Programs

Wind Chill Warnings. The local radio and TV media in concert with the National Weather Service issues a wind chill warning when temperatures are -40° F or lower for a period longer than three hours. Severe wind chill warnings are provided when conditions warrant and when severe risk and safety is a factor.

School Closings. The county's school districts have a policy of closing schools when the National Weather Service issues a wind chill warning or when snow accumulations create unsafe travel conditions. Information is typically gathered from transportation providers, Brown County Highway Department, and weather service providers to assist in making the school closure determinations. Local television and radio stations partner with the districts to make sure the announcements are out by 5:30 am. Some school districts have an automated phone system that contacts the homes of students as well.

Gaps and Deficiencies

Winter storms are typically longer events lasting several hours or even multiple days that are easier to predict and plan for. Local radio and television stations do provide warnings but are effective only if tuned to one of the local stations.

A majority of the power lines in the county are above ground and subject to damage from ice, wind, and falling tree limbs. There are community requirements to manage trees near power lines.

Storm Water Flooding

The waterways and storm water drainage systems provide essential flood protection. Storm water drainage systems cope well with most storms. However, occasionally storms can cause the storm water infrastructure to be overwhelmed and unable to manage all of the water. These types of events are characterized as flash floods. Flash floods are storm events that include a large amount of rain fall in a localized area over a very short period.

Most stormwater drains and pipe systems are not designed to accommodate a large storm event. The WDNR identifies that peak flow rates be based on the 2-, 10-, and 100- year storm events.²⁶ Most stormwater facilities are designed around the 10 year storm event with a check of the 25-year event.²⁷ A 10-year event does not mean that a storm of this magnitude will only occur once every 10 years but rather that there is a 10 percent chance that a storm of that magnitude can occur. Localized stormwater flooding can be exacerbated if drains in the area are blocked. It is important to keep the drainage system clear of litter and debris to avoid blocked drains. This is also necessary to protect and improve the health of Brown County's waterways.



Figure 7 Source: Greatlakesresilience.org

Today, new developments and redevelopments incorporate storm water management measures such as storm water detention and retention basins that provide greater flood protection. Detention basins slow the flow of storm water being carried in the drainage system by storing it for a time, while retention basins (i.e. ponds) hold water during most of the year. Detention basins can also function as parks and playing fields.

Storm water flooding is not always reported, and it can be very localized. Because of this, the NOAA Storm Events Database does not keep statistics on this type of event.

History

The history of stormwater flooding has not been tracked in the past and is often reported as a flash flood event or a flood. Because of the lack of reporting/record keeping of these types of events, anecdotally, it is known that these types of events do occur and can occur on a fairly frequent basis. However, the severity of the event is extremely variable due to numerous factors.

²⁶ WDNR, Technical Design Guidelines for Storm Water Management Practices, <https://dnr.wi.gov/topic/stormwater/documents/StormwaterManual2-TechnicalDesign.pdf>

²⁷ BC Highway Department referencing the WisDOT Facilities Design Manual (FDM)

Vulnerability

There are several areas throughout Brown County that are susceptible to recurrent storm water flooding. Many of these areas are noted by local public works and highway departments with signage to warn drivers of potential high water problems during heavy rain events. None of the Steering Committee members or community officials deemed storm water flooding to be a significant risk to residents or visitors. Street and ditch flooding after heavy rains have historically caused little damage or traffic disruption in the past.

Impacts

The following describes the various impacts that storm water flooding has on the county.

Critical Facilities

The most vulnerable facilities during a stormwater flood include roadway and transportation interruptions and stormwater facility degradation caused by erosion.

Public Health

There is not much of a public health risk as the situation is usually alleviated quickly and any cases of prolonged standing water would be rare.

Safety

Some stormwater flooding may include swift moving water. Driving through moving/flowing water should never be attempted and is a serious safety risk. Electrocution could occur from a building experiencing storm drain backup flooding and electrical wires or appliances short out and carry current through standing water. Fire is also a possible byproduct that can cause injuries.

Infrastructure

Erosion damage to roads can occur from storm water flooding, especially if the storm water facilities in the area are defective.

Economic

Clean up and replacement of damaged items can be costly after a building has experienced storm drain backup flooding.

Maintenance of roads and parking lots after storm water flooding damage can be costly.

Areas at Greatest Risk

The areas at greatest risk for storm water flooding are older parts of urban areas that have aging or undersized infrastructure and bridges and roads at the town level as they often do not have storm water facilities. Additional areas of concern are those that have waterways that have not been studied for flooding potential.

Estimation of Potential Losses

No estimation of potential losses can be derived as the hazard area is vaguely defined.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Fire. Fire can occur due to infrastructure compromise of electrical and natural gas systems.

Transportation Disruption. Disruptions of transportation routes can be disrupted due to standing water in roadways.

Plans and Programs

Repair and Maintenance. Repair and maintenance is performed by Brown County and the local municipalities on areas that experience storm water flooding damage. The urbanized area communities are also required to submit an annual Municipal Separate Storm Sewer System (MS4) permit to the DNR each year. This permit requires that stormwater facilities are inventoried and checked annually for needed maintenance.

Storm Drain Cleaning Program. Many of the communities in Brown County have some type of storm drain cleaning program that involves utilizing a vacuum to remove debris from storm drains in the fall of each year.

WisDOT Flood Mitigation Program. Wisconsin Department of Transportation assists local governments with replacing or improving roads and roadway structures that have had major damage caused by flooding, by providing help to defray the costs of repairing any public highway, street, alley, or bridge not located on the State Trunk Highway system.

Gaps and Deficiencies

There is a need to correct defective storm water facilities to prevent infrastructure damage. Correcting damaged storm water facilities is difficult due to most of the facilities being buried. This makes them difficult to thoroughly inspect. There is also a need to improve preventative measures such as cleaning storm drains to maximize their ability to manage storm water as designed. Municipalities within the urbanized area have permits with the Wisconsin Department of Natural Resources to address municipal storm water through storm water permits. The permits cover monitoring outfalls for contamination, setting up ordinances and procedures to address illicit discharges, and a program to clean clogged and damaged storm drains. Brown County and the City of Green Bay, for example, check stormwater outfalls under their jurisdiction at least once every five years.

Extreme Cold

Dangerously cold conditions can be the result of extremely cold temperatures, or the combination of cold temperatures and high winds. Wind chill is defined as “a still-air temperature that would have the same cooling effect on exposed human skin as a given combination of temperature and wind speed”²⁸. When wind blows across the skin, it removes the insulating layer of warm air adjacent to the skin. As winds increase, heat is carried away from the body at a faster rate, driving down both the skin temperature and eventually the internal body temperature. Extreme cold events are most likely during the months of January and February.

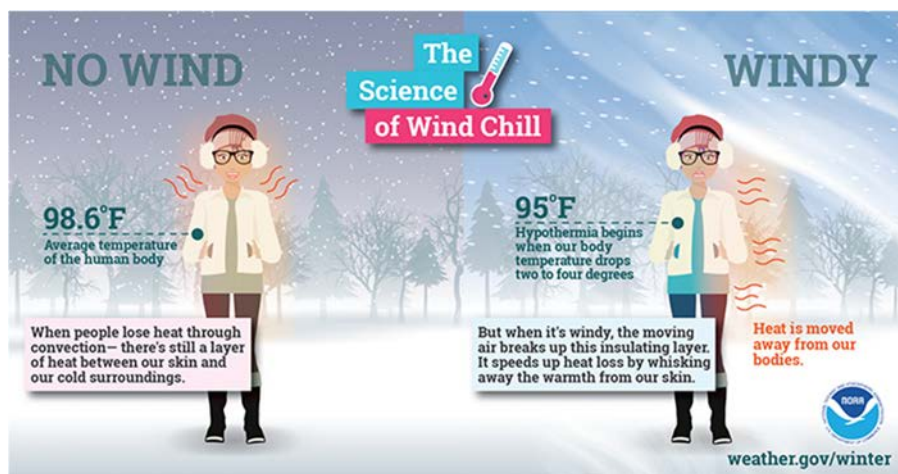


Figure 8 Source: Weather.gov/winter

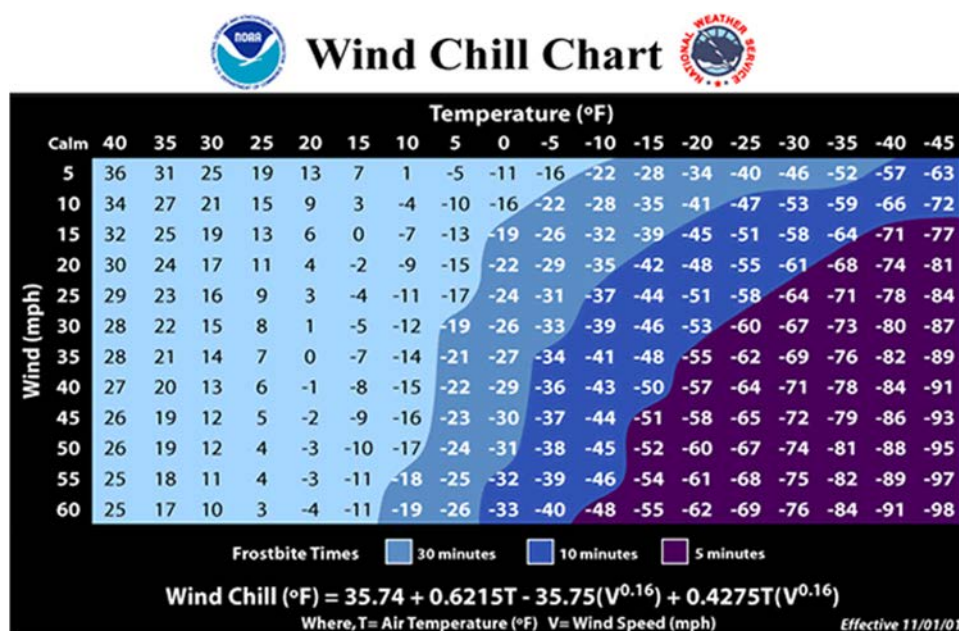


Figure 9 Source: National Weather Service, Wind Chill Chart

²⁸ Wind Chill : <https://www.merriam-webster.com/dictionary/windchill>

History

According to National Climatic Data Center, Brown County has experienced four extreme cold/wind chill events and 14 cold/wind chill events since January 1, 1990.

January 30, 1996

Bitter cold arctic air settled in across central and northeast Wisconsin. Record low temperatures were set in a few locations.

February 1, 1996

At least 20 record low temperatures were set across central and northeast Wisconsin during the early part of February, as a frigid arctic air mass remained entrenched across the area. The cold weather resulted in a hypothermia-related death in Green Bay on the first day of the month. Temperatures dropped to colder than 40 degrees below zero in parts of north central Wisconsin. Temperatures remained below zero for 137 hours straight in Green Bay. The cold weather was responsible for numerous school closures, stalled vehicles, frozen pipes, and broken water lines. Electrical and telephone outages occurred due to snapped wires and lines. Extreme cold temperatures combined with west winds of 10 to 15 mph to produce wind chill readings in the 50 to 70 degree below zero range on February 2, 1996.

June 7 & 8, 1998

Record low temperatures were set in Green Bay two mornings in a row, and in Appleton on three mornings. A low of 37 degrees F was reached on the morning of June 7. The next morning, the mercury dropped to 36 degrees F.

June 14, 1999

Temperatures dropped into the upper 20s and 30s overnight across much of north-central and northeast Wisconsin.

October 4, 1999

The low temperature at Austin Straubel International Airport in Green Bay was 25 degrees. This tied the record low that was set in 1989.

July 18, 2000

The high temperature of 58 degrees in Green Bay (Brown Co.) on the 18th tied the record for the lowest maximum temperature for the month that was set on July 11, 1917. It also broke the record for the lowest maximum temperature for July 18th, set in 1924. The low temperature of 46 degrees tied the record low for the date, set in 1956.

July 23, 2000

The low temperature at Green Bay (Brown Co.) of 46 degrees tied the record low for the 23rd, set in 1985.

February 17, 2006

A bitter cold air mass settled over the Western Great Lakes region on the February 17 and 18, 2006. On the morning of the 18th, temperatures dropped into the 15 below to 20 below zero range across east central Wisconsin, 18 below to 24 below zero across central Wisconsin, and 22 below to 27 below zero across northern Wisconsin. The cold temperatures combined with west winds of 5 to 15 mph to produce extremely cold wind chill readings. Green Bay recorded a wind chill of -41.

January 30, 2008

After an arctic front passed through the area, air temperatures fell into the 10 below to 20 below zero range and west winds increased to speeds of 20 to near 40 mph. The combination of cold temperatures and strong winds produced wind chills of 40 below to near 50 below zero across most of the area.

February 10, 2008

Strong northwest winds behind a departing low pressure system brought cold air into Wisconsin. Temperatures fell into the 10 below zero to 20 below zero range at most locations overnight and combined with 15 to 30 mph winds, with gusts as high as 40 mph, to produce bitter cold wind chills.

January 24, 2009

Northwest winds between a departing cold front and an approaching high pressure system brought much colder air into the area. Low temperatures ranged from the single digits below zero from the Fox Valley east to Lake Michigan, to the teens below zero in north-central and parts of central Wisconsin. Wind chills across the area were mostly in the 20 below zero to 30 below zero range. There were two fatalities due to hypothermia during the morning of the 24th.

January 20, 2013

Brisk northwest winds brought bitterly cold arctic air into Wisconsin. A Green Bay man died of hypothermia outside his home early on the morning of January 21st. Temperatures were in the single digits with wind chills of 10 below to 15 below zero.

January 6, 2014

A bitterly cold arctic air mass, the coldest to impact the region in years, spread across the area following the passage of a cold front. Temperatures fell to lows in the 16 below to 32 below zero range. The cold temperatures, combined with west winds of 10 to 20 mph, produced wind chills in the 40 below to 55 below zero range.

January 27, 2014

High pressure over the Plains and upper level flow from the Canadian Plains brought extremely cold temperatures and wind chills to the area. Temperatures fell to lows in the 15 below to 28 below zero range. West winds of 10 to 20 mph combined with the frigid air to produce wind chills in the 35 below to 45 below zero range.

January 10, 2016

Wind chills at Green Bay were generally in the 20 below to 23 below zero range from late on the night of January 10th through early morning January 11th. One death was associated with the cold weather when a woman was found outside of a Green Bay tavern the following morning.

January 2, 2018

Subzero low temperatures, highs mainly in the single digits, and wind chills in the 20 below to 34 below zero range were common during the first week of January. Two people died of exposure. One of them died outside her Green Bay (Brown Co.) home. It is believed that the Green Bay woman tripped and hit her head while looking for her keys.

January 29, 2019

Cold air moved into northern Wisconsin as a strong low pressure system departed and high pressure over the Plains moved toward the region. Low temperatures on the morning of January 30th were mainly in the -15F to -30F range and wind chills mostly -35 to -55. Temperatures across the area remained below zero throughout the day on the 30th. Schools and many businesses closed, public transportation suspended or curtailed service, and the U.S. Postal Service even suspended deliveries due to the bitter cold.

Storm Events Source: NOAA Storm Events Database – Extreme Cold/Wind Chill & Cold/Wind Chill

Vulnerability

Typically, an extreme cold episode affects Brown County once every couple of years, however; more recently it appears that extreme cold/wind chill events are becoming more common with nearly one event each year since 2013. Extreme cold episodes also tend to be a regional phenomenon in that the episode affects much of the northeastern region of Wisconsin on nearly all of the occasions in which the episodes affected Brown County.

Impacts

The following describes the various impacts that extreme cold events have on the county.

Critical Facilities

All buildings, including critical facilities, will have an increased demand for heat fuels during an extreme cold event. Increased demand will impact local natural gas energy utilities serving the planning area. Hospitals and clinics may see patients suffering from exposure and emergency shelters may take in additional patrons. Area schools may cancel classes or call for early dismissal in extreme cold events. Water lines may burst forcing water utilities to repair damaged water mains. Local fire departments and rescue services may also deal with direct or indirect consequences of the extreme cold event.

Public Health

Exposure to cold temperatures can cause serious and/or life threatening conditions. Some of these conditions include frostbite or hypothermia and can become life threatening.

Hypothermia can occur when someone is exposed to cold temperatures or low wind chills. When someone experiences hypothermia, their body will begin to lose heat faster than it can be produced. Hypothermia is clinically significant when the body temperature is below 95 degrees. Severe hypothermia occurs when the body's temperature drops below 85 degrees, resulting in unconsciousness. When body temperatures drop too low, the brain may be affected, making the victim unable to think clearly or loose ambulation. Most often, hypothermia occurs at very cold temperatures, but can occur even at cool temperatures (above 40 degrees) if a person becomes chilled from rain, sweat or submersion in cold water. Victims of hypothermia are most often elderly people with inadequate food, clothing or heating; babies sleeping in cold bedrooms; children left unattended; adults under the influence of alcohol; mentally ill persons; and people who remain outdoors for long periods (such as the homeless). In cases of hypothermia, if help does not come, death is imminent. Great care is needed to properly re-warm victims with even mild cases of hypothermia.

Frostbite is an injury to the body that is caused by the freezing of body tissue. When exposed to the cold for extended periods of time, parts of the body are susceptible to the formation of ice crystals within the soft tissue. Frostbite is characterized similar to burns (degrees) and will cause a loss of feeling and color in affected areas. It most often affects the nose, ears, cheeks, chin, fingers or toes, all of which are extremities that experience circulation difficulties. Frostbite can permanently damage the body, and severe cases can lead to amputation.

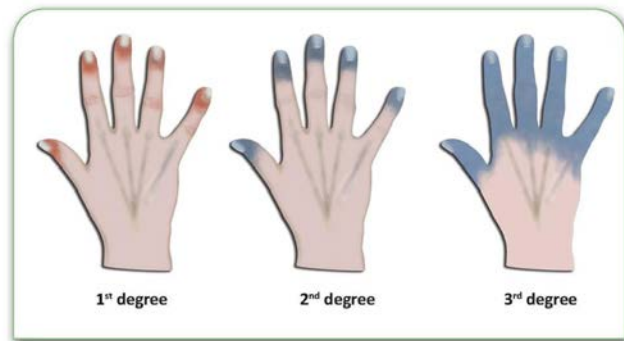


Figure 10 Source: UIAA, Mountain Skills: How

Safety

In addition to the health risks directly related to exposure to cold temperatures, Brown County residents are also susceptible to other risks associated with extremely cold temperatures. For example, residents may be in danger of extreme cold due to power failures, inadequate maintenance of heating systems (mechanical failure), or inability to pay gas and electric bills. The risks of household fires and carbon monoxide poisoning can also increase when people begin to use space heaters and fireplaces to stay warm.

Infrastructure

Public domain water pipes can burst in extreme cold conditions, which can also ruin the street above the water pipes. In addition, damage to fiber optic cables can occur

during extreme cold episodes, which can negatively affect commerce and hospitals in the planning area.

It is possible that extreme cold conditions combined with low lake levels might have led to the freezing of the water intake pipe in Lake Michigan in early 2004. Now, with historic high levels of water in Lake Michigan, a deep freeze could cause new issues.

Buildings

Extreme cold conditions can result various issues for buildings. Many of the issues such as problems with heating elements and frozen pipes have been addressed in previous sections.

Economic

Economic impacts of extreme cold events can include lack of motivation to participate in the local economy unless necessary during the event. Utility bills following the event will also be higher, which will give consumer less ability to purchase discretionary goods about a month after the event (unless that consumer is on a monthly even payment plan with the local utility). If area school districts need to call off school early on extremely cold days, there may be expenses involved with early busing and with paying staff for a full day while only having the benefit of a partial day of instruction. Non-profit organizations will incur expenses in the provision of emergency shelters. The private sector incurs economic losses and production decreases during an extreme cold event.

Areas at Greatest Risk

Extreme cold events have no defined hazard area within the planning area. The events are relatively uniform throughout Brown County.

Estimation of Potential Losses

No estimation of potential losses can be derived as there is no defined hazard area. Extreme cold events can occur anywhere in Brown County.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Winter Storms. Winter storm events will exacerbate extreme cold conditions.

Plans and Programs

Heating Moratorium. A Wisconsin rule, adopted in 1984, prohibits utilities from disconnecting natural gas and electric service during the winter months, between November 1 and April 15.

School Closings. The county's school districts have a policy of closing schools when the National Weather Service issues a wind chill warning or when snow accumulations create unsafe travel conditions. Information is typically gathered from transportation providers, Brown County Highway Department, and weather service providers to assist in making the school closure determinations. Local television and radio stations partner with the districts to make sure the announcements are out by 5:30 am. Some school districts have an automated phone system that contacts the homes of students as well.

Wind Chill Warnings. The local radio and TV media in concert with the National Weather Service issue a wind chill warning when temperatures are negative 30° F or lower. Severe wind chill warnings are provided when conditions warrant and when severe risk and safety is a factor.

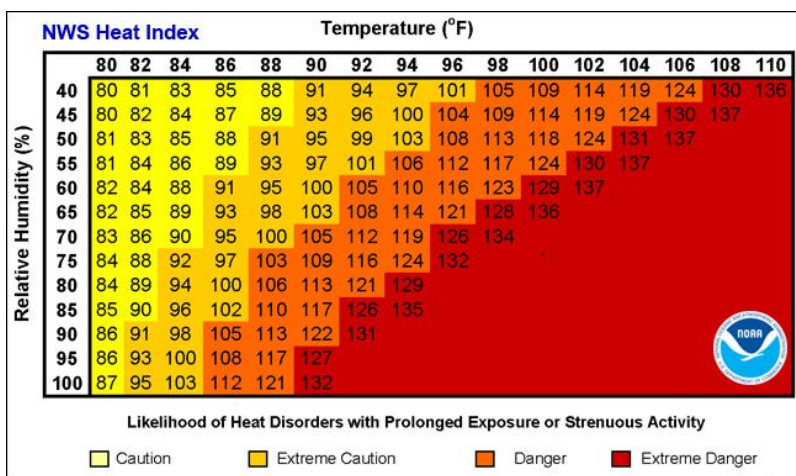
Gaps and Deficiencies

- Not all school districts have a transportation manager providing information on current weather and road conditions.
- Local radio and television stations do provide warnings but, are effective only if viewers are tuned to one of the local stations.
- A majority of the power lines in the county are above ground and subject to damage from ice, wind, and falling tree limbs. There are community requirements to manage trees near power lines.
- Residents that have had their heat disconnected prior to the heating moratorium beginning on November 1 must make arrangements with their local utility to pay outstanding bills in order to have their service restored. If a consumer has not made arrangements to pay an outstanding bill, the utility is not required to provide heat until an agreed-upon payment schedule has been reached.
- Residents could be without needed heating during any out-of-season cold spells that occur between April 16 and October 31.

Extreme Heat

Extreme heat is responsible for an average of 658 deaths per year (1999-2009)²⁹ in the US, making heat the number one weather killer in this country. Extreme heat and humid weather can create significant risks for people, particularly the elderly who may lack air conditioning or proper insulation or ventilation in their homes. Animals are also at risk during extended periods of heat and humidity.

The National Weather Service will issue a Heat Advisory when the Heat Index ranges from 105 to 114 degrees during the day and remains at or above 80 degrees at night, during a 24-hour period. The following Heat Index Chart displays the National Weather Service Heat Index. The heat index combines the effects of heat and humidity to reflect the risk of warm weather to animals and people. When heat and humidity combine to reduce the amount of



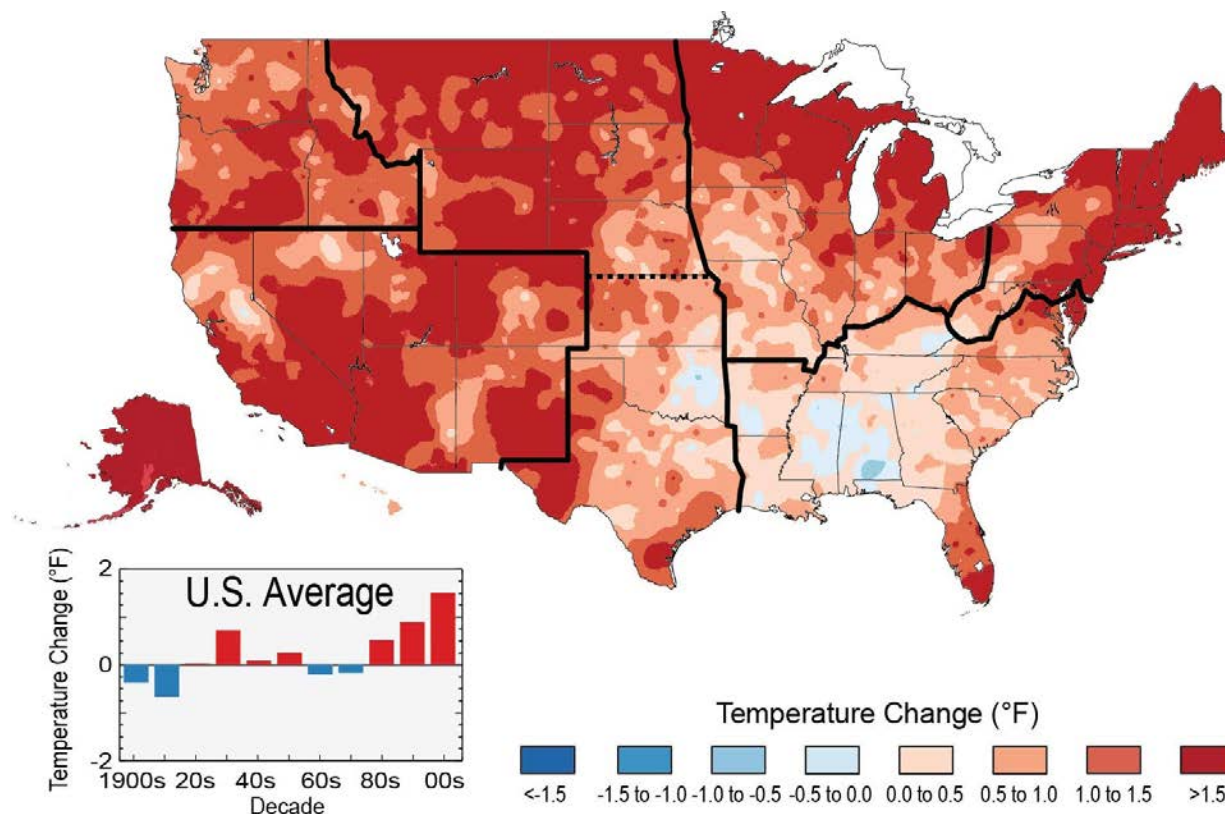
²⁹ American Public Health Association, Differences in Heat-related Mortality by Citizenship

evaporation of sweat from the body, outdoor activity becomes dangerous even for those in good shape. The index measures the apparent temperature in the shade. People exposed to the sun would experience an even higher apparent temperature. A heat index of 105 is considered dangerous and prolonged exposure can result in heat stroke, heat exhaustion, and heat cramps. People are reminded to use extreme caution when the heat index is between 95 and 105.

Based on the NOAA Storm Events Database, Wisconsin has had 12 deaths due to excessive heat since January 1, 1990. During the same time period, Brown County has not reported a death due to excessive heat.

History

According to NOAA Storm Events Database, Brown County has experienced six “extreme heat” events and 10 “heat” events since January 1, 1990. Meteorologists and climate scientists have been keeping track of temperatures in the U.S. for over a century. Over this period of time data shows that the average temperatures recorded across the U.S. are increasing, however, “quantifying long-term increases of temperature in a single number is challenging because the increase has not been constant over time. The increase can be quantified in a number of ways, but all of them show significant warming over the U.S. since the instrumental record began in 1895. For example, fitting a linear trend over the period 1895 to 2012 yields an increase in the range of 1.3 to 1.9°F.”³⁰ This trend is depicted in the map below.



³⁰ <https://nca2014.globalchange.gov/report/our-changing-climate/recent-us-temperature-trends>

The following list identifies the previously mentioned “extreme heat” and “heat” events in Brown County since January 1, 1990.

February 25-27, 1998

Record high temperatures were set at Green Bay on the 25th (47 degrees) and the 26th (54 degrees).

May 19, 1998

Temperatures typical of mid-summer affected much of central and northeast Wisconsin in mid-May. Green Bay (Brown Co.) recorded a record-tying 88 degree maximum on the 19th. The balmy weather caused pavement to pop on freeways around Green Bay

November 29, 1998

Record high temperatures were set across much of central and northeast Wisconsin late in the month. One of the warmest readings included Green Bay (Brown Co) at 63 degrees.

February 11, 1999

Southerly winds ahead of an approaching cold front brought unseasonably warm and moist air into Wisconsin. Much of central and northeast Wisconsin still had snow on the ground and the warm, moist air moving over the snow-covered ground resulted in widespread dense fog. Near zero visibility was common across much of central and northeast Wisconsin, resulting in numerous vehicular accidents. A new record high temperature was set in Green Bay (58 degrees).

July 23, 1999

Over one week of hot and very humid conditions across northeast Wisconsin resulted in numerous heat related illnesses and three deaths (none in Brown County) due to excessive heat. The heat caused concrete on many roads to buckle.

November 8 & 9, 1999

Record high temperatures were set across central and east-central Wisconsin on November 8th and 9th. Green Bay (Brown County) set new record highs of 69 degrees on the 8th and 74 degrees on the 9th. The 74 degrees reached on the 9th tied the record for the highest November temperature in Green Bay.

November 13, 1999

Record high temperatures were set across central and east-central Wisconsin on November 13th. Green Bay (Brown County) set a new record high of 67 degrees.

February 25, 2000

Green Bay (Brown Co.) set new record high temperatures of 49 degrees on the 25th and 61 degrees on the 26th. The 61 degree reading was the warmest ever recorded in Green Bay during the month of February.

February 29, 2000

The temperature reached 59 degrees in Green Bay (Brown County) which set a new record high.

March 4, 2000

Record high temperatures were set or tied in Green Bay (Brown Co.) on the 4th (57 degrees), the 5th (57 degrees), the 6th (69 degrees), the 7th (78 degrees), the 8th (74 degrees) and the 9th (56 degrees). The new record high of 78 degrees on the 7th was the second warmest March day ever in Green Bay and their new record high of 74 degrees on the 8th was the fifth warmest March day ever.

March 23, 2000

Green Bay (Brown County) tied their record high temperature of 65 degrees that was set in 1939.

November 1, 2001

The average temperature (43.4 degrees) for the month set the record in Green Bay.

July 31, 2006

Temperatures in the 90's to around 100 degrees combined with dew points in the 60's and lower 70's to produce heat index values approaching 110 during the afternoon hours. Several people in Green Bay (Brown Co.) were treated for heat exhaustion at local hospitals.

July 3, 2012

A hot air mass settled over Wisconsin in early July, bringing highs of 100 degrees or hotter to central Wisconsin from July 4th through July 6th. Relative humidity was relatively low, but heat indices still managed to reach the 100 and 110 range.

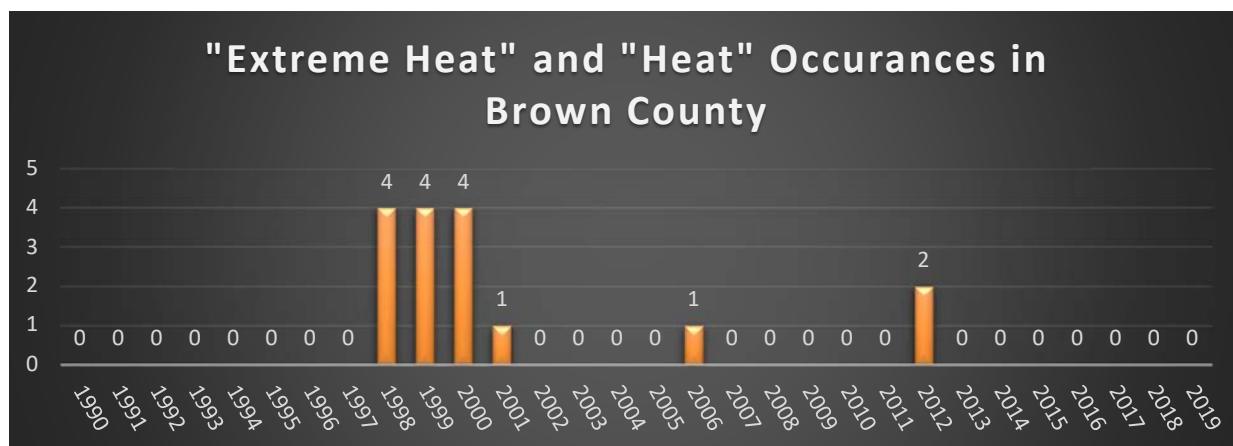
July 16, 2012

Hot temperatures returned to central and east central Wisconsin during the middle of the month. High temperatures were mainly in the 90s but heat index values topped out at 95 to 105.

Storm Events Source: NOAA Storm Events Database – Heat & Excessive Heat

Vulnerability

Based on past observations, it is likely that one to two “extreme heat” or “heat” episodes will affect Brown County in any given year. These heat episodes tend to be a regional event in that they affect much of the northeastern part of Wisconsin on nearly all of the occasions in which they affected Brown County. Heat related episodes tend to be broader geographically and can vary slightly due to local geographical features such as Lake Michigan. Lake Michigan tends to keep the areas along the lakeshore cooler throughout the year and these locations may not experience the same conditions as others located about 5-10 miles away from the shoreline.



Impacts

The following describes the various impacts that extreme heat events have on the county.

Critical Facilities

Utilities companies may experience increases in services during extreme heat episodes. Episodes such as the power grid collapse in the northeastern United States and in eastern Canada in the summer of 2003 serve as an example of how devastating a grid collapse can be during a heat event. For many people, summer is the season when people plan their outdoor adventures and it should be no surprise that the incidents of heat related health issues increases. During heat events rescue services, hospitals, and clinics may experience increased demand due to heat related illnesses including heat exhaustion and heat stroke. In some unique scenarios, the use of emergency shelters may be required during a heat event, however, these are rare. Finally, there is usually increased water demand during heat events both for human consumption as well as for lawn watering.

Public Health

Large numbers of persons can experience serious illnesses and ailments during a heat event. The most common of these illnesses include heat cramps, heat exhaustion and heat (sun) stroke. Symptoms of heat cramps include painful spasms usually occurring in the leg and abdominal muscles, along with heavy sweating. Symptoms of heat exhaustion include³¹:

- Cool, moist skin with goose bumps when in the heat
- Heavy sweating
- Faintness
- Dizziness
- Fatigue
- Weak, rapid pulse
- Low blood pressure upon standing
- Muscle cramps
- Nausea
- Headache

³¹ Heat Exhaustion Symptoms: <https://www.mayoclinic.org/diseases-conditions/heat-exhaustion/symptoms-causes/syc-20373250>

Symptoms of heat/sun stroke include³²:

- High body temperature. A core body temperature of 104 F (40 C) or higher, obtained with a rectal thermometer, is the main sign of heatstroke.
- Altered mental state or behavior. Confusion, agitation, slurred speech, irritability, delirium, seizures and coma can all result from heatstroke.
- Alteration in sweating. In heatstroke brought on by hot weather, your skin will feel hot and dry to the touch. However, in heatstroke brought on by strenuous exercise, your skin may feel dry or slightly moist.
- Nausea and vomiting. You may feel sick to your stomach or vomit.
- Flushed skin. Your skin may turn red as your body temperature increases.
- Rapid breathing. Your breathing may become rapid and shallow.
- Racing heart rate. Your pulse may significantly increase because heat stress places a tremendous burden on your heart to help cool your body.
- Headache. Your head may throb.

Heat stroke is a medical emergency, while heat exhaustion requires medical attention if persistent. Sunburn is also a common issues associated with extended exposure to the sun. Symptoms of sunburn include skin redness and pain, possible swelling, blisters, fever and headaches.

In addition to these common heat related illnesses, Brown County residents may be exposed to levels of ground-level ozone (smog) which exceeds the federal standard. Albeit, meteorological conditions must be correct for this to occur. Ozone can induce the following:

- Induction of respiratory symptoms,
- Decrements in lung function,
- Inflammation of airways.

Respiratory symptoms can include:

- Coughing,
- Throat irritation,
- Pain, burning, or discomfort in the chest when taking a deep breath,
- Chest tightness, wheezing, or shortness of breath.

In addition to these effects, evidence from observational studies strongly indicates that higher daily ozone concentrations are associated with increased asthma attacks, increased hospital admissions, increased daily mortality, and other markers of morbidity³³. People with respiratory problems are at increased risk, but even healthy people who are active outdoors can be affected when ozone levels are high. Repeated exposure to ozone pollution for several months may cause permanent lung damage. Anyone who spends time outdoors in the summer is at risk, particularly children and individuals who are active outdoors.

³² Heat Stroke Symptoms: <https://www.mayoclinic.org/diseases-conditions/heat-stroke/symptoms-causes/syc-20353581>

³³ Ozone Symptoms: <https://www.epa.gov/ozone-pollution-and-your-patients-health/health-effects-ozone-general-population>

Safety

The safety impacts of heat related events mirror the potential health impacts. Simple safety precautions should be practiced during heat events including public service announcements across all forms of media and preventative planning for the young and elderly populations who are most susceptible to excessive heat.

Infrastructure

There are not many impacts associated with extreme heat on publicly owned infrastructure. However, one impact that extreme heat can have on publicly owned infrastructure is pavement buckling. In some cases, such as those that occurred on STH 29 in 2012 that sent a vehicle flying into the air at a high rate of speed, emergency repairs may be required immediately. Another notable but not critical is a potentially higher demand for water recreation in city parks and at beaches along Lake Michigan and other swimming venues (pools, inland lakes, etc.).

Buildings

While there are no direct impacts on buildings, periods of excessive heat can affect the ability of buildings to be comfortable and safe for human habitation if they are not equipped with air conditioning. Periods of excessive heat can result in high electrical consumption and put a strain on air conditioning units requiring them to run longer and more often to keep the building cool.

Economic

There are numerous economic impacts including but not limited to; higher electrical prices due to increased demand, crop losses, infrastructure failure, tourism loss, and increased demands for medical treatment. Local, county, and state governments may incur expenses when repairing streets due to buckling and lose out on tax revenue associated with crop loss and decreased tourism. Non-profit organizations may also incur expenses if emergency shelters are activated.

A less tangible but equally important consideration is the loss in productivity amongst laborers and individuals who work in a non-climate controlled environment. These workers are at increased risk of the aforementioned health impact associated with heat as well as the potential of death. Between 1992 and 2016, excessive heat killed 783 US workers and seriously injured 69,374³⁴.

Areas at Greatest Risk

Extreme heat usually occurs throughout the entire planning area.

Estimation of Potential Losses

No estimation of potential losses can be derived as there is no defined hazard area. Extreme heat events can occur anywhere in Brown County.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

³⁴ Bureau of Labor Statistics

Drought. Extended high temperatures can result in drought.

Wildfire. Dry, hot conditions can increase the risk for wildfires.

Plans and Programs

Heat Advisories. The local radio and TV media in concert with the National Weather Service issues a heat advisory when the combination of temperature and humidity create risks for people and animals. In the state of Wisconsin, a heat index of 100 or more warrants a heat advisory. Advisories can also be issued if the expected heat index is expected to be 95 to 99 degrees for four consecutive days or more. An excessive heat warning is issued when daytime heat index values are expected to reach 105 or higher and nighttime values will be 75 degrees or higher for a 48 hour period³⁵.

School Closings. The county's school districts have a policy of closing summer schools when the National Weather Service issues a heat index warning. Local television and radio stations partner with the districts to make sure the announcements are out by 5:30 am.

Cooling Site/Shelter. The County does not have a designated cooling shelter; however, a cooling shelter may be made available through partnerships with organizations like the Red Cross and the Salvation Army/211. The authorization to open a cooling center would be determined by the Brown County Health and would require conditions to meet or exceed heat indices of 100 or more for multiple days with warm night.

Gaps and Deficiencies

Not all school districts have a transportation manager providing information on current weather conditions, however, heat events can usually be predicted by meteorologists and can be planned for in advance.

Although Wisconsin requires utilities to provide residents heating between November 1 and April 15, there is no guarantee that residents will have access to cooling during times of extreme heat.

Cooling systems are lacking in many elderly housing developments.

Fog

Fog is a hazard that should not be discounted. Fog is a cloud consisting of minute droplets or ice crystals that touches the ground. In order for fog to form, dust or some other air pollutant needs to be in the air. The water vapor then condenses around these solid particles to form fog. Airport delays, automobile accidents, shipwrecks, and plane crashes can be attributed to fog. Fog is responsible for an average of over \$1,000,000 in property damage, dozens of injuries, and several deaths every year throughout the U.S. The financial cost of transportation delays, although not collected or calculated, are thought to be substantial.

³⁵ Extreme Heat Toolkit, Wisconsin Climate and Health Program - <https://www.dhs.wisconsin.gov/publications/p0/p00632.pdf>

Fog can occur almost anywhere and during any season. There are certain locations that, due to geographical features such as the presence of hills and valleys, water, and vegetation, are more likely to experience fog. Seasonal shifts in temperatures also impact the presence and frequency of fog. Furthermore, not all fog is the same.

Fog is classified based on how it forms, which is often related to where it forms. The following are the four most common types of fog:



Figure 12 Source: WAOW

- **Advection fog** forms when warm, moist air passes over a cool surface. This process is called advection, a scientific name describing the movement of fluid. In the atmosphere, the fluid is wind. When the moist, warm air makes contact with the cooler surface air, water vapor condenses to create fog. Advection fog shows up mostly in places where warm, tropical air meets cooler water. This type of fog is most commonly found near the oceans, however, locally, this type of fog can occur along the shores of the Great Lakes and the Bay of Green Bay.
- **Freezing fog** happens when the liquid fog droplets freeze to solid surfaces. Mountaintops that are covered by clouds are often covered in freezing fog. As the freezing fog lifts, the ground, the trees, and even objects like spider webs, are blanketed by a layer of frost. The white landscapes of freezing fog are common in places with cold, moist climates.
- **Radiation fog** forms in the evening when heat absorbed by the Earth's surface during the day is radiated into the air. As heat is transferred from the ground to the air, water droplets form. Also known as "ground fog" it usually forms at night and typically does not reach as high as any of the clouds overhead. Fog that is said to "burn off" in the morning sun is radiation fog.
- **Valley fog** forms in mountain valleys, usually during winter. Valley fog develops when mountains prevent the dense air from escaping. The fog is trapped in the bowl of the valley. This type of fog is rare in Wisconsin and especially rare in Brown County as the topography does not lend itself to the formation of valley fog.³⁶

The National Weather Service forecasts fog and issues dense fog advisories when visibility is decreased to less than one quarter of a mile. These advisories alert travelers to potentially dangerous conditions. Traveling in fog will often require reduced speed and an increased level of preparedness. At night, traveling in fog is especially dangerous because darkness combines with fog to further reduce visibility. In addition, light from automobile headlights and other navigational lights is scattered off the water droplets of the fog, limiting sight to only a short distance. In response to this problem, automobiles are often equipped with specially designed lights that illuminate a usually dry (and therefore clear) area just above the roadway surface.

³⁶ Fog types, National Geographic - <https://www.nationalgeographic.org/encyclopedia/fog/>

History

According to National Climatic Data Center, Brown County has experienced 12 fog events since January 1, 1990.

March 18, 1996

Dense fog reduced visibilities to one-quarter mile or less across a large portion of northeast and east central Wisconsin.

May 9, 1996

Dense fog reduced visibilities to one-quarter mile or less across most of central and east central Wisconsin.

June 10, 1996

Dense fog affected parts of northeast and east central Wisconsin, especially near the Bay of Green Bay and Lake Michigan. The Fox Valley was also affected by the thick fog, which reduced visibilities to one-quarter mile or less at times.

September 6, 1996

Dense fog affected most of northeast and east central Wisconsin, reducing visibilities to one-quarter mile or less.

September 21, 1996

Dense fog dropped visibilities to one-quarter mile or less across east central Wisconsin.

October 16, 1996

Dense fog developed across most of central, northeast, and east central Wisconsin, reducing visibilities to one-quarter mile or less.

October 21, 1996

Dense fog reduced visibilities to one-quarter mile or less across most of northeast and east central Wisconsin.

January 2, 1997

Dense fog reduced visibilities to one-quarter mile or less across much of northeast, central, and east central Wisconsin. A warm air advection over the top of snow-covered ground led to the fog development.

March 1, 1997

Dense fog enshrouded much of central and northeast Wisconsin, reducing visibilities to one-quarter mile or less.

December 12, 1999

Dense fog reduced visibilities to near zero over much of north central, northeast, central, and east central Wisconsin. Moisture, trapped near the surface by weak high pressure, combined with cool temperatures and light winds to form widespread dense fog.

January 9, 2000

A warm front moving north through Wisconsin brought warm and moist air to central and east central Wisconsin. The snow-covered ground cooled the moist air, resulting in widespread dense fog that first developed in the Fox Valley early in the morning of the January 9, 2000 and then overspread most of central and east central Wisconsin by evening. The fog began to dissipate a bit shortly after midnight on the 10th.

February 24, 2000

Moisture from rainfall and melting snow combined with light winds to produce widespread dense fog across most of northeast Wisconsin.

Vulnerability

Twelve fog events occurred between 1990 and April of 2019, which covers nearly 30 years. Fog is not reported and recorded in the storm events database nearly as often as it occurs. As previously mentioned, fog can be extremely localized and can vary in density based on the conditions present which can drastically change conditions every 100 feet.

It is probable that residents living in Northeast Wisconsin and more specifically, Brown County, will experience fog on an annual basis. For individuals that live and travel near Lake Michigan, that likelihood increases.

Impacts

The following describes the various impacts that fog events have on the county.

Critical Facilities

Law enforcement will likely respond to accidents more frequently during fog events also increasing the likelihood that hospitals and clinics treat individuals injured in said accidents. Rescue services will also see an increase in service requests if accidents occur. Municipal public works and county highway departments may need to perform emergency repairs to infrastructure resulting from crashes during the fog event. Schools may also see schedule disruptions due to slower bus service.

In winter fog events, utility companies may need to repair above ground lines if weighted down by the freezing fog accumulation.

Austin Straubel International Airport and other area airports can experience flight delays and cancellations during certain fog events.

Ships entering the Bay of Green Bay will need to proceed with extra caution during fog events. The shipping channel and some of the bridges on the Lower Fox River are narrow requiring precise navigation with visibility playing a key role.

Public Health

Most injuries caused by fog events result from vehicle accidents. Few other public health impacts occur during fog events.

Safety

The main safety concern associated with fog are injuries from traffic accidents. Freezing fog can also create hazardous walking and driving conditions if the fog condenses on contact with objects and accumulates into ice. Although rare, ship wrecks and plane crashes are also concerns that could have serious impacts to the public's health and safety as well as to the economy.

Infrastructure

The main impact on infrastructure from a fog event is when accidents occur on the roadways. Accidents can cause damage to the roadway, guardrails, signs, and possibly to bridges and overpasses. In the event that an accident occurs, emergency personnel and law enforcement officers may need to reroute motorists to bypass the accident site. Power lines and tree limbs can also become problematic during winter fog events. Branches and power lines that cross or overhang the roadways can be weighted down and even fall into the roadway.

Buildings

There are no direct impacts to buildings from a fog event, except under certain winter circumstances, when freezing of power lines can occasionally lead to disruptions in power to buildings.

Economic

There are economic costs associated with accidents caused by fog. Vehicular accidents usually involve property damage, and some vehicular accidents during fog events involve injuries and/or fatalities. All of these consequences to vehicular accidents have costs both to the individual involved and to society. Fog events can also cost businesses in lost time involving late workers and/or late shipments. If area school districts need to delay school during a fog event, there may be expenses involved with delayed busing and with paying staff for a full day while only having the benefit of a partial day of instruction. Airline delays due to fog have economic impacts for travelers as well as for commerce. There are additional economic impacts if the fog event occurs in conjunction with the icing of power lines in cases where the power lines are damaged, and residents lose power.

Areas at Greatest Risk

Areas of Brown County situated along the Bay of Green Bay and in river valleys and other low-lying areas can be at greater risk for fog under certain meteorological conditions. However, no portion of the planning area is free of the possibility of experiencing fog.

Estimation of Potential Losses

No estimation of potential losses can be derived as there is no defined hazard area. Fog events can occur anywhere in Brown County.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Winter Storms. Winter storm conditions with freezing rain and icy roads can mix with fog to create deadly roadway conditions.

Plans and Programs

Fog Warning Signs. Flashing signals or fog warning signs are in place on roads within Brown County that are known to be prone to fog.

NOAA Weather Radio Program. Brown County has a NOAA Weather Radio purchasing program in place that encourages and assists residents in acquiring a weather radio.

Local News Stations. Local news stations can predict and issue fog advisories. These advisories can help inform people of the potential for fog before traveling.

Gaps and Deficiencies

Local radio and television stations provide warnings but are effective only if tuned to one of the local stations.

Fog warning signs may be ineffective if drivers are traveling at an unsafe speed for the weather conditions.

Hailstorms

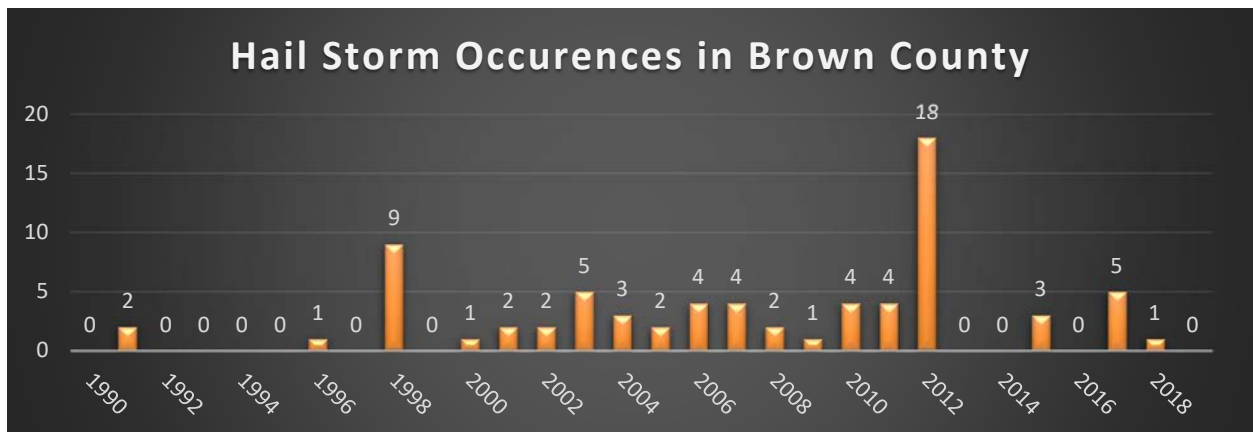
Hail is a form of precipitation that occurs when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere where they freeze into ice³⁷. Frozen droplets gradually accumulate on the ice crystals until they develop sufficient weight and fall as a solid piece of ice as shown to the right. The size of hailstones is a direct function of the severity and size of the storm. Significant damage usually does not result until the hailstones reach 1.5 inches in diameter, which occurs in less than half of all hailstorms. The majority of hail events in Wisconsin range from pea-sized to golf ball-sized however, it is possible that, given the right conditions, larger hail could develop.



Figure 13 Source: theweathernetwork.com

History

According to the National Climatic Data Center, Brown County has experienced 73 hail events since January 1, 1990. As shown in the following tables, hail storms do occur frequently in Brown County.



³⁷ <https://www.nssl.noaa.gov/research/hail/>

Table 3.9: Hail Storm Details			
Location	Date	Size of Hail	Storm Description
UNKNOWN	5/28/1991	0.75	
UNKNOWN	5/28/1991	2.38	
PULASKI	9/21/1996	0.75	
WRIGHTSTOWN & GREENLEAF	3/29/1998	2.75	Two prolific hail-producing thunderstorms dropped hail as large as baseballs and grapefruits across parts of central and east-central Wisconsin during the late morning and afternoon of March 29. Total damage to property from the storms in Waushara, Winnebago, Outagamie, Brown and Calumet counties topped \$10 million. Cash crop damage was minimal.
WRIGHTSTOWN	5/31/1998	0.88	A series of thunderstorms roared across the area late on May 30 and early on the 31st, causing about \$1.8 million dollars in damage and injuring two people. Two tornadoes were also reported.
BELLEVUE	9/1/1998	0.75	Thunderstorms with strong winds and hail moved across central and northeast Wisconsin. A few trees were knocked down across the region. Wind-driven hail caused minor damage.
HOWARD, GREEN BAY, BELLEVUE, & ASHWAUBENON	9/26/1998	1.75-0.88	Numerous thunderstorms with large hail, heavy rain and strong winds rumbled across northern and east-central Wisconsin during the early morning of September 26. Brown County was hit hard. Local flooding in Howard occurred after 3 inches of rain fell in only 2 hours, accompanied by large hail and strong winds.
GREEN BAY	7/13/2000	1.25	The storms downed trees and power lines and dropped large hail as they moved through northeast Wisconsin.
NEW FRANKEN	6/16/2001	0.75	Thunderstorms developed across northern Wisconsin as a weak cold front and an upper level disturbance moved across the state. Some of the thunderstorms downed trees and power lines and produced large hail.
GREEN BAY	8/9/2001	0.88	Severe thunderstorms, associated with a strong cold front, moved across east-central and northeast Wisconsin during the early afternoon hours. Winds from the storms downed trees and power lines, causing 6,700 customers to lose electricity.

WRIGHTSTOWN	5/6/2002	0.88	A low pressure system over southeast Minnesota moved east across central Wisconsin during the late afternoon and early evening hours. Severe thunderstorms developed in the unstable air near the intersection of a warm front and a cold front. There were numerous reports of large hail and some funnel clouds.
DE PERE	5/30/2002	1.5	Severe thunderstorms moved through northeast and east-central Wisconsin ahead of an approaching cold front. Dime size to golf ball size hail fell as the storms moved through the area.
PULASKI & FLINTVILLE	4/15/2003	0.88	Severe thunderstorms developed north of a strong cold front. Temperatures dropped as much as 30 degrees in one hour in some areas as the front moved south across Wisconsin. The hail produced ranged from dime size at numerous locations to as large as a tennis ball.
GREEN BAY	8/2/2003	0.75	Low pressure and unstable air over Wisconsin led to the development of thunderstorms. The storms moved very slowly, resulting in heavy rainfall in some areas. Flooding and large hail was reported with these storms.
PULASKI & SUAMICO	8/28/2003	0.75	Thunderstorms developed ahead of a warm front that moved north across Wisconsin. Dime size hail fell for 10 minutes one mile east of Pulaski.
WRIGHTSTOWN	7/13/2004	0.75	Thunderstorms developed in moist and unstable air as a cold front and upper level trough moved through northeast Wisconsin. Tennis ball size hail was reported in Manitowoc County.
ASHWAUBENON & GREEN BAY	10/23/2004	0.88	A front made its way through Wisconsin as a strong low pressure system moved across the northwest part of the state. Severe thunderstorms developed in a moist air mass ahead of the front. Nickel size hail fell in Ashwaubenon.

ASHWAUBENON	5/6/2005	0.75	Thunderstorms developed in east central Wisconsin as moisture interacted with a trough that moved into the area. The storms produced a tornado, numerous reports of large hail and torrential rain.
GREEN BAY	6/7/2005	1	Thunderstorms developed in the vicinity of a warm front that lifted north through the state during the afternoon and early evening hours. High winds downed trees, power lines and large branches in several locations in central and northeast Wisconsin and there were several reports of large hail.
DE PERE	6/21/2006	1	Thunderstorms that moved through Brown County during the morning produced quarter-size hail in De Pere.
HOWARD	6/28/2006	0.88	Scattered thunderstorms produced penny to nicked size hail in northeast Wisconsin.
PULASKI	7/24/2006	1.25	Half dollar size hail fell 3 miles west of Ashwaubenon and there were several reports of penny to quarter size hail across the area. An apparent wet microburst occurred in Brown County when extremely heavy rain fell as a 50 knot south wind was measured at the National Weather Service in Green Bay. Two airplanes at the airport sustained damage. Trees and tree limbs were knocked down in the Green Bay, De Pere and Hobart areas of Brown County.
BELLEVUE	8/23/2006	0.88	As thunderstorms made their way across northeast Wisconsin some of the storms produced hail as large as a quarter.
SUAMICO	6/20/2007	1	The southeast-moving storms produced copious amounts of large hail, up to golf ball size, high winds that downed trees and power lines, and a funnel cloud.
HOWARD & SUAMICO	7/5/2007	0.88	An upper trough initiated convection in northeast Wisconsin. Outflow from these storms initiated additional severe thunderstorms.
NICOLET ARPT	10/5/2007	0.88	Pulse thunderstorms that developed in unstable air across northeast Wisconsin produced isolated severe weather.

WRIGHTSTOWN	6/28/2008	1	Thunderstorms developed as winds in the upper atmosphere brought colder air over Wisconsin, causing the air mass to become unstable. Some of the storms produced large hail.
(GRB)STRAUBEL FLD GR	7/29/2008	0.75	Thunderstorms developed in unstable air ahead of a cold front that pushed east across Wisconsin. The storms produced large hail, wind damage and three weak tornadoes.
NICOLET ARPT	6/14/2009	0.88	Thunderstorms, associated with a passing cold front, produced nickel size hail near De Pere. The hail was mainly 0.50 inch to 0.75 inch diameter and partially covered the ground.
ALLOUEZ, GREEN BAY, & BELLEVUE	8/20/2010	1.5	Severe storms with heavy rains, hail, high winds, and a tornado, moved across the Fox Valley and Green Bay late in the afternoon. Hail over an inch in diameter fell in Green Bay and De Pere. Intense rains caused flooding in Green Bay.
NEW ROME	4/10/2011	1	Thunderstorms developed along and ahead of a cold front as it encountered moist and unstable air across Wisconsin. Fifteen twisters affected the state as a strong spring storm moved across the western Great Lakes. In addition to the tornadoes, the lines of thunderstorms that developed produced plenty of straight line wind damage and large hail. The largest hail reported was baseball size near Winneconne in Winnebago County.
CORMIER, WRIGHTSTOWN, & ALLOUEZ	5/22/2011	1.5- 0.88	Severe thunderstorms produced high winds, large hail, and a tornado across central and northeast Wisconsin on May 22, 2011.
HOWARD	5/3/2012	0.88	Thunderstorms developed over northeast Iowa Wednesday evening before tracking over east central Wisconsin overnight on May 2nd into the morning of May 3rd. Heavy rain produced flooding along with hail up to nickel size.

CORMIER, ASHWAUBENON, PREBLE, KOLB, ALLOUEZ, DE PERE, & SHIRLEY	6/22/2012	1.00-0.75	Thunderstorms that developed in response to an upper level disturbance produced isolated large hail and heavy rainfall as they moved through east-central Wisconsin.
KUNESH	7/9/2012	0.75	Scattered strong thunderstorms developed over northeast Wisconsin due to an upper air disturbance and an unstable air mass. One of the storms produced wind damage near Pulaski and Pittsfield.
CORMIER, GREEN BAY, SUAMICO, BELLEVUE, MORRISON, WRIGHTSTOWN, & GREENLEAF	7/30/2012	2.5-0.75	An upper level disturbance and a cold front interacting with an unstable air mass resulted in the formation of thunderstorms. The strongest storms produced hail as large as tennis ball size and wind gusts to 60 mph.
SUAMICO & ASHWAUBENON	8/2/2015	1.75	Another round of severe thunderstorms with large hail and damaging straight-line winds affected parts of central and northeast Wisconsin during the afternoon of August 2nd. Some of the first severe storms of the event developed just north of Green Bay and produced hail in excess of three inches in diameter.
PULASKI	8/14/2015	1.75	Storms produced heavy rainfall that caused minor urban flooding, damaging winds that downed trees and power lines, and hail up to golf ball size across eastern Wisconsin.
GREEN BAY & BELLEVUE	8/10/2017	1.25-0.75	Scattered thunderstorms developed when a cold front encountered moderately unstable air. The strongest storms contained heavy rain, large hail, and wind gusts of 40 to 50 mph. The largest reported hail was half dollar size in Green Bay.
DENMARK	7/30/2018	0.75	Thunderstorms in east-central Wisconsin produced penny size hail in Denmark.

Source: NOAA National Climatic Data Center; July, 2019

Vulnerability

Seventy-three hail events occurred between 1990 and April of 2019. Hail can impact any part of Brown County and most of the reported damage from hail storms occurs to; buildings, vehicles, infrastructure, and agricultural crops. As noted in some of the storm descriptions in the table above, hail damage can become extremely costly with reports of damage in the millions of dollars.

Impacts

The following describes the various impacts that hail events have on Brown County.

Critical Facilities

Hail can inflict severe damage to buildings, mainly the roofs, windows and siding, depending on hailstone size and winds.

Public Health

Hail is unlikely to cause any public health concerns.

Safety

As noted in the storm reports since 1990, hail can cause injuries but rarely causes anything more than minor injuries.

Infrastructure

Buildings

Hail can inflict severe damage to roofs, windows and siding, depending on hailstone size and winds.

Economic

Costly hailstorms are increasing in the United States, with the average year now accumulating between \$8 and \$10 billion in damage. Additionally, hailstorms account for 70 percent of insured loss from severe storms. In 2017 alone, there were two \$2 billion hailstorms, one in Denver and the other in Minneapolis³⁸. Most of the cost incurred is to vehicle and building damage, however, damage to agricultural crops can be costly as well. Taller crops, such as corn are particularly vulnerable to hail.

Areas at Greatest Risk

Based on review of the historic hailstorm patterns, there are no specific areas with higher than average risks in Brown County. The events occur relatively uniformly throughout the county.

Estimation of Potential Losses

No estimation of potential losses can be derived as there is no defined hazard area. Hailstorms can occur anywhere in Brown County.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Lightning and Thunderstorms. Lightning and thunderstorms often accompany hailstorms, increasing the damage potential to the planning area.

Plans and Programs

Severe Storm Spotters Network. This program, sponsored by the National Weather Service (NWS), enlists the help of trained volunteers to identify, evaluate, and report severe weather events to the NWS. Brown County has several trained severe weather

³⁸ Washington Post – August 8, 2018

spotters, many of whom report directly to their respective public safety offices when severe weather is observed.

Gaps and Deficiencies

Local radio and television stations do provide warnings but are only effective only if viewers are tuned to one of the local stations.

A majority of the power lines in the county are above ground and subject to damage from ice, wind, and falling tree limbs. There are community requirements to manage trees near power lines.

Dam Failure Flooding

There are 50 dams of various sizes located throughout Brown County according to the “Dam Safety” data received from WDNR in 2019. The definition of a dam is any artificial barrier in or across a watercourse which has the primary purpose of impounding or diverting water and includes all appurtenant works, such as a dike, canal or powerhouse³⁹. Of the county’s dams, 18 were owned by the county or a local municipality; one was owned by the WDNR, one by the Army Corp. of Engineers, two by Northwestern Wisconsin Technical College; two by the Wisconsin Department of Transportation, and the remaining dams were owned by individuals or private entities. The WDNR regulates the permitting of new dam construction, repairs, reconstruction, ownership transfers, water levels, and abandonment.

A dam with a structural height of over 6 feet and impounding 50 acre-feet or more, or having a structural height of 25 feet or more and impounding more than 15 acre-feet is classified as a large dam.

Dams are classified as Low, Significant, or High Hazard. A dam is assigned a rating of High Hazard when its failure would put lives at risk. The hazard rating is not based on the physical attributes, quality or strength of the dam itself, but rather the potential for loss of life or property damage should the dam fail.

History

There is no significant hazard history for any dams in Brown County.



Figure 14: Lake Delton Dam Failure
Source: wiscnews.com

³⁹ WDNR Dam Safety: <https://dnr.wi.gov/topic/dams/>

Vulnerability

Of the 52 dams within the county, there are five large dams with one having a “high” hazard rating, two have a “significant” hazard rating, and the final two have a “low” hazard rating. As shown in the table below, the Lamers Pond Dam in the Village of Ashwaubenon serving the Dutchman’s Creek Tributary is the lone dam in Brown County with a “high” hazard rating. Please see Chapter 2 for more information on the *Emergency Action Plan* prepared for this dam.

Table 3.10: Brown County Dams with Hazard Ratings

Dam Name	Dam Size	Hazard Rating
Lamers Pond	LARGE	H
Macco Pond	LARGE	L
Pouwels	SMALL	L
Colwitz	SMALL	L
Koerner	SMALL	L
Imig	SMALL	L
Upper Pamperin Park	SMALL	L
Lower Pamperin Park	SMALL	L
Blazie Investments	LARGE	L
Oneida Golf And Riding Club	SMALL	L
Heritage Hill Pond	SMALL	L
Little Kaukauna	LARGE	S
De Pere	LARGE	S

Hazard ratings are determined based on an assessment of the existing land use downstream of the dam.

Source: WDNR

The areas vulnerable to dam failure flooding include those locations within the hydraulic shadow of the dam. The hydraulic shadow of the dam is the area of land downstream from a dam that would be inundated by water upon failure of the dam during the regional flood.

Impacts

The following describes the various impacts that wildland fires have on the county.

Critical Facilities

There are no critical facilities vulnerable to flooding if the Lamers Pond Dam were to fail.

Public Health

Three types of health concerns could accompany dam failure flooding. The first hazard comes from the water itself in the form of illnesses resulting from contaminants carried in the water.

The second type of health hazard comes from the creation of stagnant pools which provide habitat for vectors and the production of mold spores.

The third health hazard is the long-term psychological impact of having experienced the destruction of a flood due to dam failure. This type of hazard can happen suddenly

and without warning leading to extreme levels of stress and possible anxiety in the future.

Safety

During a dam failure flooding event a massive amount of water is released all at once. When a large volume of water begins moving it can move large objects like cars and destroy structures. This can be dangerous for everyone and everything in the path of the water. Floods of this nature can also cause damage to utilities such as power and gas lines creating secondary hazards such as electrocution and gas leaks, unsafe structures and possibly fires.



Figure 15:
Lake Delton, WI Dam Failure Flood Damage
Source: Twincities.com

Infrastructure

Infrastructure impacts of flooding from a dam failure include impacts to roads, bridges, sewer and water line damage, and electrical and gas lines.

Economic

Floods from dam failures cause wide sweeping damage and the economic impacts can be at a scale that is in-comprehensible. Everything from infrastructure damage noted above to private property damage and agricultural loss can add up quickly. The economic impact however, is directly proportional to the size of the dam and its hazard rating. A dam with a higher rating has the potential to cause more damage and even take lives.

Other

Public expenditures spent on clean up and on repairs to damaged infrastructure and public property affect all residents of the planning area, not just those in the shadow of the dam.

Areas at Greatest Risk

The areas of greatest risk from dam failure are those areas within the hydraulic shadow of the dam of the large Lamers Pond Dam in the Village of Ashwaubenon, which has a “high” hazard rating.

The Little Kaukauna Dam in Little Rapids (Town of Lawrence) and the De Pere dam are both large dams with “significant” hazard ratings that present a noteworthy risk potential.

Estimation of Potential Losses

The hydraulic shadow for the Lamers Pond Dam in Ashwaubenon encompasses one residential structure with a total assessed valuation of \$195,300 (tax year 2020).

For the Little Kaukauna Dam in Little Rapids (Town of Lawrence) and the De Pere dam, no estimation of potential losses can be derived without a defined hazard area as the hydraulic shadow of the dam delineations are confidential and unavailable.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Flood. Inundation of floodplain areas or possibly a larger area would occur if the dam or levee structures fail.

Fire. Fire can occur due to compromised electrical and natural gas infrastructure.

Hazardous Materials. Hazardous material releases can occur due to improper storage of materials in flood prone areas.

Infectious Disease. Infectious disease outbreaks are possible during prolonged flood events where floodwaters can support disease vectors.

Transportation Disruption. Destruction or disruptions to transportation routes roads, bridges, railroads, and by river navigation can be disrupted due to inundation and/or substantial flow velocities.

Power Outages. Power outages can occur if portions of the electrical grid are compromised by floodwaters. The power outages may be longer than those incurred from high winds due to the floodwaters needing time to recede.

Plans and Programs

Regulation of Dams and Bridges. Chapter 31 of the Wisconsin Statutes, created in 1917 under the Water Power Law, was developed to ensure that dams are safely built, operated and maintained. NR 333 of the Administrative Code provides design and construction standards for large dams, and NR 335 (Wis. Admin. Code) covers the administration of the Municipal Dam Grant Program and the Dam Removal Grant Program. Wisconsin DNR is responsible for administration of these regulations. Chapter 31 covers dam construction, permitting, safety, operation and maintenance. It also covers alteration or repair of dams, dam transfer and removal, and water level and flow control.

Municipal Dam Grant Program. The Municipal Dam grant program provides a cost-sharing opportunity for eligible engineering and construction costs for dam maintenance, repair, modification or abandonment and removal up to a maximum of \$400,000. More information can be found at: <https://dnr.wisconsin.gov/aid/DamMunicipal.html>

NOAA Weather Radio Program. Brown County has a NOAA Weather Radio purchasing program in place that encourages and assists residents in acquiring a weather radio.

Gaps and Deficiencies

Many of the dams in Wisconsin were built in the late 1800s and early 1900s. Over time, water pressure, weathering, and animal activity will slowly break down a dam. Dams need constant maintenance and repairs. If dams are allowed to naturally degrade, they have a greater risk for problems such as sudden breaks.

Fires (Forest and Wildland)

A wildland fire is any non-structure fire, other than prescribed fire, that occurs in the wildland⁴⁰. Typical causes of these fires are lightning, human carelessness, or arson. Wildland fires can occur at any time of the year and during any time of the day if conditions are right. The primary factors/conditions that contribute to a wildland fire are land use, vegetation, amount of combustible materials present, and weather conditions such as wind, low humidity, and lack of precipitation. Generally, fires are more likely to occur when vegetation is dry from a winter with little snow or a spring and summer with sparse rainfall. In recent times, development of homes and other structures in areas of highly flammable vegetation have caused an increase in wildfire danger. This condition is known as the wildland-urban interface (WUI).

The WUI is the zone/area where structures and other human developments meet, or intermingle with, undeveloped wildlands. Therefore, the WUI fire interface is any point where the fuel feeding a wildfire changes from natural (wildland) fuel to man-made (urban) fuel⁴¹.



Figure 16 Source: Ethan Miller

If preventative measures are not taken the chances of a wildland fire increase. If a wildland fire develops, it can turn into an emergency or even a disaster if not caught early. Fires threaten lives, resources, and property. In addition, fires can affect livestock and other domesticated pets.

History

The Wisconsin Department of Natural Resources no longer maintains data on wildland fires. However, according to local fire fighters, wildland fires are a frequent occurrence throughout the county, primarily in the spring of the year when the snow has melted and the vegetation is dry and yet to begin growing. Other times of the year can be subject to wildland fires due to drought conditions or through human actions such as the burning of refuse or yard waste. Fire departments serving the fringe of the Green Bay Metro Area and rural departments have been upgrading equipment to better combat these types of fires.

Since January of 1990, there have been no major incidences of wildland fires in the county. According to Steering Committee members, small fires have claimed some structures, however, vegetation and wildlife habitat have been the primary impact areas.

⁴⁰ National Park Service, Fire and Fuels Management: Definitions, Ambiguous Terminology and References

⁴¹ National Park Service, Fire and Fuels Management: Definitions, Ambiguous Terminology and References

Vulnerability

Brown County is not extensively forested and does not contain the hazards and risks necessary to warrant intensive fire protection. Therefore, there are no Wisconsin DNR ranger stations or suppression resources located in the county.

According to the U.S. Forest Service Wildland Fire Assessment System, Brown County regularly falls within a low fire danger class. A low rating indicates that “Fuels do not ignite readily from small firebrands although a more intense heat source, such as lightning, may start fires in duff or punky wood. Fires in open cured grasslands may burn freely a few hours after rain, but woods fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting⁴².”

Overall, the probability of a naturally occurring wildland fire is low for the entire county. However, the probability that at least one wildland fire will occur in the county remains high because local ordinances, typically in rural communities, allow for burning to occur on private property.

Impacts

The following describes the various impacts that wildland fires have on the county.

Critical Facilities

Police, fire, and emergency response departments are greatly affected by wildland fires incurring increased workloads during and after events. Hospitals may see patients with burn related injuries and/or suffering from the effects of smoke inhalation. Schools, if not affected by a fire, could potentially be used as a temporary shelter for individuals that cannot return to their homes. All critical facilities located in the path of a wildland fire can be affected if the facility cannot be protected by fire suppression efforts.

Public Health

Wildland fires can lead to various injuries and even fatalities. Most individuals affected by wildland fires suffer from injuries related to burns and smoke inhalation.

Safety

Wildland fires present a serious threat to public safety. Residential areas and other locations that may be at risk of experiencing wildland fires are typically evacuated to ensure the safety of the public.

Infrastructure

A wildfire has the potential to impact a wide variety of public infrastructure including; traffic lights, railroad crossings, street signage, communication and power transmission structures, and if the fire is hot enough, pavement/asphalt can be damaged.

Buildings

The potential for property damage and structural losses increases as more development occurs in wooded areas and as human activity increases in recreational

⁴² USFS – Wildland Fire Assessment System (WFAS): <https://www.wfas.net/index.php/fire-danger-rating-fire-potential--danger-32/class-rating-fire-potential-danger-51>

areas. Homes and other structures on wooded lots and near the urban rural interface are at higher risk. This risk increases when buildings are surrounded by fuel sources such as unmowed grass, unraked leaves, flammable vegetation, and dead branches. If a wildfire does reach a structure, building materials that may melt or ignite can increase the risk of a structural loss.

Residential housing is typically the most dominant type of structure at the urban rural interface. Though many parts of a home can be affected by wildfire damage, the roof is the most exposed portion of the building and is more at risk from flying embers. Attics may also be affected by airborne embers that enter through open eaves and vents. Structures attached to homes, such as decks, garages, and fences, can ignite and lead to the fire engulfing a home.

Economic

Wildland fires can have an impact on the economy causing thousands of dollars in damages to both public and private property. Direct costs associated with wildland fires include the salvage and removal of downed timber and debris and any necessary restoration of the burned area. Wildland fires can also have a significant impact on local agriculture. Fires can destroy entire fields of crops as well as harm the soil and waterways. Soil exposed to intense heat may lose its capability to absorb moisture and support life.

Areas at Greatest Risk

Brown County contains approximately 79,122 acres of natural areas, including forests, wetlands, and floodplains. Of these, few contain timbers that are very susceptible to burning. Therefore, lands covered in grass fuels pose the highest risk for the planning area. Furthermore, grasslands that abut heavy residential development present an even greater danger, especially when residents practice unapproved outdoor burning of leaves, garbage and other items of which they wish to dispose of by incineration. The likelihood that any wildland fire in Brown County would be catastrophic is low as most susceptible areas lack enough acreage to allow for continuous burning.

Estimation of Potential Losses

Estimating the potential loss to a wildland fire is impossible. To help prevent a scenario where a wildland fire could start and grow to a catastrophic degree will require a combination of education and enforcement efforts at the local level.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Flooding and Erosion. Major wildfires can destroy ground cover, which can lead to heavy erosion and loss of vegetation. If heavy rains follow a wildland fire, flash floods, landslides and mudflows can occur. The preservation of vegetation is essential in deterring flooding during heavy rainfalls or spring runoff.

Hazardous Materials. Major wildfires that reach structures that contain hazardous materials can lead to explosions or rupturing of storage structures that can release hazardous materials that can impact the soil, ground water, surface water, and air quality.

Plans and Programs

Fire Districts/Departments. Brown County is served by 33 fire departments, including the Austin Straubel Airport Fire Department. Each department is responsible for wildfires within their department boundaries. However, many fire departments have mutual aid agreements which allows them to work together on larger fires, including a wildfire if it were to occur.

Fire Department Wildland Training. Wisconsin DNR - Division of Forestry provides free wildland fire training to fire departments in cooperative fire protection areas of Wisconsin. Brown County is within a cooperative fire protection area.

Zoning. The zoning departments, which include building inspectors, regulate the development of new housing. The departments oversee enforcing safety restrictions including setbacks, lot coverage, depth, and structure height. In addition, the Unified Building Code sets standards for roofing. The building inspector is responsible for inspecting residential structures, while the fire marshal inspects commercial structures for potential fire hazards.

Fire Mutual Aid Agreements. There are formal mutual aid agreements between all fire departments in Brown County. The county has become a Mutual Aid Box Alarm System (MABAS) organization (Division 112). As a MABAS agency, Brown County fire departments will agree to standards of operation, incident command, minimal equipment staffing, safety, and on-scene terminology. MABAS agencies, regardless of their geopolitical origin, can work together seamlessly on any emergency scene. All MABAS agencies operate on a common radio frequency, Interagency Fire Emergency Radio Network (IFERN) and are activated for response through protocols developed to meet local risk needs. MABAS also provides mutual aid station coverage to a stricken community when their Fire/EMS resources are committed to an incident for an extended period.

Coastal Hazards

Coastal hazards are natural hazards affecting the Wisconsin Great Lakes shoreline. Coastal areas in Brown County are specific to areas along the Bay of Green Bay. According to the Wisconsin Coastal Management Program of the National Oceanic and Atmospheric Administration, the coastal hazards of concern include:



Figure 17 Green Bay

Source: US Navy

- Erosion of coastal bluffs, banks, beaches and near shore lake beds (including erosion from freezing and thawing of lake ice);
- Flooding from upland runoff, high lake levels and storm-induced surge (temporary water level changes); and
- Damage to shoreline structures from storm waves.

In addition, Brown County has experienced property damage from rising water levels in the Fox River and East River due to heavy rain events and coastal flooding events that occur when wind conditions push water into the bay causing coastal wave run-up. The worst scenarios occur when great lake levels are high and a storm pushes in from the northeast. This scenario presents a triple threat where the rain and wind produced by the storm combined with the high lake levels creates both coastal flooding as well as flash flooding along the major waterways.

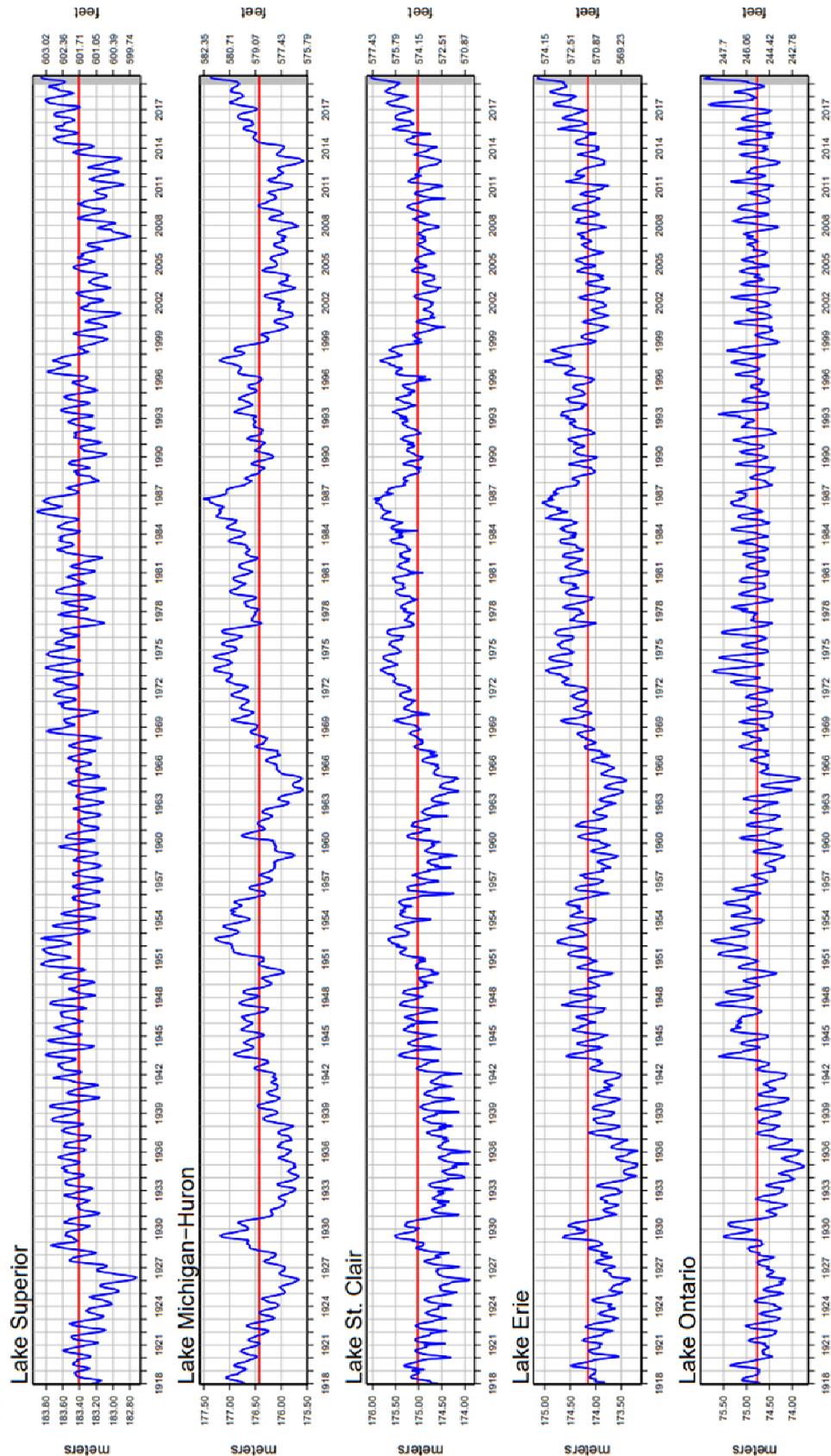
Effects of Fluctuating Lake Water Levels

Since about 2014, water levels on the Great Lakes have been trending toward record highs. The water levels on the Great Lakes have been recorded since the early 1900's. While we are currently experiencing water levels approaching records, the data shown in the following graphic from the US Army Corps of Engineers suggests the water levels fluctuate by as much as two feet.



Great Lakes Water Levels (1918–2019)

— Monthly Mean Level — Long Term Average Annual



The monthly average levels are based on a network of water level gages located around the lakes. Elevations are referenced to the International Great Lakes Datum (1985).

Water levels have been coordinated through 2018. Values highlighted in gray are provisional.

When water levels are high, properties adjacent to the water are at a heightened risk of multiple types of flooding and coastal and streambank erosion. Waves during high water levels are capable of undercutting shoreline and creating unstable conditions along bluffs and possibly along roadways or private property. Conversely, when the water level is low, wave energy dissipates as waves break along the exposed beach instead of the shoreline.

The fluctuations in the water level can have an impact on development adjacent the water. It is important for Brown County communities to consider this when development is proposed on or near the bank of waterways and along the shoreline of the Bay of Green Bay.

Coastal Ice Effects

Properties adjacent to the Bay of Green Bay are susceptible to events known as ice shoves. Ice shoves occur when the wind pushes ice on to shore. The ice, when pushed/piled up on shore, can damage structures, destroy vegetation, and move sand or stones from beaches.

As shown in the image to the right, ice shoves are typically isolated events and do not impact large areas. The right conditions are also required to produce these ice shoves and their occurrence is infrequent.



Figure 18 Source: The Door County Pulse

Coastal ice may also impact small streams if they become blocked by ice jams. The confined backwater builds up a hydrostatic head that may cause a breach in the stream bank or cut a new outlet through the lake bank, with possible damage to structures built near the stream or lake bank. Ice jams blocking stream outlets may cause backwater with resulting inundation of low-lying inland areas.

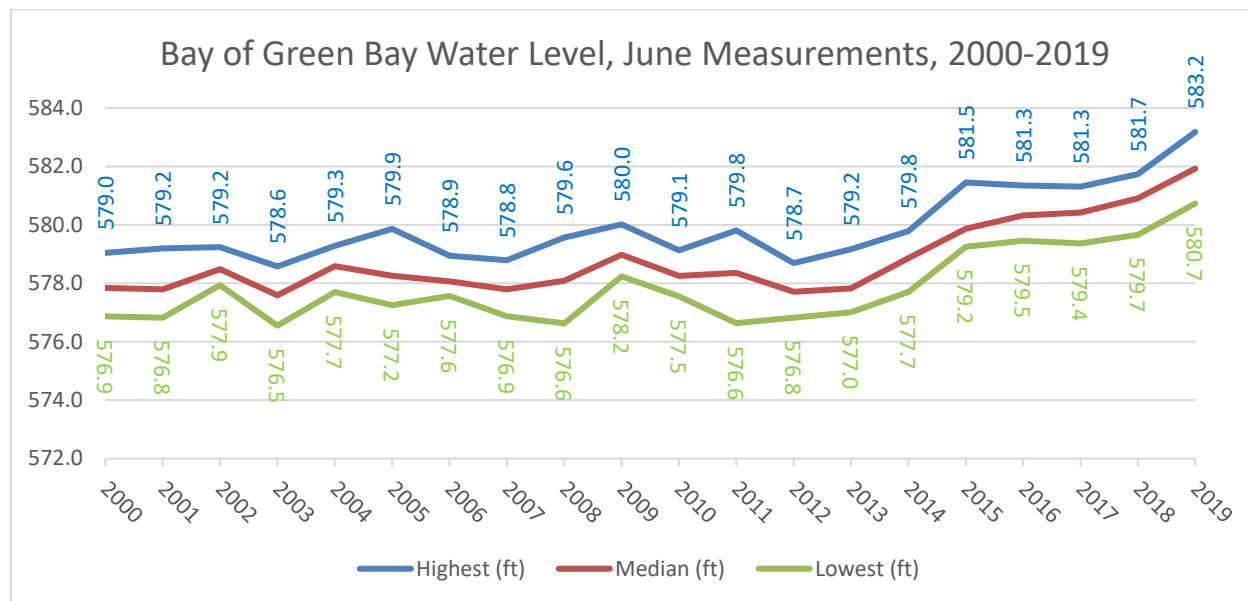
History

Lake Water Levels

The previous chart details the annual mean water level for all of the Great Lakes. This graph, while helpful in understanding the water levels over time, does not capture the high or low water levels throughout the year. Because high water levels pose the greatest threat to human life and habitation, data was collected from the month of June, which is most often the month with the highest water levels, dating back to 2000. The graph below shows the water levels measured in the Bay of Green Bay. During this 19 year span, the lowest water level was recorded in 2005 (576.5 feet) while the highest level occurred in 2019 at 583.2 feet. This is a difference in 6.7 feet.

There is a trend beginning in 2012 and continuing through 2019. Water levels have been relatively consistent from 2000 to 2012 with the recorded high dropping 0.3 feet. However, since 2012 there has been a steady increase in water levels. Conditions that have contributed to the increasing water levels include a combination of above average annual precipitation, above average snow accumulation, and below average winter temperatures that freeze more of the great lakes thereby reducing evaporation during the winter months. The current lake levels are within inches of the record set in 1986.

It is important to note that even during periods of lower water levels; severe storms can result in flooding.



Source: NOAA Tides and Currents; August, 2019

Vulnerability

All coastal counties in Wisconsin are vulnerable to erosion, flooding, and damage to shoreline structures. More specifically, the communities adjacent to the Bay of Green Bay including the Villages of Howard, Suamico, the City of Green Bay, and the Towns of Scott and Green Bay are at risk of coastal flooding. For communities that do not share a border with the Bay of Green Bay but that do have a border with the Fox River and the East River, flooding is a concern and can be a result of the high water levels in the Bay of Green Bay.

Impacts

The following describes the various impacts that coastal hazards have on the county.

Critical Facilities

Of the 1,223 critical facilities located in Brown County, 44 are located within the FEMA coastal run-up zone associated with the Bay of Green Bay and the Lower Fox River.

Public Health

Coastal hazard events may result in contaminants such as raw sewage containing E. coli to be washed into Green Bay/Lake Michigan. When these events occur public health concerns for swimmers and other patrons increases. It may be necessary to

close swimming areas and to provide public notices informing the public of the potential for health risks.

Safety

Coastal hazards present a public safety concern for boaters, swimmers, and near-shore visitors or residents during severe weather and high water conditions.

Infrastructure

Coastal hazards such as bluff erosion and coastal flooding can cause damage to private property and public infrastructure such as roadways and other facilities.

Economic

Coastal hazards can cause significant financial losses. Beach erosion, coastal flooding, and bluff failures are all possible around the great lakes.

Water level fluctuations in Green Bay/Lake Michigan significantly affect the revenues of the shipping industry. Commercial carriers' revenues decrease during periods of low water levels because shipping is dependent on the amount of draft available in shipping channels. When the draft is reduced, the amount of cargo must also be reduced. Economic losses also arise from restricted marina and launch traffic for charter boats, pleasure boats, commercial fishing, and sport fishing when lake levels are low. Although dredging can improve access to the lakes, it is often damaging to the aquatic environment and very costly.

Areas at Greatest Risk

The areas at greatest risk include those that are identified on the FEMA Flood Maps as either within the 100 year or 1 percent chance flood zone and areas adjacent to the water that include steep slopes that are often prone to erosion and degradation. There are parts of the Bay of Green Bay that have coastal run-up zones. Flooding in those areas is described in the graphic below.

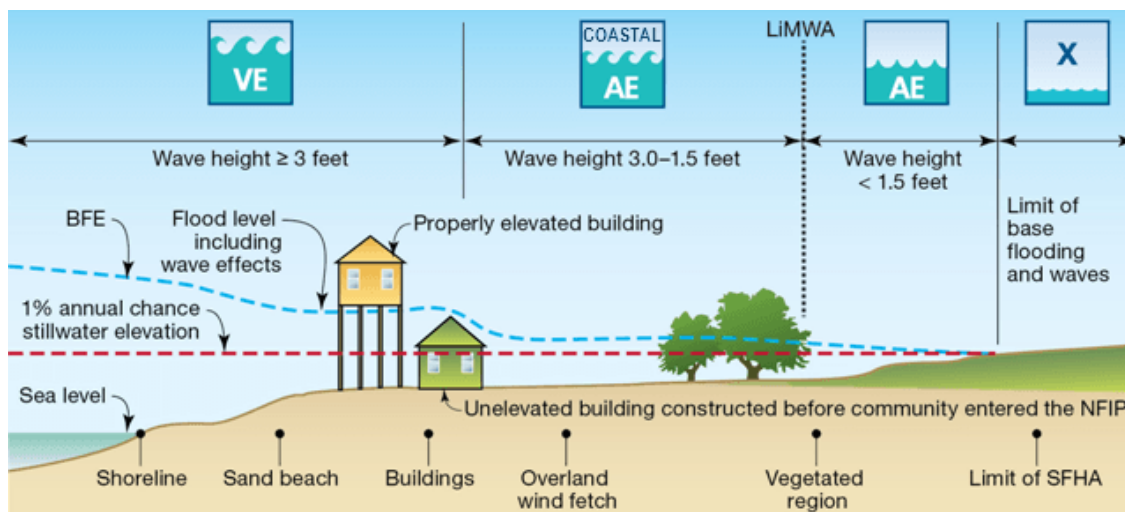


Figure 19 Source: The City of Portsmouth

Estimation of Potential Losses

Coastal Flooding and Bluff Erosion. Coastal flooding and bluff erosion can cause significant financial losses to homes, business, government facilities, and public infrastructure. Estimating the potential losses would be nearly impossible due to the unpredictable nature of coastal flooding. To estimate the potential losses, Brown County utilized the FEMA “wave run-up zone” to identify areas where coastal flooding could occur. The primary coastal communities accounted for nearly 700 million dollars in value that can be impacted.

Table 3.11: Estimate value in Coastal Flood Areas		
Municipality	Parcels Impacted	Total Value*
City of Green Bay	2725	\$567,249,600
Town of Green Bay	192	\$52,827,100
Town of Scott	306	\$7,059,660
Village of Howard	162	\$16,713,600
Village of Suamico	414	\$57,630,300
Total	3799	\$701,480,260

Source: Brown County Tax Records combined with GIS analysis of FEMA data.

Low Lake Levels. A 1,000-foot long vessel forfeits 270 tons of cargo for each one-inch reduction in draft. The loss of one foot of water means a typical 1,000-foot iron ore carrier would lose 3,240 tons of cargo. The ship would have to make 2.5 extra trips to make up the difference over the season, costing the shipping company tens of thousands of dollars (Lake Carrier’s Association/Army Corps of Engineers, 1999).

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Flooding. Flooding of tributaries to Green Bay/Lake Michigan could exacerbate flooding and coastal erosion in those areas.

Drought. Drought conditions over much of the Great Lakes area could lower lake levels decreasing the ability to ship materials through the port of Green Bay.

Plans and Programs

Shoreland Management Program: The shoreland program is a partnership between state and local government that requires the adoption of county shoreland zoning ordinances to regulate development near navigable lakes and streams in compliance with statewide minimum standards.

Brown County Subdivision Ordinance: The Brown County Subdivision Ordinance regulates land divisions throughout the county with the exception of the City of Green Bay and the City of De Pere, each of which have their own land division review. The Brown County Subdivision Ordinance incorporates the identification of natural resource features critical to the protection of water quality. Development is prohibited within these natural resource features and their associated setbacks as identified by the Brown County Subdivision Ordinance.

Wisconsin Coastal Management Program (WCMP): WCMP oversees the management of the state's coastal resources and strives to maintain a balance between preservation and economic needs.

WCMP Grant Program: WCMP provides grants to encourage the management and protection of the state's coastal resources and increase public access to the Great Lakes.

NOAA Weather Radio Program: Brown County has a NOAA Weather Radio purchasing program in place that encourages and assists residents in acquiring weather radios.

Gaps and Deficiencies

Development adjacent to water features like the Bay of Green Bay and many of the waterways that drain into it are under constant development pressure. The development adjacent to these water features are at an increased risk of flooding and where steep slopes are present, bank or bluff erosion.

Historical information on coastal hazards is not complete or easily available to emergency management planners in coastal communities.

Riprap is often viewed as an effective tool/solution to manage bluff erosion. However, riprap shifts due to the force of the water and can still be undermined if the water overtops the riprap or if the riprap is damaged and not repaired quickly.

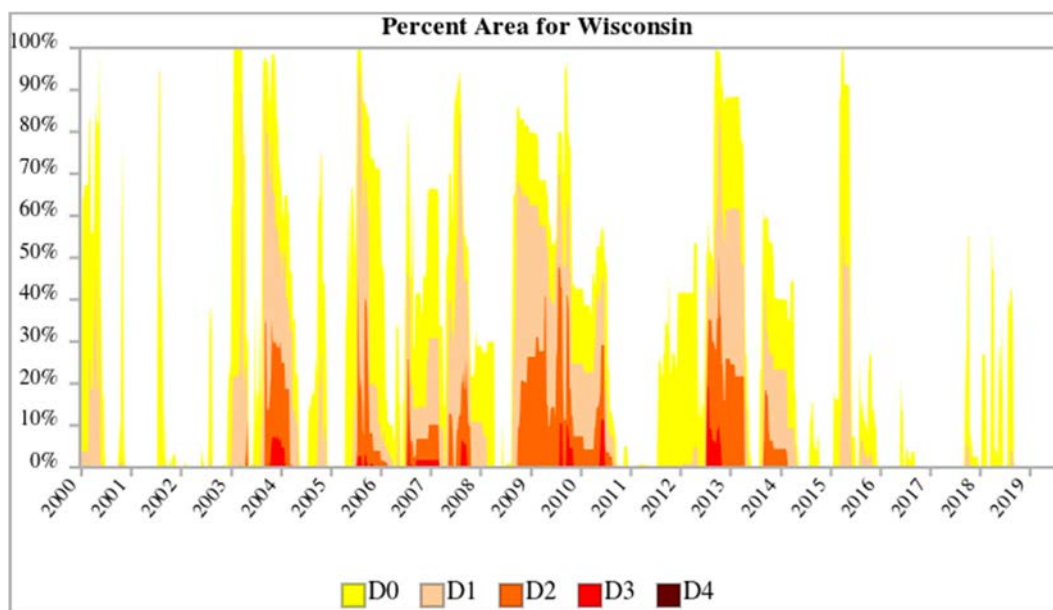
Drought

Drought is a complex phenomenon which is difficult to monitor and define. It is a creeping phenomenon that slowly sneaks up and impacts many sectors of the economy, and operates on many different time scales. As a result, the climatological community has defined four types of drought: 1) meteorological drought, 2) hydrological drought, 3) agricultural drought, and 4) socioeconomic drought. Meteorological drought happens when dry weather patterns dominate an area. Hydrological drought occurs when low water supply becomes evident, especially in streams, reservoirs, and groundwater levels, usually after many months of meteorological drought. Agricultural drought happens when crops become affected. And socioeconomic drought relates the supply and demand of various commodities to drought. Meteorological drought can begin and end rapidly, while hydrological drought takes much longer to develop and then recover.⁴³

	D0 - Abnormally Dry - Short-term dryness slowing planting, growth of crops - Some lingering water deficits - Pastures or crops not fully recovered	0.0% of State	0.0% D0-D4
	D1 - Moderate Drought - Some damage to crops, pastures - Some water shortages developing - Voluntary water-use restrictions requested	0.0% of State	0.0% D1-D4
	D2 - Severe Drought - Crop or pasture loss likely - Water shortages common - Water restrictions imposed	0.0% of State	0.0% D2-D4
	D3 - Extreme Drought - Major crop/pasture losses - Widespread water shortages or restrictions	0.0% of State	0.0% D3-D4
	D4 - Exceptional Drought - Exceptional and widespread crop/pasture losses - Shortages of water creating water emergencies	0.0% of State	

⁴³ NOAA: Definition of Drought - <https://www.ncdc.noaa.gov/monitoring-references/dyk/drought-definition>

Brown County has not experienced prolonged periods (lasting more than 2 months) without rainfall in the last 25 years. Brown County agriculture, the sector of the economy most susceptible to drought, has never experienced a total crop failure from drought. Some issues have arisen where private wells failed, requiring the affected parties to re-drill to reliable aquifers. To date, no other activities, areas, or infrastructure, including public water supply, have been affected by drought in the county.



Source: NIDIS, U.S. Drought Monitor

History

Wisconsin is a state that is susceptible to drought. In 2000, the National Integrated Drought Information System (NIDIS) was created as a partnership between seven different federal agencies to better track and manage the impacts of drought. NIDIS collects drought information as it relates to the drought (above graph). Since NIDIS began collecting the data, Wisconsin has seen periods of drought as shown in the graph above, with the most intense event occurring in July of 2012 where 19.69% of the state reached level D3. The following is a list of the drought events recorded with NOAA's Storm Events Database.

March 1, 1999

It was a very dry month across northeast Wisconsin with numerous small grass fires. Many locations received less than a quarter inch of precipitation for the month. Green Bay not only had its driest March on record with 0.15 inch, but it was also the 6th driest month of all time. No measurable precipitation was recorded in Green Bay during the last 22 days of the month.

July 19, 2005

Below normal rainfall and temperatures that averaged about 5 degrees above normal for the month of July combined with below normal precipitation during the first half of the year to result in the development of drought conditions. Precipitation for the month of July was 1.98 inches below normal in Green Bay. The January through July 2005 precipitation deficit was 3.25 inches in Green Bay. The U.S. Drought Monitor began categorizing parts of east central Wisconsin as being in moderate drought (D1) on June 28, 2005, and by July 12, 2005 northeast, central, east central, and most of northeast Wisconsin had reached the moderate drought category. Central, east central, and much of northeast Wisconsin were upgraded to severe drought (D2) on July 19, 2005. Severe drought conditions remained for the rest of the month for most of the area.

August 1, 2005

Below normal rainfall in most areas and slightly above normal temperatures for the month of August allowed drought conditions to persist through at least the first half of the month. Precipitation for the month of August was 0.46 inch above normal in Green Bay. The January through August 2005 precipitation deficit was 2.79 inches in Green Bay. The U.S. Drought Monitor continued to categorize much of northeast and most of east central Wisconsin as being in severe drought (D2) since July. By the end of August the entire area was either in the abnormally dry (D0), or moderate drought category.

March 1, 2013

Despite another month of above normal precipitation across parts of Wisconsin, Brown County remained in the severe drought (D2) category throughout March 2013.

Vulnerability

According to NOAA records, from 1999 to 2019 four significant periods of drought affected Brown County. Drought tends to be a regional phenomenon in that it affects much of the northeastern part of Wisconsin for all of the occasions in which a drought event was reported for Brown County.

Impacts

The following describes the various impacts that drought events have on the county.

Critical Facilities

There are few direct impacts on critical facilities because of drought conditions. However, droughts can trigger other natural and man-made hazards, such as wildfires and post-drought flooding, both of which can impact critical facilities.

Public Health

Drought conditions can directly affect human health. Lower levels of water in lakes and streams increase the concentration of pollutants and can lead to standing water. Dusty conditions and an increased risk of wildfires can affect those with chronic respiratory illness and can also increase risk of infection. Droughts can also pose a risk to people who get their water from a private well.⁴⁴

Safety

Negative impacts on safety are similar to those imposed on public health.

Infrastructure

Droughts have the most impact on municipal water supplies. Droughts will likely cause a shortage of potable water. Additionally, other water reserves like shallow aquifers may dry up. In addition, water quality is generally an issue before and after a drought event, which places an additional burden on wastewater treatment facilities.

Economic

The State of Wisconsin is susceptible to the economic impacts of agricultural drought. Even small droughts of limited duration can significantly reduce crop growth and yields, which adversely affects farm income. Substantial drought events can lead to complete crop loss. During severe drought periods, farmers must often seek financial assistance from the government to supplement lost income.

Livestock can also be adversely affected by droughts. Lack of water can lead to animal deaths. In addition, as drought conditions are often accompanied by periods of prolonged sunshine and high temperatures, animals are at risk to overexposure and heatstroke. Death of livestock can also lead to substantial loss of income for farmers.

Drought can also affect local commercial and industrial businesses. During times of severe drought, limitations can be placed on water usage. These limitations could have a negative impact on businesses such as car washes and landscapers as their businesses rely heavily on water. Industries that utilize large amounts of water in processing materials could also face production declines.

Areas at Greatest Risk

Droughts have no defined hazard area within Brown County and when a drought occurs it typically includes all of the county. Drought also tends to be a regional phenomenon in that it affects large areas at one time.

⁴⁴ WI Department of Health Services, Drought and Your Health - <https://www.dhs.wisconsin.gov/climate/drought.htm>

Estimation of Potential Losses

Agricultural crops are most vulnerable to losses from drought events. A “worst case scenario” would involve the total destruction of all 183,953 acres of agricultural lands in the county. In this “worst case scenario,” the total destruction of all crops would cause a loss of \$1,483,029,086.00, which is the estimated market value for farmland in Brown County at \$8,062⁴⁵ per acre.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Wildfires. Drought creates additional stress for vegetation and increases the risk of wildfires.

Plans and Programs

NOAA Weather Radio Program. Brown County has a NOAA Weather Radio purchasing program in place that encourages and aids residents in acquiring weather radio.

Gaps and Deficiencies

Water conservation provisions and use restrictions in times of drought are not included in county or city ordinances.

MAN-MADE HAZARD PROFILES

Hazard profiles are intended to describe the frequency, severity, and probability of future man-made hazards that could impact Brown County. These hazard profiles attempt to describe the cause and characteristics of man-made hazards, and how they could impact the population, infrastructure, and environment of the county. The potential risks are evaluated to determine their likelihood of occurrence or reoccurrence, and to gauge potential impacts to people and property. Hazard probabilities are represented as high, moderate, and low based on consensus of the steering committee after considering the anticipated economic, social, and environmental impact of each hazard.

⁴⁵ AcreValue - <https://www.acrevalue.com/map/WI/Brown/?lat=44.460518&lng=-88.007465&zoom=10>

Fire

Description of Hazard

Structure fires are far more common than wildland fires in Brown County. Structure fires typically occur through accidental, natural, or criminal activity. Accidental fire causes include unattended cooking, improper use of or defective heating appliances, improper use of candles, the failure of electrical wiring, circuits, etc., and improper use of smoking materials, to name a few. Natural causes such as lightning strikes are also common.

Municipal fire departments are responsible for the prevention of and response to structural fires in Outagamie County. Municipal fire departments located throughout the county respond in accordance with established response procedures, while local zoning setback controls, building and fire prevention codes provide additional mitigation measures. For large fires, the responding departments will utilize the Mutual Aid Box Alarm System (MABAS) in obtaining additional resources from neighboring departments to assist with firefighting operations.



House fire on Green Bay's east side
Figure 20 Source: Green Bay Press Gazette

History and Frequency

There have been about 3200 structure fire calls in Brown County since 2015. National Fires and Losses Trends and Patterns of U.S. Fire Loss identified an estimated 1,345,500 fires in 2015, resulting in 3,280 civilian deaths, 15,700 civilian injuries, and \$14.3 billion in direct property loss. In terms of estimates of fires, fire deaths and fire injuries, the estimates are lower than they were 10 years ago. When USFA was established in 1974, annual fire deaths were estimated at 12,000. The goal was to reduce deaths by 50 percent within 25 years; that goal was met. By 2012, estimates of civilian fire deaths were at their lowest level (2,855). While the trend in fire deaths has generally leveled off, injuries and dollar loss has declined over the last 10 years.

Based on previous hazard occurrences as reported by the Brown County Dispatch, Brown County experiences an average of 530 structure fire calls every year.

Probability of Occurrence or Reoccurrence

As noted in the previous Natural Hazards section, the probability of a wildland fire in Brown County is low to moderate and the likelihood that any wildland fire would be catastrophic is low.

However, the probability of a structural fire in the county is high.

Areas at Greatest Risk

All developed areas are vulnerable to structure fires.

Utility Failure

Description of Hazard

A utility failure emergency is a disruption to the building services, usually defined as electrical power, water, natural gas and/or sewage that restricts the ability of people to safely occupy the facility. Electrical power or natural gas outages are often caused by a fuel shortage caused by an oil embargo, power failure, or natural disaster. Disruptions to the water and sewage systems are often the direct result of a natural disaster (e.g., flooding) or are indirect losses due to another failure (e.g., a power outage disrupts the pumping of water and/or sewage).

History and Frequency

Brown County has several short power outages (i.e., lasting less than six hours) per year but does not have a history of extended power outages. The possibility always exists that a man-made or natural disaster could affect the power system for an extended period of time.

A significant utility failure has been defined as an outage event lasting 24 hours or more or involving over 1,000 people. The local utility provider for most Brown County residents was able to identify significant storm dates and the total number of customers affected. The data has limitations however, and the number of Brown County residents impacted is undetermined. The following table describes the significant storms and their impacts from storms known to impact Brown County and the surrounding areas.

Table 3.12: Storm Related Power Disruptions, WPS					
Storm outages start time	Storm outages end time	Customers affected	Company regions affected	Type of damage	Mutual assistance received
2015					
April 6 @0300	April 6 @1700	13,975			
June 22 @ 1100	June 22 @ 2200	26,299			
August 2 @0700	August 3 @0000	37,766			
August 14 @1400	August 14 @2200	10,760			
November 18 @0300	November 19 @2200	30,330			
December 23 @2300	December 24 @1600	17,924			
2016					
June 5 @ 1400	June 6 @ 900	27,948	WPS-Eastern WPS-Western	Thunderstorm	Yes
June 10 @ 1600	June 13 @ 0800	67,133	All	Thunderstorm	Yes
June 25 @ 1600	June 26 @ 0900	26,721	WPS-Northern	Thunderstorm	
July 12 @ 0100	July 12 @ 1600	18,653	WPS-Northern	Thunderstorm	Yes
July 21 @0500	July 21 @ 1700	32,551	All	Thunderstorm	
Table Continued on the next page					

Storm outages start time	Storm outages end time	Customers affected	Company regions affected	Type of damage	Mutual assistance received
2016 Continued					
November 18 @1400	November 19 @1400	14,556	All	Wind storm	Yes
December 25 @1700	December 26 @2000	25,211	All	Wind storm	Yes
2017					
March 6 @ 2200	March 9 @ 1600	98,622	WPS-Northern WPS-Western	Wind storm	Yes
April 9 @ 2200	April 10 @2300	17,016	WPS-Northern WPS-Western	Thunderstorm and tornado	Yes
April 11 @0100	April 11 @2000	11,370	WPS-Northern WPS-Western	Snow storm	Yes
May 17 @1400	May 18 @1700	38,410	WPS-Northern WPS-Western	Thunderstorm	Yes
June 10 @1000	June 10 @2200	14,604	WPS-Northern WPS-Western	Wind storm	No
June 11 @1000	June 14 @1400	121,260	WPS-Northern WPS-Western	Thunderstorm	Yes
June 14 @1400	June 15 @2100	30,490	All	Thunderstorm	Yes
December 4 @2100	December 5 @1800	17,651	All	Wind storm	
2018					
April 13 @ 2100	April 15 @ 1500	13,110	WPS-Eastern WPS-Western	Wind storm/ blizzard	Yes
April 17 @ 1700	April 18 @ 1400	14,604	All	Thunderstorm	No
August 27 @ 1900	August 28 @ 1500	16,532	All	Thunderstorm	Yes
September 20 @ 2000	September 21 @ 2100	22,833	All	Thunderstorm	Yes
October 3 @ 1500	October 4 @ 1000	13,407	All	Thunderstorm	No
2019					
February 12 @ 200	February 13 @ 1900	15,395	WPS-North Central	Snow storm	Yes
February 23 @ 2300	February 24 @ 2300	34,097	All	Snow storm	Yes
May 22 @ 200	May 22 @ 2300	50,097	WPS-North Central WPS-Northwest	Wind storm	Yes
July 19 @1900	July 26 @2300	170,046	All	Thunderstorms, tornados, derecho	Yes
August 7 @1400	August 7 @2300	21,242	All	Thunderstorms	
November 27 @0100	November 29 @1800	50,355	All	Snow storm, wind storm	Yes
December 1 @0300	December 1 @2200	33,828	All	Snow storm, wind storm	Yes

Source: WPS

Probability of Occurrence or Reoccurrence

In general, Brown County has a medium likelihood of utility failures occurring due to the age of some of the infrastructure and the extreme weather conditions experienced in Wisconsin. Utility failures present a high risk of damage, death, or injury due to a loss.

Areas at Greatest Risk

Power outages are more likely to occur and the severity is greater in areas of higher human population (i.e., urban areas) but the loss of power to rural customers, while affecting fewer people, generally lasts longer and can be as life-threatening, especially if a person with special needs (e.g., the elderly, the young, those on special medical equipment) is involved.

Hazardous Materials Spill

Description of Hazard

Brown County is concerned about the possibility of hazardous materials incidents from:

- Fixed Facility - A facility containing hazardous substances when either accidental or intentionally released cause concern for life safety and environment containment.
- Pipeline - Accidental or intentional release of natural gas from the pipeline resulting in a potential evacuation or explosion.
- Railway - Train derailment, train/vehicle collision or intentional release causing ruptured rail cars to release hazardous substances resulting in life safety and environmental concerns.
- Roadway - Vehicle accident involving hazardous chemicals in transport on the roadway resulting in life safety and environmental concerns.

Each Wisconsin County is designated as an emergency planning district and has a Local Emergency Planning Committee (LEPC) to administer the local hazardous chemical planning program under the Emergency Planning and Community Right-To Know Act, also known as SARA Title III.

The Brown County LEPC was established in 1986 to comply with the Emergency Planning Community Right to Know Act. The community right-to-know Act created new rights for members of the public and local governments to obtain information concerning potential threats in their neighborhoods involving hazardous substances.

History and Frequency

Thorough communication and preparedness (i.e., planning, training and exercising) measures between stakeholders help to ensure that significant hazardous materials events are not common, but these incidents can and do occur (about 25 since 2015). Based on previous hazard occurrences as reported by Brown County dispatch, Brown County experiences approximately 4 hazardous materials incidents every year.

Probability of Occurrence or Reoccurrence

In general, Brown County has a medium likelihood of hazardous materials spills occurring. Hazardous material spills present a high risk of damage, death, or injury due to the variety of materials and the way in which they can spread and impact people.

Areas at Greatest Risk

Hazardous materials incidents have the potential to impact large parts of the county because roadways, pipelines, and railway corridors run through residential, agricultural, and commercial neighborhoods in the county. Areas of greatest risk are those areas where chemicals are stored on site or corridors through which chemicals are frequently transported. Facilities subject to SARA Title III, while concentrated in industrial areas, can also be found in business, residential, and agricultural areas.

Manure Spill

Description of Hazard

A manure spill incident is a release of manure from a holding tank or pit, or from a truck while in transport to a field. Such incidents have the potential to contaminate groundwater and/or surface water. Contaminated groundwater can impact municipal and private drinking water wells.

Liquid manure stored in holding tanks or pits has a low solids content, giving it a consistency and therefore physical properties similar to that of water. As a result, liquid manure, when released in a spill, flows in the same manner as water, thereby placing surface water and conduits to groundwater at risk of contamination.



Figure 21 Source: Minnesota Trout Forums

According to the Wisconsin Department of Agriculture, Trade and Consumer Protection, the decomposition of manure in storage or handling systems generates gases, some of which are toxic, explosive and oxygen displacing. The most hazardous gases are hydrogen sulfide (H₂S), ammonia (NH₃), methane (CH₄) and carbon dioxide (CO₂). Dangerous levels of these gases can accumulate in and around manure management systems particularly when manure is being agitated or otherwise disturbed.

- Hydrogen sulfide levels may increase a thousand-fold during agitation. This extremely toxic gas is the most dangerous manure gas as it is colorless, heavier than air and may cause death in seconds at high concentrations. While hydrogen sulfide is commonly known for its rotten egg odor, the odor is not detectable by the human sense of smell at higher concentrations. It affects the eyes and the respiratory and central nervous systems.
- Ammonia is lighter than air, has a sharp pungent odor and at higher concentrations, it may cause permanent lung damage. Ammonia causes irritation of the eyes and respiratory tract and it is generally found in higher concentrations in poultry manure.
- Methane is highly flammable. A spark from equipment, open flames, smoking materials, faulty wiring or welding could provide an ignition source for an explosion or fire. Methane is odorless, colorless and lighter than air. By displacing air at high

concentrations, methane which is itself non-toxic, can become an asphyxiant and will cause rapid breathing, dizziness and fatigue.

- Carbon dioxide is heavier than air and will displace oxygen. Carbon dioxide exposure may result in headaches and dizziness. Death by asphyxiation is possible at high concentrations.

History and Frequency

Small manure spills occur frequently and, while they can be a contributing factor to environmental degradation, they rarely immediately affect the health and safety of the general population. Based on previous hazard occurrences as reported by Brown County Land and Water Conservation, Brown County experiences between three and five manure spill incidents every year.

Probability of Occurrence or Reoccurrence

Large spills of the type that are immediately and directly dangerous are rare. However, factors like increased precipitation and the concentration of Concentrated Animal Feed Operations (CAFOs) can increase the probability of a spill occurring.

Brown County has a moderately low probability of experiencing a large spill incident, but the risk to the county is moderate if it occurs.

Areas at Greatest Risk

Wisconsin, like many places in the United States, is seeing the closure of traditional, small family farms and is seeing more industrial, large-scale farms opening and operating. These businesses, due to the scale of their operations, are much more likely to see the large manure quantities that require transport and storage facilities that may fail. Brown County expects, like the rest of the state, to see industrial farming increase in the future.

Public Health Incidents

Description of Hazard

Public health is a community-based approach to preventing disease, prolonging life and promoting health. Public health emergencies include both those events for which public health is the primary focus (e.g., pandemic influenza) as well as those for which public health is one of many concerns (e.g., a bioterrorism incident, disease concerns related to a flood, or mental health care after a mass casualty incident).

Brown County is concerned about the possibility of loss of life due to public health incidents such as infectious disease, poor air quality and contaminated water supply. The goals of a response to pandemic influenza or another communicable disease outbreak are to limit the spread of a pandemic, treat (as possible) the disease, minimize suffering and death and sustain infrastructure and lessen the impact on the economy and the functioning of society. Brown County and other local public health departments, along with state and federal partners, work hard to prepare for the dangers of communicable diseases with comprehensive and integrated planning, training and exercises.

History and Frequency

There has been 1 significant public health incident in Brown County since 2015 that has required activation of the county Emergency Operations Center (EOC). In addition to activating the county EOC, Public Health Emergency Plans have been activated to respond to events for communicable diseases (2019 Measles in Wisconsin), vaccine preventable diseases, natural disasters, contaminated water, and biological threats.

Probability of Occurrence or Reoccurrence

As much of the world is experiencing, we are all at risk, but the level of risk depends largely on the amount of preventative measures the community has or is taking in relationship to health threats. Brown County has a moderate risk of public health incidents with a varying risk of death or injury if an incident does occur based on the type and timing of incident/threat, health status of the individuals and prophylaxis available for the threat.

Areas at Greatest Risk

Public health incidents can impact anywhere in the county and no area is at a greater risk than another. However, some public health incidents may be exacerbated with a greater level of human-to-human contact, which occurs in more populous areas of the county.

Mass Casualty

Description of Hazard

A mass casualty incident is any incident in which emergency medical services resources, such as personnel and equipment, are overwhelmed by the number and severity of casualties. Mass casualty incidents can quickly overwhelm local municipalities' capabilities and resources for responding. The definition of a mass casualty incident is determined by the responding agency, not by a hard number of victims because a mass casualty incident is one that exceeds the responding jurisdiction's ability and resources to manage it.

History and Frequency

There have been no mass casualty incidents in Brown County since 2015.

Although there have been no mass casualty incidents in the county, in preparation for potential occurrences, emergency management and emergency response departments have undertaken training specific to mass casualty incidents.

Probability of Occurrence or Reoccurrence

Among other potential mass casualty events, the increase in random acts of violence around the U.S. certainly cannot be ignored. Determining the probability of a mass casualty event is impossible. However, due to the recent trends an incident could occur Brown County has a low risk of a mass casualty incident.

Areas at Greatest Risk

Mass casualty incidents can impact anywhere in the county and no area is at a greater risk than another.

Aircraft Incidents

Description of Hazard

The Austin Straubel International Airport (GRB), is located along STH 172 just west of I41 in the Villages of Ashwaubenon and Hobart. It is the fourth busiest commercial airport in Wisconsin based on 2016 FAA records for enplanements.

An aircraft incident is an occurrence associated with the operation of an aircraft, which takes place between the time any person boards the aircraft with the intention of flight until all such persons have disembarked, where a person is fatally or seriously injured, the aircraft sustains damage or structural failure or the aircraft is missing or is completely inaccessible.

History and Frequency

Aircraft accidents are very rare and may be caused by bad weather, mechanical failure, human error, or an intentional act of terrorism. There have been no significant aircraft incidents in Brown County since 2015.

Probability of Occurrence or Reoccurrence

Brown County has a low risk of an aircraft incident.

Areas at Greatest Risk

Austin Straubel International Airport, the adjacent grounds, and flight paths, are areas of greatest risk for aircraft incidents in Brown County.

Terrorism/International Acts of Violence

Description of Hazard

Terrorism or Intentional Acts of Violence are defined as the use of violence or the threat of violence to cause fear and intimidation to the community and/or government. This can be accomplished using explosives, weapons, biological agents, cyber-attacks, food supply tampering, and other means.

History and Frequency

Intentional acts of violence have become very common, but, for the purposes of this plan we are discussing those that are large-scale and draw a large amount of response resources and/or attention. The difference between these events and terrorism is that they may be personal in nature (e.g., school or workplace violence) versus having a political goal, as is seen in terrorism. Significant terrorism and intentional acts of violence incidents in Brown County are rare. There have been no legitimate terrorism/intentional acts of violence incidents in Brown County.

Probability of Occurrence or Reoccurrence

Brown County residents are at a low risk of terrorism/intentional acts of violence incidents.

Areas at Greatest Risk

Terrorism/intentional acts of violence incidents can impact anywhere in the county and no area is at a greater risk than another.

NATURAL HAZARDS AND CLIMATE CHANGE

Hazard profiles provide information and predictions based on past hazard occurrence data. Climate change may make past trends unreliable sources for predicting future impacts, frequency, probability, and vulnerabilities. Climate change has and will continue to impact average annual temperatures causing increased frequency in heat waves; increased frequency and intensity of severe rainstorms; shorter, warmer winters with decreased lake ice cover; increased drought frequency, and other impacts. Based on the best information available, over the next 30-50 years, Brown County's climate will begin to resemble that of current Toledo, Ohio.⁴⁶

Analysis of historical data, combined with climate model downscaling, suggests a trend towards wetter conditions and more intense rainfall. Climate models also suggest that increased winter snowpack, and late winter rainfall, may result in high regional groundwater tables and lake levels, and saturated soil conditions.⁴⁷

Vulnerabilities

Local and state government and private sector developers make significant investments in long-lived infrastructure that controls or is affected by storm water runoff from large rainfalls. Likewise, municipal wastewater treatment plant operators make substantial long-term investments in their system capacity that anticipates development, but not increased storm water inflow and groundwater infiltration. This infrastructure is designed using standards based on rainfall data from the latter half of the 20th century. By having assumed "stationarity" of climate in the design of our infrastructure, Brown County is now vulnerable to the potential impacts from more intense rainfall events and elevated groundwater.

In summary, our previous investment in public safety and environmental protection is at risk of being overwhelmed by precipitation impacts that are beyond those anticipated by past infrastructure designers and water resource managers.⁴⁸

Potential Impacts

The WICCI working groups have investigated how potential changes in Wisconsin's climate might impact natural and human systems around the state. Some potential impacts of concern for Brown County with regard to storm water management and large rainfalls include:

- Conveyance systems filled beyond capacity cause flooded homes and urban streets;
- Roadways and bridges are washed-out or become impassable;
- Groundwater flooding of property and cropland increases;



⁴⁶ Wisconsin Initiative on Climate Change Impacts, Interactive Mapping Tool, <http://www.wicci.wisc.edu/climate-map.php>.

⁴⁷ Wisconsin Initiative on Climate Change Impacts, Stormwater Working Group, <http://www.wicci.wisc.edu/stormwater-working-group.php#2>.

⁴⁸ Ibid

- Rural residential wellheads are contaminated by flood waters and high groundwater;
- Impoundments and storm water detention ponds fail more frequently;
- Raingardens and other bio-filtration best management practices (BMPs) fail due to saturated soil conditions;
- Increased erosion of slopes by intense rainfall events leads to high sediment and phosphorus loading to surface waters;
- Runoff of manure from fields, and accompanying fish kills, are more frequent;
- Storm water inflow and groundwater infiltration to sanitary sewers, results in untreated municipal wastewater flowing into lakes and streams.

Other potential impacts of concern for Brown County include:

- Warmer nighttime temperatures might lead to more extreme heat waves, increasing the risk for heat stroke in some populations. At the same time, observed and projected trends show fewer cold temperature extremes, which may mean reduced health risks due to exposure in the winters.
- Air pollution, increasing temperatures, changing circulation patterns, and other processes combine to increase ground-level ozone, which affects respiratory health.
- Heavy rains and flooding can overwhelm sewer and stormwater systems, leading to a rise in water pollution and the risk of waterborne diseases such as cryptosporidium and giardia.
- Changes in temperatures and precipitation could result in an increase in disease carrying insects, including ticks and mosquitoes. This means people may be at a greater risk for contracting vector-borne diseases, such as Lyme disease, West Nile encephalitis, and Zika virus.
- Changes in temperature and precipitation could affect growing seasons, crop yields, weed and pest infestations, and dairy productivity.

Solutions/Adaptations

Although the impacts of climate change are already being seen in Wisconsin, there are things Brown County policymakers, business leaders, and residents can do to help reduce potential impacts from climate change. The development of climate change mitigation programs can help decrease the impacts from climate change while advancing other community priorities. Examples include implementing cost-effective clean energy policies and programs, and reducing carbon emissions. Climate change and clean energy policies and programs can reduce greenhouse gas emissions, lower energy costs, improve air quality and public health, and help achieve economic development goals. The following are some solutions or adaptations to climate change impacts that could be employed in Brown County. Many of the identified solutions/ adaptations were developed by the WICCI working groups.

- Strengthen public health response and warning systems.
- Increase energy efficiency.
- Incorporate renewable energy sources such as wind, solar, geothermal, and biomass.
- Increase vehicle fuel economy.
- Invest in clean transportation choices.
- Encourage bicycle and pedestrian transportation and expand availability options.
- Implement beach improvement projects that reduce stormwater runoff to beaches and nearshore waters and integrate natural infiltration features such as vegetated swales.
- Improve or restore natural shore protection features.
- Protect floodplains, wetlands, and other natural “green infrastructure” features that can hold flood waters and enable water infiltration.
- Implement development setbacks based on defensible scientific data.
- Relocate structures that are threatened by flooding or erosion.
- Provide education for developers, bankers, and insurance agents.
- Ongoing comprehensive planning and improved implementation of existing plans.
- Use best management practices for site design to control stormwater runoff.
- Develop plans for bluff stability enhancement, e.g. slow erosion by planting vegetation on bluffs.
- Design port and harbor infrastructure that can accommodate increased variability in lake levels, e.g. harbor slips that float.
- Use a risk/consequence approach to evaluating and modifying existing infrastructure to accommodate observed and predicted changes in climate.
- Develop and evaluate alternative tools and strategies for the design of stormwater-related infrastructure, using a collaborative process that includes climate scientists, water resource managers, design engineers, and regulators, and members of relevant business communities.

VULNERABILITIES

Vulnerable Critical Facilities by Municipality

The Brown County Hazard Mitigation Plan Steering Committee determined which critical facilities and infrastructure were to be addressed within this hazard's mitigation plan. Based on this list, Brown County worked with each individual community and or Non-Governmental Organizations to identify and map critical facilities. The Steering Committee and the Individuals that provided the critical facility data reviewed and confirmed the accuracy of the information. Table 3.13 summarizes the critical facilities and infrastructure by municipality. A detailed list of critical facilities and infrastructure for each community is provided in Appendix H of this plan.

Table 3.13: Critical Facilities and Infrastructure, Brown County, Wisconsin

<u>Location</u>	<u>Number of Critical Facilities</u>
Cities	
Green Bay	321
De Pere	68
Villages	
Allouez	42
Ashwaubenon	103
Bellevue	94
Denmark	23
Hobart	55
Howard	130
Pulaski (part)	20
Suamico	46
Wrightstown	20
Towns	
Eaton	8
Glenmore	14
Green Bay	17
Holland	22
Humboldt	4
Lawrence	41
Ledgeview	43
Morrison	22
New Denmark	34
Pittsfield	30
Rockland	12
Scott	19
Wrightstown	32
TOTAL	1223

Source: Brown County Hazard Mitigation Plan Steering Committee. Brown County Planning Commission. Brown County Land Information Office

County Gaps and Deficiencies

- Repetitive loss properties remain an issue in the Village of Ashwaubenon, Village of Howard, Village of Suamico, and the City of Green Bay. As state and federal funds become available, Brown County and the individual municipalities will work with willing sellers to purchase floodplain structures.
- A significant number of homes in the county lack basements that would provide shelter in the event of a tornado or damaging winds from a severe thunderstorm. Moreover, in many of the nursing homes, residents are moved to an interior hall away from windows in the event of a violent storm.
- Local radio and television stations do provide warnings but are effective only if tuned to one of the local stations.
- Most power lines in the county are above ground and subject to damage from wind and falling tree limbs. Many communities have requirements to manage trees near power lines.
- There is a constant need to improve/replace defective storm water facilities to prevent infrastructure damage.
- Some communities in Brown County may need to incorporate a storm drain cleaning program.
- Not all school districts have a transportation manager providing information on current weather and road conditions.
- Residents that have had their heat disconnected prior to the heating moratorium beginning on November 1 must make arrangements with their local utility to pay outstanding bills in order to have their service restored. If a consumer has not made arrangements to pay an outstanding bill, the utility is not required to provide heat until an agreed-upon payment schedule has been reached.
- Residents could be without needed heating during any out-of-season cold spells that occur between April 16 and October 31.
- Although Wisconsin requires utilities to provide residents heating between November 1 and April 15, there is no guarantee that residents will have access to cooling during times of extreme heat.
- Cooling systems are lacking in many elderly housing developments.
- Fog warning signs may be ineffective due to lack of visibility.
- Many of the dams in Wisconsin were built in the late 1800s and early 1900s. Over time, water pressure and weathering will slowly break down a dam. Dams need constant maintenance and repairs. If dams are allowed to naturally degrade, they have a greater risk for problems such as sudden breaks during flood conditions.
- Development continues very near the Green Bay/Lake Michigan coastline putting additional homes, business, and infrastructure at risk to coastal hazards.

- Riprap to manage bluff erosion shifts the eroding force of the water from the riprapped area to the coastal areas lacking the bluff reinforcement.
- Water conservation provisions and use restrictions in times of drought are not included in county or city ordinances for those water users that rely on groundwater.

SUPPORTING OPERATIONS PLANS AND DOCUMENTS

Plans

Agency

County Emergency Operations Plan	Brown County Emergency Management
County Disaster Plan	Brown County Emergency Management
County Hazard Analysis	Brown County Emergency Management
County Hazardous (Hazmat) Strategic Plan	Brown County Emergency Management
County Mass Casualty Plan	Brown County Emergency Management
Emergency Action Plan-Lamers Dam	Village of Ashwaubenon
Emergency Operations Plans	City of Green Bay, City of De Pere, and Village of Ashwaubenon
Emergency Operations Plans	Brown County School Districts
Emergency Operations Plan	University of Wisconsin-Green Bay
Emergency Operations Plan	St. Norbert College
Emergency Operations Plan	Oneida Nation
Emergency Operations Plan	Bellin Health
Emergency Operations Plan	Aurora Baycare
Emergency Operations Plan	St. Vincent Hospital
Emergency Operations Plan	St. Mary's Hospital
Emergency Response Plan	Austin Straubel International Airport
Emergency Response Plan	Lambeau Field
Green Bay Correctional Institution Disturbance Plan	



Report to the
Protection and Policy Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # M.4

To refer to staff to bring back an updated map and data listing all licensed establishments, type of license and location in applicable moratorium areas and for the Police Department to provide a report with data to include calls for service city wide to licensed establishments from 2018 through the end of the summer of 2021.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

- I. 2.3.2021 Communication

Jaime Fuge

From: District Six
Sent: Tuesday, February 2, 2021 10:38 PM
To: Jaime Fuge
Subject: RE: Communications

My communications ---- Protection & Policy -- To look at varying aspects of Green Bay's license alcohol establishments with a discuss on a moratorium.

---- Arts Commission -- Request that the Arts Commission involve the neighborhoods in the selection of what art will be placed in their neighborhood in the rotating art program.

Alder Lefebvre

From: Jaime Fuge [Jaime.Fuge@greenbaywi.gov]
Sent: Tuesday, February 02, 2021 10:10 PM
To: District Six; District Twelve
Subject: Communications

Good Evening,

Please send your communications to me when you have an opportunity.

Thank you,
Jaime



Report to the
Protection and Policy Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # M.5

To refer to staff to continue working with state representatives and the Military Business District to enact additional regulations for massage spa ordinance.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

- I. ALD.WERY-PROTECTION&POLICY

Jaime Fuge

From: Celestine Jeffreys
Sent: Tuesday, February 2, 2021 7:51 PM
To: Jaime Fuge
Subject: Fwd: Communication

Follow Up Flag: Follow up
Flag Status: Flagged

For next agenda.

Sent from my Verizon, Samsung Galaxy smartphone
Get [Outlook for Android](#)

From: Celestine Jeffreys <Celestine.Jeffreys@greenbaywi.gov>
Sent: Tuesday, February 2, 2021 7:50:39 PM
To: Chris Wery <chriswery@att.net>
Subject: Re: Communication

Thank you alder it will be on the next agenda.

Sent from my Verizon, Samsung Galaxy smartphone
Get [Outlook for Android](#)

From: Chris Wery <chriswery@att.net>
Sent: Tuesday, February 2, 2021 6:01:54 PM
To: Celestine Jeffreys <Celestine.Jeffreys@greenbaywi.gov>
Subject: Communication

To: Protection and Policy

Re: Receive update, with possible action, on additional changes to the massage spa ordinance.

Alderman Chris Wery
920-490-9282
chriswery@att.net
[Facebook: Alderman Chris Wery, District 8 City of Green Bay](#)



Report to the
Protection and Policy Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # M.6

To receive and place on file a request by Ald. Brunette for discussion with possible action on forwarding the Face Covering Ordinance to the Brown County Health Department for review.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

- I. brunettecommunication

Jaime Fuge

From: District Twelve
Sent: Wednesday, February 3, 2021 9:37 AM
To: Jaime Fuge
Subject: RE: Communications

Follow Up Flag: Follow up
Flag Status: Flagged

P&P: For discussion with possible action on forwarding the Face Covering Ordinance to the Brown County Health Department for review.

Jesse

From: Jaime Fuge [Jaime.Fuge@greenbaywi.gov]
Sent: Tuesday, February 02, 2021 10:10 PM
To: District Six; District Twelve
Subject: Communications

Good Evening,

Please send your communications to me when you have an opportunity.

Thank you,
Jaime



Report to the
Protection and Policy Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # M.7

To receive and place on file The Liquor Violation Report for February 8, 2021.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

1. Report February 8 2021
2. 20LiqVio
3. 19LiqVio



Report to the Green Bay Plan Commission

MEETING DATE

February 17, 2021

PREPARED BY

Madison Smith

AGENDA ITEM # N.2

To rezone 1500 N. Irwin Avenue from General Commercial (C1) to Highway Commercial (C2), subject to the following conditions:

- Compliance to all ventilation standards and HVAC regulations within the City of Green Bay.
- Meets code requirements with an application for review to the Building Inspection Department, this includes proper plans and permits. (Public Hearing held 02/08/2021)

BACKGROUND

Primary Address: 1500 N. Irwin Avenue

Aldersperson/District: Ald. Kathy Lefebvre / District 6

Reason for Request: To permit the redevelopment of the site for future commercial uses.

Surrounding Zoning and Land Uses:

SUBJECT PROPERTY: General Commercial One (C1) - a commercial building located at 1500 N. Irwin Avenue.

NORTH: General Commercial (C1) - Commercial/light industrial uses

SOUTH: General Commercial (C1) - Commercial/light industrial uses

EAST: Residential (R1) - Single Family

WEST: Residential (R1) - Single Family

Comprehensive Plan: The 2022 Smart Growth Plan designates this area as Commercial.

Report: Parcel 21-1688 is being considered as part of this request, 1500 N. Irwin Avenue which contains a commercial building. This is a corner lot on a site designed for auto sales and repairs. Currently this parcel is zoned General Commercial (C1).

In the C1 and C3 Districts, outdoor storage, sales or display are permitted only when accessory to the following uses: Greenhouse, garden supply store and building material sales. C1 also includes temporary/seasonal display.

Rezoning 1500 N. Irwin Avenue to Highway Commercial (C2) will not overly impact the adjacent properties; however, will allow for increased permitted uses such as automotive sales and repair services. The site is a total of 0.58 acres and was built in 1950. This property contains approximately 14 parking spots and the existing structure contains three (3) garages. There are two entrances, one on N. Irwin Avenue and one on Vanderbraak Street, also making this suited for auto circulation. The Tax key number is 21-1688 and is predominantly concrete. The future land use in the comprehensive plan recommends 1500 N. Irwin Avenue to remain zoned as Commercial.

The C2 District allows, outdoor storage, sales or display are permitted only when accessory to the following uses:

- (1) Building material sales;
- (2) Auto service station, in compliance with subchapter 13.1600, Specific development standards;
- (3) Automobile rental or sales;
- (4) Sales and/or service of watercraft, recreational vehicles, and agricultural equipment;
- (5) Outdoor commercial recreation.

It is also important to note, where permitted, outdoor storage shall be completely screened from any adjacent street, sidewalk, public walkway, public park or residential property, in compliance with section 13.1820. Outdoor sales and display areas shall be separated from any adjacent street, sidewalk, or public walkway by a low landscaped screen, in compliance with section 13.1814.

Ald. Kathy Lefebvre and adjacent property owners within 200 ft. have been notified of the request. As of the drafting of this report, staff has received no inquiries regarding the request.

RECOMMENDATION

Staff is recommending approval of the request upon compliance with conditions listed:

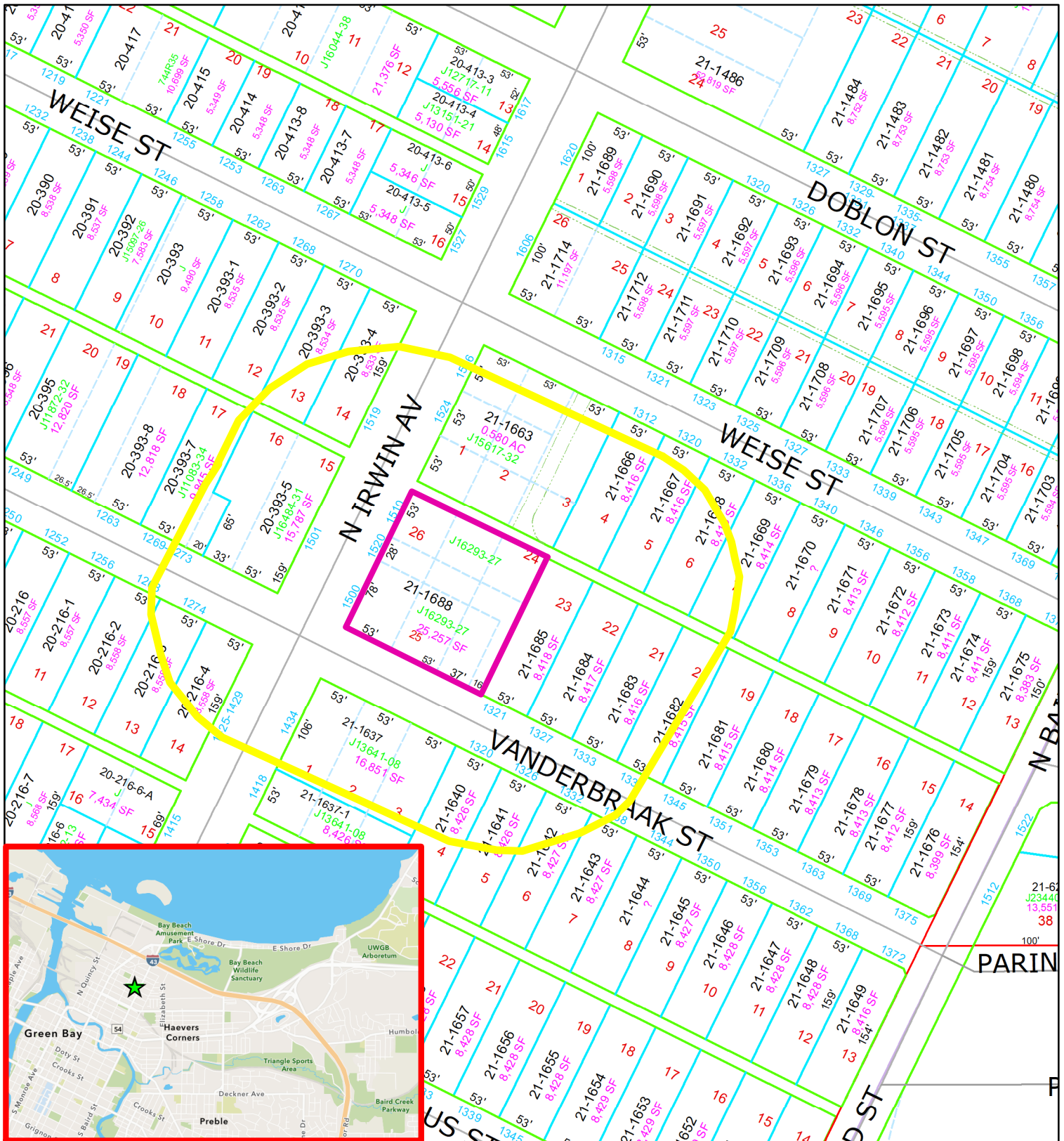
- a. Compliance to all ventilation standards and HVAC regulations within the City of Green Bay.
- b. Meets code requirements with an application for review to the Building Inspection Department, this includes proper plans and permits.

FISCAL IMPACT

ATTACHMENTS

1. ZP 20-37 BW
2. ZP 20-37 Color Aerial
3. Aerial Photos
4. ZP 20-37 City Action Application Form
5. ZP 20-37 Color Aerial

1500 N Irwin Avenue



0 0.01 0.02 0.04 0.06 0.08 Miles

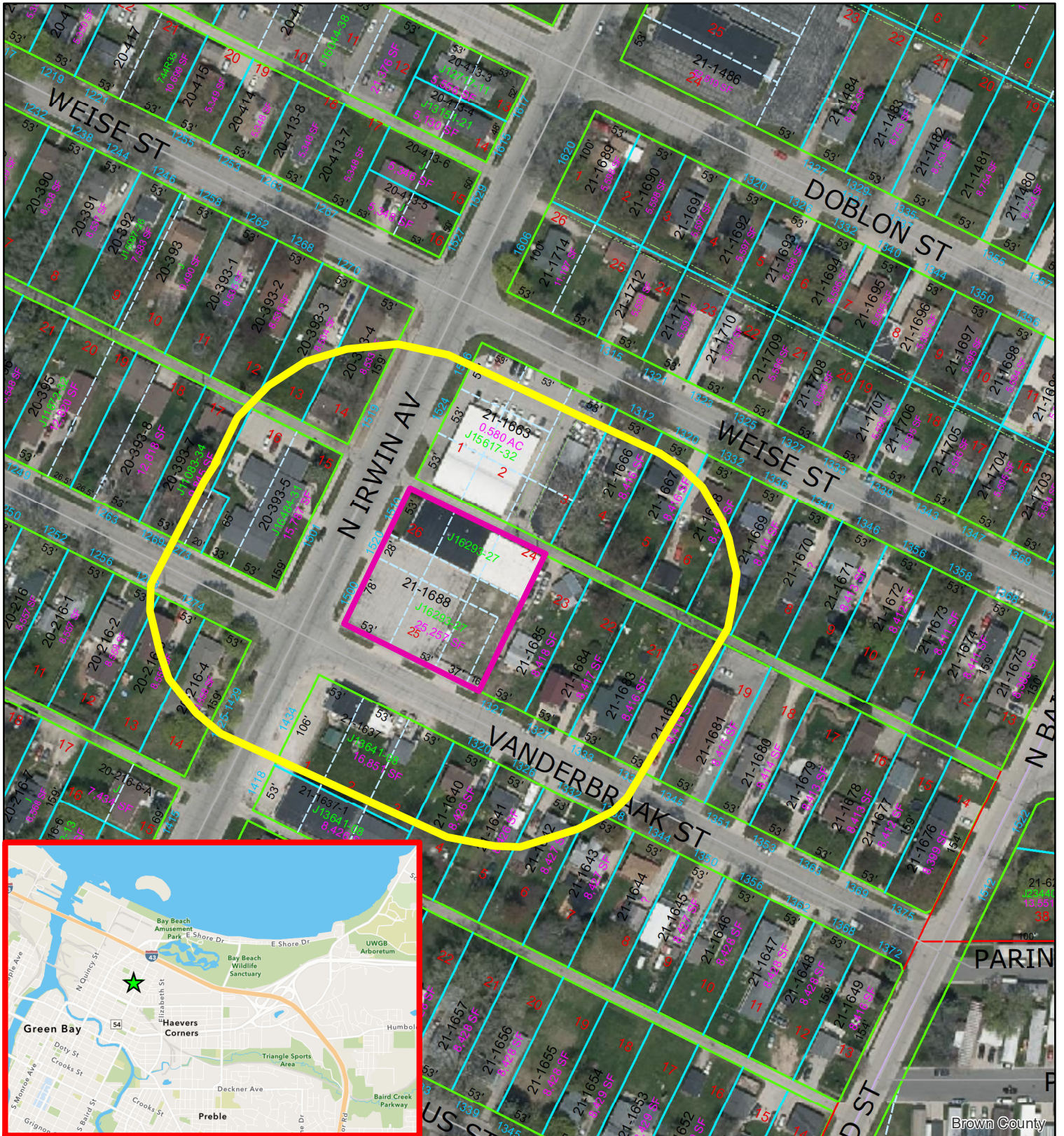
- ★ Subject Parcel 21-1688
- ▭ Subject Area
- ▭ 200' Property Owner Notice

Zoning Petition (ZP 20-37) Proposed Rezoning 1500 N Irwin Avenue

This is a compilation of records and data located in various City of Green Bay offices and is to be used for reference purposes only. The City of Green Bay is not responsible for any inaccuracies or unauthorized use of the information contained within. No warranties are implied. Map prepared by City of Green Bay Department of Community and Economic Development; MS



1500 N Irwin Avenue



Brown County

0 0.01 0.02 0.04 0.06 0.08 Miles

- ★ Subject Parcel 21-1688
- Subject Area
- 200' Property Owner Notice

Zoning Petition (ZP 20-37) Proposed Rezoning 1500 N Irwin Avenue

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REQUEST FOR CITY ACTION - PLAN COMMISSION

(Submit **two** copies to the Planning Department, Room 608 or City Clerk's Office, Room 106, City Hall)

Date: 12-28-2020

Petitioner(s): Rocco Canadeo

Phone Number: 920-676-8732

Address: 526 Chardonnay Ct.

City: Green Bay

State: WI

Zip Code: 54301

Property Owner: Rocco Canadeo

Phone Number: 920-676-8732

Parcel Numbers (required): 21-1688

Location of Property: 1500 North Irwin Ave. Green Bay Wisconsin

Attach maps and legal descriptions (required).

To: Honorable Mayor and Common Council, c/o City Clerk

I, Rocco Canadeo, respectfully request that the City of Green Bay take the following action:

Attach Zoning Petition Form with first three items.

- ☒ Rezone Property (\$300.00 Review Fee) C2 Highway Commercial
- ☐ Conditional Use and CUP Amendment, including Single Lot Duplexes (\$300.00 Review Fee)
- ☐ PUD and PUD Amendments (\$350.00 Review Fee)
- ☐ Approve Preliminary City/Extraterritorial Subdivision Plat (\$150.00 plus \$35.00 per Lot/Outlot Review Fee)
- ☐ Approve Preliminary City/Extraterritorial Certified Survey Map (\$150.00 Review Fee)
- ☐ Approve Final City/Extraterritorial Subdivision Plat (\$100.00 Review Fee)
- ☐ Grant a City/Extraterritorial Subdivision/CSM Variance (\$150.00 Review Fee)
- ☐ Grant a Postponement of Development Fees (\$100.00 Review Fee) [Review by I&S and/or Park Committees]
- ☐ Development District Map Amendment (\$200.00 Administration Fee)
- ☐ Official Map/Area Development Plan Amendment (\$200.00 Administration Fee)
- ☐ Plat of Right-of-Way (\$200.00 Administration Fee)
- ☐ Discontinue a Public Utility Easement (\$200.00 Administration Fee)
- ☐ Street Name Change (\$200.00 Administration Fee)
- ☐ Declare City Property "City Surplus" (\$200.00 Administration Fee)
- ☐ Vacate a Street/Alley/Pedestrian Way (\$200.00 Administration Fee)
- ☐ Other (\$200.00 Administration Fee):

Petitioner Signature(s): Rocco Canadeo

Review Fee: _____

Receipt No.: _____

Zoning Petition No.: 20-37 PM 1-1521

Briefly describe action desired, noting the property affected and all other pertinent information.

Attach maps and legal descriptions (required).

Rezone property at 1500 N. Irwin Ave. Green Bay Wisconsin to C2 Highway Commercial District. This rezoning is for automotive sales and repair services.

Please contact the Planning Department in Room 608, City Hall, (920) 448-3400, if you have any questions.



Web Search - Brown County, Wisconsin - Property Summary

Property: 21-1688

Search powered by



Report/Print engine
List & Label ® Version 19:
Copyright combit® GmbH
1991-2013

Tax Year	Prop Type	Parcel Number	Municipality	Property Address	Billing Address
2020 ▼	Real Estate	21-1688	231 - CITY OF GREEN BAY	1500 N IRWIN AVE	CANADEO MOWING CO LLC PO BOX 5523 DE PERE WI 54115
Tax Year Legend: = owes prior year taxes = not assessed = not taxed Delinquent Current					

Summary

Property Summary

Parcel #:	21-1688
Alt. Parcel #:	
Parcel Status:	Current Description
Creation Date:	12/29/2003
Historical Date:	
Acres:	0.579
Area (sq ft):	25257.000

Property Addresses

Primary ▲	Address
	1500 N IRWIN AVE

Owners

Name	Status	Ownership Type	Interest
CANADEO MOWING CO LLC	CURRENT OWNER		
DEQUAINE, DARRELL J	FORMER OWNER		
GETSCHOW, KURT A	FORMER OWNER		

Parent Parcels

No Parent Parcels were found

Child Parcels

No Child Parcels were found

Abbreviated Legal Description

(See recorded documents for a complete legal description)

25,257 SQ FT EASTMANS ADD LOTS 24, 25 & 26 BLK 82

Public Land Survey - Property Descriptions

No Property Descriptions were found

District

Code ▲	Description	Category
	LOCAL	OTHER DISTRICT
	STATE OF WISCONSIN	OTHER DISTRICT
2289	GREEN BAY SCH DIST	REGULAR SCHOOL
	BROWN COUNTY	OTHER DISTRICT
5040	G.B. METRO SEWER	SANITARY
1300	NORTHEAST WI VTAE	TECHNICAL COLLEGE

Associated Properties

No Associated properties were found

Building Information

Buildings

Assessments

Assessment Summary

Estimated Fair Market Value: **247700**

Assessment Ratio: **0.8629**

Legal Acres: **0.579**

2020 valuations

Class	Acres	Land	Improvements	Total
G2 - COMMERCIAL	0.580	88400	125400	213800
ALL CLASSES	0.580	88400	125400	213800

2019 valuations

Class	Acres	Land	Improvements	Total
G2 - COMMERCIAL	0.580	88400	125400	213800
ALL CLASSES	0.580	88400	125400	213800

Taxes

Tax Summary

Bill #: 4103344

Net Mill Rate: **0.024623711**

Lottery Credits

Claims	Date	Amount
0		0.00

Installments

Due Date ▲	Amount
1/31/2021	2597.54
7/31/2021	2597.53

Payments

No payments were found

Key: Property Type: RE - Real Estate, PP - Personal Property

Payment Type: A - Adjustment, R - Redemption, T - Current Tax, Q - Quit Claim, D - Write Off Deeded, B - Write Off Bankruptcy

Details

Description	Amount	Paid	Due
Gross Tax	5656.32	-	-
School Credit	391.77	-	-
 Total	5264.55	-	-
BROWN COUNTY	955.84		
GREEN BAY SCH DIST	2032.63		
LOCAL	2079.03		
NORTHEAST WI VTAE	197.05		
First Dollar Credit	69.48	-	-
Lottery Credit	0.00	-	-
Net Tax	5195.07	0.00	5195.07
Special Assessments	0.00	0.00	0.00
Special Charges	0.00	0.00	0.00
Delinquent Utility	0.00	0.00	0.00
PrivateForest Crop	0.00	0.00	0.00
Woodland Tax Law	0.00	0.00	0.00
Managed Forest Land	0.00	0.00	0.00
Other Charges	0.00	0.00	0.00
Interest	-	0.00	0.00
Penalty	-	0.00	0.00
TOTAL	5195.07	0.00	5195.07

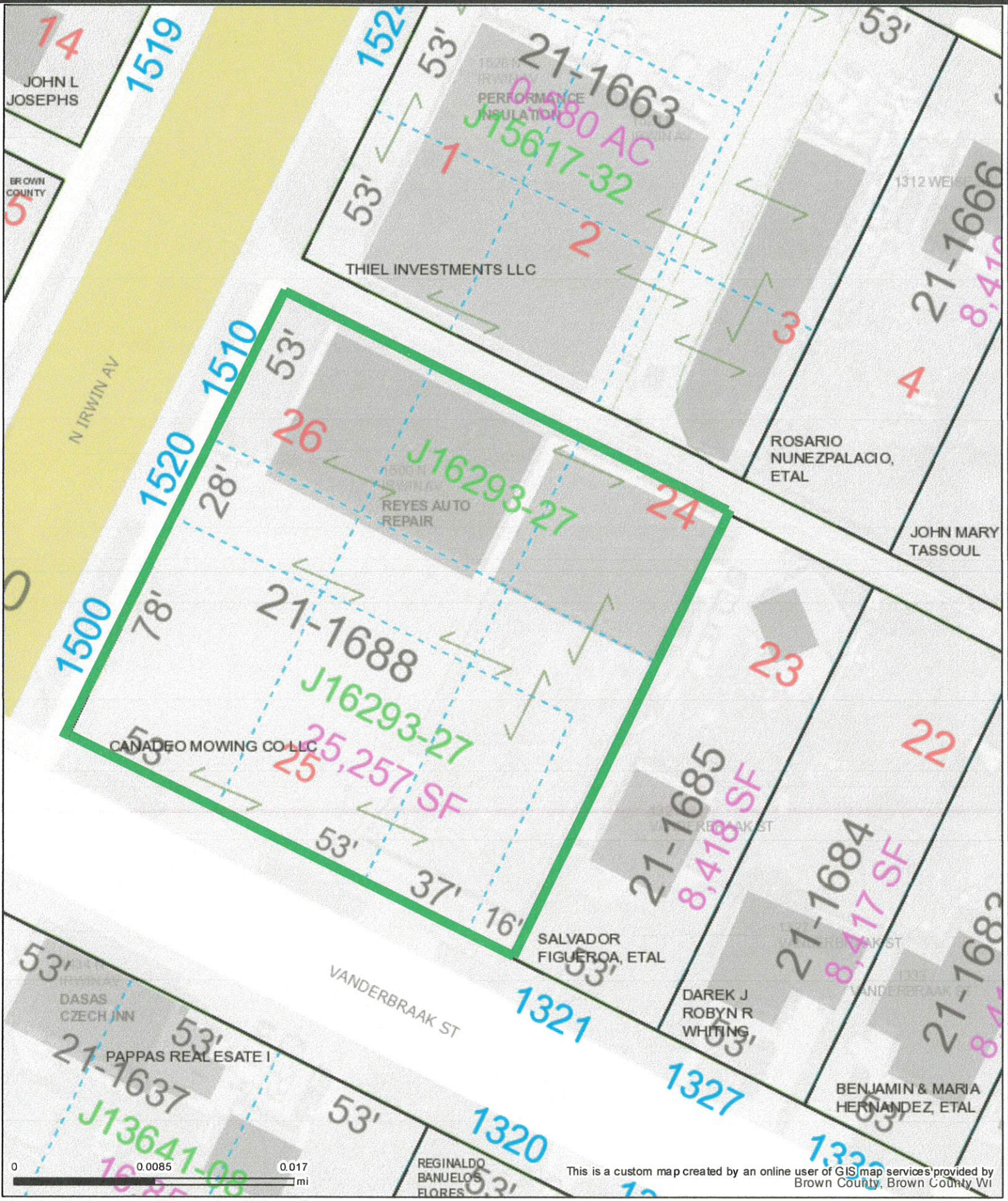
Tax History

Year	Amount	Interest Paid	Penalties Paid	Paid	Last Paid	Amount Due	Status
2020	5195.07	0.00	0.00	0.00	N/A	5195.07	No Payment Collected
2019	5076.40	0.00	0.00	5076.40	12/11/2019	0.00	Paid
2018	4979.60	49.80	0.00	5029.40	2/11/2019	0.00	Paid
2017	4802.80	0.00	0.00	4802.80	4/18/2018	0.00	Paid
2016	4740.40	0.00	0.00	4740.40	6/30/2017	0.00	Paid
2015	5370.57	0.00	0.00	5370.57	6/23/2016	0.00	Paid
TOTAL	30164.84	49.80	0.00	25019.57	-	5195.07	-

* The totals shown here represent only the items in the grid. For more detailed information see 'Tax Balance Report'.

Document History

Doc #	Type	Date	Vol / Page	# Pages	Signed Date	Transfer Date	Sale Amount	# Properties
2820613	WARRANTY DEED			0			\$0.00	0
			J25609 / 42				\$0.00	0
			J25609 / 42				\$0.00	0
			J16293 / 27				\$0.00	0



Part of Brown County WI

Map printed on 12/8/2020

1:480
1 inch = 40 feet*
1 inch = 0.00758 miles*
**original page size: 8.5"x11"*
Appropriate format depends on zoom level

Parcel ownership key

- Parcel Boundary
- Condominium
- Gap or Overlap
- Parcel line
- Right of Way line
- Meander line
- Lines between deeds or lots
- Historic Parcel Line
- Vacated Right of Way

"hooks" indicate parcel ownership crosses a line

SC-190-2
2880257
0.814 AC
279.8'
3547

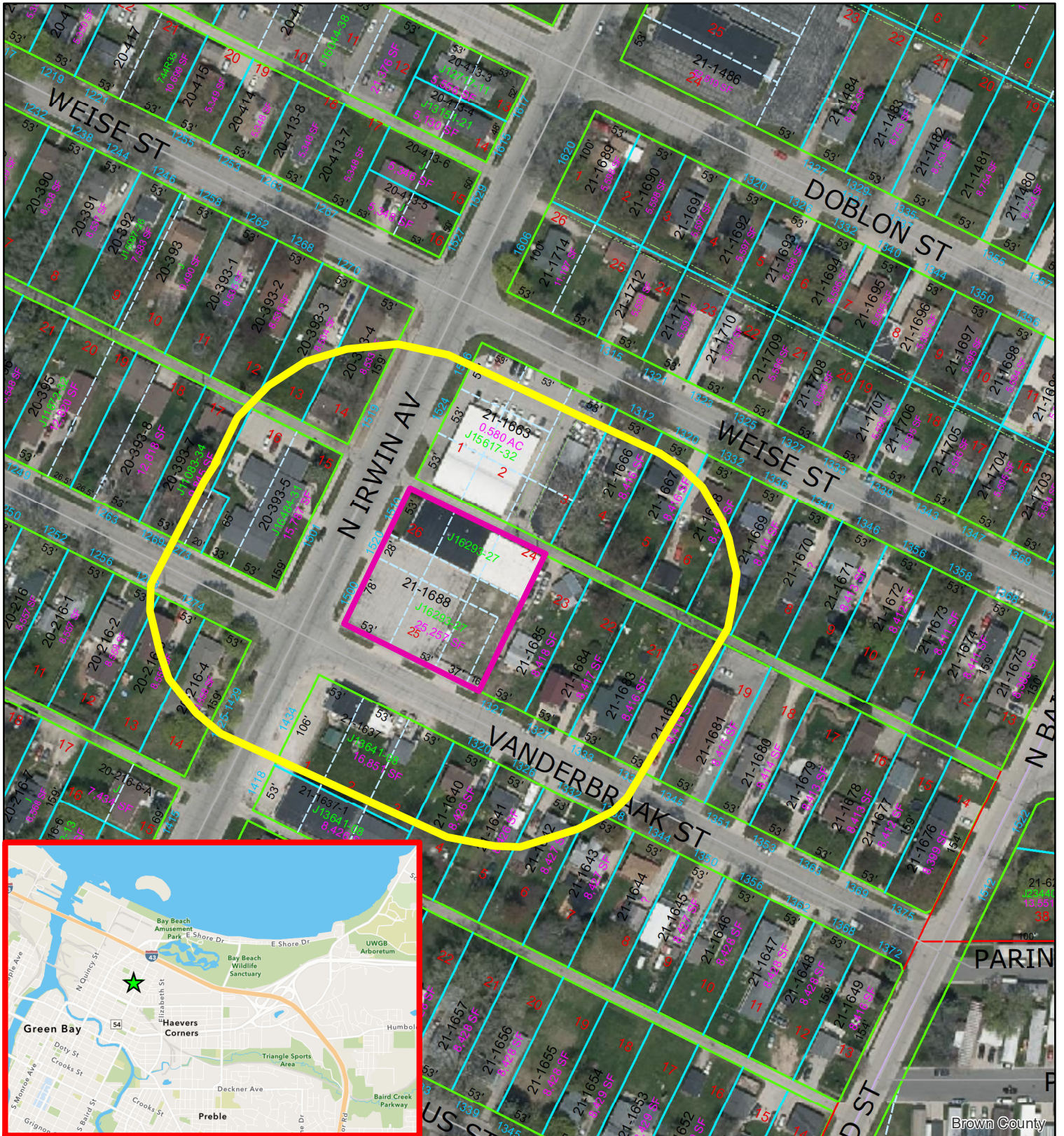
Parcel ID Number
Document Number
Area of parcel
Line Distance
Address

A complete key (legend) is available at:
<https://tinyurl.com/BrownDogKey>



(920) 448-6480
maps.gis.co.brown.wi.us

1500 N Irwin Avenue



Brown County

0 0.01 0.02 0.04 0.06 0.08 Miles

- ★ Subject Parcel 21-1688
- Subject Area
- 200' Property Owner Notice

Zoning Petition (ZP 20-37) Proposed Rezoning 1500 N Irwin Avenue

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Report to the Green Bay Plan Commission

MEETING DATE

February 17, 2021

PREPARED BY

Stephanie Hummel, Staff

AGENDA ITEM # N.3

To rezone 2226 Main Street from General Commercial (C1) to Highway Commercial (C2). (Public Hearing held 02/08/2021)

BACKGROUND

Primary Address: 2226 Main Street.

Aldersperson/District: Ald. Lynn Gerlach / District 3

Reason for Request: To permit the redevelopment of the site for an Enterprise Rent-A-Car

Zoning and Land Uses:

SUBJECT PROPERTY: General Commercial (C1) - Vacant Commercial Building

NORTH: General Commercial (C1) - Retail Store

SOUTH: General Commercial (C1) - Retail Chain Store

EAST: Right-Of-Way, Main St. - Frontage Road

WEST: General Commercial (C1) - Vacant Land

Comprehensive Plan: The 2022 Smart Growth Plan designates this area as Commercial.

Report: Enterprise Rent-A-Car is petitioning to open a location at 2226 Main Street. This parcel is currently zoned C1, General Commercial. Auto rental is not allowed in this district. C2, Highway Commercial, permits auto rental by right. This general area is zoned commercial with a mix of C1 and C2. The Comprehensive Plan shows the area as intended for Commercial uses. There will be no building or parking expansions with the establishment of this business at this time. Staff has no issues with this request at presented.

Ald. Lynn Gerlach and adjacent property owners, within 200 ft., have been notified of the request. As of the drafting of this report, staff has received no inquiries regarding the request.

RECOMMENDATION

Staff is recommending approval of the request.

FISCAL IMPACT

ATTACHMENTS

1. ZP 20-39 Map
2. ZP 20-39 Street View Photo





Report to the Green Bay Plan Commission

MEETING DATE

February 17, 2021

PREPARED BY

Paul Neumeyer, Staff

AGENDA ITEM # N.4

To amend the Comprehensive Plan for the property located at 215 Elizabeth Street from Medium Density Retail, Office or Housing (MIROH) to Commercial (C) for an area no greater than 320 ft. from the intersection of Main Street and Elizabeth Street. The balance of lands included in the request shall be designated as low density residential.

BACKGROUND

Primary Address: 215 Elizabeth Street

Alderson/District: Ald. Craig Stevens / District 5

Reason for Request: The proposed comprehensive plan amendment would allow for the future rezoning of the property for used car sales.

Surrounding Zoning and Land Uses:

SUBJECT PROPERTY: General Commercial (C1) - vacant, former tavern site

NORTH: Low Density Residential (R1) - Single family homes

SOUTH: Highway Commercial (C2)/General Commercial (C1) - Commercial

EAST: General Industrial (GI) - Self-service storage

WEST: Low Density Residential (R1) - Bay of Green Bay

Comprehensive Plan: The 2022 Smart Growth Green Bay Comprehensive Plan recommends Medium Intensity Retail, Office or Housing (MIROH). The applicant is requesting a Commercial land use.

Analysis: This item was previously before the Plan Commission on August 31, 2020, which included a Public Hearing and a recommendation of denial by staff and the Plan Commission. The request was then presented to the Common Council on September 15, 2020, and referred back to the Plan Commission for further consideration.

Since that time, the applicant has met with near-by property owners to address their concerns and signed letters of support have been provided. However, it does not represent adjoining property owners on the south side of Proper Street and a narrative from the applicant is attached within this agenda packet. The use of the site as a commercial lot has been scaled back, creating a larger green space between the residential properties and the proposed commercial zoning. See attached site plan. This has created an important change to minimize the direct impact on the residential properties to the north.

Previously staff recommended denial based on the potential land use conflict and a potential detriment to the adjoining neighborhood as a result with additional lighting and noise. After reviewing the revised site plan, it appears that there have been sufficient efforts to mitigate the impact on residential properties by pulling the commercial area south approximately 40 ft. to create a larger green space.

Staff is supportive of the amendment with a change from our previous recommendation in September 2020.

The limitation of the commercial zoning to be no greater than 320 ft. north of intersection of Main Street and Elizabeth Street. The balance of the property is being recommended for low density land uses and should be zoned accordingly. This would necessitate a strip zoning of low density residential zoning to solidify the transitional area, a rezoning would take place at a later date if the amendment is approved by the Common Council.

The following is supplemental highlights from the previous staff report and amended statements related to the review criteria for the request:

There are two parcels included in the proposed request Tax Parcel 19-234-1, aka 215 Elizabeth Street and Tax Parcel 19-309, 1589 Main Street. The location of 215 Elizabeth Street is the site of a current auto repair shop leased by the property owner to a second party tenant. 215 Elizabeth Street, south to Main Street has a Highway Commercial (C2) zoning and the "site" has been approved for used car sales.

Due to the limited size for vehicle sales at 1589 Main Street, the applicant is looking to expand vehicles sales to the north. The current General Commercial (C1) zoning does not permit vehicle sales, a Comprehensive Plan amendment is necessary to change the future land use designation to commercial which, would allow for a rezoning to Highway Commercial (C2) where, vehicle sales are permitted. A conceptual site plan layout is attached within this agenda packet that was presented to neighbors as part of a neighborhood meeting conducted last year.

The Smart Growth 2022 Comprehensive Plan establishes the following review criteria for periodic amendments:

1. The change is consistent with the goals and objectives or other elements of The Smart Growth 2022 Comprehensive Plan.

Staff feels the proposed amendment attempts to be consistent with the goals and objectives of the plan. The revised proposal appears to minimize and reduce the potential the land use conflict by increasing the green space area between adjoining land uses to an acceptable distance to allow for commercial land uses.

2. The change does not create an adverse impact on public facilities and services that cannot be mitigated. Public facilities and services include roads, sewers, water supply, drainage, schools, police, fire, and parks.

The proposed amendment should have no impact on public facilities and services.

3. Development resulting from the change does not create an undue impact on surrounding properties. Such development should be consistent with the physical character of the surrounding neighborhood or would upgrade and improve its viability.

Staff does not anticipate a detriment to the residential neighborhood with the improved green space.

4. The change allows a more viable transition to the planned uses on adjacent properties than the current land use.

The proposed expanded green space provides a mitigating measure between land uses.

5. The change does not have a significant adverse impact on the natural environment including trees, slopes, and groundwater, or the impact could be mitigated by improvements on the site or in the same vicinity.

There are no known environmental impacts.

6. There is a change in City policies or neighborhood characteristics that would justify a change.

Not applicable.

7. The change corrects an error made in the original plan.

Not applicable.

8. There is a community or regional need identified in the Comprehensive Plan for the proposed land use or service.

Not applicable.

9. The change helps the City meet its life-cycle and affordable housing goals.

Not applicable.

10. The change does not adversely impact any landmarks or other historically significant structures or properties unless mitigated through relocation, commemoration, or dedication.

There are no landmarks or historically significant features that are being modified as part of the request.

A neighborhood meeting was conducted on April 17, 2019, at the request of the planning staff, with immediate neighbors and the applicant at the Riverside Ballroom. There was no clear consensus at the meeting and many neighbors expressed concerns regarding impact on their homes as the result of an improved car lot.

The Public Participation Plan for Periodic Comprehensive Plan Amendments is being followed for this request and notices have been provided regarding the public hearings for this meeting. Ald. Craig Stevens and neighbors within 200 ft. have been noticed of the meeting based on Plan Commission policy.

Staff has received one email objecting to the request and it is attached within this agenda.

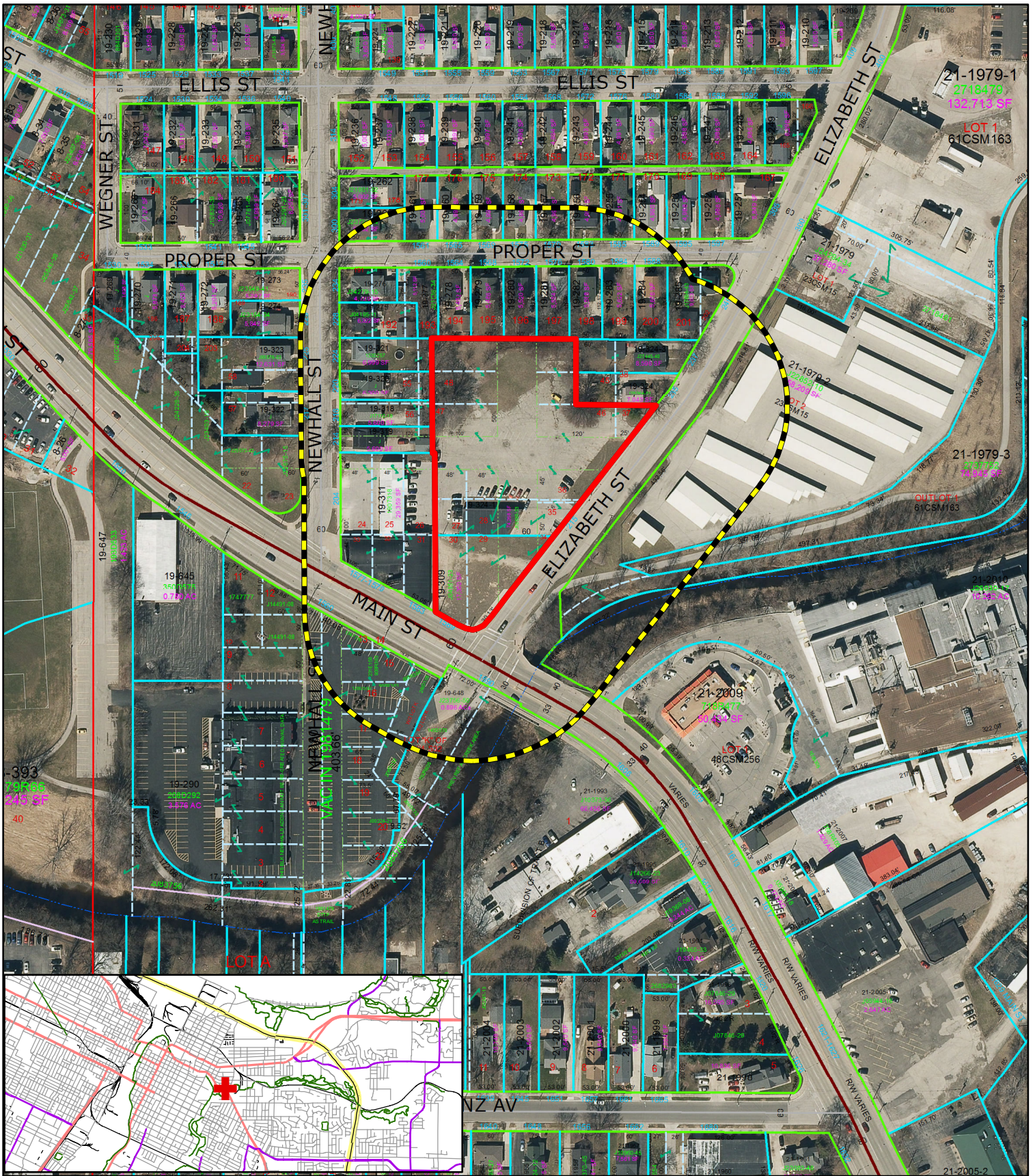
RECOMMENDATION

Staff is recommending approval of the request to amend the Comprehensive Plan for commercial land uses to be no greater than 320 ft. from the intersection of Main Street and Elizabeth Street. The balance of lands included in this request shall be designated as low density residential.

FISCAL IMPACT

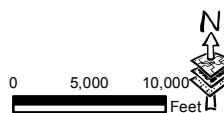
ATTACHMENTS

1. CPA 20-01 letter
2. Site Plan 4-17-19
3. 215 Elizabeth Street Narrative Jan Update
4. Fwd_ Rezoning the property at 215 Elizabeth St.



**Comprehensive Plan Amendment
(CPA 20-01)
215 Elizabeth Street**

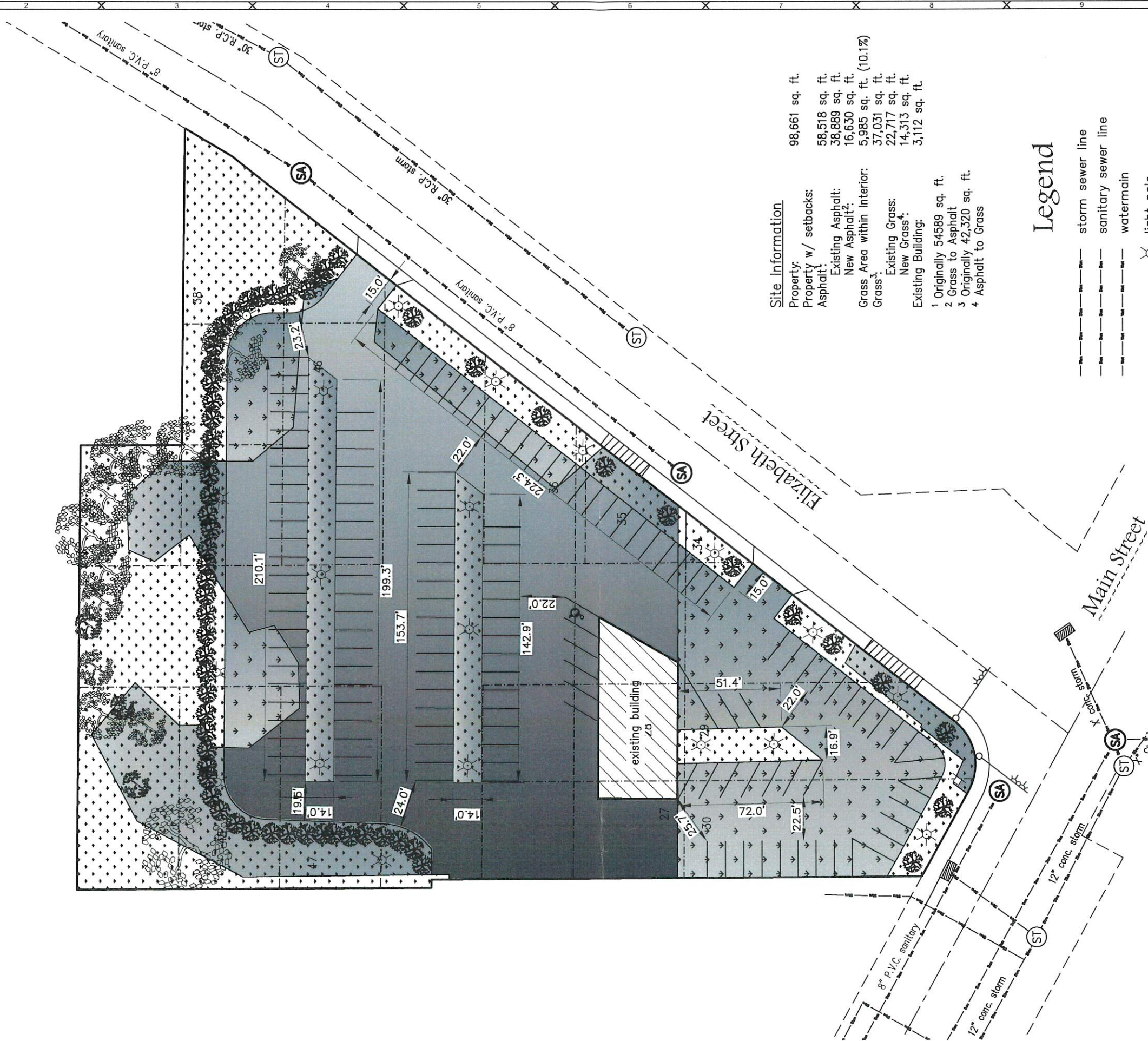
- Parcel Boundary
- 200' Property Owner Notice



This is a compilation of records and data located in various City of Green Bay offices and is to be used for reference purposes only. The City of Green Bay is not responsible for any inaccuracies or unauthorized use of the information contained within. No warranties are implied.
Map prepared by NPM

Comprehensive Site Plan

Part of the recorded plat Newhall's Addition to the City of Green Bay,
being in Unfinished Section 32, Township 24 North, Range 21 East,
City of Green Bay, Brown County, Wisconsin.



Site Information	
Property:	98,661 sq. ft.
Property w/ setbacks:	58,518 sq. ft.
Asphalt ¹ :	38,889 sq. ft.
Existing Asphalt:	16,630 sq. ft.
New Asphalt ² :	5,985 sq. ft. (10.1%)
Grass Area within Interior:	37,031 sq. ft.
Grass ³ :	22,717 sq. ft.
Existing Grass:	14,313 sq. ft.
New Grass ⁴ :	3,112 sq. ft.
Existing Building:	
1 Originally	54,589 sq. ft.
2 Grass to Asphalt	
3 Originally	42,320 sq. ft.
4 Asphalt to Grass	

Legend

- storm sewer line
- sanitary sewer line
- watermain
- light pole
- existing building
- sign
- deciduous tree
- traffic light
- handicap parking space

- existing blacktop to remain
- existing pervious to become impervious
- existing impervious to become pervious
- existing pervious to remain pervious
- existing drive to be closed off

Mirhashemi Inc.
Joe Mirhashemi

Mau & Associates, LLP
LAND SURVEYING & PLANNING
CIVIL & WATER RESOURCE ENGINEERING
Phone: 920-434-9670 Website: www.mau-associates.com
400 Security Blvd, Green Bay, WI 54313

PROJECT NO.
M-19517
SHEET NO.
1 of 1
DRAWING NO.
X-816

Site Plan

SCALE
1"=50'

DRAWN BY
ZRH

TAX PARCEL NO. 19-324-1 & 19-309
File: M-19517 Exhibit 122017.dwg Date File: X-816
Fieldwork Completed: xxx/xx/xx





215 Elizabeth Street

Comprehensive Plan Amendment

01.19.21

Request to amend the comprehensive plan designation of Medium Intensity Residential-Office to Commercial at Parcel 19-324-1 for the purposes of improving the lot to facilitate an auto sales lot at Parcels 19-324-1 and Parcel 19-309.

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Request:

Allowing action to amend the Comprehensive Plan for the property located at 215 Elizabeth Street (Parcel 19-324-1) from Medium Density Retail, Office or Housing (MIROH) to Commercial (C)

If this request is approved, subsequent request for action to change the zoning of property from C1 Commercial to C2 Commercial will be needed along with a full site plan for review.

Purpose of change is to accommodate concept plan to allow for development of an auto sales lot at the corner of Main and Elizabeth. This area is comprised of two separate parcels (southern parcel is 19-309), both owned by the petitioner, Mirhashemi Inc.

Background

The northwest corner of Main and Elizabeth has been underutilized for nearly a generation. As noted, while the site is two separate parcels, for all intent and purpose, the land has become a single brownfield site. In 2018, Joe Mirhashemi of Mirhashemi Inc, sought and received approvals for plans and variances to allow for development of an auto lot at the southern parcel (19-309). The southern parcel has received some improvements in the past two years, with new asphalt paved to allow for use on the southern parcel. This current request would offer the potential to utilize the entire site by adding a number of improvements to the northern parcel; unseen for a generation. Physical improvements include adding of new pavement, remodeling of the existing single story building, new wooden fencing, a new garage out building, and improved greenspaces and green space buffering between the existing homes to the north. The full site will allow for used car sales on a full time basis.

The site itself has been in a state of flux over the past generation. In 2000, the properties in question contained:

An automotive service shop near the Main-Elizabeth corner

Gilliam Electronics in the existing single-story building

A bar located near the northern property line containing approximately 104 surface parking stalls

As time moved on, by 2005 the bar had burned down and the site was transitioning to an underused brownfield site. The former auto service shop building still existed, but was not being used. The existing single-story building appeared to still have Gilliam Electronics as the occupant.

By 2015, Gilliam Electronics was gone. The existing building went through a few different uses including a tire shop and mechanic. None of these businesses were thriving in any particular shape.

The geography of the site has made redevelopment tricky throughout the years. While site is large in the context of its location, the frontage along Main Street is limited. Across the street, self-storage units have not and will not be helpful in attracting a neighborhood or smaller business redevelopment at the site. While the site is two separate lots, the lot to the south is too small for its C2 use and this lot is too large and too setback for its use as a C1 property. Using both parcels as a single entity will facilitate opportunity for the C2 auto car lot use to thrive and become a stable land use within the neighborhood.

Improvements

This concept and land use change will offer stability and improvements to the site which has not seen its share sustained improvement for a generation now. This concept will allow for improvement of the existing single-story building. These changes will foster an updated look to the building similar to what Gandrud West Mason improved with its single-story building at the corner of West Mason and Oneida. Add windows, improve materials, add touch ups to a venerable building.

Conceptually, the existing building would be improved by adding 7 windows, 7' x 5'. 2 on each of the sides of the building and 2 on the front of the building. The building will have 4 offices built out, 2 bathrooms, and a kitchen.

A detached garage is proposed to be built in the northwest corner of the lot, near an existing concrete foundation of the former bar building. The garage will be built to store equipment.

Daily Operations

A total of 5 employees will be at the auto lot. One manager, one title clerk, two salespeople, and a detail employee are projected to operate the business. At any given time 60 to 90 cars will be on site. This number of cars is a competitive and solid inventory for a small, locally owned used car dealer to maintain.

Typical daily operations would be conducted 10 A – 6 P, Monday through Thursday; 10A – 4 P, Friday and Saturday. A conceptual lighting plan which would limit light pollution on to neighboring properties included. At least 4 security cameras would be affixed outside and 2 on the inside of the revitalized building.

Revisions from August

A revised site plan has been attached. The following changes are noted:

- More green space. The longest, most northern row of parking has been eliminated. After more consideration, the development team felt that the 60-90 car inventory would be a sufficient number for typical cars on a lot and the final row of parking would not be needed. Green space has been added with this. In this green space, we have noted rows of larger evergreen trees to be planted along the northern end of the property to give a green buffer between the existing neighborhood and the parking lot on year-round basis.
- 3 landscape islands have been added to break up the asphalt within the parking lot.
- A detached garage has been added near the foundation of the former bar on site.
- New, improved fencing to be added along perimeter edges near the parking. Most of the site has existing parcel specific fencing near property lines.

Conclusion

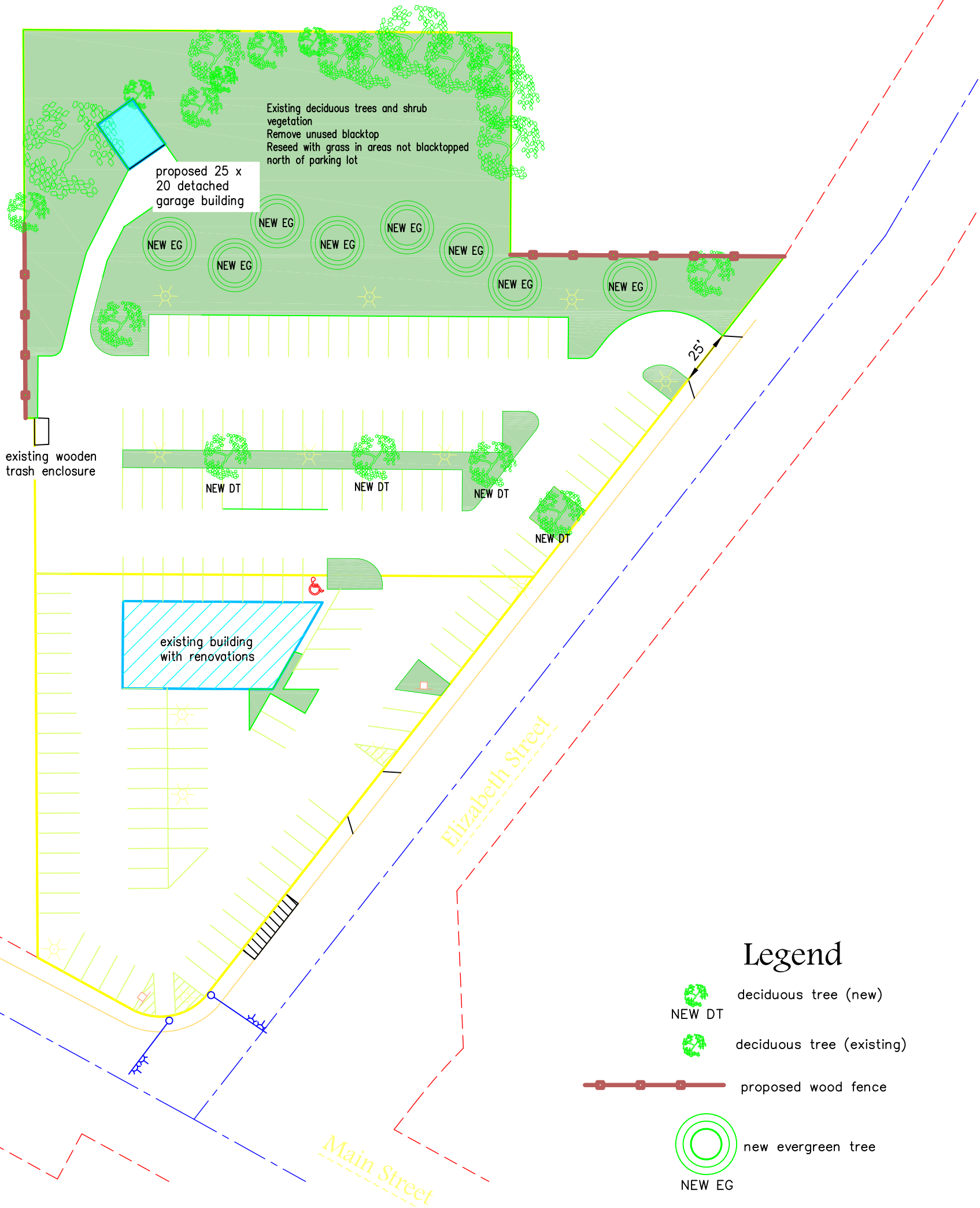
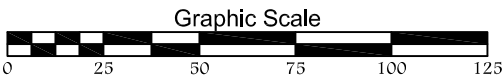
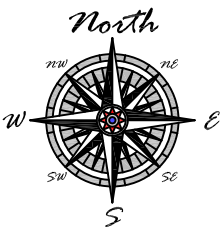
This submission requests consideration for a comprehensive plan change and will subsequently require a rezone as the two requests go hand in hand with the concept of using the site as an auto dealership.

This site has been underutilized for a generation. This concept and use will allow for the southern parcel to reach its intended use, gives stability to the overall lot for the first time in a generation, offers a market need, and gives a new, improved green space buffer to neighboring residents.

Mr. Mirhashemi has reached out multiple neighbors on nearby blocks. Letter of support have been included with this submission as well an updated site concept, images from Gandrud Used Cars, aerial imagery of the site over the past two decades, a lighting concept, bid package from Omni Paint and Glass regarding renovations to the existing building, and projected costs for asphalt removal within the northern parcel.

Comprehensive Site Plan Winter 2020-21 Update

Part of the recorded plat Newhall's Addition to the City of Green Bay,
being in Unfinished Section 32, Township 24 North, Range 21 East,
City of Green Bay, Brown County, Wisconsin.



Legend

- deciduous tree (new)
- deciduous tree (existing)
- proposed wood fence
- new evergreen tree
- light pole
- building
- sign
- traffic light
- handicap parking space



Aerial Photo

April 2000



Aerial Photo

April 2005



Aerial Photo

April 2010

Street View of Elizabeth and Main 2007



GANDRUD WEST MASON



CUSTOMER
PARKING



GANDRUD
West M
One Low Price
gandrud
OPEN MON TH
9 TO 6
SAT 9 TO 5

GANDRUD WEST MASON

One Low Price
Plain & Simple, Always.

1139

A Relaxed
Shopping Atmosphere.

OPEN

Financing Available.

No Hidden Fees.

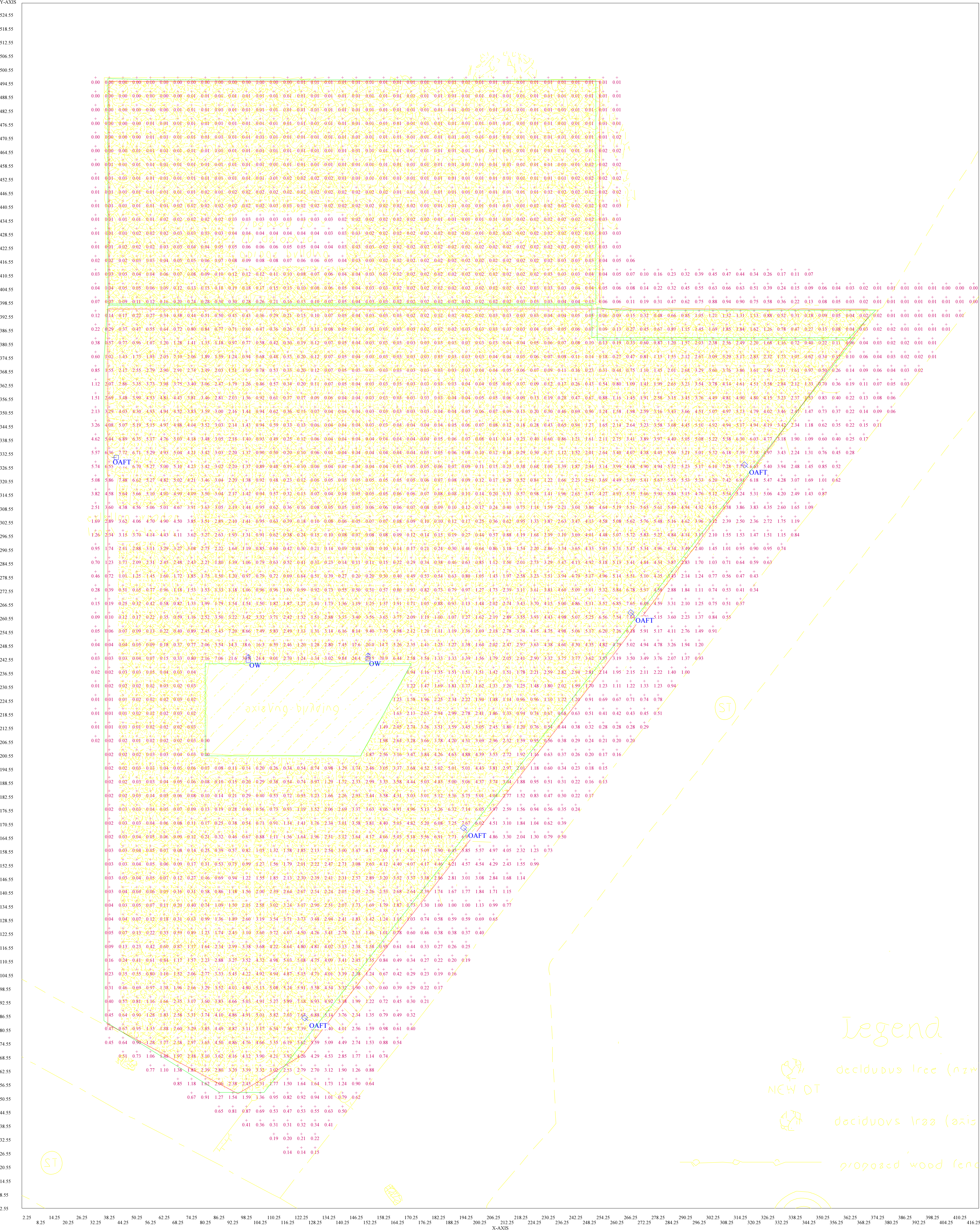
Computed in accordance with IES recommendations

Statistics					
GROUP		MIN	MAX	AVE	AVE/MIN
(+)		0.00	30.76	1.50	N/A
					N/A

Luminaires Used

TYPE	QTY/TEST#	DESCRIPTION
OAF	5	FT Slimitte, 24" SSS, 3" Conc Pour (1) AFT <SLM-LED-30L-SIL-FT-40-70CRI>, LLF= 1.00;
OW	2	MPSM100T4, , (1) W <MP-SM100UT4-40B>, LLF= 1.00;

Y-AXIS



Legend

- deciduous tree (nzw)
- deciduous tree (axis)
- progressed wood fence

Main Street Car Lot JT071519, Car Lot Less View from (500, 366, 121), Heading = 269 deg, Elevation = -17 deg

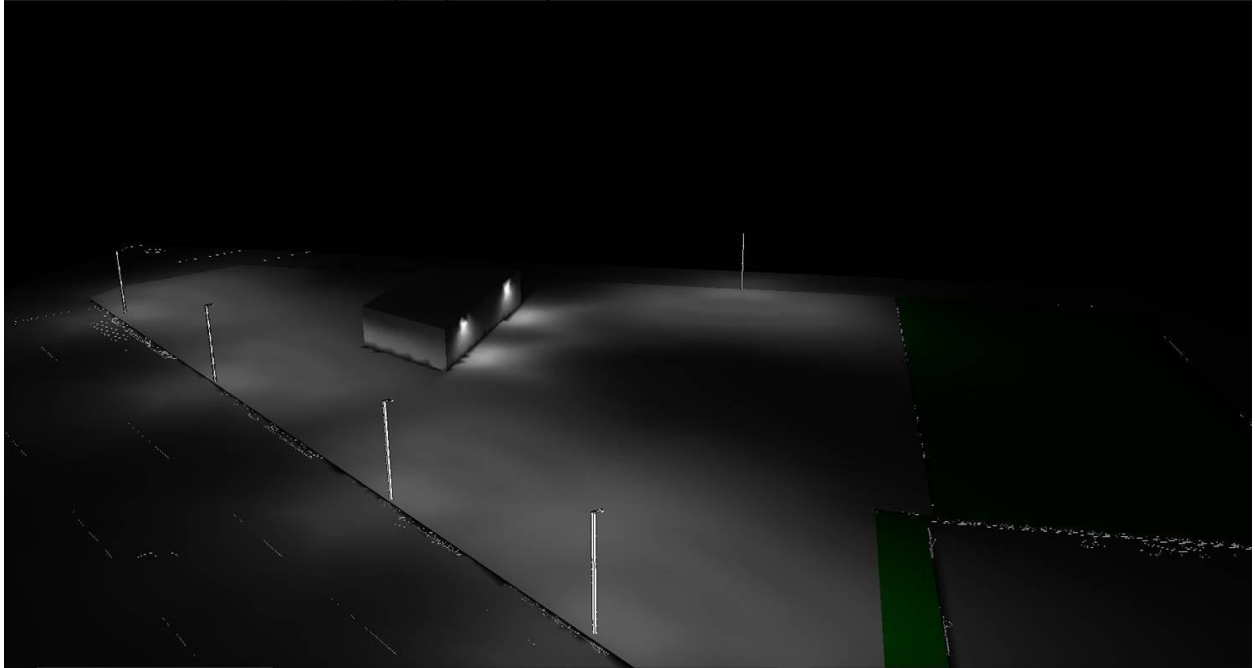


Image rendered by LifePro Version 2.030

Birds-eye view lighting concept

OMNI GLASS & PAINT, LLC

☐ 3530 Omni Drive, Oshkosh, WI 54904
PO Box 2186, Oshkosh, WI 54903-2186
PH: (920) 233-3333 FAX: (920) 236-7890

☐ 1450 Gruber Road, Green Bay, WI 54313
PH: (920) 233-3333 FAX: (920) 434-5721

☐ 5304 Schofield Avenue, Schofield, WI 54476
PH: (715) 355-8938 FAX: (715) 355-5249

☐ 20711 Watertown Rd., Suite D1, Waukesha, WI 53186
PH: (920) 233-3333 FAX: (262) 696-6013

GLASS PROPOSAL

To: John Stolz
(608) 720-8704
buildingpride@live.com

Project: John Stolz SF Windows
Location: Elizabeth St & Main St
Green Bay, WI 54302
Proposal No.: O20-992
Date: 11/10/20

OMNI GLASS & PAINT, LLC, proposes to furnish materials and/or labor described below, for sums stated:

Base Bid: \$5,954.00 Tax Included

- (4) 5'0" x 7'0" Dark bronze anodized Kawneer 451T, center glazed thermally broken storefront windows with 1" clear, low-e, tempered, insulated glass
- Perimeter caulking of our aluminum frames
- Installation in prepared openings (By others)

Price Excludes:

- Final Cleaning
- Use of out of date insurance forms (COI & Add. Insured) Omni will provide our current Zurich equivalent
- Any hazardous materials (Asbestos or lead Paint) remediation or abatement
- Demolition, removal, salvage of existing or preparation of rough openings
- Cut/prepare openings into existing wall for new windows

Qualifications:

1. This proposal supersedes any previously given, either written or verbal, and is valid for 45 days only, unless extended at our option.
2. Subject to provision contained on this or any attached sheets making up this proposal.
3. GC to hold openings to approved shops.
4. All systems priced as screw spline.

Thank you for the opportunity to quote this project. If you have any questions, please call me at our office.

Jerry Gmeiner, Project Manager
Eric Delie, Estimator

Cell: (920) 420-1234
Cell: (920) 420-7460

e-mail: jgmeiner@omnigp.com
e-mail: edelie@omnigp.com

Continued.....

Initial _____

Carter Trucking & Excavating, Inc.

1445 Viking Lane
De Pere, WI 54115

Proposal

Date	Proposal #
10/1/2020	863

Name / Address
JR Stolz

			Project
Description	Qty	Rate	Total
Proposal for removing asphalt at 215 Elizabeth st Excavating Includes: Remove approximately 19,764 sq ft of asphalt Haul asphalt away Removing some brush Bringing in 391 yards black dirt Level black dirt for future green space		14,288.50	14,288.50
		Subtotal	\$14,288.50
		Sales Tax (5.5%)	\$0.00
		Total	\$14,288.50

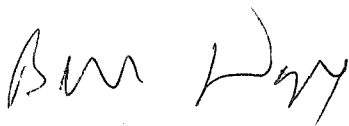
June 20, 2019

TO WHOM IT MAY CONCERN:

I own the property at 235 Elizabeth Street, Green Bay. The property directly to the south of this property has been vacant for years and I have no objections to a commercial business going in there.

I would prefer a commercial well-lit business as opposed to a vacant lot as it has been for several years.

Thank you, I can be reached at number below with any questions.

A handwritten signature in black ink, appearing to read "Bill Doyle". The signature is written in a cursive, flowing style.

Bill Doyle

920-713-3779

Greetings Plan Commissioners,

I've had a conversation with Joe Mirhashemi, the property owner at 215 Elizabeth Street, regarding the comprehensive plan amendment and the auto lot concept for the site at the corner of Main and Elizabeth Street. After discussing the changes and hearing more specifics, I'd like to offer my support for redevelopment of the site.

Thank you,

Rya Ashwin

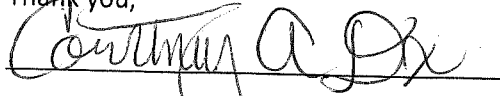
Name, Title, Date

1575 Proper St
Green Bay, WI

Greetings Plan Commissioners,

I've had a conversation with Joe Mirhashemi, the property owner at 215 Elizabeth Street, regarding the comprehensive plan amendment and the auto lot concept for the site at the corner of Main and Elizabeth Street. After discussing the changes and hearing more specifics, I'd like to offer my support for redevelopment of the site.

Thank you,

A handwritten signature in cursive script that reads "Courtney A. Dix". The signature is written in dark ink and is positioned above a horizontal line.

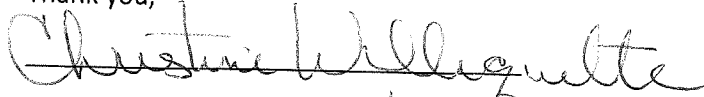
Name, Title, Date

1579 Proper st.

Greetings Plan Commissioners,

I've had a conversation with Joe Mirhashemi, the property owner at 215 Elizabeth Street, regarding the comprehensive plan amendment and the auto lot concept for the site at the corner of Main and Elizabeth Street. After discussing the changes and hearing more specifics, I'd like to offer my support for redevelopment of the site.

Thank you,



Name, Title, Date

15/3 0 Proper St,

Greetings Plan Commissioners,

I've had a conversation with Joe Mirhashemi, the property owner at 215 Elizabeth Street, regarding the comprehensive plan amendment and the auto lot concept for the site at the corner of Main and Elizabeth Street. After discussing the changes and hearing more specifics, I'd like to offer my support for redevelopment of the site.

Thank you,

Danny Beverly

Name, Title, Date

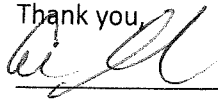
1588 Proper St

G.B

Greetings Plan Commissioners,

I've had a conversation with Joe Mirhashemi, the property owner at 215 Elizabeth Street, regarding the comprehensive plan amendment and the auto lot concept for the site at the corner of Main and Elizabeth Street. After discussing the changes and hearing more specifics, I'd like to offer my support for redevelopment of the site.

Thank you,

 Property owner on Proper

Name, Title, Date

12/8/2020

1597 Proper

Greetings Plan Commissioners,

I've had a conversation with Joe Mirhashemi, the property owner at 215 Elizabeth Street, regarding the comprehensive plan amendment and the auto lot concept for the site at the corner of Main and Elizabeth Street. After discussing the changes and hearing more specifics, I'd like to offer my support for redevelopment of the site.

Thank you,

C. Costa, retiree 11-24-20

Name, Title, Date

1539 Propos 51

Greetings Plan Commissioners,

I've had a conversation with Joe Mirhashemi, the property owner at 215 Elizabeth Street, regarding the comprehensive plan amendment and the auto lot concept for the site at the corner of Main and Elizabeth Street. After discussing the changes and hearing more specifics, I'd like to offer my support for redevelopment of the site.

Thank you,

Ken Tedford (Riverside Ballroom)

Name, Title, Date

Ken Tedford
owner Riverside Ballroom
12-10-2020

From: [Peter LaPlant](#)
To: [Paul Neumeyer](#)
Subject: Fwd: Rezoning the property at 215 Elizabeth St.
Date: Wednesday, February 3, 2021 7:07:42 AM

Paul,

I'm forwarding my original email to you expressing my desire to deny rezoning of this property. I can't express my hopes strong enough for this denial! There is a direct line through my front windows that would allow the lights to blast into my living room. It already happens from the cars headlights parked in his lot to get food at the taco truck he allows on his property. I'm very familiar with downlighting fixtures but that still won't change how these lights affect me. Why should I, as a long time neighborhood resident, have to cope with this type of negative personal impact because of his persistence. Your committee already recommended denial, I sure hope you hold to that. There are many neighbors opposed to this rezoning. Even if there were only one, that's enough to say no. This is a neighborhood, not a commercial enterprise. With the upcoming University Avenue renovation, wouldn't it be beneficial for both the city and the property owner to develop a lot there? That's where this project belongs. Not in my neighborhood. Please forward this letter to your plan commission.

I will not be taking part in your zoom meeting. I'm a horrible public speaker, especially when I feel threatened as I do with this issue. Once again, a no vote to this issue is the only fair vote. Please respond to this email so I know you received it.

Thank you for bringing my concerns forward,

Peter La Plant
1565 Proper St.
920-530-0249

Sent from my iPad

Begin forwarded message:

From: Peter LaPlant <ppscirrus@icloud.com>
Date: September 1, 2020 at 3:11:48 PM CDT
To: paulne@greenbaywi.gov
Subject: Rezoning the property at 215 Elizabeth St.

Paul,

My name is Peter La Plant and reside at 1565 Proper St., Green Bay, 54302.

I was unable to partake in last nights 'zoom' meeting regarding the rezoning of the above mentioned property, but want to express my opposition to that rezoning.

My concern lies in how bright that property will become with all the lighting required for a car lot. It's too much for a residential neighborhood and certainly not in my best interests having lived here almost 35 years. Please take this into consideration when deciding. I truly hope it's a no.

Thank you,

Peter La Plant
1565 Proper St.
Green Bay, WI 54302

Sent from my iPad



Report to the Green Bay Plan Commission

MEETING DATE

February 17, 2021

PREPARED BY

Paul Neumeyer, Staff

AGENDA ITEM # N.5

To holdover a request of Ald. Corpus-Dax to examine regulations regarding the current zoning code and "Drive Thru" or "Pickup" lanes, and the necessity of bypass lanes and/or menu boards so notices can be properly posted.

BACKGROUND

Aldersperson/District: All

Reason for Request: To review current drive-through requirements.

Report: A summary of proposed changes to the requirements for drive-through facilities:

The Zoning Code currently defines a drive-through as:

A facility consisting of a driveway and window, opening, canopy, or other facilities used for serving patrons seated in an automobile. Drive-through facilities may be associated with principal uses, such as restaurants, banks, or drugstores, or may be free-standing, such as coffee kiosks, ATMs, etc.

The following proposed definition was revised to better define a drive-through:

Drive-through facility: A facility consisting of a dedicated drive aisle that leads to and from a service area for the sale and dispensing of food, beverage, consumer items and transactions for patrons in a motor vehicle. Such facilities may include but are not limited to restaurants, pharmacies and financial institutions.

The following are the current development standards for drive-through facilities, per Chapter 13-1606(l), Commercial Uses:

- (1) Drive-through elements shall not be located between the front façade of the principal building and the street.
- (2) Plans for onsite circulation and driveway locations shall be reviewed as part of the conditional use review process. Site design shall accommodate a logical and safe vehicle and pedestrian circulation pattern. Adequate queuing lane space shall be provided without interfering with onsite parking/circulation.
- (3) Alley access to drive-through lanes is prohibited on any block containing a residential or office-residence district, except for commercial deliveries when approved by the city engineer.
- (4) Drive-through canopies and other structures, where present, shall be constructed from the same materials as the primary building and with a similar level of architectural quality and detailing.
- (5) Sound from any speakers used on the premises shall not be audible at the boundary of any surrounding residential district or on any residential property.
- (6) An emergency exit lane shall be provided for users queuing through the drive-through lane(s) without interfering with onsite parking/circulation

The development standards were revised to include the elimination of the emergency by-pass lane and specifications for minimum aisle widths. Additionally, requirements for clearly delineating the drive-through with pavement markings/signs, need for Traffic Impact Analysis (TIA) and queuing standards for vehicles were additions to the development standards further detailed in the draft ordinance attached within this agenda.

There are no proposed changes to the use of a drive-through facility as they currently exist in the table of uses.

RECOMMENDATION

Approval of the draft ordinance amendment as proposed.

FISCAL IMPACT

ATTACHMENTS

- I. DRAFT GO xx-21 - Amend Drive-Through Requirements

GENERAL ORDINANCE NO. xx-21

AN ORDINANCE
AMENDING SECTION 13-303, LAND USE DEFINITIONS
AMENDING SECTION 13-1606(j), DRIVE-THROUGH FACILITY
AMENDING SECTION 13-1714, FIGURE 2, OFF-STREET PARKING
GREEN BAY MUNICIPAL CODE

THE COMMON COUNCIL OF THE CITY OF GREEN BAY DOES ORDAIN AS FOLLOWS:

SECTION 1. Section 13-303 Definitions, Vehicle Services, Green Bay Municipal Code, is hereby amended as follows:

~~Drive-through facility: A facility consisting of a driveway and window, opening, canopy, or other facilities used for serving patrons seated in an automobile. Drive-through facilities may be associated with principal uses, such as restaurants, banks, or drugstores, or may be free-standing, such as coffee kiosks, ATMs, etc.~~

Drive-through facility: A facility consisting of a dedicated drive aisle that leads to and from a service area for the sale and dispensing of food, beverage, consumer items and transactions for patrons in a motor vehicle. Such facilities may include but are not limited to restaurants, pharmacies and financial institutions.

SECTION 2. Section 13-1606(j), Green Bay Municipal Code, is hereby amended as follows:

(l) Drive-through facility:

- (1) ~~A d~~Drive-through ~~window and menu board elements~~ shall not be located between the front façade of the principal building and the street.
- (2) ~~Plans for onsite circulation and driveway locations shall be reviewed as part of the conditional use review process.~~ Site design shall accommodate a logical, ~~and~~ safe vehicle and pedestrian circulation pattern and shall not interfere with circulation or visibility for traffic either on or off site.
- (3) Alley access to drive-through lanes is prohibited on any block containing a residential or office-residence district, except for commercial deliveries when approved by the city engineer.
- (4) Drive-through canopies and other structures, where present, shall be constructed from the same materials as the primary building and with a similar level of architectural quality and detailing.
- (5) Sound from any speakers used on the premises shall not be audible at the boundary of any surrounding residential district or on any residential property.
- ~~(6) An emergency exit lane shall be provided for users queuing through the drive-through lane(s) without interfering with onsite parking/circulation~~

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(6) Drive-through aisles shall have a minimum ten (10') foot interior radius on curves and a minimum fourteen (14') foot width. Multiple drive-throughs may reduce their aisle width to 10 feet.

(7) Each drive through facility shall clearly delineate the drive aisle and the direction of traffic flow by signs and pavement markings. Pedestrian crosswalks shall be clearly marked thru the drive aisle where necessary.

(8) Drive through facilities shall include a minimum queuing space for 3 vehicles in advance of a menu board and 3 vehicles between the menu board and service area.

(9) All drive-through facilities may be subject to a Traffic Impact Analysis (TIA) per the review of the City Traffic Engineer.

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SECTION 3. Section 13-1714, Figure 2, Notes, Green Bay Municipal Code, is hereby amended as follows:

~~Drive through facilities shall include queuing space for at least 3 vehicles in advance of the menu board and 3 vehicles between the menu board and pick-up window.~~

SECTION 4. All ordinances, or parts of ordinances, in conflict herewith are hereby repealed.

SECTION 5. This ordinance shall not take effect until a public hearing is held hereon as provided by Section 13-204, Green Bay Municipal Code, and the adoption and publication of this ordinance.

Dated at Green Bay, Wisconsin this _____ day of _____, 2021.

APPROVED:

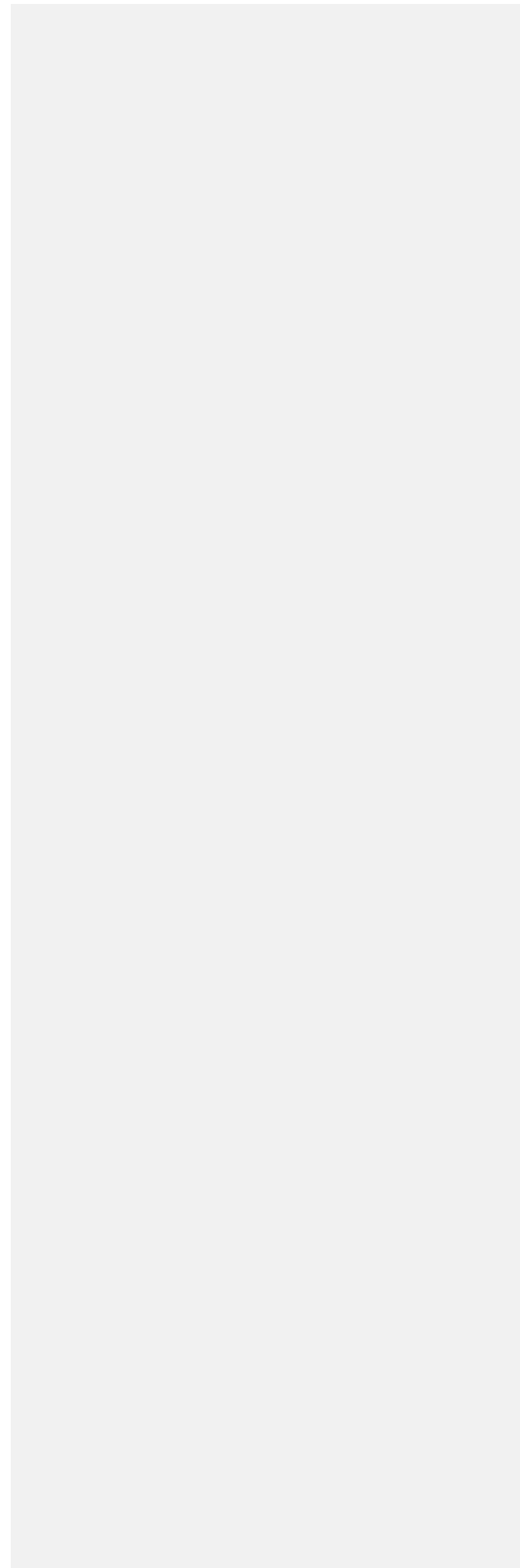
Mayor

ATTEST:

Clerk

pn

1/11/2021





Report to the
Parks Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # O.I

To direct staff to proceed with negotiations for the sale of a portion of the Mahon Creek Greenway for residential yard expansion purposes at 2100 Emmalane Drive (Parcel 21-8116) as directed in closed session.

The Council may convene in closed session pursuant to Sections 19.85(1)(e), Wis. Stats., for purposes of deliberating or negotiating the sale of public properties, investing of public funds or conducting other specified public business as necessary for competitive or bargaining reasons. The Council will thereafter reconvene in open session pursuant to Section 19.85(2), Wis. Stats., to take action on items discussed in closed session, if appropriate, and to consider the remainder of the agenda.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

- I. 2100 Emmalane_Mahon Creek Greenway



Report to the
Parks Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # O.2

To receive and place on file the staff update on fat tire biking at He-Nis-Ra Park. (Informational Only)

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

None



Report to the
Personnel Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # P.I

To approve the request to fill the following replacement positions and all subsequent vacancies resulting from internal transfers.

a. Park Supervisor - Park, Recreation & Forestry

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

1. Request to Fill Memo 2.9.2021
2. Park Supervisor - D. Kellner 01.22.21

MEMORANDUM



Human Resources Department

To: Personnel Committee
Joe Faulds, Human Resources Director

From: Sarah Fidler
Human Resources Generalist

Re: Request to Fill Vacant Positions

Date: February 9, 2021

The Human Resources Department is requesting authorization to fill the following replacement positions approved as part of the 2021 budget and all subsequent vacancies resulting from internal transfers. The justification reports are attached.

- Parks Supervisor – Replacement position due to the retirement of Dean Kellner effective January 22, 2021. Salary range: \$60,486 - \$71,136 annually

**Position Fill Request
Justification Report
January 26, 2021**

Position Title: **Park Supervisor (Grounds)**

- 1. If this position is a replacement position, please indicate the reasons for the vacancy. If this is not a replacement position, please indicate the reasons for requesting the position.**

 X **Replacement Position** **Not a Replacement Position**

Dean Kellner has retired effective January 22nd, 2021.

- 2. Is this position included in the current budget? If not, please list how this position will be funded (grant, internship, etc.). Please list the salary range of the position.**

Yes the position is Pay Grade J, (\$60,486 - \$71,136 annually)

- 3. Please list the functions and any special information regarding this position.**

This position supervises work done by Parks grounds workers and specialists, who maintain all Park owned buildings, grounds and equipment as well as the Bay Beach amusement park grounds and shelters. Position is also responsible for oversight of all athletic fields, trails, parkways to include Triangle Hill.

- 4. Does the position generate revenue or reduce expenses? If so, provide an estimated amount.**

No.

- 5. Please explain why current staff is unable to absorb duties of this position.**

This position is responsible for solving daily problems, direct staff to daily maintenance work throughout 60+ parks, trails, greenways, athletic fields, etc., and will be responsible for all of the full time and seasonal grounds and maintenance staff in preparation for our season opening as well as the winter activities and rinks.

- 6. If duties of position are presently being done, how are they done?**

All duties are currently being done by the Superintendent. This position requires daily organizing, coordinating of schedules and supervision and direction of all of the grounds maintenance staff.

- 7. What service would be reduced or eliminated if this position is not filled?**

Park, Forestry and Bay Beach seasonal hiring as well as facility repairs and coordination will be delayed which will ultimately effect our spring to fall season and could delay the opening of shelters and field preparation.

8. What are the alternative methods and costs of accomplishing the work?

There is no way for this position to be contracted out or for the Superintendent to continue to perform these duties and their own simultaneously. This is a critical position.

9. Are there union issues?

No, there are no union issues.

10. Other supporting comments.

All Park, Recreation, Forestry Bay Beach and the Wildlife Sanctuary depend on this position to ensure the required maintenance and upkeep is performed, even during the off season.



Report to the
Personnel Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # P.2

To approve the amended request to over hire three firefighter recruits.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

- I. 2021 Recruit Over Hire REVISED 2.10.2021



Proudly serving the communities of Allouez, Bellevue, and Green Bay

Green Bay Metro Fire Department

David Litton
Fire Chief

MEMORANDUM

To: Joe Faulds, Human Resources Director
Diana Ellenbecker, Finance Director

From: David Litton, Fire Chief

Date: February 4, 2021 (REVISED 02/10/2021)

Re: Firefighter Recruit Over-Hire

We are in the process of finalizing the hiring for new recruit personnel in the fire department. Currently, we have 7 open positions (6 retirements and 1 new position in the budget). The hire date and start of the recruit academy is March 15th. I have also received notice from Captain Jon Fredrickson and Engineer Steve Zich that they will be retiring during the first week of June. This would make a total of 9 openings.

I'm requesting that we over-hire for the personnel that will be retiring in June. My reasoning for this is that it is more cost effective to over-hire than to pay overtime during their absence. From now through the end of the year, we will be at minimum manning due to vacation, FLSA, sick and FMLA leaves. All of these requests create overtime and stresses the existing employee group at a time when many of them are trying to take family vacations over the summer and into the fall. In many or most of these instances, we are required to force or order people in to work. This of course places a strain on the morale of our employees.

The vacancies created by the retirements in June will cause 68 shifts or 3,264 hours of overtime. The average overtime cost is \$42.70 for a total cost of \$139,373.

The cost of the 2 new hires (for 7 months) to cover the retirements in June is \$101,035 including salary and all benefits. The cost of the Captain and Engineer salary for 2.5 months (March 15 through June 1) is \$24,742.

Overtime Cost	\$ 139,373
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Over-Hire Cost	\$ 101,035
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Captain Salary 2.5 months	\$ 13,047
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Engineer Salary 2.5 months	\$ 11,695
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Total	<u>\$125,777</u>
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Total Savings	\$ 13,596
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02/10/2021 UPDATE

We received notice yesterday that Captain Joel Krueger will be retiring on or before June 1, 2021 due to a medical condition that he has been battling for the last year. Because of this, I made the request at last night's Personnel Committee to approve three (3) total over hire positions.

The revised analysis is:

Overtime Cost	\$ 209,059	(4,986 hours x \$42.70)
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Over-Hire Cost (3)	\$ 151,553
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Captain Salary (2) 2.5 mo.	\$ 26,094
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Engineer Salary (1) 2.5 mo.	<u>\$ 11,695</u>
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Total	\$ 189,342
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<u>Total Savings</u>	<u>\$19,717</u>
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MUNICIPAL COURT MONTHLY FINANCIAL REPORT

County Name Brown		County Code Number 05		Report for Month/Year January 2021	
Municipal Name Green Bay Municipal Court		Municipal Code Number 231		Telephone Number 920-448-3131	
I. MUNICIPAL COURT OFFICIAL	Total Amount Collected	Share to be retained by Municipality	Share to be sent to County	Share to be sent to State	
1. Forfeitures for Municipal Ordinance Violations (Except for Municipal Ordinances in Conformity with Ch 348, Stats.)	\$ 53,423.88	\$ 53,423.88			
Adjustment (if applicable)	\$.00	\$.00			
2. Municipal Court Costs (Chapter 814, Subchapter II, s. 814.65, Stats.)	\$ 21,826.96	\$ 19,126.69		\$ 2,700.27	
Adjustment (if applicable)	\$.00	\$.00		\$.00	
3. Penalty Surcharges (s. 757.05, Stats.)	\$ 13,562.45			\$ 13,562.45	
Adjustment (if applicable)	\$.00			\$.00	
4. County Jail Surcharges (s. 302.46(1)(a), Stats.)	\$ 5,399.04		\$ 5,399.04		
Adjustment (if applicable)	\$.00		\$.00		
5. Driver Improvement Surcharges (s. 346.655, Stats.)	\$ 7,087.20		\$ 3,456.04	\$ 3,631.16	
Adjustment (if applicable)	\$.00		\$.00	\$.00	
6. Crime Lab and Drug Enforcement Surcharges (s. 165.755(4), Stats.)	\$ 6,958.18			\$ 6,958.18	
Adjustment (if applicable)	\$.00			\$.00	
7. Domestic Abuse Surcharges (s. 973.055(2)(b), Stats.)	\$.00			\$.00	
Adjustment (if applicable)	\$.00			\$.00	
8. Truck Weight Restrictions (Municipal Ordinances in Conformity with Ch. 348, Stats., s. 66.12(3)(c))	\$.00	\$.00		\$.00	
Adjustment (if applicable)	\$.00	\$.00		\$.00	
9. Ignition Interlock Device Surcharge (s. 343.301(5), Stats.)	\$ 800.00		\$ 800.00		
Adjustment (if applicable)	\$.00		\$.00		
10. GPS Tracking Surcharge (for violations of ordinances conforming to s. 813.12 or s. 813.125, Stats.)	\$.00			\$.00	
Adjustment (if applicable)	\$.00			\$.00	
11. Safe Ride Program (s. 85.55, Stats.)	\$ 825.00			\$ 825.00	
Adjustment (if applicable)	\$.00			\$.00	
12. Totals	\$ 109,882.71	\$ 72,550.57	\$ 9,655.08	Pay This Amount \$ 27,677.06	



MUNICIPAL COURT MONTHLY FINANCIAL REPORT

II. CERTIFICATION OF MUNICIPAL COURT OFFICIAL

I hereby certify that this report reflects all actions requiring forfeitures, court costs and surcharges collected during the month designated.

Name: NEIL BASTEN Signature: *Neil Basten* Date: 2-01-2021

III. TREASURER'S CERTIFICATION

I hereby certify that the above amount due the state has been received. After so certifying, a copy of this report will be returned to the signer of this report as a receipt, and the stated amount will be remitted to the Department of Administration with this report.

Treasurer: *Paul R. March* Date: 2/2/21

In the event the Department of Administration has questions about this report and payment, who should we contact?

Name:	Telephone #	Email Address
<u>Neil Basten</u>	<u>920-448-3131</u>	<u>neilba@greenbaywi.gov</u>

Detail Summary of Projects Issued

1/1/2021 to 1/31/2021

Proj #	Address	Owner	Applicant	Fees Paid	Estimated \$	Status
101266	1871 EAST SHORE DR..21-1083 [1-101 - Residential - New - Single Family House] Single family residential home -EC approved 6/25/20 NO STORM WATER PLAN CHANGE SEE FILE	JON & KATHY ESCH		\$2,063.13	\$730,000.00	Pending
103039	3387 LARGO RIDGE CT..21-8224 [1-101 - Residential - New - Single Family House] NEW SINGLE FAMILY HOME - DETACHED W/ ATTACHED GARAGE EC Approved 12/17/20	GEORGE A & AMY J CRAIG		\$1,363.35	\$250,000.00	Pending
103140	3218 SITKA ST..21-8086 [1-101 - Residential - New - Single Family House] SINGLE FAMILY ,2-STY. ATT. GAR.	WENDY L & JAMES P FOSS		\$1,465.26	\$335,000.00	Pending
103262	3511 BAYWATCH DR..22-1759 [1-101 - Residential - New - Single Family House] SINGL. FAM. 2-STY. ATT. GAR garage size approved by paul n on 1-20-21 EC approved 1/21/20	KYLE C & CHELSEA E GEORGIA		\$1,127.93	\$225,000.00	Pending
102461	1610 BOLAND RD..6-1228 [2-434 - Residential - Alteration - 1 -2 Family House] Egress Window	ELIZABETH MICHIELS		\$50.00	\$4,000.00	Pending
102986	3434 INDIGO BLUFF DR..21-8312 [2-434 - Residential - Alteration - 1 -2 Family House] Finish Basement	JASON J DOEMEL, ETAL		\$370.50	\$30,000.00	Pending
103070	1515 14th AV..1-1366-C [2-434 - Residential - Alteration - 1 -2 Family House] 2ND FLOOR REMODEL	JENNIFER NETT		\$205.00	\$7,600.00	Pending
103158	117 N ONEIDA ST..3-1061 [2-434 - Residential - Alteration - 1 -2 Family House] Per Complaint 115480	NELSON Y & SARA J MELGAR		\$105.00	\$4,800.00	Closed
103184	1095 SHADOW LN..1-2707 [2-434 - Residential - Alteration - 1 -2 Family House] Basement Finish	STAY GREEN BAY LLC		\$210.10	\$20,000.00	Pending
103185	846 S ONEIDA ST..2-1159 [2-434 - Residential - Alteration - 1 -2 Family House]	GINA J PILGRIM		\$247.72	\$6,000.00	Pending
103193	2500 LAREDO LN..6H-2028 [2-434 - Residential - Alteration - 1 -2 Family House] Basement Finish	BRADLEY J HANBY		\$255.00	\$22,600.00	Pending
103214	826 9th ST..1-580 [2-434 - Residential - Alteration - 1 -2 Family House] FULL RENOVATIONS	A-ZACHED RENTAL LLC		\$295.25	\$50,000.00	Pending
103220	836 MEACHAM ST..2-1307 [2-434 - Residential - Alteration - 1 -2 Family House] OPEN UP INTERIOR WALL/ EXTERIOR PATIO 15X15	KEITH ERDMANN		\$50.00	\$1,600.00	Closed
103258	2892 MT CAROL DR..21-1111-D-18 [2-434 - Residential - Alteration - 1 -2 Family House] Kitchen Remodel	TYLER G VINCENT, ETAL		\$100.00	\$2,000.00	Pending
103267	3342 PAULA ST..22-2158 [2-434 - Residential - Alteration - 1 -2 Family House]	GREGORY A NIENOW		\$237.18	\$28,000.00	Pending
103269	1935 E TELEMAR CIR..6H-4003	GABRIEL J & CICHELE M DAHL		\$255.00	\$35,000.00	Pending

[2-434 - Residential - Alteration - 1 -2 Family House]

103301	2021 OAKDALE AV..21-2357	MARITZA MONTOYA, ETAL	\$150.00	\$2,000.00	Pending
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[2-434 - Residential - Alteration - 1 -2 Family House]

103304	3256 E TWIN PINES CT..21-7760	AMANDA L & MARK J MATCZYNSKI	\$305.31	\$78,816.00	Pending
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[2-434 - Residential - Alteration - 1 -2 Family House] Basement Finish

103305	480 MASTERS LN..21-6670-16	AMY J & THOMAS J SIEBER	\$100.00	\$65,000.00	Pending
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[2-434 - Residential - Alteration - 1 -2 Family House] NO ELECTRICAL WORK

103309	3600 BAY HARBOR DR..22-1982	BRETT M & SHEILA & ZIARRA R LINK	\$273.00	\$10,000.00	Pending
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[2-434 - Residential - Alteration - 1 -2 Family House] EGRESS WINDOW EXISTING

103367	2221 MANITOWOC RD..21-455-2	AUBIN TOMA	\$551.55	\$25,300.00	Pending
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[2-434 - Residential - Alteration - 1 -2 Family House]

103368	114 S ASHLAND AV..3-70	ROBERT CLARK	\$100.00	\$4,000.00	Pending
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[2-434 - Residential - Alteration - 1 -2 Family House] Misc Home Repairs

103096	616 ONTARIO RD..21-7020	JAMES M & SHELLY L PELISHEK	\$50.00	\$1,000.00	Pending
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[4-438 - Residential - Alteration - Garage or carport or Shed] Front Left Side of garage door

102580	1338 CROOKS ST..17-380	CHARITY & JORDAN K KREBSKY	\$50.00	\$500.00	Closed
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[7-1 - Deck, Porch, Patio, Ramp (Residential)] No Soil Disturbance

103107	616 ONTARIO RD..21-7020	JAMES M & SHELLY L PELISHEK	\$100.00	\$10,000.00	Pending
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[7-1 - Deck, Porch, Patio, Ramp (Residential)]

103143	1325 DESNOYERS ST..18-1251	SHEILA D & FIDEL A SANCHEZFLORES	\$50.00	\$2,500.00	Closed
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[7-1 - Deck, Porch, Patio, Ramp (Residential)] Patio Door/ Landing/ Paver Patio

103180	3136 HUMBOLDT RD..21-371-6	SPRY RONALD G TRUST	\$75.00	\$970.00	Pending
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[7-1 - Deck, Porch, Patio, Ramp (Residential)] Modular Ramp

103181	803 S RIDGE RD..2-58-A-2	RUTH & LEONARD GOEBEN	\$75.00	\$3,256.43	Pending
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[7-1 - Deck, Porch, Patio, Ramp (Residential)] MODULAR RAMP

103287	1082 VELP AV..18-781-A	WHATSOEVER YOU DO INC	\$130.00	\$12,000.00	Pending
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[7-1 - Deck, Porch, Patio, Ramp (Residential)] PORCH REPAIR

103295	1008 LINCOLN ST..18-770	LORETTA A & WAYNE W WILMOT	\$75.00	\$8,081.31	Closed
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[7-1 - Deck, Porch, Patio, Ramp (Residential)] NO EC surface mount

103360	1162 9th ST..1-6-A	NEW ERS LLC	\$100.00	\$4,000.00	Pending
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[7-1 - Deck, Porch, Patio, Ramp (Residential)]

103006	525 11th AV..2-432	PAUL L JONES	\$50.00	\$1.00	Pending
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[9-645 - Raze - Building or Structure (Residential)]

103227	1318 N IRWIN AV..21-1606	KIM M VORPAHL	\$100.00	\$8,923.00	Closed
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[9-645 - Raze - Building or Structure (Residential)] Raze House

103259	1330 REED ST..5-663-A-1	JEREMY J CIHA	\$50.00	\$3,736.75	Pending
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[9-645 - Raze - Building or Structure (Residential)] RAZE GARAGE

103271	132 OAK ST..3-175-A	CASTLE ROCK HOMES LLC	\$50.00	\$1.00	Pending
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[9-649 - Demolition - Interior (Residential)]

103303	1746 LOST LN..21-1294-2	ROBERT W DELVEAUX	\$50.00	\$1.00	Closed
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[9-645 - Raze - Building or Structure (Residential)] RAZE GARAGE

103361	1450 CROOKS ST..17-853	FEDERAL NATIONAL MORTGAGE ASSOCIATION	\$50.00	\$1,550.00	Pending
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[9-645 - Raze - Building or Structure (Residential)]

101839	1807 MELON AV..21-1514-9	PHETLASAY & PHET DOUANGMALA	\$50.00	\$7,600.00	Pending
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[11-1 - Garage/Carport/Shed (residential)] No progress or update from submitter project abandon 9/14/20
Project reopened site plan submitted per complaint 115772
Soil was secured upon inspection

102683	1139 E WALNUT ST..14-193	JUDY A SCANLANKNIGHT	\$50.00	\$1.00	Pending
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[11-1 - Driveway Replacement and/or Expansion (Residential)] Driveway

103161	3341 LANGDON ST..21-7568	NICOLE A STROHMAN	\$250.00	\$52,000.00	Pending
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[11-1 - Swimming Pool (Residential)] EC approved 12/28/20

103165	1571 KIMBALL ST..8-523	ANTHONY & AMBER BRYLSKI	\$50.00	\$1.00	Pending
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[11-1 - Driveway Replacement and/or Expansion (Residential)] 8'x10 METAL SHED

103257	1423 SMITH ST..19-14	EDWARD G GRUSECKI	\$50.00	\$3,500.00	Pending
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[11-1 - Fence (Residential)] 5' TALL CHAIN LINK FENCE

103316	2170 WEST RED FERN LN..6H-4316	THOMPSON HOMES INC	\$50.00	\$2,757.00	Pending
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[11-1 - Fence (Residential)]

70444	622 BODART ST..11-48	AZIDUS INC	\$240.00	\$1.00	Closed
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[31-434 - Commercial - Alteration - Non-Residence, Non-Housekeeping]

100110	2231 N QUINCY ST..20-690	GREEN BAY METROPOLITAN SEWERAGE DISTRICT	\$990.00	\$3,490,000.00	Pending
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[31-325 - Commercial - New - Public Works, Utilities (transportation, water supply, heat, communication, power, sewage disposal)] EC Approved 2/18/20
NEED STATE APPROVED PLUMBING PLANS

101748	301 N ADAMS ST, SUITE 110 ..12-195	SPRING LAKE CHURCH INC	\$3,244.90	\$435,000.00	Pending
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[31-434 - Commercial - Alteration - Non-Residence, Non-Housekeeping] CLASSROOM/MULTISPACE AREAS

101848	2740 W MASON ST..6H-1752	NORTHEAST WISCONSIN TECHNICAL COLLEGE	\$1,049.00	\$220,000.00	Closed
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[31-434 - Commercial - Alteration - Non-Residence, Non-Housekeeping] SCIENCE & PROTOTYPE LAB MODS

102933	1845 AUGUST ST..21-2116-18	MICHAEL J ZOLPER	\$535.70	\$36,814.66	Pending
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[31-434 - Commercial - Alteration - Non-Residence, Non-Housekeeping] CARPORT

102962	1201 MAIN ST..9-20	WOCHINSKE REALTY LLC	\$70.00	\$2,741.00	Pending
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[31-434 - Commercial - Alteration - Non-Residence, Non-Housekeeping] Frog Art

103045	2455 CENTURY RD..6H-1060-1	AMERHART ASSOC	\$745.00	\$192,463.00	Pending
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[31-434 - Commercial - Alteration - Non-Residence, Non-Housekeeping] Canopy w/ Sprinkler

103069	2970 WALKER DR..21-161-4	2970 WALKER WISCONSIN LAND TRUST	\$956.26	\$900,000.00	Pending
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[31-434 - Commercial - Alteration - Non-Residence, Non-Housekeeping] Chemical Room Renovation

103186	744 S WEBSTER AV..14-825	BELLIN MEMORIAL HOSPITAL	\$7,785.00	\$2,749,700.00	Pending
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[31-434 - Commercial - Alteration - Non-Residence, Non-Housekeeping] Renovate cafeteria into NICU space

103212	1215 ONTARIO RD..21-180-5	DEAN BOYS THE LLC	\$1,037.15	\$98,927.00	Pending
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[31-434 - Commercial - Alteration - Non-Residence, Non-Housekeeping] Office Alteration - 2,000 sf office renovation.

103213	501 EASTMAN AV..20-123	PROCTER & GAMBLE PAPER PRODUCTS CO	\$1,961.02	\$950,000.00	Pending
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[31-434 - Commercial - Alteration - Non-Residence, Non-Housekeeping]

103252	1351 ONTARIO RD..21-181-3	SBH GREEN BAY LLC	\$360.00	\$20,000.00	Pending
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[31-434 - Commercial - Alteration - Non-Residence, Non-Housekeeping] Pharmacy Alteration

103253	835 S VAN BUREN ST..16-293	SAINT VINCENT HOSPITAL ETAL	\$864.00	\$1,353,000.00	Pending
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[31-434 - Commercial - Alteration - Non-Residence, Non-Housekeeping] 2nd and 3rd floors

103256	1414 SHAWANO AV..6-243	SEVENTH DAY ADVENTIST WISCONSIN CONFERENCE ASSN	\$887.79	\$181,000.00	Pending
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[31-434 - Commercial - Alteration - Non-Residence, Non-Housekeeping]

103288	744 S WEBSTER AV..14-825	BELLIN MEMORIAL HOSPITAL	\$430.00	\$103,531.00	Pending
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[31-434 - Commercial - Alteration - Non-Residence, Non-Housekeeping] 3rd Floor Peds Security Doors

103338	121 N ADAMS ST ..12-115	NEUFELD ENTERPRISES LLC	\$70.00	\$10,000.00	Pending
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[31-434 - Commercial - Alteration - Non-Residence, Non-Housekeeping]

100663	544 ACME ST..21-1200	GREEN BAY DRESSED BEEF LLC	\$0.00	\$0.00	Pending
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[34-1 - Temporary Office/Trailer/Event (Commercial)]

100664	1330 LIME KILN RD..23-244	JBS GREEN BAY INC	\$0.00	\$0.00	Pending
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[34-1 - Temporary Office/Trailer/Event (Commercial)]

102895	704 S WEBSTER AV..14-824-9	BELLIN MEMORIAL HOSPITAL INC	\$140.00	\$25,000.00	Pending
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[34-1 - Cell Tower - Alteration to Existing (Commercial)]

103219	720 S HURON RD..21-172-1	GREEN BAY CITY OF	\$140.00	\$20,000.00	Pending
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[34-1 - Cell Tower - Alteration to Existing (Commercial)]

103221	720-726 DOTY ST..14-456	RED DOE PROPERTIES LLC	\$175.00	\$16,977.00	Pending
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[34-649 - Raze- Building or Structure (Commercial)] EC APPROVED 1/12/20

103228	1032 BAY BEACH RD..20-694	MCDONALD LUMBER CO	\$200.00	\$200,000.00	Pending
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[34-1 - Fire Protection Sprinkler (Commercial)]

103248	2358 LEON BOND DRIVE ..21-247	UNIVERSITY OF WISCONSIN BOARD OF REGENTS	\$0.00	\$22,000.00	Pending
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[34-1 - Temporary Office/Trailer/Event (Commercial)]

103265	115 S JEFFERSON ST..11-258	GRAY TELEVISION GROUP INC	\$70.00	\$18,500.00	Pending
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[34-1 - Cell Tower - Alteration to Existing (Commercial)] NSIGHT ANTENA MODIFICATIONS

103289	2012 AUGUST ST..21-1361-3	RANKIN GB HOLDINGS LLC	\$70.00	\$18,000.00	Pending
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[34-1 - Roofing (Commercial)] replace roof

103291	2016-2026 AUGUST STREET , CONDO..21-1361-3	RANKIN GB HOLDINGS LLC	\$70.00	\$18,000.00	Pending
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[34-1 - Roofing (Commercial)] Replace roof

103298	115 N ADAMS ST..12-117	GREEN GENES REAL ESTATE LLC	\$70.00	\$10,000.00	Pending
[34-649 - Demolition - Interior (Commercial)] DEMO ONLY					
103315	2545 LARSEN RD..6H-1740-1	NORTHEAST WISCONSIN TECHNICAL COLLEGE	\$70.00	\$3,630.00	Pending
[34-1 - Fire Protection Sprinkler (Commercial)] Fire Protection Sprinkler					
103190	1919 OAKDALE AV..21-1845	EMILY A & TRAVIS J BAUR	\$50.00	\$1,200.00	Closed
[40-1 - Electrical Wiring (Misc., Alteration, Repair) (Residential)] REPLACE EXISTING 100 AMP PANEL					
103211	1400 N BAIRD ST..21-1198-6	PERRY PARK PARTNERS ETAL	\$70.00	\$2,200.00	Pending
[40-1 - Electrical Service - Change (Commercial)] Provide and install new WPS meter Pedestal on the pump house building exterior. Provide and install 2 circuit breaker panel within the pump house building. Provide grounding to earth at the pump house building					
103217	1816 14th AV..1-1319-C	TERRIEN ELEANOR IRREVOCABLE FAMILY TRUST	\$50.00	\$1,125.00	Closed
[40-1 - Electrical Service - Change (Residential)] ELECTRICAL PANEL CHANGE					
103223	1639 JUNIPER DR..21-1110-M-14	MARLENE S DEGRAVE	\$50.00	\$2,100.00	Pending
[40-1 - Electrical Service - Change (Residential)] SERVICE UPGRADE FROM 100 AMP OH TO 200 AMP OH, NEW SERVICE MAST, METER SOCKET OUTSIDE, 200A 40 SLOT BREAKER PANEL, NEW GROUNDING & BONDING, NEW ROOF BOOT, NEW BACKBOARD INSIDE.					
103224	800 SUNNY LN..6-811-12	IVAN L & DEBORATH K MEYER	\$50.00	\$3,000.00	Closed
[40-1 - Electrical Service - Change (Residential)] Provide and install 100amp 24 circuit main breaker panel in new location. Provide and install new meter base and EMT Riser. Rout Riser up gable at end of house. Provide and install exterior 100 amp fused disconnect					
103225	1145 BOND ST..5-1305	IVAN D & LAUREN M RAMIREZ QUINTERO	\$50.00	\$3,165.00	Pending
[40-1 - Electrical Wiring (Misc., Alteration, Repair) (Residential)] Utility Bonding and Grounding. Electrical for Future Studio					
103246	1700 CHATEAU DR..6-1556	SQUIRES REVOCABLE TRUST	\$50.00	\$3,500.00	Pending
[40-1 - Electrical Wiring (Misc., Alteration, Repair) (Residential)] Install 13kW Generator System with 100A Automatic Transfer Switch and interconnect to Home with utility.					
103247	1701 W MASON ST..6-185	CHARTER COMMUNICATIONS	\$70.00	\$2,000.00	Closed
[40-1 - Electrical Wiring (Misc., Alteration, Repair) (Commercial)] NEW POLE AND OVERHEAD SERVICE DUE TO CAR HITTING POLE.					
103268	214 13th AV..3-508	D JONES PROPERTIES LLC	\$50.00	\$2,700.00	Pending
[40-1 - Electrical Wiring (Misc., Alteration, Repair) (Residential)] Multiple occupancy home. Altering the occupancy size by changing it to a dual socket dwelling.					
103282	2892 MT CAROL DR..21-1111-D-18	TYLER G VINCENT, ETAL	\$50.00	\$1,400.00	Closed
[40-1 - Electrical Service - Change (Residential)] REMOVE EXISTING 100 AMP PANEL INSTALL NEW 200 AMP PANEL *permt placard emailed 1/18/21					
103292	1100 11th AV..1-655-A-3	HOHOLEK JOSEPH & LOIS TRUST THE	\$50.00	\$2,710.00	Pending
[40-1 - Electrical Service - Change (Residential)] SERVICE UPGRADE					
103293	200 S MAPLE AV..3-342	CHRISTIAN P BEZIO	\$70.00	\$3,000.00	Pending
[40-1 - Electrical Service - Change (Commercial)] NEW SERVICE					
103308	380 WINDWARD RD..21-5068	DENNIS P & SUSAN M ROCKHILL	\$50.00	\$2,000.00	Closed
[40-1 - Electrical Service - Change (Residential)] SERVICE CHANGE 100 AMP OVERHEAD TO 200 AMP UNDERGROUND					
103317	1137 ROCKDALE ST..1-1391-F	DONALD S WAGNER	\$50.00	\$1,500.00	Pending
[40-1 - Electrical Service - Change (Residential)] SERVICE UPGRADE					
103320	615 12th AV..2-656	BEN CULBERTSON	\$0.00	\$750.00	Closed
[40-1 - Electrical Service - Change (Residential)] INSTALL NEW UNDERGROUND ELECTRICAL SERVICE AND GROUND RODS FOR NEW TRAFFIC SIGNALS.					
103321	600 S ONEIDA ST..2-47-A-1	AUTOZONE INC	\$0.00	\$750.00	Closed
[40-1 - Electrical Service - Change (Commercial)] INSTALL NEW UNDERGROUND ELECTRICAL SERVICE AND GROUND RODS FOR NEW TRAFFIC SIGNALS.					
103322	1234 W MASON ST..6-140-A	GREEN BAY AREA PUBLIC SCHOOL DISTRICT FRANKLIN	\$0.00	\$750.00	Closed

[40-1 - Electrical Service - Change (Commercial)] INSTALL NEW UNDERGROUND ELECTRICAL SERVICE AND GROUND RODS FOR NEW TRAFFIC SIGNALS.					
103323	703 S RIDGE RD..2-57	WISCONSIN TELEPHONE CO	\$0.00	\$750.00	Closed
[40-1 - Electrical Service - Change (Residential)] INSTALL NEW UNDERGROUND ELECTRICAL SERVICE AND GROUND RODS FOR NEW TRAFFIC SIGNALS.					
103324	1456 W MASON ST..6-143-A	BRENDA L & STEVEN P HECKER	\$0.00	\$750.00	Closed
[40-1 - Electrical Service - Change (Commercial)] INSTALL NEW UNDERGROUND ELECTRICAL SERVICE AND GROUND RODS					
103325	1337 VANDERBRAAK ST..21-1682	ANTONIO ADAME HURTADO	\$50.00	\$800.00	Pending
[40-1 - Electrical Wiring (Misc., Alteration, Repair) (Residential)] Per complaint #115668 Wire AC from panel to unit. Add box for dispower plug. Place on GCI plug.					
103339	811 NICOLET AV..2-714	DEREK MUENSTER	\$50.00	\$2,000.00	Pending
[40-1 - Electrical Wiring (Misc., Alteration, Repair) (Residential)] CODE UPDATES					
103364	1025 CROOKS ST..14-895	REI HOME SOLUTIONS LLC	\$100.00	\$3,500.00	Pending
[40-1 - Electrical Wiring (Misc., Alteration, Repair) (Residential)] REWIRED WHOLE HOUSE AND PANEL COMPLAINT #115846 DOUBLE FEE					
103147	905 STUART ST..14-726	DAVID S BIRSCHBACH	\$50.00	\$5,000.00	Pending
[50-1 - Heating and Air Conditioning Units (Residential)] FURNACE					
103171	809 GROSS AV..2-1195	WILLIAM PAUL	\$50.00	\$2,300.00	Pending
[50-1 - Heating and Air Conditioning Units (Residential)] FURNACE					
103182	1450 CROOKS ST..17-853	FEDERAL NATIONAL MORTGAGE ASSOCIATION	\$100.00	\$1,800.00	Pending
[50-1 - Heating and Air Conditioning Units (Residential)] FURNACE					
103187	1400 N BAIRD ST..21-1198-6	PERRY PARK PARTNERS ETAL	\$50.00	\$3,560.00	Pending
[50-1 - Heating Unit Only (Residential)] FURNACE					
103188	2560 CARMEL LN..21-4667	DEREK J WICKLUND	\$50.00	\$3,092.00	Closed
[50-1 - Heating Unit Only (Residential)] FURNACE					
103189	134 BADER ST..21-1736	RYAN P RODE	\$50.00	\$7,693.00	Pending
[50-1 - Heating Unit Only (Residential)] BOILER					
103191	1136 DOTY ST..14-960	PATRICIA A FISCHER	\$50.00	\$1,884.00	Closed
[50-1 - Heating Unit Only (Residential)] FURNACE					
103194	897 KELLOGG ST..5-1393	PAMELA A & DAVID J ZAK	\$50.00	\$6,850.00	Closed
[50-1 - Heating and Air Conditioning Units (Residential)] FURNACE AND AIR CONDITIONER					
103195	127 SCHOBBER ST..21-2475-18	ROGER G DELARUELLE	\$50.00	\$5,986.00	Closed
[50-1 - Heating Unit Only (Residential)] FURNACE					
103196	1126 E WALNUT ST..14-278	KATHERINE A BENOIT	\$50.00	\$4,339.00	Closed
[50-1 - Heating Unit Only (Residential)] FURNACE					
103197	118 S WASHINGTON ST..12-341	MICHAEL P & KATHRYN L TUBBS	\$140.00	\$9,632.00	Closed
[50-1 - Heating and Air Conditioning Units (Commercial)] FURNACE & AIR CONDITIONER UNIT 302 B					
103198	1145 CRESTWOOD DR..6H-1155-7	JUSTIN J LEMKE	\$50.00	\$5,475.00	Closed
[50-1 - Heating Unit Only (Residential)] FURNACE					
103199	1034 N PLATTEN ST..18-1124	JANICE A & PETER A WARDEN	\$50.00	\$9,700.00	Closed

[50-1 - Heating and Air Conditioning Units (Residential)] FURNACE AND AIR CONDITIONER

103200	1864 DOUSMAN ST..6-225-G	MELISSA SCHMIT	\$50.00	\$6,061.00	Pending
[50-1 - Heating Unit Only (Residential)] FURNACE					
103201	804 N LOCUST ST..6-727	JEAN M STEIN	\$50.00	\$4,805.00	Closed
[50-1 - Heating Unit Only (Residential)] FURNACE					
103202	875 HUBBARD ST..5-533	ERIC P & LEAH L GABRIELSON	\$50.00	\$5,118.00	Closed
[50-1 - AC Unit Only (Residential)] AIR CONDITIONER					
103203	1208 GRANT ST..3-1014-C	KAREN SCHUETTE	\$50.00	\$5,496.00	Closed
[50-1 - Heating Unit Only (Residential)] FURNACE					
103204	509 N ASHLAND AV..5-1072	RONALD L BUNGE	\$50.00	\$4,635.00	Closed
[50-1 - Heating Unit Only (Residential)] FURNACE					
103205	228 OAK GROVE AV..21-2400	NORMA L ROBERTSON	\$50.00	\$6,886.00	Closed
[50-1 - Heating Unit Only (Residential)] FURNACE					
103206	1325 SAND HILL DR..6H-2837	AMY J D & PETER G MASIAS	\$50.00	\$9,938.00	Closed
[50-1 - AC Unit Only (Residential)] AIR CONDITIONER					
103207	895 ROSCOE ST..1-1561	KIA M & KEE LEE	\$50.00	\$4,200.00	Closed
[50-1 - Heating Unit Only (Residential)] FURNACE					
103208	2744 HAZELWOOD LN..6H-1508-M-57	LUCIENNE M & MICHAEL S FELS	\$50.00	\$7,271.00	Closed
[50-1 - Heating and Air Conditioning Units (Residential)] FURNACE AND AIR CONDITIONER					
103209	1414-1416 BEECH TREE DR..6H-1716	MARY L HARDIEROZE	\$50.00	\$4,000.00	Pending
[50-1 - Heating Unit Only (Residential)] FURNACE					
103210	1919 S BROADWAY..1-1407	GEORGIA PACIFIC CONSUMER PRODUCTS LP	\$140.00	\$208,500.00	Pending
[50-1 - Heating and Air Conditioning Units (Commercial)] BDG 24 2ND FLOOR LOCKER ROOM					
103218	1221 EMILIE ST..17-294	RHONDA NOWAK	\$50.00	\$6,103.00	Pending
[50-1 - Heating Unit Only (Residential)] FURNACE					
103222	1611 LOUISE ST..21-1334-24	JANDRAIN RENTALS LLC	\$50.00	\$4,945.00	Pending
[50-1 - Heating Unit Only (Residential)] FURNACE - UPPER UNIT					
103226	720 S VAN BUREN ST..14-1491	BELLIN MEMORIAL HOSPITAL INC	\$140.00	\$111,000.00	Pending
[50-1 - Heating Unit Only (Commercial)] BOILER					
103233	312-318 N ROOSEVELT ST..14-27	318 N ROOSEVELT LLC	\$140.00	\$4,410.00	Closed
[50-1 - Heating Unit Only (Commercial)] SPACE HEATERS - 150K AND 175K					
103234	3518 HIGHLAND CENTER DR..21-5550-5	DAVID G & CORISSA G BECK	\$50.00	\$8,000.00	Pending
[50-1 - AC Unit Only (Residential)] AIR CONDITIONER					
103236	2639 FORESTVILLE DR..6H-1225-14	DAWN M & AARON G SPICE	\$50.00	\$5,650.00	Closed
[50-1 - Heating Unit Only (Residential)] FURNACE					
103237	463 MENLO PARK RD..21-4076	JAECKELS PAUL C & MURIEA R REVOCABLE TRUST Q	\$50.00	\$12,290.00	Pending
[50-1 - Heating and Air Conditioning Units (Residential)] FURNACE AND AIR CONDITIONER					

103238	826 WILSON AV..18-358 [50-1 - Heating Unit Only (Residential)] FURNACE	SANDRA & JESSICA C RIVAS CASTANEDA	\$50.00	\$4,500.00	Closed
103239	2616 VICKI LN..21-4547 [50-1 - Heating Unit Only (Residential)] BOILER	SUSAN M & JEFFREY M NEUVILLE	\$50.00	\$4,150.00	Closed
103240	1785 SUSAN LN..6-2550 [50-1 - Heating and Air Conditioning Units (Residential)] FURNACE AND AIR CONDITIONER	TIMOTHY F & TAMMY L THYES	\$50.00	\$9,050.00	Pending
103241	229 BADER ST..21-2678-D-4-A [50-1 - Heating Unit Only (Residential)] FURNACE	VILMA Y MEJIA	\$50.00	\$3,300.00	Closed
103242	249 NEWBERRY CT..21-88-18 [50-1 - Heating Unit Only (Residential)] FURNACE	DAVE A PATRIKUS, ETAL	\$50.00	\$3,000.00	Closed
103243	1315 S CHESTNUT AV..1-927 [50-1 - Heating Unit Only (Residential)] FURNACE	JEANINE RENTALS LLC	\$50.00	\$2,800.00	Closed
103245	3621 COLLEGIATE WAY..21-7285 [50-1 - Heating and Air Conditioning Units (Residential)] FURNACE AND AIR CONDITIONER	NANCY & MICHAEL EBEL	\$50.00	\$5,850.00	Closed
103261	2595 GOOD SHEPHERD LN..6H-3753 [50-1 - Heating Unit Only (Residential)] FURNACE	BALLARD MAXWELL J & SANDRA M REVOCABLE TRUST	\$50.00	\$8,500.00	Closed
103263	1060 W MASON ST..2-43-1 [50-1 - Heating Unit Only (Commercial)] COMM - (2) BOILERS & (1) UNIT HEATER	LFI RE GREEN BAY WI LLC	\$210.00	\$40,000.00	Pending
103270	2527 LAREDO LN..6H-2049 [50-1 - Heating Unit Only (Residential)] FURNACE	JAMES C & BRENDA J CORBETT	\$50.00	\$5,859.00	Pending
103275	412 BADER ST..21-2827-H-49 [50-1 - Heating Unit Only (Residential)] FURNACE	SOHO RENTAL LLC	\$50.00	\$1,800.00	Pending
103277	328 QUINTON ST..21-1461 [50-1 - Heating Unit Only (Residential)] FURNACE	JEREMY R DONATH	\$50.00	\$3,139.00	Closed
103278	1255 THORNDALE ST..1-2185 [50-1 - Heating Unit Only (Residential)] FURNACE	PATRICK WALSH	\$50.00	\$3,787.00	Pending
103279	1427 EMILIE ST..17-692 [50-1 - Heating and Air Conditioning Units (Residential)] FURNACE AND AIR CONDITIONER	MINNIE K & GREGORY M MICOLEY	\$50.00	\$8,628.00	Pending
103280	2754 HE-NIS-RA LN..6H-2409 [50-1 - Heating Unit Only (Residential)] FURNACE	LINDA J CHARNIAK	\$50.00	\$3,650.00	Closed
103281	1256 DOTY ST..14-1347 [50-1 - Heating and Air Conditioning Units (Residential)] FURNACE AND AIR CONDITIONER	CASIMIRO & MARIA G GONZALEZ	\$50.00	\$6,500.00	Closed
103286	711 WINFORD AV..18-377-A [50-1 - Heating and Air Conditioning Units (Residential)] FURNACE & AIR CONDITIONER	LINDA L MARX	\$50.00	\$8,483.00	Closed
103307	1168 REBER ST..20-42 [50-1 - Heating Unit Only (Residential)] FURNACE	SHOUA & BLONG XIONG	\$50.00	\$6,000.00	Closed
103326	2535 CREST LN..21-509	ALLEN D & KELLY ARMSTRONG	\$50.00	\$6,893.20	Pending

[50-1 - Heating Unit Only (Residential)] BOILER

103327	1336 NELSON ST..6-2634	JAMES M YORK	\$50.00	\$4,212.00	Pending
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[50-1 - Heating Unit Only (Residential)] FURNACE

103328	121 LITTLE SWISS PL..21-82	LAURIE E FISCHER	\$50.00	\$8,766.00	Pending
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[50-1 - Heating Unit Only (Residential)] BOILER

103329	1626 EASTMAN AV..19-446	BLIA L & AI VANG	\$50.00	\$1,750.00	Pending
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[50-1 - Heating Unit Only (Residential)] FURNACE

103330	2580 RADINZ RD..21-5164	JAMIE K & ADAM D FRIZZO	\$50.00	\$3,100.00	Closed
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[50-1 - Heating Unit Only (Residential)] FURNACE

103331	1258 DOUSMAN ST..5-655	SARAH & JACOB BURFIEND	\$50.00	\$3,600.00	Pending
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[50-1 - AC Unit Only (Residential)] AIR CONDITIONER

103332	1218 CLEVELAND ST..1-164	RENAE J & DAVID A BRUNNER	\$50.00	\$8,800.00	Pending
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[50-1 - Heating and Air Conditioning Units (Residential)] FURNACE AND AIR CONDITIONER

103333	1787 AMY ST..21-3306	GREAT NORTH PROPERTIES LLC	\$50.00	\$2,947.00	Pending
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[50-1 - AC Unit Only (Residential)] AIR CONDITIONER

103334	1785 AMY ST..21-3306	GREAT NORTH PROPERTIES LLC	\$50.00	\$2,947.00	Pending
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[50-1 - AC Unit Only (Residential)] AIR CONDITIONER

103337	3366 HEAVEN DR..21-7689	GARRETT MEIXNER	\$50.00	\$12,207.00	Pending
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[50-1 - Heating Unit Only (Residential)] FURNACE

103343	1138 EASTMAN AV..7-346	DANIEL K SCHEELK	\$50.00	\$15,000.00	Pending
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[50-1 - AC Unit Only (Residential)] AIR CONDITIONER

103344	1907 DEBRA LN..21-820-M-9	LAST ROBERT M & RITA C LIVING TRUST	\$50.00	\$12,000.00	Pending
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[50-1 - Heating and Air Conditioning Units (Residential)] FURNACE AND AIR CONDITIONER

103345	1622 CANARY LN..6H-2144	GREGORY V &/OR KAREN J BARR REVOCABLE LIVING TRUST	\$50.00	\$5,400.00	Pending
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[50-1 - Heating Unit Only (Residential)] FURNACE

103346	1624 CANARY LN..6H-2144	GREGORY V &/OR KAREN J BARR REVOCABLE LIVING TRUST	\$50.00	\$5,400.00	Pending
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[50-1 - Heating Unit Only (Residential)] FURNACE

103353	1429 BRIQUELET ST..6-847	JENNIFER EARLY	\$50.00	\$8,431.00	Pending
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[50-1 - Heating and Air Conditioning Units (Residential)] FURNACE AND AIR CONDITIONER

103354	1154 10th AV..1-216	MIRANDA JO & STEVEN A MILCOFF	\$50.00	\$4,709.00	Pending
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[50-1 - Heating Unit Only (Residential)] FURNACE

103370	3011 LAWNSDALE DR..21-1111-D-203	BERNADETTE DANIELS	\$50.00	\$5,900.00	Pending
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[50-1 - Heating and Air Conditioning Units (Residential)] FURNACE AND AIR CONDITIONER

103371	3144 WINDLAND DR..21-5355	BRZOZNOWSKI CHARLES T & SANDRA M REVOCABLE TRUST	\$50.00	\$4,450.00	Pending
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[50-1 - Heating Unit Only (Residential)] FURNACE

103372	1804 DE GRAND ST..6H-1518	KEVIN W DEMARS	\$50.00	\$5,750.00	Pending
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[50-1 - Heating Unit Only (Residential)] BOILER

103376	1114 ELIZA ST..17-141	ELISABETH E & MATTHEW D HELLER	\$50.00	\$11,000.00	Pending
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[50-1 - Heating Unit Only (Residential)] BOILER

103162	1265 LOMBARDI AV..1-1841-A	GREEN BAY CITY OF LAMBEAU FIELD	\$745.75	\$3,500,000.00	Pending
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[60-1 - Sanitary Sewers - Connection/Repair (Residential)] EC APPROVED 1/26/21

103183	3116 NICOLET DR..22-129-5	NIELSON DANIEL R & ILDEMAN R REVOCABLE TRUST	\$50.00	\$8,238.00	Closed
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[60-1 - Repair/Alter Existing Plumbing System (Residential)] TEARING OUT BATH AND REPLACING WITH NEW BATH

103249	2484 VAGABOND ST..21-3194	MARY L HOVDE	\$50.00	\$8,409.00	Closed
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[60-1 - Repair/Alter Existing Plumbing System (Residential)] Bathtub and surround being replaced by a walkin shower and surround, including mixing valve and trap

103251	507 13th AV..2-607	KATHY K & TONY J KELLNER	\$50.00	\$7,500.00	Pending
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[60-1 - Repair/Alter Existing Plumbing System (Residential)] TUB TO SHOWER CONVERSION

103273	1221 ST. GEORGE ST..20-58	KATHY A & DALE J KELSEY	\$530.00	\$1,000.00	Closed
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[60-1 - Water Service - Connection/Repair (Residential)] MINI STORM SEWER CONNECTION - SUMP PUMP DISCHARGE & 1 DOWNSPOUT INTO STORM SEWER LATERAL

103274	1262 SAN JOSE PL..3-1276	DENNIS W & DALE L JONES, ETAL	\$30.00	\$1,345.00	Closed
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[60-1 - Water Heater (Residential)] WATER HEATER

103276	412 BADER ST..21-2827-H-49	SOHO RENTAL LLC	\$30.00	\$1,345.00	Pending
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[60-1 - Water Heater (Residential)] WATER HEATER
FINAL INSP LETTER COMBINED WITH FURNACE PROJECT

103283	738 S JACKSON ST..14-568	738 S JACKSON LLC	\$30.00	\$4,000.00	Closed
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[60-1 - Sanitary Sewers - Connection/Repair (Residential)] RE-LAY BROKEN SANITARY SEWER

103296	1811 BURNS AV..6-2004	ELIZABETH J NAUD	\$50.00	\$8,190.00	Pending
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[60-1 - Repair/Alter Existing Plumbing System (Residential)] TUB TO SHOWER CONVERSION

103302	2257 IMPERIAL LN..21-3373	AMBA PROPERTIES LLC	\$70.00	\$1,100.00	Closed
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[60-1 - Water Heater (Commercial)] WATER HEATER

103306	1408 CHICAGO ST..17-828	STEVEN J & CAROL J KEPLER	\$50.00	\$9,489.00	Pending
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[60-1 - Repair/Alter Existing Plumbing System (Residential)] Bathtub and surround being replaced by a walkin shower and surround, including mixing valve and trap

103318	1122 LINCOLN ST..18-773-A	INTERBAKE FOODS INC	\$70.00	\$9,250.00	Pending
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[60-1 - Repair/Alter Existing Plumbing System (Commercial)] Demo existing sink in Lab Area, re-pipe and install new sink

103347	811 NICOLET AV..2-714	DEREK MUENSTER	\$50.00	\$500.00	Pending
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[60-1 - Repair/Alter Existing Plumbing System (Residential)] REPAIR DISCREPANCIES LISTED BY THE LOCAL INSPECTOR

103355	424 S VAN BUREN ST..14-641	URBANE ENTERPRISES LLC	\$30.00	\$2,000.00	Closed
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[60-1 - Water Service - Connection/Repair (Residential)] INSTALL NEW WATER SERVICE - OLD ONE BROKEN

Totals:	176 projects		\$40,481.85	\$17,507,273.35	
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Summary of Projects Issued

1/1/2021 to 1/31/2021

Class of Work	Proj	Site	Plan	Bldg	Elec	HVAC	Plbg	EC	Fees Paid	Estimated Cost
1 Residential - New - Single Family House	4	4	8	4	4	4	4	4	\$6,019.67	\$1,540,000.00
2 Residential - Alteration - 1 -2 Family House	18	0	12	18	13	6	14	0	\$3,860.61	\$396,716.00
4 Residential - Alteration - Garage or carport or Shed	1	0	0	1	0	0	0	0	\$50.00	\$1,000.00
7 Deck, Porch, Patio, Ramp (Residential)	8	5	3	8	0	0	0	0	\$655.00	\$41,307.74
9 Demolition - Interior (Residential)	1	0	0	1	0	0	0	0	\$50.00	\$1.00
9 Raze - Building or Structure (Residential)	5	0	0	5	0	0	2	0	\$300.00	\$14,211.75
11 Driveway Replacement and/or Expansion (Residential)	2	0	0	2	0	0	0	0	\$100.00	\$2.00
11 Fence (Residential)	2	0	0	2	0	0	0	0	\$100.00	\$6,257.00
11 Garage/Carport/Shed (residential)	1	0	0	1	0	0	0	0	\$50.00	\$7,600.00
11 Swimming Pool (Residential)	1	1	1	1	1	1	0	1	\$250.00	\$52,000.00
31 Commercial - Alteration - Non-Residence, Non-Housekeeping	15	0	18	15	13	8	7	0	\$20,235.82	\$7,253,177.66
31 Commercial - New - Public Works, Utilities (transportation, water supply, heat, communication, power, sewage disposal)	1	1	0	1	1	0	1	0	\$990.00	\$3,490,000.00
34 Cell Tower - Alteration to Existing (Commercial)	3	0	0	3	2	0	0	0	\$350.00	\$63,500.00
34 Demolition - Interior (Commercial)	1	0	0	1	0	0	0	0	\$70.00	\$10,000.00
34 Fire Protection Sprinkler (Commercial)	2	0	0	2	0	0	0	0	\$270.00	\$203,630.00
34 Raze- Building or Structure (Commercial)	1	0	1	1	0	0	1	1	\$175.00	\$16,977.00
34 Roofing (Commercial)	2	0	0	2	0	0	0	0	\$140.00	\$36,000.00
34 Temporary Office/Trailer/Event (Commercial)	3	0	0	3	1	0	0	0	\$0.00	\$22,000.00
40 Electrical Service - Change (Commercial)	5	0	0	0	5	0	0	0	\$140.00	\$7,450.00
40 Electrical Service - Change (Residential)	9	0	0	0	9	0	0	0	\$350.00	\$15,335.00
40 Electrical Wiring (Misc., Alteration, Repair) (Commercial)	1	0	0	0	1	0	0	0	\$70.00	\$2,000.00
40 Electrical Wiring (Misc., Alteration, Repair) (Residential)	7	0	0	0	7	0	0	0	\$400.00	\$16,865.00
50 AC Unit Only (Residential)	7	0	0	0	0	7	0	0	\$350.00	\$47,550.00
50 Heating and Air Conditioning Units (Commercial)	2	0	0	0	0	2	0	0	\$280.00	\$218,132.00
50 Heating and Air Conditioning Units (Residential)	16	0	0	0	0	16	0	0	\$850.00	\$118,853.00
50 Heating Unit Only (Commercial)	3	0	0	0	0	3	0	0	\$490.00	\$155,410.00
50 Heating Unit Only (Residential)	41	0	0	0	0	41	0	0	\$2,050.00	\$208,932.20
60 Repair/Alter Existing Plumbing System (Commercial)	1	0	0	0	0	0	1	0	\$70.00	\$9,250.00
60 Repair/Alter Existing Plumbing System (Residential)	6	0	0	0	0	0	6	0	\$300.00	\$42,326.00
60 Sanitary Sewers - Connection/Repair (Residential)	2	1	1	1	1	0	2	1	\$775.75	\$3,504,000.00
60 Water Heater (Commercial)	1	0	0	0	0	0	1	0	\$70.00	\$1,100.00
60 Water Heater (Residential)	2	0	0	0	0	0	2	0	\$60.00	\$2,690.00
60 Water Service - Connection/Repair (Residential)	2	0	0	0	0	0	2	0	\$560.00	\$3,000.00
Totals:	176	12	44	72	58	88	43	7	\$40,481.85	\$17,507,273.35

**Resolution Authorizing Execution of the
Department of Natural Resources
Principal Forgiven Financial Assistance Agreement**

February 17, 2021

BY THE COMMON COUNCIL OF THE CITY OF GREEN BAY:

WHEREAS, the City of Green Bay wishes to undertake a project to replace private lead service lines at residences, pre k -12 schools and licensed and/or certified daycare centers, identified as DNR No. 5331-29 (the "Project"); and

WHEREAS, the Department of Natural Resources Intended Use Plan notes that "galvanized service lines that are currently or have previously been downstream of lead components, and lead goosenecks, are considered lead service lines for purposes of this program"; and

WHEREAS, the City has applied to the Safe Drinking Water Loan Program (the "SDWLP") for financial assistance in the form of a loan made by the SDWLP to the City of which all the principal will be forgiven at the time that loan disbursements are made to the City, pursuant to the DNR Principal Forgiven Financial Assistance Agreement, which is incorporated herein by reference; and

WHEREAS, the SDWLP has determined that it can provide a loan with principal forgiveness in an amount up to \$1,411,635 that it has identified as being eligible for SDWLP funding;

NOW, THEREFORE, BE IT RESOLVED that the Common Council of the City of Green Bay hereby authorizes the Mayor and City Clerk by and on behalf of the City to execute the Principal Forgiven Financial Assistance Agreement that contains the terms and conditions of the SDWLP award for the Project.

Adopted _____

Approved _____

Eric Genrich, Mayor

Celestine Jeffreys, Clerk



Report to the
Protection and Policy Committee
of the City of Green Bay

MEETING DATE

February 17, 2021

PREPARED BY

AGENDA ITEM # R.2

Resolution for the City of Green Bay to adopt the Brown County All-Hazard Mitigation Plan.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

1. Resolution - Adopt Brown Co All Hazards Mitigation Plan
2. 2020 All Hazard Draft Ch 4 FINAL
3. 2020 All Hazard Draft Ch 2 FINAL
4. 2020 All Hazard Draft Ch 1 FINAL
5. 2020 All Hazard Draft Ch 5 FINAL
6. 2020 All Hazard Draft Ch 3 FINAL

**RESOLUTION ADOPTING BROWN COUNTY
ALL HAZARDS MITIGATION PLAN**

February 2, 2021

BY THE COMMON COUNCIL OF THE CITY OF GREEN BAY:

WHEREAS, the City of Green Bay recognizes that natural hazards pose a threat to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted all hazards mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the County Board of Brown County has adopted the Brown County All Hazard Mitigation Plan as its official plan; and

WHEREAS, the City of Green Bay has reviewed such plan and recommends approval thereof for the City of Green Bay;

NOW, THEREFORE BE IT RESOLVED, that the Common Council of the City of Green Bay hereby adopts the *2020 Brown County All Hazards Mitigation Plan*, a copy of which is on file with the City Clerk, as its official plan and directs that a copy of the same be forwarded to the Brown County Emergency Management Department.

BE IT FURTHER RESOLVED, that upon approval of the *2020 Brown County All Hazards Mitigation Plan*, the Brown County Emergency Management Department will submit the adopted plan to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval, as required under the Hazard Mitigation Grant Program.

Adopted _____

Approved _____

Mayor

Clerk

CHAPTER 4 MITIGATION STRATEGIES

INTRODUCTION

The Disaster Mitigation Act of 2000 defines mitigation as a "sustained action that reduces or eliminates long-term risk to people and property from natural hazards and their effects." Mitigation planning is the systematic process of learning about the hazards that can affect the county, setting clear goals, identifying appropriate actions and following through with an effective mitigation strategy. Mitigation encourages long-term reduction of hazard vulnerability and can reduce the enormous costs associated with a disaster including costs to property owners and to public agencies. Mitigation can also protect critical community facilities, reduce exposure to liability, and minimize community disruption.

This chapter outlines the general goals to be achieved through the implementation of this all hazard mitigation plan. The natural hazards discussed in this chapter are listed in the order of priority as determined by the All Hazard Plan Steering Committee. For each natural hazard, there is list of mitigation strategies (actions and projects), noted with implementation status, along with potential stakeholders and a timetable for implementation. A summary of the recommended mitigation strategies can be found in Table 4.1 at the end of this chapter.

PROGRESS SINCE LAST UPDATE

Since the previous Hazard Mitigation Plan was approved and adopted in 2012, Brown County has been actively pursuing many of the mitigation efforts that were identified as either efforts that were underway or that were already in place. Below is a summary of the mitigation efforts that were identified in the previous plan and their current status.

- *Floodplain mapping and zoning completed and enforced:* This effort is a continually evolving effort. Brown County adopted the most recent (2009) FEMA FIRM Map and regularly adopts and updates the official floodplain zoning map based on approved flood studies. Brown County Zoning administers floodplain zoning in the unincorporated areas of the county. This has also been done by many of the incorporated communities that administer floodplain zoning.
- *Stormwater management and detention activities instituted:* Many Brown County communities have adopted storm water management ordinances. The State of Wisconsin also regulates storm water via NR 216 (Storm Water Discharge Permits) and NR 151 (Runoff Management).
- *Monitoring, warning, and evacuation procedures maintained and communicated:* These procedures are not always static. Things around the county change and so to should the procedures involving monitoring, warning, and evacuating people in the event of a hazard. These procedures may be on file but the training and communication of these procedures is always needed.
- *Building codes established and enforced:* All entities that administer building permits and enforce building code regulations have a building inspector on staff or contract for their services. Building inspectors must be certified/licensed by the State of Wisconsin.

- *Land use controls adopted and enforced:* Many land use controls are in place at the state, county, and local levels. Having land use controls can be a powerful tool to achieve an end goal but they are only good if they are administered consistently. Most hazards don't understand political boundaries and therefore it takes multi-jurisdictional cooperation and coordination to mitigate some hazards. All Brown County agencies that administer land use control codes and ordinances could coordinate more.
- *Capital improvement plans prepared and referenced:* Brown County and the local municipalities use various forms of a capital improvement plan. These plans are typically updated every year to include new projects.
- *Incident response exercises scheduled and assessed:* Brown County Emergency Management keeps up to date on required exercises.
- *Intergovernmental cooperation partnerships established and maintained:* Intergovernmental cooperation is critical to the prevention and mitigation efforts when hazards do occur.
- *Education pieces prepared and distributed:* While the education pieces were prepared and distributed, they should also be reviewed and updated periodically.
- *Disaster plan prepared, distributed, and followed:* Brown County has an Emergency Operations Plan.

CURRENT MITIGATION EFFORTS

In the preparation of this all hazard mitigation plan for Brown County, it is important to understand that many mitigation activities are already underway and/or in place. Brown County, local communities, hospitals, and schools have been very proactive in attempting to mitigate the impacts of natural hazards by adopting and using their own individual emergency response plans. A list of those plans can be found in Chapter 3. The following list highlights some of the mitigation activities currently being undertaken throughout the county by these entities.

- Floodplain mapping and zoning.
- In accordance with NR 115 (Shoreland Zoning) and NR 116 (Floodplain Management Program) Brown County and the local municipal governments enforce the adopted ordinances.
- Brown County and the communities served by public sewer, are required to have Municipal Separate Storm Sewer System (MS4) permits to comply with Wisconsin Administrative Code, NR 216. While this is water quality focused it is directly linked to stormwater management.
- Storm water management requirements:
 - Some local municipal governments have adopted and enforce storm water management ordinances.
- Monitoring, warning, and evacuation procedures maintained and communicated
- Building codes established and enforced

- Land use controls adopted and enforced
- Capital improvement plans prepared and referenced
- Incident response exercises scheduled and assessed
- Intergovernmental cooperation partnerships established and maintained
- Education pieces prepared and distributed
- Disaster plans prepared, distributed, and followed

Primary Mitigation Goals

PMG1 - To preserve life and minimize the potential for injuries or death.

PMG2 - To preserve and enhance the quality of life throughout Brown County by identifying potential property damage risks and recommending appropriate mitigation strategies to minimize potential property damage.

PMG3 - To identify potential funding sources for mitigation projects and form the basis for grant applications.

PMG4 - Coordinate mitigation efforts through communication and collaboration between jurisdictions and all departments.

PMG5 - Develop and implement plans and programs to identify and reduce a hazard's risk (e.g. Emergency action plans, Power Restoration Plans, Post-Hazard Evaluation and Action Plan, etc.).

PMG6 - Identify areas of greatest impact from hazards (e.g. High-water marks, repetitive loss, etc.).

Secondary Mitigation Goals

SMG1 - Implement policies and programs designed to reduce or eliminate the impacts of natural hazards.

SMG2 - Collect and utilize data to improve mitigation strategies.

SMG3 - Build and support local capacity and commitment to improve implementation of mitigation strategies.

SMG4 - Continue enforcement measures to reduce the impacts of natural hazards.

SMG5 - Utilize natural resource protection measures as a means to reduce the impacts of natural hazards.

SMG6 - Incorporate Green Infrastructure (GI) and Low Impact Development (LID) mitigation strategies to the impacts of natural hazards.

SMG7 - Continue training, education and outreach programs to improve disaster response and overall education of hazard planning and mitigation.

MITIGATION CATEGORIES

To establish a framework for the development of mitigation strategies to address the goals listed above, a clear understanding of what techniques should be considered during the planning process was necessary. The following six broad mitigation categories served as that basis in the formulation of mitigation strategies for each of the natural hazards addressed in this plan.

Prevention

Prevention activities are intended to keep issues associated with hazard events from getting worse. They are particularly effective in limiting Brown County's and each community's future vulnerability, especially in areas where development has not occurred, or capital improvements have not been substantial. Examples of prevention activities include:

Planning and Zoning

- Suggest municipalities adopt Brown County All-Hazard Mitigation Plan into local municipality plans or ordinances when no local plan exists.
- Ensure that there are adequate groundwater wellhead protection plans in place that are utilized.

Hazard Mapping

- Develop a mapping system with data that maps hazardous materials (open air and/or closed storage). These materials could have adverse impacts to the community and natural environment during a natural disaster or emergency. Develop a database and map to identify and track all hazardous material located within the region.

Building Codes

- Review and update building codes to ensure that structures are built to a standard that will endure most hazard events.

Studies/Data Collection and Analysis

- Continue to maintain hazardous material locations to the extent possible.

Open Space Preservation

- Obtain and preserve open spaces within key areas of Brown County.
- Develop an action plan to identify priority parcels and potential funding sources to purchase vulnerable property.
- Continue to maintain and enforce Chapter 22 (Shorelands and Wetlands) of the Brown County Code of Ordinances.
- Continue to maintain the Brown County Sewage Plan.
- Continue to maintain and enforce Chapter 21 (Land Division and Subdivision) of the Brown County Code of Ordinance.

Floodplain Regulations

- Obtain and preserve open spaces within the floodplain. Develop an action plan to identify priority parcels and potential funding sources to purchase vulnerable property.
- Continue to maintain and enforce Chapter 23 (Floodplains) of the Brown County Code of Ordinances.

Storm Water Management

- Several sections of the urbanized areas flood after heavy rain events causing damage to infrastructure and property. Develop a mapping system and database that identifies areas where flooding occurs on a more frequent basis. This process would help place drainage ways into a future Capital Improvement Plan (CIP.)

Drainage System Maintenance

- Address aging storm water infrastructure that needs maintenance to protect the natural waterways. Develop a plan to identify priority maintenance and replace areas.
- Develop funding sources to purchase, maintain, and protect the natural drainage systems. When parcels near watercourse and navigable waterways are slated to be developed the municipalities should attempt to purchase and protect the public access to these natural amenities. Develop a plan that identifies priority parcels and potential funding sources.

Capital Improvements Programing

- Develop ability to manage grass and forest fires for municipalities that have vast woodlands. Acquire equipment to properly control forest fires and grass fires.

Riverine Setbacks

- Continue to enforce development restrictions for steep slope areas and areas that drain to other natural resource features such as waterway or wetlands.

Property Protection

Property protection measures are intended to enable structures to better withstand hazard events, remove structures from hazardous locations, or provide insurance to cover potential losses. Examples include:

Acquisition

- Develop funding sources to purchase, relocate, elevate, or retrofit structures located within the floodplain. Develop a plan and/or asset map to help residents and businesses leverage any available public or private funding.

Relocation

- Develop a plan to relocate residential areas outside of flood zones and limit future development in area for natural and recreational uses, particularly in areas where structures are repeatedly damaged during flood events.
- Develop funding sources to purchase, relocate, elevate, or retrofit structures located within the floodplain. Develop a plan and/or asset map to help residents and businesses leverage any available public or private funding.

Building Elevation

- Develop funding sources to purchase, relocate, elevate, or retrofit structures located within the floodplain. Develop a plan and/or asset map to help residents and businesses leverage any available public or private funding.

Critical Facilities Protection or "Hardening"

- Develop funding sources to purchase, relocate, elevate, or retrofit structures located within the floodplain. Develop a plan and/or asset map to help residents and businesses leverage any available public or private funding.

Retrofitting (i.e., wind proofing, flood proofing, seismic design standards, etc.)

- Develop funding sources to purchase, relocate, elevate, or retrofit structures located within the floodplain. Develop a plan and/or asset map to help residents and businesses leverage any available public or private funding.

Insurance

- Develop funding sources to purchase, relocate, elevate, or retrofit structures located within the floodplain. Develop a plan and/or asset map to help residents and businesses leverage any available public or private funding.

Safe Room Construction

- Develop funding sources to purchase, relocate, elevate, or retrofit structures located within the floodplain. Develop a plan and/or asset map to help residents and businesses leverage any available public or private funding.

Natural Resource Protection

Natural resource protection activities reduce the impact of hazards by preserving or restoring the function of environmental systems. In some cases, natural systems may include high hazard areas such as floodplains, steep sloped areas or barrier islands. Thus, natural resource protection measures can serve the dual purpose of protecting lives and property while enhancing environmental goals such as improved water quality or recreational opportunities. Parks, recreation or conservation agencies and organizations often implement natural resource protection measures. Examples include:

Floodplain Protection

- Many rivers, including Suamico River, north and west branches of Suamico River, and Potters Creek, have multiple tributaries with Flood Zone A that require protection.

Riparian Buffers

- Utilize riparian buffers to improve water quality in both urban and rural settings.

Fire Resistant Landscaping

- Encourage the use of landscaping that is fire proof and fire resistant for residential and commercial properties that develop in area to prevent fast spread of future fires.

Best Management Practices

- Create an educational campaign to inform the public on best management practices on their private property.

Fuel Breaks

- Hazards associated with fuel lines, gas meters and control panels include breaking of unprotected pipes (especially at the entry point through walls or fuel tank structures), leaking fuel causing an environmental and fire hazard and the inability of pressure relief devices to operate properly if submerged during a flood.
- Each piece of equipment should be kept above the DFE, Placed in protected shafts and have some flexibility.

Erosion and Sediment Control

- Create a county-wide system where there is equal environmentally sensitive area protection for all natural resources at the municipality level in addition to the existing county level. Identify potential funding sources to enforce regional erosion and sediment control measures.

Wetland Preservation and Restoration

- Continue to work with the WI DNR to protect wetlands through the administration of NR 115, NR 121, the 2040 Brown County Sewage Plan, and CH 21 (Land Division and Subdivision) of the Brown County Code of Ordinances

Habitat Preservation

- Develop protections for woodlands that may be vulnerable to any natural disaster.

Slope Stabilization

- Development of structures near steep slope may lead to erosion and structural collapse. Strongly enforce required environmentally sensitive area setbacks and encourage use of vegetation that stabilizes soil and slopes.

Structural Projects

Structural mitigation projects are intended to lessen the impact of a hazard by physically modifying the environment. These mitigation measures are usually designed by engineers and maintained by public entities. Most of the examples provided herein are aimed at stormwater and flood management projects. Examples include:

Reservoirs

- Storage of floodwaters in reservoirs causes the broadest range of flood-modifying effects such as reduction in flood flow rate, extent of area flooded, timing, etc. Except in the area immediately downstream from the dam, however, storage may not provide as high a degree of relief from flood damage in specific areas as may be achieved by other more localized tools.
- Flood storage may function alone, in groups, or with other mitigation strategies.
- Create an inventory of all reservoirs in Brown County and monitor their condition on an annual basis.

Levees/Dikes/Floodwalls

- Dikes, levees, and floodwalls protect a portion of the floodplain from flooding, up to a design level. These works may have adverse as well as beneficial effects. They can increase the height of the flood immediately upstream, across the stream, and downstream by reducing the amount of floodplain area available for overbank floodwater conveyance and/or storage. **Although they may be effective for the emergency, they should not be considered as permanent flood protection measures.**
- A list of dams and levees is maintained by the DNR. Conditions of these facilities should be monitored annually.

Detention/Retention

- Onsite detention measures can provide temporary storage of urban runoff waters, extending the period of runoff with the intent of reducing flood peaks. The temporary storage of runoff may also result in increased infiltration.
- Effective implementation of these measures includes providing for continuous maintenance, determining the drainage area to be served by a single structure, and determining the effects of detention on the timing of runoff in different segments of the watershed.

Channel Modification

- Channel modification may be necessary for certain areas, however; altering the natural course of a waterway may have negative impacts to areas upstream and downstream and it can negatively impact the local ecology.
- Acquisition of all permits from federal, state, county, and local entities must be obtained prior to any alteration to a navigable waterway.

Storm Sewer Construction

- Areas like CTH G, located east from CTH GV, in Ledgeview flood periodically due to undersized storm water pipes under the street. Properly sized storm water pipes and crossings to allow sufficient water flow to prevent flooding during heavy rain and snow melt events should be considered.

Shoreline Protection

- Seawalls, bulkheads, and revetments are designed to protect development along coastal areas by restricting wave impacts.
- Breakwaters and jetties are designed to protect harbors and navigation channels from wave action or to stabilize inlets.
- Groin fields or segmented offshore breakwaters provide shoreline protection by trapping sand.
- Beach nourishment and building sand dunes are often a cost effective, quasi-natural method of restoring eroding beaches and protecting existing development.

Emergency Services

Although not typically considered a “mitigation technique,” efficient emergency response can significantly reduce injuries and loss of life associated with hazards. These actions are typically taken immediately prior to, during, or in response to a hazard event. Examples include:

Warning Systems

- Improve safety during a hazard event by continuing to install tornado siren systems on future fire station structures.
- Continue to develop new warning systems that can be broadcast to the public through various forms of media (i.e. television, social media, county website).

Search and Rescue

- Adequately fund police and fire departments to purchase necessary search and rescue equipment can help minimize loss of life.
- Maintain/continue ongoing training for search and rescue personnel.

Evacuation Planning and Management

- Keep emergency action plans up-to-date.

Flood "Fighting" Techniques

- Continue utilizing flood forecasting systems for major waterways such as the East River and the Fox River to monitor and plan for necessary mitigation and or evacuation of key areas.
- Continue to coordinate issuing flood watches and warnings with local media to notify residents of the potential for dangerous conditions in their area. The success of issuing these watches and warnings depends on the strength of the emergency action plan and the implementing organization's ability to respond before the flood occurs.

Public Information and Awareness

Public Information and Awareness activities are used to advise residents, business owners, potential property buyers, visitors and government officials about hazards, hazardous areas and mitigation techniques they can use to protect themselves and their property. These public awareness measures should be available in languages spoken by residents of Brown County. Measures used to educate and inform the public include:

Outreach and Education

- Continue to engage local stakeholders for annual updates on emergency actions plans, public health plans, or other related documents.
- Maintain a contact list for the distribution of educational materials.
- Schedule periodic educational seminars/training for emergency management personnel.
- Continue to work with local school districts on the implementation of emergency action plans.

Speaker Series, Demonstration Events

- Coordinate with State and Federal agencies to provide demonstration or training events.

Informing the Public

- Continue to use local news stations, local new papers, and county and local social media accounts to keep the public informed of current and potential hazards.

Real Estate Disclosure

- Real Estate disclosures in Wisconsin require property owners and their agents (realtors) to disclose any condition or defect that would result in a significant negative effect on the property value, that would significantly impair the health or safety of future occupants, or that would significantly shorten or negatively affect the normal life of the property.

Training

- All emergency management personnel need to continue to attend training events and stay current on any license or certifications.

MITIGATION STRATEGIES (ACTIONS AND PROJECTS)

Top hazard concerns were identified for each individual community from a broader range of possible incidents, including natural hazards. Nearly every participating community identified severe weather incidents as their top hazard concern. Vulnerability also was assessed on a countywide basis using the following parameters to determine an overall priority rating that was based on past events to include costs, frequency of occurrence, warning time, geographic extent, likely adverse impact, and future occurrences. The designation of high, medium, or low priority was determined based on whether or not that activity was already being done, the need to expand an activity, cost to implement, the time period to implement, whether or not the strategy is connected to another natural hazard, and the level of impact if implemented.

The mitigation strategies identified in this plan are listed below in order of priority as determined by the All Hazards Mitigation Plan Steering Committee. It was determined that some of the mitigation strategies were crossing between several natural hazard categories or were based in cooperation that was better suited for a countywide strategy section that precedes the natural hazards.

Prioritized Mitigation Measures by Hazard						
All Hazards/Countywide						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
1.1	Utilize digital media (social media & text) for emergency alerts.	PMG1 SMG1 SMG3	BC EM BC LIO BC Administration Local EM Personnel	Ongoing	H	Brown County currently uses digital media platforms for various emergency alerts. Digital media will continue to evolve and improve. Its imperative that Brown County and the local units of government keep up.
	Countywide					
1.2	Maintain intergovernmental cooperation agreements with neighboring communities and private businesses for acquisition of necessary equipment for disaster clean-up	PMG1 PMG4 SMG1 SMG3	BC EM, Local Governments	Ongoing	H	Cooperation between county departments, local governments, and other organizations is crucial to the health safety and welfare of Brown County citizens.
	Countywide					
1.3	Bury utility lines when possible	PMG1 PMG2 PMG3 PMG4	BC, Local Muni's	Ongoing	L	While this mitigation measure has its benefits it also has its drawbacks i.e. cost. When projects are proposed underground utilities should be considered by both the County and the local municipalities.
	County, Local Municipalities					

1.4	Include driver safety strategies for severe weather events in driver education classes and materials.	PMG1 PMG5	State DOT	Ongoing	L	While this is not under Brown County's jurisdiction, it is an important measure that can be taken to keep people safe when learning to drive.
	Statewide					
1.5	Continue to maintain GIS data that is utilized by E 911 personnel in responding to emergencies.	PMG5 SMG2	BC LIO, WI Cartographers Office, Local GIS Professionals	Ongoing	M	Developing and maintaining a GIS system takes a massive amount of time and expertise. Critical data used by BC EM professionals includes: Address Points, Street Centerlines, Police and Fire Boundary layers, Critical Facilities
	County					
1.6	Develop an implementation plan for the Water Storage Capacity Needs for the Lower Fox River Basin study.	PMG1 PMG2 PMG4 PMG5 PMG6	BC Planning, BC Land and Water Conservation, BC EM, BC Administration	5 years	H	Link to the Study: https://www.outagamie.org/home/showdocument?id=73817 Finding funding for this project is critical to achieving the potential flood mitigation benefits associated with this study. (Cost is high)
	Brown County, Outagamie County, Communities within the Lower Fox River Watershed					
1.7	Continue delivery of federal emergency assistance when a Presidential Disaster is declared or when FEMA declares a county eligible for aid.	PMG3	BC EM	Ongoing	H	Maintaining eligibility for disaster relief funding is critical. (Cost is low)

Winter Storms, Heavy Snow, Blizzards, Ice						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
2.1	Inventory plowing and sanding equipment for use during winter emergencies	PMG4 SMG1	BC EM, BC DPW, Local DPW's, Private Co.'s	Annually especially during winter	H	This is largely a function of DPW departments to ensure they are prepared for winter emergencies. Needs should be identified and included in capital improvement plans. (Cost could be high depending on needs)
	Countywide					
2.2	Maintain lines of communication between governments, support agencies, police, fire, EMS, hospitals, and DPW's	PMG1 PMG4 SMG1 SMG7	BC EM, BC DPW, Local DPW's, Hospitals, Police and Fire	Ongoing	H	Facilitated by BC EM with support from County Executive. During large or prolonged winter emergencies coordination between agencies is critical to the preservation of life and property. (Cost is low)
	Countywide					
2.3	Utilize BC Emergency Operations Plan for coordination of public safety, support agencies, and resource acquisition	PMG4 PMG5 SMG1 SMG7	EM Dept, BC Sheriff, Police and Fire, Hospitals	Ongoing	H	Keep the BC Emergency Operations Plan up-to-date and staff trained on utilizing this plan. (Cost is low)
	Countywide					
2.4	Prepare and distribute winter safety information to the media and vulnerable populations.	PMG5 SMG1 SMG7	BC EM, UW-Extension, BC Health and Human Services, Homeless Shelters	Annually	L	Local news channels and other agencies like UW-Extension, BC Health and Human Services, local homeless shelters and BC EM can partner to keep the vulnerable populations in Brown County safe. (Cost is low)
	Countywide					
2.5	Produce and distribute emergency preparedness information for winter weather hazards on the roads	PMG5 SMG1 SMG7	BC EM, WisDOT, BC Sheriff, Local Police Depts.	Ongoing	L	Coordinate with WisDOT and local news outlets on the distribution of emergency preparedness information. (Cost is low)
	Countywide					
2.6	Continue tree trimming programs	PMG2 SMG1	Local Forestry or DPW's, BC Parks, BC Highway, Utility Companies	Ongoing	M	Brown County, Local municipalities, and utility companies should continue tree trimming programs to prevent power outages. Can be part of local and county budgets. (Cost depends on need per agency)
	Countywide					
2.7	Develop/enforce restrictions on planting large or fast-growing trees near power lines	PMG5 SMG1 SMG4	Local Muni's	Ongoing	L	UW-Extension can be a helpful resource. Communities can also coordinate with utility companies for the location of future power lines. (Cost is low)
	Local Municipalities					
2.8	Identify key locations and install snow fencing to limit blowing and drifting of snow	PMG1 PMG2 PMG4	All DPW's	Ongoing	M	Snow fencing can be an effective measure to deter snow and ice accumulation on roadways. (Cost is low)
	Brown County and Local Municipalities					

Flooding (Stormwater, Riverine, Storm Water, Flash)						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
3.1	Monitor NWS flood forecast	PMG4 SMG2 SMG7	BC EM	Ongoing	H	Coordinate with NWS and Local meteorologists to determine when flood watches and warnings could be issued. (Cost is low)
	Countywide					
3.2	Maintain congregate care facility procedures	PMG1 PMG4	EM Dept., Non-govt Agencies	Ongoing	M	See Brown County Evacuation Plan. (Cost is low)
	Countywide					
3.3	Maintain and update emergency procedures for gas and electricity cut-off and sandbagging	PMG2 PMG5 SMG1 SMG7	BC EM, BC Highway Department	Ongoing	M	A copy of each utility company's emergency plan should be updated and on file with BC EM. (Cost is low)
	Countywide					
3.4	Maintain ordinances for proper land use planning codes and ordinances.	PMG5 SMG1 SMG3 SMG6 SMG7	County and Local Planning and Zoning Departments	Ongoing	M	This includes shoreland zoning, floodplain zoning, comprehensive plans, and other regulatory codes and ordinances. (Cost is moderate)
	Brown County, Local Municipalities					
3.5	Enforce environmentally sensitive area regulations that preserve natural resources adjacent to and in defined floodplains	PMG4 PMG6 SMG1 SMG4 SMG5 SMG6	County and Local Planning and Zoning Departments	Ongoing	M	Keep the Brown County Sewage Plan and the Brown County Subdivision Ordinances up to date. (Cost is moderate)
	Countywide					
3.6	Inventory and assess areas throughout both the rural and urban Brown County that have repeated flooding problems and identify Green Infrastructure and Low Impact Development Strategies to minimize future events.	PMG1 PMG2 PMG3 PMG6 SMG1	EM Dept., BC Planning, BC DPW, Local Municipalities	Ongoing	M	Knowing which areas experience repetitive flooding issues can help decisionmakers focus funding on those key areas. (Cost is moderate)
	Repetitive flood areas					
3.7	Maintain storm water management plans and ordinances that are consistent with the State of Wisconsin minimum requirements.	PMG2 SMG1 SMG4	Local municipalities	Ongoing	M	Storm water management requirements currently reside at the local level for most Brown County Communities. Brown County ensures that storm water management is addressed during the land division review process in all villages and towns. (Cost is Moderate)
	Local municipalities					
3.8	Incorporate FEMA approved changes to the floodplain maps to better determine areas and facilities susceptible to recurring flooding.	PMG2 PMG6 SMG1 SMG2 SMG3	BC Zoning, BC LIO	Ongoing	M	This effort has been valuable for numerous citizens and professionals around Brown County. (Cost is low)
	Countywide					

3.9	Implement a rural drainage improvement program that would include ditch, bridge, and culvert maintenance and improvements.	PMG5	County and local DPW Departments	1-5 years	L	This would be a useful program to maintain drainage systems to prevent possible water backups and flooding of both public and private property. (Cost depends on amount of maintenance)
	Countywide, Local Municipalities					
3.10	Promote the sale of flood insurance to residents with flood prone properties throughout the county.	PMG5 SMG7	BC Zoning Local Municipalities	Ongoing	L	This is important for people living in areas mapped on the FEMA FIRM maps. It is also important for people living in areas that have not been studied but are near a waterway. (Cost is low)
	Countywide in flood prone areas					
3.11	Implement floodproofing techniques such as elevation, relocation, barrier construction, and wet flood-proofing for residents, businesses and critical facilities.	PMG1 PMG2 SMG1	Local Municipalities, BC EM	Ongoing	M	Identifying all areas that are within mapped floodplains and that are in a floodplain based on elevation can help identify if structures or other critical facilities are at risk. (Cost is low)
	Countywide in flood prone areas					

Thunderstorms and Lightning						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
4.1	Continue to utilize radio and television for public awareness	PMG1 PMG4 SMG1 SMG7	BC EM, Local TV and Radio Stations	Ongoing	H	An effective process is already in place using area radio and TV stations. (Low cost)
	Brown County					
4.2	Educate public on severe weather safety procedures	PMG1 PMG4 SMG1 SMG7	BC EM, UW-Extension, BC Human Services, BC Health, Schools, Local weather professionals	Ongoing	H	Schools have weather related safety drills every year. The schools often coordinate the drills with educational materials focused on severe weather.
	Countywide					New materials are available periodically and should be used as much as possible.
4.3	Make weather radios available through local communities and Brown County EM Office	PMG1 SMG1	BC EM, BC Sheriff, BC Human Services, BC Health	Ongoing	L	While many people have cell phones and receive weather alerts on them, weather radios can still be used when cell phones don't have service.
	Countywide					
4.5	Install safe shelters at county and local parks and campgrounds	PMG1 PMG3 SMG1 SMG6	BC Parks, Local Municipalities, BC EM, BC Public Safety	Reviewed in 2009	M	Improvements were included in both Brown County's and the local communities Capital Improvements Plans. If there are improvements that are still planned but not yet constructed, the Dept. of Commerce's CDBG program may provide funds for this type of improvement.
	Brown County, Local Municipalities					
4.6	Install lightning protection on communication infrastructure and other critical facilities	PMG2	Telecommunications companies, BC Facilities Management, BC EM	Ongoing	L	New communication towers are constructed frequently. Each tower should include lightning and grounding protection equipment.
	Countywide					
4.7	Encourage use of fire and wind resistant construction materials and techniques	PMG1 PMG2 PMG3 PMG6 SMG1	BC EM, UW-Extension, Local Building Inspectors, Local Zoning Administrators	Ongoing	L	On-going education through residential and commercial building associations.
	Local Municipalities					State Building Code, Local Municipal Building Codes
4.8	Provide information to builders and owners of manufactured homes about use of tie-downs with ground anchors	PMG1 PMG2 SMG7	BC EM, UW-Extension, Local Building Inspectors, BC Home Builders Assoc.,	Ongoing	L	Most lending institutions and loan programs require the use of tie-downs and ground anchors.
	Local Municipalities					Review local building code for tie-down requirement.

Tornadoes and High Winds						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
5.1	Maintain and enhance early warning system for tornadoes	PMG1 SMG1	BC EM, BC Sheriff, Public Safety, Local News Stations	Ongoing	H	Continue to use notifications that reach the public via any and all media platforms. (Cost is moderate)
	Countywide					
5.2	Distribute tornado warning procedures to BC school districts	PMG4 PMG5 SMG1 SMG7	BC EM, BC Sheriff, UW-Extension, Local Schools	Annually	H	Promote Tornado Awareness Week. While this is typically a one-week awareness timeframe, tornado preparedness information should be available during tornado season (April – September). (Cost is low)
	Countywide					
5.3	Promote tornado safety public information through partnerships with NWS and BC Severe Weather Spotters	PMG4 PMG5 SMG1 SMG7	BC EM, Sheriff, UW-Extension, NWS	Ongoing	M	Public education can be carried out by a number of different agencies to help prevent loss of life during tornado and high wind events. (Cost is low)
	Countywide					
5.4	Increase the number of sirens to reach more county residents	PMG1 SMG1	BC EM, Local Muni's	Ongoing	H	Priority locations may include mobile home parks, large public gathering areas, rural public parks, and new subdivisions. (Cost is moderate)
	Countywide					
5.5	Assist schools, businesses, public facility managers, and individuals to determine "best available" tornado safety area.	PMG5 SMG1 SMG7	BC EM, Local Fire Depts.	Ongoing	M	Currently handled by BC EM. Could include the local fire departments and any other entity that may be able to assist. (Cost is low)
	Countywide					
5.6	Develop and maintain a comprehensive safety plan for every publicly owned building	PMG5 SMG1 SMG7	BC EM, Risk Manners, Facilities Managers	1-5 years	M	Risk managers and facilities managers should facilitate the development of plans for each facility. (Cost is moderate)
	Countywide, Local municipalities					
5.7	Require new residential development (w/o basement) to incorporate safe shelter space.	PMG1 PMG6 SMG1	State and Municipal Building Code, Planning Depts, BC EM	Ongoing	M	Educate developers and community leaders on the importance of safe shelters. (Cost may be high)
	Local Municipalities					
5.8	Improve mobile home safety through requiring tie-downs.	PMG1 PMG2 SMG1	State and Municipal Building Code, Local Building Inspectors	1-5 years	M	To prevent catastrophic damage to mobile homes, all building codes need to be amended to include requirements for tiedowns. (Cost is low)
	Local Municipalities					
5.9	Establish agreements with neighboring counties and with private businesses to acquire heavy equipment and to dispose of waste after a disaster.	PMG4 SMG3	BC EM, BC Port and Solid Waste, County Executive	As Needed	H	These agreements already exist however, if something were to change these agreements should be reviewed and amended appropriately.(Cost is low)
	Brown County, Outagamie County, Winnebago County					

5.10	Develop/enforce restrictions on planting large or fast-growing trees near power lines	PMG2 SMG1 SMG4	Local Municipalities	Ongoing	L	UW-Extension can be a helpful resource. Communities can also coordinate with utility companies for the location of future power lines. (Cost is low)
	Countywide					
5.11	Continue tree trimming programs	PMG2 SMG1	BC Parks, BC Highway, Local Forestry and/or DPW's	Ongoing	M	Tree trimming should be done annually to prevent power outages. (Cost may be high depending on how much tree trimming needs to be done)
	Countywide, Local municipalities					
5.12	Install high wind warning devices at key locations and bridges	PMG1 PMG2 PMG6	State, County, Local DPW's	Ongoing	L	Most signs should be in place. If new locations are identified, the jurisdiction responsible for maintenance of the facility should be contacted and made aware of the need for these warning devices. (Cost is low)
	Countywide					

Extreme Temperatures						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
6.1	Encourage social service entities and energy providers to expand programs to assist "at risk" populations.	PMG1 PMG4 PMG5 SMG1	BC Social Services, WPS	Ongoing	H	Utility payment assistance and acquisition of appliances can keep people in homes and out of homeless shelters or on the street. (Cost is moderate)
	Countywide					
6.2	Establish centers with proper amenities including transportation availability.	PMG1 PMG4 PMG5 SMG1	Public and private transportation providers, BC EM	As needed	L	Emergency cooling and heating centers can be set up if needed. Brown County Emergency Management can coordinate with other entities as host sites. (Cost is low)
	Countywide					
6.3	Maintain agreements with area facilities to serve as heating or cooling centers.	PMG2 PMG4 PMG5 SMG1	BC Administration, BC EM, Red Cross, Private Entities	As needed	L	These facilities include the Resch Center, Bay Park Square Mall, Brown County Libraries, and local libraries. Additional facilities as agreements are established. (Cost is low)
	Various locations					

Dam Failures						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
.1	Ensure Lamers Packerland Drive Dam is maintained and functioning properly as stated in the Emergency Action Plan	PMG1 PMG2 PMG5 SMG1	BC EM, Ashwaubenon Public Works	Ongoing	H	This is one of the only dams in Brown County that has a high risk rating if the dam were to fail. Maintaining this dam is extremely important for residents and businesses located down stream (Cost is moderate)
	Lamers Packerland Dam					
7.2	Create emergency procedures brochures and distribute them to all property owners within the potential risk area downstream of a dam.	PMG1 PMG2 PMG5 PMG6 SMG1 SMG7	BC EM, BC Zoning	Ongoing	M	Most dams in Brown County do not pose a serious risk to life or property, however, property owners should know that they are down stream from a dam and there is potential for their property to be impacted if the dam were to fail. Single purpose GIS map may help inform people of their risk. (Cost is low)
	Areas down stream of known dams					
7.3	Monitor water levels and communicate those conditions as necessary.	SMG1 SMG2	Dam Owners, WDNR, ACOE	Ongoing	L	(Cost is low)
	Countywide					

Coastal Hazards						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
8.1	Monitor natural features along the Bay of Green Bay for deterioration.	PMG2 PMG6 SMG2	BC Zoning, WI Sea Grant, Local Municipalities, WDNR	Ongoing	M	Many agencies keep track of various aspects of coastal resources. UWGB may be a good resource for collecting and tracking coastal deterioration. (Cost is high)
	Town of Green Bay, Town of Scott, City of Green Bay, Village of Howard, Village of Suamico					
8.2	Maintain maps indicating past incidences and areas most susceptible to future hazards.	PMG6 SMG2 SMG3	BC LIO, UWGB, WI Sea Grant	Ongoing	M	This effort would be similar to the mapping created for flooding events that cause road closures that was created by the BC LIO. (Cost is moderate)
	Town of Green Bay, Town of Scott, City of Green Bay, Village of Howard, Village of Suamico					
8.3	Maintain current land use regulations that permit to building structures within vulnerable coastal areas.	PMG2 SMG1 SMG4	BC Zoning, BC Planning, Local Municipalities	Ongoing	H	This should help to reduce loss of property and loss of life if proper precautions and enforced. (Cost is low)
	Brown County, Town of Green Bay, Town of Scott, City of Green Bay, Village of Howard, Village of Suamico					
8.4	Work with the Coast Guard to monitor drifting ice that can damage shore structures and destroy vegetation, move sand or stones from beaches, or dump sand, rock or other debris on beaches.	PMG6 SMG2	Coast Guard, BC EM, NWS	Ongoing	L	This is a long term monitoring project that could help to identify and/or predict future coastal hazards. (Cost is moderate)
	Bay of Green Bay					
8.5	Construction of riprap to manage bluff erosion.	PMG2	Private property owners, BC Parks, BC DPW	As needed	L	Private property owners may have a desire to install riprap barriers to help protect their property from erosion. Brown County and the local municipalities may also be interested in these types of projects. In both cases, WDNR is the primary point of contact for discussing such project and identifying what if any permits will be required. (Cost is high)
	Brown County, Town of Green Bay, Town of Scott, City of Green Bay, Village of Howard, Village of Suamico					

Drought						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
9.1	Implement and enforce water usage regulations/ordinances for both urban and rural water users.	PMG2 PMG5 SMG1 SMG4	Local Municipalities	1-5 years	L	Droughts in NE WI do occur however, access to freshwater is typically not an issue. It would be important to have water usage regulations in place to use when the conditions require them. (Cost is moderate)
	Local Municipalities					
9.2	Utilize such entities as UW-Extension, Brown County Land and Water Conservation, etc. for proper irrigation methods and ground water movement.	PMG1 PMG4 SMG7	UW-Extension, UWGB, BC Land and Water Conservation	Ongoing	M	Educational efforts are typically best if sustained for long periods of time or indefinitely. (Cost is low)
	Rural Brown County					
9.3	Ensure adequate wellhead protection plans are in place and utilized.	PMG1 PMG5 SMG1 SMG4	BC Land and Water Conservation, BC Zoning, WDNR	Ongoing	M	Measures already in place. (Cost is low)
	Non-sewered areas of Brown County					
9.4	Assist farmer with purchasing crop insurance.	PMG5 SMG1 SMG7	UW-Extension, USDA, BC Land and Water Conservation	Ongoing	L	An information brochure or information on websites should be adequate. (Cost is low)
	Rural Brown County					

Fires – Forest and Wildland						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
10.1	Notifying media outlets on burning restrictions being issued	PMG2 PMG4	DNR, Local Law Enforcement, Local New Channels, BC EM	Ongoing	H	If there are burn restriction, notification of the public is paramount in helping to prevent fires from occurring. (Cost is low)
	Countywide					
10.2	Adopt and enforce burning permit ordinances.	PMG1 PMG2 PMG5 SMG4	Local Municipalities	Ongoing	H	Brown County does not issue permits for open burning, but residents MUST notify the local fire department prior to open burning to ensure that there is no “burning ban” or “burning restrictions” in place. This measure would require that the municipalities issue a permit for anyone wishing to conduct open burning. (Cost is moderate)
	Local Municipalities					
10.3	Keep mutual aid fire protection agreements up-to-date and ensure that they include provisions for wildfires.	PMG4 SMG1	Local Municipalities	Ongoing	M	Mutual aid fire protection agreements are in place around Brown County. These agreements can change on occasion and it is imperative that changes to agreements are sent to BC EM and County Dispatchers. (Cost is low)
	Countywide					
10.4	Prevent or alleviate wildfires through property maintenance surrounding power lines and efficient response to fallen power lines.	PMG2 SMG7	WPS, ATC, Private Property Owners	Ongoing	M	WPS and ATC need to continually remind property owners of the importance of maintaining areas surrounding power lines. (Cost is moderate)
	Along utility lines					
10.5	Identify and map areas that are most susceptible to wildland fires	PMG2 PMG6 SMG2 SMG3	BC Planning	1-5 years	L	This may be possible if Brown County can coordinate with WDNR to determine what areas are most susceptible to fires. (Cost is moderate)
	Countywide					
10.6	Utilize zoning and subdivision ordinances to limit or restrict development on or in areas that are most susceptible to fires.	PMG2 PMG5 SMG1 SMG3 SMG4	Municipal zoning administrators, BC Planning	1-5 years	L	Each community will need to determine if this is a priority that necessitates changes to local municipal codes/ordinances. (Cost is moderate)
	Local Municipalities					

Fog						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
11.1	Encourage news media to broadcast emergency information concerning fog.	PMG1 PMG4 SMG7	BC EM, NWS, Local New Stations	As needed	H	Brown County EM should coordinate with the NWS and the local news stations to issue fog advisories as needed. (Cost is low)
	Countywide					
11.2	Install fog warning devices at intersections and on bridges most susceptible to fog occurrences.	PMG1 PMG2 PMG6 SMG1	BC DPW, Local DPW's	Ongoing	M	Bridges and low-lying areas are prone to fog. Installing warning devices in these locations is recommended. (Cost is low)
	Various location as determined by past fog events.					
11.3	Install and maintain pavement reflectors and reflective stripping along heavily traveled roads most susceptible to fog.	PMG1 PMG2 SMG1	WisDOT, BC DWP, Local DPWs	As needed	M	Striping and reflective materials should be kept to standards recommended by WisDOT. (Cost is low)
	Various location as determined appropriate.					

Storm: Hail						
#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
12.1	Continue distribution of hail insurance options such as the Federal Crop Insurance Corporations (FCIC) through the UW-Extension office.	PMG2 PMG4 SMG7	UW Extension	Ongoing	L	Hail storms in Brown County are rare and hail storms that do cause damage are very rare. However, when hail does pose a threat, NE WI business and residents are often unprepared and damage can be extensive. (Cost is low)
	Countywide					
12.2	Documentation of hail damage will be the responsibility of the Brown County Emergency Management Board, comprised of county and federal agricultural agency representatives.	PMG3 PMG6 SMG7	BC EM, BC Land and Water Conservation, Local municipalities	As needed	H	While hail events don't happen often, the damage they cause must be documented quickly and efficiently. Potential to use ArcGIS to collect damage information (Cost is moderate)
	Countywide					

Man Made Hazards

Utility Failure

#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
13.1	Provide information to residents on preparedness planning for utility failures on the county website, Facebook and Twitter		BC EM, Public Health	Ongoing	M	(Cost is low)
13.2	Identify which county owned facilities have back-up power systems and ensure they are working and tested regularly.		County and Local EM and Facilities	1-5 years	M	(Cost is low)

Hazardous Materials Incidents

#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
14.1	Update the LEPC off-site plans to ensure thoroughness and currency.		LEPC and BC and Local EM Departments	Ongoing	H	(Cost is low)
14.2	Maintain a strong LEPC committee with diverse representation.		LEPC and BC and Local EM Departments	Ongoing	H	(Cost is low)

Manure Spill Incidents

#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
15.1	Provide public information to livestock products regarding mitigation measures to protect against the hazards of a commercial manure spill.		BC Land and Water Conservation	Ongoing	M	(Cost is low)
15.2	Continue enforcement and update as necessary Chapter 26 (Animal Waste Management) of the Brown County Code of Ordinances.		BC Land and Water Conservation	Ongoing	M	(Cost is low)

Public Health Incidents

#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
16.1	Provide high-quality, coordinated public information in support of the PHEP Plan for periods of public health concerns.		BC Public Health, BC EM	Ongoing	M	Public health concern may include air quality alerts, communicable disease outbreaks and contaminated water supplies. Local public health will take the lead in informing, supervision, distribution of vaccines and all

						other related services (Cost varies depending on event)
16.2	Undertake training and document plans to provide mass medication distribution in response to public health threats.		BC and Local Public Health Depts.	Ongoing	M	Public health clinics to meet the needs of the population in adequate timeframes. (Cost is low)

Mass Casualty Incidents

#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
17.1	Continue exercise programs to ensure first response preparedness for mass casualty incidents.		Local Hospitals, Fire, Police, Other first responders	Ongoing	H	(Cost is low to moderate)
17.2	Mass fatality plan will be reviewed annually as part of Emergency Response Plan.		EM Departments, Public Health, Coroners	Ongoing / annual	M	(Cost is low)

Aircraft Incidents

#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
18.1	Support ongoing fire department and EMS training for aircraft incidents.		BC EM, Fire Departments, Austin Straubel International Airport	Ongoing	M	

Terrorism/Intentional Acts of Violence

#	Mitigation Measure/Location	Goals Addressed	Responsible Entities	Timetable	Priority	Comment/Cost Estimate
19.1	Provide Terrorism Liaison Officer training to appropriate individuals to create "eyes and ears" in the public so that they might report suspicious activities.		BC EM	Ongoing	L	Training is offered free and is provided by the state intelligence information center. (Cost is low)

Table 4.2: Local Jurisdiction Top Authorities, Policies, Programs and Resources

Municipality	Top Authorities	Staff Involved	Policies and Ordinances	Programs	Resources
C of De Pere	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	City Budget, BC EM
C of Green Bay	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	City Budget, BC EM
V of Allouez	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM
V of Ashwaubenon	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM
V of Bellevue	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM
V of Denmark	BC EM, Local Fire, Police, DPW, Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM
V of Hobart	BC EM, Local Fire, Police, DPW, Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM
V of Howard	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM
V of Pulaski	BC EM, Local Fire, Police, DPW, Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM

Table 4.2 continued

Municipality	Top Authorities	Staff Involved	Policies and Ordinances	Programs	Resources
V of Wrightstown	BC EM, Local Fire, Police, DPW, Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Village Budget, BC EM
T of Eaton	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Glenmore	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Green Bay	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Holland	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Humboldt	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Lawrence	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Ledgeview	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM

Table 4.2 continued

Municipality	Top Authorities	Staff Involved	Policies and Ordinances	Programs	Resources
T of New Denmark	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Pittsfield	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Rockland	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Scott	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM
T of Wrightstown	BC EM, Local Fire, Police, DPW, Planning and Zoning	EM Coordinator, Chiefs, Directors	Erosion Control, Storm Water Mgt., Shoreland/Floodplain Zoning	Comprehensive Plan, County and Local Hazard Mitigation Plan, Shoreland/Floodplain Zoning	Town Budget, BC EM

Table 4.3: Communities participating in the NFIP as of 7/30/2020		
Municipality	One Flood Protection Mitigation Action	Resources
Cities		
City of De Pere	Maintain protective measures such as sandbagging, protection of buildings and other structures, and emergency gas and electricity cutoff procedures. *	City Budget, BC EM
City of Green Bay	Utilize FEMA floodplain mapping with existing flood maps and data sources to better determine areas and facilities susceptible to recurring flooding. *	City Budget, BC EM
Villages		
Village of Allouez	Inventory and assess areas through both the rural and urban areas of Brown County that have repeated flash flooding problems and identify activities to remediate or rectify those locations. *	Village Budget, BC EM
Village of Ashwaubenon	Ensure the residents located within the flood zone have information on emergency procedures if the Ashwaubenon dam is compromised. *	Village Budget, BC EM
Village of Bellevue	Inventory and assess areas through both the rural and urban areas of Brown County that have repeated flash flooding problems and identify activities to remediate or rectify those locations. *	Village Budget, BC EM
Village of Hobart	Utilize FEMA floodplain mapping with existing flood maps and data sources to better determine areas and facilities susceptible to recurring flooding. *	Village Budget, BC EM
Village of Howard	Continue to monitor the National Weather Service flood forecasts. *	Village Budget, BC EM
Village of Pulaski	Implement a rural drainage program that would include ditch, bridge, and culvert maintenance and improvements. *	Village Budget, BC EM
Village of Suamico	Inventory and assess areas through both the rural and urban areas of Brown County that have repeated flash flooding problems and identify activities to remediate or rectify those locations. *	Village Budget, BC EM
Village of Wrightstown	Utilize FEMA floodplain mapping with existing flood maps and data sources to better determine areas and facilities susceptible to recurring flooding. *	Village Budget, BC EM

*NFIP Mitigation Measure

Table 4.4: Jurisdictions with Site Specific Mitigation Actions				
Municipality	Project Name	Project Location	Construction Type	Mitigation Benefits
City of Green Bay	Shipyards District to Seymour Park Green Infrastructure Corridor	City of Green Bay	Integrating Green infrastructure into redevelopment	Water quality and flood mitigation. This project is a high priority for the City and is planned to take place sometime in the next 1-9 years.
	Seymour Park Stormwater Management	City of Green Bay	Planning stages	Water quality and flood mitigation. This project is a high priority for the City and is planned to take place sometime in the next 1-5 years.
	Acquisition of hazard-properties along to East River and conversion to open space	City of Green Bay	Property acquisition	Elimination of repetitive loss properties. This project is a medium priority for the City and is planned to take place as funding is secured.
	Redesign and re-construction of 7 flood-prone areas of East River Recreational Trail to protect public trail from high water levels through green infrastructure and conventional storm water management	City of Green Bay	Design and reconstruction of public trail facilities utilizing Green Infrastructure and conventional storm water mgt approaches.	Protection of public property, water quality improvements, and flood mitigation. This project is a medium priority for the City and is planned to take place sometime in the next 1-5 years.
	Bay Beach wetland restoration, shoreline stabilization & storm water management to mitigate impact of high bay levels utilizing vegetative management, structural flood control and green infrastructure	City of Green Bay	Green Infrastructure, nature-based solutions, and conventional storm water management approaches.	Coastal flood mitigation, habitat restoration, and water quality improvements. This project is a high priority for the City and is planned to take place sometime in the next 1-5 years.
	South Bay Shore Dike Reinforcement	City of Green Bay	Continuation of project underway	Coastal flood mitigation, erosion prevention. This project is a high priority for the City and is planned to be completed in the next 1-5 years.
	Museum Way Storm Lift Station to reduce high water impacts to Antoinette area.	City of Green Bay	Construction a lift station.	Flood mitigation to low lying areas. This project is a high priority for the City. No timeline was provided
	Stormwater management and Green Infrastructure improvements to mitigate Ellis Creek high water impacts.	Ellis Creek: Main St. to Lime Kiln Rd.	Complete flood study, design and construct green infrastructure improvements.	Flood mitigation, water quality improvements. This project is a medium priority for the City. No timeline was provided
	Stormwater management solutions for the downtown area to address weather events along the Fox River (wind, seiche, rain).	Impact areas: E Mason to E Walnut, Fox River to Monroe Ave.	Identify stormwater management solution that may help alleviate flooding from seiche, wind, rain events	Flood mitigation, water quality improvements. This project is a medium priority for the City. No timeline was provided
	Mitigate Joliet Park parking lot flooding through shoreline stabilization and vegetative management on Bay of Green Bay.	Joliet Park	Shoreline stabilization and vegetative management	Flood mitigation and protecting public property. This project is a low priority for the City. No timeline was provided

Table 4.4: Continued				
Municipality	Project Name	Project Location	Construction Type	Mitigation Benefits
Village of Denmark	New/Expand Storm Warning Sirens	Village Hall	None. Includes standard AC siren with radio decoder, antenna and weatherproof cabinet. Siren is omni directional with 8hp continuous duty DC motors, siren heaters, batteries, dual pro chargers, battery blankets and magnetic starter in a NEMA 3R enclosure plus electrical service.	Existing and new developments in the village would be in range of the sirens. New sirens would meet FEMA recommended Alert Level for entire village.
	New/Expand Storm Warning Sirens	Corner of Wisconsin Ave and Grand Ave on east side of village	None. Includes standard AC siren with radio decoder, antenna and weatherproof cabinet. Siren is omni directional with 8hp continuous duty DC motors, siren heaters, batteries, dual pro chargers, battery blankets and magnetic starter in a NEMA 3R enclosure plus electrical service.	Existing and new developments in the village would be in range of the sirens. New sirens would meet FEMA recommended Alert Level for entire village.
Village of Pulaski	Ditch Cleaning: Middle Branch of Suamico River on North 4 th Avenue	North 4 th Avenue		
	Storm Sewer installation Fourth Avenue	4 th Avenue		
	Emergency power backup: Village Hall and Police Department	Village Hall		
	Emergency power backup Well #2	Well #2		
Village of Suamico	Improve Snow and Ice Control Measures	Village Wide	Adding an additional snowplow route in 2021 by delaying the sale of oldest snow plow.	Will reduce the amount of time necessary to clear roads during snow events.
	Flood Study	Shoreline Roads	Study to develop flood mitigation strategies along the Bay.	Reduce safety hazards for residents and emergency responders during sustained NE wind events.

Table 4.4: Continued				
Municipality	Project Name	Project Location	Construction Type	Mitigation Benefits
Village of Wrightstown	Emergency Response Plan	Village-Wide	None. Work in progress; requires participation by other entities such as local private and public schools.	Improvement in efforts to provide Public Safety aspects to residents and schools during possible incidents; hazardous spills, massive accidents, etc.
	Infrastructure replacement plan	Village Wide	None. Work in progress.	Create plan for sustainable infrastructure replacement avoid system failures
	Public Safety assessments	Village Wide	Assess growth and future Public Safety needs for the community	Define future growth needs and create plan to improve public safety resources
	Backup power for local EOC	Village Hall	Install natural gas generator and needed connections	Allow village hall to function through daily task and have sustainable EOC
Town of Ledgeview	Mystery Valley Flood Reduction	South of Dickinson & North of Oak Ridge	Dredging	Reduce Flooding and Increase water flow throughout Mystery Valley subdivision
	Dickinson Road Sewer Main	Dickinson Road: Monroe Road to East River Drive	Sewer improvements	Increase sewer capacity at Interceptor
	East River/Ledgeview Park Downed Tree Removal	East River: Ledgeview Road to Dickinson Road	Fallen Tree and Debris Removal	Remove Fallen Trees and Debris to increase flow and minimize flooding

Some communities did not provide community specific projects. Those communities include:

Town of Eaton,
Town of Glenmore
Town of Green Bay
Town of Holland
Town of Humboldt
Town of Lawrence

Town of Morrison
Town of New Denmark
Town of Pittsfield
Town of Rockland
Town of Scott
Town of Wrightstown

Village of Howard
Village of Hobart
Village of Bellevue
Village of Ashwaubenon
Village of Allouez
City of De Pere

Table 4.4: Continued				
Other Entity	Project Name	Project Location	Construction Type	Mitigation Benefits
Green Bay Metropolitan Sewerage District	Design and Install a permanent berm at the East River Lift Station.	Ledgeview (321 East River Drive)	Design and install a permanent berm at this location within the next 5 years	Will reduce the risk of damage and the frequent need to install temporary sand berms for flood protection.
The Nature Conservancy	Build flood storage on municipal riparian lands and floodplain areas of the East River	East River Watershed, floodplains and riparian zones	Identify opportunities for construction of flood water storage systems (e.g., wetlands, stormwater detention basins) on municipality owned lands within the East River floodplain	Minimize and mitigate flooding to areas within the East River watershed.
	Restore wetlands for flood protection	Countywide	Locate potentially restorable wetlands in Brown County that have high value for flood water storage; build partnerships and funding to restore the wetlands.	Minimize and mitigate flooding to areas around Brown County
	Rural road protection through culvert replacement program.	Countywide	Replace broken or undersized culverts to minimize road failure and overtopping.	Replacing broken or undersized culverts can help alleviate damage to infrastructure and minimize flooding issues adjacent to the culvert.
	Develop a floodplain and riparian lands protection program.	Countywide	Identify and preserve floodplains through acquisition and protection by the most appropriate municipality or partner organization.	Additional flood studies would be required to identify floodplain areas and codes/ordinances would need to be reviewed and amended to help preserve floodplains.
	Develop an East River Resiliency Collaborative	East River Watershed	Formalize a coalition of stakeholders from municipalities and other groups within the East River Watershed to collectively fund long-term, watershed-scale projects through multi-jurisdictional funding mechanisms	This creates a potential fundraising group that can help support other mitigation strategies focused on the East River Watershed.
	East River Community Resiliency Project	East River Watershed	Provide technical support and engage in planning efforts to develop flood mitigation strategies for the municipalities of the East River watershed	Project will be launching in 2021.
	East River Stormwater Infrastructure Improvements	East River Watershed	Stormwater system improvements (where feasible) to prioritize pre-treatment and retention using bioswales and phytoremediation	

Table 4.4: Continued				
Other Entity	Project Name	Project Location	Construction Type	Mitigation Benefits
The Nature Conservancy	Manure Management	Countywide	Provide support and outreach to Brown County farmers on using tools like NOAA's Runoff Risk Toolkit, to identify optimal times for manure application.	In progress. NOAA planned launch 2021. https://vlab.ncep.noaa.gov/web/noaa-runoff-risk/runoff-risk-background

CHAPTER 2 BROWN COUNTY PROFILE

INTRODUCTION

During the early stages of any planning project it is important to develop an understanding of the physical elements and social components of the planning area and how these elements could influence the contents and scope of the plan. This chapter of the Brown County All Hazards Mitigation Plan inventories and details the county's history, general physical composition, land cover and land use, demographics, development patterns, critical infrastructure, and emergency response resources.



The profile draws on data and information from the US Census Bureau; Wisconsin Department of Natural Resources; *Brown County Comprehensive Plan*; the *Brown County Farmland Preservation Plan*; watershed plans; FEMA regulations; infrastructure maps (sewer, water, etc.); and utility maps. Information used to prepare the maps in this chapter were drawn from the Brown County Land Information Office, Brown County Planning Commission, existing county plan documents, and the State of Wisconsin.

HISTORICAL AND CULTURAL SETTING

It is believed that human habitation of the area *that is currently known as* Brown County, may have existed near the Red Banks area along the east shore of the Bay of Green Bay as far back as 7000 B.C. Since then, many different Indian tribes have periodically inhabited the lands adjacent to the Bay of Green Bay and the Fox River. Prior to the 1600s, the Winnebago and Menomonee Indian tribes inhabited this area: however, by the mid-1600s, other tribes, such as the Ottawa, Huron, Fox, Sauk, Potawatomi, and Ojibwa, moved into the area as they were displaced from 297 acres of their ancestral lands further east. They in turn, displaced the Winnebago and Menomonee tribes. As a result of European settlers the Oneida tribe was relocated to the west side of Brown County from the State of New York.

Jean Nicolet has commonly been cited as being the first European to set foot in what would one day become the State of Wisconsin when he arrived at the Red Banks area in 1634. This event heralded a period of rapid change for the area adjacent to the bay and the Fox River as other French explorers and fur traders quickly followed Nicolet. By the mid-1600s, French missionaries also began to visit the area. These visits eventually became so numerous that in 1671 the first permanent European development, the St. Francis Xavier mission, was established along the Fox River near the De Pere rapids. In 1701, following this initial wave of French explorers, fur traders, and missionaries, the French government established a military stockade called Fort St. Francis in the area along the bay near the mouth of the Fox River where the Canadian National Railroad yards in the City of Green Bay are now located. By 1764, the first recorded settler, Augustin de Langlade, moved to this area and established a trading post.

Eventually, the French presence in this region gave way to British influences. In 1761, the French Fort St. Francis was rebuilt by the British and renamed Fort Edward Augustus. In 1763, France ceded the area to England. By the mid-1780s, the colony established by de

Langlade, which would eventually become part of the City of Green Bay, had reached a population of about 50 people.

In 1783, England ceded this region to the United States. However, it was not until after the War of 1812 that the British presence was erased when American pioneers from New England and New York outnumbered the original French-Canadian settlers. By 1812, the population of the settlement established by de Langlade had increased to about 250 people. In 1816, Fort Edward Augustus was once again rebuilt and renamed Fort Howard. At that point in time, the Fort Howard area was the second largest settlement in Wisconsin. By 1824, the settlement originally founded by de Langlade had reached a population of about 500 people with an additional 600 troops stationed at Fort Howard. In 1824, Brown County's first county courthouse was founded. In 1854, Green Bay incorporated as a city. Large-scale immigration into this area began by the late 1840s, so that by 1860 about 11,800 people inhabited the area identified today as Brown County.

Brown County was created in 1818 as part of the Michigan Territory, and at that time, it included much of Upper Michigan and all of Wisconsin from Lake Michigan to the Wisconsin River and south to Illinois. By the time the Wisconsin Territory was established in 1836, the southern one-third of Brown County had been removed to form new counties in the rapidly growing southeastern portion of the territory. When Wisconsin became a state in 1848, the counties of Door, Oconto, Outagamie, and Waupaca were created from Brown County. The following year, Kewaunee County was created. By 1853, Brown County had been reduced to 534 square miles when Shawano County was created. Brown County was formally established by congress in 1861.

Brown County's first communities, Navarino (which later became part of the City of Green Bay) and De Pere, were founded in 1829 along the shores of the Fox River near the Bay of Green Bay. Other early Brown County communities, Astor (which later became part of the City of Green Bay) and Wright (which later became the Village of Wrightstown), were also located along the Fox River. Jurisdictional changes continued with incorporation of the Town of Allouez as a village in 1986, the Towns of Bellevue and Hobart as villages in 2002, and the Town of Suamico as a village in 2003. The 24 municipalities of present-day Brown County include 2 cities, 9 villages, and 13 towns. Since its inception, the City of Green Bay has always been and continues to be Brown County's largest community.

PHYSICAL CHARACTERISTICS

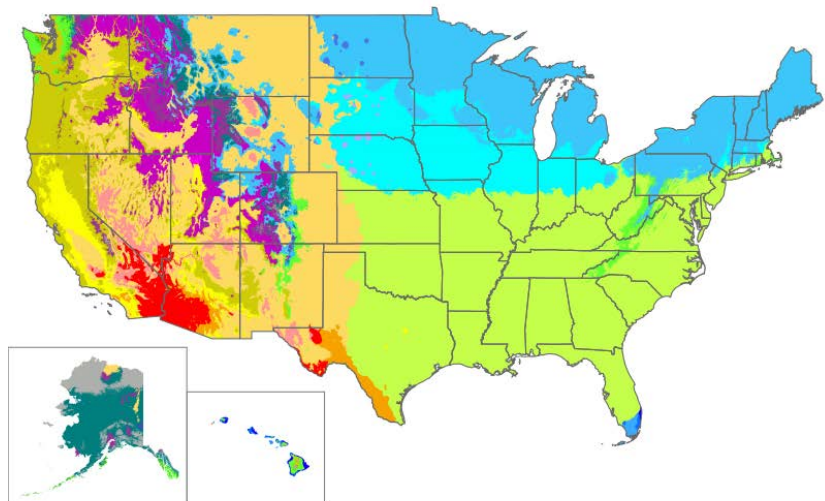
Climate

Using the widely accepted Koppen climate classifications, Brown County's climate is classified as "humid continental". This climate is a sub type of the more generalized Continental climate classification and is characterized by an extreme disparity between summer and winter temperatures that range from cold, snowy winters and warm summers

with periods of hot, humid conditions¹. According to the Midwestern Regional Climate Center, the average annual temperature for NE Wisconsin is 43.73 degrees (2017). The average annual temperature has been trending higher since records were kept in 1895. The increase in temperature over approximately 125 years was slightly more than two degrees. The Increase in both regional and global average temperature has been linked to many other climatological changes including the frequency and intensity of extreme weather events².

Precipitation is also an important element of the climate that can present important trends over time. Green Bay averages 29.53 inches of precipitation (rainfall) annually with an additional average of 51 inches of snowfall. The average annual precipitation has increased nearly 2.5 inches since 1895. The amount of precipitation generally increases during the spring and peaks in the summer months before falling though the fall and into the beginning of winter as depicted by the graph to the right³. Overall, the varied climate is favorable for many agricultural purposes however: more extreme weather events will pose issues for farmers as well as in more suburban and urban areas alike.

Köppen climate types of the United States



Köppen climate type

EF (Ice-cap)	Dsb (Warm-summer mediterranean continental)	Csa (Hot-summer mediterranean)
ET (Tundra)	Dsa (Hot-summer mediterranean continental)	BSk (Cold semi-arid)
Dfc (Subarctic)	Cfc (Subpolar oceanic)	BSh (Hot semi-arid)
Dfb (Warm-summer humid continental)	Cfb (Oceanic)	BWk (Cold desert)
Dfa (Hot-summer humid continental)	Cfa (Humid subtropical)	BWh (Hot desert)
Dwc (Subarctic)	Cwb (Subtropical highland)	Aw (Savanna)
Dwb (Warm-summer humid continental)	Cwa (Humid subtropical)	Am (Monsoon)
Dwa (Hot-summer humid continental)	Csc (Cold-summer mediterranean)	Af (Rainforest)
Dsc (Dry-summer subarctic)	Csb (Warm-summer mediterranean)	

*Isotherm used to distinguish temperate (C) and continental (D) climates is -3°C

Data sources: Köppen types calculated from data from PRISM Climate Group, Oregon State University, <http://prism.oregonstate.edu>; Outline map from US Census Bureau

Figure 1: Köppen Climate Types of the United States

Green Bay Climate Graph - Wisconsin Climate Chart

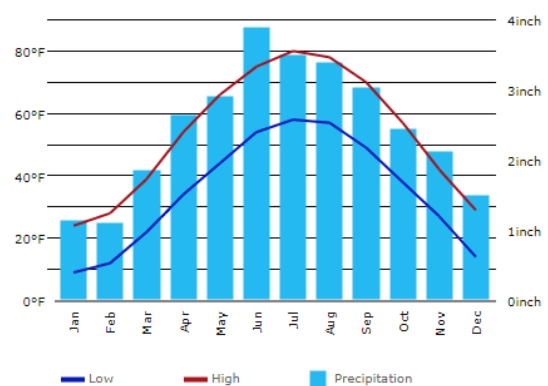


Table 1: Green Bay Climate Graph

¹ Encyclopedia Britannica: <https://www.britannica.com/science/humid-continental-climate>

² National Climate Assessment, GlobalChange.gov: <https://nca2014.globalchange.gov/highlights/report-findings/extreme-weather>

³ US Climate Data: <https://www.usclimatedata.com/climate/green-bay/wisconsin/united-states/uswi0288>

Geology

Brown County has three types of bedrock. The two more common types, as shown in the image to the right, are the Sinnipee Group (Green) and Dolomite (Tan). The third type of bedrock shown as the pink strip through the middle of Brown County is the Maquoketa Formation⁴. The local bedrock is at the heart of the most prominent landscape feature in the county. The Niagara Escarpment, is a prominent rock ridge that stretches nearly 1,000 miles in an arc across the Great Lakes region. This type of rock feature is associated with karst features consisting of cracked and fractured bedrock, such as limestone located close to the earth's surface. This bedrock is easily dissolved by water, and its cracks and layers allow water and pollutants to easily reach the groundwater. Sinkholes, shallow soils, sinking streams, and springs are commonly found in such areas. These features are located adjacent to the escarpment and more extensively in the Town of Green Bay, Town of Scott, Town of Ledgewood, and Town of Morrison.

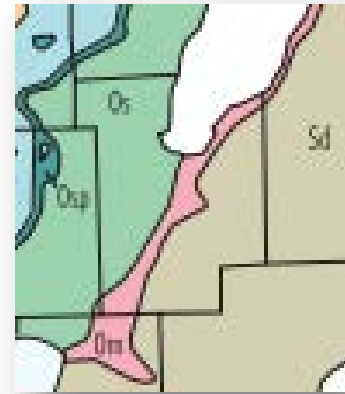


Figure 2: Brown County Bedrock

Soils

Soil properties are used to define/identify problems facing agriculture and land development. Of these, texture and composition are usually the most meaningful. Some information that can be gathered from the soil properties include fertility, bearing capacity, internal drainage, erodibility, slope stability, etc. can be made.

As stated in the 1974 Soil Survey of Brown County, most of the soils in Brown County formed in glacial till and lake sediment that were high in clay. These soils are generally rich, heavy soils common to gently rolling topography and are well suited to farming. In the northwestern part of Brown County, the soils are slightly lighter (containing higher sand content) but remain acceptable for farming. On the south and west sides of the Bay of Green Bay and scattered throughout the rest of the County, the soils are organic peat and are poorly suited for farming. The 1974 Soil Survey of Brown County also states that ten soil associations are located within Brown County. A soil association is a landscape that has a distinctive proportional pattern of soils. Soil associations are useful in that they provide a general idea of the soils in a county, facilitate simple comparisons, and provide a general indication of the suitability of large areas for various land uses.

Topography

The topography of much of Wisconsin was formed by glacial action. The topography that is familiar to us today is generally characterized by gently rolling moraines. The western two-thirds of Brown County include the roughly four-mile-wide Fox River Valley, a continuation of the same depression forming the Bay of Green Bay. This area slopes gently northeastward from Lake Winnebago in east central Wisconsin, drains to the bay, and is generally level to gently rolling. This lowland area contains many glacial landforms, including eskers, moraines, and remnants of extinct glacial lakes. During glacial times, the flat marshy land west and south of the bay had been covered by the bay. Most streams

⁴ Wisconsin Geological & Natural History Survey: <https://wgnhs.uwex.edu/>

in the area flow northeastward and parallel the escarpment to the bay. Most streams also possess shallow channels, except in a few instances where the streams have cut through softer underlying glacial landforms, such as the Fox River in Wrightstown.

Forming the eastern boundary of the Fox River Valley is the aforementioned Niagara Escarpment, which rises relatively abruptly as high as 300 feet above the valley floor. On top of the Niagara Escarpment is a narrow strip of level land. East of that is generally a slightly rolling plain that drains east and southeast toward Lake Michigan. The headwaters of a number of streams that drain to Lake Michigan are located within this area. However, gaps in the Niagara Escarpment allow two streams—Baird Creek and Bower Creek—to flow westward to the Bay of Green Bay. The area is generally well drained but has many small wet depressions in places. Due to its location between two lobes of the last glacier to advance through Wisconsin, the southeastern portion of the County is hilly and has many poorly drained depressions. This area, which extends into southeastern Wisconsin, is called the Kettle Moraine area of the state. Land relief within the County ranges from approximately 600 feet above sea level to approximately 1,000 feet above sea level. The low point in the County (580 feet) is located in the City of Green Bay where the Fox River enters the bay. The highest point in the County is located in the Town of Holland, southeast of the unincorporated community of Greenleaf, at an elevation of about 1,020 feet.

Hydrology

Groundwater

Brown County residents and businesses obtain freshwater from two main sources, groundwater aquifers and Lake Michigan. The City of De Pere, City of Green Bay, Village of Allouez, Village of Ashwaubenon, Village of Bellevue, Village of Howard, Village of Hobart, Village of Wrightstown, Town of Ledgeview, and Town of Scott obtain fresh water via pipeline from Lake Michigan. For all other communities within Brown County, groundwater wells tap into the underground aquifers.

Groundwater is harvested from four aquifers that vary in depth. Most private wells in Brown County utilize two shallower aquifers, while most public wells obtain water from the deeper St. Peter Sandstone aquifer. Brown County does have a few areas that are highly susceptible to groundwater contamination. This was evident in a large scale well contamination case in 2006 in the Town of Morrison where more than 34 percent of wells tested

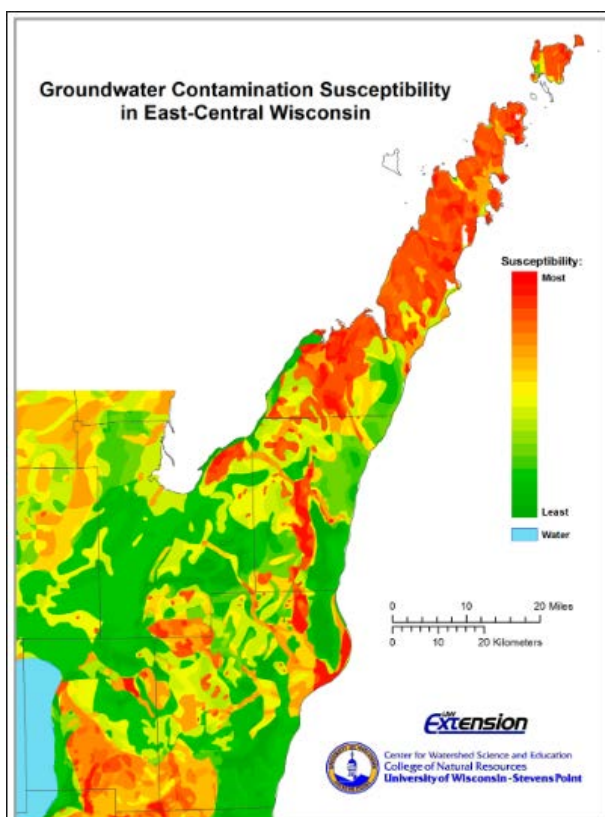


Figure 3: Groundwater Contamination Susceptibility

exceeded state drinking water standards⁵ for a hazardous substance. In addition to the Town of Morrison, the northern end of the Town of Green Bay also an area that is highly susceptible to groundwater contamination.

Based upon data obtained from the Wisconsin Department of Natural Resources' drinking water website, there are 144 (2019) "active" separate public water supply systems (systems which can be used by the general public and which are regulated by the DNR) within Brown County. Of the 144 active systems, 19 (2019) are municipal community systems while the remainder are primarily associated with parks, eating and drinking establishments, or food processing plants. There are approximately 7,515 (2012) documented, private potable wells used for human consumption, sanitary use, or for the preparation of food in Brown County. It is likely that additional undocumented wells (old, inactive, or otherwise unrecorded with the DNR) are located throughout Brown County.

Surface Waters

Brown County contains numerous significant surface water resources. The largest and most important are the Bay of Green Bay and the Fox River. Both of these water features have played an important role in the evolution of Brown County and the surrounding areas.



Figure 4: Bay of Green Bay

From an ecological perspective, the Bay of Green Bay is home to a variety of unique ecosystems which different wildlife including a unique feature called emergent wetlands. These wetlands are found along the west shore of the bay and are extremely important to local fisheries, waterfowl, and other native and migratory species.

Based upon a 2010 land use inventory undertaken by the Brown County Planning Commission, surface water features (including the Bay of Green Bay) encompassed approximately 55,552 acres or 14.1 percent of Brown County. The Fox River is the largest and most important river in northeastern Wisconsin. It is a navigable river that flows northward 155 miles from its headwaters in southern Green Lake County in east-central Wisconsin to the Bay of Green Bay. Its basin drains over 2,700 square miles of east-central and northeastern Wisconsin. In Brown County, it extends 19 miles from the Village of Wrightstown to its downstream end at Green Bay of Lake Michigan and drains about 311 square miles, or almost half of Brown County.

Other significant surface water resources in Brown County include its three named lakes: the small Lily, Middle, and Third Lakes located adjacent to one another in the eastern portion of the County, comprising approximately 50 acres. Also included are the numerous smaller rivers and streams, the biggest of which include Duck Creek, the East River, and the Suamico River.

⁵ Brown County Land and Water Conservation Department: <http://tinyurl.com/yy4b647x>

Floodplains

Floodplains are important areas that store floodwaters, reduce flood peaks and velocities, and reduce sedimentation. They also provide wildlife habitat and serve to filter out pollution from water. Like surface waters, the importance of floodplains is also recognized and is regulated by federal, state, and local governments. The State of Wisconsin mandates floodplain zoning for all communities under Wisconsin Administrative Code NR 116. These minimum standards must be implemented in order to meet eligibility requirements for federal flood insurance programs. As required by NR 116, Brown County has adopted and enforces Chapter 23 of the Brown County Code.

The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps (FIRM) for many of the larger rivers and streams, such as the East and Fox Rivers. The FIRM is a tool used by FEMA to identify Special Flood Hazard Areas (SFHA). Floodplains are a type of SFHA and are most commonly described as the area affected by the one percent chance flood event (100-year flood).⁶ The Brown County Planning Commission and many local communities often require flood studies and the mapping of floodplains prior to development adjacent to rivers and streams. The FEMA maps currently in effect, were approved as part of the official Brown County Floodplain Zoning map in 2009.

Wetlands

Wetlands are defined as “areas where water is at or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which have soils indicative of wet conditions.”⁷ Wetlands are a significant natural resource that serves several important functions including but not limited to: enhancing water quality by absorbing excess nutrients into the roots, stems, and leaves of its plants, and slowing the flow of water to let suspended pollutants settle out. Wetlands also help regulate storm water runoff, which minimizes floods and periods of low flow. Today many wetlands have been destroyed or degraded through development, farming, and grazing. The result of these activities can be seen along the southern and eastern shores of the Bay of Green Bay where significant reductions in wetlands has occurred. However, the wetlands along the west shore of the bay, while adversely impacted by adjacent development and past farming practices, still remain the largest wetlands complex within Brown County. Other relatively large areas of wetlands are located in the southeastern portion of the Town of Holland and the northern portion of the Towns of Scott and Green Bay.

The Wisconsin DNR Wetlands Inventory maps for Brown County identify wetlands throughout the entire County, which are primarily along its lakes, rivers, and streams. According to the Wisconsin Department of Natural Resources inventory, about 38,142 acres of Brown County, or just under 10 percent, was comprised of wetlands in 2020.

Watersheds

A watershed is a geographical area that is characterized by higher areas that form ridges that channel water to a lower area called a basin. Brown County is located within the Great Lakes-St. Lawrence drainage basin. Approximately one-fourth of the County is

⁶ FEMA Flood Zones: <https://www.fema.gov/flood-zones>

⁷ WDNR Wetland Mapping: <https://dnr.wi.gov/topic/wetlands/inventory.html>

drained by streams tributary to Lake Michigan, and the remainder of the area is drained by streams tributary to the Bay of Green Bay and through the bay to Lake Michigan. Portions of four river basins and ten watersheds are located within Brown County.

1. The East River Watershed encompasses about 203 square miles, or about 38 percent of the County. Major streams within this area include the East and Fox Rivers and Baird and Bower Creeks.
2. The Apple and Ashwaubenon Creeks Watershed encompass about 47 square miles, or about 9 percent of the County. Major streams within this area include Apple, Ashwaubenon, and Dutchman Creeks.
3. The Plum Creek Watershed encompasses about 13 square miles, or about 2 percent of the County. Major streams within this area include Plum Creek.
4. The Duck Creek Watershed encompasses about 48 square miles, or about 9 percent of the County. Major streams within this area include Duck and Trout Creeks.
5. The West Twin River Watershed encompasses about 75 square miles, or about 14 percent of the County. Major streams within this area include the Devils and Neshota Rivers, and King and Twin Hill Creeks.
6. The Kewaunee River Watershed encompasses about 27 square miles, or about 5 percent of the planning area. Major streams within this area include School Creek.
7. The Red River and Sturgeon Bay Watershed encompasses about 13 square miles, or about 2 percent of the planning area. Major streams within this area include Gilson Creek.
8. The Branch River Watershed encompasses about 40 square miles, or about 7 percent of the County. Major streams within this area include the Branch River.
9. The Lower Manitowoc River Watershed encompasses about 2 square miles, or about 1 percent of the County. Major streams within this area include Mud Creek.

DEMOGRAPHICS

In order to plan for any natural hazards that may occur within Brown County, it is important to gain an understanding of the population and housing characteristics for each community within the county. The population estimates provided by the Wisconsin Department of Administration (WDOA) and U.S. Bureau of the Census provide a clearer picture of where the largest population increases are expected to occur within the planning area. The increase in population will drive the need for new homes (single and multi-family) and the services associated with the new residents. The following sections summarize basic population and housing data for the 24 municipalities within the Brown County planning area.

Population

Table 2.1 indicates Brown County gained 21,349 new residents, an 8.6 percent increase from year 2000 to 2010. Since 2010 the WDOA estimates that the county gained approximately 12,655 people between 2010 and the most recent WDOA population estimate in 2018. Map Figure 2-2 highlights the population change by community from 2010 to 2018. WDOA is further projecting that Brown County will add an additional 41,730 residents from 2020 to 2040, which represents a 15.39 percent increase during this 20-year time period.

Brown County's largest community, the City of Green Bay, is estimated to experience an increase in population of 5,450 residents over the same 20 year period, which equates to 5.04 percent. The county's only other city, De Pere, is estimated to experience an increase in population of 5,020 residents over the same 20 year period, which equates to 19.12 percent. The county's villages that are anticipated to grow at the highest rate include Hobart at 45.37 percent, Lawrence at 45.35 percent and Ledgeview at 45.29 percent. In total, the incorporated communities will add 41,730 new residents by 2040 or 15.39 percent of the overall county increase in residents. Some of these figures may change due to annexations of surrounding fast growing towns.

The 13 towns are projected to add 20,000 new residents by 2040. This is 7.38 percent of the county's overall anticipated increase in residents.

Table 2.1: Population Comparison by Municipality, 2000-2030, Brown County, Wisconsin									
	Census	Census		WDOA Projections				Number Change	Percent Change
Municipality	2000	2010		2025	2030	2035	2040	2025-2040	2025-2040
Cities									
De Pere	20,559	23,800		27,950	29,550	30,700	31,280	3,330	11.91%
Green Bay	102,767	104,057		111,200	113,850	114,700	113,500	2,300	2.07%
Villages									
Allouez	15,443	13,975		14,150	14,200	14,030	13,600	- 550	-3.89%
Ashwaubenon	17,634	16,963		17,630	17,870	17,810	17,440	- 190	-1.08%
Bellevue	11,828	14,570		17,840	19,140	20,150	20,780	2,940	16.48%
Denmark	1,958	2,123		2,385	2,490	2,550	2,565	180	7.55%
Hobart*	5,090	6,182		9,705	10,810	11,750	12,480	2,775	28.59%
Howard	13,546	17,399		23,820	26,110	28,000	29,370	5,550	23.30%
Pulaski	3,013	3,321		4,010	4,210	4,335	4,385	375	9.35%
Suamico	8,686	11,346		14,430	15,650	16,620	17,290	2,860	19.82%
Wrightstown	1,934	2,676		3,540	3,830	4,055	4,210	670	18.93%

Table continued on next page

Towns									
Eaton	1,414	1,508		1,730	1,815	1,870	1,895	165	9.54%
Glenmore	1,187	1,135		1,175	1,190	1,185	1,160	- 15	-1.28%
Green Bay	1,772	2,035		2,385	2,530	2,625	2,675	290	12.16%
Holland	1,339	1,519		1,715	1,790	1,840	1,855	140	8.16%
Humboldt	1,338	1,311		1,375	1,395	1,390	1,365	- 10	-0.73%
Lawrence	1,548	4,284		6,195	6,900	7,505	7,965	1,770	28.57%
Ledgeview	3,363	6,555		9,710	10,810	11,760	12,480	2,770	28.53%
Morrison	1,651	1,599		1,670	1,695	1,695	1,665	- 5	-0.30%
New Denmark	1,482	1,541		1,715	1,780	1,820	1,825	110	6.41%
Pittsfield	2,433	2,608		2,960	3,090	3,165	3,190	230	7.77%
Rockland	1,522	1,734		2,075	2,210	2,310	2,370	295	14.22%
Scott	3,138	3,545		4,210	4,470	4,665	4,770	560	13.30%
Wrightstown	2,013	2,221		2,535	2,655	2,725	2,755	220	8.68%
Total	226,658	248,007		286,110	300,040	309,255	312,870	26,760	9.35%

*Includes Oneida Nation

Source: U.S. Bureau of the Census 2000 and 2010; WDOA Demographic Services Center 2019

Households

A household includes all the persons who occupy a housing unit as their usual place of residence.⁸ The number of households in Brown County has increased by 6,330 from 2010 to 2017 (Table 2.2). Map Figure 2-3 reflects the additional number of households from 2010 to 2017. In 2017, there were approximately 103,267 households in Brown County, up from 96,937 in 2010. From 2010 to 2017, both the City of Green Bay and the City of De Pere experienced a net loss in households, -350 and -26 respectively.

The 11 incorporated communities accounted for roughly 87 percent of the households in Brown County while the 13 Towns account for the remaining 13 percent in 2017. Of the 6,330 households that were added between 2010 and 2017, 4,688 (74 percent) were added within the cities and villages. This suggests that while the Cities and Villages contain the majority of the households in Brown County, the development of new households in the towns is slightly disproportionate as compared to the overall percentage of households.

Brown County has been following the national and state trend of fewer persons per household. In 1990, there were 2.69 persons per household. In 2000, that number had dropped to 2.60 persons per household. And in 2010, that number dropped again to 2.48 persons per household⁹. It is expected that the census conducted in 2020 will reveal that the trend is either staying close to 2.48 persons per household or further declining.

Housing Units

A *housing unit* is a house, an apartment, a mobile home or trailer, a group of rooms, or a single room occupied as a separate living quarters, or if vacant, intended for occupancy as separate living quarters. Separate living quarters are those in which the occupants live separately from any other individuals in the building and which have direct access from outside the building or through a common hall. For vacant units, the criteria of

⁸ US Census Bureau, Households and Persons Per Household:
<https://www.census.gov/quickfacts/fact/note/US/HSD410217>

⁹ US Census

separateness and direct access are applied to the intended occupants whenever possible.

Table 2.2 provides a housing unit comparison between 2010 and 2017 for Brown County and each of its 24 municipalities. Map Figure 2-4 provides a comparison by community for their respective housing unit changes for 2010 and 2017. In 2010, there were 103,238 housing units in Brown County. By 2017, that number increased to 108,200 which represents approximately 4.8 percent increase. Of the total number of housing units in 2017, 87.6 percent were located in one of the 11 incorporated communities. The villages of Hobart (1,105), Howard (1,081), and the Town of Ledgeview (628), lead the way in new housing units from 2010 to 2017. The towns took nearly 34 percent of the new housing units in Brown County during this same time period.

- When comparing Brown County's housing vacancy rates for 2000 and 2010, the vacancy rate increased from 3.2 percent to 4.3 percent.

Table 2.2: Population and Housing Comparison, 2000-2017, Brown County, Wisconsin									
	Persons			Households			Housing Units		
Municipality	2010	2017	Change	2010	2017	Change	2010	2017	Change
<u>Cities</u>									
De Pere	23,800	24,695	3.76%	857	833	-2.88%	8,831	9,869	10.52%
Green Bay	104,057	104,796	0.71%	42,909	42,559	-0.82%	46,693	45,038	-3.67%
<u>Villages</u>									
Allouez	13,975	13,898	-0.55%	5,322	5,366	0.82%	5,597	5,623	0.46%
Ashwaubenon	16,963	17,141	1.05%	7,365	7,608	3.19%	7,655	7,942	3.61%
Bellevue	14,570	15,373	5.51%	5,755	6,508	11.57%	6,187	6,712	7.82%
Denmark	2,123	2,066	-2.68%	8,425	9,475	11.08%	890	915	2.73%
Hobart*	6,182	8,178	32.29%	2,206	3,308	33.31%	2,349	3,454	31.99%
Howard	17,399	19,121	9.90%	6,561	7,670	14.46%	6,784	7,865	13.74%
Pulaski	3,321	3,335	0.42%	1,325	1,370	3.28%	1,392	1,510	7.81%
Suamico	11,346	12,222	7.72%	4,047	4,619	12.38%	4,170	4,735	11.93%
Wrightstown	2,676	3,138	17.26%	757	901	15.98%	994	1,162	14.46%
Table Continued on Next Page									

Towns									
Eaton	1,508	1,553	2.98%	538	580	7.24%	564	621	9.18%
Glenmore	1,135	1,148	1.15%	419	398	-5.28%	430	410	-4.88%
Green Bay	2,035	2,049	0.69%	745	851	12.46%	830	931	10.85%
Holland	1,519	1,417	-6.71%	534	514	-3.89%	534	523	-2.10%
Humboldt	1,311	1,346	2.67%	546	505	-8.12%	564	515	-9.51%
Lawrence	4,284	4,900	14.38%	1,441	1,787	19.36%	1,441	1,871	22.98%
Ledgeview	6,555	7,614	16.16%	2,313	2,851	18.87%	2,364	2,992	20.99%
Morrison	1,599	1,633	2.13%	571	607	5.93%	603	643	6.22%
New Denmark	1,541	1,538	-0.19%	581	575	-1.04%	601	604	0.50%
Pittsfield	2,608	2,722	4.37%	942	1,051	10.37%	1,024	1,092	6.23%
Rockland	1,734	1,904	9.80%	580	644	9.94%	612	660	7.27%
Scott	3,545	3,688	4.03%	1,258	1,533	17.94%	1,353	1,608	15.86%
Wrightstown	2,221	2,529	13.87%	940	1,154	18.54%	776	905	14.25%
Total	248,007	258,004	4.03%	96,937	103,267	6.53%	103,238	108,200	4.81%

*Includes Oneida Nation

Source: U.S. Bureau of the Census 2010; American Community Survey 2017.

Employment

As shown on Table 2.3 (next page), Brown County added 8,240 workers since 2010. The number and type of employment opportunities grew slightly as well. Brown County continues to enjoy a very diverse economy. In 2010, county's labor force was led by the Educational Services, Health Care, and Social Assistance sector with 20.64 percent of the work force. The manufacturing sector has historically been a strong sector and accounted for 17.85 percent of the labor force in 2010 while retail trade was the third largest sector with 16.6 percent. Ten years later, in 2020, the Educational Services, Health Care, and Social Assistance sector increased to a 20.90 percent share of the total workforce while Manufacturing and Retail Trade also saw growth as a percentage of the total workforce.

Table 2.3: Employment by Category, 2010 and 2017, Brown County, Wisconsin								
Employment category	Number Employed in 2010		Percentage Employed in 2010		Est. Number Employed in 2017		Est. Percentage Employed in 2017	Percent Change 2010-2017
Agriculture, Forestry, Fishing, Hunting, Mining		1,904		1.51%		2,347	1.75%	23.27%
Construction		6,233		4.96%		7,516	5.61%	20.58%
Manufacturing		22,456		17.85%		25,183	18.79%	12.14%
Wholesale Trade		4,420		3.51%		4,051	3.02%	-8.35%
Retail Trade		14,506		11.53%		15,582	11.63%	7.42%
Transportation & Warehousing, Utilities		8,776		6.98%		8,101	6.04%	-7.69%
Information		2,125		1.69%		1,807	1.35%	-14.96%
Finance, Insurance, real estate		9,806		7.80%		9,785	7.30%	-0.21%
Professional Services, Management, Administrative, Waste Management Services		8,628		6.86%		10,501	7.84%	21.71%
Educational Services, Health Care, and Social Assistance		25,965		20.64%		28,006	20.90%	7.86%
Arts, Entertainment, Recreation, Accommodation & Food Services		11,815		9.39%		12,400	9.25%	4.95%
Other		5,477		4.35%		4,865	3.63%	-11.17%
Public Administration		3,664		2.91%		3,871	2.89%	5.65%
Total		125,775		100%		134,015	100%	

Source: U.S. Census Bureau, American Community Survey

GEOGRAPHY

Community Size

Table 2.4 lists each Brown County municipality size in square miles. Brown County encompasses 616 square miles. Brown County communities account for approximately 534 of the 616 square miles which leaves approximately 82 square miles that comprise water features, Renard Isle, Little Tail Point, and Long Tail Point. Incorporated communities account for a little over 186 square miles or 30.25 percent of the total county.

Table 2.4: Municipality Size in Square Miles	
Municipality	Total Planning Area (Square Miles)
Cities	
De Pere	12.77
Green Bay	46.12
Villages	
Allouez	5.21
Ashwaubenon	12.86
Bellevue	14.38
Denmark	1.97
Hobart*	33.12
Howard	18.44
Pulaski	2.30
Suamico	35.75
Wrightstown	3.45
Towns	
Eaton	24.34
Glenmore	32.85
Green Bay	22.11
Holland	35.99
Humboldt	24.03
Lawrence	15.93
Ledgeview	17.22
Morrison	36.44
New Denmark	34.37
Pittsfield	32.03
Rockland	21.76
Scott	18.24
Wrightstown	32.95
Total	534.65

*Includes Oneida Nation

Source: U.S. Census Bureau, Brown County Planning Commission.

Land Use

Brown County encompasses approximately 342,546 acres. Of this, approximately 98,025 acres or 28.6 percent of the land mass of the county is developed. Approximately 250,944 acres or 73.2 percent of the land in the county is undeveloped. These undeveloped lands consist largely of agricultural lands, pastures, woodlands, and other natural features. A detailed inventory of land uses was completed in 2019 by Brown County Planning Commission staff. The land use information was then compiled into generalized land use categories and presented in Map Figure 2-5.



Residential Land

Residential land accounts for 47,706 acres, or 13.92 percent of the total area of Brown County. The majority of this land is single family residential. Other residential land uses in Brown County included two family residential, multi-family residential, group quarters, and mobile homes. Vacant residential land is also counted in this category.

Table 2.5: Brown County 2019 Land Use Inventory

Land Use	Acres	% of Total
Residential	47,706	13.92%
Commercial	4,964	1.44%
Industrial	6,873	2.0%
Transportation	26,905	7.9%
Communication/Utilities	1,576	0.46%
Institutional/Governmental	3,575	1.0%
Outdoor Recreation	11,129	3.2%
Agricultural	165,869	48.4%
Natural Areas	73,945	21.6%
Total	342,546	100.00%

Commercial Land

Although commercial land is scattered throughout the county, significant areas of commercial development can be seen along the Interstate 43 and 41, and State Highway 172; within the central business districts in cities and some villages; and lining commercial strip development along certain urban corridors such as East and West Mason Street. Total commercial land comprises of 4,964 acres, or 1.4 percent of Brown County.

Industrial Land

Industrial land covers 6,873 acres or 2 percent of Brown County. Although the majority of the industrial land is dedicated to manufacturing, significant proportions of the industrial land is dedicated to warehousing and storage. Traditionally, industrial lands are generally situated along rail corridors and along rivers. Within the past two decades, industrial parks have emerged around Brown County's cities and villages.

Transportation Land

The 26,905 acres or 7.9 percent of Brown County transportation land encompasses all modes of transportation. This includes roads, rail, air, marine, and non-motorized modes of moving people, goods, and services. It is the second largest category for developed land. Streets and roads constitute the majority of this land use, but off-street parking and rail and air related uses are also significant transportation land uses.

Communications and Utilities Land

Over 1,576 acres or 0.46 percent of land in Brown County is for communications and utilities uses. Some of the more significant communications/utilities related land uses (in terms of land mass occupied) in Brown County include landfills, recycling plants and other non-landfill disposal facilities, sewage treatment plants, electric power plants and substations, and water utility facilities. Other key uses which fall under this category include natural gas terminals, local telephone services, radio stations and towers.

Governmental and Institutional Land

Governmental and institutional land uses include public and private facilities for education, health or assembly, for cemeteries and related facilities, and for all government facilities used for administration or safety, except public utilities and areas of outdoor recreation. This category accounts for 3,575 acres or 1.0 percent of land within Brown County. Examples of institutional or governmental facilities in Brown County include city,

village and town halls; post offices; hospitals and clinics; municipal garages; fire stations; law enforcement facilities including prisons and jails, educational facilities, churches and cemeteries.

Park and Recreational Land

Park and recreational land uses include outdoor sports and general recreation, camping and picnicking facilities, nature exhibits, areas designated for the preservation of historic or cultural resources. Park and recreational land accounts for 11,129 acres or 3.2 percent of the land within Brown County and comprises the third largest developed land category in the county.

Agricultural Land

Agricultural land uses include farm buildings and accessories (barns, silos and sheds used for agricultural purposes), as well as lands devoted to animal husbandry and fish hatcheries/aquaculture. This category accounts for 169,869 acres or 48.4 percent of the land in Brown County.

Natural Features

Natural features include all other natural areas and environmentally sensitive areas not included in the above referenced undeveloped areas. This category accounts for 73,945 acres or 21.6 percent of the total land area in Brown County.

General Development Trends

The following development trends have been observed in Brown County. It is expected that these trends will influence the county's future growth and its preservation of natural and agricultural resources. All local municipalities in the county will need to address them within their planning processes. These basic development trends include:

- Current areas of higher density development will likely remain or increase in density while new areas outside established neighborhoods will develop at lower densities.
- Brown County can expect an increase in the number of dwelling units over the next several years.
- Brown County's natural features will continue to be impacted due to current and future development pressures throughout the county, increasing the potential for negative impacts.
- Commercial and industrial land uses will continue to be a prominent feature along main transportation corridors including Interstates 41 and 43, U.S. Highways 41 and 141, State Highways 32, 57, 54, 29, and 172.
- Brown County will experience an increased demand for services as the population's median age continues to increase.

CRITICAL COMMUNITY INFRASTRUCTURE (“CRITICAL FACILITIES”)

Critical facilities in the 2012 International Building Code (IBC) (Section 1604, General Design Requirements, Table 1604.5) and American Society of Engineers (ASCE) 7-10 (Section 1.2, Definitions and Notations, Table 1.5-1) are classified as Risk Category IV facilities. Risk Categories in building codes are assigned to reflect current understanding of the risk to human life, health, and welfare associated with damage or failure of a facility by nature of its occupancy or use. Risk Category IV, the highest risk category, includes buildings and structures that, if severely damaged, would reduce the availability of essential community services necessary to cope with an emergency. Risk Category IV buildings and structures include hospitals, police stations, fire stations, emergency communication centers, and similar emergency facilities, as well as ancillary structures required for the operation of these facilities during an emergency, and facilities containing extremely hazardous materials that would threaten the public if released (ASCE 2010, IBC 2012)¹⁰.



Table 2.6 lists the critical facility categories selected by the Brown County All Hazards Mitigation Plan Steering Committee. Figure 2.6 at the end of this chapter shows all critical facilities in the county classified by critical facility type.

Table 2.6: Critical Facility Categories	
Administrative Buildings	Post Office
Bridge	Pre-School / Day Care
Dam	Prison or Jail
Electric Power Facility	Radio / Television Station
Electric Power Plant	Radio / Television Transmission Towers / Antenna
Generation/Processing of Communication Utilities	School
Health Institution/Government Facility	School – Higher Education Facility
Hospital	Sewage Sludge or Water Supply Chemical Disposal
Long-Term Health Care Facility	Sewage Treatment Plant
Major Electric Power Transmission Lines	Sports Stadium / Arena
Military Installation	Telephone Terminal / Dispatch Center
Mobile Home Park	Transmission of Communication / Utilities
Natural Gas Substation	Water Supply Booster/Pumping Station
Natural Terminals Plant	Water Supply Filter Treatment Plant
Other Liquid Fuel Substation	Water Supply Storage Tank / Reservoir
Other Liquid Fuel Terminal Plant	Water Supply Well
Police / Fire Station / Office	

Source: Brown County All-Hazards Mitigation Plan Steering Committee

¹⁰ Mitigation Assessment Team Report, Definitions of Critical Facilities and Risk Categories:
<http://tinyurl.com/y32u829r>

Schools

Brown County has 12 school districts within the county. Four of those school districts do not have any facilities within Brown County: Brillion, Kaukauna, Luxemburg-Casco, and Reedsville. Table 2.7 references the number of facilities and Map Figure 2-7 displays boundaries of each of the 12 school districts. PreK-12 schools are also highlighted on the county critical facilities Map Figure 2-6 as “School” and institutions of higher education are displayed as “School - Higher Education”.

There are several private schools in Brown County that complement the local public schools. Some of the larger facilities include Notre Dame Academy, and Northeastern Wisconsin Lutheran High School.

SCHOOL DISTRICT	Facility Type	Number of Facilities within Brown County	Student Enrollment (2018-2019)
ASHWAUBENON	Public	5	3,313
	Private	3	257
DENMARK	Public	4	1,560
	Private	2	113
BRILLION	Public	-	-
	Private	-	-
DE PERE	Public	6	4,518
	Private	3	479
GREEN BAY	Public	37	20,391
	Private	18	3,399
HOWARD-SUAMICO	Public	9	6,103
	Private	1	307
KAUKAUNA	Public	-	-
	Private	-	-
PULASKI	Public	5	3,777
	Private	2	101
LUXEMBOURG-CASCO	Public	-	-
	Private	-	-
REEDSVILLE	Public	-	-
	Private	1	87
WEST DE PERE	Public	5	3,556
	Private	3	130
WRIGHTSTOWN	Public	3	1,367
	Private	2	84
TOTAL		121	49,542

Source: WI Department of Public Instruction, Brown County Planning Commission.

In addition to the area public school districts, Brown County also has a number of institutions of higher education. They include:

- University of Wisconsin-Green Bay
- Northeast Wisconsin Technical College
- St. Norbert College
- Bellin College of Nursing
- College of Menominee Nation
- Globe University
- ITT Technical Institute
- Rasmussen College



Brown County Public Facilities

Brown County owns a large number of public parks, administrative buildings, government offices, maintenance facilities, public works, and open spaces throughout the county. Several of these public facilities have been identified as critical facilities and are mapped on Map Figure 2-6.

Places of Interest

There are several sites in Brown County that are regional attractions that draw a large number of visitors for special events, as well as on a seasonal or year-round basis. These areas have been identified as locations for concern and specific mitigation strategies have been developed during the planning process to appropriately address problems resulting from natural disasters. These sites include:

Lambeau Field	 Credit: Somerville Architects
Resch Center	 Credit: Spancrete
Resch Expo Hall	 Credit: Nicholas Kozloski
Kress Events Center	 Credit: UWGB

N.E.W Zoo	 Credit: Google Maps (Streetview)
Brown County Adventure Park	 Credit: Brown County
Bay Park Square	 Credit: Greater Green Bay Convention & Visitors Bureau
Donald J Schneider Stadium	 Credit: Miron Construction
Mulva Family Fitness & Sports Center (St. Norbert College)	 Credit: St. Norbert College

Bay Beach Amusement Park	 Credit: Yelp
Bay Beach Wildlife Sanctuary	 Credit: Greater Green Bay Convention & Visitors Bureau
Brown County Fairgrounds	 Credit: Google Maps (Streetview)
Green Bay Botanical Gardens	 Credit: Green Bay Botanical Gardens
Oneida Casino	 Credit: Greater Green Bay Convention & Visitors Bureau

KI Convention Center	 Credit: KI Convention Center
National Railroad Museum	 Credit: Google Maps (Streetview)
Heritage Hill State Park	 Credit: Heritage Hill State Park
Weidner Center for the Performing Arts	 Credit: UWGB

Events

In addition to places of interest in Brown County, there are a number of short-term or day-long events held throughout the year that draw a large number of people and resources to one location. These events have been examined and appropriate mitigation strategies have been developed if a natural disaster were to occur during the events. These events include:

- Artstreet
- Bellin Run
- Celebrate De Pere
- Cellcom Green Bay Marathon
- Festival Foods Fireworks & Celebrate Americafest
- Hispanic Festival
- Native American Festival
- Pulaski Polka Days
- Oneida Nation Pow-Wwow
- BayCare Clinic Century
- Pilgrimage to the Shrine of Our Lady of Good Help
- Titledown Bicycle Tour

Transportation

The transportation system in Brown County provides the primary means by which people and goods move about the county. The county's transportation infrastructure is comprised of roads, bridges, railroads, airports, transit, and ports/marinas. The transportation infrastructure of the county is crucial for providing emergency services and evacuation before, during, and after a hazard event. Hazardous events can have other significant impacts on the transportation systems. Weather events such as heavy rain storms and winter storms that produce snow and ice can cause hazardous conditions which may produce traffic accidents or hazardous materials spills. Impacts to transportation infrastructure are evaluated for each hazard event in Chapter 3. Transportation facilities in Brown County, such as airport facilities, bridges, and bus facilities, are displayed on the county critical facilities map, Map Figure 2-6 and the county transportation network is displayed on Map Figure 2-8.

Roads

Brown County currently contains two interstate highways, two US highways, nine state highways, several county trunk highways, and many local streets. These streets and highways are currently the primary means of reaching the destinations around the County. There are 2,345 miles of road in Brown County. Of that total, 1,790 miles are under jurisdiction of the local communities and 361 miles are maintained by the county¹¹. For maps of county roads by functional class, please refer to the *Brown County Comprehensive Plan*.



Source: NBC 26 News

¹¹ WisDOT - <https://wisconsindot.gov/Documents/travel/road/hwy-maps/county-maps/brown.pdf>

Bridges

There are a significant number of bridges in Brown County when considering all overpasses for highways, roads, and streets, rail, and water bodies. Note: Bridges for the purposes of this plan also include culverts. Although a majority of these critical passageways are small, many are considered vital to the movement of people and goods around the county, particularly those that cross the Fox River. The following are some of the largest bridges in the county including the Leo Frigo (I 43), Main Street/Nitschke (Green Bay), Walnut Street (Green Bay), Mason Street/Tilleman (Green Bay), Claude Allouez (De Pere), STH 172, and STH 96 (Wrightstown).



Source: Fineart America

Railroads

Brown County has two railroads serving customers throughout the county including the Canadian National Railroad and the Escanaba and Lake Superior Railroad Company. Canadian National has three rail lines of which one runs from Green Bay to the Village of Luxemburg in Kewaunee County; the second runs from Green Bay to the Village of Denmark; and a third run stretches north-south from the Fox Valley north to the City of Oconto in Oconto County. The Escanaba and Lake Superior Railroad Company owns 335 miles of rail line that extends from Rockland, Michigan (just south of Ontonagon, MI) to Green Bay. In addition to the mainline, several branches exist including two branches, the 4.7-mile Stiles Junction to Oconto Falls and the 21-mile Crivitz to Marinette/Menominee line that are closer to Brown County.

Airports

Brown County is served by one major airport, the Austin Straubel International Airport. Austin Straubel International Airport is a cornerstone for economic activity in Northeast Wisconsin. The airport functions 24 hours a day, 365 days a year and offers both commercial and general aviation services. The airport is also responsible for employing approximately 2000 people in aviation related jobs within the region. The Airport is currently served by four major airlines (American Airlines, Delta, Frontier, and United) offering direct service to five cities with connections available to any destination in the world. Austin Straubel International Airport is also a regional base of operations for the Federal Aviation Administration and the Transportation Security Administration serving one-third of Wisconsin and the Upper Peninsula of Michigan.

Transit

The urbanized portion of Brown County is served by two public transit agencies (Green Bay Metro and the Oneida Transit System) and several private transit providers that primarily offer services to elderly and disabled residents of the area. Green Bay Metro operates 17 full service fixed routes and several limited service routes in the Cities of Green Bay and De Pere and the Villages of Allouez, Ashwaubenon, and Bellevue (see Figure 3-5 for Metro's fixed route system). Metro also connects with the Oneida Transit

System on the west side of Green Bay to enable people to transfer between the two systems.

Ports and Marinas

Brown County has one port, (Port of Green Bay) and 13 marinas with three of them in Green Bay: Metro Boat Launch, Green Bay Yachting Club, and the South Bay Marina. The City of De Pere also contains three boat launch facilities Boat Yard Marina, and the Allouez Yacht Harbor; River Place Yacht Club in Ashwaubenon; and the Shipyard Marine, Suamico Boat Launch, and Windjammer's Sailing Club in Suamico.

Dams

According to the Wisconsin Department of Natural Resources, Brown County has 52 dams of various sizes located throughout the county (Appendix G). Of those 52 dams, there are three large dams with a "high" hazard rating located in Ashwaubenon, Village of Suamico, and Town of Rockland. These three dams are known locally as the Macco Pond Dam, Blazie Investments Dam, and the Lamers Pond Dam. The remaining structures are large and small dams with "low" or no hazard ratings. Dams in Brown County are displayed on the county critical facilities map, Map Figure 2-6.

The Lamers Pond Dam in the Village of Ashwaubenon has an Emergency Action Plan (EAP) that was developed in 2002. The *Emergency Action Plan: Lamers Packerland Drive Detention Basin Control Structure* describes the dam hazard area; identifies those responsible for dam operation and implementation of the EAP; and describes the procedures for training participants, and reviewing, testing, and updating the EAP. No known EAP has been developed for the other two dams in the Town of Rockland and the Village of Suamico.

Lamers Pond Dam Description:

The Lamers Basin control structure is located on a tributary to Dutchman's Creek as it passes under Packerland Drive just north of Interstate Highway 172, in Section 5, T23N, R20E. The dam is formed by the Packerland Drive roadway, which is owned and operated by the Brown County Highway Department. The Village of Ashwaubenon constructed and operates the control structure, regulating discharges through the Packerland culvert system. The drainage area at the dam is approximately three square miles. The reservoir flood storage capacity is 55 acre-feet at the emergency spillway crest (top of Packerland Drive), elevation 661.1 feet. Downstream of the dam, this tributary winds through fully developed residential areas before its confluence with Dutchman's Creek near STH 172/41 interchange. The main components of the dam are:

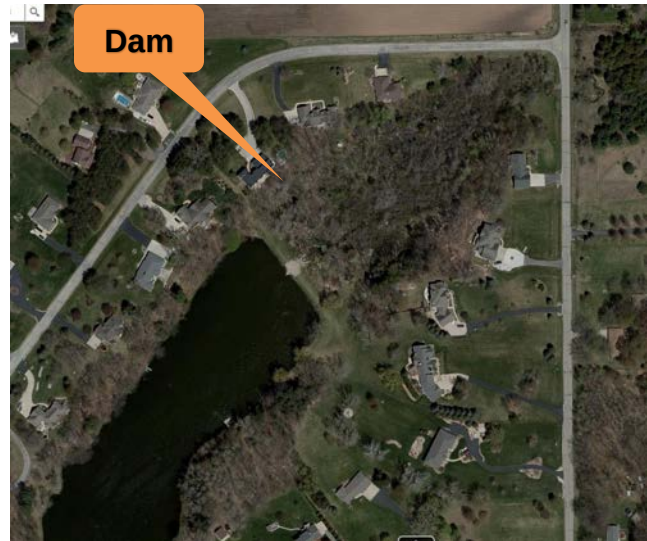
- Homogenous earth embankment, approximately 200 feet long at the toe, with a crest (top of road) elevation of 661.1 feet and an approximate structure height of 19 feet.
- Embankment slopes of 3H:1V, with a 76 feet wide road surface on the top (back of curb to back of curb).

- Basin outlet control structure which reduces the existing twin 54-inch culverts under Packerland Drive to twin 42-inch pipe outlets.
- Basin outlet control structure also includes a box configuration with a concrete weir overflow (elevation 651.3) and a low-flow fish gate with flowline at elevation 645.0.

The Brown County Highway Department and Village of Ashwaubenon replaced the single 60" culvert in 1998 with the twin 54" culvert which now exist under Packerland Drive.

Blaize Investments Dam Description:

This dam is located in the Village of Suamico on a tributary of the Suamico River. This dam is owned and maintained by the Hidden Lake Association. If the dam were to fail, infrastructure downstream such as the road could be in jeopardy of significant damage. The Hidden Lake Association and the Village of Suamico should coordinate their efforts to ensure that the dam is maintained properly and develop an EAP that describes appropriate actions during and after a possible dam failure and procedures for training participants, and reviewing, testing, and updating the EAP.



Macco Pond Dam/Springwater Dam Description:

This dam is located in the Town of Rockland on a tributary of the East River. The dam is located on private property and is identified as being owned/maintained by the property owners. The reservoir associated with this dam is not very large; however, if the dam were to fail, County Highway PP may be impacted as it would be the first impediment that the water met. There is also a private residence located immediately adjacent to the intersection of the waterway and County Highway PP which, depending on the elevation of the structures on site and the impacts of the water, could be impacted. The Town of Rockland and the property owners should follow the EAP that describes appropriate actions during and after a dam failure, procedures for training participants, and reviewing, testing, and updating the EAP.



Area Affected by a Breach or Major Flooding:

A detailed floodplain study was completed for the Lamers Pond Dam establishing floodplain limits for floodplain zoning. A 100-year storm event with dam “non-existent” was also performed to determine the area that would be inundated if the dam were not in place and future development were to occur throughout the drainage basin. This higher flow condition has been mapped as the regulated downstream floodplain. A limited dam failure analysis was also performed downstream of the detention basin. The results of that evaluation showed the “hydraulic shadow” to be well contained within the valley section and below all residences except as noted below. The “hydraulic shadow” ends within about 2,000 feet of Packerland Drive.

No FEMA flood data is available for the other two dams listed.

Population Affected by Lamers Pond Dam

Only one residence (a low-lying home with a walk-out basement on the left overbank just upstream of Shady Lane) may be subject to flooding during the 100-year flood. Otherwise, no other residences, buildings, or campgrounds would be inundated during flooding or by the failure of the structure. The 2020 total assessed value of the one residence is \$195,300.

Critical Facilities

No critical facilities, such as hospital, rescue and relief facilities, water supply facilities, hazardous waste facilities, or bridges, are in the hazard area. It was noted that with each of the three dams listed above, a County Highway is either the structure or is the first structure immediately downstream of the dam. All of which would be important roadways in their respective areas and if damaged, would cause major issues with local traffic and would require that emergency response personnel be aware of and plan alternate routes.

Communication Facilities

Brown County has an extensive communications infrastructure. Television, radio, newspapers, and broader electronic and print media serve as the primary means of notifying the public of hazard events in Brown County. These various types of communication facilities are displayed on the county critical facilities map, Map Figure 2-6. In addition to the traditional communication methods, hazard events are increasingly noticed by way of social media and can be distributed by way of text messages.

Newspaper

Brown County is served by one newspaper, the Green Bay Press-Gazette, which is a daily newspaper owned by Gannett Company, Inc.

Television

There are seven local broadcast television stations that service Brown County. Table 2.8 identifies each of these stations as well as their national affiliate and the location from which they broadcast.

Table 2.8: Broadcast Television Stations Serving Brown County, Wisconsin				
Name	Channel		Affiliate	Broadcast Location
WBAY-TV	2	2-1, 2-2, 2-3	ABC	Green Bay
WFRV-TV	5		CBS	Green Bay
WLUK-TV	11		Fox	Green Bay
WCWF	14		CW	Suring
WGBA	26	26-1, 26-2	NBC	Green Bay
WACY	32		MNT	Appleton
WPNE	38	38-1, 38-2, 38-3	PBS	Green Bay

Source: Wikipedia®, a registered trademark of the Wikimedia Foundation, Inc., 2019.

Radio

There are 42 FM and 17 AM radio stations that broadcast in or around Brown County. The following table lists these stations.

Table 2.9: Radio Stations, Source: radio-locator.com, 2019.			
WHID	88.1 FM	Green Bay, WI	Public Radio
WPNE	89.3 FM	Green Bay, WI	Public Radio
WORQ	90.1 FM	Green Bay, WI	Christian Contemporary
WPFF	90.5 FM	Sturgeon Bay, WI	Christian Contemporary
WOVM	91.1 FM	Appleton, WI	Adult Album Alternative
WEMY	91.5 FM	Green Bay, WI	Christian Contemporary
W221DA (WNCY)	92.1 FM	Howard, WI	Country
W226BD (WGEE)	93.1 FM	Green Bay, WI	Country
WGEE	93.5 FM	New London, WI	Country
WYDR	94.3 FM	Neenah-Menasha, WI	Adult Hits
WZOR	94.7 FM	Mishicot, WI	Rock
WKSZ	95.9 FM	De Pere, WI	Top-40
W245BS (WAUN)	96.9 FM	Green Bay, WI	Regional Mexican
WTAQ	97.5 FM	Glenmore, WI	News/Talk
WQLH	98.5 FM	Green Bay, WI	Hot AC
WOWN	99.3 FM	Shawano, WI	Classic Hits
WDKF	99.7 FM	Sturgeon Bay, WI	Country
WNCY	100.3 FM	Neenah-Menasha, WI	Country
WIXX	101.1 FM	Green Bay, WI	Top-40
W268BG (WRVM)	101.5 FM	Green Bay, WI	Religious
W270AJ (WNFL-AM)	101.9 FM	Green Bay, WI	Sports
WRVM	102.7 FM	Suring, WI	Religious
WOGB	103.1 FM	Reedsville, WI	Classic Hits
Table continued on next page			

WKZG	104.3 FM	Seymour, WI	Holiday (Adult Contemporary)
WPCK	104.9 FM	Denmark, WI	Christian Contemporary
WAPL	105.7 FM	Appleton, WI	Classic Rock
W292DR (WHBY-AM)	106.3 FM	Wrightstown, WI	News/Talk
WKRU	106.7 FM	Allouez, WI	Classic Rock
WDUZ	107.5 FM	Brillion, WI	Sports
WTMJ	620 AM	Milwaukee, WI	News/Talk
WCUB	980 AM	Two Rivers, WI	Country
WJOK	1050 AM	Kaukauna, WI	Religious
WHBY	1150 AM	Kimberly, WI	News/Talk
WNAM	1280 AM	Neenah-Menasha, WI	Nostalgia
WTAQ	1360 AM	Green Bay, WI	News/Talk
WDUZ	1400 AM	Green Bay, WI	Sports
WNFL	1440 AM	Green Bay, WI	Sports
WGBW	1590 AM	Denmark, WI	Oldies

Power Facilities

The power generating plants located in Brown County include both publicly- and privately-owned facilities. Various types of power facilities are mapped on the county critical facilities map, Map Figure 2-6.

Public Water Supply Systems

Based upon data obtained from the Wisconsin Department of Natural Resources' drinking water website, there are 130 separate public water systems within Brown County. These systems can be used by the general public and are regulated by the WDNR. In addition to public water systems, there are thousands of private wells in Brown County. Private residence obtain groundwater through a private well which the WDNR recommended testing on a regular basis to ensure the water is safe to drink and free of toxins such as nitrates, pesticides, heavy metals, and Volatile Organic Compounds (VOC).

The City of Green Bay, *Village of Hobart*, *Village of Wrightstown*, *Town of Scott*, and the Village of Ashwaubenon obtain their water from Lake Michigan through a pipeline originating near the City of Kewaunee. The City of De Pere and the villages of Allouez, Bellevue, and Howard and towns of Lawrence and Ledgeview comprise the Central Brown County Water Authority and are receiving water from Lake Michigan through a pipeline originating in the City of Manitowoc.

Wastewater Treatment Systems

Most of Brown County is served by Green Bay Metropolitan Sewerage District wastewater treatment system and is within the Brown County Sewer Service Area (SSA). The City of De Pere system was connected to the Green Bay Metropolitan Sewerage District wastewater treatment system in 2009. The SSA Plan identifies those areas eligible to receive sanitary sewer service so that wastewater treatment facilities can be designed to

provide adequate treatment capacity for the anticipated population growth in the sewer service area, while protecting sensitive natural areas and water quality.

Military Installations

Brown County has three military installations. The Army National Guard Unit is located on Military Avenue in Green Bay. The US Defense Logistics Agency is located on N Madison Street in the City of Green Bay and the Navy Operational Support Center is stationed in Ashwaubenon.

EPCRA Facilities

Emergency Planning and Community Right to Know Act (EPCRA) establishes requirements for Federal, State and local governments, Indian Tribes, and industry regarding emergency planning and “Community Right-to-Know” reporting on hazardous and toxic chemicals. The Community Right-to-Know provisions help increase the public’s knowledge and access to information on chemicals at individual facilities, their uses, and releases into the environment. States and communities, working with facilities, can use the information to improve chemical safety and protect public health and the environment. EPCRA facilities in Brown County are displayed on the county critical facilities map, Map Figure 2-6.

EMERGENCY SERVICES AND FACILITIES

Brown County Emergency Management provides county-wide communications for the public to police, fire, and emergency medical services. *These* emergency facilities are displayed on the county critical facilities map, Map Figure 2-6.

Police

The Brown County Sheriff’s Department, located in Bellevue, is a full service law enforcement agency that serves portions of Brown County that do not provide their own law enforcement/protection services, including Allouez, Bellevue, Eaton, Glenmore, Green Bay (town), Holland, Howard, Humboldt, Ledgeview, Morrison, New Denmark, Pittsfield, Rockland, Scott, Suamico, and Wrightstown (town). The communities of Allouez, Bellevue, Denmark, Howard, and Suamico also contract for additional police services from the sheriff’s department.

The remaining communities within Brown County provide their own law enforcement, including the Cities of De Pere and Green Bay, the Village of Ashwaubenon, and the Oneida Nation. The communities of Denmark, Hobart, Lawrence, Pulaski, and the Village of Wrightstown also provide their own law enforcement but contract with the sheriff’s department for backup service when necessary.

Fire, Rescue, and Emergency Medical Services

As with most counties in Wisconsin, Brown County does not provide fire, rescue services or emergency medical services. Fire services in Brown County are provided on an individual community basis or are obtained through contracts with neighboring communities. There are 18 fire districts in Brown County. They include Denmark (with service to Eaton, portions of Glenmore, and New Denmark in Brown County and Franklin in Manitowoc County); Hobart; Holland; Pulaski (with service to Pittsfield); Suamico; Wayside; Wrightstown (village); Lawrence; New Franken (a joint department between the towns of Green Bay, Humboldt, and Scott); Greenleaf (with service to the western half of

Rockland and to the Town of Wrightstown); Morrison (with service to the eastern half of Rockland, portions of Glenmore, and to Morrison); Ledgeview (with service to portions of Glenmore); De Pere (with service to Lawrence); Howard; and the City of Green Bay (with service provided to the Villages of Allouez and Bellevue). Lastly, Austin Straubel International Airport has a private contracted Fire Department (Protect), and many of the area paper mills and one chemical company have internalized Fire Brigades both structural and incipient.

The Federal and State governments define departments as *Career departments – 100% paid FTE with no part-time supplemental staffing*. Currently Green Bay is the only complete career department in Brown County. Combination departments – some career positions supplemented with paid on call or part-time coverage. Allouez, Ashwaubenon, Bellevue, Howard, and De Pere are officially combination departments. Volunteer – do not work duty shifts, receive no pay per call, or only receive a stipend for expenses per the IRS “*bright line*” test. Morrison, Holland Town, Greenleaf, New Franken, Pulaski, Hobart, Suamico and Lawrence fall into this category.

Rescue and emergency medical services are also provided on an individual community basis or are obtained through agreements/contracts with neighboring communities or private providers. As examples, most communities in Brown County rely upon County Rescue Services, a private provider located in the Village of Bellevue with additional stations in Howard, Suamico and Denmark that is supported by a joint partnership with Bellin and St. Vincent Hospitals. These communities include the towns of Eaton, Glenmore, Green Bay, Hobart, Holland, Howard, Humboldt, Morrison, Rockland, Scott, Suamico, Wrightstown (both village and town). The village of Allouez receives EMS from Green Bay Metro Fire Department while the village of Bellevue receives EMS from Brown County currently and is planning to switch to Green Bay Metro in 2022. The village of Ashwaubenon and cities of De Pere (with service to Lawrence and Ledgeview) and Green Bay provide their own rescue services.

Hospitals & Medical Clinics

Brown County has four hospitals serving the county and municipalities. They are the Aurora BayCare Medical Center on 2845 Greenbrier Road in Green Bay; HSHS St. Mary’s Hospital on 1726 Shawano Avenue in Green Bay; Bellin Hospital on 744 S. Webster Avenue in Green Bay; and HSHS St. Vincent Hospital on 835 S. Van Buren Street in Green Bay.

Large Hospitals:

- Aurora BayCare Medical Center – 2845 Greenbrier Road, Green Bay, WI.
- Bellin Hospital – 744 Webster Ave., Green Bay, WI.
- HSHS St. Vincent Hospital – 835 Van Buren St. Green Bay, WI.
- HSHS St. Mary’s Hospital Medical Center – 1726 Shawno Ave., Green Bay, WI

Clinics:

- N.E.W. Community Clinic – 622 Bodart St., Green Bay, WI
- Green Bay VA HCC (Huempfer) – 2851 University Ave. Green Bay, WI.

- BayCare Clinic – 1035 Kepler Dr., Green Bay, WI.
- Aurora BayCare Health Center – 3237 Voyager Dr., Green Bay, WI.
- Orthopedics & Sports Medicine BayCare Clinic – 1160 Kepler Dr., Green Bay, WI.
- New Clinic – NWTC Campus
- Prevea East Mason Health Center – 3021 Voyager Dr., Green Bay, WI.
- Prevea Washington Street Health Care – 102 N Washington St, Green Bay, WI.
- Aurora Health Center – 4070 Equestrian Rd., Green Bay, WI.
- BayCare Clinic – 164 N Broadway, Green Bay, WI.
- Prevea Allouez Health Center – 1821 S Webster Ave., Allouez, WI.
- Prevea Shawano Ave Health Center – 1727 Shawano Ave., Green Bay, WI.
- Aurora Health Center – 1565 Allouez Ave., Green Bay, WI.
- Prevea Pulaski Health Center – 940 Augustine St., Pulaski, WI.
- Aurora Health Center – 980 S St Augustine St., Pulaski, WI.
- Bellin Health Cardiology Associates – 723 S Wisconsin St., Pulaski WI.
- Aurora Health Center – 629 Solvang Wy., Denmark, WI.
- Bellin Health Denmark – 595 County Rd R, Denmark, WI.

Walk-in Clinics:

- Bellin Health Fast (Green Bay East) – 1976 Lime Kiln Rd., Green Bay, WI.
- Bellin Health Fast (Green Bay West) – 2015 Shawano Ave., Green Bay, WI.

Urgent Care:

- Aurora BayCare Urgent Care – 2845 Greenbrier Road, Green Bay, WI.
- Aurora BayCare Urgent Care – 2253 W Mason St., Green Bay, WI.
- Aurora Urgent Care – 1881 Chicago St., De Pere, WI.
- Bellin Health (Bellevue) – 3263 Eaton Rd., Bellevue, WI.
- Prevea Urgent Care – 2793 Lineville Rd., Green Bay, WI.
- Prevea Urgent Care – 2502 S Ashland Ave., Green Bay, WI.
- Prevea Urgent Care – 1601 Lawrence Dr., Green Bay, WI.
- Prevea Urgent Care – 3021 Voyager Dr. Green Bay, WI.
- Ashwaubenon Respiratory Clinic – 1630 Commanche Ave., Bellevue, WI.

It should be noted that this list was derived from an exhaustive online search and that this list may not include all facilities in Brown County. Some facilities may also have capabilities that would allow them to be adapted to shelter-in-place inpatient and victim

medical services. These facilities may be needed in the time of a community disaster that requires hospitals to activate surge capacity and/or should a hospital disaster occur that renders the facility inhospitable for patient occupancy. Elements of consideration for these critical facilities are those buildings that may have medical utilities (electrical generators, medical gas systems, life safety compartmentalization, imaging equipment, laboratory services, and surgical capabilities), physically large enough to provide critical mass, and/or are under the business auspice of the hospital.

Emergency Warning Systems

Most of the cities and villages in Brown County have emergency sirens to warn residents in the event of a tornado. There are 59 tornado sirens in the county. The county Dispatch Center is responsible for testing and activating the systems.

Emergency Operations Center

Brown County emergency response operations will be carried out at Brown County's designated Emergency Operations Center (EOC) in the City of Green Bay. The EOC has 24-hour per day operational capabilities.

Heavy Equipment Inventory

Brown County and each of the municipalities maintain a wide array of heavy equipment that could be available during specific emergency response situations. On certain projects and during times of an emergency, the county and communities will share specific pieces of equipment on a lease or rental basis.

Community	Emergency Contact	24-Hour Contact
Brown County	Paul Fontecchio, Public Works Director	920-492-4925
City of Green Bay	Steve Grenier, Public Works Director	920-448-3100
City of De Pere	Scott Thoresen, Public Works Director	920-339-4060
Oneida Tribe	Jacque Boyle, Public Works Manager	920-869-1059
Village of Allouez	Seah Gehin, Public Works Director	920-448-2800
Village of Ashwaubenon	Doug Martin, Director of Eng. & Utilities	920-492-2337
Village of Howard	Geoff Farr, Public Works Director	920-434-4060
Village of Bellevue	David Betts, Public Works Director	920-468-5507
Village of Hobart	Jerry Lancelle, Pub. Works Coordinator	920-869-3807
Village of Suamico	Andy Smits, Public Works Director	920-434-8410
Village of Denmark	Erika Thronson, Public Works Director	920-362-7982
Village of Pulaski	Joel Van Lannen, PW Team Leader	920-822-5192
Village of Wrightstown	Andy Vickman, Public Works Director	920-660-4337
GB Water Department	Andrea Hay, Dir. of Communications	920-621-7726
WPS Gas	Emergency Hotline	800-450-7280
WPS Electric	Emergency Hotline	800-450-7240
WPS Local Affairs	Scott Sheppard	920-380-3376

Private Contractors

Brown County and several communities work with the following major vendors to secure heavy equipment/vehicles when needed:

- Aring Equipment Company, Inc., 1800 N. Ashland Avenue, De Pere, WI 54115, 920-336-3601

- Badger Crane & Dragline, 1316 Russett Court, Green Bay, WI 54313, 920-662-7624
- Barlament Erection and Crane Rentals, 1575 Lineville Road, Green Bay, WI 54313, 920-434-3677
- Brooks Tractor Incorporated, 1031 Lawrence Drive, De Pere, WI 54115, 920-336-5711
- Fabco Equipment Inc., 600 Hansen Road, Green Bay, WI 54301, 920-498-8000
- 4 Star Equipment, Inc. 1273 Cornell Rd, Green Bay, WI 54313, 888-223-9300
- Kocken Construction Equipment, 780 Morris Ave., Green Bay, WI 54304, 920-494-7429
- Miller-Bradford & Risberg Inc., 3203 French Road, De Pere, WI 54115, 920-638-7448
- M&R Track Service, 310 E Clay St. #8, Wrightstown, WI 54180
- Riesterer & Schnell, Inc., N2909 State Highway 32, Pulaski, WI 54162, 920-822-3077
- Riesterer & Schnell, Inc., 3200 S. County Road P, Denmark, WI 54208, 920-863-2181
- Roland Machinery Company, 3275 French Road, De Pere, WI 54115, 920-532-0165
- RSC Rental Equipment, 3161 Market Street, Green Bay, WI 54304, 920-337-0777
- Service Motor Company, 3969 Champeau Road, New Franken, WI 54229, 920-468-7700
- Weyers Equipment, Inc., N1957 E. Frontage Road, Kaukauna, WI 54130, 920-766-1861

Bulk Fuel

The West Shore Pipeline that provided petroleum products to Green Bay originated in the Chicago area. This pipeline is no longer in service and the primary source of fuel has transitioned to shipping via the great lakes. The following is a list of bulk fuel providers that can be called upon in emergency scenarios.

- Kwik Trip – 1626 Oak St., La Crosse, WI 54603, Phone: 608-781-8988
- Titledown Oil – 1275 Glory Rd., Green Bay, WI 54304, Phone: 920-336-8983
- Packer City International – 611 Hansen Rd., Green Bay, WI 54304, Phone: 920-499-0878
- Halron Oil Company – 1618 State St., Green Bay, WI 54306, Phone: 920-436-4000
- Klemm Tank Lines – 2204 Pamperin Rd., Howard, WI, 54313, Phone: 920-434-6343
- Semfuel – 955 Challenger Dr., Green Bay, WI 54311, 800-236-5858

- Tilot Oil Company, 1121 McDonald St., Green Bay, WI 54303, Phone: 920-432-7711

It should also be noted that the Port of Green Bay has fuel storage on site and may be called upon if fuel from other sources is not an option.

OTHER INFORMATION

Additional pre- and post-disaster information may be needed during or after a disaster event. The following is some information that could be helpful.

Pre-Disaster

Elderly Housing

The elderly population is a demographic that may be exceptionally vulnerable to hazard events. Brown County has a large number of elderly housing facilities located throughout the county. Each of the individual facilities should maintain their own emergency preparedness and evacuation procedures. “Long-term Health Care Facilities” are displayed on the county critical facilities map, Map Figure 2.6.

Staging Areas

As stated in the Brown County Evacuation Plan, temporary collection points will be set up at the county polling places located within the evacuation area. Community Emergency Response Team (CERT) Volunteers will assist evacuees at these polling places. Transportation resources will be directed to the staging area as determined by officials in the incident command center. A list of polling places and evacuation routes are provided in the county’s evacuation plan.

Temporary Shelters

Temporary shelters, designed for short duration lodging, may be needed before, during, and after a hazard event to provide beds and basic sanitary facilities. Brown County has identified temporary emergency shelters located throughout the county that can provide interim housing for people evacuated from their homes. These shelters consist primarily of schools and churches, plus facilities such as the Red Cross building and other public owned buildings. A list of Brown County shelters can be found in the *Brown County Evacuation Plan*.

Agreements between public and private facilities and the Red Cross vary in number from year to year and are subject to verification of availability at the time of request.

Temporary Pet Shelters

Temporary pet shelters may also be needed before, during, and after a hazard event if people are required to evacuate their homes. It is important to provide a method to segregate the pets in the shelters. Aside from the Bay Area Humane Society, there are

no other temporary pet shelters in the county unless agreements are created with private entities.

Post-Disaster

Solid and Special Waste Landfills

Often, the remaining debris from a destructive storm event cannot be land filled in typical landfills. Therefore, it is important to know where the nearest subtitle-d solid and special waste landfills are located. A landfill of this nature cannot be found in Brown County. However, the Veolia Inc. landfill in Outagamie County and Waste Management's landfill near Whitelaw may be used as disposal sites in case of an emergency.

Long Term Shelters

Long term shelters may be needed if people are unable to return to their homes for an extended period after a hazard event. Brown County works with agencies to set up long term housing. Agencies like the Red Cross develop contracts with a variety of possible shelter locations however the facilities are subject to availability at the time they are requested. Housing arrangements for those residents permanently displaced by the natural disaster will be made primarily through the Brown County Department of Human Services or Integrated Community Services.

Long Term Pet Shelters

Humane Societies often serve as long-term pet sheltering facilities if needed after a hazard event. Bay Area Humane Society may be able to fill this role along with volunteer pet owners.

Planning Area

Brown County All Hazard Mitigation Plan

Brown County, WI

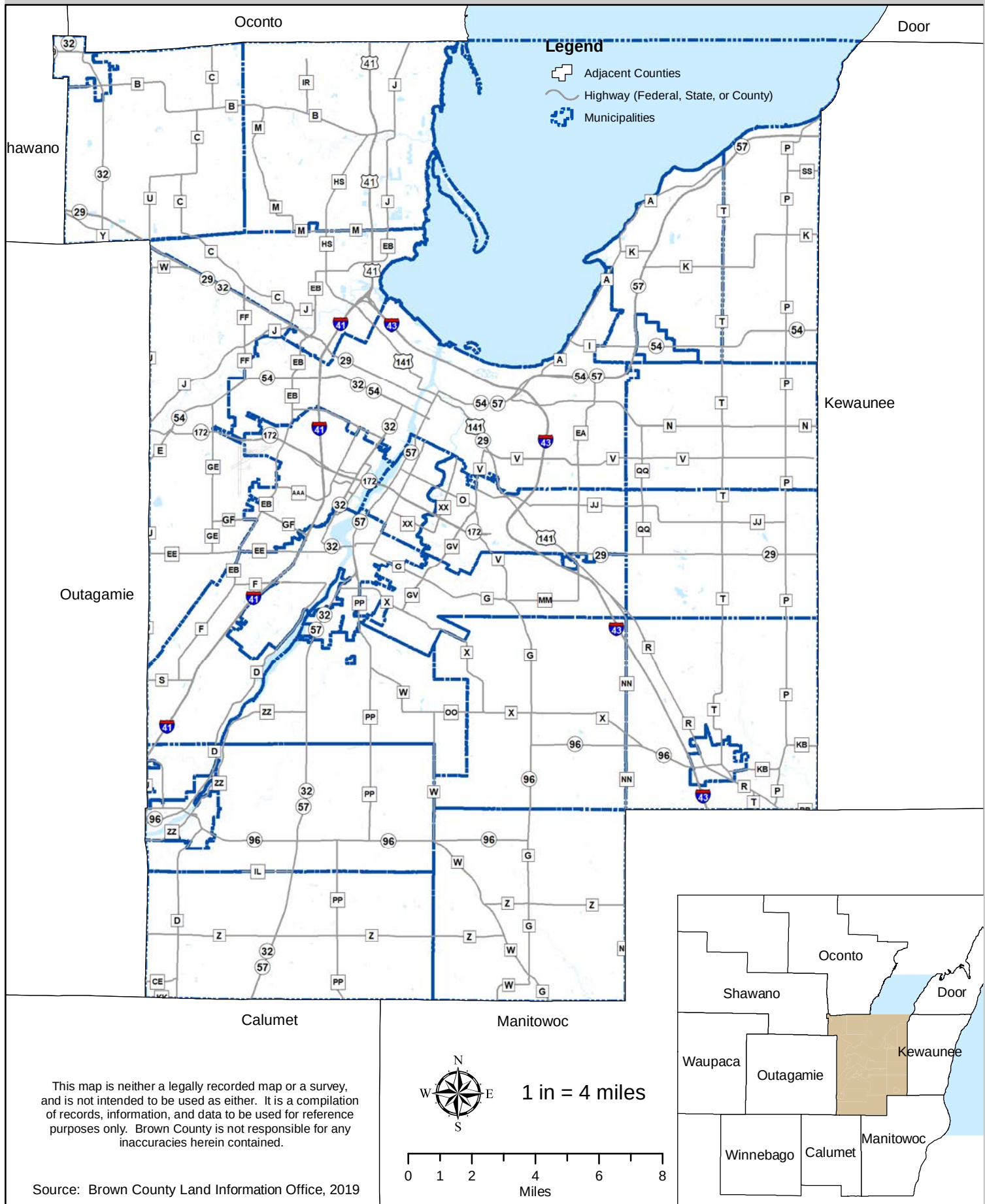


Figure 2-1

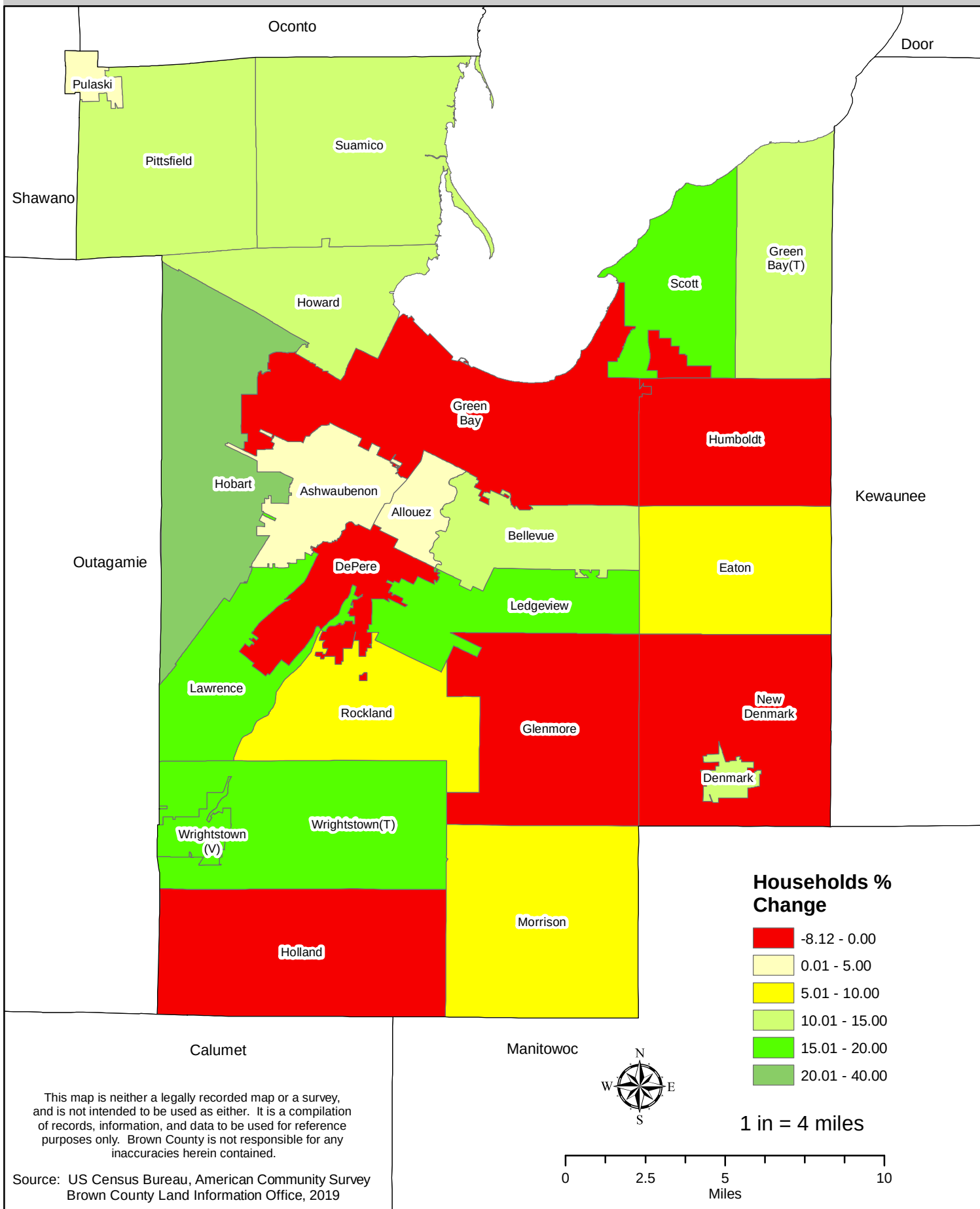
Brown County, WI



Households Percent Change 2010-2017

Brown County All Hazard Mitigation Plan

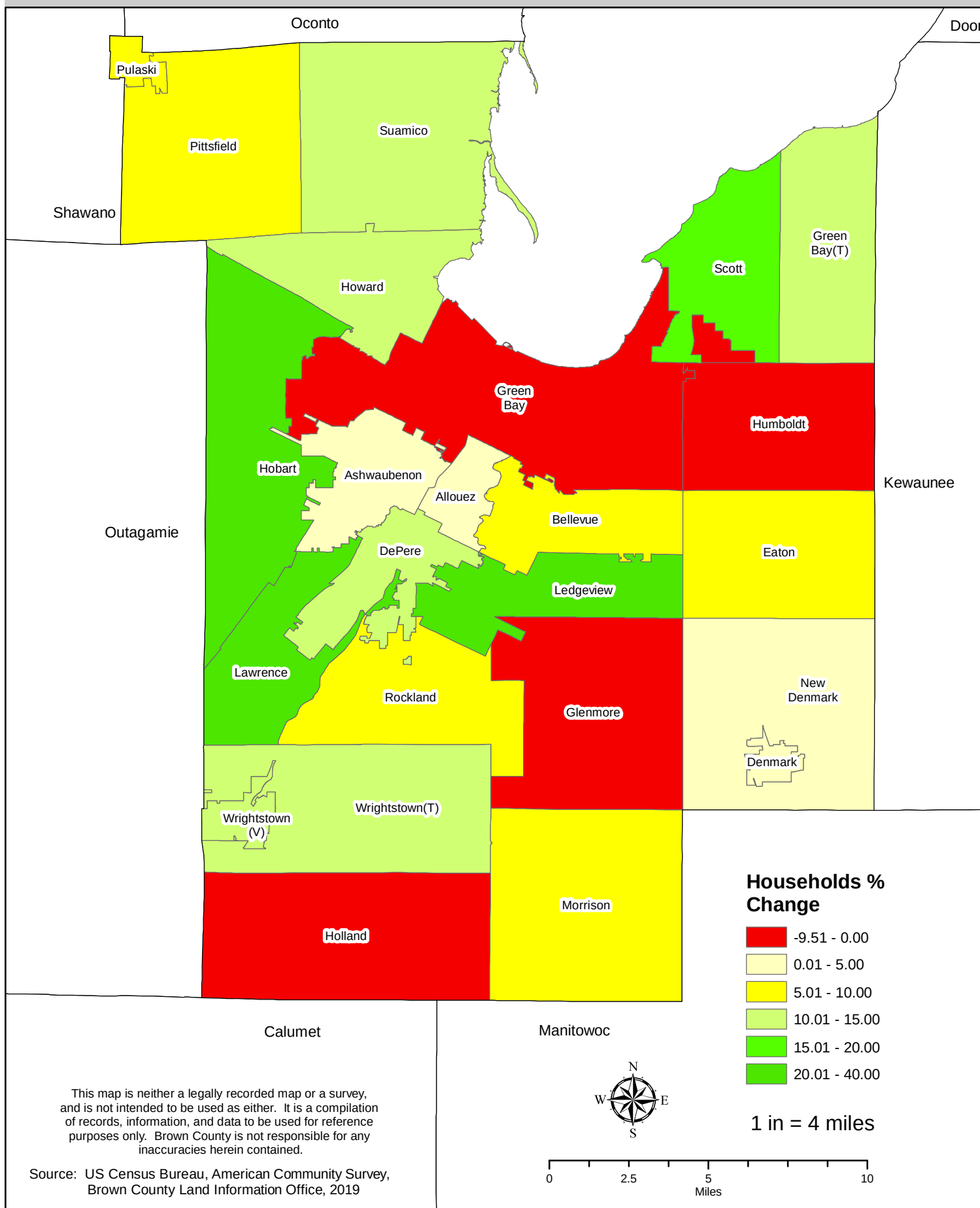
Brown County, WI



Housing Units Percent Change 2010-2017

Brown County All Hazard Mitigation Plan

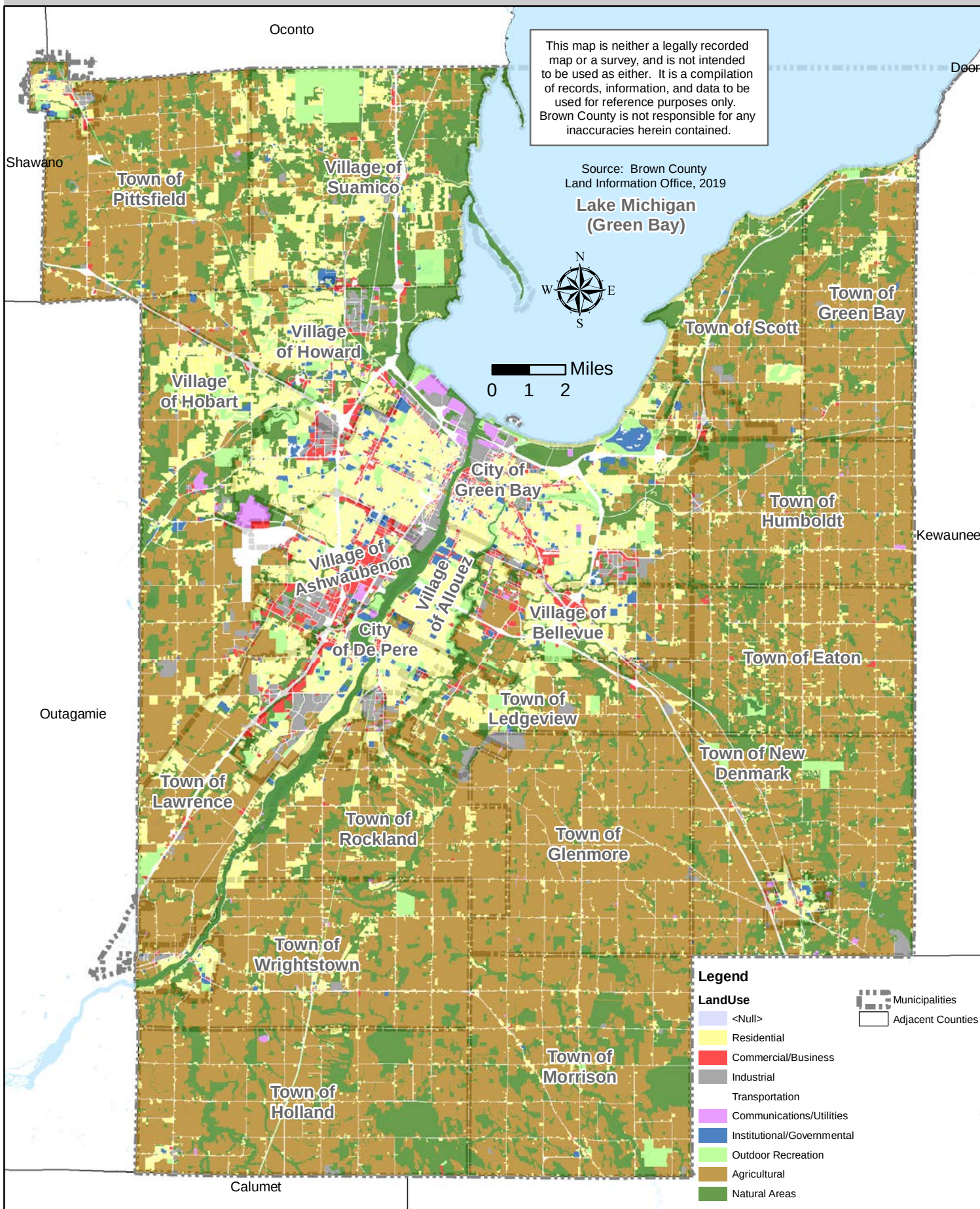
Brown County, WI



2019 Land Use

Brown County All Hazard Mitigation Plan

Brown County, WI



Critical Facilities

Brown County All Hazard Mitigation Plan

Brown County, WI

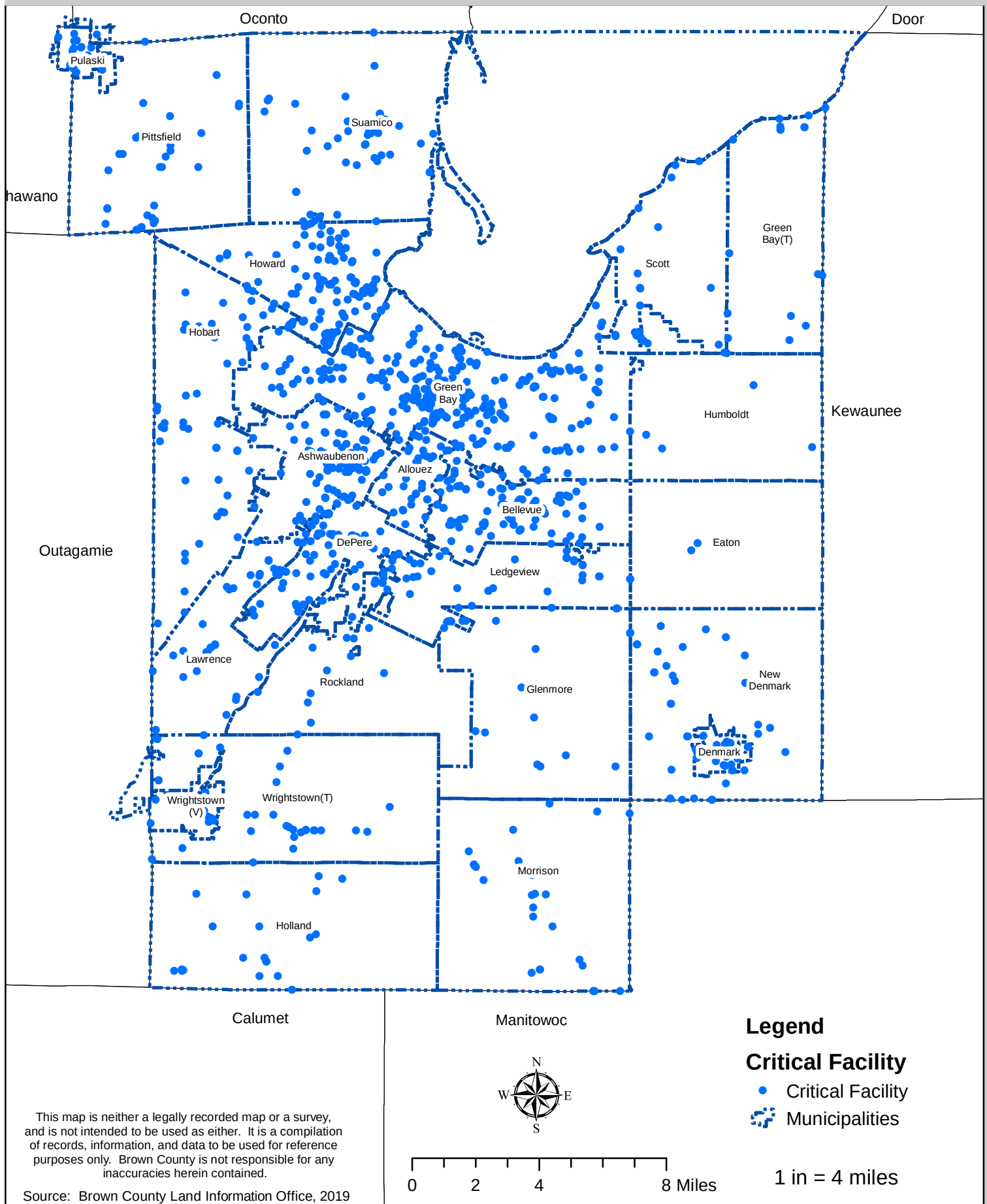


Figure 2-6

School District Boundaries

Brown County All Hazard Mitigation Plan

Brown County, WI

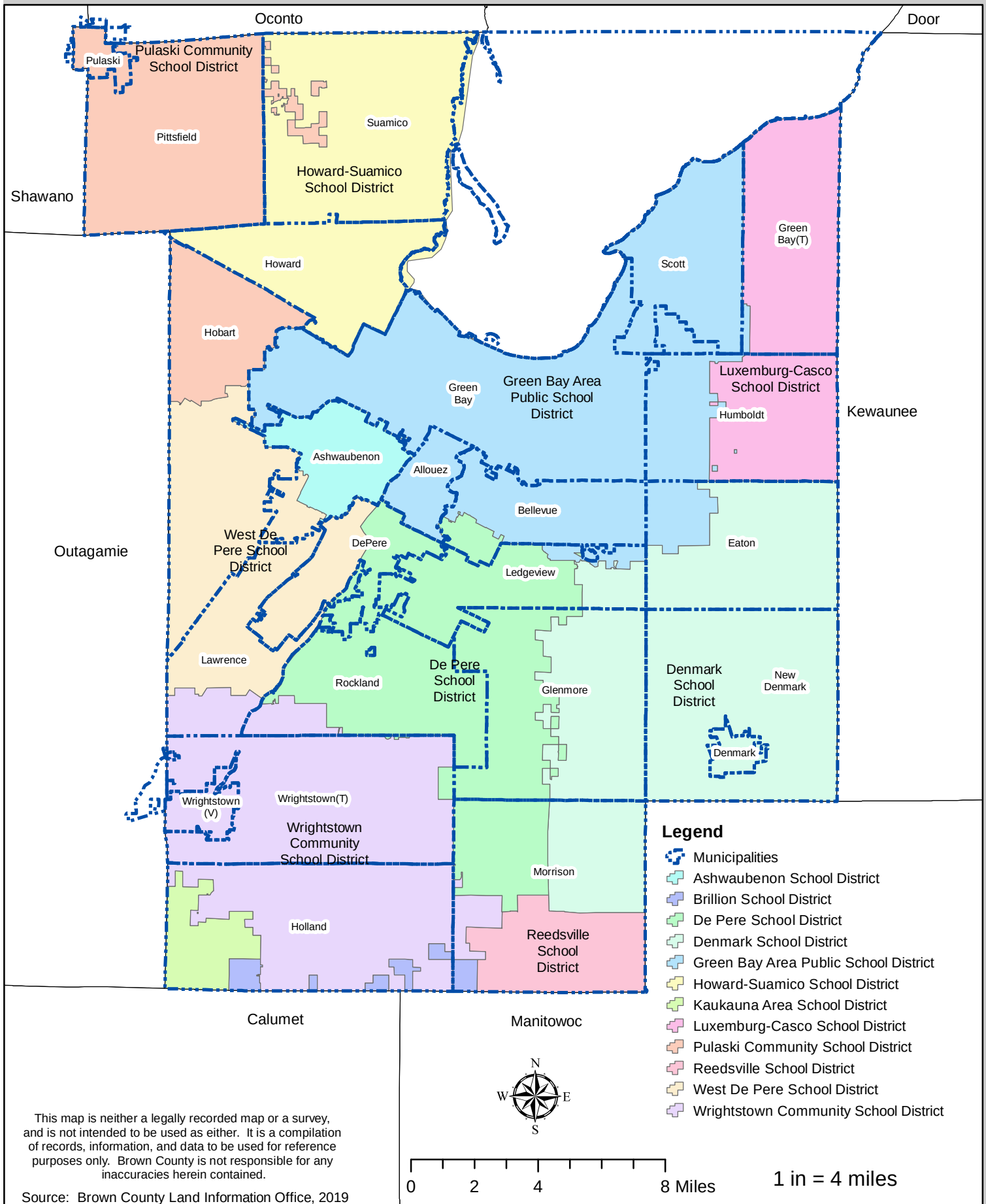


Figure 2-7

Transportation Network

Brown County All Hazard Mitigation Plan

Brown County, WI

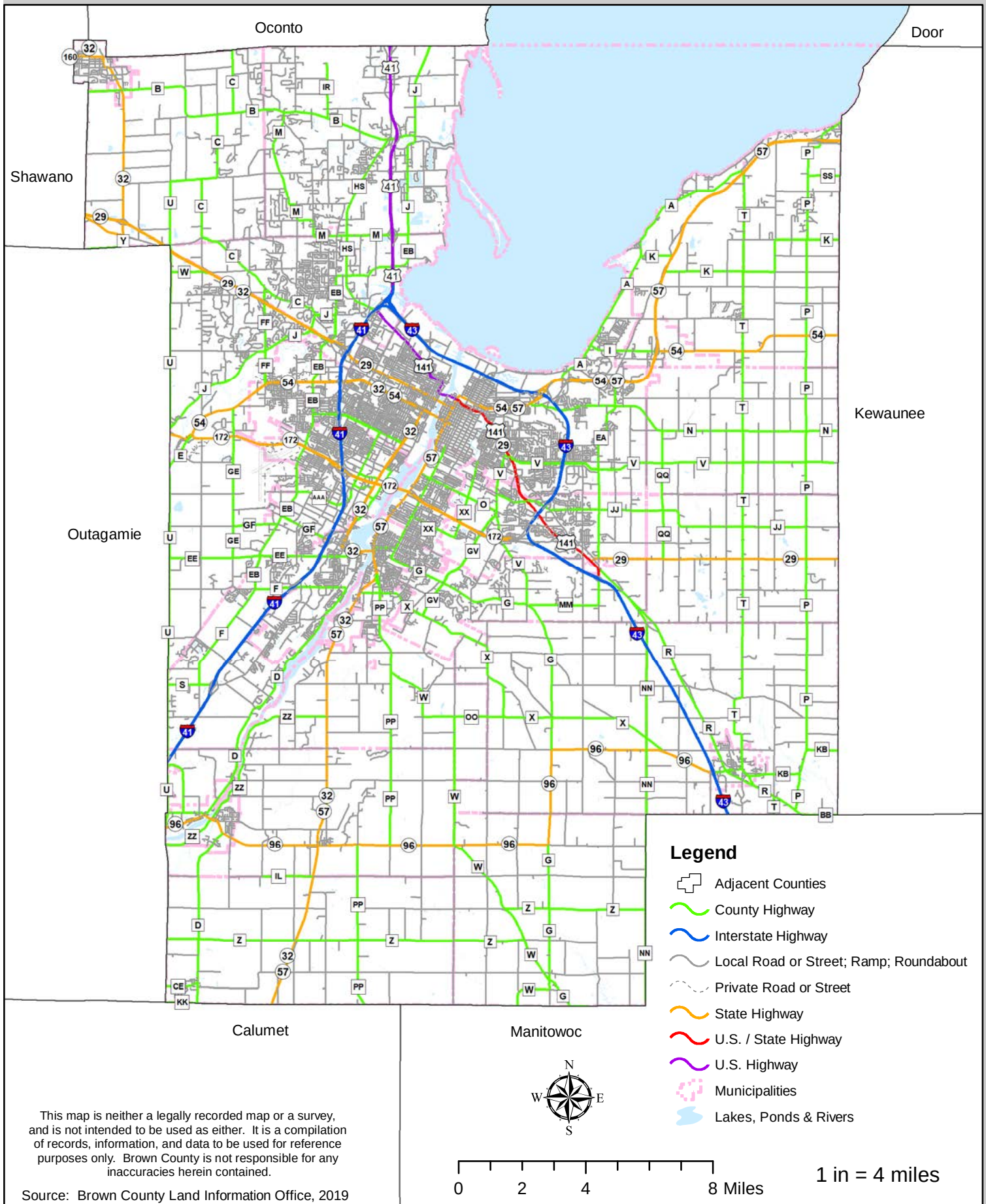


Figure 2-8

Brown County, Wisconsin 2020 All Hazards Mitigation Plan



Prepared by the Brown County All Hazard Plan Steering Committee
with Assistance from the Brown County Planning Commission
DATE: _____



Brown County, Wisconsin

Steering Committee Members

Angela Kowalzek-Adrians, NEW Water
Anna Destree, Brown County Public Health
Ben Risch, Wisconsin Public Service
Bob Mayer, American Red Cross
Bill Bosiacki, Brown County Zoning
Brian Uhl, Village of Ashwaubenon Public Safety
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BROWN COUNTY ALL HAZARDS MITIGATION PLAN

ADOPTED: _____



Prepared by:

Brown County Planning Commission
305 E. Walnut St., Room 320
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The preparation of this document was financed with a grant from the State of Wisconsin Department of Military Affairs Division of Emergency Management (Project Number PDMC-PL-05-WI-2017-001) with local matching in-kind funds from Brown County.

RESOLUTION OF ADOPTION

Resolution No. _____

A RESOLUTION adopting the *Brown County All Hazards Mitigation Plan*.

WHEREAS, Brown County recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted all hazards mitigation plan is required as a condition of future grant funding for mitigation projects.

NOW, THEREFORE BE IT RESOLVED, that the County Board of Brown County, Wisconsin, hereby adopts the *Brown County All Hazards Mitigation Plan* as an official plan; and

BE IT FURTHER RESOLVED, that upon approval of the *Brown County All Hazards Mitigation Plan*, the Brown County Emergency Management Department will submit the adopted plan to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval, as required under the Hazard Mitigation Grant Program.

I HEREBY CERTIFY that the foregoing Resolution was duly passed by the County Board of Brown County, Wisconsin, on the _____ day of _____, 2020.

Dated _____, 2020. _____
County Executive

Dated _____, 2020. _____
County Clerk

Approved _____, 2020. _____
County Board Chair

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CHAPTER 1: INTRODUCTION AND PLANNING PROCESS

PURPOSE FOR THE PLAN

An update to the *Brown County All Hazards Mitigation Plan* began during January of 2019. A Steering Committee comprised of local and county officials and emergency management personnel guided the update process over a two year timeframe with professional planning support from the Brown County Planning Commission.

The plan's purpose is to evaluate the county's potential exposure to natural hazards and to identify appropriate mitigation strategies. Consistent with the Code of Federal Regulations (44 CFR Part 201.6), the county identified natural hazards and, although not required, the county also identified man made hazards. Based on these required components, this plan conforms to Federal All Hazards Mitigation Planning requirements.

Completion of the 2019 plan update will continue to allow Brown County Emergency Management personnel to identify areas of risk, assess the magnitude of the risk, and develop strategies to continue reducing risks. Through this process, the county can address issues related to incompatible land uses; identification and protection of critical facilities; and assess costs associated with natural disaster relief and rescue efforts. Completion and approval of the plan will also make Brown County eligible to apply for future disaster relief and mitigation project funds to implement applicable recommended mitigation strategies.

The following sections discuss the Disaster Mitigation Act of 2000 which led to the requirement for All Hazards Mitigation Plans as well as the funding of this planning effort to develop the five parts of this plan.

DISASTER MITIGATION ACT OF 2000

The development of the *Brown County, Wisconsin 2012 All Hazards Mitigation Plan* is in response to the enactment of the Disaster Mitigation Act (DMA) of 2000. The act attempts to stem the losses from disasters, reduce future public and private expenditures, and speed up response and recovery from disasters. The following is a summary of the parts of the Disaster Mitigation Act of 2000 that pertain to local governments and tribal organizations. The Act:

- Establishes a new requirement for local governments and tribal organizations to prepare an All Hazards Mitigation Plan in order to be eligible for funding from FEMA through the Pre-Disaster Mitigation Assistance Program and the Hazard Mitigation Grant Program.
- Establishes a requirement that natural hazards need to be addressed in the risk assessment/vulnerability analysis part of the All Hazards Mitigation Plan. Addressing man-made/technological hazards is encouraged, but not required.
- Authorizes up to seven percent of Hazard Mitigation Grant Program funds available to a state after a federal disaster to be used for development of state, local and tribal organization All Hazards Mitigation Plans.

- Established November 1, 2004, as the date by which local governments and tribal organizations are to prepare and adopt their respective plans in order to be eligible for the FEMA Hazard Mitigation Grant Program. This deadline was November 1, 2003 for the Pre-Disaster Mitigation Program.

The plan is being revised in 2019-2020 and is expected to remain current and eligible for funding for a period of time not exceeding 5 years.

PLANNING VISION

This plan utilizes the same three visionary elements to fulfill the requirements established through DMA 2000:

Reduce Hazard Risks and Impacts – This All Hazard Mitigation Plan assessed vulnerability of life and property to a broad range of potential natural hazards, and developed a prioritized range of mitigation strategies to reduce both risks and impacts.

Build on Existing Efforts – Many cities, villages, towns, school districts, and businesses, often lead by county personnel, have already engaged in mitigation and/or response *training and planning*. The intent of this plan is to maximize these efforts by inventorying, coordinating, and building on these efforts when possible, and developing new strategies to fill any gaps identified among existing efforts. This plan incorporates information and strategies from existing emergency response plans and other relevant public documents.

Share Information and Raise Awareness – Public engagement methods used in the preparation of this plan sought input from a diverse range of stakeholders including the general public and various public, private, and non-profit sector representatives. One of the most commonly heard messages throughout these planning meetings and workshops is the need for clear information and ongoing communication among all stakeholders. Mitigation strategies identified in this plan address the public information and communication component in a universal manner (regardless of hazard type) and within a hazard-specific context, as applicable.

PLANNING GOAL

Historically, Brown County had several federal disaster declarations for flooding, severe storms (including winter storms), and tornadoes. More generally, Wisconsin disasters over the same period incurred millions of dollars in Federal Emergency Management Agency (FEMA) expenditures. Most recently, Brown County has seen two of the wettest years in recorded history (2018 & 2019), near record water levels in the Great Lakes, both of which contributed to numerous flooding events causing millions of dollars in property damage and loss.

The goal of this plan is to meet the requirements established by the Disaster Mitigation Act of 2000, and to eliminate or reduce vulnerability to significant or repetitive damage from one or more hazards determined to have potential in Brown County, Wisconsin.

PLANNING PROCESS

Development of the *Brown County, Wisconsin 2020 All Hazards Mitigation Plan* was based on the planning requirements and guidance provided by the Federal Emergency Management Agency (FEMA) and the Wisconsin Department of Military Affairs, Wisconsin Emergency Management (WEM). *Through* following these requirements and guidance, the plan meets the requirements of the Disaster Mitigation Act of 2000.

Since the WEM guidance for All Hazards Mitigation Plans recommended that planning areas “be consistent with a community’s comprehensive planning boundary,” the planning area for the *Brown County, Wisconsin 2020 All Hazards Mitigation Plan* includes all of the County of Brown, encompassing the cities of Green Bay and De Pere; villages of Allouez, Ashwaubenon, Bellevue, Denmark, Hobart, Howard, Pulaski, Suamico, and Wrightstown; and towns of Eaton, Glenmore, Green Bay, Holland, Humboldt, Lawrence, Ledgeview, Morrison, New Denmark, Pittsfield, Rockland, Scott, and Wrightstown. By including the entirety of Brown County and all municipalities contained within, this plan is compliant with WEM.

PLANNING APPROACH

Brown County initiated development of this updated plan with a pre-planning meeting held in January, 2019. Brown County staff and representatives from each of the communities were invited to a meeting to inform them of the process and to encourage their input and participation during the plan development period.

Development of the plan was structured along a four-phase planning process:

Phase I: Start-Up, Assess Community Support

Phase II: Assess Risks

Phase III: Develop a Mitigation Plan

Phase IV: Implement the Mitigation Plan

STEERING COMMITTEE

Brown County established a Hazard Mitigation Plan Steering Committee to oversee the development of the plan. Committee members were selected from all county departments involved in emergency management issues (i.e. Emergency Management, Sheriff, Highway, Health, Planning, Zoning, and Water Utility), county officials, and local community emergency personnel. Because the plan focused on updates, the Steering Committee did not include representation from adjacent counties, however; draft copies of the plan were sent to the adjacent counties prior to FEMA approval, and a final copy was posted to the Brown County website. The Steering Committee was responsible for providing input, guiding the planning process, reviewing and commenting on draft chapters of the plan, and advocating for approval at the county level. Brown County’s Emergency Management Coordinator collected and distributed information along with the Brown County Planning Commission for Steering Committee meetings in addition to handling the administrative portion of the grant.

During the assessment of natural hazard conditions, the Steering Committee reviewed and adjusted the prioritized potential natural hazards facing Brown County. The committee’s risk assessment for natural hazards can be found in Table 3.1 of Chapter 3

of this plan. Based on the results of this exercise and analysis of past natural hazards, the Steering Committee prioritized and selected the natural hazards that were to be the focus of this plan:

The 2020 Brown County All Hazards Mitigation Plan Steering Committee held meetings on the following dates:

1. January 17, 2019
2. March 28, 2019
3. December 21, 2020

The Steering Committee was also invited to participate in three virtual workshop that were part of a secondary project that sought to develop mitigation strategies using green infrastructure, low impact development, and nature-based solutions. The three workshops associated with this project were held on the following dates:

1. September 8, 2020
2. September 11, 2020
3. September 18, 2020

INCORPORATED COMMUNITY INVOLVEMENT

The *Brown County All Hazards Mitigation Plan* covers all the unincorporated towns within the county. The plan enables those communities to be automatically eligible for pre and post disaster funding opportunities. The county's eleven incorporated communities (two cities and nine villages) will need to adopt the All Hazards Mitigation Plan as their own in order to be eligible for these pre and post disaster funding grants.

The county's incorporated communities were invited to participate in the development of the plan throughout the two year process. Through the Brown County Emergency Management Department and Brown County Planning and Land Services Department, each municipality in Brown County was informed of the update and invited to participate at various times throughout the planning process. Since the adoption of the 2012 Brown County All Hazards Mitigation Plan, Brown County Emergency Management personnel has worked closely with the local municipalities and the Brown County Land Information Office to keep important datasets up to date for the E-911 system. Datasets important to emergency personnel such as critical facilities, street centerlines, addresses, and police and fire zones are continually reviewed and updated as necessary. This constant communication between Brown County and the local municipalities has been critical to this update process.

A near final-draft plan summary was sent to each community in December 2020 to keep the municipalities updated with the planning process. A final plan was provided to the Brown County Board of Supervisors through the emergency management and planning committees to keep them informed of the progress being made on the development of the county's All Hazards Mitigation Plan. To ensure each municipality within Brown County had input regarding mitigation strategies applicable to their respective community, a request was sent to each town, village, and city requesting input on possible mitigation projects, with a focus being made on site specific issues that may be unique to each community. The results of that information were gathered and included in table 4.4 of this Plan.

Once a draft of the All Hazard Plan and Mitigation Strategies was completed, the document was shared with each municipality. Each of the incorporated communities were asked to review and comment during the same time WEM was reviewing the document. During their review each community was asked to ensure the plan addresses their specific mitigation needs and to provide feedback to the Steering Committee as necessary. Municipality involvement was utilized in order to allow communities to provide comments, to allow the communities to offer information that would increase the plan eligibility for pre and post disaster funding, and to allow the municipality an opportunity to adopt the plan.

RELATIONSHIP TO BROWN COUNTY EMERGENCY PLANS

Brown County has prepared and adopted an ***Emergency Operations Plan*** for the county as part of its overall preparedness strategy.

The ***Emergency Operations Plan*** addresses response training and all aspects of response from occurrence forward. The purpose of the County Emergency Operations Plan is to:

1. Facilitate the protection of lives, property and the environment in major disasters of any nature.
2. Coordinate response to disasters, assess damages, identify mitigation opportunities and implement recovery efforts.
3. Describe the county's relationship in support of local units of governments during response and recovery.
4. Serve as a coordinating document for supporting Internal Agency Plans (IAP) (i.e., Policy and Procedures.)
5. Reflect information collected, decisions made, and procedures developed in the planning process and during response.
6. Provide a link between the county and municipal plans.

The All Hazards Mitigation Plan is complementary to the EOP and seeks to reduce hazard risks and impacts on a pre-event basis through:

- Structural hazard control or protection measures;
- Retrofitting of facilities;
- Acquisition and relocation of repetitive loss structures;
- Development of mitigation standards, regulations, policies, and programs;
- Review, updating, and enforcement of building codes;
- Public awareness and education programs; and
- Development or improvement of warning systems.

PLAN ORGANIZATION

The 2020 *Brown County All Hazards Mitigation Plan* is divided into five chapters to specifically address each of FEMA's local mitigation plan requirements. The five chapters are as follows:

Chapter 1 – Introduction is the executive summary of the *Brown County All Hazards Mitigation Plan*. It provides the overarching vision, purpose, and regulatory context for preparing this plan. The chapter also provides a brief synopsis of the plan's main sections as outlined below.

Chapter 2 – County Profile of Brown County is its physical, social, economic, and political characteristics comprised mainly of the following:

Historical Setting	Schools
Climate	Public Facilities
Geology	Transportation
Topography and Soils	Utilities
Hydrology	Population and Housing
Land Cover and Land Use	Demographic Trends
Community Infrastructure	Economics and Labor
Emergency Response Resources	

Chapter 3 – Risk Assessment profiles a range of potential natural hazards that could pose a threat to Brown County. As appropriate, selected events that may originate outside of the county have been included if they could jeopardize safety and stability within the county. This chapter also assesses vulnerabilities to the potential hazards based on a variety of considerations. This resulting assessment was used with other factors to identify priorities for future mitigation efforts.

Chapter 4 – Mitigation Strategies are a series of goals, objectives, and action steps to mitigate the impacts of each hazard. Each strategy has a lead department(s) responsible for addressing that strategy and for setting benchmarks to measure progress toward implementation.

Chapter 5 – Plan Adoption and Maintenance describes the planning process in terms of its technical, political, and public engagement components. This section also sets the course for plan implementation and updating, measuring progress, and continued engagement of persons with a stake in this plan; e.g., residents, municipal governments, county government, businesses, non-profit organizations, and schools.

EXECUTIVE SUMMARY

BROWN COUNTY PROFILE SUMMARY (CHAPTER 2)

Located in eastern Wisconsin, Brown County sits at the mouth of the Fox River. Brown County is the fourth most populous county in Wisconsin with an estimated population of over 264,000 people¹. Of the 615 square miles that comprise the county, most of the population is concentrated in the central portion, while the south and eastern areas are largely rural. Brown County is becoming increasingly urbanized and has been one of the most rapidly growing counties in the State of Wisconsin in the past and current decade. Much of the new population growth is occurring in second and third ring suburbs around Green Bay such as Howard, Suamico, Bellevue, and Ledgeview, Lawrence, and Hobart. The county enjoys a diversified economy and is home to some of the region's largest employers such as Georgia-Pacific, Schneider National, Inc., Humana, and Green Bay Area School District.

As stated in the *1974 Soil Survey of Brown County*, most of the soils in the county formed of glacial till and lake sediment that are high in clay. Overall, the survey identifies ten soil associations in the county, and each is susceptible to erosion problems. Agriculture lands comprise nearly 50 percent of the county's total acreage. The local climate is characterized by cold, snowy winters and warm, humid summers. The growing season is approximately 152 days.

RISK ASSESSMENT SUMMARY (CHAPTER 3)

Natural hazards profiled by this plan include:

Severe Winter Storms
Extreme Temperatures
Fog
Coastal Hazards
Drought
Landslides
Agriculture

Severe Summer Storms
Flooding
Wild Fires
Agriculture
Earthquakes
Subsidence

Other hazards are discussed in this plan, but the natural hazards listed above are the primary focus.

The following information is provided for each hazard: a general description of the hazard, its event history in the county, vulnerability considerations, possible cascading effects, existing plans and programs to address the hazard, and known gaps and deficiencies in these programs.

¹ WI Department of Administration, Population Projections by County:
https://doa.wi.gov/DIR/Final_Ests_Co_2020.pdf

Chapter 3 includes a three-part assessment of hazard concerns in Brown County:

1) Critical Facilities by Jurisdiction: The plan includes a summary of critical facilities vulnerable to accidents or terrorism as identified by communities within Brown County. Community representatives used CBRNE principles (chemical, biological, radiological, nuclear, and explosives) to assess critical facility vulnerability within their own jurisdictions.

2) All Hazards by Jurisdiction: Community representatives also identified top hazard concerns for their individual communities from a broader range of possible incidents, including natural and man-made hazards. Nearly every participating community identified severe weather incidents as their top hazard concern.

3) Countywide Vulnerability and Priorities: Vulnerability was then assessed on a countywide basis using the following parameters to determine an overall priority rating: past events, frequency of occurrence, warning time, geographic extent, and likely adverse impact. This assessment yielded the following hazards listed by priority:

- | | |
|---|---------------------------------|
| 1) Blizzards | 11) Agriculture |
| 2) Heavy Snow Storms | 12) Coastal Hazards |
| 2) Stormwater Flooding | 13) Drought |
| 4) Ice Storms | 13) Forest Fires/wildland Fires |
| 5) Tornadoes/High Winds | 13) Fog |
| 5) Flooding (Flash, Riverine, and Lake) | 17) Subsidence |
| 7) Extreme Cold | 18) Hail Storms |
| 8) Lightning Storms/Thunderstorms | 18) Landslide |
| 9) Extreme Heat | 20) Earthquake |
| 10) Dam Failure Flooding | |

MITIGATION STRATEGIES SUMMARY (CHAPTER 4)

Mitigation goals, objectives, and strategies were developed to:

- Reduce risks and potential impacts of the specific hazard events noted above.
- Address gaps in current preparedness plans and programs.
- Deal with concerns of collaborating entities (public, private, and non-profit sector representatives).
- Build on existing efforts, when possible.
- Enhance communication, information sharing, and education, when possible.

An overarching set of goals were developed to be applicable to any or all hazard situations, namely 1) communication, information sharing, and education; and 2) public health protection. Individual strategies within each of these goals were ranked based on priority, an identification of any new vs. ongoing efforts, target implementation dates, lead and participating agencies, potential funding sources, and possible benchmarks for future evaluation.

PLAN ADOPTION AND MAINTENANCE SUMMARY (CHAPTER 5)

Plan Adoption Process

A Steering Committee comprised of local and county officials and emergency management personnel guided the plan development process over a 2-year timeframe with professional planning support from the Brown County Planning Commission. Wisconsin Emergency Management (WEM) and FEMA reviewed the county's draft All Hazards Mitigation Plan. Their comments are on file and were incorporated into the final draft of the plan. Development of the updated plan began in January 2019 and was approved by a resolution by the Brown County Board of Supervisors on January 20, 2020.

Public Review Process

The public was able to comment during the drafting of the plan and during the final draft review process. A request was sent to each community to solicit their input on potential hazard problems within their municipality and possible mitigation strategies to address those conditions. While many communities responded, many communities did not.

While WEM was reviewing the draft *Brown County All Hazards Mitigation Plan*, a draft was posted to the Brown County website and the link was provided to each of the communities. Steering Committee members and communities were directed to the site to review the document with a complete set of maps, and hard copies were located at three key locations throughout the county for review by the public.

Plan Implementation

Brown County's Office of Emergency Management will oversee the implementation, evaluation, and maintenance of the *Brown County All Hazards Mitigation Plan*. This plan incorporates many of the county's emergency operations plans already in place; therefore, the mitigation strategies and procedures overlap and are to act in conjunction with one another. The implementation of this All Hazards Plan will also satisfy the conditions and actions in other plans to include the *Brown County Comprehensive Plan*, capital improvements budget, and applicable ordinances. As local communities update their comprehensive plans and emergency operations procedures/plans, each municipality should reference the mitigation strategies outlined in this all hazard mitigation plan. In turn, updated mitigation actions created at the local level should be reviewed for inclusion in any future updates of the *Brown County All Hazards Mitigation Plan*.

Plan Evaluation

Each mitigation strategy includes a matrix for monitoring implementation progress. More detailed steps will be developed, as needed, for more complex initiatives. At minimum, the Brown County Office of Emergency Management's designated committee will meet with municipalities and implementation partners to evaluate progress for each mitigation strategy, compile summary progress reports, and promote findings through the media, County Board of Supervisors, county committees, and local communities on an annual basis. This collaborative implementation approach will also provide a forum for identifying additional mitigation gaps.

Plan Maintenance

Brown County Emergency Management will review the plan annually with an update completed every five years. Brown County Emergency Management staff will continue to coordinate with local municipalities and other agencies to implement mitigation projects. Newly identified mitigation needs will be addressed through the development of additional goals, objectives, or strategies, as applicable. If there are changes needed in the priorities for implementation, the rationale will be documented. Revisions and updates will be distributed to the oversight committee appointed by the Brown County Emergency Management Office, municipalities, and implementation partners such as local hospitals and the Red Cross for review and approval.

Plan revisions will be made available through the Brown County's Office of Emergency Management website for general public review and comment during the plan updating process. Public comment on revisions and updates also will be solicited through a comprehensive public outreach strategy (news releases, open houses, partnerships). Updates and revisions to the plan will also be a way to further promote the need for continued hazard preparedness at all levels. The updated plan will be submitted for approval by the Brown County Board of Supervisors, WEM, and FEMA every five years.

CHAPTER 5 PLAN ADOPTION AND MAINTENANCE

PLAN ADOPTION PROCESS

The *2020 Brown County All Hazards Mitigation Plan* was prepared to ensure Brown County and its communities stay in compliance with the Disaster Mitigation Act of 2000 and remain eligible for various funding sources. The plan is divided into five chapters that address all of FEMA's local mitigation plan requirements. A Steering Committee comprised of local and county officials and emergency management personnel guided the plan development process over a 24-month timeframe with professional planning support from the Brown County Planning Commission.

Wisconsin Emergency Management (WEM) and FEMA each had a role in reviewing the county's draft All Hazards Mitigation Plan. The *2020 Brown County All Hazards Mitigation Plan* was sent to WEM on _____ for their pre-review. WEM forwarded the plan on to the FEMA Regional Office for review and informal approval. Final comments were received from WEM and FEMA on _____ and included in the plan as appropriate. When the plan met FEMA's guidelines, the *2020 Brown County All Hazards Mitigation Plan* was adopted by resolution by the Brown County Board of Supervisors on _____. Incorporated communities were encouraged to adopt the plan as well but were not required to do so.

PUBLIC REVIEW PROCESS

The public was able to comment on the draft via a virtual public meeting held in December of 2020. The draft document was also shared with each community for review. Final Plans were also provided to the county's Executive Committee, Public Education and Information Committee of Brown County's Office of Emergency Management and the Planning, Development, and Transportation Committee of the Brown County Planning Commission to keep them abreast of the planning process and to encourage their input and comments. A series of e-mail requests were sent to each community to solicit their input on potential hazard problems within their municipality and possible mitigation strategies to address those conditions. A letter was sent to each of the county's eleven incorporated municipalities asking them to review the plan to ensure any issues specific to their community were included in the final plan. Any input received was incorporated into *Chapter 4: Mitigation Strategies* and as appropriate elsewhere in the document. The review did not include representation from adjacent counties.

While WEM and FEMA were reviewing the draft *Brown County All Hazards Mitigation Plan*, copies of the draft plan were provided to each member of the Steering Committee, a CD copy was provided to the communities, the plan could be viewed on the Brown County website and a hard copy located at three key locations throughout the county for review by the public.

Once the plan was reviewed by WEM and FEMA, their comments were integrated as appropriate into the plan as well as those received from the Steering Committee members and public. The public was allowed to provide comments and ask questions regarding the development of the all hazard mitigation plan throughout the entire development process. All comments received during the plan review process and open houses were considered for inclusion in this plan.

PLAN IMPLEMENTATION

Brown County's Office of Emergency Management will oversee the implementation, evaluation, and maintenance of the *2020 Brown County All Hazards Mitigation Plan*. This plan incorporates many of the emergency operations plans already in place; therefore, the mitigation strategies and procedures overlap and are to act in conjunction with one another. The implementation of this all

hazard plan will also satisfy the conditions and actions in the other plans to include the county's comprehensive plan, capital improvements budget, and applicable ordinances.

Table 4.1 in Chapter 4: *Mitigation Strategies* lists the strategies by natural hazard, along with priority, timeline for implementation, lead county department(s), and cost if known. Through the guidance and direction of the Office of Emergency Management, a committee will be created or an existing committee will be directed to oversee the implementation and maintenance of the hazard mitigation plan. This committee will communicate with the identified departments on their role in the implementation of the plan. A work plan will be created based on the mitigation strategies with those of highest priority receiving preference. Local communities will be asked to participate in the implementation and monitoring of the plan due to the fact that the broad scope of many of the strategies requires local participation. Assignment of roles and responsibilities will be handled under the direction of the committee set to implement the plan. Work will commence according to priority status of each mitigation strategy and available funding.

PLAN INTEGRATION MECHANISMS

Since the last plan there have been many methods that have been used to integrate components of the *2020 Brown County All Hazards Mitigation Plan*. The following summarizes some of the methods in place since the last plan, or that have been developed since the last plan:

Comprehensive Planning – Brown County municipalities facilitated the development, or update of 15 additional comprehensive plans since the last All Hazard Mitigation Plan was written. Each comprehensive plan included a section that identified environmentally sensitive areas, natural features, flood plains, and floodways to help create a better understanding of areas subject to flooding.

Capital Improvement Planning – Brown County municipalities facilitated the development capital improvement plans to provide improved emergency management services. Some of the improvements related to fire, tornado warning, storm water control, etc.

Environmentally Sensitive Area Education – Brown County residents are offered education and information on a daily basis regarding environmentally sensitive areas, including floodways, and floodplains. In 2020, a new informational flyer and booklet, explaining the hazards of developing near certain hazard areas was published to further enhance public awareness.

Storm Water Management Planning – Brown County municipalities facilitated the development of 4 additional storm water management plan ordinances since the last All Hazard Mitigation Plan was written, for a total of 11 municipalities. Storm water management plan reviews for all other municipalities are reviewed by Brown County at the time land is subdivided by way of a plat or certified survey map. The Brown County review was in place prior to the last All Hazard Mitigation Plan being written.

PLAN EVALUATION

Each mitigation strategy includes a matrix for monitoring implementation progress. In addition, more detailed steps will be developed, as needed, for more complex initiatives. On at least an annual basis, Brown County's Office of Emergency Management designated committee will meet with municipalities and implementation partners to evaluate progress for each mitigation strategy, compile summary progress report, and promote findings through the media, County Board of Supervisors, county committees, and local communities. This collaborative implementation approach will also provide a forum for identifying additional mitigation needs.

PLAN MAINTENANCE

Federal regulations require that local hazard mitigation plans be reviewed, revised if appropriate, and resubmitted for approval in order to remain eligible for benefits awarded under the Disaster Mitigation Act (44 CFR Section 201.6.d(3) and Section 201.7(d)(3)). This plan's format allows Brown County and Brown County municipalities to review and update sections when new data becomes available. New data can be easily incorporated, resulting in a plan that will remain current and relevant. BC Emergency Management intends to update the plan on a five-year cycle from the date of plan approval. This cycle may be accelerated to less than 5 years based on the following triggers:

- A presidential disaster declaration that impacts the planning area
- A hazard event that causes loss of life
- An update of a participating jurisdiction's comprehensive plan

It will not be the intent of the update process to develop a completely new hazard mitigation plan. Based on needs identified by the planning team, the update will, at a minimum, include the following elements:

- The update process will be convened through a new steering committee.
- The hazard risk assessment will be reviewed and, if necessary, updated using best available information and technologies.
- Action plans will be reviewed and revised to account for any actions completed, dropped, or changed and to account for changes in the risk assessment or planning partnership policies identified under other planning mechanisms (such as the comprehensive plan).
- The draft update will be sent to appropriate agencies and organizations for comment.
- The public will be given an opportunity to comment on the update prior to adoption.
- Partners' governing bodies will adopt their respective portions of the updated plan.

Because plan updates can require a year or more to complete, Brown County will initiate efforts to update the plan before it expires. Brown County will consider applying for funding to update the plan no later than 2 calendar years before plan expiration.

Plan revisions will be made available through the Brown County Emergency Management website for general public review and comment during the plan updating process. Public comment on revisions and updates also will be solicited through a comprehensive public outreach strategy as deemed appropriate by Brown County Emergency Management to include any of the following; new releases, open houses, posters, brochures, partnerships. Public outreach efforts for the plan updates will further use these opportunities to provide ongoing public education on hazard preparedness. The reviewed and updated plan will be submitted to the Brown County Board of Supervisors, WEM, and FEMA for approval as necessary or at a minimum, every five years.

IMPLEMENTATION

The implementation of the *Brown County All Hazards Mitigation Plan* will be the responsibility of several Brown County departments with assistance provided by officials and emergency personnel from local communities, schools, and hospitals. The County Executive, with consultation and input from the Brown County Board of Supervisors, will oversee implementation of the plan through implementation of the individual strategies outlined in this chapter.

Brown County Departments include:

Emergency Management	Department of Public Works	Planning
Facility Management	Zoning	Parks
Land Information Office	Public Safety	Solid Waste
Human Services	Aging and Disability	Land Conservation
UW-Extension	Sheriff	Health

APPENDIX

Appendix A – Steering Committee Agendas

The Brown County All Hazard Plan Steering Committee held meetings on the following dates:

1. January 17, 2019
2. March 28, 2019
3. December 21, 2020

The Steering Committee was also invited to participate in three virtual workshop that were part of a secondary project that sought to develop mitigation strategies using green infrastructure, low impact development, and nature-based solutions. The three workshops associated with this project were held on the following dates:

1. September 8, 2020
2. September 11, 2020
3. September 18, 2020

Due to the COVID-19 pandemic, most of the information and participation from the Steering Committee was done through email correspondence or virtually through an online platform.

AGENDA
BROWN COUNTY ALL-HAZARDS MITIGATION PLAN UPDATE
STEERING COMMITTEE
Thursday, January 17, 2019
Brown County Emergency Management Office
(Brown County Jail)
3030 Curry Lane, 2nd Floor
Green Bay, WI
1:30 p.m.

ROLL CALL:

Rich Annen	_____	Chuck Lamine	_____
Bill Bosiacki	_____	Jody Lemmens	_____
Tom Collins	_____	David Litton	_____
Anna Destree	_____	Lauri Maki	_____
Jeff DuMez	_____	Bob Mayer	_____
Chief Eric Dunning	_____	Kurt Minten	_____
Steve Grenier	_____	Michael Moore	_____
Matt Heyroth	_____	Jared Preston	_____
Justin Hewitt	_____	Michael Piacenti	_____
Lynn Kroll	_____	Stephanie School	_____
Tom Kujawa	_____	Dan Teaters	_____

1. Introductions.
2. Overview of the Plan and how the Plan is used.
3. Discuss Project Timeline and Purpose for Steering Committee Performing Update.
4. Discuss Information and Maps in Chapters 1 and 2 of the Plan.
5. Establish Future Meeting Dates.
6. Other matters.
7. Adjourn.

ANY PERSON WISHING TO ATTEND WHO, BECAUSE OF A DISABILITY, REQUIRES SPECIAL ACCOMMODATION SHOULD CONTACT THE BROWN COUNTY HUMAN RESOURCES OFFICE AT 448-4065 BY THE DAY BEFORE THE MEETING SO ARRANGEMENTS CAN BE MADE.

AGENDA
BROWN COUNTY ALL-HAZARDS MITIGATION PLAN UPDATE
STEERING COMMITTEE
Thursday March 28, 2019
Brown County Emergency Management Office
(Brown County Jail)
3030 Curry Lane, 2nd Floor
Green Bay, WI
1:30 p.m.

ROLL CALL:

Rich Annen	_____	Chuck Lamine	_____
Bill Bosiacki	_____	Jody Lemmens	_____
Tom Collins	_____	David Litton	_____
Anna Destree	_____	Lauri Maki	_____
Jeff DuMez	_____	Bob Mayer	_____
Chief Eric Dunning	_____	Kurt Minten	_____
Steve Grenier	_____	Michael Moore	_____
Matt Heyroth	_____	Jared Preston	_____
Justin Hewitt	_____	Michael Piacenti	_____
Lynn Kroll	_____	Stephanie School	_____
Tom Kujawa	_____	Dan Teaters	_____

1. Introductions.
2. Discuss the Committees review of Chapters 1 and 2 of the Plan.
3. Affirm list of natural hazards.
4. Generate list of man-made hazards and vulnerabilities.
5. Determine how hazards should be evaluated.
6. Confirm next meeting date: April ____, 2019.
7. Other matters.
8. Adjourn.

ANY PERSON WISHING TO ATTEND WHO, BECAUSE OF A DISABILITY, REQUIRES SPECIAL ACCOMMODATION SHOULD CONTACT THE BROWN COUNTY HUMAN RESOURCES OFFICE AT 448-4065 BY THE DAY BEFORE THE MEETING SO ARRANGEMENTS CAN BE MADE.

AGENDA
BROWN COUNTY ALL-HAZARDS MITIGATION PLAN UPDATE
STEERING COMMITTEE
December 21, 2020
Virtual Meeting via Zoom
2:00 p.m.

ROLL CALL:

Rich Annen
Bill Bosiacki
Tom Collins
Anna Destree
Jeff DuMez
Steve Grenier
Matt Heyroth
Justin Hewitt
Angela Kowalzek-Adrians
Jody Lemmens
David Litton

Sara Lornson
Lauri Maki
Bob Mayer
Kurt Minten
Michael Moore
Julia Noordyk
Michael Piacenti
Ben Risch
Stephanie School
Dan Teaters
Brian Uhl

Introductions.

Overview of GI LID project final report

Review and discuss Draft BC AHMP

Approvals
WI Emergency Management
BC Approval

Other matters.

Adjourn.

ANY PERSON WISHING TO ATTEND WHO, BECAUSE OF A DISABILITY, REQUIRES SPECIAL ACCOMMODATION SHOULD CONTACT THE BROWN COUNTY HUMAN RESOURCES OFFICE AT 448-4065 BY THE DAY BEFORE THE MEETING SO ARRANGEMENTS CAN BE MADE.



[All credit for photos used in this document go to Brown County, WI]

Recommendations for Integrating Green Infrastructure and All Hazard Mitigation Planning in Brown County, WI

December 2020

INTRODUCTION

The Disaster Mitigation Act (DMA) of 2000 requires state, local, and tribal governments to have a Federal Emergency Management Agency (FEMA)-approved hazard mitigation plan (HMP) to establish eligibility for FEMA's Hazard Mitigation Assistance (HMA) funding programs. The purpose of an HMP is to identify a set of strategies to mitigate the natural hazards that impact the community. Each plan must identify hazard vulnerabilities and impacts, and then outline actions to mitigate the vulnerabilities and impacts identified. HMPs must be updated every 5 years and can be amended throughout the 5-year plan lifecycle. Hazard mitigation actions should be integrated into local jurisdictional mechanisms and can include plans/policies, capital projects, development requirements, and programs.

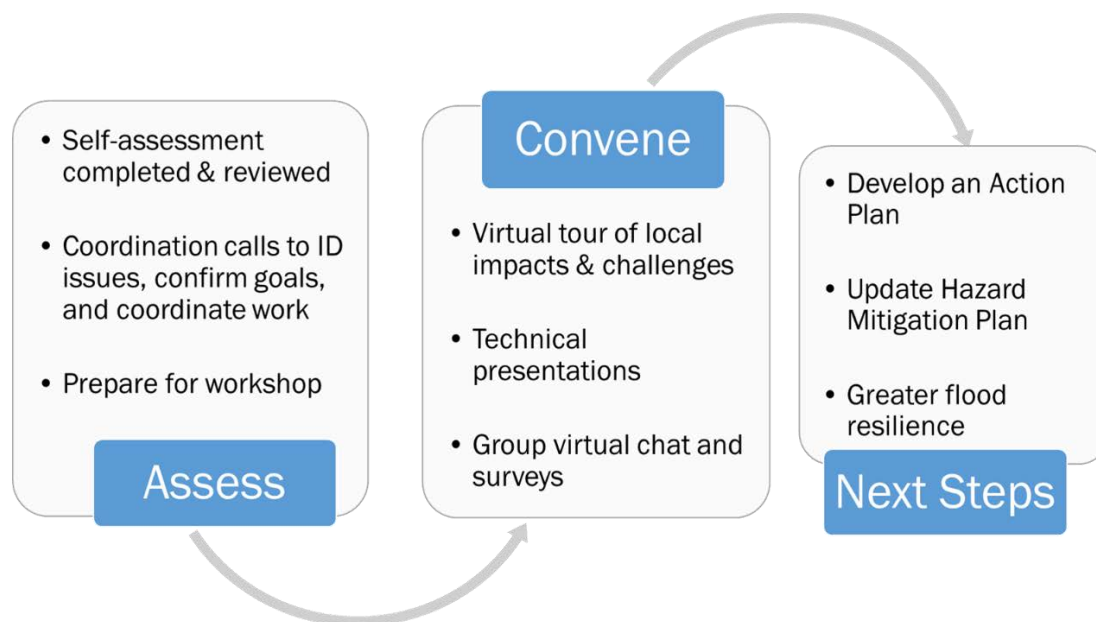
The frequency and severity of many risks, especially for flooding, is increasing with urbanization and changes in climate. As such, many local jurisdictions are adopting a proactive and integrated approach to anticipating and mitigating these risks. Failing to anticipate and mitigate potential risks early can increase the cost and liability to address the hazard risk later, especially after a hazard event has occurred. In addition, hazard preparedness is beginning to factor into local economic stability in terms of bond rating and desirability for businesses and residents to locate in the region. A proactive, integrated approach to hazard mitigation planning evaluates strategies that reduce risk while investing in co-benefits that increase environmental sustainability, economic value and local quality of life.

FEMA recently updated HMP Guidance to include provisions that allow for and incentivize integrated and green infrastructure/low impact development (GI/LID) approaches to hazard mitigation, including:

- More focus on integrated planning including natural resources.
- Future conditions considerations including impervious area expansion.
- Incentives to exceed the minimum plan content requirements - "Enhanced Plans" are eligible for more post-disaster funding.
- FEMA focus on resilience creates openness for local initiatives integrated into planning.
- In addition to FEMA, other state and federal agencies are more often prioritizing grant and loan funding for projects with co-benefits, such as GI/LID, that provide multiple community benefits.



This pilot project, which was sponsored by the U.S. Environmental Protection Agency (EPA) Office of Water and EPA Region 5, brought together representatives from EPA, Wisconsin Emergency Management, and FEMA to work with Brown County, Wisconsin and its local partners to examine options for integrating GI/LID into the county's All Hazard Mitigation Plan (AHMP). In providing this assistance to Brown County, EPA and its project consulting team used the following three stage process:



THREE STAGES OF TECHNICAL ASSISTANCE FOR BROWN COUNTY, WI

This report documents the key outcomes of technical assistance provided to Brown County to achieve the following goals:

- Identify the local flood and stormwater issues that could be addressed via hazard mitigation planning.
- Using local input, gauge the capacity/capability to address the flood and stormwater issues identified.
- Identify the gaps in capacity/capability.
- Enhance understanding of what makes a good mitigation project.
- Identify feasible actions that leverage the capacity/capability for integration into the Brown County AHMP.

EPA anticipates that this effort will provide an example that can be followed by other communities to integrate GI/LID into their local HMPs.

COMMUNITY CONTEXT

Brown County is located in east-central Wisconsin at the southern end of the bay of Green Bay on western Lake Michigan. The County has over 250,000 residents, with more than 100,000 of those residents living in the county seat of Green Bay, making it the fourth most populous county in Wisconsin. Urban development in Brown County is centered around Green Bay while the southern and eastern portions of the county are predominantly rural/agricultural. There are 13 townships, nine villages, and two cities in the county.



Brown County's location at the head of Green Bay and the mouth of Fox River has resulted in a long history as an economic and transportation crossroads for western Lake Michigan. Economic development in Brown County consists of a diverse group of industries led principally by paper and paper product manufacturers along the Fox River. Another important industry is cheese making — Green Bay is the largest cheese processing, concentrating, and shipping center in the U.S. Among the numerous other industries in Brown County are manufacturing, finance, transportation, and communications.

Geologically the county has been greatly influenced by glacial forces and the topography is generally categorized as gently rolling moraines. The western two-thirds of the county slopes northeastward where it drains into the Fox River before discharging into Green Bay. This drainage contains most of the Urban development in Brown County which is centered in and around the City of Green Bay and its adjacent communities with smaller areas of urban development in communities outside of this area. Drainage in rural areas is provided by natural stream channels often enhanced with agricultural drainage tile systems. In urban areas, stormwater sewer systems provide drainage of stormwater runoff into Green Bay. These systems exhibit a wide range of age, condition, and capacity. Throughout the county, older roadways are drained by way of a roadside ditch system while new construction contains modern stormwater infrastructure such as subsurface drainage systems and stormwater capture and treatment facilities.



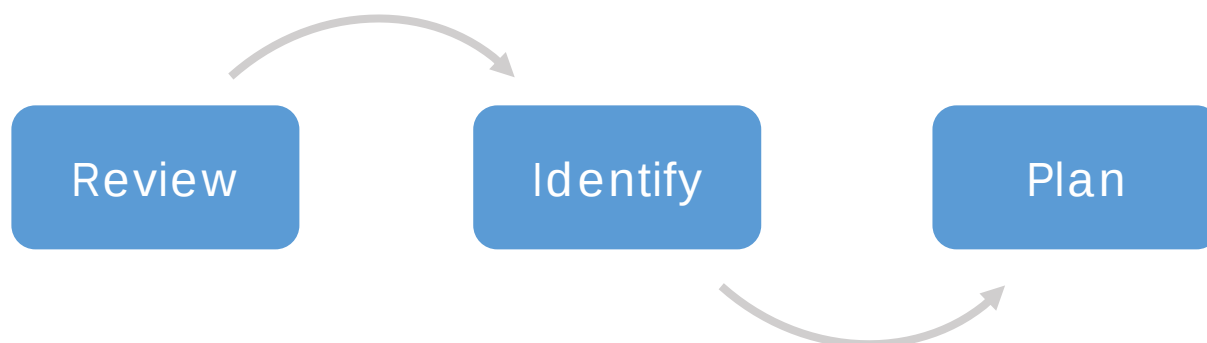
As part of updating the Brown County AHMP planners from the county and partner jurisdictions are assessing strategies for mitigating a wide diversity of identified hazards. Given the climate, development patterns, and shoreline/riverside setting of the county flooding impacts are a major hazard throughout the county and occur in response to a variety of causes including seiche, ice dams, snowmelt, riverine, and stormwater runoff. This flood risk was a high ranked hazard of concern for the planning area and is an emphasis of the Brown County AHMP Update.

COMMUNITY CONVENING

Brown County and AHMP partner representatives; state agency representatives; non-governmental organization representatives; FEMA staff; and EPA staff and consultants convened for a series of virtual workshops on September 8, 11, and 18, 2020. Workshop 1 provided a review of the flooding issues within Brown County which may be addressed by the Hazard Mitigation process. Workshop 2 focused on identifying green infrastructure solutions applicable to Brown County flooding issues and identifying possible alternatives to address them. Workshop 3 focused on building a set of action plan items that would lead to the integration of green infrastructure into Brown County's AHMP.



The ESRI Storymaps platform was used as the primary workshop delivery mechanism allowing facilitators to share information and graphics throughout each workshop while simultaneously providing workshop participants an opportunity to share information relevant to their respective community. Storymaps is a web-based application of ArcGIS that enables the sharing and building of maps and other data collaboratively. The Storymaps platform is particularly applicable to the virtual workshop setting. The three workshops followed a review-identify-plan process.



Workshop 1

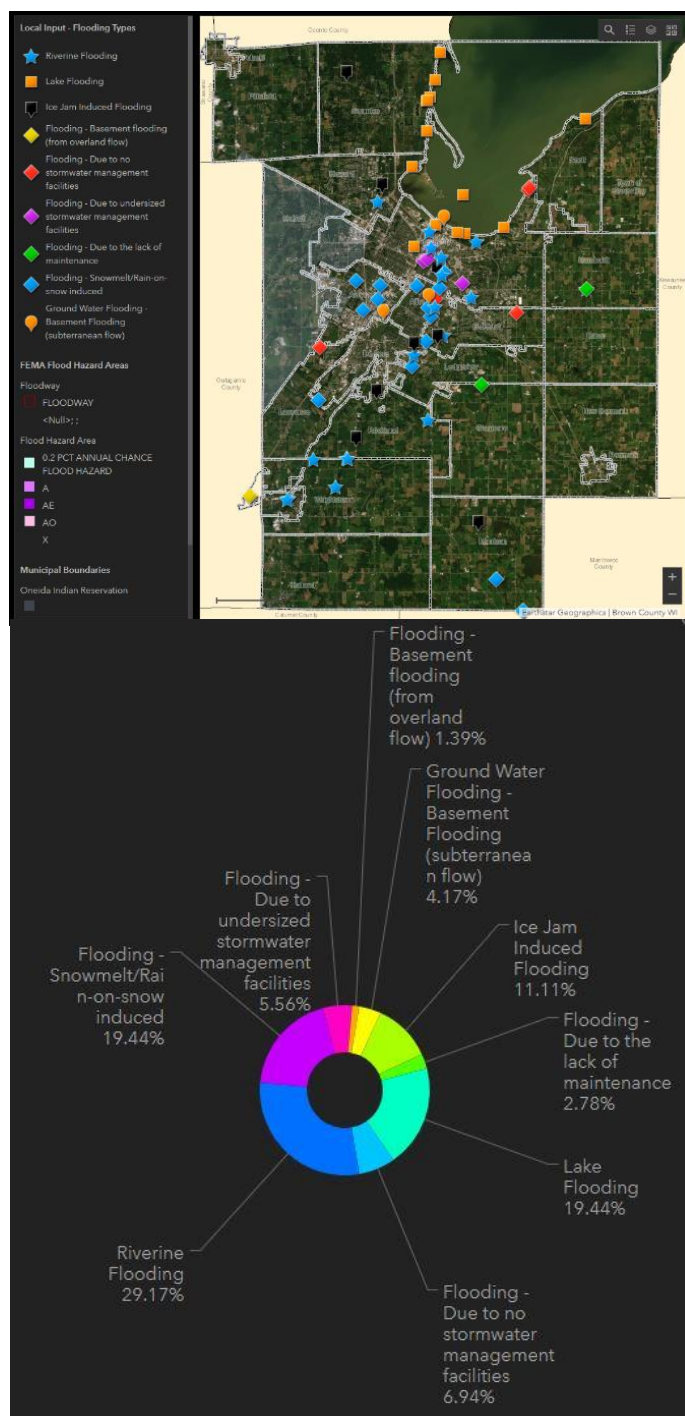
Workshop 1 was held on September 8, 2020, as a 2-hr virtual meeting. There were approximately 50 participants representing numerous communities throughout Brown County (see Appendix A for list of workshop attendees).

EPA Region 5 staff introduced the purpose of the workshops as a collaborative exploration of GI and its application within Brown County's AHMP update process.

The Brown County lead planner for the AHMP led off with a presentation of historical flooding problems throughout Brown County and detailed various flooding types and their causes. These included seiche, ice/snowmelt, coastal, and stormwater flooding. The presentation included a review of a county mapping application which tracks historic flooding incidents and provides a snapshot of the geographic distribution of flooding across the County.

Participants were then asked to provide information on known flooding issues within their respective communities. The ESRI ArcGIS StoryMaps application was used to collect this information via a survey link in which participants provided key information including; flooding type, impacted community, comments, representative photos, and other identifying information. For each entry participants were able to identify the flooding location via the mapping platform. This information was then uploaded to the story-mapping platform in real-time.

- Participants identified 50 individual locations of flooding issues geographically grouped according to flooding type
- Riverine flooding was the most reported flooding type at 29%
- Snowmelt/rain-on-snow and lake flooding were the next most common types reported at 19%
- Flooding due to the lack of, or undersized, stormwater management facilities were less reported at 7% and 6% of responses respectively.



Participants were then asked to complete a core capability exercise in the form of a web-based survey containing questions related to the capabilities to address stormwater flooding throughout the County. The first part of the core capabilities exercise focused on county-level capabilities where participants were asked to rate various stormwater capabilities in the county as either strengths or weaknesses. The second part of the exercise focused on the participant's local community and consisted of a yes/no response to a series of questions regarding each community's flood/stormwater programs and their relative core capacity.

Workshop 2

Workshop 2 was held on September 11, 2020 and followed the same general format as Workshop 1. The workshop began with a recap of the overall objectives of the workshops and a review of the results of Workshop 1. The facilitators provided an analysis of the core capability exercise responses provided by the workshop participants. The results highlighted several county scale strengths and challenges in the current policies and regulations in which flooding hazards are managed and mitigated. The following elements were rated as strengths or weaknesses by more than 60% of participant respondents. While other elements received a more even quantity of responses.

County-level Strengths

- Consistent regulations and practices to manage stormwater
- A good understanding of stormwater management issues by the public
- Future development within the county is managed so that flood hazards due to existing development are not increased
- Adequate capacity and resources to implement current stormwater management programs
- Floodplain management policies are consistent

County-level Challenges

- Stormwater management facilities are not always adequately sized and maintained
- Procuring funding for maintenance of publicly owned stormwater facilities
- Appropriating funding for the construction of needed new capital stormwater facilities
- Achieving public understanding of stormwater management and flood risks
- Gaining public and political support for the use of LID/GI and/or nature-based solutions (NBS) to manage stormwater



Local Capabilities

The core capabilities exercise also indicated occasional contrast between participants' perception of county level capacity and capability within their specific jurisdiction. Rather than a

strength/weakness response which was requested for the county level portion of the exercise, participants in the local core capabilities portion were asked to answer yes/no on a series of questions regarding their individual community's capacity to address hazards. Key results included the following:

- The local jurisdiction has an established stormwater utility to finance construction and operation of publicly owned stormwater collection and treatment systems (70% responded 'No')
- The floodplain program is coordinated with stormwater, source water, and other water resource programs (47% responded 'Yes')
- The local jurisdiction has a capital facilities program that can fund the construction of stormwater management facilities (58% responded 'Yes')

Some of the key findings from the capabilities exercise had a significant influence on the outcomes of this project. Most notable was the shift in focus from localized actions that target each planning partner individually, to more large scale, regional actions that would help address the significant variance in capability at the local level. A large variance in capacity/capability between the smaller towns/cities and the City of Green Bay/Brown County was identified by the core capability exercise. While this was not a surprise to the planning team, this finding did warrant a course correction in the focus of the discussion that followed Workshop 2.

The facilitator then provided a technical presentation on green infrastructure and its relevance to addressing stormwater flooding issues. The presentation included an overview of green infrastructure function and practices as well as information on the various benefits which green infrastructure provides in addition to its core function of protecting water quality. Particular focus was on the role which green infrastructure practices can serve in reducing overall stormwater runoff volumes and therefore reducing downstream flood impacts.

The presentation included a review of green infrastructure practices which may be applicable to Brown County. These included both urban practices such as permeable pavement, bioretention, and infiltration-based practices as well as practices applicable to rural/agricultural settings. Rural practices include many which are already incorporated into local watershed management plans serving the drainage areas in Brown County including wetland restoration, vegetated buffers, tile system management, and water and sediment control basins (WASCONBS). Finally, the presentation briefly reviewed program and policy elements necessary for the successful implementation of green infrastructure on a regional scale. These include stakeholder coordination, technical capacity, education and outreach, and funding/policy elements.



Workshop 3

Roughly 30 people convened virtually for Workshop 3 to support development of the Action Plan for integrating GI with the AHMP for Brown County. The group consisted of key stakeholders that could influence the incorporation of GI concepts into existing policies and future hazard mitigation projects.

As noted above, the results of the Workshop 2 core capabilities exercise resulted in a course correction for the content and focus of Workshop 3. The original game plan for Workshop 3 was to establish breakout groups organized by flood hazard problem type and similarity in core capability, with the objective of identifying clearly defined hazard mitigation actions for each planning partner to the Brown County Hazard Mitigation Plan. However, this approach was revised when it became apparent that the issues identified would be better addressed at the regional scale. So, the focus for discussion for Workshop 3 was shifted to how the issues identified could be addressed regionally. This discussion resulted in the identification of “countywide” actions that would benefit all planning partners to the Brown County Hazard Mitigation Plan. Area-wide actions are a best-management practice for multi-jurisdictional hazard mitigation plans and can be an effective way to build support for regional scale actions.

Participants in the action planning workshop identified 5 overarching actions that are important to Brown County and encompass the strengths, challenges, and opportunities discussed at the two earlier workshops for integrating GI into the AHMP.

Countywide Action Plan

1. Complete a comprehensive watershed master plan to regionalize the stormwater management program for Brown County
2. Develop a technical guidance manual on GI/LID Best Management Practices (BMP) for Brown County
3. Develop a public education and outreach program to promote the benefits and uses of GI/LID
4. Establish a funding coordination group within Brown County that can help identify and coordinate funding opportunities for GI/LID/NBS projects
5. Perform a comprehensive review of the local stormwater management codes and standards within Brown County

Countywide #1: Comprehensive Watershed Masterplan

Utilizing existing plans and programs as the foundation, complete a comprehensive watershed masterplan that looks at the feasibility and applicability to regionalize the stormwater management program for Brown County. This Master Plan will strive to answer the following questions:

- What are the current problems within Brown County (BC) in both a water quality and quantity context?
- What is the degree of consistency of adequate stormwater management codes and standards (including those needed to support GI) throughout the planning area and what are the barriers to implementing effective codes countywide?
- How will the identified problems change in the future based on projected growth if regulated to the current codes and standards within the county?
- How could the impacts of these identified problems (both current and future) be mitigated via various means, such as revisions to existing codes and standards to mitigate potential impacts that may occur due to new and redevelopment activities and projects?
- Estimated cost for that mitigation

Applies to New or Existing Assets	Lead & Support Agencies & Roles	Immediate Next Steps	Estimated Cost	Funding Sources	Success Measures	Timeframe	Priority
New and Existing	BC Planning (Lead), BC Land and Water Con., NEW Water, Local Governments, WDNR, ACOE, UWGB, Sea Grant, Oneida Tribe, NEWSC	Find funding sources to apply for grants, test political support	High	FEMA HMA grants (BRIC, HMGP), HUD (CDBG-DR and MIT), EDA Community Resilience Grants	The master plan will determine if this regional approach to stormwater management is feasible from a practical, financial, and political standpoint	Short-term	High/Medium

Countywide #2: Develop a Technical Guidance Manual

As an interim implementation measure to the completion of Countywide Action #1, develop a technical guidance manual that presents the appropriate GI/LID/NBS BMPs for Brown County. This manual will be utilized as an interim implementation tool to support the promotion, uses, and benefits of GI/LID/NBS practices to manage both stormwater quality and quantity.

Applies to New or Existing Assets	Lead & Support Agencies & Roles	Immediate Next Steps	Estimated Cost	Funding Sources	Success Measures	Timeframe	Priority
New and Existing	BC Planning (Lead), Sea Grant, New Water	Find funding sources to apply for grants, form an oversite committee	Medium	WI Coastal Management	Technical guidance manual will provide Brown County and local muni's with a resource tor GI/LID/NBS BMPs and lead to more GI/LID/NBS	Short-term	Low

Countywide #3: Public Education/Outreach Program

As an interim implementation measure to the completion of Countywide Action #1, develop a public education and outreach program that promotes the benefits and uses of GI/LID/NBS stormwater projects at the local and private property owner scales.

Applies to New or Existing Assets	Lead & Support Agencies & Roles	Immediate Next Steps	Estimated Cost	Funding Sources	Success Measures	Timeframe	Priority
New and Existing	NEWSC/UW Extension and the Leads (TBD), BC Planning, Muni's, Fox Watershed Alliance, New Water	Coordinate with support agencies, find funding sources to apply for grants	Medium	WI DNR – Surface Water Grant, WCMO, FEMA BRIC (C&CB)	NEWSC is a stormwater consortium that helps municipalities navigate MS4 requirements including education and outreach efforts; NEWSC could also be a good organization to help promote GI/LID/NBS	Short-term	Medium

Countywide #4: Funding Coordination Group

As an interim implementation measure to the completion of Countywide Action #1, establish a funding coordination group within Brown County that can help identify and coordinate funding opportunities for GI/LID/NBS stormwater management projects within the planning area.

Applies to New or Existing Assets	Lead & Support Agencies & Roles	Immediate Next Steps	Estimated Cost	Funding Sources	Success Measures	Timeframe	Priority
New and Existing	BC EM, BC Planning, BC Administration	Find funding sources to apply for grants	Low	Local funding	To secure funding for any of these countywide actions	Short-term	Medium

Countywide #5: Codes and Standards Review

Perform a comprehensive review of the local stormwater management codes and standards within Brown County to identify obstacles and/or barriers to the implementation and enforcement of GI/LID/NBS standards and practices for stormwater management. As an option under this action, Brown County's urban and urbanizing area communities could utilize the GI audit tool provided in "Tackling Barriers to Green Infrastructure, An Audit of Local Codes and Ordinance," to assess their capacity to support and promote GI during development and redevelopment projects.

Applies to New or Existing Assets	Lead & Support Agencies & Roles	Immediate Next Steps	Estimated Cost	Funding Sources	Success Measures	Timeframe	Priority
New and Existing	BC Planning, Local Municipal Planning Depts (Lead), WI Sea Grant	Find funding sources to apply for grants	Medium	FEMA (BRIC C&CB Grant)	Get all communities reviewed*	1-5 years	Medium/Low

* The audit tool already exists and has been used by the City of Green Bay. This audit can be done ASAP if desired by a local municipality.

Table Legend:

Applies to New or Existing Assets: Existing assets are the general building stock and/or critical facilities and infrastructure that currently exist within the planning area. New assets are the future building stock and/or critical facilities and infrastructure that have yet to be constructed.

Lead & Support Agencies & Roles: Agencies that will play a role in the implementation of the action. The lead agency will take the responsibility for implementation and oversight of the action while the support agency(s) with assuming a supporting role as determined by the lead agency. The lead agency has been underlined in the table.

Immediate Next Steps: What actions are needed to be taken by the lead and support agencies to get the action to a point of implementation.

Estimated Cost: Enter "High," "Medium" or "Low" as follows:

- High: Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed action.
- Medium: Could budget for under existing work-plan but would require a reapportionment of the budget or a budget amendment, or the cost of the action would have to be spread over multiple years.
- Low: Possible to fund under existing budget. Action is or can be part of an existing ongoing program.

Funding Sources: Identify funding sources for the action. If it is a grant, include the funding sources for the cost share. Refer to your fiscal capability assessment to identify possible sources of funding and refer to the table below for project eligibility for FEMA's hazard mitigation assistance grant program.

Success Measures: Measurement of success as it pertains to the implementation of the action. This can be either quantitative, measured by a metric, or qualitative, measured by subjective measures.

Time Frame: Indicate the timeline as "short-term" (1 to 5 years) or "long-term" (5 years or greater) or "ongoing" (a continual program).

Priority: Enter "High," "Medium" or "Low" as follows:

- High Priority: An action that meets multiple objectives, has benefits that exceed costs, and has a secured source of funding. Action can be completed in the short term (1 to 5 years).
- Medium Priority: An action that meets multiple objectives, has benefits that exceed costs, and is eligible for funding though no funding has yet been secured for it. Action can be completed in the short term (1 to 5 years), once funding is secured. Medium-priority actions become high-priority actions once funding is secured.
- Low Priority: An action that will mitigate the risk of a hazard, has benefits that do not exceed the costs or are difficult to quantify, has no secured source of funding, and is not eligible for any known grant funding. Action can be completed in the long term (1 to 10 years). "Wish-list" actions. They may be eligible for grant funding from programs that have not yet been identified.

NEXT STEPS



The countywide actions have been crafted and formatted so that they could easily be integrated into the Brown County AHMP. "Countywide" means that the entire planning area would benefit from the outcome of the action. The AHMP will include countywide actions for other hazards of concern addressed by the plan as well. While these actions are not jurisdiction specific, each entity participating in the multi-jurisdictional planning effort are encouraged to show their support for these actions by specifically including their endorsement of a specific countywide action in their individual action plans for their jurisdiction. For example, an action that could be incorporated into a jurisdiction specific action plan could read as follows:

Support the designated lead and partner agencies as needed in the implementation of the countywide actions identified in the Brown County All Hazard Mitigation Plan.

If a jurisdiction wants only to endorse certain countywide actions, but not all; the above statement could be crafted to only address those actions the jurisdiction wishes to endorse. As stated earlier, countywide actions can be a good platform from which to build consensus on regional scale actions. All jurisdictions participating in the Brown County hazard mitigation planning effort are encouraged to fully vet these 5 actions before including them in their individual action plans. It is important to note that there was consensus among those that participated in these workshops that the scale of the problem(s) to be addressed in the planning area warranted regional scale actions. In the future Brown County may want to pursue such regional scale actions in conjunction with regional and state agencies and other local partners.

The following text provides a comprehensive strategy for implementing these county-wide actions into the Brown County AHMP. The text draws on required plan components and best practices for development and maintenance of hazard mitigation plans while highlighting GI/LID/NBS elements identified during the workshop.

Plan Implementation/Maintenance Strategy

A hazard mitigation plan must present a plan maintenance process that includes the following (44 CFR Section 201.6(c)(4)):

- A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan over a 5-year cycle
- A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate
- A discussion on how the community will continue public participation in the plan maintenance process

While these points can be considered the “minimum” requirements for DMA planning compliance, a robust plan maintenance strategy is the key to keeping a plan dynamic, especially multi-jurisdictional scope plans like the Brown County planning effort. Therefore, it is recommended that the Brown County Hazard Mitigation Plan include the following plan implementation and maintenance strategy as a stand-alone chapter in the plan to emphasize its importance. The following strategy exceeds the 44 CFR section 201.6 requirements and meets the Community Rating System (CRS) plan maintenance requirements specified under activity 510.

Recommended Plan Text for Brown County

The following text should be included in the Brown County Hazard Mitigation Plan as a stand-alone chapter. Special note is made where GI/LID/NBS elements should be highlighted or reinforced.

This chapter details the formal process that will ensure that the hazard mitigation plan remains an active and relevant document and that the planning partners maintain their eligibility for applicable funding sources. The plan maintenance process includes a schedule for monitoring and evaluating the plan annually and producing an updated plan every five years.

This chapter also describes how public participation will be integrated throughout the plan maintenance and implementation process. It also explains how the mitigation strategies outlined in this plan will be incorporated into existing planning mechanisms and programs, such as comprehensive land-use planning processes, capital improvement planning, and building code enforcement and implementation.

The plan’s format allows sections to be reviewed and updated when new data become available, resulting in a plan that will remain current and relevant. Pursuant to 44CFR 201.6(c)(4)(i), the plan maintenance matrix shown in Table-1 provides a synopsis of responsibilities for the overall plan maintenance strategy, which are discussed in further detail in the sections below.

Table-1. Plan Maintenance Matrix

Task	Approach	Timeline	Lead Responsibility	Support Responsibility
Monitoring-Progress Reporting	Preparation of status updates and action implementation tracking as part of submission for annual progress report	January to January of each calendar year or upon full update to comprehensive plan or major disaster	Jurisdictional points of contact for each signatory to the plan	Jurisdictional implementation lead identified in the jurisdictional specific component of the plan
Evaluation	Annual progress reports will be evaluated by an oversight steering committee annually	Finalized progress report completed by March 1 of each year	Brown County	Jurisdictional implementation lead identified in the jurisdictional specific component of the plan
Update	Reconvene the planning partners, at a minimum, every 5 years to guide a full update to review and revise the plan	Every 5 years or upon full update to comprehensive plan or major disaster	Brown County and oversight steering committee	Jurisdictional points of contact for each signatory to the plan
Grant Monitoring and Coordination	Grant funding opportunities will be monitored via agency notifications, state associations and post-disaster response	Ongoing during the performance period of this plan	Brown County	Jurisdictional points of contact for each signatory to the plan
Plan Integration	Create a linkage between the hazard mitigation plan and individual jurisdictions' comprehensive plans or similar plans identified in the core capability assessments	Ongoing during the performance period of this plan as opportunities for integration become available, or according to timelines identified in the actions plans for each planning partner	Jurisdictional points of contact identified in Volume 2 annexes	Jurisdictional implementation lead identified in the jurisdictional specific component of the plan

Task	Approach	Timeline	Lead Responsibility	Support Responsibility
Continuing Public Involvement	Keep the website maintained and receive comments through it over the course of the plan; maintain planning partner links to the website; post county-wide progress report to the website	Ongoing during the performance period of the plan. Progress reports to be posted annually. Participating CRS communities are to provide the annual progress report to their governing bodies for their information	Brown County will maintain the overall hazard mitigation plan website and post the Countywide progress report annually (Each planning partner will provide a link to the website and post their individual progress report at their discretion. Participating CRS communities will follow protocol identified under step 10 of the 10-step CRS planning requirements)	Brown County and Jurisdictional implementation lead identified in Volume 2 annexes

Plan Monitoring-Annual Progress Reporting

Brown County will be the lead agency responsible for monitoring the plan, and each partner will support plan implementation by tracking the status of all recommended mitigation actions relevant to that partner. Staff or departments with primary responsibility are identified in each jurisdictional specific component of the plan.

The minimum task of each planning partner will be the monitoring of the progress of its individual action plan during a 12-month performance period. This review will include the following:

- The internal process for monitoring and evaluating the plan's processes will be evaluated as part of the annual progress reporting process
- Summary of any hazard events that occurred during the performance period and the impact these events had on the planning area
- Review of mitigation success stories
- Review of continuing public involvement [including the development of a countywide GI/LID/NBS education and outreach program]
- Brief discussion about why targeted strategies were not completed
- Re-evaluation of the action plan to determine if the timeline for identified projects needs to be amended (such as changing a long-term project to a short-term one because of new funding)
- Recommendations for new projects

- Changes in or potential for new funding options (grant opportunities)
- Impact of any other planning programs or actions that involve hazard mitigation

A template that shows the minimum level of detail that will be sought for preparing a progress report is provided in Appendix B. Brown County will oversee progress reporting and will have the discretionary authority on how to capture this information at least annually over the performance period of the plan. This information may be captured by various means available to the planning partnership. This report should be used as follows:

- Posted on the Brown County website page dedicated to the hazard mitigation plan
- Provided to the local media through available media outlets
- Presented to planning partner governing bodies to inform them of the progress of actions implemented during the reporting period
- Provided as part of the CRS annual re-certification package for planning partners that participate in the CRS. The CRS requires an annual recertification to be submitted by October 1 of every calendar year for which the community has not received a formal audit. To meet this recertification timeline, the planning team will strive to complete progress reports between June and September each year.



Uses of the progress report will be at the discretion of each planning partner. Annual progress reporting is not a requirement specified under 44 CFR. However, it may enhance the planning partners' opportunities for funding. While failure to implement this component of the plan maintenance strategy will not jeopardize a planning partner's compliance under the DMA, it may jeopardize its opportunity to partner and leverage funding opportunities with the other partners.

Plan Evaluation

Brown County has used a volunteer Steering Committee to oversee the update of the AHMP and made recommendations on key elements including the maintenance strategy. It was the Steering Committee's position that an oversight committee with representation similar to the initial Steering Committee should have an active role in the Plan maintenance strategy. Therefore, it is recommended that a Steering Committee remain a viable body involved in key elements of the Plan maintenance strategy. The new Steering Committee, managed by the Brown County Emergency Management Department, should strive to include representation from the planning partners, as well as other stakeholders in the planning area, at the discretion of Brown County.

The principal role of the Steering Committee in this plan maintenance strategy will be to provide a review forum to be used by Brown County and its planning partners to identify enhancements to be considered at the next update [such as the evaluation of a potential watershed master plan(s) for incorporation of GI/LID/NBS elements as part of flood hazard mitigation efforts]. Keeping a Steering

Committee intact will provide a head start on future updates. However, it should be noted that completion of the progress report is the responsibility of each planning partner, not the responsibility of the Steering Committee. It will be the Steering Committee's role to serve as a resource to all planning partners as needed to review the progress report in an effort to identify issues needing to be addressed by future plan updates.

Plan Update

Federal regulations require that local hazard mitigation plans be reviewed, revised if appropriate, and resubmitted for approval in order to remain eligible for benefits awarded under the Disaster Mitigation Act (44 CFR Section 201.6.d(3) and Section 201.7(d)(3)). This format allows all of the individual planning partners to review and update plan sections when new data become available. New data can be easily incorporated including newly recommended actions, resulting in a plan that will remain current and relevant. The County intends for planning partners to support updating the plan on a five-year cycle from the date of plan approval. This cycle may be accelerated to less than 5 years based on the following triggers:

- A presidential disaster declaration that impacts the planning area
- A hazard event that causes loss of life
- An update of a participating jurisdiction's comprehensive plan

It will not be the intent of the update process to develop a completely new hazard mitigation plan. Based on needs identified by the planning team, the update will, at a minimum, include the following elements:

- The update process will be convened through a new steering committee
- The hazard risk assessment will be reviewed and, if necessary, updated using best available information and technologies
- Action plans will be reviewed and revised to account for any actions completed, dropped, or changed and to account for changes in the risk assessment or planning partnership policies identified under other planning mechanisms (such as the comprehensive plan)
- The draft update will be sent to appropriate agencies and organizations for comment
- The public will be given an opportunity to comment on the update prior to adoption
- Partners' governing bodies will adopt their respective portions of the updated plan

Because plan updates can require a year or more to complete, Brown County will initiate efforts to update the plan before it expires. Brown County will consider applying for funding to update the plan no later than 2 calendar years before plan expiration.

Grant Monitoring and Coordination

Brown County will identify grant funding opportunities and send notifications to participating partner jurisdictions. This will include the organization of a GI/LID/NBS coordination group to identify grant opportunities related to these elements. Once these grant opportunities are identified, planning partners interested in pursuing a grant will convene in a short meeting to review the hazard mitigation plan and pursue a strategy to capture that grant funding including grant application. Brown County Emergency Management will assume lead responsibility for planning and facilitating grant

opportunity meetings. Review of the hazard mitigation plan at these meetings can include the following:

- Discussion of any hazard events that occurred during the prior year and their impact on the planning area
- Impact of potential grant opportunities on the implementation of mitigation actions
- Re-evaluation of the action plans to determine if the timeline for identified actions needs to be amended (such as changing a long-term action to a short-term action because of funding availability)
- Recommendations for new actions/removal of completed or unwarranted projects
- Impact of any other planning programs or initiatives that involve hazard mitigation

If multiple planning partners decide to pursue the same grant funding opportunity, partnerships can be formed to utilize the hazard mitigation plan in the grant application. Coordination should always include Brown County Emergency Management.

Incorporation into Other Planning Mechanisms

The information on hazard, risk, vulnerability, and mitigation contained in this plan is based on the best science and technology available at the time this plan was prepared. Note that the comprehensive plans of the planning partners are considered to be integral parts of the Brown County AHMP. The planning partners used their comprehensive plans, capital improvement plans, and the hazard mitigation plan as complementary documents that work together to achieve the goal of reducing risk exposure to the citizens of the planning area. An update to a comprehensive plan may trigger an update to the hazard mitigation plan.

All municipal planning partners are committed to creating a linkage between the hazard mitigation plan and their individual comprehensive plans by identifying a mitigation action as such and giving that action a high priority. Other planning processes and programs to be coordinated with the recommendations of the hazard mitigation plan include the following:

- Emergency response plans
- Training and exercise of emergency response plans
- Debris management plans
- Recovery plans
- Capital improvement programs
- Municipal codes [including GI/LID/NBS code reviews]
- Community design guidelines
- Green Infrastructure design guidelines
- Stormwater management programs
- Water system vulnerability assessments
- Community wildfire protection plans
- Comprehensive flood hazard management plans
- Resiliency plans
- Community Development Block Grant-Disaster Recovery action plans
- Public information/education plans

Some action items do not need to be implemented through regulation. Instead, these items can be implemented through the creation of new educational programs, continued interagency coordination, or improved public participation. As information becomes available from other planning mechanisms that can enhance this plan, that information will be incorporated via the update process.

Continuing Public Participation

The public outreach strategy used during development of the current update will provide a framework for public engagement through the plan maintenance process. It can be adapted for ongoing public outreach as determined to be feasible by the planning partnership such as for educating stakeholders on the potential application of green infrastructure. A steering committee similar to the one involved in developing this hazard mitigation plan update will be put in place to provide stakeholder input on plan maintenance activities.

The public will continue to be apprised of hazard mitigation activities through the website and reports on successful hazard mitigation actions provided to the media. Brown County will keep the website maintained, including monitoring the email address where members of the public can submit comments to the steering committee. This site will house the final plan and will be a one-stop shop for information regarding the plan, the partnership and plan implementation. Copies of the plan also will be distributed to the Brown County Library System.

Upon initiation of the next plan update process, a new public involvement strategy will be initiated, with guidance from the new steering committee. This strategy will be based on the needs and capabilities of the planning partnership at the time of the update. At a minimum, it will include the use of local media outlets.



Additional Resources

Community Rating System Frequently Asked Questions

www.floodsmart.gov/floodsmart/pages/crs/community_rating_system.jsp

FEMA Building Community Resilience with Nature-based Solutions

www.fema.gov/Riskmap-nature-based-solutions-guide-2020.pdf

FEMA Building Resilient Infrastructure and Communities (BRIC)

www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities

FEMA Flood Mitigation Assistance Grant Program

www.fema.gov/flood-mitigation-assistance-grant-program

FEMA Hazard Mitigation Grant Program

www.fema.gov/hazard-mitigation-grant-program

FEMA National Flood Insurance Program, Community Rating System

www.fema.gov/national-flood-insurance-program-community-rating-system

FEMA Pre-Disaster Mitigation Grant Program

www.fema.gov/pre-disaster-mitigation-grant-program

HUD Community Development Block Grant Disaster Recovery Program

<https://www.hudexchange.info/programs/cdbg-dr/>

Implementing Stormwater Infiltration Practices at Vacant Parcels & Brownfields

<http://www.epa.state.il.us/water/watershed/publications/implementing-stormwater-infiltration-practices.pdf>

National Association of City Transportation Officials (NACTO) Urban Street Stormwater Guide

<https://nacto.org/publication/urban-street-stormwater-guide/>

National Stormwater Calculator

<https://www.epa.gov/water-research/national-stormwater-calculator>

NOAA Resilience Grant Program

coast.noaa.gov/resilience-grant/

U.S. EPA Building Blocks for Sustainable Communities

<http://www.epa.gov/dced/buildingblocks.htm>

U.S. EPA Flood Resilience for Riverine and Coastal Communities Checklist

Tool helps communities adapt to climate change and plan for disaster resilience by auditing local plans, policies, and development regulations. For more information on flood resilience, visit:

www2.epa.gov/smartgrowth/flood-resilience-checklist

U.S. EPA Green Infrastructure Website

<http://www.epa.gov/green-infrastructure>

U.S. EPA Green Infrastructure Funding Sources

<https://www.epa.gov/green-infrastructure/green-infrastructure-funding-opportunities>

U.S. EPA Manage Flood Risk

www.epa.gov/green-infrastructure/manage-flood-risk

U.S. EPA Reference Documents on Incorporating Green Infrastructure into Brownfields Projects

https://www.epa.gov/sites/production/files/2015-07/documents/green_infrastructure-9-16-14.pdf

<http://www.epa.gov/green-infrastructure>

U.S. EPA Water Quality Scorecard: Incorporating Green Infrastructure Practices at the Municipal, Neighborhood, and Site Scale

<http://www.epa.gov/smartgrowth/water-quality-scorecard-incorporating-green-infrastructure-practices-municipal>

APPENDIX A – WORKSHOP ATTENDEES

9/8/20	9/11/20	9/18/20	Name	Title	Affiliation
•	•		Bertler, Joe	Fire Chief	Village of Suamico Fire Department
•			Bosiacki, Bill	Zoning Administrator	Brown County Zoning
•		•	Butry, Adam	Health, Safety, Security Coordinator	NEW Water (Green Bay Metropolitan Sewerage District)
•	•	•	Clements, Trevor	Principal Planner	Tetra Tech
•			Delzell, Sophie	Environmental Communications Specialist	Tetra Tech
•	•	•	DuMez, Jeff	GIS Coordinator / LIO	Brown County
•	•		Dunks, Steve	Zoning Administrator	Village of Suamico
•		•	Estrup, Cindy	Sergeant Emergency Manager	University of Wisconsin Green Bay
•	•	•	Flaner, Rob	Hazard Mitigation Program Manager	Tetra Tech
		•	Fuller, Trevor	Planning and Zoning Administrator	Village of Allouez
•	•	•	Garcia, Chris	Transportation Planner	Bay-Lake Regional Planning Commission
•	•	•	Genchanok, Yana	Environmental Engineer	EPA
•	•	•	Goo, Robert	Environmental Protection Specialist	US EPA
•	•	•	Grenier, Steve	Director of Public Works	City of Green Bay
•	•	•	Gresham, Kaylynn	Emergency Management Director	Oneida Nation
•	•	•	Grosshans, Jon	Community Planner	EPA
•			Hewitt, Justin	Project Specialist	Green Bay Water utility
•	•		Heyroth, Matt	Assistant Zoning Administrator	Brown County Planning and Land Services - Zoning
•			Jacobs, Meghan	Market Human Resources Manager	Bryant & Stratton College
•			Janke, Ed	Chief	Village of Howard

•			Juedes, Jesse	Supervisor	Town of Wrightstown
•	•		Kaster, Mike	Director of Engineering	Village of Howard
•	•		Koenig, Julie	Clerk	Town of Rockland
•	•	•	Kotenberg, Kurt	Warning Coordination Meteorologist	National Weather Service
•	•	•	Kowalzek-Adrians, Angela	Contract & Grant Specialist	NEW Water (Green Bay Metropolitan Sewerage District)
•			Kozak, Michelle	Chief of Emergency Management	Army Corp - Chicago
•	•		Kozloski, Nick	Lieutenant	ASHWAUBENON
•			Ladwig, Holly	211 and Program Investment Manager	Brown County United Way
•			Lange, Brad	Administrator	City of Green Bay
•	•	•	Maki, Lauri	Director	Brown County Emergency Management
•	•	•	Marsh, Janette	Nonpoint Source Specialist State and Tribal Programs	U.S. EPA Region 5
•			Massie, Joe	Communications Specialist	Brown County
•			Moore, Mike	Services Manager	Wisconsin Public Service
•	•	•	Mosso, Dacia	Associate Director of Environmental Sciences	Tetra Tech
•	•	•	Neumann, Blake	East River Resiliency Fellow	The Nature Conservancy
•		•	Neumeyer, Paul	Zoning Administrator	City of Green Bay
•	•	•	Noordyk, Julia	Water Quality and Coastal Community Specialist	UW Sea Grant
•		•	Pelch, Steve	Coordinator	North East Wisconsin Healthcare Emergency Readiness Coalition
•	•	•	Peltier, Cullen	Director	Brown County Public Safety Communications
•	•	•	Peterson, Cadence	Mitigation Planner	FEMA RV
•	•	•	Qualls, Nathan	Director of Technical Services	NEW Water (Green Bay Metropolitan Sewerage District)

•	•		Risch, Ben	Emergency Dispatch Supervisor	Wisconsin Public Service Corp
	•	•	Rowell, Andy	Public Works Director	Village of Bellevue
•	•	•	Sarau, Lisa	Staff Engineer	NEW Water (Green Bay Metropolitan Sewerage District)
•			School, Stephanie	Emergency Management Specialist	Hospital Sisters Health System (HSHS)
•	•	•	Smith, Jonathan	Senior Stormwater Engineer	Tetra Tech
	•	•	Smith, Madison	Planner	City of Green Bay
	•	•	Smudde, Jeff	Director of Environmental Programs	NEW Water (Green Bay Metropolitan Sewerage District)
		•	Sommers, Katie	State Hazard Mitigation Officer	WI Emergency Management
	•		Studer, Melissa	Senior Stormwater Engineer	Tetra Tech
•	•	•	Teaters, Dan	Senior Planner, Natural Resources & Land Division	Brown County Planning and Land Services
•	•	•	Tews, Randy	Deputy Chief	ASHWAUBENON
•			Treml, Ben	Regional Conservation Warden	WI - DNR
•	•	•	UsarekWitek, Magda	Project Planner/GIS Specialist	Tetra Tech
•	•		Vickman, Andy	Superintendent of Public Works and Utilities	Village of Wrightstown
•	•		Wescott, Patrick	Director of Operations	NEW Water (Green Bay Metropolitan Sewerage District)
•	•	•	Willemon, Genny	EMR Coordinator/Safety Chair, NEW HERC President	Brown County

APPENDIX B – PROGRESS REPORT TEMPLATE

2020 Brown County Hazard Mitigation Plan Annual Progress Report

Reporting Period: (Insert reporting period)

Background: Brown County and participating cities and special purpose districts in the county developed a hazard mitigation plan to reduce risk from all hazards by identifying resources, information, and strategies for risk reduction. The federal Disaster Mitigation Act requires state and local governments to develop hazard mitigation plans as a condition for federal disaster grant assistance. To prepare the plan, the participating partners organized resources, assessed risks from natural hazards within the county, developed planning goals and objectives, reviewed mitigation alternatives, and developed an action plan to address probable impacts from natural hazards. By completing this process, these jurisdictions maintained compliance with the Disaster Mitigation Act, achieving eligibility for mitigation grant funding opportunities afforded under the Robert T. Stafford Act. The plan can be viewed on-line at:

(Insert Website address)

Summary Overview of the Plan's Progress: The performance period for the *2020 Brown County Hazard Mitigation Plan* became effective in Month Year with the final approval of the plan by FEMA. The initial performance period for this plan will be 5 years, with an anticipated update to the plan to occur before Month Year. As of this reporting period, the performance period for this plan is considered to be ___% complete. The hazard mitigation plan has targeted ___ hazard mitigation actions to be pursued during the 5-year performance period. As of the reporting period, the following overall progress can be reported:

___ out of ___ actions (___ %) reported ongoing action toward completion.

___ out of ___ actions (___ %) were reported as being complete.

___ out of ___ actions (___ %) reported no action taken.

Purpose: The purpose of this report is to provide an annual update on the implementation of the action plan identified in the *2020 Brown County Hazard Mitigation Plan*. The objective is to ensure that there is a continuing and responsive planning process that will keep the hazard mitigation plan dynamic and responsive to the needs and capabilities of the partner jurisdictions. This report discusses the following:

- Natural hazard events that have occurred within the last year
- Changes in risk exposure within the planning area
- Mitigation success stories
- Review of the action plan
- Changes in capabilities that could impact plan implementation
- Recommendations for changes/enhancement.

The Hazard Mitigation Plan Steering Committee: The Hazard Mitigation Plan Steering Committee, made up of planning partners and stakeholders within the planning area, reviewed and approved this progress report at its annual meeting held on [REDACTED], 202_. It was determined through the plan's development process that a steering committee would remain in service to oversee maintenance of the plan. At a minimum, the Steering Committee will provide technical review and oversight on the development of the annual progress report. It is anticipated that there will be turnover in the membership annually, which will be documented in the progress reports. For this reporting period, the Steering Committee membership is as indicated in Table 1.

Table 1. Steering Committee Members

Name	Title	Jurisdiction/Agency

Natural Hazard Events within the Planning Area: During the reporting period, there were __ natural hazard events in the planning area that had a measurable impact on people or property. A summary of these events is as follows:

[REDACTED]

[REDACTED]

Changes in Risk Exposure in the Planning Area: *(Insert brief overview of any natural hazard event in the planning area that changed the probability of occurrence or ranking of risk for the hazards addressed in the hazard mitigation plan)*

Mitigation Success Stories: *(Insert brief overview of mitigation accomplishments during the reporting period)*

Review of the Action Plan: Table 2 reviews the action plan, reporting the status of each action. Reviewers of this report should refer to the hazard mitigation plan for more detailed descriptions of each action and the prioritization process.

Address the following in the "status" column of the following table:

- Was any element of the action carried out during the reporting period?
- If no action was completed, why?
- Is the timeline for implementation for the action still appropriate?
- If the action was completed, does it need to be changed or removed from the action plan?

Table 2. Action Plan Matrix

Action Taken? (Yes or No)	Time Line	Priority	Status	Status (X, O, ✓)
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		
Action # __ —		[description]		

Completion status legend:
✓ = Project Completed
O = Action ongoing toward completion
X = No progress at this time

Changes That May Impact Implementation of the Plan: (Insert brief overview of any significant changes in the planning area that would have a profound impact on the implementation of the plan. Specify any changes in technical, regulatory and financial capabilities identified during the plan's development)

Recommendations for Changes or Enhancements: Based on the review of this report by the Hazard Mitigation Plan Steering Committee, the following recommendations will be noted for future updates or revisions to the plan:

Public review notice: The contents of this report are considered to be public knowledge and have been prepared for total public disclosure. Copies of the report have been provided to the governing boards of all planning partners and to local media outlets and the report is posted on the Brown County Hazard Mitigation Plan website. Any questions or comments regarding the contents of this report should be directed to:

**Brown County Planning and Land Services
305 E. Walnut St.
Green Bay, WI 54301
Ph: 920 448-6480**

Appendix C – Final Plan Shared with Municipalities Letter

To be included after FEMA approval

LETTER Place holder

Appendix D – List of Critical Facilities

The following list of critical facilities was derived from the Brown County Land Information Office address points data set. The Brown County Land Information Office and Emergency Management Departments work closely together to identify infrastructure and various facilities round the county that qualify as critical facilities and include that information in the GIS system used by Emergency Management for emergency response. The following table include the Geographic ID number, the critical facility use, critical facility name (if applicable) and the municipality in which its located.

ID	Usage	Name	Municipality
8333	WATER TOWER	DE PERE WATER TOWER - E MATTHEW DR	CITY OF DE PERE
79768	Electric Power Substation	DEPERE ENERGY CENTER	CITY OF DE PERE
79773	Water Supply Storage Tanks/Reservoirs	DEPERE WATER PUMP 3	CITY OF DE PERE
79774	Water Supply Storage Tanks/Reservoirs	DEPERE WATER PUMP 4	CITY OF DE PERE
79775	WATER PUMP	DEPERE WATER PUMP 5	CITY OF DE PERE
79776	WATER PUMP	DEPERE WATER PUMP 6	CITY OF DE PERE
79820	ELDERLY CARE FACILITY	RENNES HEALTH CENTER-NH	CITY OF DE PERE
79839	Radio/Television Stations	WGEE RADIO TOWERS	CITY OF DE PERE
79841	ELECTRICAL SUBSTATION	WPS SUB STATION 13	CITY OF DE PERE
79842	ELECTRICAL SUBSTATION	WPS SUB STATION 15	CITY OF DE PERE
80523	DAM	DEPERE DAM	CITY OF DE PERE
80635	Bridge (road over road)	CLAUDE ALLOUEZ EAST OVER FRONT ST	CITY OF DE PERE
81596	SCHOOL & RED CROSS DESIGNATED SHELTER	SYBLE HOPP SCHOOL	CITY OF DE PERE
81597	ELEMENTARY SCHOOL	WESTWOOD ELEMENTARY	CITY OF DE PERE
81620	SCHOOL	WEST DEPERE HIGH SCHOOL	CITY OF DE PERE
81850	CARE-CHILD	CREEKSIDE CHRISTIAN MONTESSORI	CITY OF DE PERE
82050	CARE-CHILD	ENCOMPASS CHILD CARE	CITY OF DE PERE
82615	HEALTH	AURORA PHARMACY	CITY OF DE PERE
95402	CLINIC	AURORA HEALTH CENTER	CITY OF DE PERE
95590	SCHOOL & RED CROSS DESIGNATED SHELTER	DICKINSON ELEMENTARY SCHOOL	CITY OF DE PERE
95949	SCHOOL	NOTRE DAME ELEMENTARY	CITY OF DE PERE
95978	CHURCH	FIRST UNITED PRESBYTERIAN	CITY OF DE PERE
96232	SCHOOL	SNC BUSH ART CENTER	CITY OF DE PERE
96498	CLINIC	BELLIN HEALTH CENTER	CITY OF DE PERE
96562	RESIDENTIAL CARE HOMES	RENAISSANCE ASSISTED LIVING	CITY OF DE PERE

96699	SCHOOL	ALTMAYER ELEMENTARY	CITY OF DE PERE
97102	HIGH SCHOOL & RED CROSS DESIGNATED SHELTER	DEPERE HIGH SCHOOL	CITY OF DE PERE
97136	FIRE STATION	DPFD FIRE STATION 1	CITY OF DE PERE
97137	FIRE & AMBULANCE STATION	DPFD FIRE STATION 2	CITY OF DE PERE
97280	SCHOOL	FOX VIEW INTERMEDIATE SCHOOL	CITY OF DE PERE
97317	School	MONTESSORI CHILDRENS WORLD	CITY OF DE PERE
97352	RETAIL SALES	PREVEA CLINIC	CITY OF DE PERE
98112	Municipal Garage	DEPERE MSC	CITY OF DE PERE
98375	SCHOOL	OUR LADY OF LOURDES SCHOOL	CITY OF DE PERE
98425	POLICE STATION	DEPERE POLICE DEPT	CITY OF DE PERE
98435	POST OFFICE	POST OFFICE DEPERE	CITY OF DE PERE
98556	WASTEWATER TREATMENT DePere Facility	DE PERE SEWER PLANT - NEW Water DBF	CITY OF DE PERE
98615	SPORTS STADIUM	SNC SOCCER STADIUM	CITY OF DE PERE
98981	MIDDLE SCHOOL	WEST DEPERE MID SCHOOL	CITY OF DE PERE
189084	FIRE & AMBULANCE STATION	DEPERE FIRE STATION 1	CITY OF DE PERE
189085	FIRE STATION	DEPERE FIRE STATION 2	CITY OF DE PERE
244490	Bridge (railroad over road)	NA	CITY OF DE PERE
244496	Bridge (road over water)	NA	CITY OF DE PERE
244506	Bridge (road over road)	NA	CITY OF DE PERE
244507	Bridge (road over road)	NA	CITY OF DE PERE
244508	Bridge (road over water)	CLAUDE ALLOUEZ BRIDGE	CITY OF DE PERE
244509	Bridge (road over road)	STH 32-57 & CTH PP OVERPASS	CITY OF DE PERE
244510	Bridge (road over trail)	NA	CITY OF DE PERE
244511	Bridge (road over water)	I-41 & ASHWAUBENON CREEK	CITY OF DE PERE
244513	Bridge (road over water)	SCHEURING RD OVER ASHWAUBENON CREEK	CITY OF DE PERE
244563	Bridge (railroad over road)	NA	CITY OF DE PERE
244564	Bridge (road over water)	NA	CITY OF DE PERE
244636	Bridge (road over road)	I-41 & SCHEURING RD OVERPASS	CITY OF DE PERE
244750	Bridge (road over water)	NA	CITY OF DE PERE
244751	Bridge (road over water)	NA	CITY OF DE PERE
244753	Bridge (road over water)	NA	CITY OF DE PERE
244755	Bridge (road over water)	I-41 & ASHWAUBENON CREEK	CITY OF DE PERE
244756	Bridge (road over water)	NA	CITY OF DE PERE
245092	Bridge (road over road)	NA	CITY OF DE PERE

247900	Wastewater Facility (Lift Station)	NEW Water OPLS-LS	CITY OF DE PERE
252736	Dam	NA	CITY OF DE PERE
252753	Dam	NA	CITY OF DE PERE
252754	Dam	NA	CITY OF DE PERE
252755	Dam	NA	CITY OF DE PERE
252764	Dam	NA	CITY OF DE PERE
27799	GENERATION/PROCESSING OF COMMUNICATION/UTILITIE	NA	CITY OF GREEN BAY
28798	SUB-STATION	NA	CITY OF GREEN BAY
36787	CLINICS	NA	CITY OF GREEN BAY
37071	PRIMARY SCHOOLS	ALDO LEOPOLD SCHOOL MONROE ENTRANCE	CITY OF GREEN BAY
38171	Lift Station (Stormwater)	NA	CITY OF GREEN BAY
44603	Lift Station (Stormwater)	NA	CITY OF GREEN BAY
45504	Lift Station (Stormwater)	NA	CITY OF GREEN BAY
46427	Lift Station (Stormwater)	NA	CITY OF GREEN BAY
48380	PRE-SCHOOL/DAY CARE	ENCOMPASS CHILD CARE	CITY OF GREEN BAY
49051	ADMINISTRATIVE BUILDINGS	NA	CITY OF GREEN BAY
49684	CHURCHES/TEMPLES/SYNAGOGUES	NA	CITY OF GREEN BAY
51622	MUNICIPAL GARAGES	NA	CITY OF GREEN BAY
52352	TELEPHONE TERMINALS/DISPATCH CENT	NA	CITY OF GREEN BAY
52359	MUNICIPAL GARAGES	NA	CITY OF GREEN BAY
52415	FIRE STATION	GB FIRE STATION 3	CITY OF GREEN BAY
52911	Electric Power Substations	NA	CITY OF GREEN BAY
54687	PRIMARY SCHOOLS	LINCOLN ELEMENTARY SCHOOL SHAWANO ENTRANCE	CITY OF GREEN BAY
54998	ELECTRIC SUBSTATION	NA	CITY OF GREEN BAY
55155	Wastewater Treatment Plan?	NEW Water MS-PG	CITY OF GREEN BAY

55317	Electric Power Substation	WPS SUBSTATION	CITY OF GREEN BAY
55705	Administrative Building	NA	CITY OF GREEN BAY
56706	CHURCHES/TEMPLES/SYNAGOGUES	NA	CITY OF GREEN BAY
56728	WATER SUPPLY STORAGE TANKS/RESERVOIRS	NA	CITY OF GREEN BAY
60878	WATER WELL	NA	CITY OF GREEN BAY
61031	Wastewater Facility	NEW Water MS-14	CITY OF GREEN BAY
78859	Water Supply Storage Tanks/Reservoirs	WATER TOWER - S HURON	CITY OF GREEN BAY
79388	NA	AMERICAN FOODS GROUP	CITY OF GREEN BAY
79393	NA	EDEN BROOK-NH	CITY OF GREEN BAY
79863	PHONE COMPANY	ATT BUILDING	CITY OF GREEN BAY
79887	Clinic	BAYSHORE COUNSELING	CITY OF GREEN BAY
79893	HOSPITAL	BELLIN HOSPITAL	CITY OF GREEN BAY
79952	Radio/Television Transmission Towers/Antennae	CELLCOM TOWER SHOP	CITY OF GREEN BAY
80032	NA	GOLDEN HOUSE	CITY OF GREEN BAY
80035	CHURCH & RED CROSS DESIGNATED SHELTER	GRACE LUTHERAN CHURCH	CITY OF GREEN BAY
80055	POLICE STATION	HQ	CITY OF GREEN BAY
80180	Pre-School/Day Care	PRECIOUS MEMORIES CHILDCARE	CITY OF GREEN BAY
80183	NA	PRO CHEMICALS INC	CITY OF GREEN BAY
80224	CHURCH & RED CROSS DESIGNATED SHELTER	ST ELIZABETH SETON	CITY OF GREEN BAY
80225	CHURCH & RED CROSS DESIGNATED SHELTER	ST JAMES LUTHERAN CHURCH	CITY OF GREEN BAY
80228	HOSPITAL	ST MARYS HOSPITAL	CITY OF GREEN BAY
80229	CHURCH & RED CROSS DESIGNATED SHELTER	ST PETER PAUL CHURCH	CITY OF GREEN BAY
80248	Daycare	THREE SISTERS HEADSTART	CITY OF GREEN BAY

80258	CHURCH & RED CROSS DESIGNATED SHELTER	TRINITY LUTHERAN CHURCH	CITY OF GREEN BAY
80282	MEDICAL BUILDING	WEBSTER MEDICAL BLDG	CITY OF GREEN BAY
80302	FITNESS CENTER	YMCA	CITY OF GREEN BAY
80303	FITNESS CENTER	YWCA	CITY OF GREEN BAY
80758	ELDERLY CARE FACILITY	GRANCARE NURSING CTR- NH	CITY OF GREEN BAY
80868	COMMUNITY CENTER	SALVATION ARMY	CITY OF GREEN BAY
81130	CHILD CARE	PEACE NURSERY CTR	CITY OF GREEN BAY
81237	COMMUNICATIONS	ATT BUILDING	CITY OF GREEN BAY
81254	RADIO STATIONS & BROADCASTING	WQLH	CITY OF GREEN BAY
81265	TEXTILE GOODS	ASPIRO	CITY OF GREEN BAY
81280	CHEMICALS	US OIL TANKS	CITY OF GREEN BAY
81288	FEDERAL GOVERNMENT	SOCIAL SECURITY ADMINISTRATION	CITY OF GREEN BAY
81289	CBRF CLASS C 359	CARE FOR ALL AGES - NH	CITY OF GREEN BAY
81394	Hospital	BELLIN POWER PLANT	CITY OF GREEN BAY
81453	CHURCH & RED CROSS DESIGNATED SHELTER	CELEBRATION CHURCH	CITY OF GREEN BAY
81492	UTILITIES	UWGB PUMP STATION	CITY OF GREEN BAY
81502	ELDERLY CARE FACILITY	BORNEMANN NURSING HOME - NH	CITY OF GREEN BAY
81524	CLINIC	AURORA ORTHOPEDICS	CITY OF GREEN BAY
81599	HIGH SCHOOL & RED CROSS DESIGNATED SHELTER	EAST HIGH SCHOOL	CITY OF GREEN BAY
81600	SCHOOL & RED CROSS DESIGNATED SHELTER	EISENHOWER SCHOOL	CITY OF GREEN BAY
81601	SCHOOL & RED CROSS DESIGNATED SHELTER	ELMORE SCHOOL	CITY OF GREEN BAY
81602	SCHOOL & RED CROSS DESIGNATED SHELTER	FORT HOWARD SCHOOL	CITY OF GREEN BAY
81603	SCHOOL & RED CROSS DESIGNATED SHELTER	FRANKLIN MIDDLE SCHOOL	CITY OF GREEN BAY

81607	SCHOOL & RED CROSS DESIGNATED SHELTER	JEFFERSON SCHOOL	CITY OF GREEN BAY
81608	SCHOOL & RED CROSS DESIGNATED SHELTER	PREBLE HIGH SCHOOL	CITY OF GREEN BAY
81610	CHURCH, SCHOOL & RED CROSS DESIGNATED SHELTER	ST PAULS UNITED METHODIST	CITY OF GREEN BAY
81611	SCHOOL & RED CROSS DESIGNATED SHELTER	WASHINGTON MIDDLE SCHOOL	CITY OF GREEN BAY
81614	SCHOOL	ST PAUL LUTHERAN SCHOOL	CITY OF GREEN BAY
81615	SCHOOL	EDISON MIDDLE SCHOOL	CITY OF GREEN BAY
81616	SCHOOL & RED CROSS DESIGNATED SHELTER	DANZ SCHOOL	CITY OF GREEN BAY
81618	SCHOOL	NOTRE DAME ACADEMY	CITY OF GREEN BAY
81636	CHURCH	ST MARK LUTHERAN CHURCH	CITY OF GREEN BAY
81637	CHURCH & RED CROSS DESIGNATED SHELTER	ST PATRICKS PARISH	CITY OF GREEN BAY
81640	CHURCH & RED CROSS DESIGNATED SHELTER	ST WILLEBRORD PARISH	CITY OF GREEN BAY
81930	Radio/Television Stations	WNCY RADIO	CITY OF GREEN BAY
81989	CLINIC	PREVEA CLINIC	CITY OF GREEN BAY
82647	CHEMICALS	SEM STREAM	CITY OF GREEN BAY
83327	SCHOOL	NWTC ARTISAN CENTER	CITY OF GREEN BAY
83647	ELECTRIC POWER SUBSTATIONS	NA	CITY OF GREEN BAY
83680	UTILITIES	WEST SHORE PIPELINE CO	CITY OF GREEN BAY
83936	GENERATION/PROCESSING OF COMMUNICATION/UTILITIE	NA	CITY OF GREEN BAY
84075	SCHOOL	REDEEMER LUTHERAN SCHOOL	CITY OF GREEN BAY
84110	MEDICAL FACILITY	MEDICAL ARTS BUILDING	CITY OF GREEN BAY
84944	ELECTRIC POWER SUBSTATIONS	NA	CITY OF GREEN BAY
84949	DAY CARE	ROYAL MONTESSORI ACADEMY	CITY OF GREEN BAY
84964	MEDICAL CLINIC	DOUSMAN CLINIC	CITY OF GREEN BAY

85276	Daycare	EARLY LEARNING CENTER	CITY OF GREEN BAY
85293	CLINIC	NEW COMMUNITY CLINIC	CITY OF GREEN BAY
85334	Administrative Building	GB PACKAGING	CITY OF GREEN BAY
85514	SEWAGE TREATMENT PLANTS	NEW Water MS-CFB	CITY OF GREEN BAY
87116	Lift Station (Sanitary)	NA	CITY OF GREEN BAY
87167	WALK-IN CLINIC	PREVEA CLINIC	CITY OF GREEN BAY
87884	Pre-School/Day Care	ENCOMPASS CHILD CARE	CITY OF GREEN BAY
87885	Lift Station (Sanitary)	LOT 1 - LAMBEAU-SOUTHEAST	CITY OF GREEN BAY
87910	Radio/Television Transmission Towers/Antennae	ATT BUILDING	CITY OF GREEN BAY
88000	School	ST THOMAS MORE SCHOOL	CITY OF GREEN BAY
88627	HEATING & COOLING PLANT	UWGB HEATING PLANT	CITY OF GREEN BAY
88670	UNIVERSITY BUILDING	UWGB COFRIN HALL	CITY OF GREEN BAY
93346	SUBSTATION	WPS substation	CITY OF GREEN BAY
93531	PHYSICIANS & SURGEONS	NEW ENT SC	CITY OF GREEN BAY
93599	CLINIC	AURORA HEALTH CENTER	CITY OF GREEN BAY
94110	MEDICAL FACILITY	ASCEND HEALTH	CITY OF GREEN BAY
94195	ELECTRICAL SUBSTATION & SHED	WPS SUB STATION	CITY OF GREEN BAY
94465	CLINICS	NA	CITY OF GREEN BAY
94813	TRUCK STORAGE	DPW WAREHOUSE	CITY OF GREEN BAY
94927	CLINIC	EAST SIDE FAMILY PRACTICE	CITY OF GREEN BAY
94935	Pre-School/Day Care	I DO WISHES	CITY OF GREEN BAY
94981	COUNTY GOVERNMENT OFFICES	NORTHERN BUILDING	CITY OF GREEN BAY
95006	WELL STATION	GB WATER UTILITY	CITY OF GREEN BAY

95012	PAPER MILL	GEORGIA PACIFIC	CITY OF GREEN BAY
95035	DAY CARE 321	KINDERCARE	CITY OF GREEN BAY
95089	WELL STATION	GB WATER UTILITY	CITY OF GREEN BAY
95123	CONVERTING AREA-	GEORGIA PACIFIC	CITY OF GREEN BAY
95125	DOCTOR OFFICES	AURORA DIALYSIS	CITY OF GREEN BAY
95181	WELL STATION	GB WATER UTILITY	CITY OF GREEN BAY
95183	CHILD CARE	PARAGON COMUUNITY SERVICES	CITY OF GREEN BAY
95271	COLD STORAGE	AMERICOLD LOGISTICS	CITY OF GREEN BAY
95300	DAY CARE	ENCOMPASS CHILD CARE	CITY OF GREEN BAY
95321	WELL STATION	GB WATER UTILITY	CITY OF GREEN BAY
95349	CHILD CARE	ENCOMPASS CHILD CARE	CITY OF GREEN BAY
95370	CLINIC	PREVEA CLINIC	CITY OF GREEN BAY
95385	SCHOOL	LEONARDO DA VINCI SCHOOL	CITY OF GREEN BAY
95417	SCHOOL	CESA 7 HEAD START	CITY OF GREEN BAY
95423	CLINIC	AURORA HEALTH CENTER	CITY OF GREEN BAY
95449	BUSINESS	ATT BUILDING	CITY OF GREEN BAY
95460	SOCIAL SERVICE & WELFARE ORG	AGING RESOURCE CTR	CITY OF GREEN BAY
95498	HOSPITAL	AURORA SURGERY CTR	CITY OF GREEN BAY
95546	PHYSICIANS & SURGEONS	CARDIOLOGY ASSOCIATES	CITY OF GREEN BAY
95560	CLINICS	CLINICARE CONVENIENCE CLINIC	CITY OF GREEN BAY
95705	SCHOOL & RED CROSS DESIGNATED SHELTER	KING ELEMENTARY SCHOOL	CITY OF GREEN BAY
95718	SCHOOL & RED CROSS DESIGNATED SHELTER	LINCOLN ELEMENTARY SCHOOL	CITY OF GREEN BAY
95731	GOVERNMENT OFFICES	MEDICAL EXAMINER	CITY OF GREEN BAY

95782	SCHOOL & RED CROSS DESIGNATED SHELTER	RED SMITH ELEMENTARY SCHOOL	CITY OF GREEN BAY
95899	ELDERLY CARE FACILITY	BORNEMANN CBRF NORTH - NH	CITY OF GREEN BAY
95900	CHILD CARE SERVICE	BRIGHT BEGINNINGS CHILD CARE	CITY OF GREEN BAY
95905	DAY CARE	ENCOMPASS CHILD CARE	CITY OF GREEN BAY
95932	NURSING & CONVALESCENT HOMES	FREEDOM HOUSE MINISTRIES	CITY OF GREEN BAY
95952	SCHOOL & RED CROSS DESIGNATED SHELTER	SOUTHWEST HIGH SCHOOL	CITY OF GREEN BAY
95953	HIGH SCHOOL & RED CROSS DESIGNATED SHELTER	WEST HIGH SCHOOL	CITY OF GREEN BAY
95956	SCHOOL	NEW LUTHERAN HIGH SCHOOL	CITY OF GREEN BAY
95957	SCHOOL (K-8)	ALDO LEOPOLD SCHOOL	CITY OF GREEN BAY
95982	CHURCH & RED CROSS DESIGNATED SHELTER	INCARNATION LUTHERAN CHURCH	CITY OF GREEN BAY
96237	STATE GOVERNMENT-PUBLIC HEALTH	PUBLIC HEALTH	CITY OF GREEN BAY
96297	BUILDING IS USED AS A CHURCH	KINGDOM AGENDA CHURCH	CITY OF GREEN BAY
96479	GUEST HOME	ALTRUSA HOUSE	CITY OF GREEN BAY
96612	CHURCH & RED CROSS DESIGNATED SHELTER	FIRST UNITED METHODIST	CITY OF GREEN BAY
96623	CHURCH	SEVENTH DAY ADVENTIST CHURCH	CITY OF GREEN BAY
96719	ARMORY & RED CROSS DESIGNATED SHELTER	NATIONAL GUARD	CITY OF GREEN BAY
96752	ELEMENTARY SCHOOL & RED CROSS DESIGNATED SHELTER	BAIRD SCHOOL	CITY OF GREEN BAY
96798	Long Term Health Care Facility	SHELTER CARE	CITY OF GREEN BAY
96807	SCHOOL & RED CROSS DESIGNATED SHELTER	BEAUMONT SCHOOL	CITY OF GREEN BAY
96815	Sports Stadium/ Arenas	LAMBEAU - BELLIN HEALTH GATE	CITY OF GREEN BAY
96887	Prisons or Jails	HUBER JAIL	CITY OF GREEN BAY
96892	COURTHOUSE	COURTHOUSE	CITY OF GREEN BAY
96948	RECREATION CENTE	BOYS AND GIRLS CLUB	CITY OF GREEN BAY

96952	TELEVISION STATIONS & BROADCASTS	WFRV	CITY OF GREEN BAY
96953	SCHOOL & RED CROSS DESIGNATED SHELTER	CHAPPELL SCHOOL	CITY OF GREEN BAY
96987	RAILROAD	CN RAILROAD	CITY OF GREEN BAY
97139	MEDICAL OFFICE	ARBES DR PODIATRIST	CITY OF GREEN BAY
97190	MUNICIPAL GARAGE	GB STREET DEPT	CITY OF GREEN BAY
97288	PRE-SCHOOL	GARDEN OF EARLY LEARNING	CITY OF GREEN BAY
97302	SCHOOL & RED CROSS DESIGNATED SHELTER	GARDEN OF EARLY LEARNING	CITY OF GREEN BAY
97311	CITY HALL	CITY HALL GREEN BAY	CITY OF GREEN BAY
97313	Administrative Building	FIRE DEPT SHOP	CITY OF GREEN BAY
97334	FIRE STATION	GNFD FIRE STATION 1	CITY OF GREEN BAY
97335	FIRE & AMBULANCE STATION	GNFD FIRE STATION 2	CITY OF GREEN BAY
97336	FIRE & AMBULANCE STATION	GNFD FIRE STATION 3	CITY OF GREEN BAY
97337	FIRE STATION	GNFD FIRE STATION 4	CITY OF GREEN BAY
97338	FIRE & AMBULANCE STATION	GNFD FIRE STATION 5	CITY OF GREEN BAY
97339	FIRE & AMBULANCE STATION	GNFD FIRE STATION 6	CITY OF GREEN BAY
97340	FIRE & AMBULANCE STATION	GNFD FIRE STATION 7	CITY OF GREEN BAY
97397	CLINIC WITHIN HOSPITAL	GB ONCOLOGY	CITY OF GREEN BAY
97424	CLINIC	GB SURGICAL	CITY OF GREEN BAY
97428	PETROLEUM STORAGE	GB TERMINAL CORP	CITY OF GREEN BAY
97492	SCHOOL & RED CROSS DESIGNATED SHELTER	KELLER ELEMENTARY SCHOOL	CITY OF GREEN BAY
97543	SCHOOL & RED CROSS DESIGNATED SHELTER	HOWE ELEMENTARY SCHOOL	CITY OF GREEN BAY
97546	COUNTY GOVERNMENT-SOCIAL/HUMAN	SOPHIE BEAUMONT BUILDING	CITY OF GREEN BAY
97591	SCHOOL & RED CROSS DESIGNATED SHELTER	JACKSON ELEMENTARY SCHOOL	CITY OF GREEN BAY

97625	CARE-CHILD	JUST 4 KIDS CHILD CARE	CITY OF GREEN BAY
97645	SCHOOL & RED CROSS DESIGNATED SHELTER	KENNEDY ELEMENTARY SCHOOL	CITY OF GREEN BAY
97765	SCHOOL & RED CROSS DESIGNATED SHELTER	LOMBARDI SCHOOL	CITY OF GREEN BAY
97783	SCHOOL & RED CROSS DESIGNATED SHELTER	MAC ARTHUR SCHOOL	CITY OF GREEN BAY
97796	CARE-OTHER	CROSSROADS CARE CENTER - NH	CITY OF GREEN BAY
97797	SKILLED NURSING CARE	CROSSROADS CARE CENTER - NH	CITY OF GREEN BAY
97848	SEWER TREATMENT PLANT (236,000 customers served)	GB MET SEWER PLANT-NEW Water GBF	CITY OF GREEN BAY
97863	CLINIC	VA CLINIC	CITY OF GREEN BAY
98100	SCHOOLS	MARTIN ELEMENTARY SCHOOL	CITY OF GREEN BAY
98111	CLINICS	BELLIN HEALTH MRI	CITY OF GREEN BAY
98118	OFFICE 591	GB MUNICIPAL COURT	CITY OF GREEN BAY
98161	CARE-OTHER	CURATIVE CONNECTION	CITY OF GREEN BAY
98193	CARE-OTHER	NICOLET PSYCHIATRIC	CITY OF GREEN BAY
98194	SCHOOLS	NICOLET ELEMENTARY SCHOOL	CITY OF GREEN BAY
98207	TECH COLLEGE	NWTC	CITY OF GREEN BAY
98372	CLINIC	OSMS	CITY OF GREEN BAY
98433	POST OFFICES	POST OFFICE COFRIN	CITY OF GREEN BAY
98437	POST OFFICE	POST OFFICE MONROE	CITY OF GREEN BAY
98458	WAREHOUSE	PROCTOR AND GAMBLE	CITY OF GREEN BAY
98496	SOCIAL SERVICE & WELFARE ORGAN	RED CROSS	CITY OF GREEN BAY
98497	NON PROFIT	RED CROSS	CITY OF GREEN BAY
98537	CBRF 359 CLASS C	HOUSE OF HOPE	CITY OF GREEN BAY
98591	HOMELESS SHELTER	ST JOHNS SHELTER	CITY OF GREEN BAY

98643	CHILDCARE FACILITY	EARLY CHILDHOOD CENTER ST MARYS	CITY OF GREEN BAY
98675	SCHOOL & RED CROSS DESIGNATED SHELTER	ANN SULLIVAN SCHOOL	CITY OF GREEN BAY
98699	SCHOOL & RED CROSS DESIGNATED SHELTER	TANK ELEMENTARY SCHOOL	CITY OF GREEN BAY
98706	ROOMING HOUSE CB	ATTIC CORRECTIONAL	CITY OF GREEN BAY
98743	Administrative Building	MINOKA HILL SCHOOL	CITY OF GREEN BAY
98918	OILS-PETROLEUM-MANUFACTURERS	US OIL COMPANY	CITY OF GREEN BAY
98965	WATER UTILITY OFFICES	GB WATER UTILITY	CITY OF GREEN BAY
98983	CHURCH	WEST MORAVIAN CHURCH	CITY OF GREEN BAY
98998	ELECTRICAL UTILITY COMPANY	WPS CORPORATION	CITY OF GREEN BAY
99002	CLINIC	NEW COMMUNITY CLINIC	CITY OF GREEN BAY
99004	ELEMENTARY SCHOOL & RED CROSS DESIGNATED SHELTER	WILDER ELEMENTARY SCHOOL	CITY OF GREEN BAY
126264	Wastewater Facility (Lift Station)	NEW Water MS-09	CITY OF GREEN BAY
139685	COMMERCIAL STORAGE	NA	CITY OF GREEN BAY
189077	FIRE STATION	GB FIRE STATION 1	CITY OF GREEN BAY
189078	FIRE STATION	GB FIRE STATION 2	CITY OF GREEN BAY
189079	FIRE STATION	GB FIRE STATION 4	CITY OF GREEN BAY
189080	FIRE STATION	GB FIRE STATION 5	CITY OF GREEN BAY
189081	FIRE STATION	GB FIRE STATION 6	CITY OF GREEN BAY
189082	FIRE STATION	GB FIRE STATION 7	CITY OF GREEN BAY
201614	Administrative Building	HEAD START LEARNING CTR	CITY OF GREEN BAY
238277	ELECTRICAL SUBSTATION	NA	CITY OF GREEN BAY
244297	Bridge (road over water)	NA	CITY OF GREEN BAY
244298	Bridge (pedestrian over road)	NA	CITY OF GREEN BAY

244299	Bridge (road over water)	NA	CITY OF GREEN BAY
244300	Bridge (road over water)	NA	CITY OF GREEN BAY
244301	Bridge (railroad over road)	NA	CITY OF GREEN BAY
244313	Bridge (road over road)	NA	CITY OF GREEN BAY
244314	Bridge (road over water)	NA	CITY OF GREEN BAY
244372	Bridge (road over water)	NA	CITY OF GREEN BAY
244373	Bridge (road over water)	NA	CITY OF GREEN BAY
244374	Bridge (road over water)	NA	CITY OF GREEN BAY
244375	Bridge (road over road)	NA	CITY OF GREEN BAY
244376	Bridge (road over road)	NA	CITY OF GREEN BAY
244377	Bridge (road over road)	NA	CITY OF GREEN BAY
244378	Bridge (road over road)	NA	CITY OF GREEN BAY
244379	Bridge (road over water)	NA	CITY OF GREEN BAY
244380	Bridge (road over water)	NA	CITY OF GREEN BAY
244417	Bridge (road over road)	NA	CITY OF GREEN BAY
244425	Bridge (road over road)	NA	CITY OF GREEN BAY
244437	Bridge (road over water)	NA	CITY OF GREEN BAY
244438	Culvert (road over water)	NA	CITY OF GREEN BAY
244439	Bridge (road over road)	NA	CITY OF GREEN BAY
244440	Bridge (road over road)	NA	CITY OF GREEN BAY
244444	Bridge (road over railroad)	NA	CITY OF GREEN BAY
244445	Bridge (road over water)	NA	CITY OF GREEN BAY
244446	Bridge (road over water)	NA	CITY OF GREEN BAY

244451	Bridge (road over road)	NA	CITY OF GREEN BAY
244452	Bridge (road over water)	NA	CITY OF GREEN BAY
244453	Bridge (road over former rail yard)	NA	CITY OF GREEN BAY
244512	Bridge (road over road)	I-43 & GREENBRIER RD OVERPASS	CITY OF GREEN BAY
244535	Bridge (road over road, railroad, and water)	NA	CITY OF GREEN BAY
244536	Bridge (road over road, railroad, and water)	NA	CITY OF GREEN BAY
244537	Bridge (road over water)	NA	CITY OF GREEN BAY
244538	Bridge (road over water)	NA	CITY OF GREEN BAY
244539	Bridge (road over water)	NA	CITY OF GREEN BAY
244540	Bridge (road over water)	NA	CITY OF GREEN BAY
244541	Bridge (road over water)	NA	CITY OF GREEN BAY
244542	Bridge (road over water)	NA	CITY OF GREEN BAY
244543	Bridge (road over road)	I-43 & HUMBOLDT RD OVERPASS	CITY OF GREEN BAY
244544	Bridge (road over road)	NA	CITY OF GREEN BAY
244545	Bridge (road over road)	NA	CITY OF GREEN BAY
244550	Bridge (road over water)	NA	CITY OF GREEN BAY
244589	Bridge (road over water)	NA	CITY OF GREEN BAY
244590	Bridge (road over water)	NA	CITY OF GREEN BAY
244591	Bridge (road over water)	NA	CITY OF GREEN BAY
244592	Bridge (road over water and trail)	NA	CITY OF GREEN BAY
244593	Bridge (road over road)	NA	CITY OF GREEN BAY
244594	Bridge (road over road)	NA	CITY OF GREEN BAY
244595	Bridge (road over road)	NA	CITY OF GREEN BAY

244596	Bridge (road over road)	NA	CITY OF GREEN BAY
244597	Bridge (road over road)	NA	CITY OF GREEN BAY
244598	Bridge (road over road)	NA	CITY OF GREEN BAY
244599	Bridge (road over road)	NA	CITY OF GREEN BAY
244600	Bridge (road over road)	NA	CITY OF GREEN BAY
244601	Bridge (road over road)	NA	CITY OF GREEN BAY
244602	Bridge (road over road)	NA	CITY OF GREEN BAY
244603	Bridge (road over road)	NA	CITY OF GREEN BAY
244772	Bridge (railroad)	NA	CITY OF GREEN BAY
244773	Bridge (road)	NA	CITY OF GREEN BAY
244774	Bridge (road)	NA	CITY OF GREEN BAY
244775	Bridge (road)	NA	CITY OF GREEN BAY
244776	Bridge (road over road)	NA	CITY OF GREEN BAY
244777	Bridge (road over road)	NA	CITY OF GREEN BAY
244778	Bridge (road over road)	NA	CITY OF GREEN BAY
244779	Bridge (road over road)	NA	CITY OF GREEN BAY
244780	Bridge (railroad over water)	NA	CITY OF GREEN BAY
244781	Bridge (pedestrian over water)	EAST RIVER FOOTBRIDGE	CITY OF GREEN BAY
244782	Bridge (road over road)	NA	CITY OF GREEN BAY
244783	Bridge (road over road)	NA	CITY OF GREEN BAY
244784	Bridge (road over road)	NA	CITY OF GREEN BAY
244785	Bridge (road over road)	NA	CITY OF GREEN BAY
244786	Bridge (road over road)	NA	CITY OF GREEN BAY

244787	Bridge (road over water)	NA	CITY OF GREEN BAY
244788	Bridge (road over road)	NA	CITY OF GREEN BAY
244789	Bridge (road over road)	NA	CITY OF GREEN BAY
244793	Bridge (road over water)	NA	CITY OF GREEN BAY
244797	Bridge (road over water)	NA	CITY OF GREEN BAY
244798	Bridge (railroad over water)	NA	CITY OF GREEN BAY
244829	Bridge (railroad over water)	NA	CITY OF GREEN BAY
244830	Bridge (road over road)	I-43 & HUMBOLDT RD OVERPASS	CITY OF GREEN BAY
244831	Bridge (road over water)	NA	CITY OF GREEN BAY
244832	Bridge (road over road)	NA	CITY OF GREEN BAY
245493	Wastewater Facility (Lift Station?)	NEW Water MS-05	CITY OF GREEN BAY
245494	Wastewater Facility (Lift Station?)	NEW Water MS-06	CITY OF GREEN BAY
247092	Wastewater Facility	NEW Water MS-13	CITY OF GREEN BAY
252740	Dam	NA	CITY OF GREEN BAY
252748	Dike	NA	CITY OF GREEN BAY
252756	Dam	NA	CITY OF GREEN BAY
252759	Dam	NA	CITY OF GREEN BAY
252762	Dam	NA	CITY OF GREEN BAY
252765	Dam	NA	CITY OF GREEN BAY
252766	Dam	NA	CITY OF GREEN BAY
253501	Electrical substation	NA	CITY OF GREEN BAY
253908	Dike extending along bayshore	NA	CITY OF GREEN BAY
96888	PUBLIC SAFETY & COMMUNICATIONS	BC PUBLIC SAFETY	CITY OF GREEN BAY

78055	RED CROSS DESIGNATED SHELTER? (confirm)	NA	TOWN OF EATON
78313	Radio/Television Transmission Towers/Antennae	NA	TOWN OF EATON
81662	TOWN HALL	EATON TOWN HALL	TOWN OF EATON
97123	FIRE STATION	DNFD FIRE STATION 2	TOWN OF EATON
189074	FIRE STATION	DENMARK FIRE STATION 2	TOWN OF EATON
252767	Dam	NA	TOWN OF EATON
5837	COMMUNICATIONS TOWER	WFRV TOWER	TOWN OF GLENMORE
79858	ELECTRICAL SUBSTATION	WPS SUB STATION 10	TOWN OF GLENMORE
83941	RADIO TOWER	RADIO TOWER	TOWN OF GLENMORE
88345	RADIO/TELEVISION TRANSMISSION TOWERS/ANTENNAE	NA	TOWN OF GLENMORE
98483	RADIO TOWER	Radio Tower	TOWN OF GLENMORE
98551	BC RADIO TOWER	BC TOWER - SCRAYS HILL	TOWN OF GLENMORE
133493	RADIO TOWER	NA	TOWN OF GLENMORE
135961	RADIO TOWER - AVIATION	RADIO TOWER - FAA	TOWN OF GLENMORE
144910	TOWN HALL & RED CROSS DESIGNATED SHELTER	GLENMORE TOWN HALL	TOWN OF GLENMORE
144913	COMMUNICATIONS TOWER	NBC 26 TOWER	TOWN OF GLENMORE
144919	RADIO TOWER	WAPL FM RADIO TOWER	TOWN OF GLENMORE
244362	Bridge (road over water)	NA	TOWN OF GLENMORE
244572	Bridge (road over water)	NA	TOWN OF GLENMORE
244619	Bridge (road over water)	NA	TOWN OF GLENMORE
78309	CELL TOWER	NA	TOWN OF GREEN BAY
79399	TOWN HALL	TOWN OF GREEN BAY HALL	TOWN OF GREEN BAY
79400	ELECTRICAL SUBSTATION	WPS SUB STATION 3	TOWN OF GREEN BAY
81274	UTILITY TOWER	UTILITY TOWER	TOWN OF GREEN BAY
83940	RADIO TOWER	RADIO TOWER	TOWN OF GREEN BAY

85749	CELL TOWER	NA	TOWN OF GREEN BAY
94889	Pre-School/Day Care	DAY BY DAY DISCOVERIES CHILD CARE	TOWN OF GREEN BAY
98438	POST OFFICE	POST OFFICE NEW FRANKEN	TOWN OF GREEN BAY
244316	Bridge (road over water)	NA	TOWN OF GREEN BAY
244368	Bridge (road over water)	NA	TOWN OF GREEN BAY
244369	Bridge (road over water)	NA	TOWN OF GREEN BAY
244791	Bridge (road over road)	NA	TOWN OF GREEN BAY
244792	Bridge (road over road)	NA	TOWN OF GREEN BAY
244795	Bridge (road over water)	NA	TOWN OF GREEN BAY
247895	Wastewater Facility (Lift Station)	NEW Water EBS-LS-05-MS-17	TOWN OF GREEN BAY
247896	Wastewater Facility (Lift Station)	NEW Water EBS-LS-06	TOWN OF GREEN BAY
247897	Wastewater Facility (Lift Station)	NEW Water EBS-LS-07	TOWN OF GREEN BAY
247898	Wastewater Facility (Lift Station)	NEW Water EBS-LS-08	TOWN OF GREEN BAY
136	LIFT STATION	HOLLAND SANITARY LIFT STATION	TOWN OF HOLLAND
206	WATER TOWER	HOLLANDTOWN WATER TOWER	TOWN OF HOLLAND
82077	TOWN HALL	HOLLAND TOWN HALL	TOWN OF HOLLAND
85205	Primary Schools	NA	TOWN OF HOLLAND
95985	CHURCH & RED CROSS DESIGNATED SHELTER	ST CLARE PARISH	TOWN OF HOLLAND
97446	BC RADIO TOWER	BC TOWER - GREENLEAF	TOWN OF HOLLAND
97522	FIRE STATION	HOFD FIRE STATION	TOWN OF HOLLAND
189087	FIRE STATION	HOLLANDTOWN FIRE STATION	TOWN OF HOLLAND
244349	Bridge (road over water)	NA	TOWN OF HOLLAND
244351	Bridge (road over water)	NA	TOWN OF HOLLAND

244352	Bridge (road over water)	NA	TOWN OF HOLLAND
244353	Bridge (road over water)	NA	TOWN OF HOLLAND
244354	Bridge (road over water)	NA	TOWN OF HOLLAND
244355	Bridge (road over water)	NA	TOWN OF HOLLAND
244583	Bridge (road over water)	NA	TOWN OF HOLLAND
244584	Bridge (road over water)	NA	TOWN OF HOLLAND
244585	Bridge (road over water)	NA	TOWN OF HOLLAND
244586	Bridge (road over water)	NA	TOWN OF HOLLAND
244814	Bridge (road over water)	NA	TOWN OF HOLLAND
244815	Bridge (trail over water)	NA	TOWN OF HOLLAND
252743	Dam	NA	TOWN OF HOLLAND
252746	Dam	NA	TOWN OF HOLLAND
252749	Dam	NA	TOWN OF HOLLAND
97242	WATER FILTRATION PLANT	GB FILTRATION PLANT	TOWN OF HUMBOLDT
244367	Bridge (road over water)	NA	TOWN OF HUMBOLDT
244551	Bridge (road over water)	NA	TOWN OF HUMBOLDT
244794	Bridge (road over water)	NA	TOWN OF HUMBOLDT
244796	Culverts (road over water)	NA	TOWN OF HUMBOLDT
13372	Wastewater Facility	NEW Water MS-10	TOWN OF LAWRENCE
14841	TOWN UTILITY?	NA	TOWN OF LAWRENCE
78839	PIPELINE TERMINAL	NA	TOWN OF LAWRENCE
80405	ELECTRICAL SUBSTATION	WPS SUB STATION 6	TOWN OF LAWRENCE
83285	CLINIC	PREVEA CLINIC	TOWN OF LAWRENCE

97493	SCHOOL	HEMLOCK CREEK ELEMENTARY	TOWN OF LAWRENCE
97690	FIRE STATION	LWFD FIRE STATION 2	TOWN OF LAWRENCE
97691	FIRE STATION	LWFD FIRE STATION 1	TOWN OF LAWRENCE
189090	FIRE STATION	LAWRENCE FIRE STATION 2	TOWN OF LAWRENCE
189091	FIRE STATION	LAWRENCE FIRE STATION 1	TOWN OF LAWRENCE
244304	Bridge (road over water)	MID VALLEY DR & ASHWAUBENON CREEK	TOWN OF LAWRENCE
244305	Bridge (road over water)	NA	TOWN OF LAWRENCE
244306	Bridge (road over road)	NA	TOWN OF LAWRENCE
244318	Bridge (road over water)	NA	TOWN OF LAWRENCE
244335	Bridge (road over water)	NA	TOWN OF LAWRENCE
244336	Bridge (road over water)	NA	TOWN OF LAWRENCE
244514	Bridge (road over water)	NA	TOWN OF LAWRENCE
244566	Bridge (road over road)	NA	TOWN OF LAWRENCE
244621	Culverts (road over water)	NA	TOWN OF LAWRENCE
244635	Bridge (road over road)	I-41 & SCHEURING RD OVERPASS	TOWN OF LAWRENCE
244637	Bridge (road)	NA	TOWN OF LAWRENCE
244659	Bridge (road over water)	NA	TOWN OF LAWRENCE
244660	Bridge (road over water)	NA	TOWN OF LAWRENCE
244661	Bridge (road over road)	NA	TOWN OF LAWRENCE
244662	Bridge (road over water)	NA	TOWN OF LAWRENCE
244663	Culvert (road over water)	NA	TOWN OF LAWRENCE
244664	Bridge (road over water)	NA	TOWN OF LAWRENCE
244665	Bridge (road over water)	NA	TOWN OF LAWRENCE

244666	Bridge (road over water)	NA	TOWN OF LAWRENCE
244667	Culvert (road over water)	NA	TOWN OF LAWRENCE
244668	Bridge (road over water)	NA	TOWN OF LAWRENCE
244669	Culvert (road over water)	NA	TOWN OF LAWRENCE
244670	Culvert (road over water)	NA	TOWN OF LAWRENCE
244671	Culvert (road over water)	NA	TOWN OF LAWRENCE
244672	Culvert (road over water)	NA	TOWN OF LAWRENCE
244673	Culvert (road over water)	NA	TOWN OF LAWRENCE
252744	Dam	NA	TOWN OF LAWRENCE
252752	Dam	NA	TOWN OF LAWRENCE
82149	COMMERCIAL	SAGE MEADOWS	TOWN OF LAWRENCE
6003	SEWER & WATER INFRASTRUCTURE	LEDGEVIEW SANITARY DISTRICT	TOWN OF LEDGEVIEW
78977	SANITARY DIST	Ledgeview Sanitary District 2	TOWN OF LEDGEVIEW
79848	BUILDING	LEDGEVIEW NURSING HOME - CLSD	TOWN OF LEDGEVIEW
79855	ELECTRICAL SUBSTATION	WPS SUB STATION 7	TOWN OF LEDGEVIEW
81730	ELDERLY CARE FACILITY	CARATON COMMONS	TOWN OF LEDGEVIEW
81787	Long Term Health Care Facility	CARATON COMMONS	TOWN OF LEDGEVIEW
84608	MEDICAL CLINIC	MERCY FAMILY MEDICAL	TOWN OF LEDGEVIEW
85188	UTILITIES	CELLCOM TOWER	TOWN OF LEDGEVIEW
94825	ELEMENTARY SCHOOL	HERITAGE ELEMENTARY SCHOOL	TOWN OF LEDGEVIEW
95429	CLINIC	PREVEA CLINIC	TOWN OF LEDGEVIEW
95436	CLINIC	BELLIN HEALTH CENTER	TOWN OF LEDGEVIEW
96198	TOWER	WI PUBLIC RADIO-TV TOWER	TOWN OF LEDGEVIEW

96950	COMMUNICATIONS TOWER	WBAY TOWER	TOWN OF LEDGEVIEW
97181	MIDDLE SCHOOL	DEPERE MIDDLE SCHOOL	TOWN OF LEDGEVIEW
97276	UTILITIES	FOX 11 TOWER	TOWN OF LEDGEVIEW
97779	FIRE STATION	LVFD FIRE STATION 1	TOWN OF LEDGEVIEW
97780	FIRE STATION	LVFD FIRE STATION 2	TOWN OF LEDGEVIEW
189092	FIRE STATION	LEDGEVIEW FIRE STATION 1	TOWN OF LEDGEVIEW
189093	FIRE STATION	LEDGEVIEW FIRE STATION 2	TOWN OF LEDGEVIEW
244522	Culvert (road over water)	NA	TOWN OF LEDGEVIEW
244524	Bridge (road over road)	I-43 & CTH MM OVERPASS	TOWN OF LEDGEVIEW
244525	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244526	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244527	Bridge (road over road)	NA	TOWN OF LEDGEVIEW
244528	Bridge (road over road)	NA	TOWN OF LEDGEVIEW
244534	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244552	Bridge (road over road)	I-43 & PINE GROVE OVERPASS	TOWN OF LEDGEVIEW
244553	Bridge (road over road)	I-43 & PINE GROVE OVERPASS	TOWN OF LEDGEVIEW
244558	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244560	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244562	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244617	Bridge (road over road)	NA	TOWN OF LEDGEVIEW
244618	Bridge (road over road)	NA	TOWN OF LEDGEVIEW
244639	Culvert (road over water)	NA	TOWN OF LEDGEVIEW
244640	Bridge (road over road)	I-43 & CTH MM OVERPASS	TOWN OF LEDGEVIEW

244641	Culvert (road over water)	NA	TOWN OF LEDGEVIEW
244643	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244644	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244645	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244646	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244647	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244819	Bridge (road over water)	NA	TOWN OF LEDGEVIEW
244822	Culverts (road over water)	NA	TOWN OF LEDGEVIEW
247902	Sewerage district building	NEW Water MS-03	TOWN OF LEDGEVIEW
252745	Dam	NA	TOWN OF LEDGEVIEW
257908	Bridge (railroad over road and water)	NA	TOWN OF LEDGEVIEW
247899	Wastewater Facility (Lift Station)	NEW Water EBS-LS-09	TOWN OF LUXEMBURG (KEWAUNEE CO)
81623	K-8 SCHOOL & RED CROSS DESIGNATED SHELTER	ZION LUTHERAN SCHOOL OF WAYSIDE	TOWN OF MORRISON
96537	TOWN HALL	MORRISON TOWN HALL	TOWN OF MORRISON
96943	PHONE COMPANY	WAYSIDE TELEPHONE CO	TOWN OF MORRISON
98091	FIRE STATION	MOFD FIRE DEPT	TOWN OF MORRISON
98558	SEWAGE TREATMENT	MORRISON SEWAGE PLAN	TOWN OF MORRISON
99037	FIRE STATION	WSFD FIRE STATION	TOWN OF MORRISON
99047	School	MORRISON LUTHERAN SCHOOL	TOWN OF MORRISON
189094	FIRE STATION	MORRISON FIRE DEPT	TOWN OF MORRISON
189100	FIRE STATION	WAYSIDE FIRE STATION	TOWN OF MORRISON
244293	Bridge (road over water)	NA	TOWN OF MORRISON
244294	Bridge (road over water)	NA	TOWN OF MORRISON

244317	Bridge (road over water)	NA	TOWN OF MORRISON
244356	Bridge (road over water)	NA	TOWN OF MORRISON
244357	Bridge (road over water)	NA	TOWN OF MORRISON
244358	Bridge (road over water)	NA	TOWN OF MORRISON
244359	Bridge (road over water)	NA	TOWN OF MORRISON
244360	Bridge (road over water)	NA	TOWN OF MORRISON
244361	Bridge (road over water)	NA	TOWN OF MORRISON
244570	Bridge (road over water)	NA	TOWN OF MORRISON
244571	Bridge (road over water)	NA	TOWN OF MORRISON
244579	Bridge (road over water)	NA	TOWN OF MORRISON
244580	Bridge (road over water)	NA	TOWN OF MORRISON
244581	Bridge (road over water)	NA	TOWN OF MORRISON
244812	Bridge (road over water)	NA	TOWN OF MORRISON
244813	Bridge (road over water)	NA	TOWN OF MORRISON
80407	TOWERS MANUFACTURERS	AMERICAN TOWER CORP	TOWN OF NEW DENMARK
97090	BC RADIO TOWER	BC TOWER - DENMARK	TOWN OF NEW DENMARK
244363	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244364	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244365	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244366	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244554	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244555	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244556	Culvert (road over water)	NA	TOWN OF NEW DENMARK

244565	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244573	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244574	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244575	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244576	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244577	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244578	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244642	Culvert (road over water)	NA	TOWN OF NEW DENMARK
244649	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244650	Culvert (road over water)	NA	TOWN OF NEW DENMARK
244651	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244652	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244653	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244655	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244656	Culvert (road over water)	NA	TOWN OF NEW DENMARK
244657	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244658	Bridge (road over water)	NA	TOWN OF NEW DENMARK
244807	Bridge (railroad over water)	NA	TOWN OF NEW DENMARK
244808	Bridge (road over trail)	NA	TOWN OF NEW DENMARK
244809	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244810	Bridge (road over road)	NA	TOWN OF NEW DENMARK
244811	Bridge (road over water)	NA	TOWN OF NEW DENMARK
252734	Dam	NA	TOWN OF NEW DENMARK

252747	Dam	NA	TOWN OF NEW DENMARK
93244	CELL TOWER	NA	TOWN OF PITTSFIELD
93613	SCHOOL	LANNOME SCHOOL	TOWN OF PITTSFIELD
96555	CHURCH & RED CROSS DESIGNATED SHELTER	PEACE LUTHERAN CHURCH	TOWN OF PITTSFIELD
97258	BC RADIO TOWER	BC TOWER - FLINTVILLE	TOWN OF PITTSFIELD
98484	RADIO TOWER	WQLH RADIO TOWER	TOWN OF PITTSFIELD
230668	CELL TOWER	NA	TOWN OF PITTSFIELD
244320	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244321	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244322	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244323	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244324	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244325	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244387	Bridge (road over road)	NA	TOWN OF PITTSFIELD
244392	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244395	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244398	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244400	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244404	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244405	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244408	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244411	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244587	Bridge (road over road)	NA	TOWN OF PITTSFIELD

244674	Culvert (road over water)	NA	TOWN OF PITTSFIELD
244675	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244676	Bridge (road over water)	NA	TOWN OF PITTSFIELD
244759	Culverts (road over water)	NA	TOWN OF PITTSFIELD
244760	Bridge (trail over water)	NA	TOWN OF PITTSFIELD
244761	Bridge (trail over water)	NA	TOWN OF PITTSFIELD
249092	LIFT STATION	LIFT STATION 11919	TOWN OF PITTSFIELD
249093	LIFT STATION	PITTSFIELD LIFT STATION - KUNESH RD	TOWN OF PITTSFIELD
5525	SUBSTATION	OLD MARTIN RD SUBSTATION	TOWN OF ROCKLAND
98523	CITY GOVERNMENT-EXECUTIVE OFFI	ROCKLAND TOWN HALL	TOWN OF ROCKLAND
244343	Bridge (road over water)	NA	TOWN OF ROCKLAND
244677	Bridge (road over water)	NA	TOWN OF ROCKLAND
244678	Bridge (road over water)	NA	TOWN OF ROCKLAND
244679	Bridge (road over water)	NA	TOWN OF ROCKLAND
244818	Bridge (road over water)	NA	TOWN OF ROCKLAND
244820	Bridge (road over water)	NA	TOWN OF ROCKLAND
244824	Bridge (road over water)	NA	TOWN OF ROCKLAND
252735	Dam	NA	TOWN OF ROCKLAND
252737	Dam	NA	TOWN OF ROCKLAND
80428	Water Supply Booster/Pumping Stations	SCOTT SANITARY DIST	TOWN OF SCOTT
82079	TOWN HALL	SCOTT TOWN HALL	TOWN OF SCOTT
93478	CHURCH & RED CROSS DESIGNATED SHELTER	ST KILLIANS CHURCH	TOWN OF SCOTT
97254	GOVERNMENT OFFICES	US FISH AND WILDLIFE SERVICE	TOWN OF SCOTT
98177	FIRE STATION	NFFD FIRE STATION	TOWN OF SCOTT
98550	WATER UTILITY	WATER TOWER - SCOTT	TOWN OF SCOTT

98976	SCHOOL & RED CROSS DESIGNATED SHELTER	WEQUIOCK SCHOOL	TOWN OF SCOTT
134764	Wastewater Facility	NEW Water MS-14A	TOWN OF SCOTT
167136	TOWN UTILITY (PRV STATION)	NEW Water MS-15	TOWN OF SCOTT
189095	FIRE STATION	NEW FRANKEN FIRE DEPARTMENT	TOWN OF SCOTT
244370	Bridge (road over water)	NA	TOWN OF SCOTT
244371	Bridge (road over water)	NA	TOWN OF SCOTT
244790	Bridge (road over water)	NA	TOWN OF SCOTT
247891	Wastewater Facility (Lift Station)	NEW Water EBS-LS-01-MS-16	TOWN OF SCOTT
247892	Wastewater Facility (Lift Station)	NEW Water EBS-LS-02	TOWN OF SCOTT
247893	Wastewater Facility (Lift Station)	NEW Water EBS-LS-03	TOWN OF SCOTT
247894	Wastewater Facility (Lift Station)	NEW Water EBS-LS-04	TOWN OF SCOTT
78306	Water Supply Storage Tanks/Reservoirs	WRIGHTSTOWN SANITARY	TOWN OF WRIGHTSTOWN
79409	SEWAGE PLANT	WRIGHTSTOWN SEWAGE PLANT	TOWN OF WRIGHTSTOWN
80448	TOWN HALL	WRIGHTSTOWN TOWN HALL	TOWN OF WRIGHTSTOWN
93556	SCHOOLS	ST MARYS SCHOOL	TOWN OF WRIGHTSTOWN
97328	FIRE STATION	GREENLEAF FIRE STATION	TOWN OF WRIGHTSTOWN
97447	FIRE DEPT WATER SOURCE	FILL SITE - GREENLEAF	TOWN OF WRIGHTSTOWN
98436	POST OFFICE	POST OFFICE GREENLEAF	TOWN OF WRIGHTSTOWN
120165	SEWERAGE LIFT STATION	GREENLEAF SEWERAGE LIFT STATION	TOWN OF WRIGHTSTOWN
189076	FIRE STATION	GLFD FIRE STATION	TOWN OF WRIGHTSTOWN
227467	COMMUNICATION TOWER	NA	TOWN OF WRIGHTSTOWN
244337	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244338	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244339	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244340	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244341	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244342	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN

244344	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244345	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244347	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244348	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244350	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244546	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244557	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244567	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244568	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244569	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244582	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244816	Bridge (road over water)	NA	TOWN OF WRIGHTSTOWN
244817	Bridge (railroad over water)	NA	TOWN OF WRIGHTSTOWN
252761	Dam	NA	TOWN OF WRIGHTSTOWN
18480	MUNICIPAL FACILITIES	NA	VILLAGE OF ALLOUEZ
18925	WATER TOWER	NA	VILLAGE OF ALLOUEZ
22126	WATER SUPPLY BOOSTER/PUMPING STATIONS	NA	VILLAGE OF ALLOUEZ
79434	POLICE STATION	ALLOUEZ PUBLIC SAFETY	VILLAGE OF ALLOUEZ
79438	PSYCH CLINIC	BELLIN PSYCHIATRIC	VILLAGE OF ALLOUEZ
79442	CHURCH & RED CROSS DESIGNATED SHELTER	FIRST BIBLE BAPTIST	VILLAGE OF ALLOUEZ
79452	CLINIC	PREVEA CLINIC	VILLAGE OF ALLOUEZ
81372	VILLAGE HALL	ALLOUEZ VILLAGE HALL	VILLAGE OF ALLOUEZ
81592	SCHOOL	RESURRECTION SCHOOL	VILLAGE OF ALLOUEZ

82400	CLINIC	BAY AREA NEPHROLOGY	VILLAGE OF ALLOUEZ
84067	Administrative Building	ALLOUEZ COMMUNITY CENTER	VILLAGE OF ALLOUEZ
86187	PRE-SCHOOL/DAY CARE	RIVERSIDE CHRISTIAN CHILD CARE	VILLAGE OF ALLOUEZ
95412	ELDERLY CARE FACILITY	ODD FELLOWS HOME - NH	VILLAGE OF ALLOUEZ
95595	ELEMENTARY SCHOOL & RED CROSS DESIGNATED SHELTER	DOTY ELEMENTARY SCHOOL	VILLAGE OF ALLOUEZ
95851	SCHOOL & RED CROSS DESIGNATED SHELTER	WEBSTER ELEMENTARY SCHOOL	VILLAGE OF ALLOUEZ
95897	ELDERLY CARE FACILITY	BISHOPS COURT - NH	VILLAGE OF ALLOUEZ
97341	FIRE STATION & PUBLIC SAFETY	GNFD FIRE STATION 8	VILLAGE OF ALLOUEZ
97653	DIALYSIS CLINIC	DAVITA DIALYSIS CTR	VILLAGE OF ALLOUEZ
97700	SCHOOL & RED CROSS DESIGNATED SHELTER	LANGLADE ELEMENTARY	VILLAGE OF ALLOUEZ
98649	DIALYSIS CLINIC	DIALYSIS CENTER	VILLAGE OF ALLOUEZ
138234	MUNICIPAL WELL	ALLOUEZ WELL 4	VILLAGE OF ALLOUEZ
140093	Water Supply Wells	ALLOUEZ WELL 7	VILLAGE OF ALLOUEZ
189083	FIRE STATION & PUBLIC SAFETY	GB FIRE STATION 8	VILLAGE OF ALLOUEZ
244315	Bridge (road over water)	NA	VILLAGE OF ALLOUEZ
244457	Bridge (road over road)	NA	VILLAGE OF ALLOUEZ
244458	Bridge (road over road)	NA	VILLAGE OF ALLOUEZ
244491	Bridge (road over road)	NA	VILLAGE OF ALLOUEZ
244492	Bridge (road over road)	NA	VILLAGE OF ALLOUEZ
244493	Bridge (road over road)	NA	VILLAGE OF ALLOUEZ
244517	Bridge (railroad over road and trail)	NA	VILLAGE OF ALLOUEZ
244547	Bridge (railroad over water)	NA	VILLAGE OF ALLOUEZ
244548	Bridge (road over water)	NA	VILLAGE OF ALLOUEZ

244608	Bridge (road over water)	NA	VILLAGE OF ALLOUEZ
244609	Bridge (road over water)	NA	VILLAGE OF ALLOUEZ
244723	Bridge (road over railroad)	NA	VILLAGE OF ALLOUEZ
244725	Bridge (railroad over road)	NA	VILLAGE OF ALLOUEZ
244727	Bridge (railroad over water)	NA	VILLAGE OF ALLOUEZ
244728	Bridge (railroad over water)	NA	VILLAGE OF ALLOUEZ
245492	Wastewater Facility (Lift Station?)	NEW Water MS-04	VILLAGE OF ALLOUEZ
248291	Dialysis clinic	ST VINCENT REGIONAL DIALYSIS	VILLAGE OF ALLOUEZ
86808	ELDERLY CARE FACILITY	WYNDEMERE MEMORY CARE	VILLAGE OF ALLOUEZ
284387	SCHOOL	RESURRECTION CHURCH	VILLAGE OF ALLOUEZ
17193	Pipeline facility?	PIPELINE	VILLAGE OF ASHWAUBENON
18608	ELECTRICAL SUBSTATION	NA	VILLAGE OF ASHWAUBENON
27487	FIRE STATION	AFFD STATION 2	VILLAGE OF ASHWAUBENON
79472	WATER TOWER	ASHWAUBENON WATER TOWER 2	VILLAGE OF ASHWAUBENON
79475	WATER WELL	ASHWAUBENON WATER WELL 3	VILLAGE OF ASHWAUBENON
79478	WATER WELL	ASHWAUBENON WATER WELL 5	VILLAGE OF ASHWAUBENON
79523	Daycare	CORMIER EARLY EDUCATION CTR	VILLAGE OF ASHWAUBENON
79603	Military Installations	NAVAL RESERVE CENTER	VILLAGE OF ASHWAUBENON
79607	COLD STORAGE WAREHOUSE	NORTHLAND COLD STORAGE	VILLAGE OF ASHWAUBENON
79622	CHURCH & RED CROSS DESIGNATED SHELTER	PILGRIM CONGREGATION	VILLAGE OF ASHWAUBENON
81322	Airport	AIR HOST	VILLAGE OF ASHWAUBENON
81594	SCHOOL & RED CROSS DESIGNATED SHELTER	VALLEY VIEW SCHOOL	VILLAGE OF ASHWAUBENON
81621	SCHOOL	PARKVIEW MIDDLE SCHOOL	VILLAGE OF ASHWAUBENON

81653	ARENA	RESCH CENTER	VILLAGE OF ASHWAUBENON
82790	CARE-CHILD	STEPPING STONES CHILD CARE	VILLAGE OF ASHWAUBENON
82797	ELDERLY CARE FACILITY	WOODSIDE HAVEN - NH	VILLAGE OF ASHWAUBENON
83495	SCHOOL	ST JOSEPH SCHOOL	VILLAGE OF ASHWAUBENON
84287	MEDICAL CLINIC	BAYCARE CLINIC	VILLAGE OF ASHWAUBENON
84351	PREK - 8TH PRIVATE SCHOOL	ENTERPRISE ACADEMY	VILLAGE OF ASHWAUBENON
84781	CLINIC	BELLIN FAST CARE	VILLAGE OF ASHWAUBENON
85349	CLINIC	BELLIN HEALTH CARE SERVICES	VILLAGE OF ASHWAUBENON
87744	NA	PREVEA PLASTIC SURGERY CENTER	VILLAGE OF ASHWAUBENON
87816	NA	BAYCARE CLINIC	VILLAGE OF ASHWAUBENON
94897	WATER TOWER	ASHWAUBENON WATER TOWER 1	VILLAGE OF ASHWAUBENON
94898	PUBLIC SAFETY DEPT	ASHWAUBENON PUBLIC SAFETY	VILLAGE OF ASHWAUBENON
95434	CLINIC	PREVEA CLINIC	VILLAGE OF ASHWAUBENON
95765	SCHOOL & RED CROSS DESIGNATED SHELTER	PIONEER ELEMENTARY SCHOOL	VILLAGE OF ASHWAUBENON
95896	CHILD CARE SERVICE	ASHWAUBENON DAY CARE	VILLAGE OF ASHWAUBENON
95902	CHILD CARE SERVICE	KINDERCARE	VILLAGE OF ASHWAUBENON
95907	CHILD CARE SERVICE	KIDZ IN MOTION	VILLAGE OF ASHWAUBENON
96604	CLINIC	BELLIN HEALTH - TITLETOWN	VILLAGE OF ASHWAUBENON
96726	FIRE & AMBULANCE STATION	ASHWAUBENON PS STATION 1	VILLAGE OF ASHWAUBENON
96727	FIRE STATION	ASHWAUBENON PS STATION 2	VILLAGE OF ASHWAUBENON
96731	Arena Stadium	CORNERSTONE COMMUNITY CTR	VILLAGE OF ASHWAUBENON
96916	CLINIC	BELLIN CANCER CENTER	VILLAGE OF ASHWAUBENON
96951	COMMERCIALS-RADIO & TELEVISION	NBC 26	VILLAGE OF ASHWAUBENON

97232	NA	BILLIE KRESS CENTER	VILLAGE OF ASHWAUBENON
97275	TV STATION	FOX 11	VILLAGE OF ASHWAUBENON
97305	UTILITIES	WPS GATE STATION	VILLAGE OF ASHWAUBENON
97417	RADIOLOGY CLINIC	GB RADIOLOGY	VILLAGE OF ASHWAUBENON
98110	CLINIC	BELLIN HEALTH MRI	VILLAGE OF ASHWAUBENON
98913	Military Installations	ARMY RESERVE CENTER	VILLAGE OF ASHWAUBENON
98996	DOT	DEPT OF TRANS	VILLAGE OF ASHWAUBENON
101861	Administrative Building	ASHW VILLAGE GARAGE	VILLAGE OF ASHWAUBENON
189070	FIRE STATION	AFFD STATION 1	VILLAGE OF ASHWAUBENON
244302	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244303	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244307	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244308	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244309	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244386	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244441	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244442	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244461	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244465	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244470	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244471	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244472	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244473	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON

244474	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244475	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244476	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244477	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244478	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244479	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244480	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244481	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244482	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244483	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244484	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244485	Bridge (over road and railroad)	NA	VILLAGE OF ASHWAUBENON
244486	Bridge (over road and railroad)	NA	VILLAGE OF ASHWAUBENON
244487	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244488	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244489	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244498	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244499	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244500	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244501	Bridge (road over road and railroad)	NA	VILLAGE OF ASHWAUBENON
244502	Bridge (road over road and railroad)	NA	VILLAGE OF ASHWAUBENON
244503	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244504	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON

244505	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244604	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244605	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244606	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244607	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244626	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244627	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244628	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244629	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244630	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244631	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244632	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244633	Bridge (road over road)	NA	VILLAGE OF ASHWAUBENON
244769	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244770	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244771	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
244825	Bridge (railroad over water)	NA	VILLAGE OF ASHWAUBENON
244826	Bridge (road over water)	NA	VILLAGE OF ASHWAUBENON
247491	Wastewater Facility	NEW Water MS-13A	VILLAGE OF ASHWAUBENON
247492	Wastewater Facility	NEW Water MS-13B	VILLAGE OF ASHWAUBENON
247493	Wastewater Facility	NEW Water MS-13C	VILLAGE OF ASHWAUBENON
247494	Wastewater Facility	NEW Water MS-13D	VILLAGE OF ASHWAUBENON
252760	Dam	NA	VILLAGE OF ASHWAUBENON

257907	Bridge (railroad over water)	NA	VILLAGE OF ASHWAUBENON
98539	ELDERLY CARE FACILITY	MAPLE RIDGE MGM HEALTHCARE - NH	VILLAGE OF ASHWAUBENON
13386	VILLAGE UTILITY?	NA	VILLAGE OF BELLEVUE
16772	Water Supply Storage Tanks/Reservoirs	Water Tower	VILLAGE OF BELLEVUE
19987	SANITARY DISTRICT BUILDING	BELLEVUE WELL 2	VILLAGE OF BELLEVUE
20144	WATER TOWER	NA	VILLAGE OF BELLEVUE
22230	Wastewater Facility (Lift Station?)	NEW Water MS-01	VILLAGE OF BELLEVUE
25521	Radio/Television Stations	MIDWEST COMMUNICATIONS	VILLAGE OF BELLEVUE
62708	LONG-TERM HEALTH CARE FACILITIES	NA	VILLAGE OF BELLEVUE
79681	Administrative Building	BELLEVUE WATER DEPT	VILLAGE OF BELLEVUE
79686	ELDERLY CARE FACILITY	CENTURY RIDGE	VILLAGE OF BELLEVUE
79687	EMS	COUNTY RESCUE STATION 1	VILLAGE OF BELLEVUE
79695	NA	VETERANS ASSISTANCE FOUNDATION	VILLAGE OF BELLEVUE
79741	ELECTRICAL SUBSTATION	WPS SUB STATION	VILLAGE OF BELLEVUE
79742	ELECTRICAL SUBSTATION	WPS SUB STATION	VILLAGE OF BELLEVUE
80642	CHILD CARE	TINY TOWN CHILD CARE	VILLAGE OF BELLEVUE
81491	ELDERLY CARE FACILITY	CENTURY RIDGE - NH	VILLAGE OF BELLEVUE
81650	APARTMENTS	BELLEVUE RETIREMENT - NH	VILLAGE OF BELLEVUE
82083	CARE-CHILD	KINDER CARE	VILLAGE OF BELLEVUE
84306	CARE-CHILD	STAY N PLAY CHILD CARE	VILLAGE OF BELLEVUE
87995	Long Term Health Care Facility	PATIENT PINES ASSISTED LIVING - 1721	VILLAGE OF BELLEVUE
96000	College or University	BELLIN COLLEGE OF NURSING	VILLAGE OF BELLEVUE
96073	MEDICAL CLINIC	BELLIN HEALTH GENERATIONS	VILLAGE OF BELLEVUE

96905	FIRE STATION	BVFD FIRE STATION 1	VILLAGE OF BELLEVUE
96906	FIRE STATION	BVFD FIRE STATION 2	VILLAGE OF BELLEVUE
97456	CARE-CHILD	CENTERPIECE	VILLAGE OF BELLEVUE
97828	SCHOOL & RED CROSS DESIGNATED SHELTER	MCAULIFFE SCHOOL	VILLAGE OF BELLEVUE
98592	SHERIFFS DEPT	BCSO	VILLAGE OF BELLEVUE
189071	FIRE STATION	BELLEVUE FIRE STATION 1	VILLAGE OF BELLEVUE
189072	FIRE STATION	BELLEVUE FIRE STATION 2	VILLAGE OF BELLEVUE
198777	AMBULANCE STATION	CR STATION 1	VILLAGE OF BELLEVUE
244295	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244296	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244495	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244497	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244515	Bridge (road over road)	I-43 & MANITOWOC RD OVERPASS	VILLAGE OF BELLEVUE
244519	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244520	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244521	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244523	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244529	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244530	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244531	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244532	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244533	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244549	Bridge (road over road)	NA	VILLAGE OF BELLEVUE

244610	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244611	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244612	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244613	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244614	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244615	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244616	Bridge (railroad over road)	NA	VILLAGE OF BELLEVUE
244634	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244680	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244681	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244682	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244683	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244684	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244686	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244687	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244688	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244689	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244690	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244691	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244692	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244693	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244694	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244695	Culvert (road over water)	NA	VILLAGE OF BELLEVUE

244696	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244697	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244698	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244699	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244700	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244701	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
244702	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244703	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244704	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244705	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244706	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244707	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244799	Bridge (pedestrian over water)	NA	VILLAGE OF BELLEVUE
244800	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244801	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244802	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244803	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244804	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244805	Bridge (road over road)	NA	VILLAGE OF BELLEVUE
244806	Bridge (railroad over road)	NA	VILLAGE OF BELLEVUE
244827	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
244828	Bridge (road over water)	NA	VILLAGE OF BELLEVUE
245491	LIFT STATION (WASTEWATER FACILITY)	NEW Water MS-02	VILLAGE OF BELLEVUE

253906	Water tower	BELLEVUE WATER TOWER	VILLAGE OF BELLEVUE
258707	Culvert (road over water)	NA	VILLAGE OF BELLEVUE
2961	CHURCH & RED CROSS DESIGNATED SHELTER	OUR SAVIORS LUTHERAN CHURCH	VILLAGE OF DENMARK
3691	WATER SYSTEM	VIL OF DENMARK WATER	VILLAGE OF DENMARK
3757	SCHOOL	DENMARK ELEMENTARY SCHOOL	VILLAGE OF DENMARK
78128	HEALTH CENTER	BELLIN HEALTH CENTER	VILLAGE OF DENMARK
78778	COMMERCIAL	PRO GAS	VILLAGE OF DENMARK
79378	WATER UTILITY	DENMARK WATER DEPT	VILLAGE OF DENMARK
79745	VILLAGE HALL	DENMARK VILLAGE HALL	VILLAGE OF DENMARK
81595	SCHOOL & RED CROSS DESIGNATED SHELTER	DENMARK MIDDLE SCHOOL	VILLAGE OF DENMARK
81933	SCHOOL & RED CROSS DESIGNATED SHELTER	DENMARK HIGH SCHOOL	VILLAGE OF DENMARK
93636	CLINIC	AURORA HEALTH CENTER	VILLAGE OF DENMARK
93696	CHURCH	ALL SAINTS RECTORY	VILLAGE OF DENMARK
96139	CARE-CHILD	DENMARK EARLY CHILDHOOD CTR	VILLAGE OF DENMARK
97089	WATER RESOURCE	FILL SITE - DENMARK - WATER TOWER	VILLAGE OF DENMARK
97122	FIRE STATION	DNFD FIRE STATION 1	VILLAGE OF DENMARK
97306	UTILITIES	WPS GATE STATION	VILLAGE OF DENMARK
98434	POST OFFICE	POST OFFICE DENMARK	VILLAGE OF DENMARK
98557	GOVERNMENT	DENMARK SEWAGE PLANT	VILLAGE OF DENMARK
98939	AMBULANCE SERVICE	COUNTY RESCUE STATION 4	VILLAGE OF DENMARK
189073	FIRE STATION	DENMARK FIRE STATION 1	VILLAGE OF DENMARK
198780	AMBULANCE SERVICE	CR STATION 4	VILLAGE OF DENMARK
244559	Bridge (road over road)	NA	VILLAGE OF DENMARK

244561	Bridge (road over trail)	NA	VILLAGE OF DENMARK
244638	Bridge (road over road)	NA	VILLAGE OF DENMARK
244708	Bridge (road over road)	NA	VILLAGE OF DENMARK
63127	OUTDOOR RECREATION	NA	VILLAGE OF HOBART
64365	WATER TOWER	NA	VILLAGE OF HOBART
78254	FIRE STATION	HOBART FIRE STATION 2	VILLAGE OF HOBART
81612	SCHOOL	HILLCREST SCHOOL	VILLAGE OF HOBART
84357	RADIO/TELEVISION TRANSMISSION TOWERS/ANTENNAE	NA	VILLAGE OF HOBART
88545	WELL	HOBART WATER WELL	VILLAGE OF HOBART
93451	CHURCH & RED CROSS DESIGNATED SHELTER	ST JOSEPH PARISH	VILLAGE OF HOBART
96474	MUNICIPAL OFFICES	HOBART VILLAGE OFFICE	VILLAGE OF HOBART
96681	AIRPORT FIRE STATION	ARFF	VILLAGE OF HOBART
97483	FIRE STATION	HBFD FIRE STATION 1	VILLAGE OF HOBART
97484	FIRE STATION	HBFD FIRE STATION 2	VILLAGE OF HOBART
98136	OTHER USES	TRANS CANADA ANR PIPELINE	VILLAGE OF HOBART
98235	CLINIC	ONEIDA COMMUNITY HEALTH	VILLAGE OF HOBART
98273	ADMINISTRATIVE BUILDING (Oneida)	ONEIDA HOUSING AUTHORITY	VILLAGE OF HOBART
98307	Pre-School/Day Care	ONEIDA CHILD CARE	VILLAGE OF HOBART
98308	TRIBAL CIVIC CENTER	ONEIDA CIVIC CENTER	VILLAGE OF HOBART
98309	TRIBAL	ONEIDA LAND MANAGEMENT	VILLAGE OF HOBART
98311	POLICE STATION	ONEIDA POLICE	VILLAGE OF HOBART
98333	Administrative Building	ONEIDA VETERANS DEPARTMENT	VILLAGE OF HOBART
138854	WATER WELL	NA	VILLAGE OF HOBART

187070	AIRPORT FIRE STATION	AIRPORT FIRE	VILLAGE OF HOBART
189086	FIRE STATION	HOBART FIRE STATION 1	VILLAGE OF HOBART
244330	Bridge (road over water)	NA	VILLAGE OF HOBART
244334	Bridge (road over water)	NA	VILLAGE OF HOBART
244384	Bridge (road over water)	NA	VILLAGE OF HOBART
244443	Bridge (road over water)	NA	VILLAGE OF HOBART
244450	Bridge (road over water)	NA	VILLAGE OF HOBART
244454	Bridge (road over water)	NA	VILLAGE OF HOBART
244455	Bridge (road over water)	NA	VILLAGE OF HOBART
244456	Bridge (road over water)	NA	VILLAGE OF HOBART
244516	Bridge (road over water)	NA	VILLAGE OF HOBART
244620	Bridge (road over water)	NA	VILLAGE OF HOBART
244711	Culvert (road over water)	NA	VILLAGE OF HOBART
244712	Bridge (road over water)	NA	VILLAGE OF HOBART
244713	Bridge (road over water)	NA	VILLAGE OF HOBART
244714	Bridge (road over water)	NA	VILLAGE OF HOBART
244715	Bridge (road over water)	NA	VILLAGE OF HOBART
244716	Bridge (road over water)	NA	VILLAGE OF HOBART
244717	Culvert (road over water)	NA	VILLAGE OF HOBART
244718	Culvert (road over water)	NA	VILLAGE OF HOBART
244719	Bridge (road over water)	NA	VILLAGE OF HOBART
244720	Bridge (road over water)	NA	VILLAGE OF HOBART
244721	Culvert (road over water)	NA	VILLAGE OF HOBART

244722	Culvert (road over water)	NA	VILLAGE OF HOBART
244767	Bridge (former railroad over water)	NA	VILLAGE OF HOBART
244768	Bridge (road over water)	NA	VILLAGE OF HOBART
244823	Bridge (road over water)	NA	VILLAGE OF HOBART
247901	Wastewater Facility (Lift Station?)	NEW Water MS-07	VILLAGE OF HOBART
252741	Dam	NA	VILLAGE OF HOBART
252742	Dam	NA	VILLAGE OF HOBART
252750	Dam	NA	VILLAGE OF HOBART
252751	Dam	NA	VILLAGE OF HOBART
252763	Dam	NA	VILLAGE OF HOBART
65511	GAS GATE STATION	WPS GATE STATION	VILLAGE OF HOWARD
66139	CHURCHES/TEMPLES/SYNAGOGUES	NA	VILLAGE OF HOWARD
80318	PRESCHOOL	BIG APPLE PRESCHOOL	VILLAGE OF HOWARD
80320	ELDERLY CARE FACILITY	CARDINAL RIDGE-NH	VILLAGE OF HOWARD
80324	DAYCARE	CUDDLE CARE DAY CARE	VILLAGE OF HOWARD
80341	PUBLIC WORKS	HOWARD PUBLIC WORKS	VILLAGE OF HOWARD
80395	ELECTRICAL SUBSTATION	WPS SUB STATION 2	VILLAGE OF HOWARD
80396	ELECTRICAL SUBSTATION	WPS SUB STATION 5	VILLAGE OF HOWARD
80931	CLINIC	PREVEA CLINIC	VILLAGE OF HOWARD
81543	AMBULANCE BASE	COUNTY RESCUE STATION 2	VILLAGE OF HOWARD
83210	UTILITIES	WPS SUB STATION	VILLAGE OF HOWARD
83494	CHURCH & RED CROSS DESIGNATED SHELTER	ST JOHN THE BAPTIST - NEW CHURCH	VILLAGE OF HOWARD
83848	ELDERLY CARE FACILITY	ALPHA SENIOR CONCEPTS	VILLAGE OF HOWARD

93626	UTILITIES	WPS SUB STATION 9	VILLAGE OF HOWARD
95000	WELL STATION	GB WATER UTILITY	VILLAGE OF HOWARD
95532	CLINIC	BELLIN HEALTH CENTER	VILLAGE OF HOWARD
95909	CHILD CARE SERVICE	STARTING POINT DAYCARE	VILLAGE OF HOWARD
95959	SCHOOL	LINEVILLE INTERMEDIATE SCHOOL	VILLAGE OF HOWARD
95979	CHURCH	GOOD SHEPHERD LUTHERAN CHURCH	VILLAGE OF HOWARD
96602	ELDERLY CARE FACILITY	TENDER HEARTS ASSISTED LIVING	VILLAGE OF HOWARD
96794	SCHOOLS	BAYVIEW MIDDLE SCHOOL	VILLAGE OF HOWARD
96972	CHURCH & RED CROSS DESIGNATED SHELTER	HOPE COMMUNITY CHURCH	VILLAGE OF HOWARD
97265	SCHOOL	FOREST GLEN ELEMENTARY SCHOOL	VILLAGE OF HOWARD
97304	UTILITIES	WPS GATE STATION	VILLAGE OF HOWARD
97539	SCHOOLS	HOWARD ELEMENTARY SCHOOL	VILLAGE OF HOWARD
97550	FIRE STATION	HWFD FIRE STATION 1	VILLAGE OF HOWARD
97551	FIRE STATION	HWFD FIRE STATION 2	VILLAGE OF HOWARD
97836	SCHOOL	MEADOWBROOK ELEMENTARY	VILLAGE OF HOWARD
98959	WATER TOWER	WATER TOWER - HOWARD	VILLAGE OF HOWARD
98960	WATER TOWER	WATER TOWER - HOWARD	VILLAGE OF HOWARD
115939	COMMERCIAL BUILDING	NSIGHT TELE SERVICES	VILLAGE OF HOWARD
144360	WATER TOWER	WATER TOWER - HOWARD	VILLAGE OF HOWARD
189088	FIRE STATION	HOWARD FIRE STATION 1	VILLAGE OF HOWARD
189089	FIRE STATION	HOWARD FIRE STATION 2	VILLAGE OF HOWARD
198778	AMBULANCE STATION	CR STATION 2	VILLAGE OF HOWARD
244291	MUNICIPAL WELL	HOWARD WELL 2	VILLAGE OF HOWARD

244292	MUNICIPAL WELL	HOWARD WELL 3	VILLAGE OF HOWARD
244310	Bridge (road over road, railroad and water)	NA	VILLAGE OF HOWARD
244311	Bridge (road over road)	NA	VILLAGE OF HOWARD
244312	Bridge (trail over road)	NA	VILLAGE OF HOWARD
244381	Bridge (road over water)	NA	VILLAGE OF HOWARD
244382	Bridge (road over water)	NA	VILLAGE OF HOWARD
244383	Bridge (road over water)	NA	VILLAGE OF HOWARD
244385	Bridge (road over water)	NA	VILLAGE OF HOWARD
244388	Bridge (road)	NA	VILLAGE OF HOWARD
244403	Bridge (trail over road)	NA	VILLAGE OF HOWARD
244406	Bridge (road over water)	NA	VILLAGE OF HOWARD
244407	Bridge (road over road)	NA	VILLAGE OF HOWARD
244409	Bridge (road over water)	NA	VILLAGE OF HOWARD
244410	Bridge (road over water)	NA	VILLAGE OF HOWARD
244412	Bridge (road over water)	NA	VILLAGE OF HOWARD
244413	Bridge (road over water)	NA	VILLAGE OF HOWARD
244414	Bridge (road over water)	NA	VILLAGE OF HOWARD
244415	Bridge (road over water)	NA	VILLAGE OF HOWARD
244416	Bridge (road over water)	NA	VILLAGE OF HOWARD
244418	Bridge (trail over road)	NA	VILLAGE OF HOWARD
244419	Bridge (road over road)	NA	VILLAGE OF HOWARD
244420	Bridge (road over road)	NA	VILLAGE OF HOWARD
244421	Bridge (road over railroad)	NA	VILLAGE OF HOWARD

244422	Bridge (road over railroad)	NA	VILLAGE OF HOWARD
244423	Bridge (road over water)	NA	VILLAGE OF HOWARD
244424	Bridge (road)	NA	VILLAGE OF HOWARD
244426	Bridge (road over road)	NA	VILLAGE OF HOWARD
244427	Bridge (road over road)	NA	VILLAGE OF HOWARD
244428	Culvert (road over water)	NA	VILLAGE OF HOWARD
244429	Culvert (road over water)	NA	VILLAGE OF HOWARD
244430	Culvert (road over water)	NA	VILLAGE OF HOWARD
244432	Bridge (road over road)	NA	VILLAGE OF HOWARD
244433	Bridge (road over road)	NA	VILLAGE OF HOWARD
244434	Bridge (road over road)	NA	VILLAGE OF HOWARD
244435	Bridge (road over road, railroad and water)	NA	VILLAGE OF HOWARD
244436	Bridge (road over road, railroad and water)	NA	VILLAGE OF HOWARD
244447	Bridge (road over water)	NA	VILLAGE OF HOWARD
244448	Bridge (road over water)	NA	VILLAGE OF HOWARD
244449	Bridge (road over road)	NA	VILLAGE OF HOWARD
244588	Bridge (road over water)	NA	VILLAGE OF HOWARD
244625	Bridge (road over road)	NA	VILLAGE OF HOWARD
244730	Culvert (road over water)	NA	VILLAGE OF HOWARD
244731	Bridge (road over water)	NA	VILLAGE OF HOWARD
244732	Bridge (road over water)	NA	VILLAGE OF HOWARD
244733	Bridge (road over water)	NA	VILLAGE OF HOWARD
244734	Bridge (road over water)	NA	VILLAGE OF HOWARD

244735	Bridge (road over trail)	NA	VILLAGE OF HOWARD
244736	Bridge (road over trail)	NA	VILLAGE OF HOWARD
244737	Bridge (road over water)	NA	VILLAGE OF HOWARD
244738	Bridge (road over water)	NA	VILLAGE OF HOWARD
244739	Bridge (road over water)	NA	VILLAGE OF HOWARD
244740	Bridge (road over water)	NA	VILLAGE OF HOWARD
244741	Bridge (road over water)	NA	VILLAGE OF HOWARD
244742	Bridge (road over water)	NA	VILLAGE OF HOWARD
244743	Bridge (road over water)	NA	VILLAGE OF HOWARD
244744	Bridge (road over water)	NA	VILLAGE OF HOWARD
244745	Bridge (railroad over water)	NA	VILLAGE OF HOWARD
244746	Bridge (road over water)	NA	VILLAGE OF HOWARD
244747	Culvert (road over water)	NA	VILLAGE OF HOWARD
244748	Bridge (road over road)	NA	VILLAGE OF HOWARD
244749	Bridge (road over water)	NA	VILLAGE OF HOWARD
244762	Bridge (railroad over water)	NA	VILLAGE OF HOWARD
244763	Bridge (road over water)	NA	VILLAGE OF HOWARD
244766	Bridge (trail over railroad)	NA	VILLAGE OF HOWARD
244833	Bridge (road over road)	NA	VILLAGE OF HOWARD
244834	Bridge (road over road)	NA	VILLAGE OF HOWARD
244835	Bridge (road over road)	NA	VILLAGE OF HOWARD
244836	Bridge (road over road)	NA	VILLAGE OF HOWARD
244837	Bridge (road over road)	NA	VILLAGE OF HOWARD

247091	Wastewater Facility (Lift Station) & restrooms	NEW Water MS-08-AND Pamperin Park restrooms	VILLAGE OF HOWARD
247495	Wastewater Facility	NEW Water MS-22	VILLAGE OF HOWARD
249492	LIFT STATION	HOWARD LIFT STATION ON LAKEVIEW DR	VILLAGE OF HOWARD
249493	LIFT STATION	HOWARD LIFT STATION ON RIVERVIEW DR	VILLAGE OF HOWARD
249494	LIFT STATION	HOWARD LIFT STATION ON VALLEY LN	VILLAGE OF HOWARD
252738	Dam	NA	VILLAGE OF HOWARD
252739	Dam	NA	VILLAGE OF HOWARD
257107	Bridge (road over road, railroad and water)	NA	VILLAGE OF HOWARD
257108	Bridge (road over road, railroad and water)	NA	VILLAGE OF HOWARD
257109	Bridge (road over road, railroad and water)	NA	VILLAGE OF HOWARD
257110	Bridge (road over road)	NA	VILLAGE OF HOWARD
257111	Bridge (road over road)	NA	VILLAGE OF HOWARD
257112	Bridge (road over road)	NA	VILLAGE OF HOWARD
257113	Bridge (road over road)	NA	VILLAGE OF HOWARD
257114	Bridge (road over road)	NA	VILLAGE OF HOWARD
257115	Bridge (road over road)	NA	VILLAGE OF HOWARD
257116	Bridge (road over road)	NA	VILLAGE OF HOWARD
257507	Bridge (road over water)	NA	VILLAGE OF HOWARD
257508	Bridge (railroad over water)	NA	VILLAGE OF HOWARD
257509	Bridge (railroad over water)	NA	VILLAGE OF HOWARD
257510	Bridge (road over road)	NA	VILLAGE OF HOWARD
257511	Bridge (road over road and railroad)	NA	VILLAGE OF HOWARD
257512	Bridge (road over railroad)	NA	VILLAGE OF HOWARD

257513	Bridge (road over railroad)	NA	VILLAGE OF HOWARD
258708	Bridge (road over road)	NA	VILLAGE OF HOWARD
259107	Bridge (railroad over water)	NA	VILLAGE OF HOWARD
74195	GENERATION/PROCESSING OF COMMUNICATION/UTILITIE	NA	VILLAGE OF PULASKI
77107	Electric Power Substation	NA	VILLAGE OF PULASKI
80417	WATER DEPT	PULASKI WATER DEPT	VILLAGE OF PULASKI
80598	Long Term Health Care Facility	THE PINES - NH	VILLAGE OF PULASKI
80623	CLINIC	PREVEA CLINIC PULASKI	VILLAGE OF PULASKI
88053	OIL TANKS	OLSON OIL TANKS	VILLAGE OF PULASKI
93543	PUBLIC UTILITIES	PULASKI WATER AND SEWER	VILLAGE OF PULASKI
93583	CLINIC	AURORA HEALTH CENTER	VILLAGE OF PULASKI
93614	SCHOOL	PULASKI MIDDLE SCHOOL	VILLAGE OF PULASKI
93618	SCHOOL & RED CROSS DESIGNATED SHELTER	PULASKI HIGH SCHOOL	VILLAGE OF PULASKI
95954	SCHOOL & RED CROSS DESIGNATED SHELTER	ASSUMPTION BVM SCHOOL	VILLAGE OF PULASKI
97282	CHURCH	ASSUMPTION RECTORY	VILLAGE OF PULASKI
98408	FIRE STATION	PULASKI FIRE STATION	VILLAGE OF PULASKI
98428	CHILD CARE SERVICE	ENCOMPASS CHILD CARE	VILLAGE OF PULASKI
98440	POST OFFICE	POST OFFICE PULASKI	VILLAGE OF PULASKI
189096	FIRE STATION	PFFD FIRE STATION	VILLAGE OF PULASKI
244757	Bridge (road over water)	NA	VILLAGE OF PULASKI
244758	Bridge (road over water)	NA	VILLAGE OF PULASKI
247496	Wastewater Facility	NEW Water MS-23	VILLAGE OF PULASKI
253907	WATER TOWER	PULASKI WATER DEPT	VILLAGE OF PULASKI

72086	LIFT STATION	SUAMICO LIFT STATION 7	VILLAGE OF SUAMICO
72393	Utility building?	NA	VILLAGE OF SUAMICO
79311	PRE-SCHOOL/DAY CARE	TENDER HEART LEARNING	VILLAGE OF SUAMICO
80439	CHURCH & RED CROSS DESIGNATED SHELTER	ST BENEDICT CHURCH	VILLAGE OF SUAMICO
80444	ELECTRICAL SUB STATION	WPS SUB STATION 8	VILLAGE OF SUAMICO
81544	AMBULANCE / RESCUE SQUAD	COUNTY RESCUE STATION 3	VILLAGE OF SUAMICO
81560	CLINIC	AURORA HEALTH CENTER	VILLAGE OF SUAMICO
82084	CARE-CHILD	KINDER CARE	VILLAGE OF SUAMICO
83385	CLINIC	BELLIN FAST CARE	VILLAGE OF SUAMICO
83600	CARE-CHILD	TINY TOWN CHILD CARE	VILLAGE OF SUAMICO
85750	GOVERNMENT	SUAMICO VILLAGE HALL	VILLAGE OF SUAMICO
86348	CHURCH	PILGRIM LUTHERAN CHURCH	VILLAGE OF SUAMICO
93622	CHURCH & RED CROSS DESIGNATED SHELTER	ST EDWARD AND ISIDORE CHURCH	VILLAGE OF SUAMICO
93641	CARE-CHILD	SHINING STARS DAYCARE	VILLAGE OF SUAMICO
95910	CHILD CARE SERVICE	TEDDY BEAR DAY CARE	VILLAGE OF SUAMICO
96771	SCHOOL	BAY HARBOR ELEMENTARY	VILLAGE OF SUAMICO
96782	HIGH SCHOOL & RED CROSS DESIGNATED SHELTER	BAY PORT HIGH SCHOOL	VILLAGE OF SUAMICO
98441	POST OFFICE	POST OFFICE SUAMICO	VILLAGE OF SUAMICO
98673	FIRE STATION	SMFD STATION 1	VILLAGE OF SUAMICO
98674	FIRE STATION	SMFD STATION 2	VILLAGE OF SUAMICO
98963	GOVERNMENT	WATER TOWER - SUAMICO	VILLAGE OF SUAMICO
98964	SANITARY DISTRICT BUILDING	SUAMICO WATER TREATMENT PLANT	VILLAGE OF SUAMICO
189097	FIRE STATION	SUAMICO FIRE STATION 1	VILLAGE OF SUAMICO

189098	FIRE STATION	SUAMICO FIRE STATION 2	VILLAGE OF SUAMICO
198779	AMBULANCE / RESCUE SQUAD	CR STATION 3	VILLAGE OF SUAMICO
244319	Bridge (road over road and water)	NA	VILLAGE OF SUAMICO
244326	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244327	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244328	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244329	Bridge (road over road and water)	NA	VILLAGE OF SUAMICO
244389	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244390	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244391	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244393	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244394	Bridge (road over railroad)	NA	VILLAGE OF SUAMICO
244396	Bridge (road over railroad)	NA	VILLAGE OF SUAMICO
244397	Bridge (road over road)	NA	VILLAGE OF SUAMICO
244399	Bridge (road over road)	NA	VILLAGE OF SUAMICO
244401	Bridge (road over water)	NA	VILLAGE OF SUAMICO
244402	Bridge (road over road)	NA	VILLAGE OF SUAMICO
244624	Bridge (road over road)	NA	VILLAGE OF SUAMICO
244709	Bridge (road over road)	NA	VILLAGE OF SUAMICO
244710	Bridge (road over road)	NA	VILLAGE OF SUAMICO
244764	Bridge (railroad over water)	NA	VILLAGE OF SUAMICO
244765	Bridge (road over water)	NA	VILLAGE OF SUAMICO
249495	LIFT STATION	SUAMICO LIFT STATION 2	VILLAGE OF SUAMICO

252757	Dam	NA	VILLAGE OF SUAMICO
1726	MUNICIPAL SERVICES / PD	WRIGHTSTOWN POLICE DEPARTMENT	VILLAGE OF WRIGHTSTOWN
2769	WATER TOWER	VIL OF WRIGHTSTOWN WATER TOWER	VILLAGE OF WRIGHTSTOWN
78311	WATER TOWER	NA	VILLAGE OF WRIGHTSTOWN
79411	PHONE COMPANY	ATT BUILDING	VILLAGE OF WRIGHTSTOWN
79418	DAY CARE	KIDS CARE	VILLAGE OF WRIGHTSTOWN
80564	SEWAGE PLANT	WRIGHTS PUBLIC WORKS	VILLAGE OF WRIGHTSTOWN
81349	CLINIC	BELLIN HEALTH WRIGHTSTOWN	VILLAGE OF WRIGHTSTOWN
81591	MIDDLE SCHOOL	WRIGHTSTOWN MIDDLE SCHOOL	VILLAGE OF WRIGHTSTOWN
82064	SCHOOL	ST JOHN LUTHERAN SCHOOL	VILLAGE OF WRIGHTSTOWN
84115	VILLAGE HALL	WRIGHTSTOWN VILLAGE HALL	VILLAGE OF WRIGHTSTOWN
94826	HIGH SCHOOL & RED CROSS DESIGNATED SHELTER	WRIGHTSTOWN HIGH SCHOOL	VILLAGE OF WRIGHTSTOWN
95947	ELEMENTARY SCHOOL	WRIGHTSTOWN ELEMENTARY SCHOOL	VILLAGE OF WRIGHTSTOWN
97821	RESIDENTIAL	MATTHEWS SENIOR LIVING	VILLAGE OF WRIGHTSTOWN
98442	POST OFFICE	POST OFFICE WRIGHTSTOWN	VILLAGE OF WRIGHTSTOWN
98989	FIRE STATION	WFFD FIRE STATION	VILLAGE OF WRIGHTSTOWN
99030	CHILD CARE	WRIGHTCARE CHILD CARE	VILLAGE OF WRIGHTSTOWN
189099	FIRE STATION	WRIGHTSTOWN FIRE STATION	VILLAGE OF WRIGHTSTOWN
244346	Bridge (road over water)	NA	VILLAGE OF WRIGHTSTOWN
244648	Bridge (road over water)	NA	VILLAGE OF WRIGHTSTOWN
252758	Dam	NA	VILLAGE OF WRIGHTSTOWN

Appendix E – BC Shoreland Zoning Code

CHAPTER 22
(Revised 10-4-2016)

SHORELANDS AND WETLANDS

STATUTORY AUTHORIZATION, FINDING OF FACT, STATEMENT OF PURPOSE AND TITLE

22.01 STATUTORY AUTHORIZATION. This ordinance (Chapter 22) for shoreland protection is adopted pursuant to the authorization set forth in s. 59.692, Wis. Stats., to implement ss. 59.692, 59.694, & 281.31, Wis. Stats., and Ch. NR 115 of the Wisconsin Administrative Code. These rules and laws shall apply until amended and then shall apply as amended.

22.02 FINDING OF FACT. Uncontrolled use of the shorelands and pollution of the navigable waters of Brown County would adversely affect the public health, safety, convenience, and general welfare and impair the tax base. The legislature of Wisconsin has delegated responsibility to the counties to further the maintenance of safe and healthful conditions; prevent and control water pollution; protect spawning grounds, fish and aquatic life; control building sites, placement of structures and land uses; and to preserve shore cover and natural beauty. This responsibility is hereby recognized by Brown County, Wisconsin.

22.03 PURPOSE AND INTENT (s. NR 115.01). For the purpose of promoting the public health, safety, convenience and welfare, and promote and protect the public trust in navigable waters this ordinance has been established to:

- (1) Further the maintenance of safe and healthful conditions and prevent and control water pollution through:
 - (a) Establishing minimum lot sizes to provide adequate area for private on-site waste treatment systems.
 - (b) Controlling filling and grading to prevent serious soil erosion problems.
 - (c) Limiting impervious surfaces to control runoff which carries pollutants.
- (2) Protect spawning grounds, fish and aquatic life through:
 - (a) Preserving wetlands and other fish and aquatic habitat.
 - (b) Regulating pollution sources.
 - (c) Controlling shoreline alterations, dredging and lagooning.
- (3) Control building sites, placement of structures and land uses through:
 - (a) Prohibiting certain uses detrimental to the shoreland area.
 - (b) Setting minimum lot sizes and widths.
 - (c) Setting minimum building setbacks from waterways.
 - (d) Setting the maximum height of near shore structures.
- (4) Preserve and restore shoreland vegetation and natural scenic beauty through:
 - (a) Restricting the removal of natural shoreland cover.

- (b) Preventing shoreline encroachment by structures.
- (c) Controlling shoreland excavation and other earth moving activities.
- (d) Regulating the use and placement of boathouses and other structures.

22.04 TITLE. This ordinance constituting Chapter 22 of the Brown County Code, shall be known, cited and referred to as: The Shorelands and Wetlands Ordinance for Brown County, Wisconsin.

GENERAL PROVISIONS

22.05 AREAS TO BE REGULATED. Areas regulated by this ordinance shall include all the lands (referred to herein as "shorelands") in the unincorporated areas of Brown County which are:

- (1) Within 1,000 feet of the ordinary high-water mark of navigable lakes, ponds or flowages. (s. NR 115.03(8).) Lakes, ponds or flowages in Brown County shall be presumed to be navigable if they are listed in the Wisconsin Department of Natural Resources ("Department") publication FH-800 2009 "Wisconsin Lakes" book available electronically at the following web site: <http://dnr.wi.gov/org/water/fhp/lakes/lakemap/> or are shown on United States Geological Survey quadrangle maps (1:24,000 scale), or other zoning base maps.
- (2) Within 300 feet of the ordinary high-water mark of navigable rivers or streams, or to the landward side of the floodplain, whichever distance is greater. (s. NR 115.03(8).) Rivers and streams in Brown County shall be presumed to be navigable if they are designated as perennial waterways or intermittent waterways on United States Geological Survey quadrangle maps. (1:24,000) Flood hazard boundary maps, flood insurance rate maps, flood boundary- floodway maps, county soil survey maps or other existing county floodplain zoning maps shall be used to delineate floodplain areas.
- (3) Determinations of navigability and ordinary high-water mark location shall initially be made by the zoning administrator. When questions arise, the zoning administrator may contact the appropriate office of the Department for a final determination of navigability or ordinary high-water mark. The county may work with surveyors with regard to s. 59.692(1h), Wis. Stats. Field locating the ordinary high-water mark on the Bay of Green Bay ("Bay") shall not exceed the elevation of 583 feet, IGLD85 unless deemed appropriate by the zoning administrator to set higher based on site conditions per the definition of ordinary high-water mark in this ordinance. The all-time historic high water elevation of the Bay is 582.35 feet, IGLD85 as calculated by the Army Corps of Engineers (USACOE).
- (4) Under s. 281.31(2m), Wis. Stats., notwithstanding any other provision of law or administrative rule promulgated thereunder, this ordinance does not apply to:
 - (a) Lands adjacent to farm drainage ditches if:
 - 1. Such lands are not adjacent to a natural navigable stream or river.
 - 2. Those parts of such drainage ditches adjacent to such lands were not navigable streams before ditching.
 - (b) Lands adjacent to artificially constructed drainage ditches, ponds or stormwater retention basins that are not hydrologically connected to a natural navigable water body.
- (5) The Brown County Private Sewage System Ordinance (Chapter 11 of this Code), The Floodplains Ordinance for Brown County, Wisconsin (Chapter 23 of this Code) and the Brown

County Land Division and Subdivision Ordinance (Chapter 21 of this Code), as referred to in this ordinance, have been adopted separately and are applicable throughout Brown County where there is jurisdiction.

- (6) The provisions of this ordinance apply to the county's regulation of the use and development of unincorporated shoreland areas. Unless specifically exempted by law, all cities, villages, towns, counties and, when s. 13.48 (13), Wis. Stats., applies, state agencies are required to comply with, and obtain all necessary permits under, local shoreland ordinances. The construction, reconstruction, maintenance or repair of state highways and bridges carried out under the direction and supervision of the Wisconsin Department of Transportation is not subject to local shoreland zoning ordinances if s. 30.2022 (1), Wis. Stats., applies. (s. NR 115.02.) Shoreland zoning requirements in annexed or incorporated areas are provided in ss. 61.353 and 62.233, Wis. Stats.

22.06 SHORELAND WETLAND ZONING MAPS. The most recent version of the Wisconsin Wetland Inventory as depicted on the Department of Natural Resources Surface Water Data Viewer is made part of this ordinance. The maps can be viewed at: <http://dnrmaps.wi.gov/SL/Viewer.html?Viewer=SWDV&runWorkflow=Wetland> and the data will also be available on the county GIS.

22.07 COMPLIANCE (NR 115.04). The use of any land or water, the size, shape and placement of lots, the use, size, type and location of structures on lots, the installation and maintenance of water supply and waste disposal facilities, the filling, grading, lagooning, dredging of any lands, the cutting of shoreland vegetation, the subdivision of lots, shall be in full compliance with the terms of this ordinance and other applicable local, state or federal regulations. (However, see Section 22.46 of this ordinance for standards applicable to nonconforming uses.) Buildings, signs and other structures shall require a permit unless otherwise expressly excluded by a provision of this ordinance. Property owners, builders and contractors are responsible for compliance with the terms of this ordinance.

22.08 MUNICIPALITIES AND STATE AGENCIES REGULATED. Unless specifically exempted by law, all cities, villages, towns, and counties are required to comply with this ordinance and obtain all necessary permits. The construction, reconstruction, maintenance and repair of state highways and bridges by the Wisconsin Department of Transportation are exempt when s. 30.2022(1), Wis. Stats., applies.

22.09 ABROGATION AND GREATER RESTRICTIONS. The provisions of this ordinance supersede all the provisions of any county zoning ordinance adopted under s. 59.69, Wis. Stats., which relate to shorelands. In other words if a zoning standard only applies to lands that lie within the shoreland and applies because the lands are in shoreland, then this ordinance supersedes those provisions. However, where an ordinance adopted under a statute other than s. 59.692, Wis. Stats., does not solely relate to shorelands and is more restrictive than this ordinance, for example a floodplain ordinance, that ordinance shall continue in full force and effect to the extent of the greater restrictions, but not otherwise.

- (1) (s. 59.692(2)(a), Wis. Stats.) This ordinance shall not require approval or be subject to disapproval by any town or town board.
- (2) (s. 59.692(2)(b), Wis. Stats.) If an existing town ordinance relating to shorelands is more restrictive than this ordinance or any amendments thereto, the town ordinance continues in all respects to the extent of the greater restrictions, but not otherwise.
- (3) This ordinance is not intended to repeal, abrogate or impair any existing deed restrictions,

covenants or easements. However, where this ordinance imposes greater restrictions, the provisions of this ordinance shall prevail.

- (4) The following provisions of The Floodplains Ordinance for Brown County (Chapter 23) are hereby incorporated by reference; these provisions shall only apply to the shoreland area where they impose greater restrictions than this ordinance otherwise imposes.
- (5) (s. 59.692(1k)(a)1., Wis. Stats.) This ordinance may establish standards to regulate matters that are not regulated in NR 115, but that further the purposes of shoreland zoning as described in section 22.03 of this ordinance.
- (6) (s. 59.692(1k)(a)1., Wis. Stats.) Counties may not establish shoreland zoning standards in a shoreland zoning ordinance that does any of the following:
 - (a) Requires approval to install or maintain outdoor lighting in shorelands, imposes any fee or mitigation requirement to install or maintain outdoor lighting in shorelands, or otherwise prohibits or regulates outdoor lighting in shorelands if the lighting is designed or intended for residential use.
 - (b) Requires any inspection or upgrade of a structure before the sale or other transfer of the structure may be made.
- (7) (s. 59.692(7), Wis. Stats.) The construction and maintenance of a facility is considered to satisfy the requirements of this ordinance if:
 - (a) The Department has issued all required permits or approvals authorizing the construction or maintenance under ch. 30, 31, 281, or 283 of the Wisconsin Statutes.

For purposes hereof, a "facility" means any property or equipment of a public utility, as defined in s. 196.01(5), Wis. Stats., or a cooperative association organized under ch. 185, Wis. Stats., for the purpose of producing or furnishing heat, light, or power to its members only, that is used for the transmission, delivery, or furnishing of natural gas, heat, light, or power.

22.10 INTERPRETATION (59.69(13)). In their interpretation and application, the provisions of this ordinance shall be held to be minimum requirements and shall be liberally construed in favor of the county and shall not be deemed a limitation or repeal of any other powers granted by Wisconsin Statutes. Where a provision of this ordinance is required by statute and a standard in Ch. NR 115, Wis. Adm. Code, and where the ordinance provision is unclear, the provision shall be interpreted in light of the statute and Ch. NR 115 standards in effect on the date of the adoption of this ordinance or in effect on the date of the most recent text amendment to this ordinance.

22.11 SEVERABILITY. If any portion of this ordinance is adjudged unconstitutional or invalid by a court of competent jurisdiction, the remainder of this ordinance shall not be affected.

LAND DIVISION AND SANITARY REGULATIONS

22.12 LAND DIVISION REVIEW (s. NR 115.05(2)). The county shall review, pursuant to s. 236.45, Wis. Stats., all land divisions in shoreland areas which create three or more parcels or building sites of five acres each or less within a five-year period. In such review the following factors shall be considered:

- (1) Hazards to the health, safety or welfare of future residents.
- (2) Proper relationship to adjoining areas.
- (3) Public access to navigable waters, as required by law.
- (4) Adequate storm drainage facilities.
- (5) Conformity to state law and administrative code provisions.

22.13 PLANNED UNIT DEVELOPMENT (s. NR 115.05(1)(a)4.).

- (1) **PURPOSE.** The Planned Unit Development is intended to permit smaller non-riparian lots where the physical layout of the lots is so arranged as to better assure the control of pollution and preservation of ground cover than would be expected if the lots were developed with the normal lot sizes and setbacks and without special conditions placed upon the Planned Unit Development at the time of its approval. A condition of all Planned Residential Unit Development is the preservation of certain open space, preferably on the shoreland, in perpetuity.
- (2) **REQUIREMENTS FOR PLANNED UNIT DEVELOPMENT.** The Brown County Planning and Land Services Department may at its discretion, upon its own motion or upon petition, approve a Planned Unit Development Overlay District upon finding, that all of the following facts exist:
 - (a) **Area.** The area proposed for the Planned Unit Development shall be at least 2 acres in size or have a minimum of 200 feet of frontage on navigable water.
 - (b) **Lots.** Any proposed lot in the Planned Unit Development that does not meet the minimum size standards of sections 22.16 and 22.17 of this ordinance shall be a non-riparian lot.
 - (c) **Lot sizes, widths, setbacks, and vegetation removal.** When considering approval of a Planned Unit Development the governing body shall consider whether proposed lot sizes, widths, and setbacks are of adequate size and distance to prevent pollution or erosion along streets or other public ways and waterways. Increased shoreland setbacks shall be a condition of approval as a way of minimizing adverse impacts of development. Shore cover provisions in section 22.33 of this ordinance shall apply except that maximum width of a lake frontage opening shall be 100 feet and minimum vegetative buffer depth shall be increased to offset the impact of the proposed development.

SANITARY REGULATIONS

22.14 SANITARY REGULATIONS (NR 115.05(3)).

- (1) The county shall adopt sanitary regulations for the protection of health and the preservation and enhancement of water quality.
 - (a) Where public water supply systems are not available, private well construction shall be required to conform to Ch. NR 812, Wis. Adm. Code.
 - (b) Where a public sewage collection and treatment system is not available, design and construction of private on-site waste treatment system shall, prior to July 1, 1980, be required to comply with Ch. SPS 383, Wis. Adm. Code, and after June 30, 1980, be

governed by a private sewage system ordinance adopted by the county under s. 59.70(5), Wis. Stats.

DIMENSIONS OF BUILDING SITES

22.15 PURPOSE (s. NR 115.05(1)(a)).

- (1) Minimum lot sizes in the shoreland area shall be established to afford protection against danger to health, safety and welfare, and protection against pollution of the adjacent body of water.

22.16 LOTS SERVED BY PUBLIC SANITARY SEWER (s. NR 115.05(1)(a)1.).

- (1) The minimum lot area shall be 10,000 sq. ft. and the minimum average lot width shall be 65 feet with at least 65 feet of frontage at the ordinary high-water mark.

22.17 LOTS NOT SERVED BY PUBLIC SANITARY SEWER (s. NR 115.05(1)(a)2.).

- (1) The minimum lot area shall be 20,000 sq. ft. and the minimum average lot width shall be 100 feet with at least 100 feet of frontage at the ordinary high-water mark.

22.18 SUBSTANDARD LOTS (s. NR 115.05(1)(a)3). A legally created lot or parcel that met minimum area and minimum average width requirements when created, but does not meet current lot size requirements, may be used as a building site if all of the following apply:

- (1) The substandard lot or parcel was never reconfigured or combined with another lot or parcel by plat, survey, or consolidation by the owner into one property tax parcel.
- (2) The substandard lot or parcel has never been developed with one or more of its structures placed partly upon an adjacent lot or parcel.
- (3) The substandard lot or parcel is developed to comply with all other ordinance requirements.

Note: The intent of this provision is to allow lots that were legally created that currently do not meet the minimum lot width and area requirements to be considered a building site provided all ordinance requirements can be met. Substandard lots that have been reconfigured by a certified survey map or consolidated into one legal description with the Register of Deeds, which result in a larger (closer to conforming) lot should be allowed to be utilized as a building site. Additionally, lots that have a legal description for each substandard lot on record with the Register of Deeds but have one tax parcel number assigned by the Real Property Lister or Assessor for taxing/assessing purposes should be considered separate building sites and should not be considered consolidated. Lots that have had development over the lot lines should be combined with a legal description and recorded with a new deed prior to new development occurring.

22.19 HEIGHT (s. NR 115.05(1)(f)). To protect and preserve wildlife habitat and natural scenic beauty, on or after February 1, 2012, a county may not permit any construction that results in a structure taller than 35 feet within 75 feet of the ordinary high-water mark of any navigable waters.

- (1) Height Measurement: The maximum 35 foot measurement shall be made from the highest grade elevation next to the foundation as measured to the midpoint of the roof line.

IMPERVIOUS SURFACE STANDARDS

22.20 PURPOSE (s. NR 115.05(1)(e)). Establish impervious surface standards to protect water quality, fish and wildlife habitat and to protect against pollution of navigable waters. County impervious surface standards shall apply to the construction, reconstruction, expansion, replacement or relocation of any impervious surface on a riparian lot or parcel and any nonriparian lot or parcel that is located entirely within 300 feet of the ordinary high-water mark of any navigable waterway.

22.21 CALCULATION OF PERCENTAGE OF IMPERVIOUS SURFACE (s. NR 115.05(1)(e)1m.). Percentage of impervious surface shall be calculated by dividing the surface area of the existing and proposed impervious surfaces on the portion of a lot or parcel that is within 300 feet of the ordinary high-water mark by the total surface area of that lot or parcel, and multiplied by 100. Impervious surfaces described in section 22.25 of this ordinance shall be excluded from the calculation of impervious surface on the lot or parcel. If an outlot lies between the ordinary high water mark and the developable lot or parcel and both are in common ownership, the lot or parcel and the outlot shall be considered one lot or parcel for the purposes of calculating the percentage of impervious surface.

Note: For properties that have been “condominiumized” the impervious surface calculations apply to the entire property. The property is still under one legal description and the proposed expansion to a unit is not the only impervious surface calculated since the regulation states lot or parcel and not a unit. It will be important to remember also that mitigation applies to the property as a whole and not just to the portion of the frontage that might be in front of the unit impacted.

22.22 IMPERVIOUS SURFACE STANDARD (s. NR 115.05(1)(e)2.). Except as allowed in sections 22.23 through 22.25 of this ordinance allow up to 15% impervious surface on the portion of a lot or parcel that is within 300 feet of the ordinary high-water mark.

22.23 IMPERVIOUS SURFACE STANDARD FOR HIGHLY DEVELOPED SHORELINES. (s. NR 115.05(1)(e)2m. and s. 59.692(1k)(am)2, Wis. Stats.). The county at its discretion may adopt an ordinance for highly developed shorelines allowing up to 30% for residential land use and up to 40% for commercial, industrial or business land uses for lands that meet one of the following standards:

- (1) The highly developed shoreline is identified as an Urbanized Area or Urban Cluster in the 2010 US Census or has a commercial, industrial, or business land use as of January 31, 2013.
- (2) After conducting a hearing and receiving approval by the Department, the county has established a map of additional areas of highly developed shorelines that are at least 500 feet in length and meet one of the following criteria:
 - (a) The majority of the lots are developed with more than 30% of impervious surface area.
 - (b) Located on a lake served by a sewerage system as defined in NR 110.03(30), Wis. Adm. Code.
 - (c) The majority of the lots contain less than 20,000 square feet in area.
 - (d) The highly developed shoreline is identified on the Green Bay MPO 2045 Metropolitan Planning Area Boundary approved by WisDOT June 16, 2014.
 - (e) The highly developed shoreline is also identified on the HDS map created on 6/15/16 or as amended to reflect areas that match any of (a), (b) or (c) above.

22.24 MAXIMUM IMPERVIOUS SURFACE (s. NR 115.05(1)(e)3.). A property may exceed the impervious surface standard under sections 22.22 or 22.23 of this ordinance provided the following standards are met:

- (1) For properties where the impervious surface standard applies under section 22.22 of this ordinance, a property owner may have more than 15% impervious surface but not more than 30% impervious surface on the portion of a lot or parcel that is within 300 feet of the ordinary high-water mark.
- (2) For properties on shorelands where the impervious surface standard for highly developed shorelines applies under section 22.23 of this ordinance, a property owner may have more than 30% impervious surface but not more than 40% impervious surface for residential land uses. For commercial, industrial or business land uses, a property owner may have more than 40% impervious surface but not more than 60% impervious surface.
- (3) For properties that exceed the standard under sections 22.22 or 22.23 of this ordinance but do not exceed the maximum standard under sections 22.24(1) or 22.24(2) of this ordinance, a permit can be issued for development with a mitigation plan that meets the standards found in section 22.51 of this ordinance.

22.25 TREATED IMPERVIOUS SURFACES (s. NR 115.05(1)(e)3m. and s. 59.692(1k)(a)5, Wis. Stats.). Impervious surfaces that can be documented to show they meet either of the following standards shall be excluded from the impervious surface calculations under section 22.21 of this ordinance.

- (1) The impervious surface is treated by devices such as stormwater ponds, constructed wetlands, infiltration basins, rain gardens, bio-swales or other engineered systems.
- (2) The runoff from the impervious surface discharges to an internally drained pervious area that retains the runoff on or off the parcel and allows infiltration into the soil.

22.26 EXISTING IMPERVIOUS SURFACES (s. NR 115.05(1)(e)4.). For existing impervious surfaces that were lawfully placed when constructed but that do not comply with the impervious surface standard in section 22.22 of this ordinance or the maximum impervious surface standard in section 22.24 of this ordinance, the property owner may do any of the following:

- (1) Maintain and repair the existing impervious surfaces.
- (2) Replace existing impervious surfaces with similar surfaces within the existing building envelope.
- (3) Relocate or modify an existing impervious surface with similar or different impervious surface, provided that the relocation or modification does not result in an increase in the percentage of impervious surface that existed on the effective date of this ordinance and the impervious surface meets the applicable setback requirements in sections 22.27 or 22.28 hereof.

NOTE: The impervious surface standards set forth herein shall not be construed to supersede other provisions of this ordinance. All of the provisions of this ordinance still apply to new or existing development.

SETBACKS FROM THE WATER

22.27 BUILDING SETBACKS (s. NR 115.05(1)(b)). Permitted building setbacks shall be established to conform to health, safety and welfare requirements, preserve natural beauty, reduce flood

hazards and avoid water pollution.

- (1) **SHORELAND SETBACK (s. NR 115.05(1)(b)1.).** Unless exempt under section 22.27(2), or reduced under section 22.28 of this ordinance, a setback of 75 feet from the ordinary high-water mark of any navigable waters to the nearest part of a building or structure shall be required for all buildings and structures.
- (2) **EXEMPT STRUCTURES (s. NR 115.05(1)(b)1m. and s. 59.692(1k)(a)(6), Wis. Stats.).** All of the following structures are exempt from the shoreland setback standards in Subsection (1), above:
 - (a) Boathouses located entirely above the ordinary high-water mark and entirely within the access and viewing corridor that do not contain plumbing and are not used for human habitation. The roof of a boathouse may be used as a deck provided that:
 1. The boathouse has a flat roof.
 2. The roof has no side walls or screens.
 3. The roof may have a railing that meets the Department of Safety and Professional Services standards.
 - (b) Shoreland Permit – Special. Open sided and screened structures such as gazebos, decks, patios and screen houses in the shoreland setback area that satisfy the requirements in s. 59.692(1v), Wis. Stats.
 1. The part of the structure that is nearest to the water is located at least 35 feet landward from the ordinary-high water mark.
 2. The floor area of all the structures in the shoreland setback area will not exceed 200 square feet.
 3. The structure that is the subject of the request for special zoning permission has no sides or has open or screened sides.
 4. The county must approve a plan that will be implemented by the owner of the property to preserve or establish a vegetative buffer zone that covers at least 70% of the half of the shoreland setback area that is nearest to the water.
 - (c) Broadcast signal receivers, including satellite dishes or antennas that are one meter or less in diameter and satellite earth station antennas that are two meters or less in diameter.
 - (d) Utility transmission and distribution lines, poles, towers, water towers, pumping stations, well pumphouse covers, private on-site wastewater treatment systems that comply with Ch. SPS 383, Wis. Adm. Code and other utility structures that have no feasible alternative location outside of the minimum setback and that employ best management practices to infiltrate or otherwise control storm water runoff from the structure.
 - (e) Stairways, walkways, and rail systems that are necessary to provide pedestrian access to the shoreline and are a maximum of 60 inches in width.
 - (f) Devices or systems used to treat runoff from impervious surfaces.
- (3) **EXISTING EXEMPT STRUCTURES (s. 59.692(1k)(a)2m., Wis. Stats.).** Existing exempt structures may be maintained, repaired, replaced, restored, rebuilt and remodeled provided the activity does not expand the footprint and does not go beyond the three-dimensional building envelope of the existing structure. The county may allow expansion of a structure beyond the existing footprint if the expansion is necessary to comply with applicable state or federal requirements.

NOTE: Section 59.692(1k)(a)2m., Wis. Stats., prohibits the county from requiring any approval or imposing any fee or mitigation requirement for the activities specified in section 22.27(3) hereof. However, it is important to note that property owners may be required to obtain permits or

approvals and the county may impose fees under Brown County Ordinances it adopted pursuant to other statutory requirements, such as floodplain zoning, general zoning, sanitary codes, building codes, or even stormwater erosion control.

22.28 REDUCED BUILDING SETBACKS (NR 115.05(1)(b)1. and (s. 59.692(1n), Wis. Stats.) A setback less than the 75' required setback from the ordinary high water mark shall be permitted for a proposed principal structure and shall be determined as follows:

- (1) Where there are existing principal structures in both directions, the setback shall equal the average of the distances the two existing principal structures are set back from the ordinary high water mark provided all of the following are met:
 - (a) Both of the existing principal structures are located on adjacent lot to the proposed principal structure.
 - (b) Both of the existing principal structures are located within 250' of the proposed principal structure and are the closest structure.
 - (c) Both of the existing principal structures are located less than 75' from the ordinary high water mark.
 - (d) The average setback shall not be reduced to less than 35' from the ordinary high water mark of any navigable water.

Note: s. 59.692(1d)(a), Wis. Stats., requires counties to adopt the standards consistent with Section 22.28(1) or reducing the shoreland setback.

- (2) Where this is an existing principal structure in only one direction, the setback shall equal the distance the existing principal structure is set back from the ordinary high water mark and the required setback of 75' from the ordinary high water mark provided all of the following are met:
 - (a) The existing principal structure is located on adjacent lot to the proposed principal structure.
 - (b) The existing principal structure is located within 250' of the proposed principal structure and is the closest structure.
 - (c) The existing principal structure is located less than 75' from the ordinary high water mark.
 - (d) The average setback shall not be reduced to less than 35' from the ordinary high water mark of any navigable water.

22.29 FLOODPLAIN STRUCTURES (s. NR 115.05(1)(b)2.). Buildings and structures to be constructed or placed in a floodplain shall be required to comply with any applicable floodplain zoning ordinance.

22.30 CRITICAL SLOPE SETBACK. All residential, commercial or industrial structures shall be set back a minimum of 20 feet from the top ridgeline of a 20% or greater slope measured to the foundation and must comply with the ordinary high-water mark required setbacks of this ordinance, whichever is greater. Elevation change will be analyzed to determine how steep or significant the slope is to decide the applicability of this section. Decks, patios, stairways, fences, gazebos, screen houses, pools, boathouses and storage sheds can be located within the 20 foot setback but must not exceed a building footprint of 500 square feet. If a geotechnical study is completed for the proposed area, a shoreland permit may be issued for a structure within the 20 foot setback subject to being constructed following the recommendations of the study. A certificate of compliance will need to be completed by the responsible architect or engineer after construction and prior to occupancy. This certificate must be returned to the Zoning Office within 60 days of completion of the project.

(1) Special exceptions. A special exception permit shall be required for the following:

(a) For any proposed encroachment into the critical slope setback not identified in section 22.30 of this ordinance.

22.31 SHORELAND PERMIT- AGRICULTURAL. The following uses shall be permitted within the Shoreland District or as defined by the Brown County Land Conservation Department on their most current hazard maps to the extent that they are not prohibited in a particular area by any underlying zoning ordinance. The hazard maps can be found at the Brown County Land and Water Conservation Department or on its website.

(1) Agricultural uses are permitted providing they comply with the provisions of this ordinance.

(a) A minimum of 35 feet of land free of row crops and seeded to grass, alfalfa, or other close-growing crop shall be maintained between the farmed area and the edge of the navigable stream; navigable stream crossings shall be permitted for livestock and shall be of a design deemed appropriate by the Brown County Land Conservation Department. A farmer may be exempt from this section if soil and water conservation practices are deemed sufficient and no pollution is occurring in the opinion of the Brown County Land Conservation Department.

(b) If there is a pollution problem resulting from the grazing or pasturing of livestock, the farmer/operator will be required to erect a fence no closer than 16-1/2 feet of the edge of the navigable stream or otherwise abate the pollution in such a manner as may be determined by the Brown County Land Conservation Department. If a fence has to be erected, provision will be allowed for watering livestock in the navigable stream.

REMOVAL OF SHORE COVER - VEGETATION

22.32 PURPOSE (s. NR 115.05(1)(c)1.). To protect natural scenic beauty, fish and wildlife habitat, and water quality, a county shall regulate removal of vegetation in shoreland areas, consistent with the following: The County shall establish ordinance standards that consider sound forestry and soil conservation practices and the effect of vegetation removal on water quality, including soil erosion, and the flow of effluents, sediments and nutrients.

22.33 ACTIVITIES ALLOWED WITHIN VEGETATIVE BUFFER ZONE (s. NR 115.05(1)(c)2.). To protect water quality, fish and wildlife habitat and natural scenic beauty, and to promote preservation and restoration of native vegetation, the county shall designate land that extends from the ordinary high water mark to a minimum of 35 feet inland as a vegetative buffer zone and prohibit removal of vegetation in the vegetative buffer zone except as allowed in section 22.34 hereof.

22.34 SHORELINE CUTTING. Tree and shrubbery cutting in an area parallel to the ordinary high-water mark, and extending 35 feet inland from all points along the ordinary high-water mark, shall be limited in accordance with the following provisions:

(1) The county may allow routine maintenance of vegetation.

(2) The county may allow removal of trees and shrubs in the vegetative buffer zone to create access and viewing corridors. Per s. 59.692(1f)(b), Wis. Stats, the viewing corridor may be at least 35 feet wide for every 100 feet of shoreline frontage. The viewing corridor may run contiguously for the entire maximum width or shoreline frontage owned.

(3) The county may allow removal of trees and shrubs in the vegetative buffer zone on a parcel

with ten or more acres of forested land consistent with “generally accepted forestry management practices” as defined in s. NR 1.25 (2)(b), and described in Department Publication “Wisconsin Forest Management Guidelines” (Publication FR-226), provided that vegetation removal be consistent with these practices.

- (4) The county may authorize by permit additional vegetation management activities in the vegetative buffer zone. The permit issued under this Subsection shall require that all management activities comply with detailed plans approved by the county and designed to control erosion by limiting sedimentation into the waterbody, to improve the plant community by replanting in the same area, and to maintain and monitor the newly restored area. The permit also shall require an enforceable restriction to preserve the newly restored area.
- (5) The county may allow removal of vegetation within the vegetative buffer zone to manage exotic or invasive species, damaged vegetation, vegetation that must be removed to control disease, or vegetation creating an imminent safety hazard, provided that any vegetation removed be replaced by replanting in the same area as soon as practicable.

Note: Wis. Stats., § 59.692(1f)(a) prohibits the county from requiring a property owner to establish a vegetative buffer zone on previously developed land or expand an existing vegetative buffer zone. However, as part of the County’s shoreland mitigation standards, the establishment or expansion of the vegetative buffer may remain an option.

22.35 MINIMUM STANDARD OF A VEGETATIVE BUFFER. Planting Densities. The table below describes planting standards for two major shoreland types: woodland, and barrens/dry prairie/wet prairie. The woodland has a nearly complete canopy of trees while the barrens/prairie and wetland are more open. Plant numbers are to be calculated based on the area in square feet to be reestablished and the appropriate density. The area to be reestablished shall be calculated for each layer.

(1) Shoreland Buffer Planting Standards (Table 1)

	Woodland Buffer		Wetland / Prairie Buffer	
Layer	Minimum number of species	Density per 100 square feet	Minimum number of species	Density per 100 square feet
Tree Canopy*	3	1	1	0.2
Shrub Understory**	4	2	2	0.5
Groundcover Plant Plugs***	1	50 Must be Mulched	5	70 Must be Mulched
Groundcover Seeding	1	Varies Grass 4oz./1000sqft. Forbs 3oz./1000sqft.	5	Varies Grass 4oz./1000sqft. Forbs 3oz./1000sqft.

- * Tree must be ≥ 2 years old and 18" tall or taller
- ** Shrubs must be 1 Liter container size or larger
- *** Plugs must be 3" tall or 1" dia.

(2) Types of Vegetation Buffer Establishment.

- (a) Avoidance- Your buffer may be totally intact or undisturbed. If that is the case, your affidavit will simply state that you will not disturb the area and will remain compliant with placement of your viewing corridor. The area designated as Vegetative Buffer must meet the density requirements of (Table 1).
 - (b) Accelerated Recovery (enhancement) - This method entails actually installing some plant materials to achieve proper vegetation density, outlined in (Table 1). Simply stated, you will be filling in areas that are too thin or where the vegetation is missing.
 - (c) Accelerated Recovery (creation) - This method is used when no buffer exists. The area in question may have been graded to bare soil or the site may have been mowed for many years. Creation will involve planting groundcover, shrubs and trees after removal of existing vegetation.
- (3) Brown County Native Plant List. Species of plants must be selected from the Brown County Native Plant List and approved for shoreline buffers by the Brown County Zoning Administrator. Substitutions must be approved by the Brown County Zoning Administrator. Substitutions to the list will be allowed in the event of lack of plant stock or seed availability on a case-by-case basis. All plants may be transplanted from areas outside of the buffer zone. The following link to the Wisconsin Botanical Information System shall be used to determine Brown County native plants. County: Brown, Origin: Native.
<http://www.botany.wisc.edu/herb/Countysearch.html>
- (4) Shoreland Buffer Plan Requirements. When restoration of a shoreland buffer is chosen as a mitigation option, a restoration plan shall be completed by an engineer, landscape architect, surveyor or other licensed contractor acceptable by the Brown County Zoning Administrator. Said Plan must be approved by the county and shall include:
- (a) Name and address of property owner.
 - (b) Property address and legal description.
 - (c) Extent of the shoreland buffer.
 - (d) Scale (e.g. 1 inch = 10 feet) or as approved by reviewer.
 - (e) North arrow.
 - (f) Ordinary high water mark (OHWM) location.
 - (g) Location of all structures in the shoreland buffer zone.
 - (h) Viewing and access corridor.
 - (i) Boundary of the shoreland buffer zone.
 - (j) Existing trees, shrubs, and native ground cover.
 - (k) Areas to be planted with trees, shrubs, and groundcovers.
 - (l) Implementation schedule.
 - (m) A plant species list; indicate if you are requesting substitutions from the prepared list.

- (n) Erosion control practices (to be installed prior to and during buffer establishment).
 - (o) Water diversions and channelized flow areas.
 - (p) Buffer maintenance (weeding, replanting).
- (5) Certificate of Completion. No later than 2 years after issuance of the shoreland permit, the property owner shall complete the mitigation practices and shall certify in writing to the Brown County Zoning Administrator that the required mitigation has been completed. As part of the certification, the property owner shall submit photos documenting the mitigation measures and the Brown County Planning and Land Services Department staff may conduct an on-site compliance inspection. If the project for which the permit was issued was never completed then the implementation of the mitigation plan will not be required. An affidavit of correction to that effect shall be recorded on to the deed at the property owner's expense.
 - (6) Subsequent Development. Shoreland permit applications shall require additional mitigation and will be dependent on the scope of the project.

FILLING, GRADING, LAGOONING, DREDGING, DITCHING AND EXCAVATING

22.36 GENERAL STANDARDS (s. NR 115.05(1)(d)). Filling, grading, lagooning, dredging, ditching and excavating may be permitted only in accordance with the provisions of s. NR 115.04, the requirements of Ch. 30, Wis. Stats., and other state and federal laws where applicable, and only if done in a manner designed to minimize erosion, sedimentation and impairment of fish and wildlife habitat and natural scenic beauty. Erosion control is required as per Best Management Practices. Filling, grading, lagooning, dredging, ditching or excavating which does not require a permit under section 22.37 of this ordinance may be permitted in the shoreland area provided that:

- (1) It is done in a manner designed to minimize erosion, sedimentation and impairment of fish and wildlife habitat.
- (2) Filling, grading, lagooning, dredging, ditching or excavating in a shoreland-wetland district meets the requirements of sections 22.41(2) and 22.41(3) of this ordinance.
- (3) All applicable federal, state and local authority is obtained in addition to a permit under this ordinance.
- (4) Any fill placed in the shoreland area is protected against erosion by the use of riprap, vegetative cover or a bulkhead.

22.37 PERMIT REQUIRED.

- (1) Filling, grading, lagooning, dredging, ditching and excavating. Erosion control is required as per Best Management Practices. A permit is required for any shoreland area as defined in this ordinance and on which there is either:
 - (a) At least 1,000 square feet of filling, grading and excavating.
 - (b) Filling of more than 500 square feet within 100 feet of any shoreland wetland. A 35 foot setback is required on wetlands.
 - (c) Not more than 20,000 square feet of filling, grading and excavating within 100 feet of navigable water.

- (2) Special exceptions. A special exception permit shall be required for the following:
- (a) For any filling, grading and excavating of any area within the shoreland district which is within 100 feet horizontal distance of navigable water and on which there is:
 - 1. Filling, grading and excavating greater than 20,000 square feet.
 - (b) For any construction or dredging commenced on any artificial waterway, canal, ditch, lagoon, pond, lake or similar waterway which is within 300 feet landward of the ordinary high-water mark of a navigable body of water or where the purpose is the ultimate connection with a navigable body of water.
 - (c) This subsection (2) does not apply to soil conservation practices such as terraces, runoff diversions, grassed waterways, waste storage facilities, and channel restoration, which are used for sediment reduction. All projects designed by other Brown County Departments, DNR, USF & WS, NRCS, and other governmental departments will not require a special exception permit, only a shoreland permit will be required. The shoreland permit fee will be waived when the agency designing the project will have direct supervision over the construction. A letter must be provided to this office by that agency upon completion indicating the project was completed as permitted. The DOT is exempt from permit requirements when section 30.12(4)(a), Wisconsin Statutes, applies.
 - (d) Municipal projects designed by licensed architects or engineers will not require a special exception permit, only a shoreland permit will be required.
- (3) Conditions. In issuance of a shoreland permit or in granting a special exception permit for filling or grading, the Board of Adjustments or Brown County Zoning Office may attach the following conditions in addition to the provisions specified in Section 22.58 that:
- (a) The smallest amount of bare ground be exposed for as short a time as feasible.
 - (b) Temporary ground cover such as mulch be used and permanent cover such as sod be planted.
 - (c) Diversions, silting basins, terraces, and other methods to trap sediment be used.
 - (d) Fill is stabilized according to accepted engineering standards.
 - (e) Fill will not restrict a floodway or destroy the storage capacity of a floodplain.
 - (f) Sides of a channel or artificial watercourse be stabilized to prevent slumping.
 - (g) Sides of channels or artificial watercourses be constructed with side slopes of two units horizontal distance to one unit vertical or flatter, unless bulkheads or rip rapping are provided.
 - (h) In shoreland areas with no floodplain mapped a minimum 35 foot no fill area is required from the ordinary high-water mark. If floodplain analysis is submitted and approved by the Department the 35 foot no fill area may be reduced.

22.38 PERMIT CONDITIONS. In granting a special exception permit under section 22.37(2), the Board of Adjustment shall attach the following conditions, where appropriate, in addition to those provisions specified in sections 22.58(2) and 22.58(3):

- (1) The smallest amount of bare ground shall be exposed for as short a time as feasible.
- (2) Temporary ground cover (such as mulch or jute netting) shall be used and permanent vegetative cover shall be established.

- (3) Diversion berms or bales, silting basins, terraces, filter fabric fencing, and other methods shall be used to prevent erosion.
- (4) Lagoons shall be constructed to avoid fish trap conditions.
- (5) Fill shall be stabilized according to accepted engineering standards.
- (6) Filling shall comply with any local floodplain zoning ordinance and shall not restrict a floodway or destroy the flood storage capacity of a floodplain.
- (7) Channels or artificial watercourses shall be constructed with side slopes of two units horizontal distance to one unit vertical or flatter which shall be promptly vegetated, unless bulkheads or riprap are provided.

SHORELAND-WETLAND DISTRICT

22.39 DESIGNATION (s. NR. 115.04). This district shall include all shorelands within the jurisdiction of this ordinance which are designated as wetlands on the most recent version of the Wisconsin Wetland Inventory as depicted on the Department of Natural Resources Surface Water Data Viewer.

- (1) Locating shoreland-wetland boundaries. (s. NR 115.04(b)2.) Where an apparent discrepancy exists between the shoreland-wetland district boundary shown on the Wisconsin Wetland Inventory Maps and actual field conditions, the zoning administrator shall contact the appropriate office of the Department to determine if the shoreland-wetland district boundary as mapped is in error. If Department staff concur with the zoning administrator that a particular area was incorrectly mapped as a wetland or meets the wetland definition, the zoning administrator shall have the authority to immediately grant or deny a zoning permit in accordance with the regulations applicable to the correct zoning district. In order to correct wetland mapping errors on the official zoning map, an official zoning map amendment must be initiated within a reasonable period of time.

22.40 PURPOSE. This district is created to maintain safe and healthful conditions, to prevent water pollution, to protect fish spawning grounds and wildlife habitat, to preserve shore cover and natural beauty and to control building and development in wetlands whenever possible. When development is permitted in a wetland, the development should occur in a manner that minimizes adverse impacts upon the wetland.

22.41 PERMITTED USES (s. NR 115.04(3)). The following uses shall be allowed, subject to general shoreland zoning regulations contained in this ordinance, the provisions of Chs. 30, 31, and 281.36, Wis. Stats., and the provisions of other applicable local, state and federal laws:

- (1) Activities and uses which do not require the issuance of a shoreland permit, but which must be carried out without any filling, flooding, draining, dredging, ditching, tiling or excavating except as allowed under sections 22.41(2) or 22.41(3) of this ordinance.
 - (a) Hiking, fishing, trapping, hunting, swimming, and boating.
 - (b) The harvesting of wild crops, such as marsh hay, ferns, moss, wild rice, berries, tree fruits, and tree seeds, in a manner that is not injurious to the natural reproduction of such crops.

- (c) The pasturing of livestock.
 - (d) The cultivation of agricultural crops.
 - (e) The practice of silviculture, including the planting, thinning, and harvesting of timber.
 - (f) The construction or maintenance of duck blinds.
- (2) Uses which do not require the issuance of a shoreland permit and which may include limited filling, flooding, draining, dredging, ditching, tiling, or excavating but only to the extent specifically provided below:
- (a) Temporary water level stabilization measures necessary to alleviate abnormally wet or dry conditions that would have an adverse impact on silvicultural activities if not corrected.
 - (b) The cultivation of cranberries including flooding, dike and dam construction or ditching necessary for the growing and harvesting of cranberries.
 - (c) The maintenance and repair of existing agricultural drainage systems including ditching, tiling, dredging, excavating and filling necessary to maintain the level of drainage required to continue the existing agricultural use. This includes the minimum filling necessary for disposal of dredged spoil adjacent to the drainage system provided that dredged spoil is placed on existing spoil banks where possible.
 - (d) The construction or maintenance of fences for the pasturing of livestock, including limited excavating and filling necessary for such construction or maintenance.
 - (e) The construction or maintenance of piers, docks or walkways built on pilings, including limited excavating and filling necessary for such construction and maintenance.
 - (f) The maintenance, repair, replacement or reconstruction of existing town and county highways and bridges, including limited excavating and filling necessary for such maintenance, repair, replacement or reconstruction.
- (3) Uses which require the issuance of a shoreland permit under section 22.56-(shoreland permits) and which may include limited filling, flooding, draining, dredging, ditching, tiling or excavating, but only to the extent specifically provided below:
- (a) The construction and maintenance of roads which are necessary to conduct silvicultural activities or agricultural cultivation provided that:
 - 1. The road cannot, as a practical matter, be located outside the wetland.
 - 2. The road is designed and constructed to minimize adverse impact upon the natural functions of the wetland enumerated in section 22.43(2).
 - 3. The road is designed and constructed with the minimum cross-sectional area practical to serve the intended use.
 - 4. Road construction activities are carried out in the immediate area of the roadbed only.
 - (b) The construction or maintenance of nonresidential buildings provided that:
 - 1. The building is essential for and used solely in conjunction with the raising of waterfowl, minnows or other wetland or aquatic animals; or some other use permitted in the shoreland-wetland district.
 - 2. The building cannot, as a practical matter, be located outside the wetland.
 - 3. Such building is not designed for human habitation and does not exceed 500 square feet in floor area.

4. Only limited filling or excavating necessary to provide structural support for the building is authorized.
- (c) The establishment of public and private parks and recreation areas, natural and outdoor education areas, historic and scientific areas, wildlife refuges, game bird and animal farms, fur animal farms, fish hatcheries, and public boat launching ramps and attendant access roads, provided that:
1. Any private development is used exclusively for the permitted use and the applicant has received a permit or license under Ch. 29, Wis. Stats., where applicable.
 2. Filling or excavating necessary for the construction or maintenance of public boat launching ramps or attendant access roads is allowed only where such construction or maintenance meets the criteria in section 22.41(3)(a)1- 4.
 3. Ditching, excavating, dredging, or dike and dam construction in public and private parks and recreation areas, natural and outdoor education areas, historic and scientific areas, wildlife refuges, game bird and animal farms, fur animal farms, and fish hatcheries is allowed only for the purpose of improving wildlife habitat and to otherwise enhance wetland values.
- (d) The construction or maintenance of electric, gas, telephone, water and sewer transmission and distribution facilities, by public utilities and cooperative associations organized for the purpose of producing or furnishing heat, light, power or water to their members and the construction or maintenance of railroad lines provided that:
1. The transmission and distribution facilities and railroad lines cannot, as a practical matter, be located outside the wetland.
 2. Such construction or maintenance is done in a manner designed to minimize adverse impact upon the natural functions of the wetland enumerated in section 22.43(2).

22.42 PROHIBITED USES (s. NR 115.04(4)). Any use not listed in sections 22.41(1), 22.41(2) or 22.41(3) of this ordinance is prohibited, unless the wetland or portion of the wetland has been rezoned by amendment of this ordinance in accordance with section 22.43 of this ordinance and s. 59. 69(5)(e), Wis. Stats.

22.43 REZONING OF LANDS IN THE SHORELAND-WETLAND DISTRICT (s. NR 115.04(2)).

- (1) For all proposed text and map amendments to the shoreland-wetland provisions of this ordinance, the appropriate district office of the Department shall be provided with the following:
 - (a) A copy of every petition for a text or map amendment to the shoreland-wetland provisions of this ordinance, within five days of the filing of such petition with the county clerk. Such petition shall include a copy of the Wisconsin Wetland Inventory Map adopted as part of this ordinance describing any proposed rezoning of a shoreland-wetland.
 - (b) Written notice of the public hearing to be held on a proposed amendment at least 10 days prior to such hearing.
 - (c) A copy of the county zoning agency's findings and recommendations on each proposed amendment within 10 days after the submission of those findings and recommendations to the county board.

- (d) Written notice of the county board's decision on the proposed amendment within 10 days after it is issued.
- (2) A wetland or a portion thereof, in the shoreland-wetland district shall not be rezoned if the proposed rezoning may result in a significant adverse impact upon any of the following:
- (a) Storm and flood water storage capacity.
 - (b) Maintenance of dry season stream flow, the discharge of groundwater to a wetland, the recharge of groundwater from a wetland to another area, or the flow of groundwater through a wetland.
 - (c) Filtering or storage of sediments, nutrients, heavy metals or organic compounds that would otherwise drain into navigable waters.
 - (d) Shoreline protection against soil erosion.
 - (e) Fish spawning, breeding, nursery or feeding grounds.
 - (f) Wildlife habitat.
 - (g) Wetlands both within the boundary of designated areas of special natural resource interest and those wetlands which are in proximity to or have a direct hydrologic connection to such designated areas as defined in s. NR 103.04 which can be accessed at the following web site: <http://www.legis.state.wi.us/rsb/code/nr/nr103.pdf>.
- (3) If the Department notifies the county zoning agency that a proposed text or map amendment to the shoreland-wetland provisions of this ordinance may have a significant adverse impact upon any of the criteria listed in section 22.43(2) of this ordinance, that amendment, if approved by the county board, shall contain the following provision:

"This amendment shall not take effect until more than 30 days have elapsed after written notice of the county board's approval of this amendment is mailed to the Department of Natural Resources. During that 30 day period the Department of Natural Resources may notify the county board that it will adopt a superseding shoreland ordinance for the county under s. 59.692(6), Wis. Stats. If the Department does so notify the county board, the effect of this amendment shall be stayed until the s. 59.692(6) adoption procedure is completed or otherwise terminated."

NONCONFORMING USES AND STRUCTURES

22.44 DISCONTINUED NONCONFORMING USE (s. NR. 115.05(1)(g)3.). If a nonconforming use is discontinued for a period of 12 months, any future use of the building, structure or property shall conform to this ordinance.

22.45 MAINTENANCE, REPAIR, REPLACEMENT OR VERTICAL EXPANSION OF NONCONFORMING STRUCTURES (s. 59.692(1k)(a)2., 4. and (b), Wis. Stats.). An existing structure that was lawfully placed when constructed but that does not comply with the required shoreland setback may be maintained, repaired, replaced, restored, rebuilt or remodeled if the activity does not expand the footprint of the nonconforming structure. Further, an existing structure that was lawfully placed when constructed but that does not comply with the required shoreland setback may be vertically expanded unless the vertical expansion would extend more than 35 feet above grade level. The county may allow expansion of a structure beyond the existing footprint if the expansion is necessary to comply with applicable state or federal

requirements.

22.46 LATERAL EXPANSION OF NONCONFORMING PRINCIPAL STRUCTURE WITHIN THE SETBACK (s. NR 115.05(1)(g)5.). An existing principal structure that was lawfully placed when constructed but that does not comply with the required building setback per sections 22.27 and 22.28 of this ordinance may be expanded laterally, provided that all of the following requirements are met:

- (1) The use of the structure has not been discontinued for a period of 12 months or more if a nonconforming use.
- (2) The existing principal structure is at least 35 feet from the ordinary high-water mark.
- (3) Lateral expansions are limited to a maximum of 200 square feet over the life of the structure. No portions of the expansion may be closer to the ordinary high-water mark than the closest point of the existing principal structure.
- (4) The county shall issue a permit that requires a mitigation plan that shall be approved by the county and implemented by the property owner by the date specified in the permit. The mitigation plan shall meet the standards found in section 22.51 hereof.
- (5) All other provisions of this ordinance shall be met.

22.47 EXPANSION OF A NONCONFORMING PRINCIPAL STRUCTURE BEYOND SETBACK (s. NR 115.05(1)(g)5m.). An existing principal structure that was lawfully placed when constructed but that does not comply with the required building setback under section 22.24(1) of this ordinance, may be expanded horizontally, landward or vertically provided that the expanded area meets the building setback requirements per section 22.27(1) or 22.28 hereof and that all other provisions of this ordinance are met. A mitigation plan is not required solely for expansion under this section, but may be required per section 22.22 of this ordinance.

22.48 RELOCATION OF NONCONFORMING PRINCIPAL STRUCTURE (s. NR 115.05(1)(g)6.). An existing principal structure that was lawfully placed when constructed but that does not comply with the required building setback per sections 22.27(1) and 22.28 of this ordinance may be relocated on the property provided that all of the following requirements are met:

- (1) The use of the structure has not been discontinued for a period of 12 months or more if a nonconforming use.
- (2) The existing principal structure is at least 35 feet from the ordinary high-water mark.
- (3) No portion of the relocated structure is located any closer to the ordinary high-water mark than the closest point of the existing principal structure.
- (4) The county determines that no other location is available on the property to build a principal structure of a comparable size to the structure proposed for relocation that will result in compliance with the shoreland setback requirement per section 22.27(1) hereof.
- (5) The county shall issue a permit that requires a mitigation plan that shall be approved by the county and implemented by the property owner by the date specified in the permit. The mitigation plan shall meet the standards found in section 22.51 of this ordinance and include enforceable obligations of the property owner to establish or maintain measures that the county determines are adequate to offset the impacts of the permitted expansion on water quality, near-shore aquatic habitat, upland wildlife habitat and natural scenic beauty. The mitigation measures shall be proportional to the amount and impacts of the replaced or

relocated structure being permitted. The obligations of the property owner under the mitigation plan shall be evidenced by an instrument recorded in the office of the Brown County Register of Deeds.

(6) All other provisions of this ordinance shall be met.

22.49 MAINTENANCE, REPAIR, REPLACEMENT OR VERTICAL EXPANSION OF STRUCTURES THAT WERE AUTHORIZED BY VARIANCE (s. 59.692(1k)(a)2. and (a)4., Wis. Stats.). A structure of which any part has been authorized to be located within the shoreland setback area by a variance granted before July 15, 2015 may be maintained, repaired, replaced, restored, rebuilt or remodeled if the activity does not expand the footprint of the authorized structure. Additionally, the structure may be vertically expanded unless the vertical expansion would extend more than 35 feet above grade level. The county may allow expansion of a structure beyond the existing footprint if the expansion is necessary to comply with applicable state or federal requirements.

22.50 WET BOATHOUSES. The maintenance and repair of nonconforming boathouses which extend beyond the ordinary high-water mark of any navigable waters shall be required to comply with s. 30.121, Wis. Stats.

MITIGATION

22.51 MITIGATION (s. 59.692(1v), Wis. Stats., and s. NR 115.05(1)(e)3., (g)5., & (g)6.). When the county issues a permit requiring mitigation under sections 22.27(2)(b), 22.24, 22.47, or 22.49 of this ordinance, the property owner must submit a complete permit application that is reviewed and approved by the county. Existing buffer zones may be used to meet the mitigation point totals. The following mitigation practices may be used to obtain a minimum of 3 points.

(1) Mitigation Options –Maintenance of Existing or Establishment of Buffers.

- (a) Primary Active Buffer Zone – Shore buffer zone within 35 feet of the ordinary high-water mark, including trees, shrubbery, ground cover and other natural vegetation, and subject to no mowing is permitted other than the allowable viewing corridor. 3 points.
- (b) Passive Buffer Zone – Shoreland vegetation buffer area within 35 feet of the ordinary high-water mark, including un-mowed grass or other ground cover vegetation, but without the tree and shrub layers required to meet the 3 point mitigation standard. 2 points.
- (c) Side Lot Buffer Zone – A 10 foot wide side lot buffer zone including trees, shrubbery, ground cover and other natural vegetation extending along a side lot line for a depth of at least 75 feet from the ordinary high-water mark. 1 point. The side lot buffer area is subject to the condition of no mowing is permitted. Points for side lot line buffers may be additive, for a maximum of 2 points, if buffer areas exist and are maintained along both side lot lines.

(2) Mitigation Alternative Option.

- (a) At the discretion of the Brown County Zoning Administrator, up to three additional mitigation points may be approved for restoration or protection activities that are likely to provide significant benefits to meet the objectives of this ordinance. Examples may include but are not limited to construction of a storm water detention basin or implementation of other storm water management plan activities, replacement of seawalls with bio-engineered structures, rain gardens, bio swales, water diversion of

overland flow or removal of artificial sand beaches in compliance with all applicable statutes and provisions set forth in the Wisconsin Administrative Code. Up to 3 points.

(b) Factors to be considered in making the determination of number of points and approval of alternative mitigation practices include, but are not limited to:

1. Runoff diversion and/or retention.
2. Lot configuration.
3. Parcel size.
4. Location of impervious areas.
5. Sensitivity and level of development of the waterbody.
6. Significance toward meeting ordinance objectives.
7. Type, density and filtering capacity of vegetation/ground cover.
8. Replacement of a failing private on-site wastewater treatment system with a code compliant system as permitted by current standards.
9. Removal of existing impervious areas and structures.

22.52 MITIGATION PLAN. The application shall include the minimum of the following and comply with all requirements as described in section 22.35 of this ordinance:

- (1) A site plan that describes the proposed mitigation measures shall be designed and implemented to restore natural functions lost through development and human activities. The mitigation measures shall be proportional in scope to the impacts on water quality, near-shore aquatic habitat, upland wildlife habitat and natural scenic beauty.
 - (a) The plan shall be designed by an engineer, landscape architect, surveyor or other licensed contractor acceptable by the Brown County Zoning Administrator to offset the increased impervious surface as calculated by the county. The Brown County Zoning Administrator may determine that the mitigation area will be described by a metes and bounds description and staked on the lot by a professional land surveyor.
 - (b) An implementation schedule and enforceable obligation on the property owner to establish and maintain the mitigation measures shall be recorded in the office of the Brown County Register of Deeds.
- (2) The approved mitigation measures must be started within 1 year of the permit issue date. All plantings and any other activities must be completed within 2 years of the permit issue date.

22.53 RECORDING REQUIREMENT. The affidavit described in 22.52 of this ordinance, as modified by the county during the permitting process, must be recorded in the office of the Brown County Register of Deeds in order for the permit to be effective so that work may commence. If the affidavit is not recorded no permit shall be issued.

ADMINISTRATIVE PROVISIONS

22.54 PLANNING, DEVELOPMENT & TRANSPORTATION COMMITTEE.

- (1) The committee shall oversee the functions of the zoning office; review and make recommendations to the Board of Adjustments of all proposed amendments to the shorelands and wetlands zoning ordinance map and text; and maintain a complete public record of all its proceedings as defined in s. 236.02(1), Wis. Stats., and required by s. 59.692(3), Wis. Stats.
- (2) The Planning, Development and Transportation Committee shall not grant variances or special exceptions to the terms of the ordinance.

22.55 ZONING OFFICE (s. NR 115.05(4)). There is hereby created the Brown County Zoning Office as authorized by s. 59.69, Wis. Stats. and a Brown County Board of Adjustment as authorized by s. 59.694, Wis. Stats. The appointment of a Zoning Administrator and such additional staff may occur as the workload may require. The Zoning Office shall exercise the following duties and powers:

- (1) Advise applicants as to the provisions of this ordinance and assist them in preparing permit applications and appeal forms.
- (2) Issue permits and certificates of compliance and inspect properties for compliance with this ordinance. A system of permits shall remain in place for new construction, development, reconstruction, structural alteration or moving of buildings and structures. A copy of applications shall be required to be filed in the office of the Brown County Zoning Administrator, unless prohibited by s. 59.692(1k), Wis. Stats.
- (3) Keep records of all permits issued, inspections made, work approved and other official actions.
- (4) A variance procedure which authorizes the Brown County Board of Adjustment to grant such variance from the terms of this ordinance as will not be contrary to the public interest where, owing to special conditions and the adoption of this ordinance, a literal enforcement of the provisions of this ordinance will result in unnecessary hardship. Provide copies of variances, special exceptions and decisions on appeals for map or text interpretations and map or text amendments within 10 days after they are granted or denied to the appropriate office of the Department.
- (5) Have access to any structure or premises between 7:30 a.m. and 4:30 p.m. for the purpose of performing his/her duties. Regular inspection of permitted work in progress to ensure conformity of finished structures with the terms of this ordinance.
- (6) Investigate and report violations of this ordinance to the appropriate Brown County Zoning Committee and the district attorney or corporation counsel as necessary.

22.56 SHORELAND PERMITS.

- (1) When required. Except where another section of this ordinance specifically exempts certain types of development from this requirement (as in sections 22.41(1) and 22.41(2)) hereof, a shoreland permit shall be obtained from the Brown County Zoning Administrator before any new development, as defined in section 22.64(h) of this ordinance, or any change in the use of an existing building or structure, is initiated.
- (2) Application. An application for a shoreland permit shall be made to the Brown County Zoning Administrator upon forms furnished by the county.
 - (a) Erosion control is required as per Best Management Practices.
- (3) Fees. As established in the annual county budget.
- (4) Expiration of permit. Shoreland permits shall expire 2 years from date of issuance.

22.57 RELAXATION OF STANDARDS FOR PERSONS WITH DISABILITIES APPLIES TO ALL SHORELAND AREAS. The Brown County Zoning office may issue a shoreland permit to relax the standards of this ordinance in order to provide reasonable accommodation of persons with disabilities as required by provisions of federal and state law. Such relaxation shall be consistent

with federal guidelines for accommodation of persons with disabilities and shall, where practicable, be terminated when the facility is no longer in use by a disabled person. A person applying for a permit for construction under this section shall establish the nature and extent of the disability and that the relaxation requested is the minimum necessary to provide reasonable use of the facility.

22.58 SPECIAL EXCEPTION PERMITS.

- (1) Application for a special exception permit. Any use listed as a special exception in this ordinance shall be permitted only after an application has been submitted to the zoning administrator and a special exception permit has been granted by the Brown County Board of Adjustment.
- (2) Standards applicable to all special exceptions. In passing upon a special exception permit, the Brown County Board of Adjustment shall evaluate the effect of the proposed use upon:
 - (a) The maintenance of safe and healthful conditions.
 - (b) The prevention and control of water pollution including sedimentation.
 - (c) Compliance with local floodplain zoning ordinances and opportunity for damage to adjacent properties due to altered surface water drainage.
 - (d) The erosion potential of the site based upon degree and direction of slope, soil type and vegetative cover.
 - (e) The location of the site with respect to existing or future access roads.
 - (f) The need of the proposed use for a shoreland location.
 - (g) Its compatibility with uses on adjacent land.
 - (h) The amount of liquid and solid wastes to be generated and the adequacy of the proposed disposal systems.
 - (i) Location factors under which:
 1. Domestic uses shall be generally preferred.
 2. Uses not inherently a source of pollution within an area shall be preferred over uses that are or may be a pollution source.
 3. Use locations within an area tending to minimize the possibility of pollution shall be preferred over use locations tending to increase that possibility.
- (3) Conditions attached to special exceptions. Upon consideration of the factors listed above, the Board of Adjustment shall attach such conditions, in addition to those required elsewhere in this ordinance, as are necessary to further the purposes of this ordinance. Violations of any of these conditions shall be deemed a violation of this ordinance. Such conditions may include specifications for, without limitation because of specific enumeration: type of shore cover; specific sewage disposal and water supply facilities; landscaping and planting screens; period of operation; operational control; sureties; deed restrictions; location of piers, docks, parking and signs; and type of construction. To secure information upon which to base its determination, the Brown County Board of Adjustment may require the applicant to furnish, in addition to the information required for a shoreland permit, the following information:
 - (a) A plan of the area showing surface contours, soil types, ordinary high-water marks, ground water conditions, subsurface geology and vegetative cover.
 - (b) Location of buildings, parking areas, traffic access, driveways, walkways, piers, open

space and landscaping.

- (c) Plans of buildings, sewage disposal facilities, water supply systems and arrangement of operations.
 - (d) Specifications for areas of proposed filling, grading, lagooning or dredging.
 - (e) Other pertinent information necessary to determine if the proposed use meets the requirements of this ordinance.
- (4) Notice, public hearing and decision. Before acting upon an application for a special exception permit, the Board of Adjustment shall hold a public hearing. Notice of such public hearing, specifying the time, place and matters to come before the board, shall be given as a Class Two notice under Ch. 985, Wis. Stats. Such notice shall be provided to the appropriate district office of the Department at least 10 days prior to the hearing. The Brown County Board of Adjustment shall state in writing the grounds for granting or refusing a special exception permit.
- (5) Recording. When a special exception permit is approved, an appropriate record shall be made of the land use and structures permitted and such permit shall be applicable solely to the structures, use and property so described. A copy of any decision on a special exception permit shall be provided to the appropriate district office of the Department within 10 days after it is granted or denied.
- (6) Revocation. Where the conditions of a special exception permit are violated, the special exception permit shall be revoked by the Brown County Board of Adjustment.

22.59 VARIANCES.

- (1) Decision. The Brown County Board of Adjustment may grant upon appeal a variance from the dimensional standards of this ordinance where an applicant convincingly demonstrates that:
- (a) Literal enforcement of the provisions of this ordinance will result in unnecessary hardship on the applicant.
 - (b) The hardship is due to special conditions unique to the property.
 - (c) Such variance is not contrary to the public interest.
 - (d) The request represents the minimum relief necessary to relieve unnecessary burdens.
- (2) Notice, hearing and decision. Before acting on an application for a variance, the Brown County Board of Adjustment shall hold a public hearing. Notice of such hearing specifying the time, place and matters of concern, shall be given a Class Two notice under Ch. 985, Wis. Stats. Such notice shall be provided to the appropriate district office of the Department at least 10 days prior to the hearing. The Brown County Board of Adjustment shall state in writing the reasons for granting or refusing a variance and shall provide a copy of such decision to the appropriate Department office within 10 days of the decision.

22.60 BOARD OF ADJUSTMENT. The County Executive shall appoint the Brown County Board of Adjustment consisting of 3 members and 2 alternates under s. 59.694(2), Wis. Stats. The county board shall adopt such rules for the conduct of the business of the Brown County Board of Adjustment as required by s. 59.694(3), Wis. Stats.

- (1) Powers and duties.

- (a) The Brown County Board of Adjustment shall adopt such additional rules as it deems necessary and may exercise all of the powers conferred on such boards by s. 59.694(3), Wis. Stats.
 - (b) It shall hear and decide appeals where it is alleged there is error in any order, requirements, decision or determination made by an administrative official in the enforcement or administration of this ordinance.
 - (c) It shall hear and decide applications for special exception permits pursuant to section 22.58 hereof.
 - (d) It may grant a variance from the dimensional standards of this ordinance pursuant to section 22.59 hereof.
 - (e) In granting a special exception permit or variance, the board may not impose conditions which are more restrictive than any of the specific standards in this ordinance. Where this ordinance is silent as to the extent of restriction, the Brown County Board of Adjustment may impose any reasonable permit conditions to affect the purpose of this ordinance.
- (2) Appeals to the Brown County Board of Adjustment. Appeals to the Brown County Board of Adjustment may be made by any person aggrieved or by an officer, department, board or bureau of the county affected by any decision of the Zoning Administrator or other Administrative Officer. Such appeal shall be made within a reasonable time, as provided by the rules of the Board of Adjustment by filing with the officer whose decision is in question, and with the Brown County Board of Adjustment, a notice of appeal specifying the reasons for the appeal. The Brown County Zoning Administrator or other officer whose decision is in question shall promptly transmit to the board all the papers constituting the record concerning the matter appealed.
- (3) Hearing appeals and applications for variances and special exception permits.
- (a) The Brown County Board of Adjustment shall fix a reasonable time for a hearing on the appeal or application. Said Board shall give public notice thereof by publishing a Class 2 notice under Ch. 985, Wis. Stats, specifying the date, time and place of the hearing and the matters to come before it. Notice shall be mailed to the parties in interest. Written notice shall be given to the appropriate district office of the Department at least 10 days prior to hearings on proposed shoreland variances, special exceptions (conditional uses), and appeals for map or text interpretations.
 - (b) A decision regarding the appeal or application shall be made as soon as practical. Copies of all decisions on shoreland variances, special exceptions (conditional uses), and appeals for map or text interpretations shall be submitted to the appropriate district office of the Department within 10 days after they are granted or denied.
 - (c) The final disposition of an appeal or application to the Brown County Board of Adjustment shall be in the form of a written resolution or order signed by the chairman and secretary of said Board. Such resolution shall state the specific facts which are the basis of the Brown County Board of Adjustment's determination and shall either affirm, reverse, vary or modify the order, requirement, decision or determination appealed, in whole or in part, dismiss the appeal for lack of jurisdiction or prosecution or grant the application.
 - (d) At the public hearing, any party may appear in person or by agent or by attorney.

22.61 FEES. As established in the annual county budget.

ORDINANCE CHANGES

22.62 CHANGES AND AMENDMENTS. The county board may from time to time, alter, supplement or change the boundaries of use districts and the regulations contained in this ordinance in accordance with the requirements of s. 59.692, Wis. Stats., ch. NR 115, Wis. Adm. Code and section 22.44 of this ordinance where applicable.

- (1) Amendments to this ordinance may be made on petition of any interested party as provided in s. 59.692, Wis. Stats.
- (2) Every petition for a text or map amendment filed with the county clerk shall be referred to the county zoning agency. A copy of each petition shall be mailed to the appropriate office of the Department within five days of the filing of the petition with the county clerk. Written notice of the public hearing to be held on a proposed amendment shall be provided to the appropriate district office of the Department at least 10 days prior to the hearing.
- (3) A copy of the county board's decision on each proposed amendment shall be forwarded to the appropriate district office of the Department within 10 days after the decision is issued.

VIOLATIONS

22.63 ENFORCEMENT AND PENALTIES.

- (1) Any violation of the provisions of this ordinance by any person, firm, association, corporation (including building contractors) or his/her or their agent is hereby declared to be unlawful. A violator shall, upon conviction, forfeit to the county a penalty as specified under Chapter 30 of the Brown County Code. Each day during which such violation exists shall constitute a separate offense.
- (2) Every violation of this ordinance is a public nuisance, and the creation thereof may be enjoined and maintenance thereof may be abated by action at suit of the county, the state, or any citizen thereof. Any such violator may be required to forfeit as specified under Chapter 30 of the Brown County Code. Each day during which such violation exists shall constitute a separate offense.

EXPLANATION OF TERMS AND WORDS

22.64 DEFINITIONS.

- (1) For the purpose of administering and enforcing this ordinance, the terms or words used herein shall be interpreted as follows: Words used in the present tense include the future; words in the singular number include the plural number; and words in the plural number include the singular number. The word "shall" is mandatory, not permissive. All distances, unless otherwise specified, shall be measured horizontally.
- (2) The following terms or words used in this ordinance mean:
 - (a) "ACCESS AND VIEWING CORRIDOR" – means a strip of vegetated land that allows safe pedestrian access to the shore through the vegetative buffer zone.

- (b) "ACCESSORY STRUCTURE OR USE" - means a detached subordinate structure or a use which is clearly incidental to, and customarily found in connection with, the principal structure or use to which it is related, and which is located on the same lot as the principal structure or use.
- (c) "AGRICULTURAL PRACTICE" - has the meaning found in s. 281.16 (1)(b), Wis. Stats.

NOTE: Section 281.16 (1)(b), Wis. Stats., defines "agricultural practice" to mean "beekeeping; commercial feedlots; dairying; egg production; floriculture; fish or fur farming; grazing; livestock raising; orchards; poultry raising; raising of grain, grass, mint and seed crops; raising of fruits, nuts and berries; sod farming; placing land in federal programs in return for payments in kind; owning land, at least 35 acres of which is enrolled in the conservation reserve program under 16 USC 3831 to 3836; and vegetable raising."

- (d) "BOATHOUSE" - means a permanent structure used for the storage of watercraft and associated materials and includes all structures which are totally enclosed, have roofs or walls or any combination of these structural parts.
- (e) "BUILDING ENVELOPE" - means the three dimensional space within which a structure is built.
- (f) "COUNTY ZONING AGENCY" - means that committee or commission created or designated by the county board under s. 59.69(2)(a), Wis. Stats., to act in all matters pertaining to county planning and zoning.
- (g) "DEPARTMENT" - means the Department of Natural Resources.
- (h) "DEVELOPMENT" - means any man-made change to improved or unimproved real estate, including, but not limited to the construction of buildings, structures or accessory structures; the construction of additions or substantial alterations to buildings, structures or accessory structures; the placement of mobile homes; ditching, lagooning, dredging, filling, grading, paving, excavation or drilling operations, and the deposition or extraction of earthen materials.
- (i) "DISABLED" - means having a physical or mental impairment that substantially limits one or more major life activities.
- (j) "DRAINAGE SYSTEM" - means one or more artificial ditches, tile drains or similar devices which collect surface runoff or groundwater and convey it to a point of discharge.
- (k) "EXISTING DEVELOPMENT PATTERN" - means that principal structures exist within 250 feet of a proposed principal structure on each lot in both directions along the shoreline.
- (l) "FLOODPLAIN" - means the land which has been or may be hereafter covered by flood water during the regional flood as shown on the county's official floodplain zoning maps. The regional flood is based upon a statistical analysis of stream flow records available for the watershed or an analysis of rainfall and runoff characteristics in the general watershed region, or both. The flood frequency of the regional flood is once in every 100 years. In any given year, there is a one % chance that the regional flood may occur.

NOTE: "Floodway" is defined in s. NR 116.03 (22) to mean "the channel of a river or stream, and those portions of the floodplain adjoining the channel required to carry the regional flood discharge."

- (m) "IMPERVIOUS SURFACE" - means an area that releases as runoff all or a majority of the precipitation that falls on it. "Impervious surface" excludes frozen soil but includes rooftops, sidewalks, driveways, parking lots, and streets unless specifically designed, constructed, and maintained to be pervious. Roadways as defined in s. 340.01(54), Wis.

Adm. Code, or sidewalks as defined in s. 340.01(58), Wis. Adm. Code, are not considered impervious surfaces.

- (n) "MITIGATION" - means balancing measures that are designed, implemented and function to restore natural functions and values that are otherwise lost through development and human activities.
- (o) "NAVIGABLE WATERS" - means Lake Superior, Lake Michigan, all natural inland lakes within Wisconsin and all streams, ponds, sloughs, flowages and other waters within the territorial limits of this state, including the Wisconsin portion of boundary waters, which are navigable under the laws of this state. Under s. 281.31(2)(d), Wis. Stats., notwithstanding any other provision of law or administrative rule promulgated thereunder, shoreland ordinances required under s. 59.692, Wis. Stats., and ch. NR 115, Wis. Adm. Code, do not apply to lands adjacent to:
 - 1. Farm drainage ditches where such lands are not adjacent to a natural navigable stream or river and such lands were not navigable streams before ditching; and
 - 2. Artificially constructed drainage ditches, ponds or stormwater retention basins that are not hydrologically connected to a natural navigable water body.
- (p) "ORDINARY HIGH-WATER MARK" - means the point on the bank or shore up to which the presence and action of surface water is so continuous as to leave a distinctive mark such as by erosion, destruction or prevention of terrestrial vegetation, predominance of aquatic vegetation, or other easily recognized characteristics. Field locating the ordinary high-water mark on the Bay of Green Bay shall not exceed the elevation of 583 feet, IGLD85 unless deemed appropriate by the zoning administrator to set higher based on site conditions per this definition of ordinary high-water mark. The all-time historic high water elevation of the Bay is 582.35 feet, IGLD85 as calculated by the Army Corps of Engineers (USACOE).
- (q) "REGIONAL FLOOD" - means a flood determined to be representative of large floods known to have generally occurred in Wisconsin and which may be expected to occur on a particular stream because of like physical characteristics, once in every 100 years.
- (r) "REASONABLE ACCOMMODATION" - means allowing a disabled person to deviate from the strict requirements of this ordinance if an accommodation is necessary and reasonable, in order not to unlawfully discriminate against the disabled person and to allow them equal housing opportunity.

NOTE: Federal courts have interpreted the "reasonable accommodations" requirement in the Federal Fair Housing Act to mean that an accommodation is reasonable "if it does not cause any undue hardship or fiscal or administrative burdens on the municipality, or does not undermine the basic purpose that the zoning ordinance seeks to achieve." Oxford House, Inc. v. Town of Babylon, 819 F. Supp. 1179, 1186 (E.D.N.Y. 1993)

- (s) "ROUTINE MAINTENANCE OF VEGETATION" – means normally accepted horticultural practices that do not result in the loss of any layer of existing vegetation and do not require earth disturbance.
- (t) "SHORELANDS" and "SHORELAND ZONE" - have the meaning found in s.59.692 (1)(b), Wis. Stats.

NOTE: Section 59.692 (1)(b), Wis. Stats., defines "shorelands" to mean "the area within the following distances from the ordinary high-water mark of navigable waters, as defined under s. 281.31 (2)(d), Wis. Stats.:

- 1. One thousand feet from a lake, pond or flowage. If the navigable water is a

glacial pothole lake, this distance shall be measured from the ordinary high-water mark of the lake.

2. Three hundred feet from a river or stream or to the landward side of the floodplain, whichever distance is greater.

- (u) "SHORELAND-SETBACK" – also known as the “shoreland setback area” in s.59.692(1)(bn), Wis. Stats., means an area in a shoreland that is within a certain distance of the ordinary high-water mark in which the construction or placement of buildings or structures has been limited or prohibited under an ordinance enacted under section 59.692, Wis. Stats.
- (v) "SHORELAND-WETLAND DISTRICT" - means the zoning district, created as a part of this shoreland zoning ordinance, comprised of shorelands that are designated as wetlands on the wetland maps which have been adopted and made a part of this ordinance.
- (w) "SPECIAL EXCEPTION (CONDITIONAL USE)" - means a use which is permitted by this ordinance provided that certain conditions specified in the ordinance are met and that a permit is granted by the Board of Adjustment or, where appropriate, the planning and zoning committee or county board.
- (x) "STRUCTURE" - means any man-made object with form, shape and utility, that is constructed or otherwise erected, attached to or permanently or temporarily placed, either upon the ground, a river bed, stream bed or lake bed or upon another structure. For the purpose of this chapter, the term “structure” includes garages, sheds, boathouses, sidewalks, walkways, retaining walls, porches, fire pits, patios, and decks, but does not include landscaping or earthwork including graded areas, filled areas, ditches, berms, or earthen terraces. The term “structure” does not include small objects that are easily moved by hand, such as canoes, kayaks, lawn chairs, portable grills, portable picnic tables, temporary snow fences, small temporary fences around individual plants or small groups of plants to prevent animal herbivory, bird feeders, birdhouses and birdbaths.
- (y) "UNNECESSARY HARDSHIP" - means that circumstance where special conditions, which were not self-created, affect a particular property and make strict conformity with restrictions governing area, setbacks, frontage, height or density unnecessarily burdensome or unreasonable in light of the purposes of this ordinance.
- (z) "VARIANCE" - means an authorization granted by the Brown County Board of Adjustment to construct, alter or use a building or structure in a manner that deviates from the dimensional standards of this ordinance.
- (aa) "VEGETATIVE BUFFER ZONE" – means an area along, and parallel to, the ordinary high-water mark, 35 feet from the water’s edge, that is either undisturbed or restored with native vegetation that provides or will provide natural features and functions for fish and wildlife habitat, water quality protection, and natural scenic beauty. This area may change based on mitigation measures designed by a professional landscape architect or professional stormwater engineer to compensate for and be proportional in scope to the impacts on the lot.
- (bb) "WETLAND" - has th found in s 23.32 (1), Wis. Stats. Means 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.”

CHAPTER 3 THREATS AND HAZARDS RISK ASSESSMENT

This chapter been prepared to identify the hazards believed to pose the greatest risk to the residents of Brown County; to profile the extent and severity of past county hazards; and to assess the vulnerability of the county to the risk of future hazard events. Through the risk assessment process, emergency management personnel will be able to more effectively evaluate potential hazard mitigation measures and develop useful strategies to address the risks associated with the identified hazards.

HAZARD IDENTIFICATION

Although Brown County could potentially be at risk from several distinct hazards, this plan narrows the scope of the hazards to those that pose the greatest risk to residents and facilities of the county. Identification of the hazards was based on a priority ranking of the many different natural and man-made/technological hazards previously identified in the *2012 Brown County All Hazards Mitigation Plan*. The natural and man-made/technological hazards included in this list were first identified in the *Resource Guide to All Hazards Mitigation Planning in Wisconsin* that was prepared by the Association of Wisconsin Regional Planning Commissions through funding provided by the State of Wisconsin Department of Military Affairs, Wisconsin Emergency Management, and the Federal Emergency Management Agency.

The following is a list of the hazards considered by the Steering Committee.

Natural Hazards

- Lightning Storm/Thunderstorm
- Heavy Snow Storm
- Ice Storm
- Tornadoes/High Winds
- Blizzards
- Stormwater Flooding
- Flooding (Flash, Ravine, Lake)
- Extreme Cold
- Extreme Heat
- Fog
- Hail Storms
- Dam Failure Flooding
- Forest Fires
- Wildland Fires
- Coastal Hazards
- Agriculture
- Drought
- Earthquake
- Landslide
- Subsidence



Flooding



Tornados



Winter Storms



Wild Fires



Thunderstorms



Drought

HAZARDS RISK ASSESSMENT SURVEY

Members of Brown County's previous 2007 and 2012 All Hazards Mitigation Plan Steering Committee created a *Natural Hazard Identification and Risk Assessment Matrix*. Each Steering Committee member was asked to assign a risk rating (1 = low, 2 = moderate, and 3 = high) to the various risk assessment criteria for each natural hazard. The total number of points for each of the identified natural hazards was then calculated. Members of the 2019 Committee reviewed the results for updates but did not propose significant changes.

The Steering Committee members combined the following natural hazards:

- Lightning Storms and Thunderstorms as "Lightning Storms/Thunderstorms" (exclusive occurrence was deemed to be rare in Brown County);
- Tornado and High Winds as "Tornado/High Winds" (deemed that their assessment and mitigation actions would be the same in Brown County);
- Flash Flooding, Riverine Flooding, and Lake Flooding as "Flooding (Flash, Riverine, and Lake)" (deemed that their assessment and mitigation actions would be the same in Brown County).

Table 3.1: Risk Assessment Ranking for Natural Hazards, Brown County, Wisconsin

Rank	Natural Hazard	Risk Assessment Ranking Total
1	Blizzards	32
2	Heavy Snow Storms	31
2	Stormwater Flooding	31
4	Ice Storms	30
5	Tornadoes/High Winds	28
5	Flooding (Flash, Riverine, and Lake)	28
7	Extreme Cold	26
8	Lightning Storms/Thunderstorms	23
9	Extreme Heat	22
10	Dam Failure Flooding	20
11	Agricultural	18
12	Coastal Hazards	17
13	Drought	16
13	Forest Fires	16
13	Wildland Fires	16
13	Fog	16
17	Subsidence	15
18	Hail Storms	14
18	Landslide	14
20	Earthquake	13

Source: Brown County Hazards Mitigation Plan Steering Committee, 2019,

NATURAL HAZARDS - HISTORICAL SUMMARY

Past hazards statistics assisted the Steering Committee in determining the natural hazards to be evaluated in the plan. The National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC) publishes National Weather Service (NWS) data describing past weather events and the resulting deaths, injuries and damages associated with each hazard event. This data is available at the county level. While the data is advertised as being available beginning in January, 1950, a considerable portion of the data for several of the hazard events is only available as early as the 1990's. This plan only utilized the data from January 1, 1990 through September of 2018. Descriptions of individual natural hazard events are located in the risk and vulnerability assessment in the portion of this chapter.

Frequency

The data from the NCDC shows that of the 388 discernible events recorded from January 1, 1990 through September of 2019, thunderstorms and associated high winds are the most frequently occurring natural hazard event with 103 events recorded. This was followed by hail (73 events), winter storms (36 events), heavy snow (23 events), and strong winds (19 events) to round out the top five¹. Table 3.2 shows the frequency of all reported natural hazards occurring in Brown County between January 1, 1990 and September of 2018.

Deaths

From January, 1990 through June of 2019, deaths caused by natural hazard events occurred mostly from cold weather events. There were 5 deaths associated with cold/wind chill events occurring on one occasion in 1996, 2009, 2013, 2016, and 2018².

**TABLE 3.2: NATURAL HAZARD OCCURRENCES
1990-JUNE 2019, BROWN COUNTY,
WISCONSIN**

NATURAL HAZARD	Total
BLIZZARD	7
COLD/WIND CHILL	14
DENSE FOG	12
DROUGHT	4
DUST DEVIL	2
EXCESSIVE HEAT	6
EXTREME COLD/WIND CHILL	4
FLASH FLOOD	14
FLOOD	10
FUNNEL CLOUD	6
HAIL	73
HEAT	10
HEAVY RAIN	28
HEAVY SNOW	22
HIGH WIND	9
ICE STORM	2
LIGHTNING	14
STRONG WIND	21
THUNDERSTORM WIND	104
TORNADO	13
WINTER STORM	38
WINTER WEATHER	12
TOTAL	425

Source: NOAA National Climatic Data Center, 2019.

¹ NOAA: <http://tinyurl.com/y38yykxg>

² NOAA: <http://tinyurl.com/y38yykxg>

Injuries

Six injuries occurred in Brown County from January, 1990 through September, 2018. Three injuries were the result of a heat wave in 2006 while one injury occurred from each of the following events: an ice storm in 1996, winds associated with a thunderstorm in 1996, and a strong wind event in 2008.

Property Damage

The most damaging event during this same time frame, in terms of property damage, was a tornado in 2013 that resulted in approximately two million dollars in damage. Other event categories that have caused significant property damage in Brown County have been floods, flash floods, high winds, and thunderstorms. Lightning storms and winter storms have also resulted in more significant property damages.

Crop Damage

The most damaging event from January 1, 1990 through June of 2019, in terms of crop damage, was associated with thunderstorm winds. Other events like floods and tornados have undoubtedly caused crop damage/loss, however, no reported losses were documented with NOAA.

NATURAL HAZARDS PRIORITIZATION

The purpose of rating the potential risks associated with each natural hazard and reviewing past hazard event data is to address those natural hazards posing the greatest threat to residents and to property. Based on the assessment of past data, the Steering Committee identified the following updated natural hazards to be the focus of the plan assessment, goals, objectives and strategies:



Winter Storms

- including heavy snow, ice, and blizzards involving high winds



Lightning Storms & Thunderstorms



Tornadoes & High Winds



Flooding

- including flash, ravine, and lake



Extreme Cold



Extreme Heat



Fog



Hail



Dam Failure Flooding



Fires

- includes Forest and Wildfires



Stormwater Flooding



Coastal Hazards



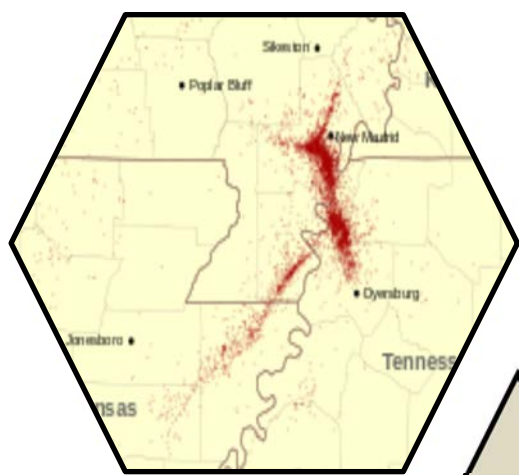
Drought

OTHER NATURAL HAZARDS POSING NO SIGNIFICANT RISK

The following natural hazards were determined by the Steering Committee to have a minimal chance of occurring, to pose minimal risk to the safety of residents or property, or to offer very limited mitigation options. These natural hazards are excluded from the full assessment, but they are briefly discussed here to meet the comprehensive requirements for developing a hazards mitigation plan under Federal law.

Earthquakes

According to the U.S. Geological Survey (USGS), there have been five documented and recognized earthquake events in Wisconsin. The closest of these to Brown County occurred in Clintonville in March 20, 2012, being a magnitude of 1.5 on the on the Richter Scale. The other events appear to have occurred near Iola and were documented between July and September of 2018. The four events that occurred near Iola were small ranging from 1.3 to 1.5 magnitude.³



The nearest active earthquake fault outside of Wisconsin is the New Madrid Fault, which stretches from northeast Arkansas to southern Illinois. Brown County falls within the lowest earthquake hazard shaking area. This represents the levels of horizontal shaking which have a 1-in-50 chance of being exceeded in a 50-year period. Similarly, Brown County falls within a 0%g-force to 1%g-force peak ground acceleration (PGA) zone as shown on the USGS PGA values map with a 10 percent chance of being exceeded over 50 years. Therefore, Brown County is considered unlikely to be substantially affected by earthquakes in the long-term future. The threat to Brown County from an earthquake is considered very low.

³ USGS interactive Earthquake map: <http://tinyurl.com/yxwtpv9j>

If a tremor or earthquake was to occur anywhere in the county, damage to structures and infrastructure could be substantial due to the fact that construction design standards in the immediate geographic area do not require buildings to be designed and constructed to meet standards consistent with an area prone to earthquake activity. Obviously, the more urbanized and densely populated areas within Brown County would experience much greater losses, injuries, and possibly deaths if an earthquake were to occur. According to the Wisconsin Department of Revenue, the 2018 Equalized Value of Brown County is \$21,829,376,900, up from \$18,157,652,100 in 2011. The cities of Green Bay and De Pere accounted for \$8,721,374,700, an increase of \$1,047,440,800 since 2011. The six villages contribute another \$9,361,555,400, up from \$7,609,428,300 in 2011, while the 13 towns accounted for the remaining \$3,712,890,100 as compared to \$2,874,289,900 in 2011⁴.

The area's economy could also be significantly impacted for extended periods of time given the area's dependence on a transportation system that is not designed to withstand a significant seismic event. The cost to rebuild infrastructure and the loss of company revenues and employee wages has the potential to be significant to not just the County but rather, it has the potential to impact the state and region. County and local municipal officials would certainly need to seek financial assistance and equipment and manpower needs from the state and federal levels to deal with a seismic event in Brown County.

Landslides

The term "landslide" includes a wide range of ground movement, including rock falls, deep failure of slopes and shallow debris flows. Although gravity acting on an overly steep slope is the primary reason for a landslide, there can be other contributing factors such as erosion by rivers, excess weight from the accumulation of rain or snow, or man-made and other structures stressing weak slopes to the point of failure. In some cases, slope material that becomes saturated with water may develop a debris flow or mudflow.

The U.S. Geological Survey *Landslide Overview Map of the Conterminous United States*⁵ identifies moderate landslide susceptibility risks for parts of Brown County and the remainder of the county is considered at low risk. The majority of the land formations within Brown County does not include features that pose a landslide risk. While there are areas of the county that have steep slopes (greater than 20% grade) the soils involved pose more of a gradual erosion risk as opposed to the sudden, large-scale movement of ground associated with landslide hazards. Areas with the steepest slopes tend to be zoned as conservancy districts by the various local jurisdictions in the planning area and are protected from unsuitable development, further minimizing any related hazard risks. Hillside erosion (minor landslides) within the county is very uncommon and results from man-made impacts such as the removal of vegetation. Hillside erosion has not posed substantial risk to life or property and has been largely mitigated through subdivision law, site plan review, and erosion control plans for construction sites.

⁴ WI DOR – 2018 Statement of Changes in Equalized Values by Class and Item, <https://www.revenue.wi.gov/SLFReportsassessor/2018socBRO.pdf>

⁵ <https://pubs.usgs.gov/pp/p1183/figures/map.jpg>

There are no records of substantial damage or injury from large landslides within Brown County and these hazard threats are considered low.

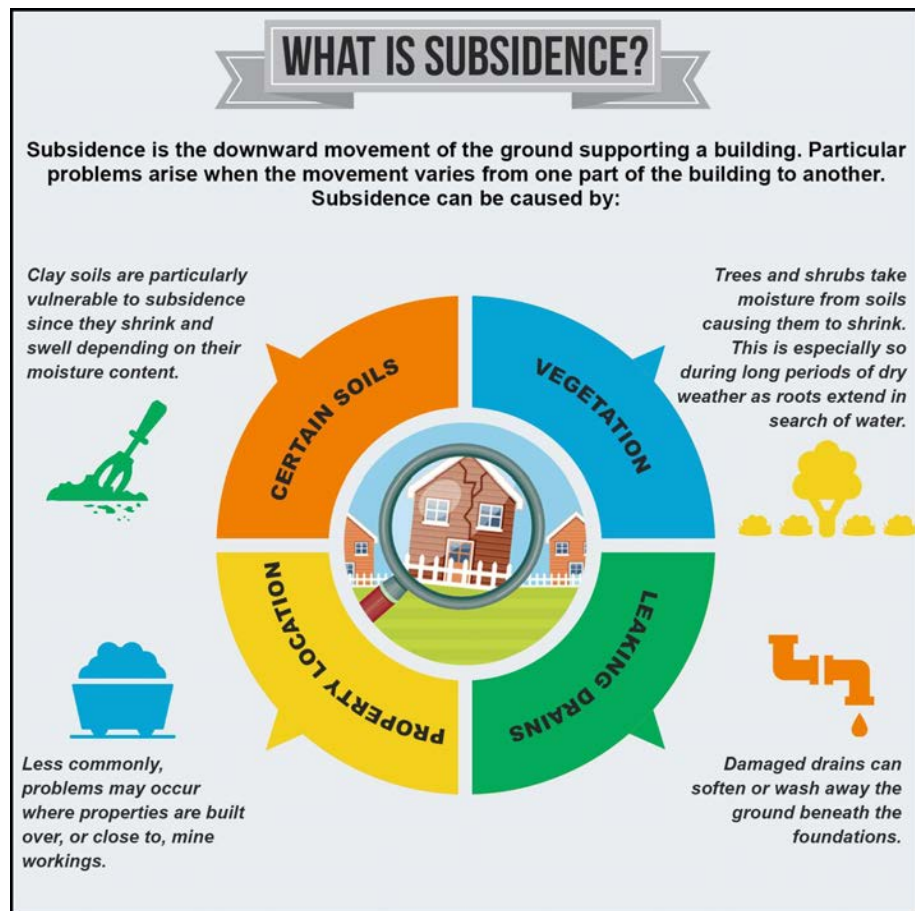
Subsidence

Land subsidence is a gradual settling or sudden sinking of the Earth's surface owing to subsurface movement of earth materials⁶. The principal causes of land subsidence include: aquifer-system compaction, drainage of organic soils, underground mining, hydrocompaction, natural compaction, sinkholes, and thawing permafrost. More than 80 percent of the identified subsidence in the Nation is a consequence of exploitation of underground water. The increasing development of land and the pressure that it has on water resources threatens to exacerbate existing land-subsidence problems and could initiate new ones.

Brown County is not an area of excessively karst topography but certain karst features and groundwater usage for purposes of providing potable drinking water, industrial usage or agricultural production should be monitored since this could lead to land subsidence, particularly in the southeastern areas of Brown County where groundwater contamination has already occurred.

The more densely populated areas of Brown County do not rely on groundwater for a water supply. Many of the surrounding communities in central Brown County obtain their water supply from Lake Michigan.

There are no records of substantial damage or injury from large land subsidence within Brown County and these hazard threats are considered low.



⁶ Land Subsidence: <https://water.usgs.gov/ogw/subsidence.html>

Agricultural Hazards

Agriculture accounts for the largest and most expansive (geographically) land uses and one of the top contributors to the local and regional economy. Natural hazards such as; drought, excessive heat, floods, severe thunderstorms, tornadoes, and fires have the potential to impact the agriculture business. Although agricultural losses are not particularly common in Brown County the potential for widespread impacts/losses is present.

In addition to natural hazards, biological factors such as animal diseases and crop pests (insects and weeds) can pose significant threats for Brown County farmers and associated businesses. Significant efforts on a global scale have been dedicated toward improving livestock conditions and boosting crop yields to keep up with the growing demand for food and other agricultural products.

An emerging issue associated with flooding disasters across the United States are large scale farms that include manure pits or lagoons. Manure pits/lagoons pose a significant risk if not designed and maintained properly and if the location for the manure pit/lagoon is not chosen with all due respect to water ways and flood prone areas. With the number of large scale farming operations in the state of Wisconsin and in Brown County it is important for individuals at the local, county, and state level to consider the potential impacts of these facilities if a disaster were to occur.



Figure 1: Manure pit/lagoon near a river before and after flooding event. Source: NPR

HAZARD PROFILES

Hazard profiles are intended to describe the frequency, severity, and probability of future natural and man-made/technological hazards that could have an impact on Brown County. These hazard profiles attempt to historically describe the cause and characteristics of each natural and man-made/technological hazard and how they have impacted the population, infrastructure, and environment of the county. These potential risks are evaluated to determine their likelihood of reoccurrence and to gauge the negative impacts to the existing (or planned) population and property that could occur as a result of these hazards.

Although this assessment will attempt to focus on the risk potential to the overall planning area, critical facilities are of particular concern. These entities provide essential products and services to the public that are necessary to preserve health, welfare, and quality of life of residents of Brown County, plus fulfill important public safety, emergency response, and/or disaster recovery functions.

A profile of both natural and manmade hazards are provided in their respective sections as follows. For the purposes of this plan, some hazards have been grouped into logically related hazard topics in order to better organize and describe the extent of the potential risk and vulnerability. The assessment for natural hazards follows in this order: flooding (including flash, riverine, and lake); tornadoes/high winds; lightning and thunderstorms, winter storms (including heavy snow storms, ice storms, and blizzards); storm water flooding; extreme cold; extreme heat; fog, hailstorms, dam failure flooding, forest fires, wildland fires, coastal hazards, and drought.

NATURAL HAZARDS

A natural hazard is an event that occurs naturally and causes harm to humans – or to other things that we care about, though usually the focus is on humans (which, we might note, is anthropocentric)⁷. The following hazards have been identified by the Steering Committee that pose a risk to Brown County residents.



⁷ Penn State College of Earth and Mineral Sciences - <https://www.e-education.psu.edu/geog30/node/378>

Flooding

Flooding is one of the more imminent natural disasters that Brown County residents face on an annual basis. A flood is an event that creates general or temporary conditions of partial or complete inundation of normally dry land areas from:

- The overflow of inland or tidal waters;
- The unusual and rapid accumulation or runoff of surface waters from any source;
- Mudslides (i.e., mudflows) which are proximately caused by flooding and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.⁸

A flood event will inundate floodplain areas adjacent to waterways. Floodplains are characterized as lowlands adjacent to rivers and lakes. Most flood-related injuries and deaths occur when people are swept away by flood currents, and the majority of property damage is caused from sediment-laden floodwaters.

The severity of flooding is determined by rainfall intensity (or other water source) and duration. A large amount of rainfall over a short time span can result in flash flood conditions. However, several factors beyond intensity and duration also come into play. For instance, a small amount of rain can cause flooding in areas where the soil is saturated or in areas of impermeable surfaces such as large parking lots, paved roadways, or other impervious developed areas. Topography and ground cover are also contributing factors for floods. Water runoff is greater in areas with steep slopes and little or no vegetative ground cover.



City of Green Bay Flooding
Figure 2 Source: Brown County Planning

History

Sixteen flood and flash flood events have been reported by the National Climatic Data Center as having occurred in the planning area since January 1, 1990.

June 16, 1996

Heavy rainfall fell across most of central and east central Wisconsin, as well as parts of northeast Wisconsin from June 16 through 18, 1996. Amounts over the three-day period ranged from two to seven inches in most locales. Runoff from the heavy rainfall caused rivers to rise substantially, with several peaking well above flood stage. Several streets, parks, campgrounds and county roads were flooded, and a few roads were washed out. Crop damage estimates amounted to at least 56 million dollars over the entire 15-county area.

⁸ FEMA - <https://www.fema.gov/flood-or-flooding>

March 31, 1998

Thunderstorms with locally heavy rain caused the Duck Creek to rise above flood stage late on March 31. The flooding continued into early April. Flooding was confined to areas adjacent to the creek, but no damage was reported.

April 1, 1998

The flooding that occurred in early April was a carryover from the excessive precipitation that fell in late March. Duck Creek in Howard reached 17.85 feet, just above flood stage, on April 1, 1998.

September 26, 1998

Numerous thunderstorms with large hail, heavy rain, and strong winds rumbled across northern and east central Wisconsin during the early morning of September 26, 1998. Local flooding in Howard occurred after 3 inches of rain fell in only 2 hours, accompanied by large hail and strong winds resulting in 5,000 dollars in property damage.

July 8, 2000

A nearly stationary front covering Wisconsin combined with upper air support and abundant moisture produced a prolonged period of thunderstorms. A few of the storms contained high winds and hail but flooding from heavy rainfall caused the majority of the problems. Flooding of roads and/or basements was reported in Green Bay and De Pere. Small streams and creeks overflowed their banks and rural areas suffered some crop damage. Green Bay received 4.12 inches of rain on July 8, 2000 and 4.65 inches of rain in a 24-hour period spanning July 7 - 8. These totals set a new rainfall record for July 8, 2000 and for the month of July 2000. The previous record 24-hour total was 4.39 inches set on July 23, 1912. At least 25,000 customers lost electrical power.

July 30, 2003

This flooding event resulted in two areas in Brown County that were impacted and are identified separately in the NOAA data. The event included flash flooding resulting from storms associated with a cold front that moved southeast into a warm and unstable air mass. Early storms produced large hail and some wind damage before an east to west boundary formed in the Appleton area, providing the focus for training on thunderstorms and flooding. Heavy rain resulted in flash flooding that left 2 to 3 feet of water over many roads. Manhole covers popped off on streets in the Green Bay area. The downtown mall in Green Bay had to be evacuated as water started to flow into the lower levels from the street.

March 5, 2004

A late winter storm moved across southern Wisconsin and produced a large area of heavy precipitation across northeast and north central Wisconsin. Heavy snow fell across the north and rain fell across much of the east central part of the state. Significant snowmelt due to warm temperatures earlier in the week combined with over an inch of rain from the storm system in east central Wisconsin to produce flooding. Widespread lowland flooding was observed along the East River from De Pere to Allouez and a few intersections became flooded and had to be closed.

March 28, 2005

Well above normal temperatures during the last week of the month resulted in considerable snowmelt. Rainfall combined with runoff from melted snow, causing minor flooding on several rivers.

July 15, 2010

Heavy rainfall caused Apple Creek to rise about 2.5 feet above flood stage at the Apple Creek Campground. Brown County officials had to evacuate 28 people from the campground where water was up to 5 feet deep.

August 20, 2010

Thunderstorms produced torrential rains in Green Bay. Lombardi Avenue was closed between Oneida Street and Holmgren Way due to three feet of water and stalled cars on the road. Storm and isolated sanitary sewer backups occurred in this area, causing some damage to basements. In just ten minutes 0.88 inch of rain fell at Austin Straubel Airport, 0.54 inch of that fell in just four minutes.

September 26, 2010

Heavy rain fell over extreme northwest Brown County, causing flash flooding in Pulaski where a storm total of 3.97 inches of rain fell. Some roads in the area flooded, including State Highway 32, and a small creek that is normally about 1 foot deep was flowing at a depth of eight or nine feet.

September 8, 2015

Heavy rain developed as low pressure moved across Wisconsin. The heaviest rain fell during the morning. The highest rainfall totals were 3.50 inches in Allouez and 3.15 inches near Kaukauna (Outagamie Co.). Green Bay received 2.50 inches of rain, including 0.81 inch in just 15 minutes.

July 22, 2017

Scattered thunderstorms that formed ahead of an approaching cold front brought high winds that downed trees and heavily damaged a farm building in Oconto County, and produced torrential rainfall that flooded intersections in Green Bay.

September 8, 2018

Severe thunderstorms produced torrential rainfall that caused urban flooding and flash flooding in parts of the Green Bay area and Fox Valley. There were numerous reports of 2 to 4 inches of rain, along with a few even higher totals.

September 17, 2018

Thunderstorms brought a period of torrential rainfall to eastern Brown County, causing flash flooding on the east side of Green Bay and in Bellevue. About 50 people had to be rescued from cars that became trapped in flooded intersections. Employees and customers of some businesses had to shelter in place due to high water in their parking lots and surrounding streets. The ground floor of some buildings flooded, including a Green Bay Metro Fire Department station.

More than 100 people were evacuated from seven buildings, including residents of a 48-unit apartment building that housed mostly elderly people. The basement of the building flooded, leaving electrical services underwater. More than 70 people were left homeless for the night and stayed overnight at a local church.

Storm Events Source: NOAA Storm Events Database – Flooding and Flash Flooding

Vulnerability

Past floods are indicative of what can happen in the future, and flood studies and mitigation plans are based on the risk of future flooding. Flood studies extrapolate from historical records to determine the statistical potential that storms and floods of a certain magnitude will recur.

The probability of reoccurrence is expressed in percentages as the chance of a flood of a specific extent occurring in any given year. The most widely adopted design and regulatory standard for floods in the United States is the 1-percent annual chance flood and this is the standard formally adopted by FEMA.

The 1-percent annual flood, also known as the base flood, has a 1 percent chance of occurring in any particular year. It is also often referred to as the “100-year flood” since its probability of occurrence suggests it should only reoccur once every 100 years. This expression is, however, merely a simple and general way to express the statistical likelihood of a flood with actual recurrences varying from place to place.

These terms are often misunderstood. Frequently, people interpret the 50-year flood definition to mean occurring “once every 50 years,” which is incorrect. From a probability standpoint, a 50-year flood has a one in 50 (two percent) chance of occurring in any given year. In reality, a 50-year flood could occur two times in the same year, two years in a

row, or four times over the course of 50 years. On the other hand, it is possible for 100 years to pass without having a 50-year flood event. The term “50-year flood” has caused much confusion for people not familiar with statistics. Another way of looking at it is in the context that a base flood will happen during the life of a 30-year mortgage, a 26 percent chance.

The official floodplain study for insurance and regulatory purposes is the *Flood Insurance Study* by the Federal Emergency Management Agency (FEMA). Flood Insurance Studies have been prepared for Brown County (for unincorporated areas); for the cities of Green Bay and De Pere, the villages of Ashwaubenon, Allouez, Bellevue, and Howard. Flood Insurance Rate Maps (FIRMs) were updated for the unincorporated areas of Brown County and for the City of Green Bay in 2009.

FEMA uses the “base” flood as the basis for its regulatory requirements and flood insurance rate setting. This Hazards Mitigation Plan also uses the base flood for planning purposes. The base flood is the one percent chance flood, or the 100-year flood.

Even these numbers do not convey the true flood risk because they focus on the larger, less frequent floods. If a house is low enough, it may be subject to the 10- or 25-year flood. During a typical 30-year mortgage, a house may have a 26 percent chance of being hit by the 100-year flood, but the odds are 96 percent (nearly guaranteed) that a 10-year flood will occur during the 30-year mortgage period. Compare those odds to the only five percent chance that the house will catch on fire during the same 30-year mortgage period.

Another term used is the “500-year flood,” which has a 0.2 percent chance of occurring in any given year. While the odds of it occurring are more remote, the “500-year flood” is the national standard used for protecting critical facilities, such as hospitals and power plants.

Within the long-range future (20 to 30 years), Brown County is considered to have a **high** probability of sustaining a 100-year flood. This probability is based on observation of past flooding events (and the extent of those events) by the Hazards Mitigation Plan Steering Committee and is consistent with the odds that a “base” flood will happen during the life of a 30-year mortgage.

Impacts

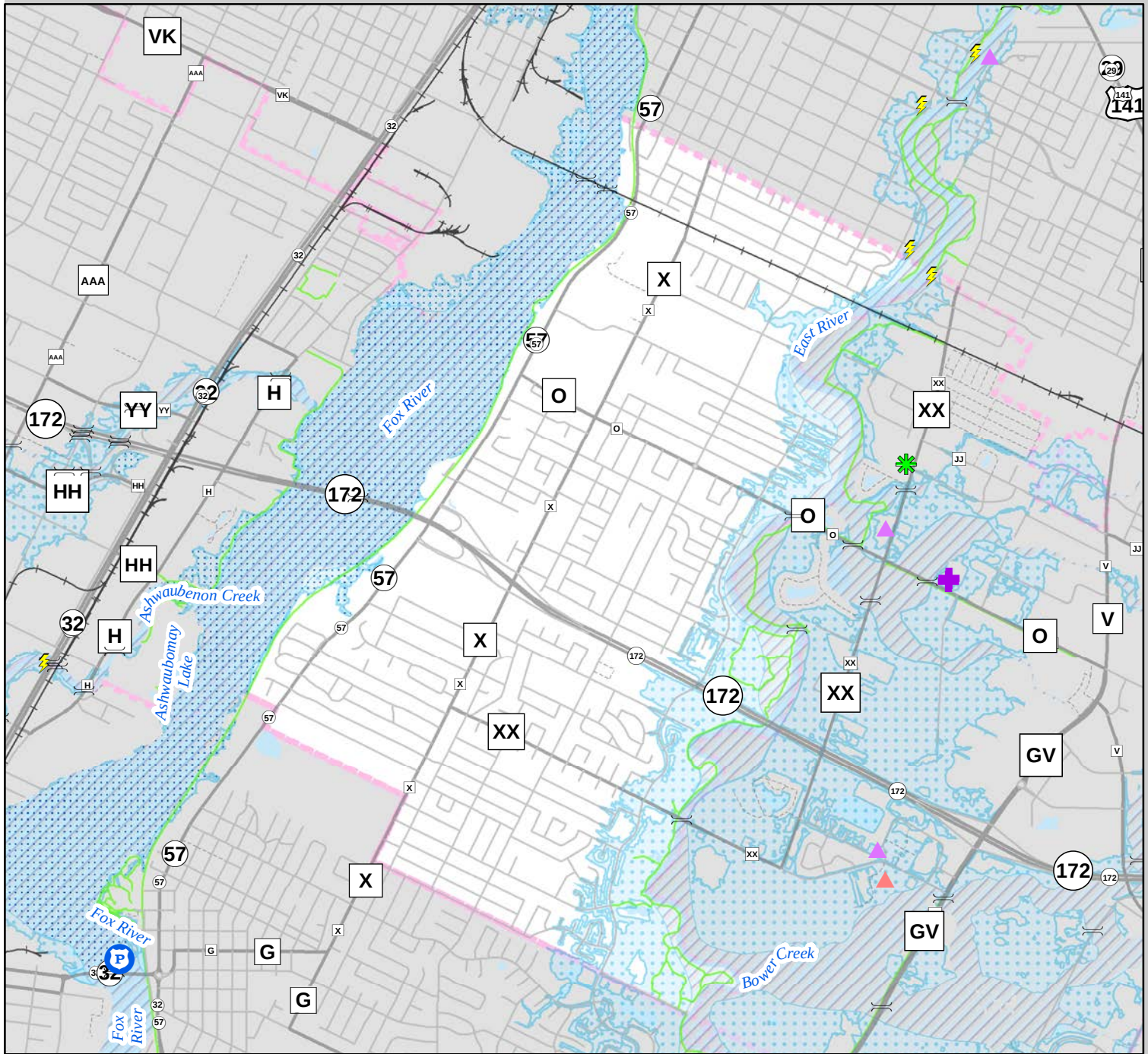
The following describes the various impacts that flooding has on the county.

Critical Facilities

Brown County Emergency Management and the Land Information Office coordinated with the local communities to confirm the type and location of the critical facilities as defined by the Steering Committee. The number of critical facilities that could be impacted by flooding was determined by using data collected in GIS and overlaying that information with the FEMA flood data. Using this method, 159 critical facilities were found in the 100-year floodplain. However, the 500-year flood is considered the most appropriate protection level for critical facilities. The following maps show the location of critical facilities within the areas of the county susceptible to the one percent chance event.

Brown County Critical Facilities within 100 Year Floodplain

Village of Allouez



Map 3.01

Legend

- | | | | | | |
|--|------------|--|----------------|--|----------------|
| | Business | | Other Landmark | | EMS |
| | Adult Care | | Utility | | Police Station |
| | Child Care | | Bridge | | |

Flood Hazard Areas

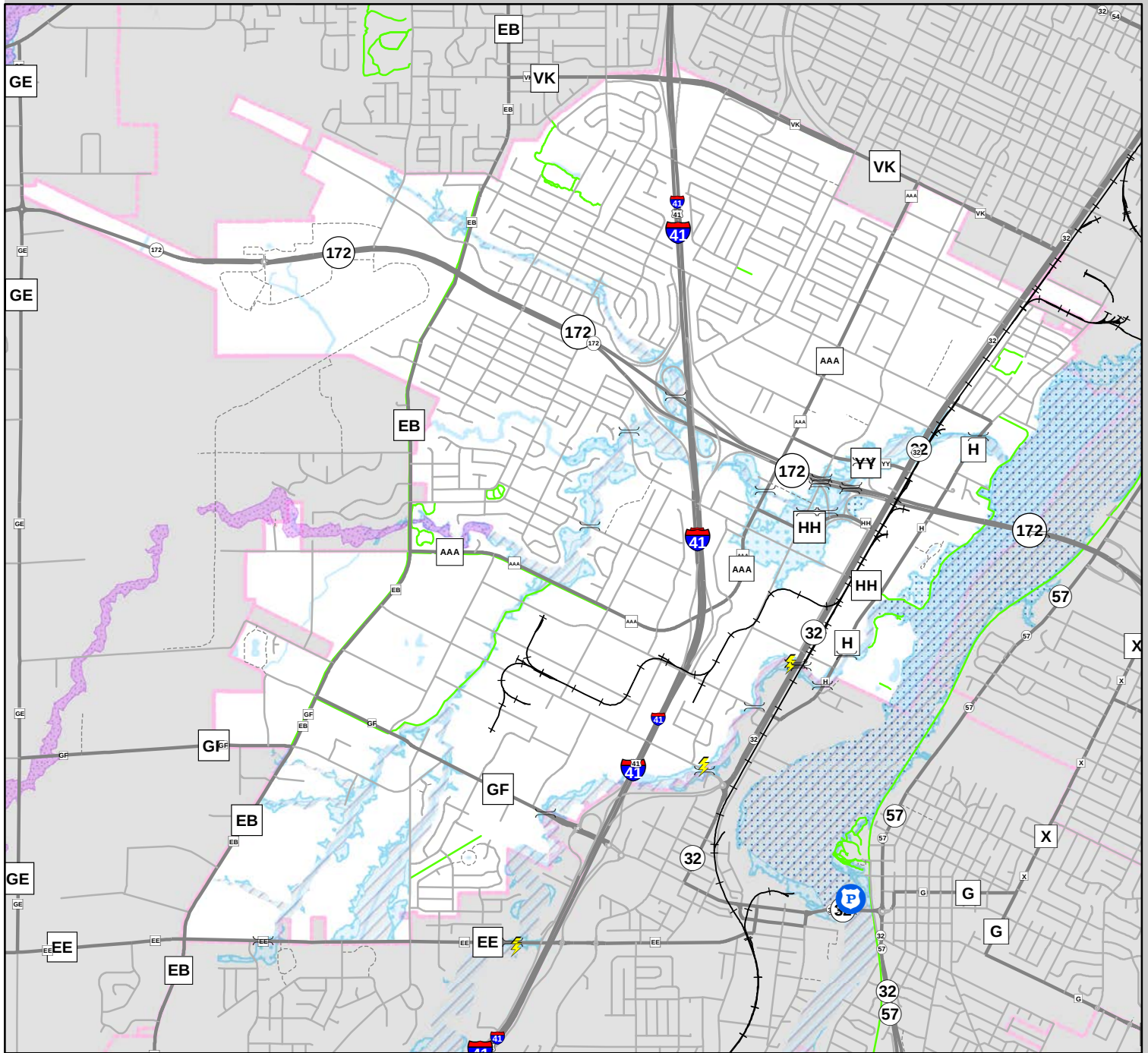
- Zone AE (100 year floodplain with Base Flood Elevation determined)
- Floodway Areas in Zone AE



0 0.3 0.6
Miles

Brown County Critical Facilities within 100 Year Floodplain

Village of Ashwaubenon



Map 3.02

Legend

- | | | |
|--|----------------|--|
| | Other Landmark | Flood Hazard |
| | Utility | Zone A (100 year floodplain, No Base Flood elevation determined) |
| | Bridge | Zone AE (100 year floodplain with Base Flood Elevation determined) |
| | Police Station | Floodway Areas in Zone AE |



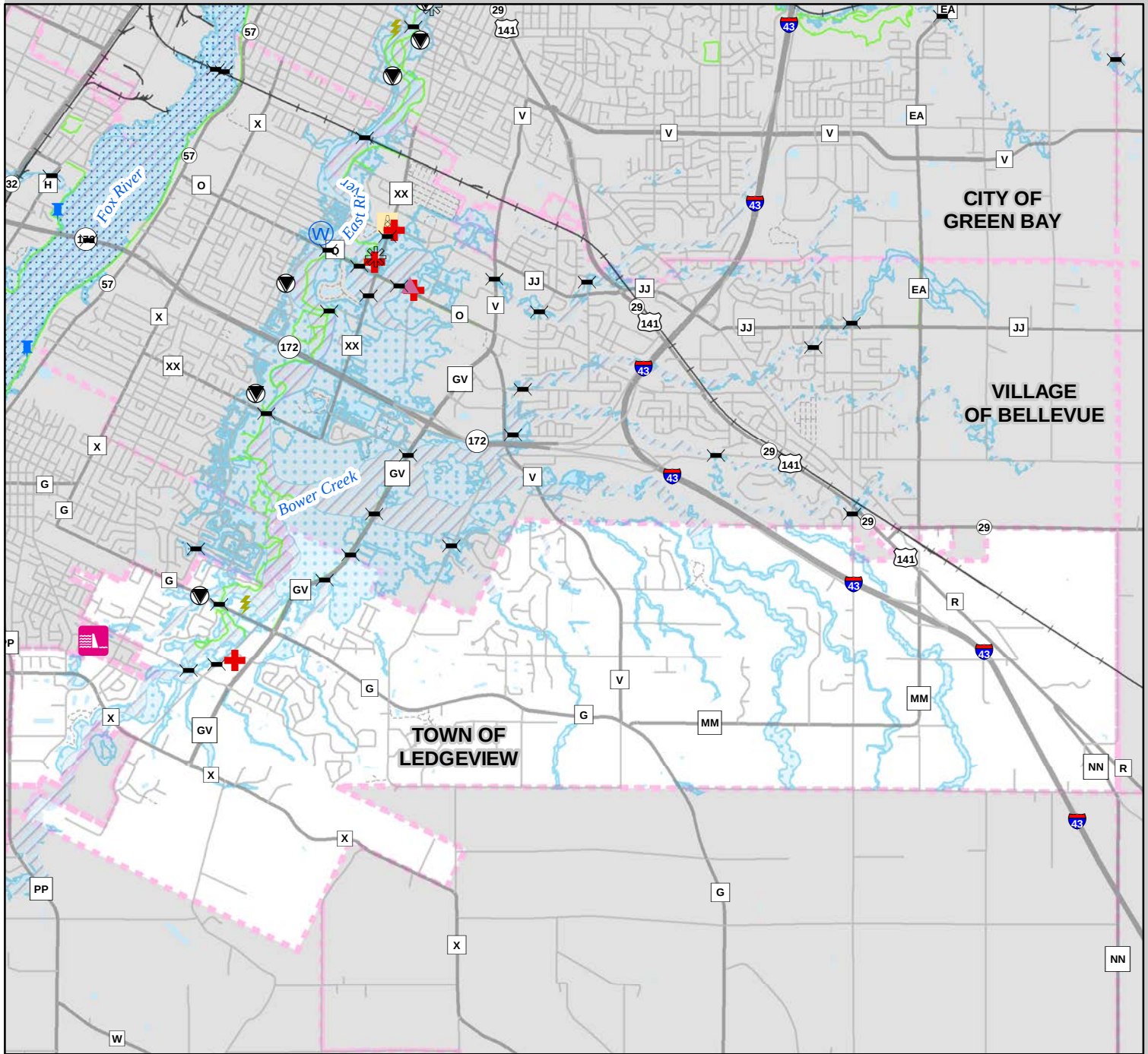
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Source: Brown County Land Information Office, 2019

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Brown County Critical Facilities within 100 Year Floodplain

Town of Ledgeview



Map 3.03

Legend

Critical Facilities

- Bridges
- Clinics
- Dams
- Docking Facilities; Docking facilities

- Electric Power Plants; Electric Power Substations; Major Electric Power Transmission Lines R/W
- Lift Station; Sanitary Lift Station; Sewage Treatment Plants; Sewer Lift Station; Storm Lift Station

- Police/Fire Stations/Offices
- Pre-School/Day Care
- Radio/Television Stations
- Water Supply Booster/Pumping Stations; Water Supply Wells

Flood Hazard Areas

- Zone A (100 year floodplain, No Base Flood elevation determined)
- Zone AE (100 year floodplain with Base Flood Elevation determined)
- Floodway Areas in Zone AE



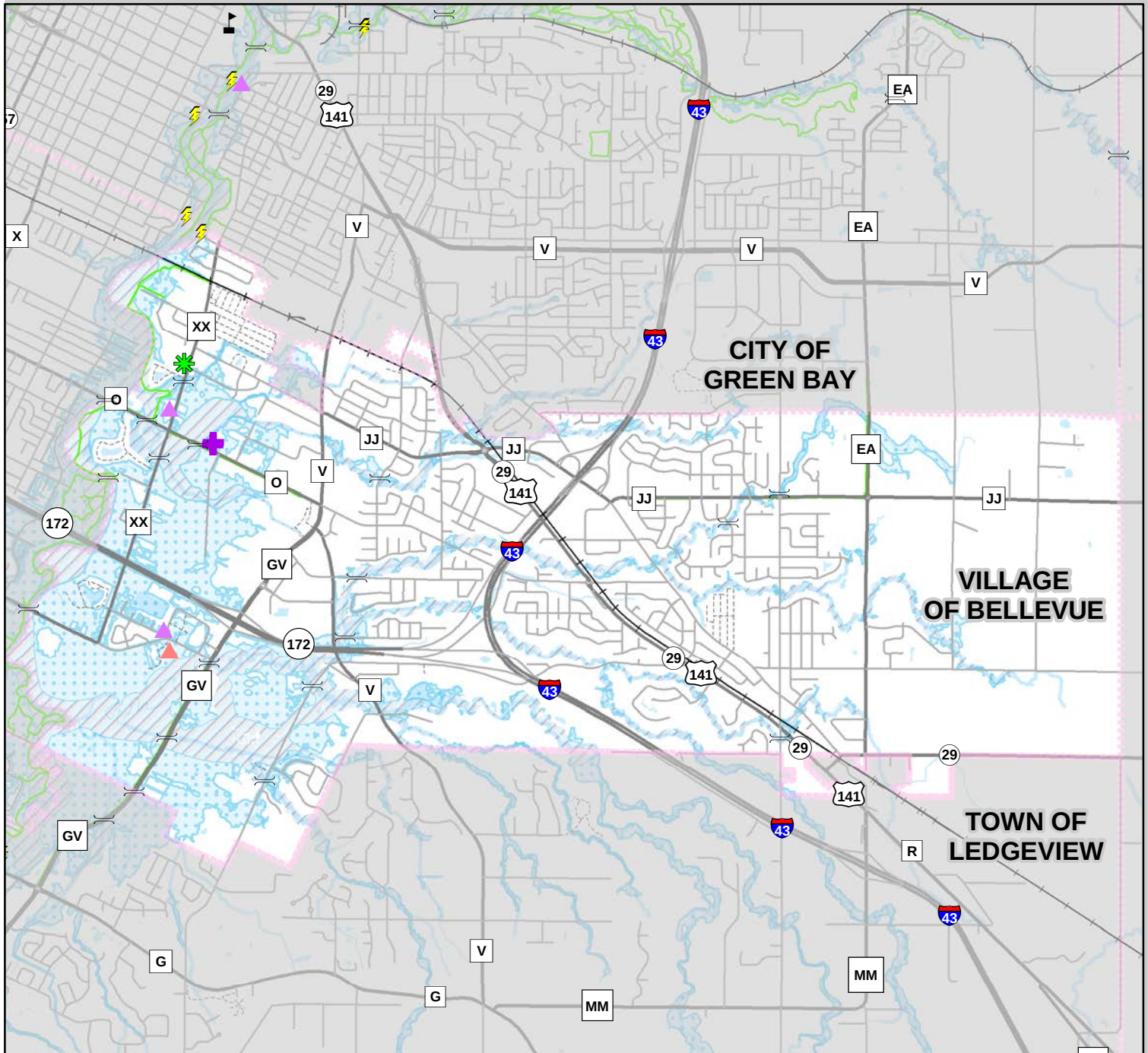
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0 0.5 1
Miles

Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Village of Bellevue



Map 3.04

Legend

- | | | |
|--|------------|--|
|  | Business | Flood Hazard |
|  | Adult Care |  Zone A (100 year floodplain, No Base Flood elevation determined) |
|  | Child Care |  Zone AE (100 year floodplain with Base Flood Elevation determined) |
|  | School |  Floodway Areas in Zone AE |
|  | Utility | |
|  | Bridge | |
|  | EMS | |



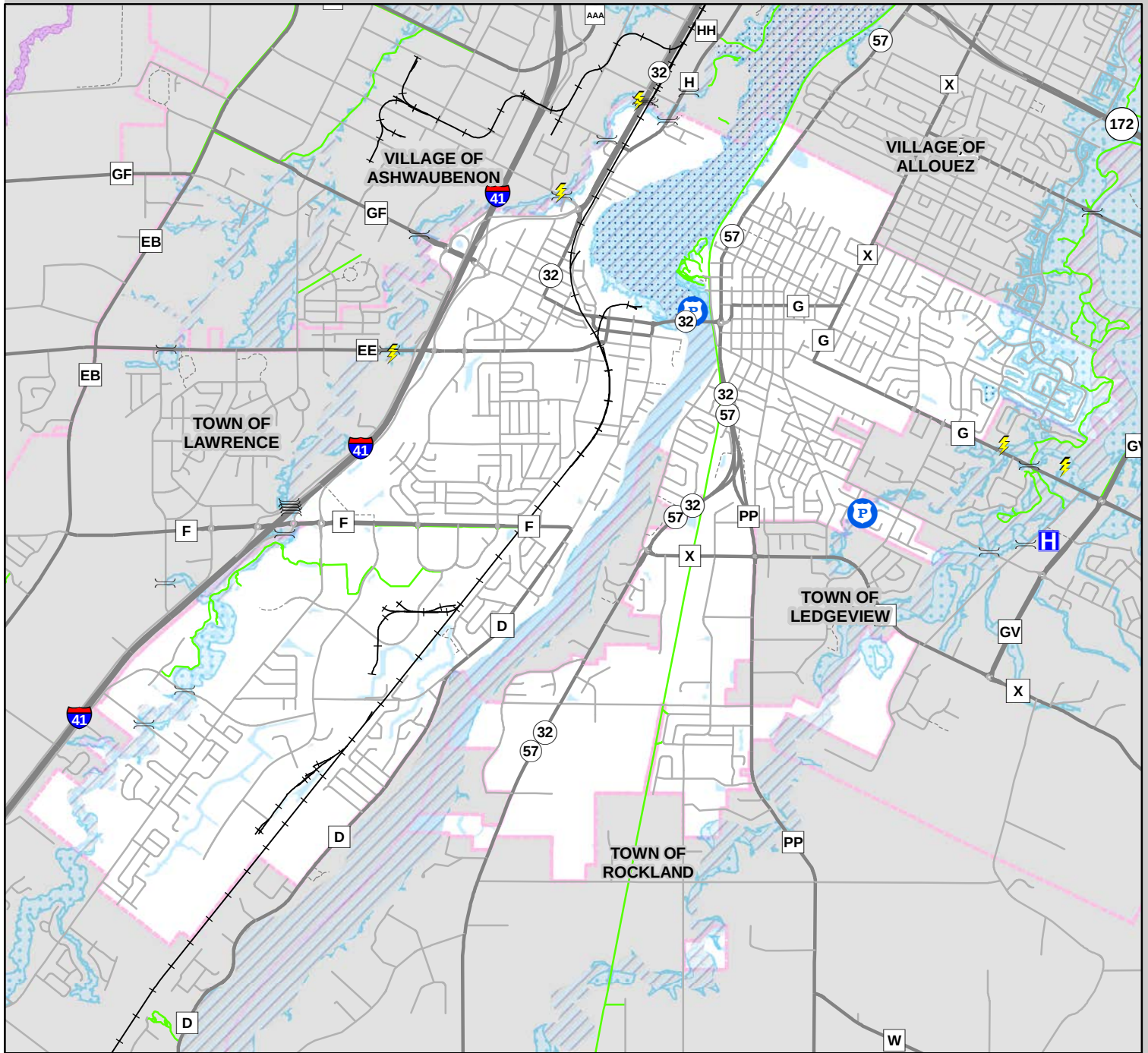
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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

City of De Pere



Map 3.05

Legend

-  Hospital/Clinic
-  Other Landmark
-  Utility
-  Bridge
-  Police Station

Flood Hazard Areas

-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE



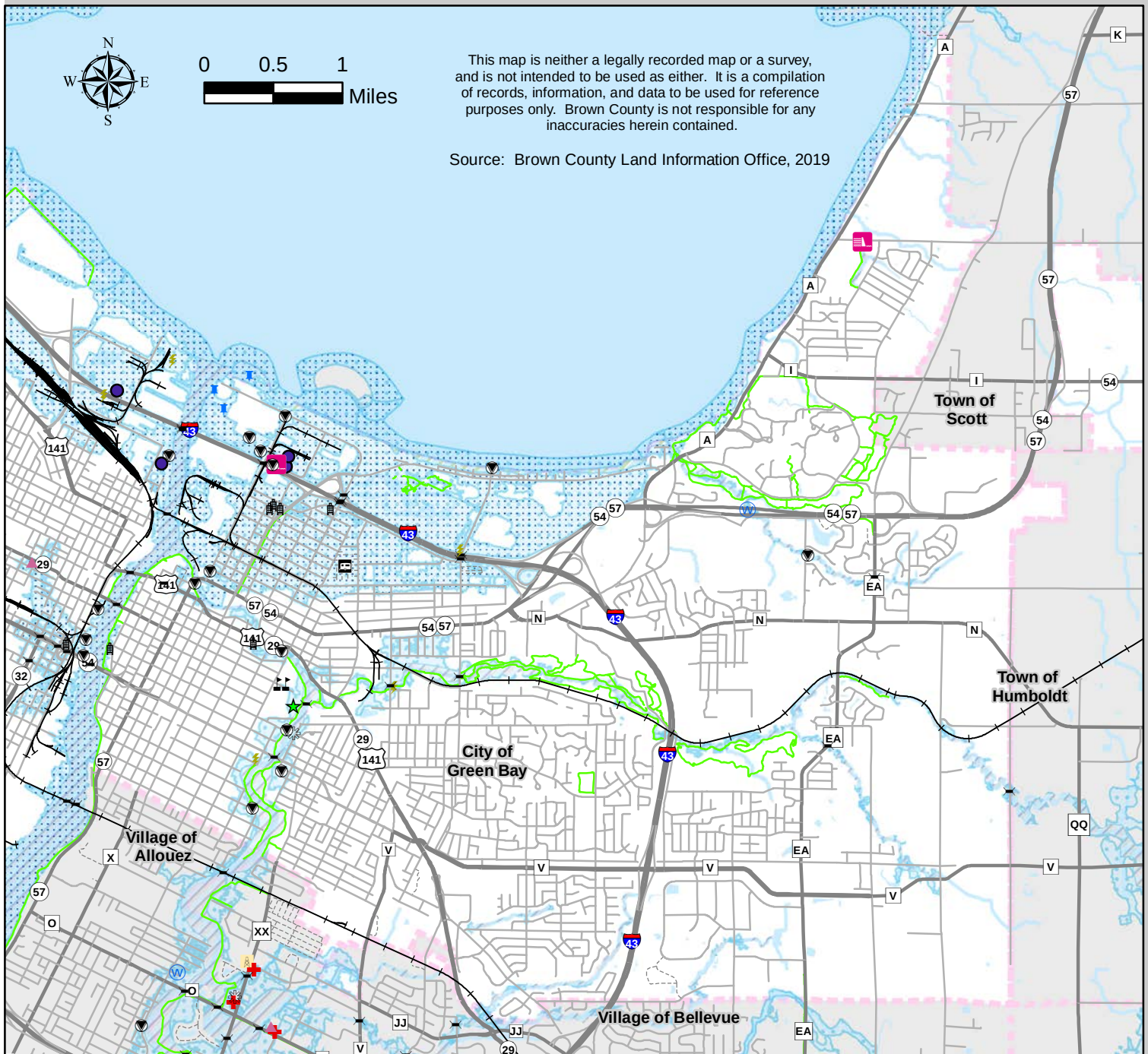
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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

City of Green Bay East



Map 3.06

Legend

Critical Facilities

- Administrative Buildings
- Bridges
- Clinics
- Dams
- Docking Facilities; Docking facilities
- Electric Power Plants; Electric Power Substations; Major Electric Power Transmission Lines R/W
- Lift Station; Sanitary Lift Station; Sewage Treatment Plants; Sewer Lift Station; Storm Lift Station
- Mobile Home Park
- Other Liquid Fuel Substations; Other Liquid Fuel Terminal Plants

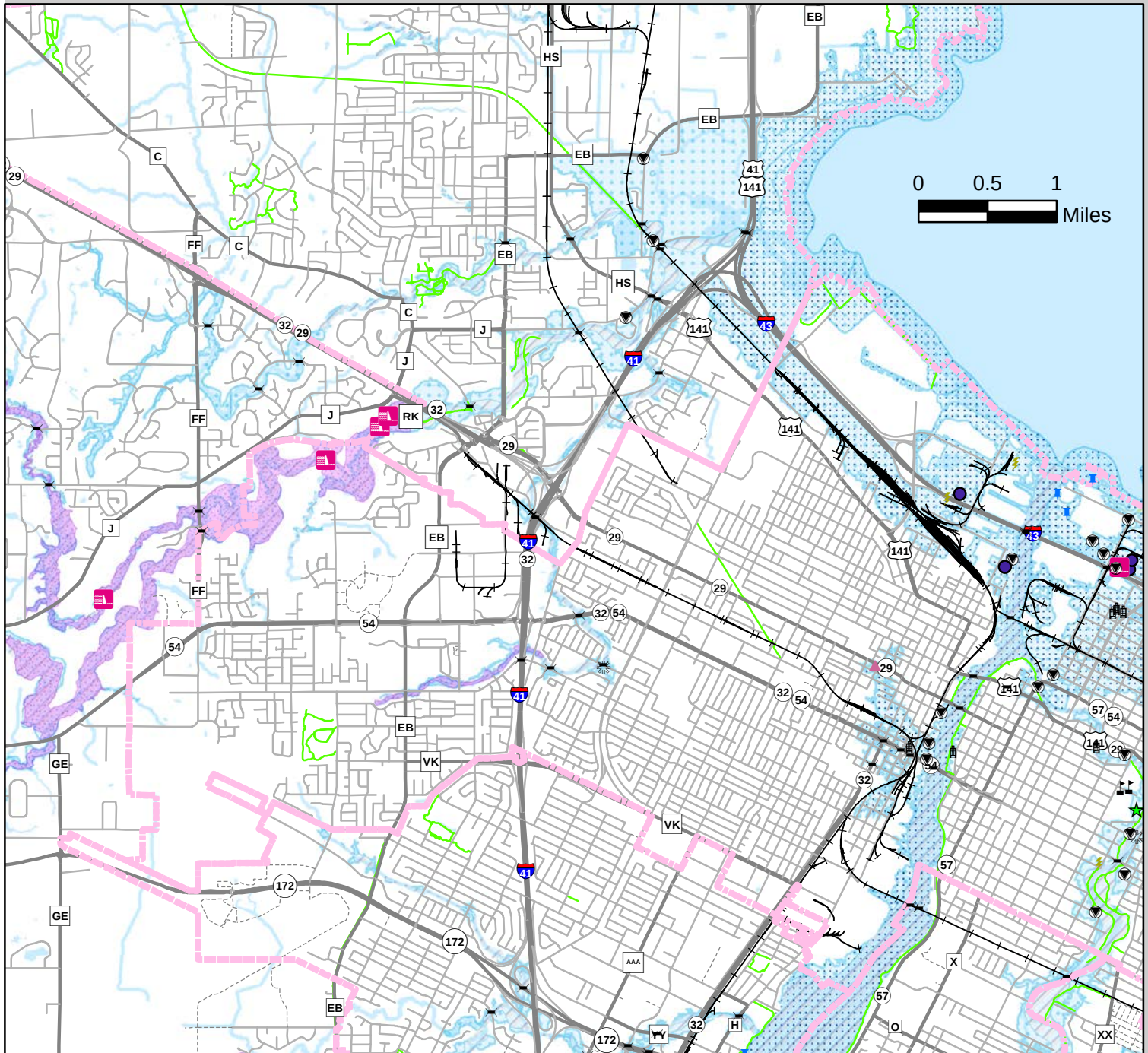
- Police/Fire Stations/Offices
- Pre-School/Day Care
- Radio/Television Stations
- School; Secondary Schools
- Sports stadium / arena
- Water Supply Booster/Pumping Stations; Water Supply Wells

Flood Hazard Areas

- AO,
- Zone A (100 year floodplain, No Base Flood elevation determined)
- Zone AE (100 year floodplain with Base Flood Elevation determined)
- Floodway Areas in Zone AE

Brown County Critical Facilities within 100 Year Floodplain

City of Green Bay West



Map 3.07

Legend

Critical Facilities

-  Administrative Buildings
-  Bridges
-  Dams
-  Docking Facilities; Docking facilities
-  Electric Power Plants; Electric Power Substations; Major Electric Power Transmission Lines R/W
-  Lift Station; Sanitary Lift Station; Sewage Treatment Plants; Sewer Lift Station; Storm Lift Station

-  Other Liquid Fuel Substations; Other Liquid Fuel Terminal Plants
-  Police/Fire Stations/Offices
-  Pre-School/Day Care
-  School; Secondary Schools
-  Sports stadium / arena

Flood Hazard Areas

-  AO,
-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE

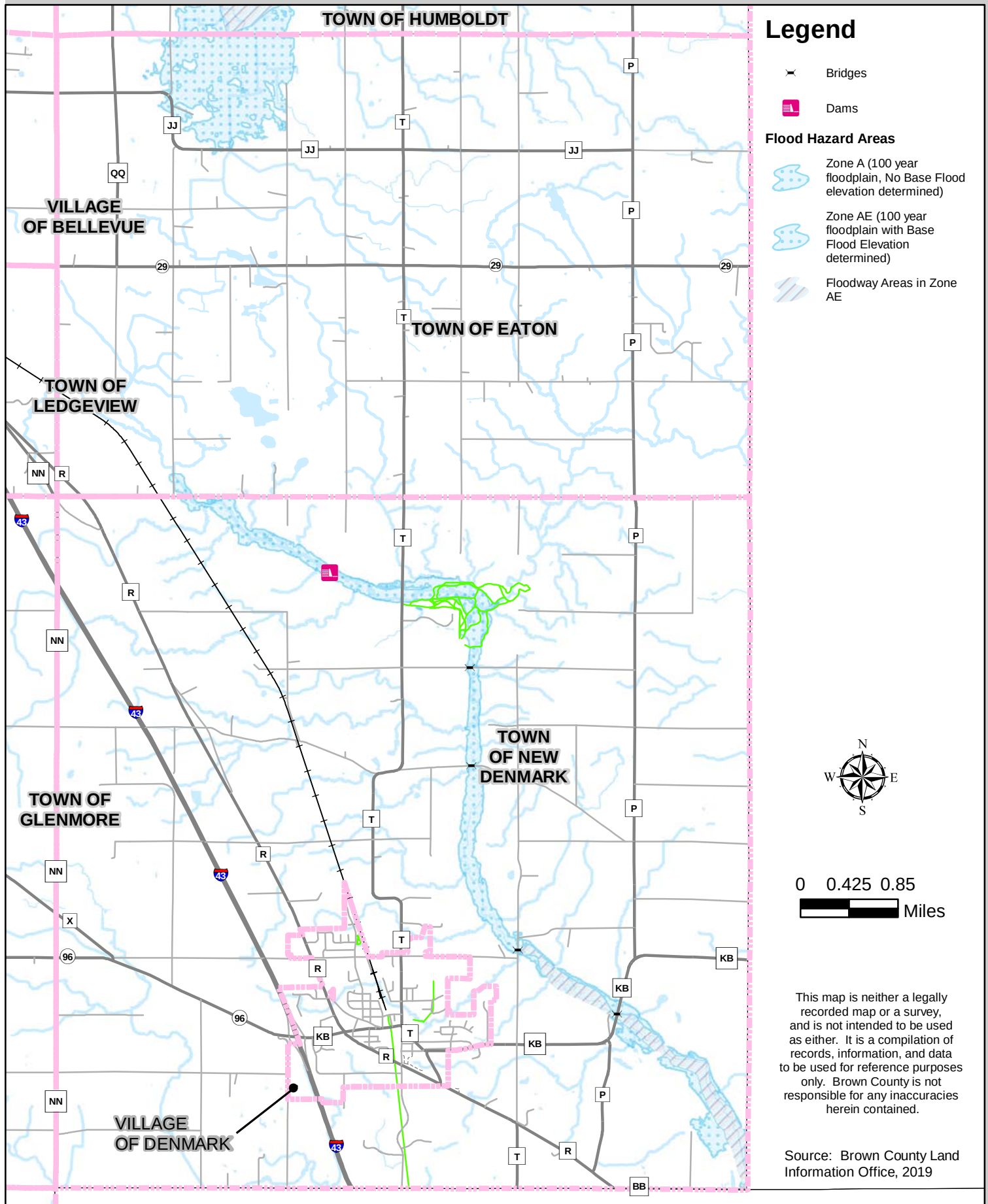


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Source: Brown County Land Information Office, 2019

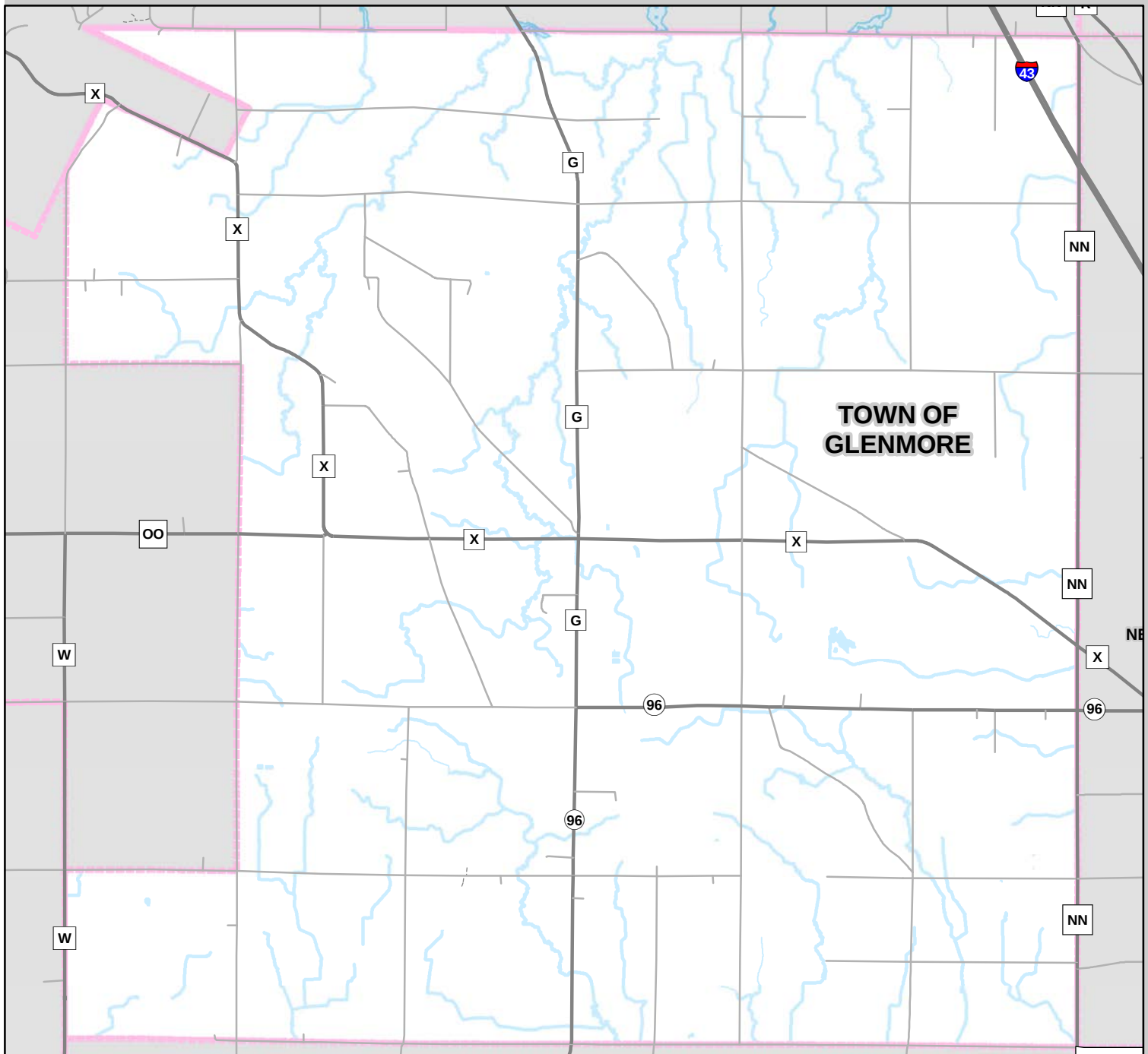
Brown County Critical Facilities within 100 Year Floodplain

Town of Eaton, Town of New Denmark, Village of Denmark



Brown County Critical Facilities within 100 Year Floodplain

Town of Glenmore



Map 3.09

Legend

Flood Hazard Areas

-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE

**No Critical Facilities in the
Town of Glenmore are within
the 100 year floodplain**



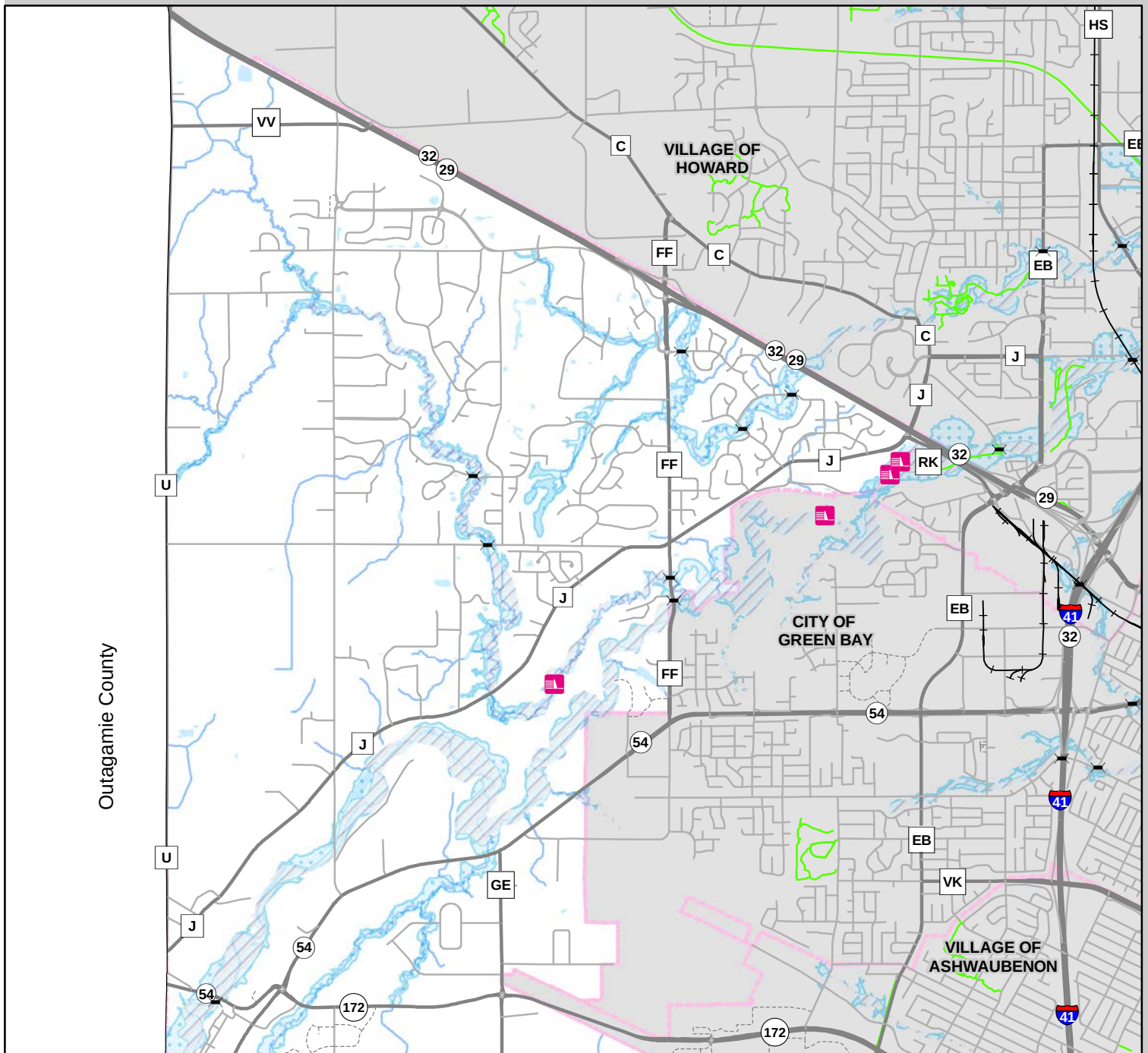
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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Village of Hobart North



Map 3.10

Legend

Critical Facilities Flood Hazard

-  Bridges
-  Dams
-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE



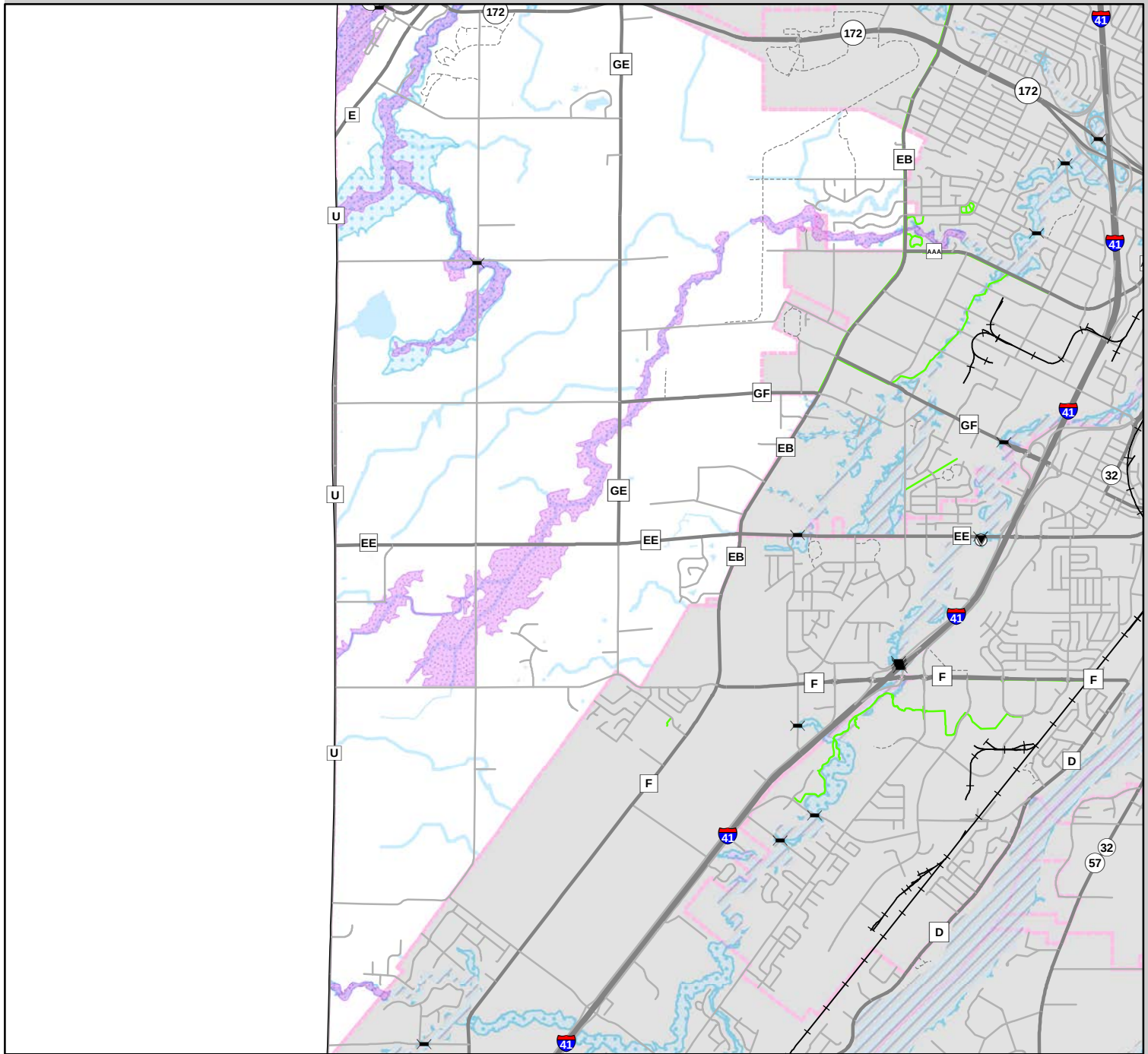
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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Village of Hobart South



Map 3-11

Legend

Critical Facilities

-  Bridges
-  Lift Station; Sanitary Lift Station; Sewage
-  Treatment Plants; Sewer Lift Station; Storm Lift Station

Flood Hazard Areas

-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE



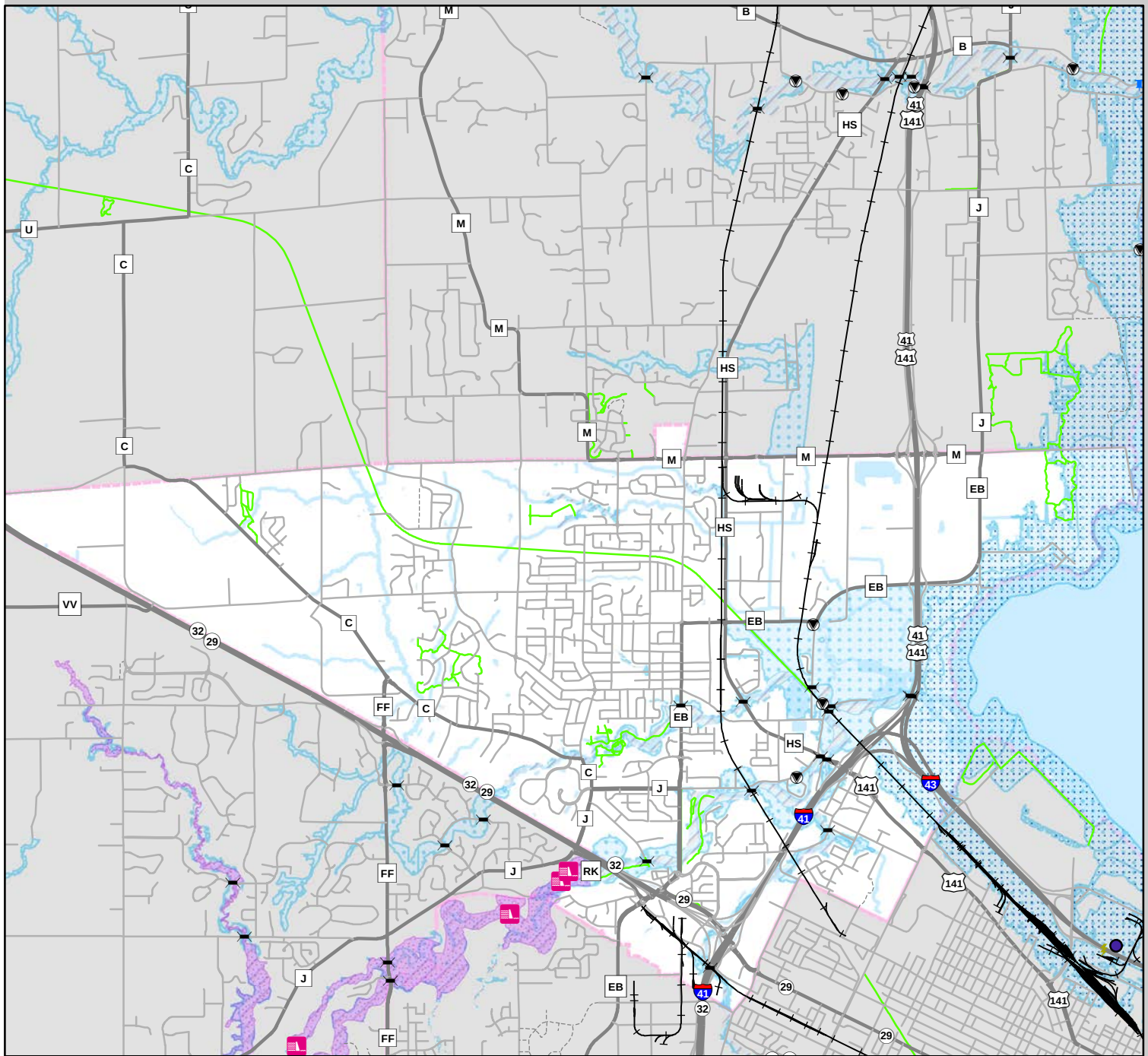
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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Village of Howard



Legend

Critical Facilities

-  Bridges
-  Dams
-  Docking Facilities; Docking facilities



Electric Power Plants;
Power Substations;
Electric Power
Transmission Lines R/W



Lift Station; Sanitary Lift
Station; Sewage
Treatment Plants; Sewer
Lift Station; Storm Lift
Station



Liquid Fuel Substations
and Fuel Terminal Plants

Flood Hazard Areas



Zone A (100 year
floodplain, No Base Flood
elevation determined)



Zone AE (100 year
floodplain with Base
Flood Elevation
determined)



Floodway Areas in Zone
AE



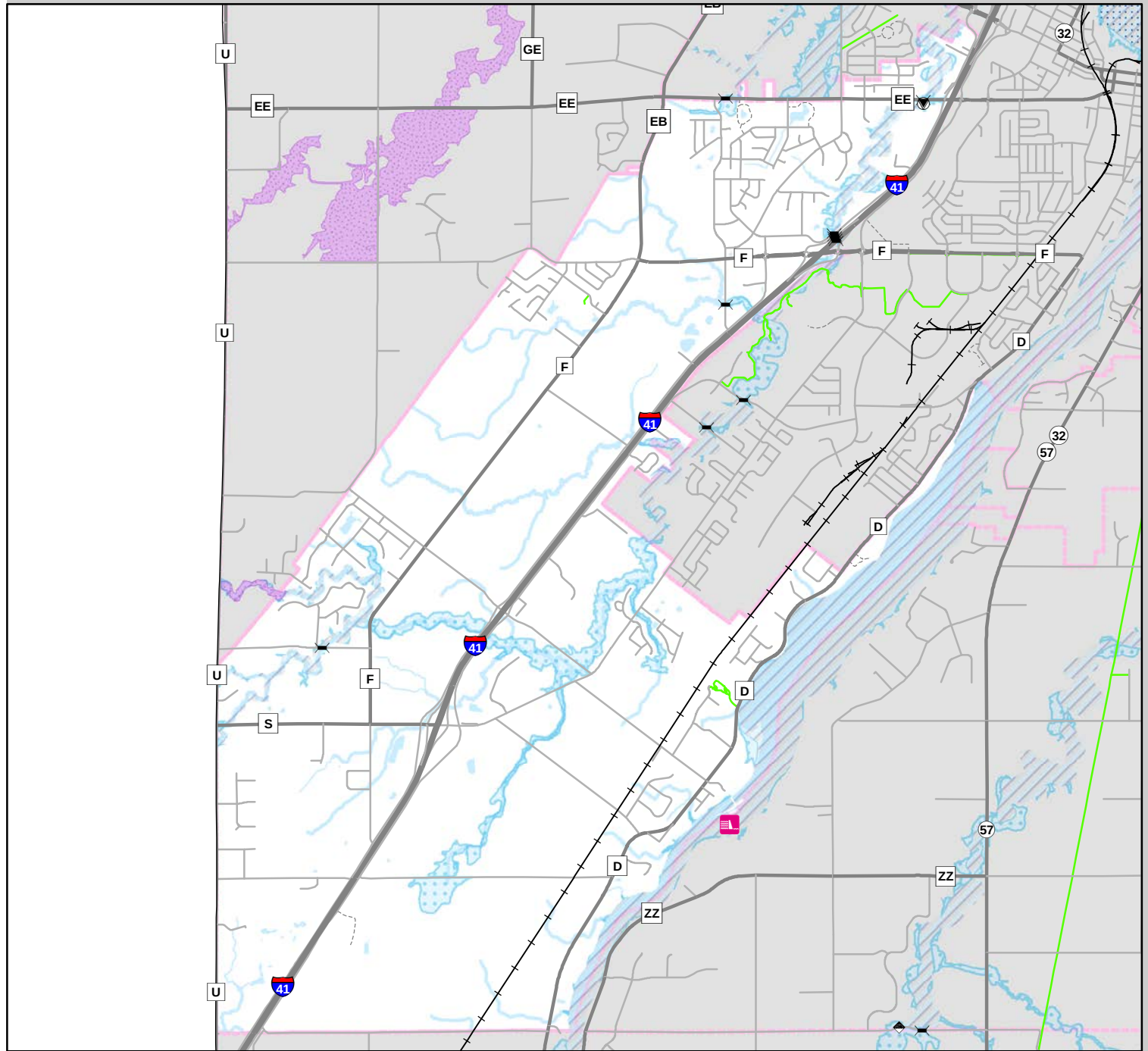
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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Town of Lawrence



Map 3-13

Legend

Critical Facilities

-  Bridges
-  Dams
-  Flooding Site
-  Lift Station; Sanitary Lift Station; Sewage Treatment Plants; Sewer Lift Station; Storm Lift Station

Flood Hazard Areas

-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE



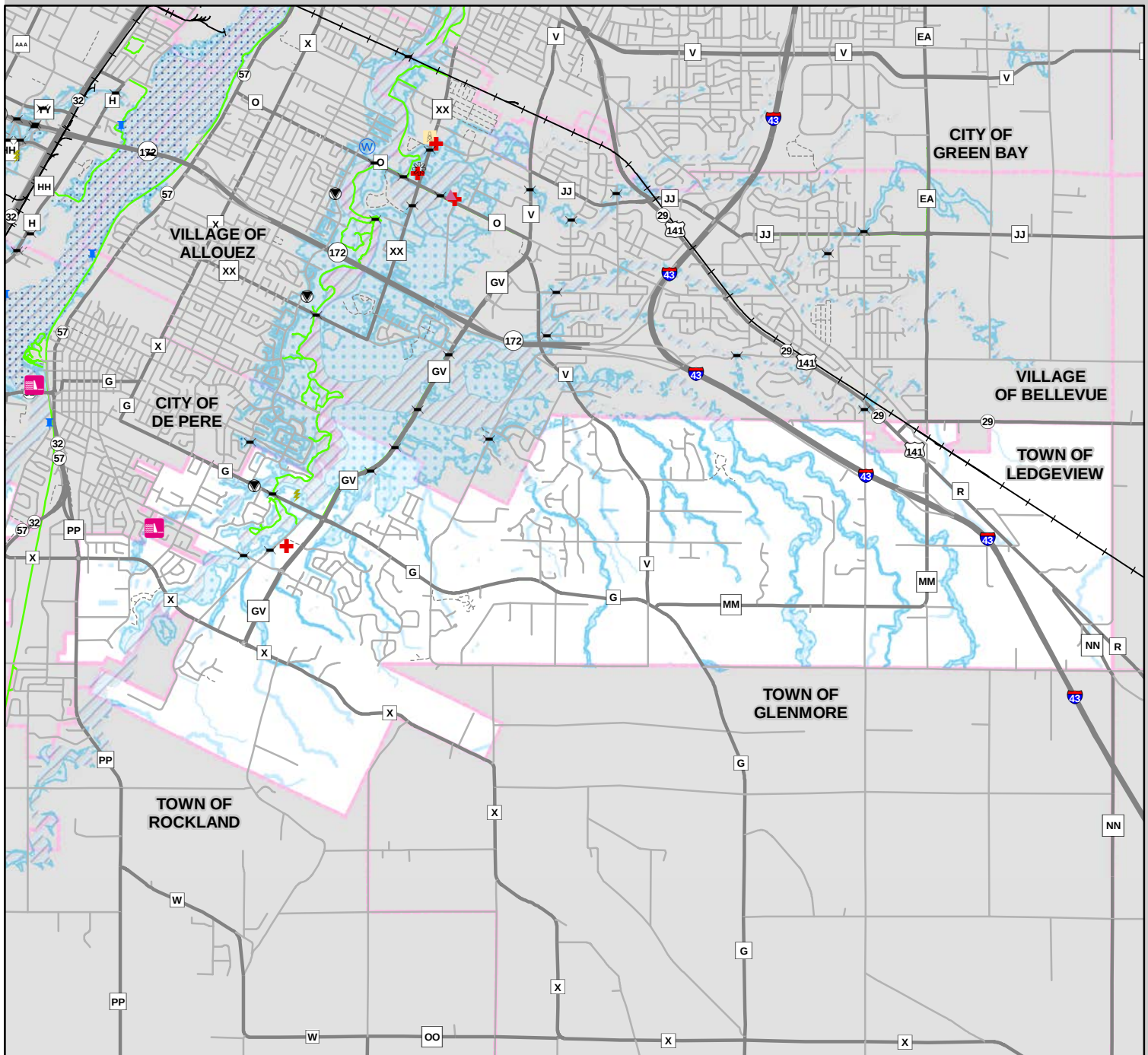
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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Town of Ledgeview



Map 3-14

Legend

Critical Facilities

- ✕ Bridges
- ✚ Clinics
- 🏰 Dams
- ⚓ Docking Facilities; Docking facilities

⚡ Electric Power Plants; Power Substations; Electric Power Transmission Lines R/W

🗑️ Lift Station; Sanitary Lift Station; Sewage Treatment Plants; Sewer Lift Station; Storm Lift Station

🚒 Police/Fire Stations/Offices



Pre-School/Day Care



Radio/Television Stations



Water Supply Booster/Pumping Stations; Water Supply Wells

Flood Hazard Areas



Zone A (100 year floodplain, No Base Flood elevation determined)



Zone AE (100 year floodplain with Base Flood Elevation determined)



Floodway Areas in Zone AE



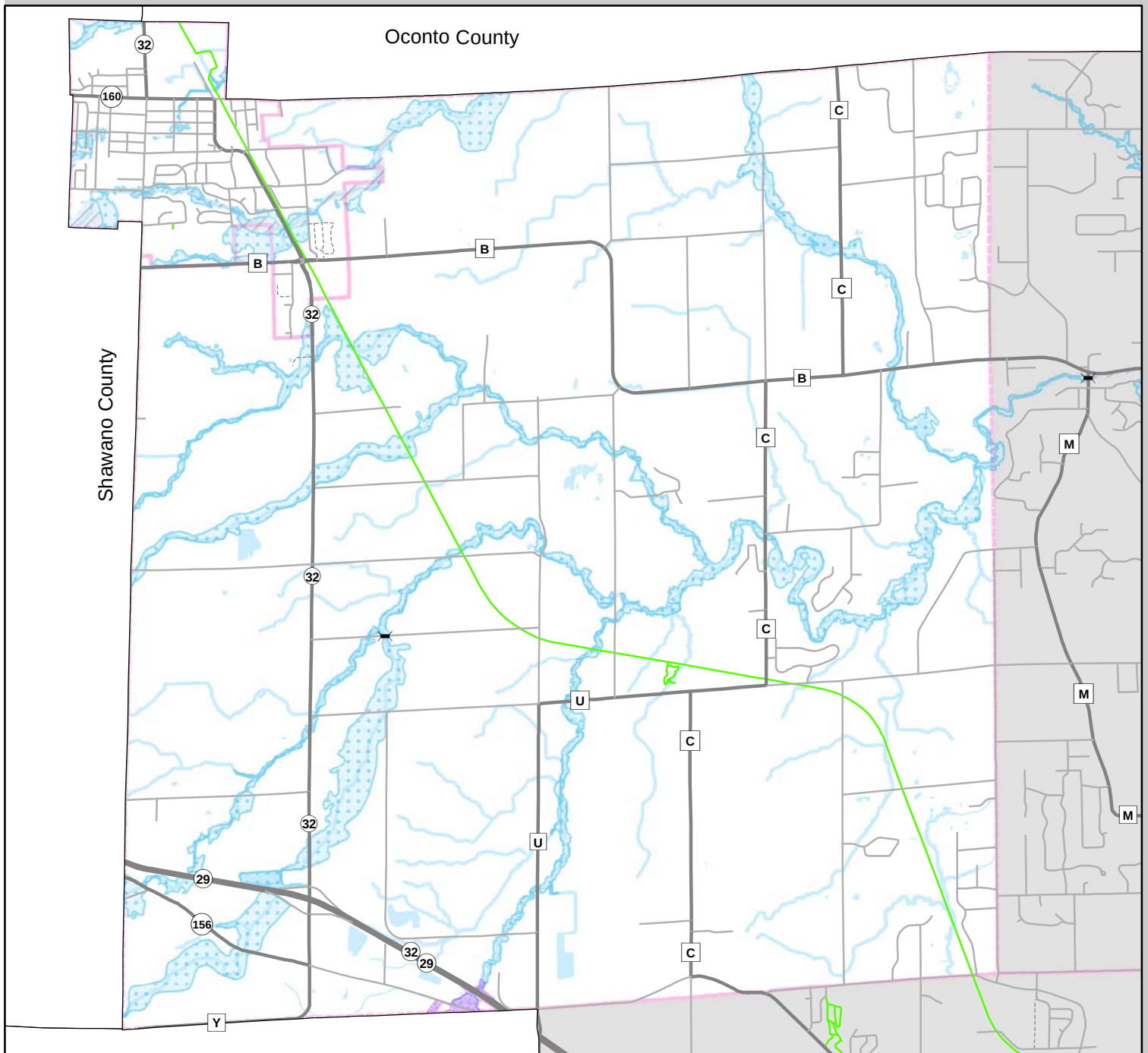
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Miles

Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Village of Pulaski and Town of Pittsfield



Map 3-15

Legend

Critical Facilities Flood Hazard

-  Bridges
-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE



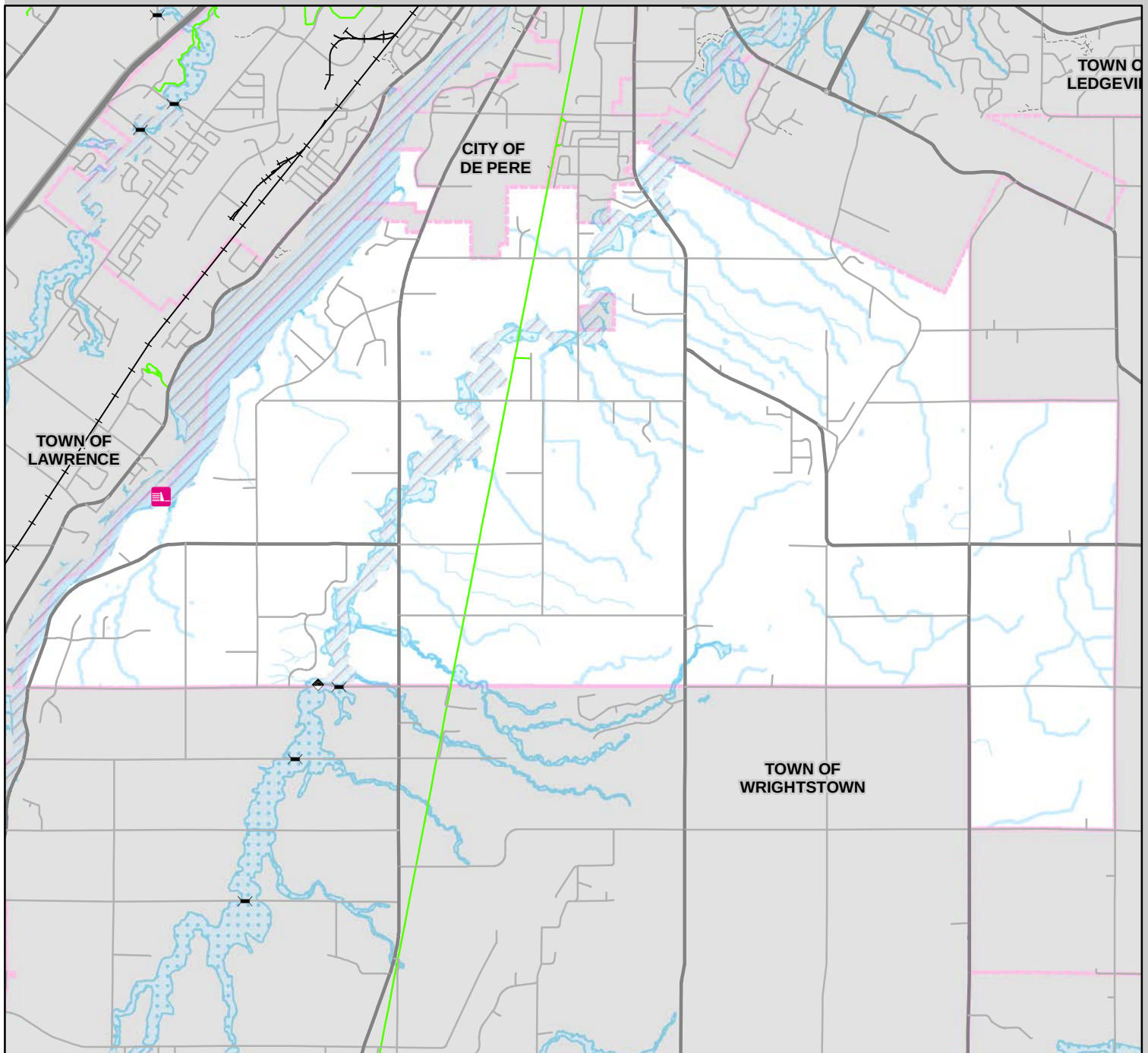
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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Town of Rockland



Map 3-16

Legend

Critical Facilities

-  Bridges
-  Dams
-  Flooding Site

Flood Hazard Areas

-  Zone A (100 year floodplain, No Base Flood elevation determined)
-  Zone AE (100 year floodplain with Base Flood Elevation determined)
-  Floodway Areas in Zone AE



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Miles

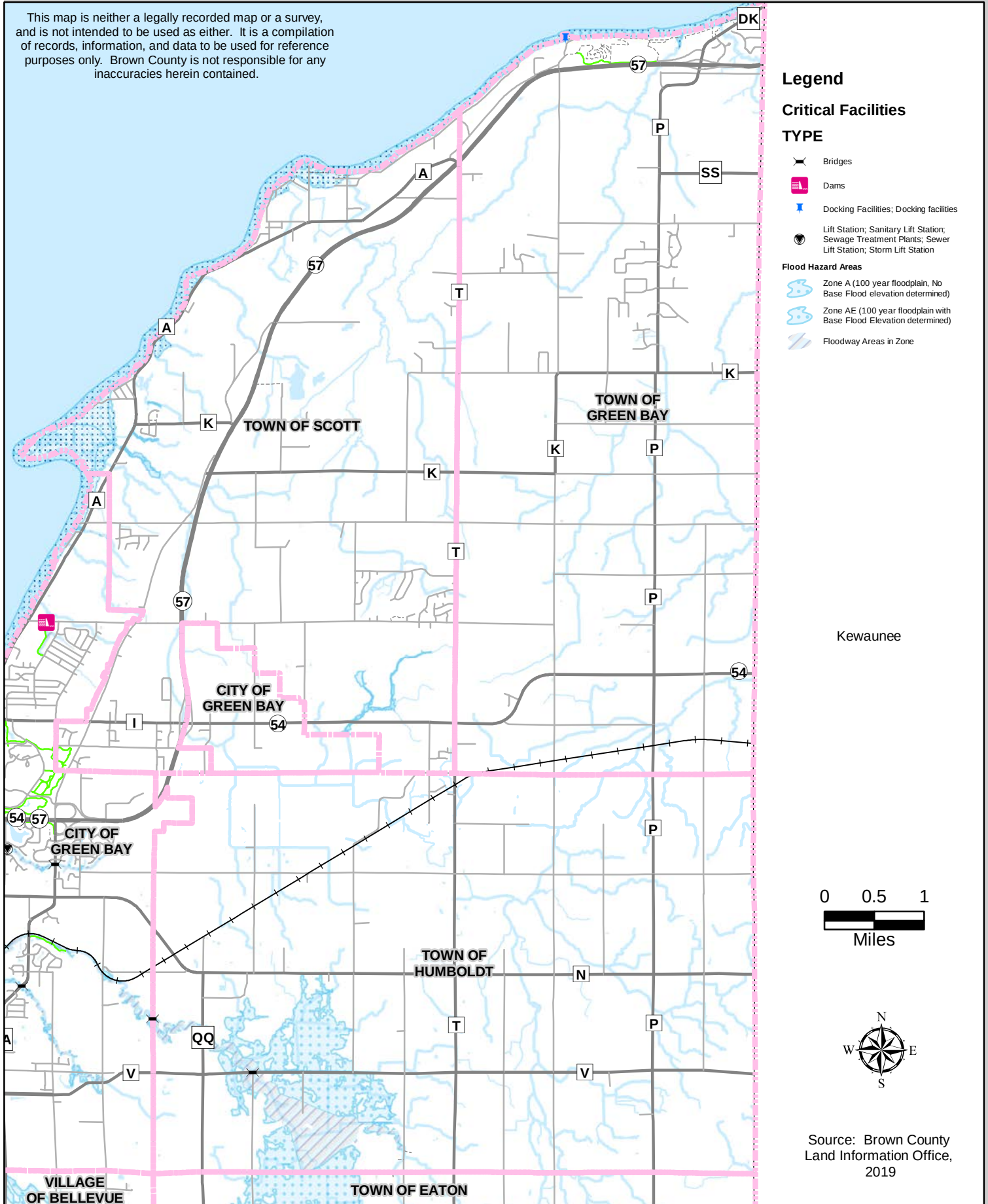
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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

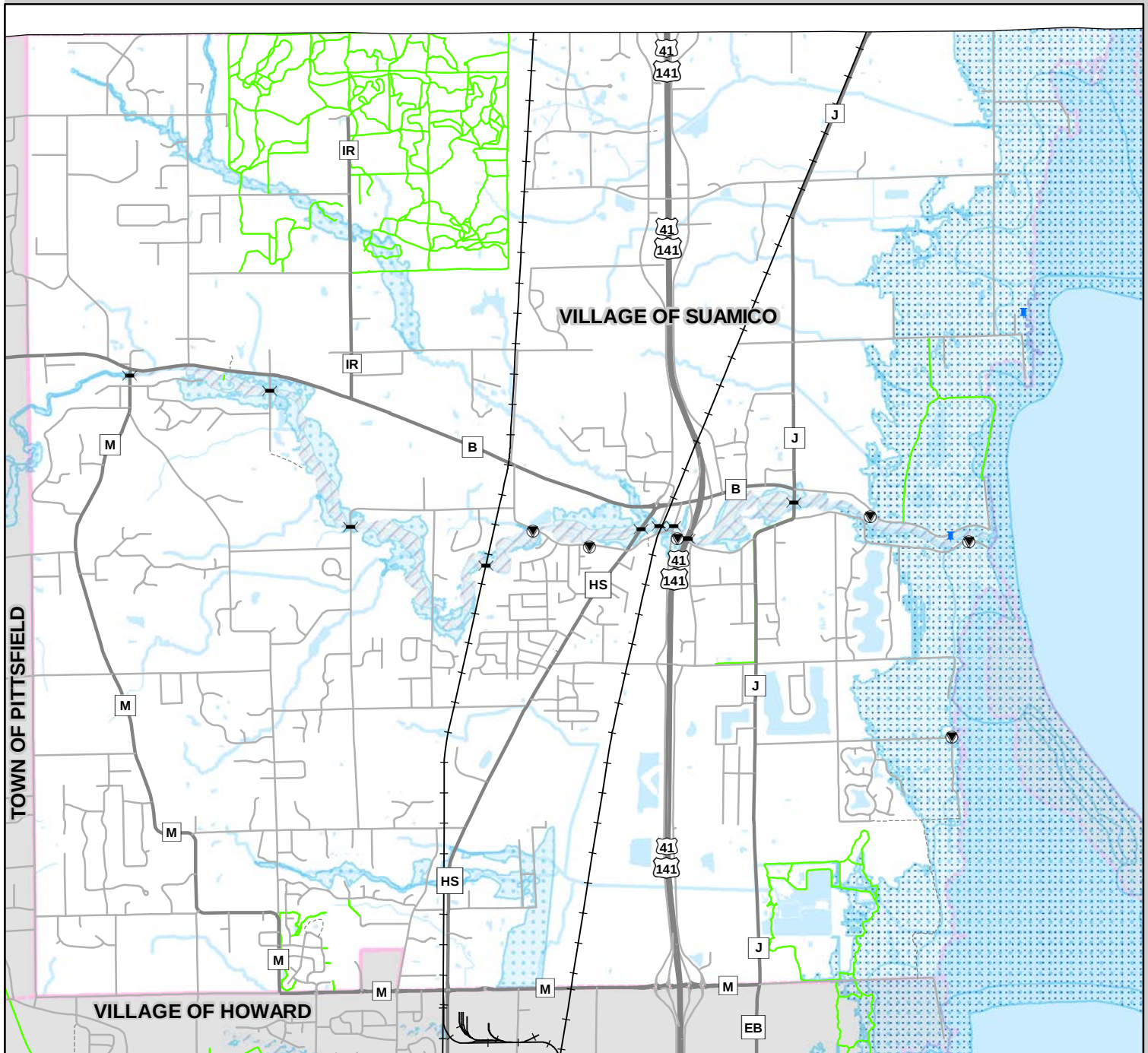
Town of Green Bay, Town of Scott, Town of Humboldt

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Brown County Critical Facilities within 100 Year Floodplain

Village of Suamico



Map 3.18

Legend

Critical Facilities

- Bridges
- Docking Facilities; Docking facilities
- Lift Station; Sanitary Lift Station; Sewage Treatment Plants; Sewer
- Lift Station; Storm Lift Station

Flood Hazard Areas

- Zone A (100 year floodplain, No Base Flood elevation determined)
- Zone AE (100 year floodplain with Base Flood Elevation determined)
- Floodway Areas in Zone AE



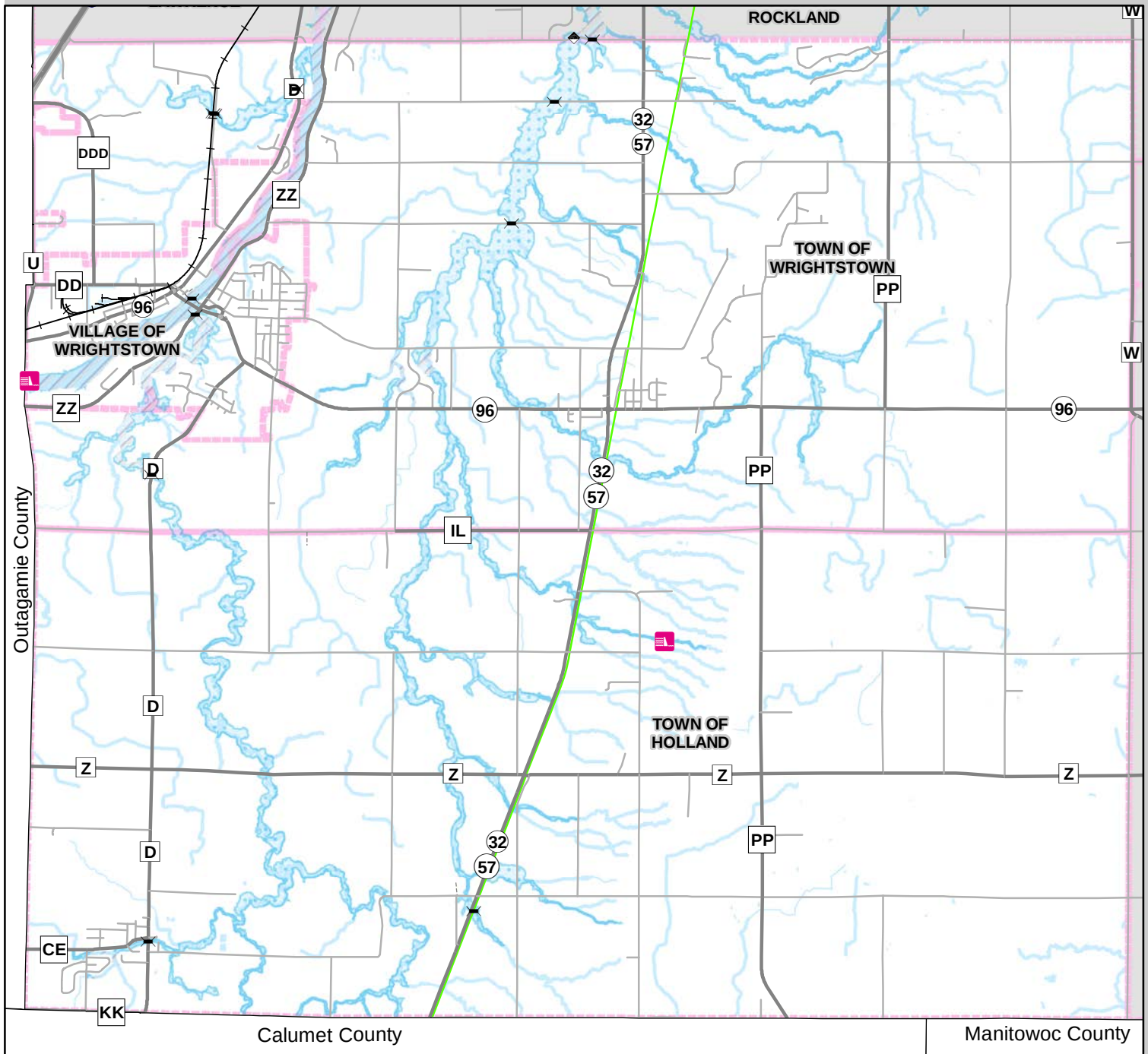
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Source: Brown County Land Information Office, 2019

Brown County Critical Facilities within 100 Year Floodplain

Village of Wrightstown and Towns of Wrightstown and Holland



Legend

Critical Facilities

- Bridges
- Dams
- Flooding Site

Flood Hazard Areas

- Zone A (100 year floodplain, No Base Flood elevation determined)
- Zone AE (100 year floodplain with Base Flood Elevation determined)
- Floodway Areas in Zone AE



0 0.5 1
Miles

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Source: Brown County Land Information Office, 2019

Public Health

While health problems associated with flooding are often not reported, three general types of health hazards accompany floods. The first hazard comes from the water itself. Floodwaters carry whatever was on the ground that the upstream runoff picked up, including dirt, oil, animal waste, and lawn, farm and industrial chemicals. Pastures and areas where livestock are kept can contribute polluted waters to the receiving streams. Floodwaters saturate the ground, which leads to infiltration into sanitary sewer lines. When wastewater treatment plants are flooded, raw sewage can flow from the facility. Infiltration and lack of treatment lead to overloaded sewer lines, which back up into low-lying areas and some homes. Raw sewage can be a breeding ground for bacteria, such as *E. coli* and other disease causing agents.

The second type of health hazard is presented after floodwaters have receded. Stagnant pools become breeding grounds for mosquitoes, and wet areas of a building that have not been thoroughly cleaned, propagate mold and mildew. A building that is not cleaned properly is especially a health hazard for small children and the elderly. Health hazards occur when heating ducts in a forced-air system are not properly cleaned after inundation. When the furnace or air conditioner is turned on, the sediments left in the ducts are circulated throughout the building and are breathed in by the occupants. If the water system loses pressure, a boil order may be issued to protect people and animals from contaminated water.

The third health hazard occurs from the long-term psychological impact of having been through a flood and seeing one's home damaged and irreplaceable keepsakes destroyed. The cost and labor needed to repair a flood-damaged home puts a severe strain on people, especially the unprepared and the uninsured. The resulting stress on those impacted takes its toll in the form of aggravated physical and mental health problems. In some cases, stress-induced hypertension, heart disease and certain cancers have been linked with traumatic events.

Safety

A frequent cause of flood fatalities occur from drowning, which can occur when a vehicle is swept into deep water and the occupants become trapped in the vehicle. Flood victims have frequently put themselves in harm's way by ignoring warnings about travel or by believing that a washed out bridge is still intact.

People have died of heart attacks from exertion during their efforts to minimize the effect of the flood. Electrocution can cause deaths during a flooding event, claiming lives in flooded areas that carry a live current created when electrical components short out. Floods can damage gas lines, floors, and stairs, creating secondary hazards such as gas leaks, unsafe structures and fires. Fires are especially damaging in areas made inaccessible to firefighting equipment by high water or flood-related road or bridge damage.

Infrastructure

Infrastructure flooding impacts include damage to roads and bridges, and sewer, water, and electrical systems. Localized infrastructure impacts include street, road,

and shoulder washouts; culvert damage; storm sewer and sanitary sewer failures; public utility damage; damage to emergency vehicles; and trail and road damage in parks. Much of this damage could lead to public service interruptions.

Transportation Route Interruptions

Loss of road access is a major flood ramification that affects all residents and businesses within the region, not just those who own property in the floodplain. Oftentimes, the inability to travel freely is only temporary, perhaps lasting several hours. The loss of transportation may last months after the disaster. When roads, bridges, or railroads are washed out by a flood, it can be weeks or months before they are repaired and usable.

A key evacuation consideration is an evaluation of the roads that have the potential for flooding and remaining submerged for long periods. This will determine how emergency personnel will enter the area to begin rescue operations and to deliver vital goods and services to residents of the area affected.

A review of the Flood Insurance Rate Map and Brown County's critical facility layer identified 113 bridge or other stream crossing sites that could potentially become inundated during a base flood. A listing of the 1 bridge or other stream crossing sites that could potentially become submerged during a base flood is listed below.

A bridge does not have to be inundated to be damaged or to cut off an evacuation route. In some cases, the bridge is above water but the access road may be flooded. In other cases, the bridge or culvert can be washed out. This is especially dangerous for a person utilizing a flooded road assuming passage is possible because the bridge is still intact.

In addition to the bridges within the floodplain, there are bridges and culverts in areas that are not included in the Flood Insurance Rate Map 100-year flood zones. Most of these areas are located along small tributary streams or are in areas that have not undergone a detailed flood study.

Table 3.3: Bridge Crossings in the 100-Year Floodplain, Brown County, Wisconsin		
Municipality	Street	Water Body
Municipality *	Street	Water Crossing
City of Green Bay	7th Street	Unnamed Tributary
Village of Ashwaubenon	Ashwaubomay Park	Ashwaubenon Creek
Village of Hobart	Brookwood Circle	Trout Creek
City of Green Bay	Chantel Street	Unnamed Tributary
Village of Ashwaubenon	Circle Drive	Dutchman Creek
City of De Pere	Creamery Road	Ashwaubenon Creek
Village of Ashwaubenon	CTH AAA/S Oneida Street	Dutchman Creek
Town of Holland	CTH D	Unnamed Tributary
Town of Wrightstown	CTH D/Lost Dauphin Road	Apple Creek
Town of Wrightstown	CTH D/Plum Road	Plum Creek
City of Green Bay	CTH EA/S Huron Road	Baird Creek

Town of Lawrence	CTH EE/Grant Street	Unnamed Tributary
Village of Hobart	CTH FF/Hillcrest Drive	Duck Creek
Village of Hobart	CTH FF/Hillcrest Drive	Trout Creek
Town of Morrison	CTH G/Dickinson Road	Branch River
Town of Morrison	CTH G/Dickinson Road	Branch River
Village of Ashwaubenon	CTH GF/W Main Avenue	Ashwaubenon Creek
Village of Bellevue	CTH GV	Unnamed Tributary
Town of Ledgeview	CTH GV	Unnamed Tributary
Town of Ledgeview	CTH GV	Unnamed Tributary
City of De Pere	CTH H/Fort Howard Avenue	Ashwaubenon Creek
Village of Ashwaubenon	CTH H/S Broadway	Dutchman Creek
Village of Suamico	CTH HS	Suamico River
Village of Howard	CTH HS/Velp Avenue	Unnamed Tributary
Village of Howard	CTH HS/Velp Avenue	Duck Creek
Village of Howard	CTH HS/Velp Avenue	Beaver Dam Creek
Village of Suamico	CTH J/Lakeview Drive	Suamico River
Town of New Denmark	CTH KB	Neshota River
Village of Suamico	CTH M	Suamico River
Village of Allouez	CTH O/Allouez Avenue	East River
Village of Bellevue	CTH O/Allouez Avenue	Unnamed Tributary
Village of Bellevue	CTH O/Allouez Avenue	East River
Town of Humboldt	CTH V/Finger Road	Baird Creek
Village of Bellevue	CTH V/Lime Kiln Road	Unnamed Tributary
Village of Bellevue	CTH XX/Bellevue Street	Unnamed Tributary
Village of Wrightstown	CTH ZZ/Washington Street	Plum Creek
Village of Bellevue	Daly Drive	Unnamed Tributary
City of Green Bay	Danz Avenue	Baird Creek
Village of Bellevue	Dorset Drive	Unnamed Tributary
City of Green Bay	E Mason Street	East River
Town of Holland	Fox River Trail	East River
Village of Bellevue	Glenmore Road	Unnamed Tributary
Town of Lawrence	Grant Street/CTH EE	Ashwaubenon Creek
Village of Bellevue	Guns Street	Unnamed Tributary
Village of Ashwaubenon	Hansen Road	Dutchman Creek
Village of Bellevue	Hazen Road	Unnamed Tributary
Town of Morrison	Hill Road	Branch River
Village of Ashwaubenon	Holmgren Way	Dutchman Creek
City of De Pere	I41 NB	Ashwaubenon Creek
Village of Howard	I41 SB	Beaver Dam Creek
City of De Pere	I41 SB	Ashwaubenon Creek
City of De Pere	I41 SB (Off Ramp)	Ashwaubenon Creek

City of Green Bay	I43	Fox River
Village of Hobart	Indian Trail	Unnamed Tributary
Village of Bellevue	Klondike Road	Sorenson Creek
Village of Howard	Lakeview Drive	Unnamed Tributary
Town of New Denmark	Langes Corner Road	Neshota River
Town of Ledgeview	Ledgeview Road	East River
CITY OF DE PERE	Main Avenue	Fox River
City of De Pere	Main Avenue	Fox River
City of Green Bay	Main Street	Fox River
Town of Wrightstown	Mallard Road	East River
Town of New Denmark	Maribel Road	Neshota River
Village of Howard	Memorial Drive	Beaver Dam Creek
Town of Lawrence	Mid Valley Drive	Ashwaubenon Creek
City of Green Bay	N Henry Street	Baird Creek
City of Green Bay	N Huron Road	Unnamed Tributary
Village of Hobart	Navajo Trail	Unnamed Tributary
Town of Lawrence	Noah Road	S Branch of Ashwaubenon Creek
Village of Bellevue	Ontario Road	Unnamed Tributary
Town of New Denmark	Park Road	Neshota River
Village of Ashwaubenon	Parkview Road	Ashwaubenon Creek
Town of Wrightstown	Partridge Road	East River
City of Green Bay	Pedestrian Bridge	East River
Village of Bellevue	Pedestrian Bridge	East River
Village of Ashwaubenon	Pilgrim Way/CTH YY	Dutchman Creek
Town of Lawrence	Quarry Park Drive	Hemlock Creek
Village of Allouez	Railroad	East River
Village of Allouez	Railroad	Fox River
Village of Allouez	Railroad	Fox River
Village of Howard	Railroad	Duck Creek
Village of Howard	Railroad	Duck Creek
Village of Suamico	Railroad	Suamico River
City of Green Bay	Railroad	Fox River
Town of Wrightstown	Railroad	Apple Creek
Village of Howard	Riverview Drive	Duck Creek
Town of Wrightstown	Rosin Road	Apple Creek
Town of Humboldt	S Northview Road	Baird Creek
Village of Hobart	seminole Trail	Unnamed Tributary
Village of Suamico	Side Street	Suamico River
City of De Pere	Southbridge Road	Ashwaubenon Creek
Village of Suamico	St Pats Road	Suamico River
Village of Ashwaubenon	STH 172	Unnamed Tributary

Village of Ashwaubenon	STH 172	Fox River
Village of Ashwaubenon	STH 172 EB	Dutchman Creek
Village of Ashwaubenon	STH 172 WB	Dutchman Creek
City of Green Bay	STH 54/East Mason	Fox River
Village of Hobart	STH 54/W Mason St	Duck Creek
Village of Wrightstown	STH 96/Broadway Street	Fox River
Village of Suamico	Stream Road	Suamico River
Town of Pittsfield	Town Hall Road	Unnamed Tributary
Village of Bellevue	Town Hall Road	Spring Creek
Village of Hobart	Trout Creek Road	Trout Creek
Village of Howard	US41/US141	Duck Creek
Village of Howard	US41/US141	Duck Creek
Village of Suamico	US41/US141 NB	Suamico River
Village of Suamico	US41/US141 SB	Suamico River
Village of Ashwaubenon	Vanderperren Way (Off Ramp)	Dutchman Creek
Village of Hobart	W Adam Drive	Unnamed Tributary
Village of Suamico	W Deerfield Avenue	Suamico River
City of Green Bay	Walnut Street	Fox River
Town of Morrison	Wayside Road	Branch River
Town of Wrightstown	Wrightstown Road	East River

Source: Brown County Planning Commission via GIS analysis

Economic

Business and Industry Disruptions

Flooding damage to businesses and industry is not as easy to identify as critical facilities. Even minor damage may result in businesses or industry closures. Businesses or industry damages or disruptions may also include loss of inventories, inaccessibility to customers or employees, and often times, employees are busy protecting or cleaning up their flooded homes and are unable to come to work

Farming

According to the 2010 Brown County Land Use Inventory, approximately 49.5 percent of Brown County is agricultural use. Brown County updated the land use inventory in 2019 which indicated that there was a slight reduction in the amount of agricultural land (48.2 percent). Crop damage and loss often occurs due to flooding, which leads to large financial losses and loss of projected income to the agricultural community.

Tourism

The tourism industry can be impacted by natural disasters such as a flood. Most notable is a recent story on Wisconsin Public Radio from September of 2018, which discussed and noted the impacts of heavy rains across the state. Heavy rains and high lake and stream levels lead to the closure of outdoor recreation facilities (parks & trails) road closures that disrupted trade.

Other industries that are oftentimes negatively impacted include boating/charter fishing, golfing, and eco-tourism. Boating and charter fishing would be impacted because of the relatively unstable conditions on Lake Michigan and on area rivers making this activity unsafe. Golfing would be impacted because of anticipated erosion, flooding, and other damage on area golf courses. Eco-tourism visitors are seeking outdoor interaction with nature, which may be unwelcoming after flooding due to inaccessibility in many saturated areas. Transportation to tourist destinations in the area could also be impacted, and hotels and restaurants could sustain damage under severe flooding conditions.

Other

Public expenditures on flood fighting, sandbags, fire, and police calls, clean up, and on repairs to damaged public property affect all residents of the planning area, not just those in the floodplain. Federal assistance is not always available for smaller, more localized floods, and it cannot be counted on in the future. In addition, public agencies are required to purchase insurance on flood prone buildings. The amount of insurance that should be carried is deducted from disaster assistance payments.

Areas at Greatest Risk

The area inundated by the base flood is the “base floodplain.” FEMA maps (called Flood Insurance Rate Maps, or FIRMs) also call this the Special Flood Hazard Area, or “A Zone.”

Areas affected by flood hazards in the planning area include areas adjacent to rivers, creeks, lakes and other bodies of water. These bodies of water include The Bay of Green Bay; Fox River; East River, Suamico River, Duck Creek, Ashwaubenon Creek, Plum Creek, Dutchman Creek, Lily Lake, Middle Lake, Third Lake; and numerous other small rivers and streams.

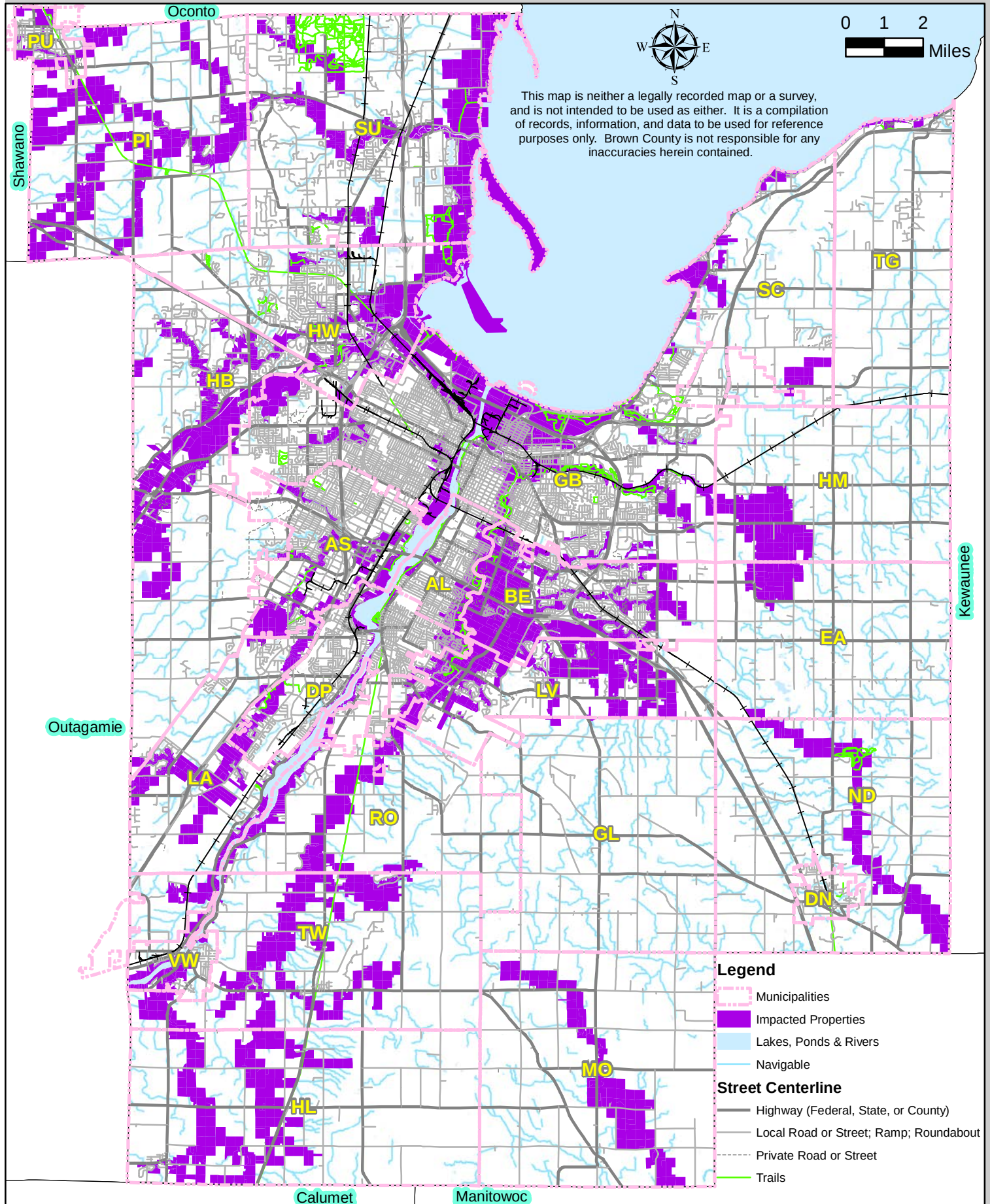
The central part of the floodplain is referred to as the “floodway.” The floodway is the channel and that portion of the adjacent floodplain that must remain open to permit passage of the base flood. Floodwaters generally are deepest and swiftest in the floodway, and anything in this area is in the greatest danger during a flood. The remainder of the floodplain is called the “fringe,” where water may be shallower and slower.

Floodplains (including floodways and flood fringes) are subject to special development regulations, as explained at the end of this section. The following maps highlight the location and breadth of properties susceptible to the 100 year or 1 percent storm event.

Property Impacted by the 0.2 Percent (500 year) Flood

Brown County All Hazard Mitigation Plan

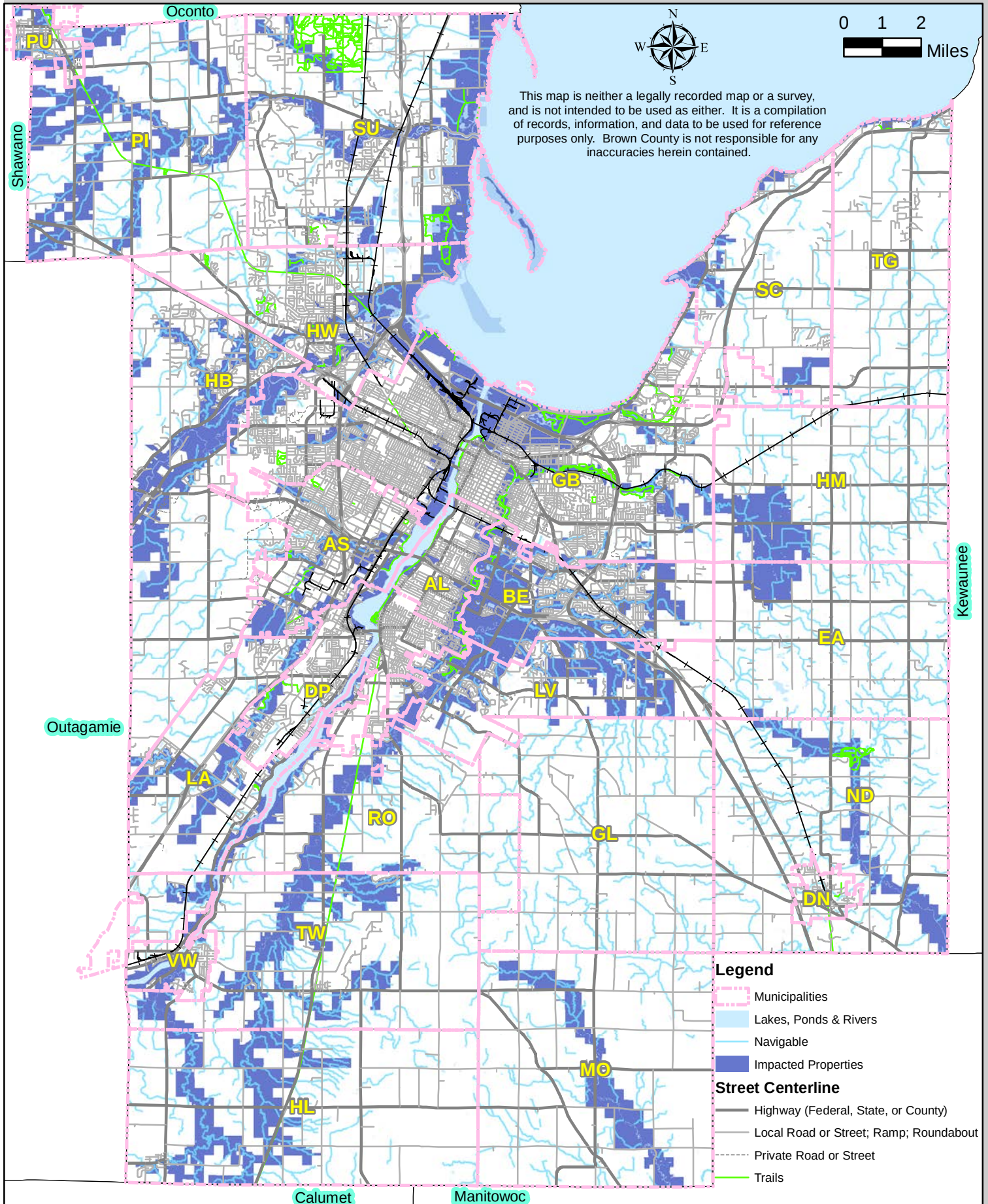
Brown County, WI



Property Impacted by the 1 Percent (100 year) Flood

Brown County All Hazard Mitigation Plan

Brown County, WI



Impact to Existing and Future Buildings

The cities of Green Bay and De Pere; the villages of Ashwaubenon, Allouez, Bellevue, Hobart, Howard, Suamico, and the towns of Lawrence, Ledgeview, Pittsfield, and Scott each had buildings on over 300 parcels potentially impacted by the base flood. The following table provides a breakdown of all Brown County communities and the number of impacted parcels and the total value based on those parcels. There are numerous vacant parcels located within the base floodplain that have potential for development that would be subject to floodplain zoning restrictions.

Table 3.4: Potential Flood Impact Based on FEMA Flood Mapping		
Municipality	Parcels Impacted	Total Value*
City of De Pere	653	\$232,937,900.00
City of Green Bay	4059	\$786,842,600.00
Town of Eaton	42	\$4,029,200.00
Town of Glenmore	5	\$855,100.00
Town of Green Bay	192	\$52,827,100.00
Town of Holland	223	\$24,175,400.00
Town of Humboldt	101	\$8,996,300.00
Town of Lawrence	481	\$125,025,700.00
Town of Ledgeview	811	\$287,292,300.00
Town of Morrison	94	\$9,253,300.00
Town of New Denmark	88	\$8,657,700.00
Town of Pittsfield	321	\$44,117,300.00
Town of Rockland	167	\$49,345,600.00
Town of Scott	343	\$75,049,000.00
Town of Wrightstown	287	\$35,056,800.00
Village of Allouez	729	\$125,655,700.00
Village of Ashwaubenon	563	\$328,626,900.00
Village of Bellevue	1249	\$426,431,700.00
Village of Hobart	466	\$93,457,600.00
Village of Howard	783	\$185,785,300.00
Village of Pulaski	178	\$28,291,300.00
Village of Suamico	765	\$128,553,900.00
Village of Wrightstown	159	\$21,805,300.00
Total	12759	\$3,083,069,000.00

*Values are based on 2019 Brown County tax parcels total value

Brown County is the third fastest growing county in the State of Wisconsin as a percentage of population growth⁹. According to Wisconsin Department of Administration calculations, the Brown County population is expected to grow by 41,730 residents between the years 2020 and 2040. Based on an average of 2.46 persons per household, these new residents will need an additional 16,963 housing units within the 20-year time period. The result will be a need for more than 8,482 acres for new residential development with an average lot size of one-half acre. The fastest growing communities within this planning period are the Towns of Ledgeview and Lawrence and the Village of Hobart. Future acreage calculations, based on residential land use projections, were also made for future commercial and industrial development in the county. By 2040, there will be a need for an additional 758 acres for commercial businesses and another 1,022 acres for industrial operations. In comparison, the county will continue to lose agriculture land to accommodate these other land uses. It is expected that Brown County will lose approximately 10,494 acres of farmland during the same time period¹⁰. With Brown County's rapid growth in residential, business, and public facilities (structures and recreational areas), some of the development will occur in areas susceptible to flooding. The flood-plain designation does not eliminate construction but defines the risks of having a 26 percent chance of experiencing a flood during the life of a 30-year mortgage compared to a 9 percent chance of a fire.

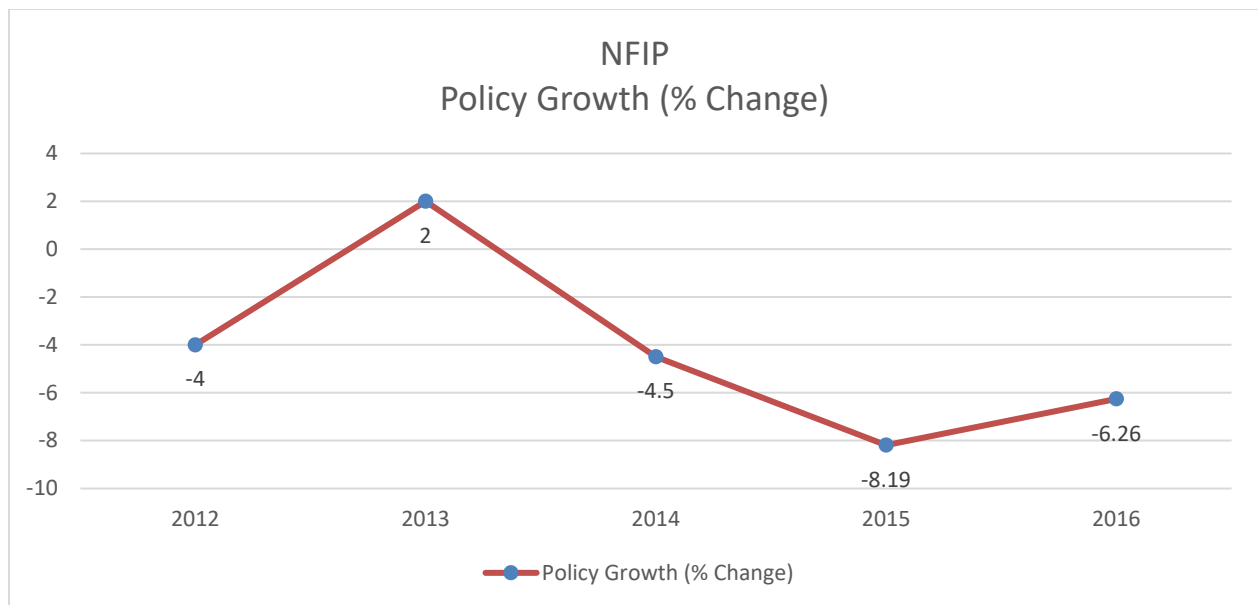
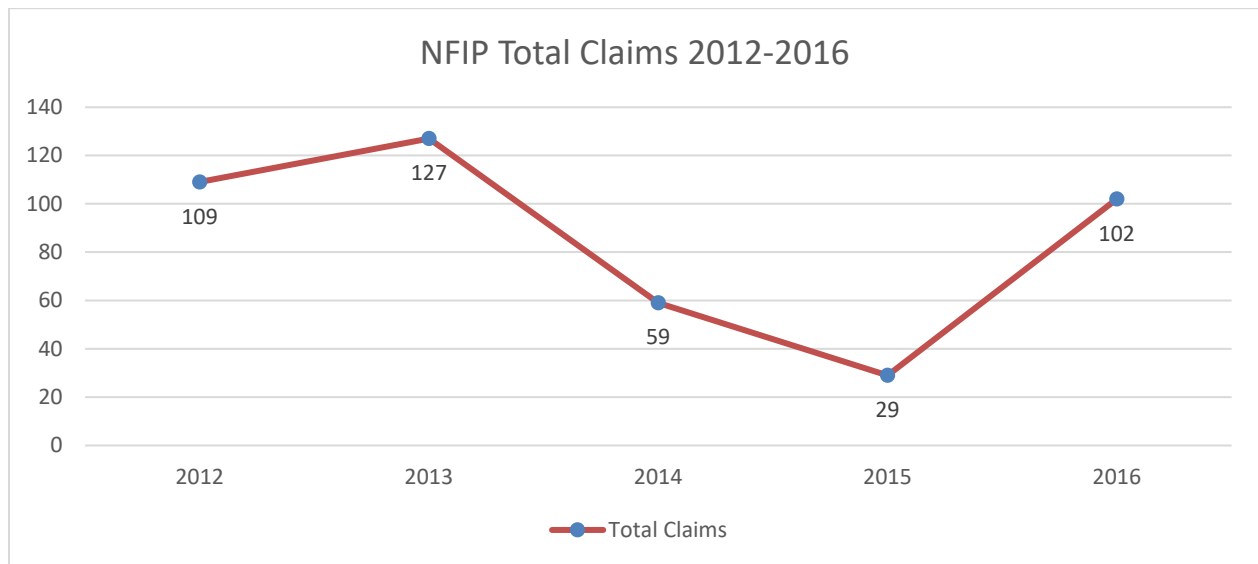
Flood-risk maps for Brown County were reviewed by residents and local officials, and then approved by the Brown County Board of Directors in 2009. The maps are the result of five years of work by the Federal Emergency Management Agency and Wisconsin Department of Natural Resources, which were directed by the U.S. Department of Homeland Security to modernize flood-risk maps into a countywide format. The updated maps from 2009 were used as a tool to prepare this hazards mitigation plan. The maps reflect the best information available in identifying high-risk areas within each community. Any changes to the floodplain maps during the review process will impact critical facilities and flood-risk assessment for future development in the county. Map revisions will be noted and incorporated during the updating of this hazards mitigation plan.

A majority of the county's floodplains can be found along the southern rim on the bay of Green Bay of Lake Michigan (densely developed areas of the county) and along the East River and other smaller tributaries in the Village of Bellevue and the Town of Ledgeview where development is occurring at a fast pace. The 2009 FEMA maps have not seemed to have had any effect on the pace of development in areas designated as floodplains over the last 10 years. Given these trends/observations, it is estimated that there will still be significant growth in and adjacent to flood-prone areas. The improved value of structures located in designated floodplains was over \$2.3 billion in 2019. With continued residential, commercial, and industrial development occurring in Brown County, there is potential for an increase in the value of existing buildings within these areas due to redevelopment efforts.

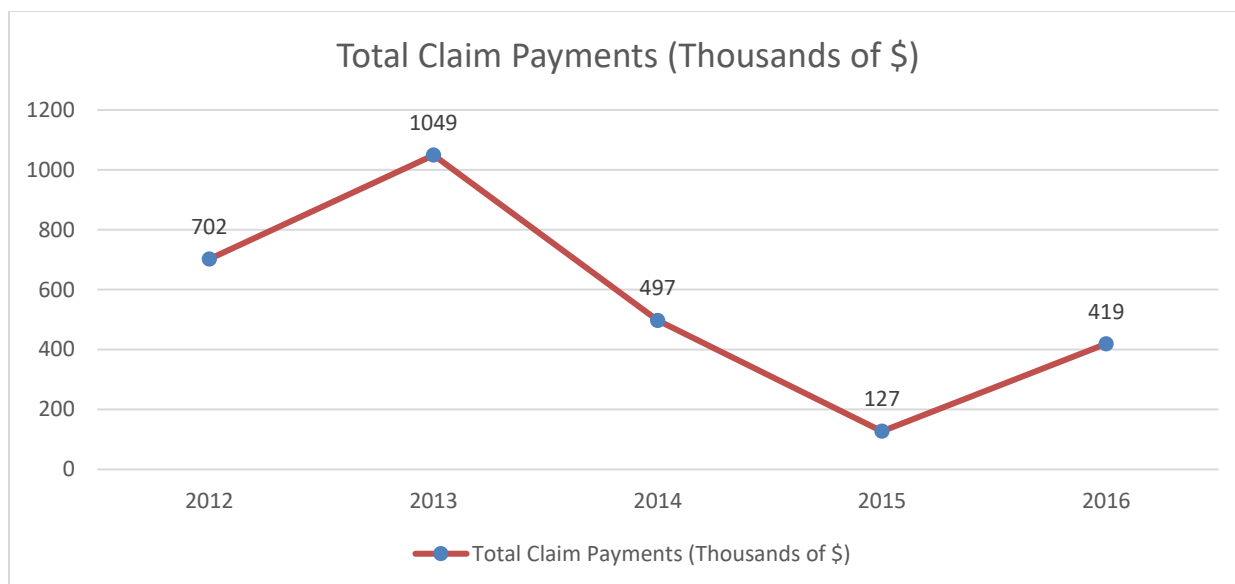
⁹ Brown County Population: <http://worldpopulationreview.com/us-counties/wi/>

¹⁰ Brown County Comprehensive Plan Update 2020

A review of FEMA NFIP claim data revealed that the state of Wisconsin had an average of 85 claims on an annual basis from 2012-2016. During this same time period the number of policies and the total claim payments typically declined with the exception of 2013 where both saw growth¹¹.



¹¹ FEMA.gov – Policy and Claim Statistics for Flood Insurance



Repetitive Loss Properties

Repetitive loss properties are those that have sustained flood damage on two or more separate occasions over a ten-year period and the cost of repairs from the flood damage meets or exceeds 25 percent of the market value of the property before the damage occurred.

Brown County has 12 repetitive loss properties which vary in use from residential to commercial. Due to privacy concerns the data has been generalized by community in the following table and the property locations were used to derive values from the Brown County Treasurer office.

Community	# of Properties	Total Improved Value*	Total Value*
V of Ashwaubenon	1	138,500	195,300
C of Green Bay	7	497,700	645,000
V of Howard	2	173,000	218,500
V of Suamico	1	92,100	128,700
T of Holland	1	141,400	180,900

*Values based on 2020 tax information – Brown County Treasurer's Office.

Relationships to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Fire. Fire can occur due to compromised infrastructure such as electrical and natural gas systems. In addition, fire trucks are unable to pump water if floodwaters are deep enough to reach the tailpipe of the truck.

Hazardous Materials. Hazardous material releases can occur due to improper storage of materials in floodplains.

Infectious Disease. Infectious disease outbreaks are possible during prolonged flood events in areas sensitive to disease vectors.

Wastewater Treatment Plant Failure. Wastewater treatment plant failure can occur if facilities are not adequately protected from flooding, excessive clearwater inflow and infiltration into the system, or protection is weakened.

Transportation Disruption. Disruptions of transportation routes via roads, bridges, railroads, and water can be disrupted due to inundation and/or substantial flow velocities.

Power Outages. Power outages can occur if portions of the electrical grid are damaged by floodwaters.

Plans and Programs

Emergency Operations Plan. The *Brown County Emergency Operations Plan* outlines procedures for the County in response to a variety of hazards. During a flood event the Emergency Management Director works with local officials to ensure public health and safety and maintain transportation routes.

National Flood Insurance Program (NFIP). In 1968, Congress created the National Flood Insurance Program in response to the rising costs of taxpayer funded disaster relief. The Federal Emergency Management Agency (FEMA), Mitigation Division manages the NFIP, and oversees the floodplain management components of the program, with state coordination through the Wisconsin DNR.

National Weather Service. The National Weather Service in Green Bay provides weather, hydrologic, and climate forecasts and warnings for northeastern Wisconsin.

Sewer Service Area Review. Development in floodplains, wetlands, and other environmentally sensitive areas has been limited through such mechanisms as the sewer service extension review process.

Floodplain Ordinance. Brown County regulates development within the floodplain through its Floodplain Ordinance. The Floodplain Ordinance, which is Chapter 23 of the Brown County Code of Ordinances, can be found in Appendix E. This ordinance can be a useful tool in keeping inappropriate development out of many flood hazard zones in the planning area. Floodplain overlay zoning ordinances (where they exist in local jurisdictions within the planning area) can also help to deter development in flood hazard zones.

Provisions of Plans and Policies that Regulate Development

Various local comprehensive plans produced for local communities in Brown County have addressed regulation of development in floodplains, watersheds, and natural resource areas in various ways. Most of these plans addressed this in their goals, objectives, and policies in the natural resources chapter (or equivalent) in the plan; and through the general plan design chapter of the plan.

Brown County addresses regulation of development in floodplains, watersheds, and natural resource areas in the 2004 Brown County Comprehensive Plan. The following is a list of communities in Brown County with a comprehensive plan and the year of plan adoption:

Town of Eaton	2012	Village of Allouez	2015
Town of Glenmore	2016	Village of Ashwaubenon	2016
Town of Green Bay	2019	Village of Bellevue	2012
Town of Holland	2019	Village of Hobart	2006
Town of Humboldt	2006	Village of Howard	2012
Town of Lawrence	2016	Village of Suamico	2016
Town of Ledgeview	2015	Village of Pulaski	2017
Town of Morrison	2016	Village of Denmark	2020
Town of New Denmark	2020	Village of Wrightstown	2016
Town of Pittsfield	2019	City of De Pere	2010
Town of Scott	2006	City of Green Bay	2002
Town of Wrightstown	2018		

The Brown County Planning Commission (BCPC) has tools to limit development within the FEMA flood hazard zones in the planning area. BCPC develops sewer service area plans for Brown County Sewer Service Area and takes into account preservation of natural features and minimization of future development in flood hazard areas near bodies of water. BCPC reviews proposals for development in Brown County for consistency with the sewer service area plan.

Gaps and Deficiencies

As detailed above, some structures that are susceptible to repetitive loss remain in the floodplain placing the structures at high risk of total loss. Filling within the floodplain for land reclamation is also an issue that continues to be of concern. As state and federal funds become available, Brown County should work with local municipalities to purchase floodplain structures and advocate for limiting or banning the filling of floodplain areas.

Tornadoes/High Winds

A tornado is characterized by a rapidly rotating column of air spawned by a cumulonimbus cloud. When a tornado forms and drops to the ground, it can create significant damage and loss of life. A tornado is a relatively short-lived storm and is nearly always visible as a funnel, although its lower end does not always necessarily touch the ground. Wind speeds vary greatly in tornados and are hard to measure. However, more sophisticated measuring tools are being developed and climatologists and meteorologists know that wind speeds within a tornado can be between 40 and 300 plus miles per hour.

A tornado path averages about five miles and will typically last about 10 minutes in length. The width of a tornado can vary greatly from about 300 feet all the way up to a mile or more in width¹². Some thunderstorm complexes can have formed groups of two or more funnels traveling together. On average, tornadoes move between 25 and 45 miles per hour, but speeds over land of up to 70 miles per hour have been recorded.



Figure 3 Source: American Museum of Natural History

Table 3.4 shows the Enhanced Fujita Scale, which has been recognized as the acceptable tornado magnitude measurement rating. In 2007 the Fujita scale was updated to the Enhanced F Scale (EF Scale) for operational use in the United States¹³. The EF Scale accounts for different degrees of damage that occur with different types of structures, as well as damage to things other than structures. The scale was revised to reflect better examinations of tornado damage surveys to align wind speeds more closely with associated storm damage.

The destructive power of a tornado results primarily from high wind velocities and sudden changes in pressure. Since tornadoes are generally associated with severe storm systems, they are usually accompanied by other “hazardous” conditions including; hail, torrential rain, and intense lightning. Depending on their intensity, tornadoes can uproot trees, down power lines and destroy buildings. Flying debris can cause serious injury and death. Tornado damage is categorized by determining damage to structures and other features such as described in the following figure.



Figure 4 Source: National Weather Service - Tuscaloosa-Birmingham Tornado

¹² <https://www.encyclopedia.com/earth-and-environment/atmosphere-and-weather/weather-and-climate-terms-and-concepts/tornado>

¹³ <http://www.spc.noaa.gov/fag/tornado/f-scale.html>



F0 Light: Chimneys are damaged, tree branches are broken, shallow-rooted trees are toppled.



F1 Moderate: Roof surfaces are peeled off, windows are broken, some tree trunks are snapped, unanchored mobile homes are overturned, attached garages may be destroyed.



F2 Considerable: Roof structures are damaged, mobile homes are destroyed, debris becomes airborne (**missiles** are generated), large trees are snapped or uprooted.



F3 Severe: Roofs and some walls are torn from structures, some small buildings are destroyed, non-reinforced masonry buildings are destroyed, most trees in forest are uprooted.



F4 Devastating: Well-constructed houses are destroyed, some structures are lifted from foundations and blown some distance, cars are blown some distance, large debris becomes airborne.

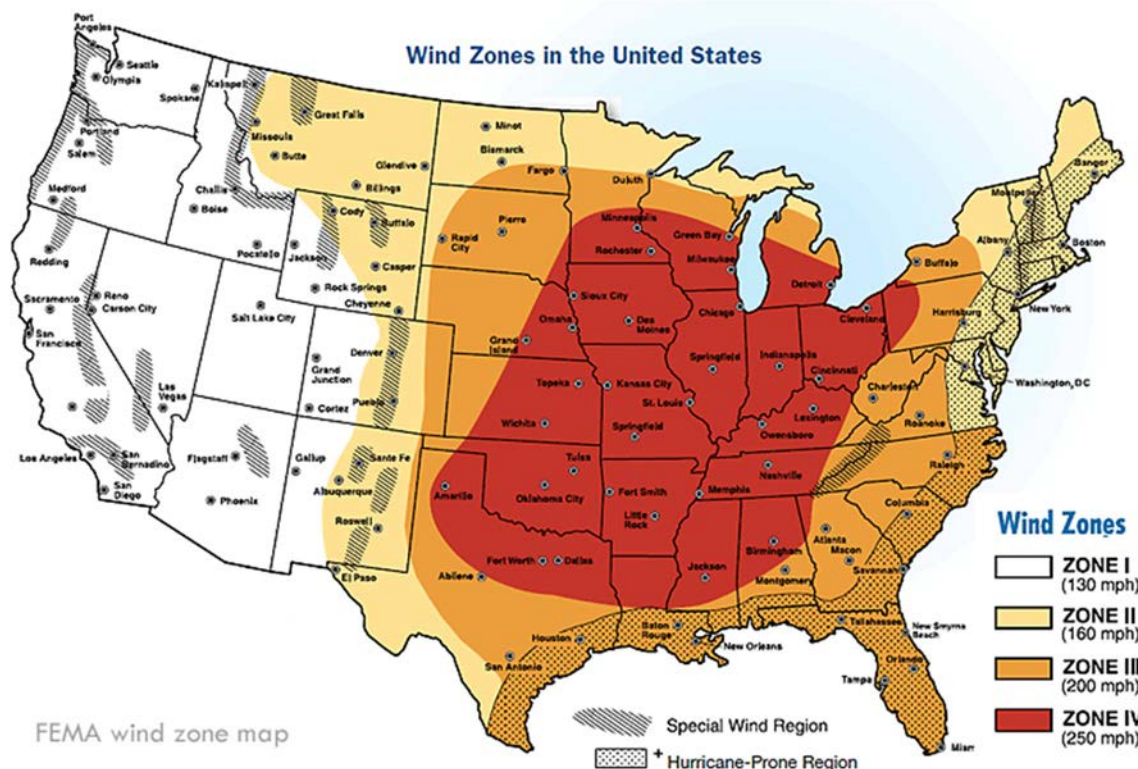


F5 Incredible: Strong frame houses are lifted from foundations, reinforced concrete structures are damaged, automobile-sized missiles become airborne, trees are completely debarked.

F0, F1, AND F2 IMAGES COURTESY OF ANDREW DEVANAS, FLORIDA DIVISION OF EMERGENCY MANAGEMENT
F3, F4, AND F5 IMAGES COURTESY OF NOAA, NATIONAL SEVERE STORMS LABORATORY (NSSL)

Figure 5 Source: FEMA, Understanding the Hazards

Based on 50 plus years of tornado history and more than 100 years of hurricane history, the United States has been divided into four zones that geographically reflect the number and strength of extreme windstorms. FEMA Wind Zone IV, which includes most of the southern two-thirds of Wisconsin, has experienced the most and the strongest tornado activity that has affected the entire U.S., with wind speeds of up to 250 miles per hour being recorded at some point. This zone includes the entirety of Brown County.



Wisconsin lies along the northern edge of the nation's maximum frequency belt for tornadoes (commonly known as "tornado alley"), which extends northeastward from Oklahoma into Iowa and then across to Michigan and Ohio. Generally, the southern and western portions of Wisconsin have a higher frequency of tornadoes; however, every county in Wisconsin is susceptible to tornado damage. Tornadoes have occurred in Wisconsin in every month except February.

Wisconsin's tornado season runs from the beginning of April through September. The most severe tornadoes statewide typically occur during the months of April, May and June. Many tornadoes strike in late afternoon or early evening. However, tornadoes have occurred during other times of the day. Personal property damage, deaths and injuries have and will continue to occur due to tornado events in Wisconsin.

History

According to National Weather Service, a department of NOAA, Brown County has experienced 28 tornadoes since data was kept in 1950. The following map is a state wide count of Tornado activity in the state of Wisconsin since 1844 through 2014.

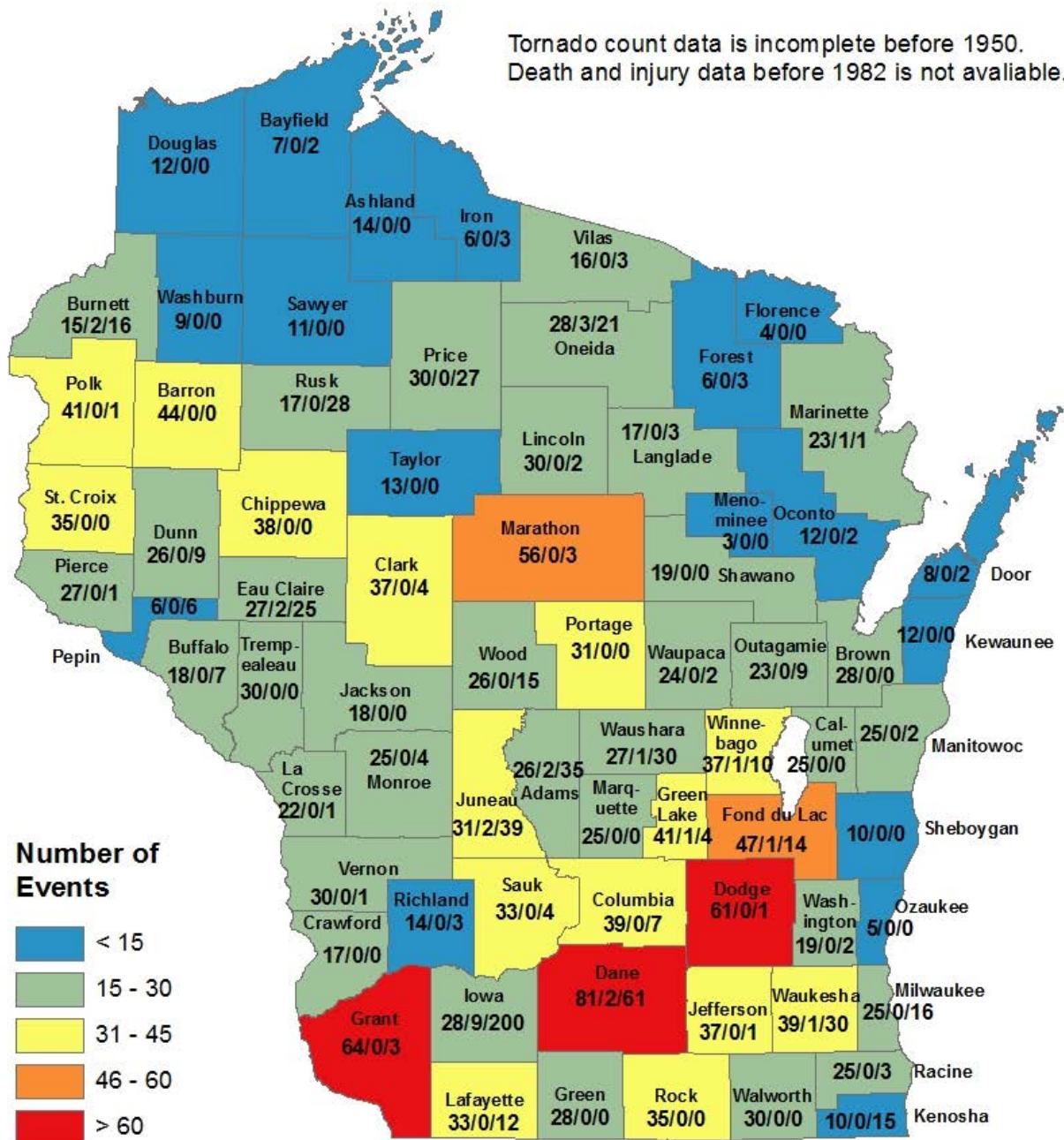


Wisconsin Tornado Events 1844 - 2014

Events / # Deaths / # Injuries



Tornado count data is incomplete before 1950.
Death and injury data before 1982 is not available.



Tornadoes 1990-Present

May 16, 1992

The F1 tornado was 1 mile long and 100 yards wide and caused 250,000 dollars in property damage.

June 17, 1992

The F0 tornado was 23 yards wide.

June 23, 2004

The F0 tornado was 10 yards wide and occurred in Green Bay.

August 18, 2005

The F1 tornado was 1 mile long and 100 yards wide and caused 10,000 dollars in property damage in Wrightstown.

September 13, 2005

The F0 tornado was 2 miles long and 50 yards wide and caused 5,000 dollars in property damage in De Pere.

August 20, 2010

The EF1 tornado touched down 2 miles southeast of Greenleaf, where several trees were snapped and uprooted. The tornado then destroyed a relatively new barn. Pieces of the barn were strewn over 100 yards from the site. About 50 to 100 yards on either side of the damaged barn small outbuildings and trees were untouched. The tornado, estimated to be approximately 75 feet wide, continued east-northeast to another farm and heavily damaged another building. Large parts of the metal roof were thrown over 200 yards. Numerous trees along the path were snapped or uprooted. Estimated maximum winds were 90 mph.

The tornado was on the ground for 1.28 miles before dissipating just north of the Holland State Wildlife Area.

April 10, 2011

A brief tornado touched down about a mile and a half south of Greenleaf. The tornado damaged the tops of two silos then ripped the roof off a barn. Average path width was 75 yards.

August 6, 2013

The EF0 tornado that developed 2.7 miles east-northeast of Mackville in Outagamie County at 12:40 am CDT moved into Brown County, entering near Highway 41, 1.8 miles northwest of Wrightstown. The tornado first hit the Apple Creek Campground, snapping 50 trees and knocking over two camping trailers. As the tornado moved across the southern part of the county, at least 70 homes sustained at least minor damage, many from fallen trees. A large, free-standing garage was heavily damaged when the tornadic winds blew in two garage doors, causing the roof to be ripped off. The tornado proceeded on to Manitowoc County. Average path width of the tornado in Brown County was 175 yards and the tornado was on the ground for 15.22 miles.

August 6, 2013

This tornado is associated with the above tornado, however, the storm, at one point, produced winds that caused enough damage that it was upgraded to an EF1. The tornado dissipated about 3 miles west of Morrison. The average path width of the tornado in Brown County was 125 yards and was on the ground for 7.84 miles.

August 6, 2013

The EF1 tornado that touched down in Outagamie County, 3.5 miles east of Greenville, briefly moved across far southwest Brown County near Holland. A few trees were knocked over by the tornado in Brown County. The average path width was 150 yards and was on the ground for 1.48 miles before moving into Calumet County.

August 6, 2013

A EF1 tornado formed in eastern Brown County and moved east-southeast into Kewaunee County. A couple dozen trees were damaged and uprooted before it moved into Kewaunee County. Average path width in Brown County was 75 yards and the tornado was on the ground for 5.53 miles.

June 15, 2015

A weak, brief tornado produced very minor (EF0) damage near Glenmore, about eight miles southeast of Green Bay. A swing set was toppled, and a small metal shed was pushed 20 feet. The tornado was approximately 25 yards wide and was on the ground for 0.35 miles.

June 14, 2017

A weak tornado caused minor tree damage. Average path width in Brown County was 50 yards and the tornado was on the ground for 1.21 miles.

Storm Events Source: NOAA Storm Events Database – Tornadoes

Funnel Clouds and Waterspouts 1990-Present

July 5, 1994

A funnel cloud was reported in Denmark at 3:40pm on July 5, 1994.

July 29, 1996

Numerous cold-air funnels were observed around Green Bay, especially southeast of the city. A couple of the funnel clouds could be seen from the Green Bay National Weather Service office.

August 31, 1996

Weak thunderstorms developing along a lake breeze boundary spawned several funnel clouds in the Bellevue and Langes Corners areas. The funnel clouds prompted approximately 150 calls to the Brown County sheriff department.

July 7, 2010

A funnel cloud was spotted near Interstate 43 just north of Denmark.

April 10, 2011

A funnel cloud was spotted at Cooperstown Road near Denmark.

June 15, 2015

A funnel cloud was observed near Shirley, Town of Glenmore, as it moved southeast.

June 17, 2017

A narrow funnel cloud formed north of Denmark in eastern Brown County. The funnel was visible from other nearby counties.

Storm Events Source: NOAA Storm Events Database – Funnel Clouds & Waterspouts

High Winds/Strong Winds 1990-Present

April 6, 1997

A strong cold front ushered in wind gusts over 50 mph across much of northeast Wisconsin. Winds were measured as high as 54 mph in Green Bay. Many trees were reported down, signs were blown over and power was lost in several locations across northeast Wisconsin. A few houses sustained damage from fallen trees. The high wind event caused 149,000 dollars over property damage over a 22-county area.

March 9, 1998

Strong winds developed as a winter storm, which brought snow to northeast and central Wisconsin, moved away from the state. Official wind gusts reached 45 mph in Green Bay. The strong winds knocked some power poles down and blew tree limbs onto power lines, causing power outages. The wind also whipped the new snow around, producing low visibilities. The high wind event caused 15,000 dollars in property damage over a 9-county area.

July 28, 1998

Strong winds, which developed from a strong pressure difference in the wake of a departing thunderstorm complex, produced damage across parts of central and east central Wisconsin. Trees and power lines were knocked down in many locations. Significant wind damage to structures appeared to be limited to Outagamie and Brown counties. In West De Pere, a storage building collapsed and the roof was taken off about half of another storage building. A tree fell onto a house in De Pere, crashing through a bedroom window. Other measured wind gusts included 55 mph in Green Bay. The high wind event caused 30,000 dollars in property damage across a 13-county area.

November 10, 1998

An intense area of low pressure moved across the Midwest on November 10, 1998, producing very high winds, rain, and snow across the region. The low, which tracked from central Iowa to western Lake Superior, resulted in record minimum pressures in Iowa and Minnesota and an unusually widespread high wind event across Wisconsin. The strong winds lasted for much of the day. Trees, street signs and power poles were damaged or destroyed by the strong winds across northeast, central and north central Wisconsin. Numerous semi-trailers were blown over on area highways, necessitating the closure of the Tower Bridge (Interstate 43) in Green Bay. Trees and power poles were blown down in many locations across the region. The wind was also responsible for numerous power outages across the region. Some areas were without power for nearly 3 days. A strong gust of 65 mph was recorded in Suamico, and one of 63 mph was recorded in Green Bay. The high wind event caused 1,000,000 dollars in property damage across a 22-county area.

March 17, 1999

Strong west to northwest winds developed across much of Wisconsin as an intense area of low pressure moved from southern Lake Superior to near Lake Huron. The strong winds began in the early afternoon of the March 17, 1999 and continued until very early on the 18th. Numerous gusts near 50 mph were recorded across central and east central Wisconsin including 48 mph in Green Bay. Strong winds in Green Bay knocked out electricity to 3,200 homes and downed a large tree limb along a busy street.

December 26, 1999

Strong winds developed behind a cold front as the front moved through Wisconsin. Numerous gusts in the 40 to 50 mph range were recorded across north central, northeast, central, and east central Wisconsin.

March 25, 2000

Strong winds blew as sinking air behind a cold front brought stronger winds from higher levels of the atmosphere down to the surface. Sustained winds were mainly 30 to 40 mph with gusts in the 40 to 50 mph range.

April 5, 2000

Strong winds blew across central and east central Wisconsin behind a strong cold front. Sustained winds were mainly in the 25 to 35 mph range.

April 20, 2000

A tight surface pressure gradient caused strong winds to blow across northeast and east central Wisconsin. Sustained winds were mainly in the 25 to 35 mph range with some gusts over 45 mph.

June 21, 2000

Strong winds behind a cold front caused broken tree limbs and branches to fall onto power lines. Between 2,000 and 3,000 customers lost electrical power in parts of central and east central Wisconsin. Strong winds downed five small trees at the Green Bay Botanical Garden. Peak gusts were in the 35 mph to 45 mph range across the 15-county area.

February 25, 2001

Strong winds developed across central and east central Wisconsin on the backside of an intense winter storm system that was moving away from the state. A 44 mph wind gust was recorded in Green Bay.

April 7, 2001

A strong low-pressure system dragged an occluded front through Wisconsin as the low moved northeast across Minnesota. High winds behind the front downed numerous trees, tree limbs and power poles across central, east central, and northeast Wisconsin.

October 25, 2001

An area of low pressure intensified as it moved toward the upper Great Lakes, producing strong winds across northeast. The strong winds began in northeast Wisconsin on the morning of October 25, 2001 and continued throughout most of the morning of the 26th. Several tractor-trailers were overturned in the Fox River Valley as the strong winds blew. A 45 mph wind gust was recorded in Green Bay. Heavy, wet snow caused tree branches to break across north central Wisconsin.

December 5, 2001

A powerful cold front moved through central and eastern Wisconsin during the late afternoon and evening. Gusty winds accompanied showers and thunderstorms ahead of the front and continued as cold air moved into the region after the frontal passage. The strong winds behind the front downed trees and power lines across northeast and north central Wisconsin, knocking out power to about 4,000 customers.

February 11, 2002

An intense low-pressure system moved across southern Canada bringing colder air into Wisconsin. Gusts of 40 mph or higher were reported at several locations from the evening of the February 11, 2002 into the morning hours of the 12th. Strong winds blew a light pole onto power lines in Green Bay, causing 2,600 customers to lose electrical service.

March 9, 2002

Strong winds developed across northeast Wisconsin in the wake of a departing low-pressure system. Wind gusts over 40 mph were common during the afternoon and evening of the March 9, 2002 into the early morning hours of the 10th. High winds knocked down tree limbs and power poles causing numerous power outages. Gusts to 54 mph were recorded in Green Bay.

May 9, 2002

A cold front passed through Wisconsin as low pressure over the northern part of the state strengthened and moved toward southern Ontario. Strong west winds developed as the low intensified. Gusts of 45 mph or higher were reported at several locations. A 46 mph wind gust was recorded in Green Bay. The strong winds downed trees that blocked roads and knocked down utility lines.

November 30, 2002

Very cold air, behind a strong cold front, traveling over the warmer waters of Lake Superior caused heavy lake effect snow showers. Winds behind the front were strong during the morning and early afternoon hours. A 44 mph wind gust was recorded in Green Bay.

October 11, 2003

Strong winds that accompanied a cold front downed a few trees and some power lines in parts of central and east central Wisconsin. The high wind event caused 9,000 dollars in property damage over a 3-county area.

November 13, 2005

Strong south to southwest winds developed as a deep low-pressure system moved across northwest Wisconsin and Lake Superior. The winds caused scattered power outages, broke tree branches and tore shingles from roofs. Wind speeds of 64 mph were recorded in Bellevue. The high wind event caused 2,500 dollars in property damage over a 3-county area.

May 11, 2006

An unusually strong low-pressure system for the month of May moved north across Michigan and produced heavy rain and high winds in northeast and north central Wisconsin. The high winds downed power lines, and knocked down and uprooted trees. In Brown County around 800 customers lost power and one house was damaged when a tree fell on it. The heavy rainfall that accompanied the high winds resulted in some lowland flooding in the town of Ledgeview. The high wind event caused 39,000 dollars in property damage over a 4-county area.

May 17, 2008

Strong winds caused rafters to collapse at a construction site in Green Bay. A worker, who was setting the rafters at a Habitat for Humanity home, was injured around 1140 AM CST. The ASOS at Austin Straubel International Airport recorded

February 10, 2009

As an occluded front passed through Wisconsin, winds as high as 55 mph occurred at isolated locations in the east-central part of the state. The strong winds tore shingles from a house and a church in Brown County.

October 26, 2010

A number of trees were knocked down throughout the county, some falling on homes and cars. One tree fell through a home and severely damaged the building.

October 14, 2014

Strong winds blew across east central Wisconsin, producing several measured gusts around 50 mph, as low pressure passed east of the state. The winds associated with the low may have been enhanced by a gravity wave. The strong winds downed numerous trees, branches, and power lines. More than 14,000 customers were without power at the height of the event.

December 23, 2015

Widespread winds of 35 to 45 mph affected central, north central, and east central Wisconsin. The strong winds blew down some trees, numerous tree branches were knocked down and thousands lost power. Some of the strongest wind gusts included: 59 mph near Whitefish Dunes State Park (Door Co.), 52 mph at Algoma (Kewaunee Co.), 51 mph in Green Bay (Brown Co.), and 46 mph near Appleton (Outagamie Co.).

February 24, 2019

A fierce, late-winter storm produced heavy snow, freezing rain, and high winds across much of central and northern Wisconsin on February 23-24 as an area of low pressure rapidly deepened across the Great Lakes. The combination of ice, snow, and strong winds caused power outages and tree damage in many locations. Measured wind gusts in the 50 mph to 60 mph range were recorded at many locations, including: 60 mph in Green Bay (Brown Co.); 58 mph in Wausau (Marathon Co.); 57 mph in Kewaunee (Kewaunee Co.); 56 mph in Omro (Winnebago Co.); 53 mph near Zittau (Winnebago Co.), near Monico (Oneida Co.), in Marshfield (Wood Co.), and in Rhinelander (Oneida Co.); 52 mph in Wisconsin Rapids (Wood Co.) and in Manitowoc (Manitowoc Co.); and 51 mph in Appleton (Outagamie Co.) and in Wautoma (Waushara Co.).

Storm Events Source: NOAA Storm Events Database – Strong Winds & High Winds

Vulnerability

Wisconsin lies along the northern edge of the nation's maximum frequency belt for tornadoes, an area better known as "tornado alley." According to NOAA's National Climatic Data Center, this area extends northeastward from Oklahoma into Iowa and then across to Michigan and Ohio. Generally, the southern and western portions of the state have been subject to a higher frequency of tornadoes; however, every county is susceptible to a tornado related disaster.

In considering other tornado-like occurrences, which includes waterspouts, funnel clouds, and high winds, on average. Brown County has had 28 verified tornadoes over the 69-year period from 1950 through 2019, or an average of about one tornado every two and a half years.

Tornadoes have no defined hazard area within Brown County and events do not follow or have a specific area of increased frequency.

Impacts

The following describes the various impacts that tornadoes have on the county.

Critical Facilities

Hospitals can see increases in patient load following tornadoes. Schools can sustain damage, and if they do not sustain damage, they often function as temporary shelters in the aftermath of tornadoes. Police and fire departments often see an increased workload during and after tornadoes.

Any critical facility in the county is capable of being hit. However, schools are a main concern for two reasons: (1) they have large numbers of people present, either during school or as a storm shelter; and (2) they have large span areas, such as gyms and theaters.

Public Health

The major health hazard from tornadoes involves physical injury from flying debris or being in a collapsed building or mobile home. Based on national statistics approximately 1000 tornadoes occur in the United States every year¹⁴. The 1000 tornadoes cause an average of 1,500 injuries and 80 deaths¹⁵.

Flying debris is most typically the main culprit of both injuries and deaths associated with tornadoes while people becoming airborne due to the wind is also a factor. Following a tornado, damaged buildings are a potential health hazard due to instability, electrical system damage, gas leaks, and hazardous materials. Sewage and water lines may also be damaged from tornadoes.

Safety

Although tornadoes in the county have not been the cause of any deaths, as mentioned above, tornadoes can and do kill about 80 people a year within the US. There were approximately 24,478 tornadoes¹⁶ causing thousands of fatalities in the United States from 2000 to 2018. Of the 24,478 tornadoes, 382 were considered killer tornadoes¹⁷ of which five were in the State of Wisconsin with none of the five occurring in Brown County. The number of people who live in mobile homes is far smaller than the number of people who live in permanent homes. However, mobile home deaths represent over 38 percent of the totals deaths sustained from tornado events. Due to their vulnerability, this plan has

RV Parks and Campgrounds

Brown County is home to four facilities open to RVs and/or campers; Apple Creek Campground, Bay Shore Park, Brown County Fairgrounds, and Shady Acres Campsites. Apple Creek Campground has 152 sites, Bay Shore Park has 88 sites, the Brown County Fairgrounds can accommodate 50 RV sites, and Shady Acres Campsites can accommodate 25 big rig and tent sites.

Although RVers and campers are encouraged to own a NOAA weather radio, in the event of severe weather, the county parks department will notify patrons of the Brown County owned and operated sites of the situation.

Infrastructure

Similar to severe thunderstorms, street signs are frequently in disrepair after tornadoes, and debris often litter streets and highways following a tornado, requiring clean up. Downed trees and power lines caused by tornadoes can be problematic in terms of impacting infrastructure (transportation) as well as critical facilities.

¹⁴ Annual Disaster/Death Statistics for US Storms - <https://www.depts.ttu.edu/nwi/research/DebrisImpact/Reports/DDS.pdf>

¹⁵ www.nssl.noaa.gov

¹⁶ NOAA Storm Prediction Center - <https://www.spc.noaa.gov/climo/online/monthly/newm.html#2000>

¹⁷ NOAA Storm Prediction Center - <https://www.spc.noaa.gov/climo/torn/fatalmap.php#viewDiv>

Buildings

Although tornadoes strike at random making all buildings vulnerable, there are three types of structures that are most likely to suffer damage. These structure types include mobile homes, homes constructed on crawlspaces (because they are more susceptible to lift), and buildings with large spans (such as airplane hangars, gymnasiums and factories).

Structures within the direct path of a tornado vortex are often reduced to rubble. However, structures adjacent to the path of the tornado are often severely damaged by high winds flowing into the tornado vortex (these winds are known as inflow winds). It is here, adjacent to the tornado's path, where the building type and construction techniques are critical to the structure's survival.

According to research conducted by FEMA following an unusually destructive tornado in May of 1999 in parts of Kansas and Oklahoma¹⁸, failure for many residential structures occurred where residential framing was attached to the foundation or when nails were the primary connectors between the roofing and the walls. The study also found that roof geometry plays a significant role in a building's performance. The research further indicated that the failure of garage doors, commercial overhead doors, residential entry doors, or large windows caused a significant number of catastrophic building failures. Finally, this research found that manufactured homes built upon permanent foundations performed better than those that were not on solid foundations.

Economic

The major impact of a tornado on the local economy is damage to businesses and infrastructure. A heavily damaged business, especially one that was barely making a profit, often times must close due to the loss.

Infrastructure damage is usually limited to above ground utilities, such as power lines. Damage to utility lines can usually be repaired or replaced relatively quickly. Damage to roads and railroads is usually localized; if these facilities cannot be repaired promptly, alternate transportation routes are usually available.

Public expenditures include police and fire department calls, search and rescue, shelters, and emergency protection measures. The largest public expenses are for repairs to public facilities and clean up and disposal of debris. Most public facilities are insured, so the economic impact on the local treasury is likely to be small. However, clean up and disposal can be a larger problem, especially if there is limited landfill capacity near the damage site.

The agricultural sector can also experience economic losses as winds in excess of 39 miles per hour can damage crops during the growing season.

¹⁸ Midwest Tornadoes of May 3, 1999 Observations, Recommendations, and Technical Guidance

Other

Clean up and disposal after a tornado can pose health and safety risks to emergency responders and recovery workers. During cleanup activities physical, chemical and biological hazards may be present. Challenges faced by emergency response and recovery workers include electrocution, falls, chemical hazards, fire, and physical hazards associated to injury from falling or flying debris, among others.¹⁹

Areas at Greatest Risk

Tornadoes have no defined hazard area within Brown County, however, mobile homes are at greatest risk during tornadoes and high winds. An F1 tornado might cause minor damage to a site-built house; but could do significant damage to a manufactured home, especially an older model or one that is not connected to anchors.

RV Parks, campgrounds, and marinas are also at significant risk from tornadoes and high winds.

Potential Losses

The “worst case scenario” when considering a tornado event in Brown County would be the loss of a life. Through detailed and accurate weather forecasting and better warning systems, the likelihood of there being any loss of life from a tornado has decreased, however, it is still possible that people could die. Other scenarios that would cause extreme or worst case scenarios include a direct hit on the Brown County Emergency Management Center. If there were damage or disruption to the emergency management center communication equipment it would severely impair the response to a disaster.

Due to the vulnerability of manufactured homes, a direct hit at one of the mobile home communities in the county would likely include a significant amount of damage and an increased chance for serious injuries and death. Mobile home parks are shown as land use code 180 on Brown County’s land use inventory completed in 2019.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Flooding. Heavy rain and thunderstorms can cause flooding that can disrupt emergency response, transportation, and communication before, during, or after a tornado. Flooding can further exacerbate the aftereffects of a tornado that has caused property damage, loss of life, and personal injury. Flooding can further disrupt transportation, communication, and emergency services, and threaten public health and safety. Essential public infrastructure and services such as power, water supply systems and sanitary systems can be compromised as well.

¹⁹ Centers for Disease Control and Prevention: Emergency Response Resources:
<https://www.cdc.gov/niosh/topics/emres/tornado.html>

Plans and Programs

Emergency Operations Plan. The *Brown County Emergency Operations Plan* outlines procedures for the County in response to a variety of hazards. During the course of a flood event in Brown County, the Emergency Management Director works with local officials to ensure public health and safety and maintain transportation routes.

Severe Storm Spotters Network. This program, sponsored by the National Weather Service (NWS), enlists the help of trained volunteers to identify, evaluate, and report severe weather events to the NWS. No tornado warning is given unless the storm has been spotted by someone or is confirmed by NWS radar reports. Brown County has several trained severe weather spotters, many of whom report directly to their respective public safety offices when severe weather is observed.

Tornado Warning System. Most of the cities and villages in Brown County have emergency sirens to warn residents in the event of a tornado. There are a total of 60 (as of November 2019) tornado sirens in the county. The Brown County Public Safety Communications center is responsible for testing and activating the systems. A map of the siren locations and their associated sound shed can be seen on the following page.

Shelter Opening Plan. Emergency Support Function (ESF) 8 addresses the procedures for opening shelters.

Gaps and Deficiencies

A significant number of homes in the county lack basements that would provide shelter in the event of a tornado or damaging winds from a severe thunderstorm. If there is a residential, commercial, or industrial facility that does not have a basement they should develop an action plan that include directions for individuals to take shelter.

Local radio and television stations do provide warnings but are effective only if tuned to one of the local stations.

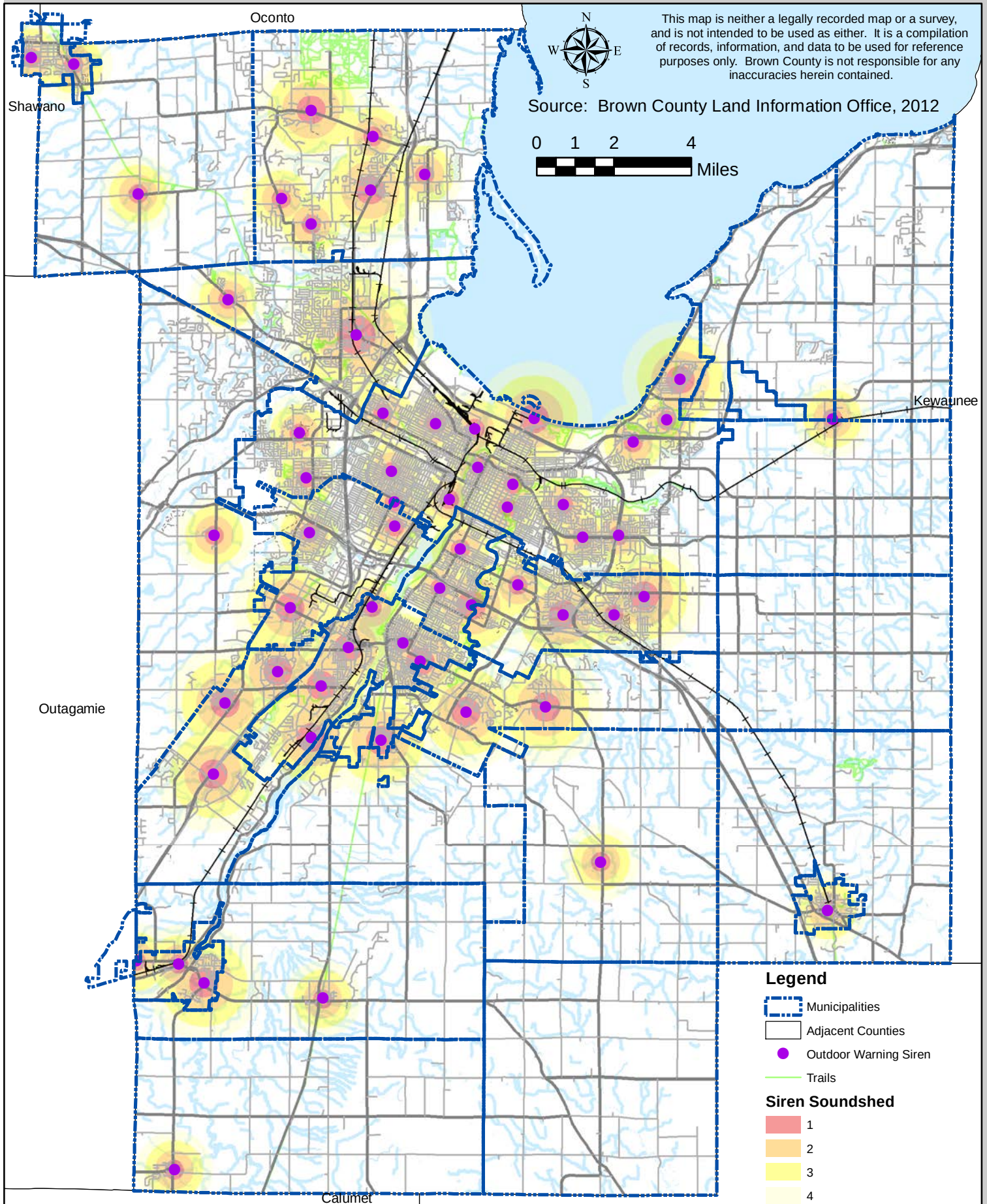
A majority of the power lines in the county are above ground and subject to damage from wind and falling tree limbs. There are community requirements to manage trees near power lines and the larger lines typically have large easements that keep trees far enough away to reduce the chance of damage during tornados and high wind events.

Not all of the county's 60 tornado siren systems have a generator that will enable them to work during a power failure.

Outdoor Warning Sirens

Brown County All Hazard Mitigation Plan

Brown County, WI



Lightning and Thunderstorms

Lightning, which occurs during all thunderstorms, can strike anywhere. Generated by the buildup of charged ions in a thundercloud, the discharge of a lightning bolt interacts with the best conducting object or surface on the ground. The air in the channel of a lightning strike reaches temperatures higher than 50,000 degrees Fahrenheit. The rapid heating and cooling of the air near the channel causes a shock wave that produces thunder. The death toll from lightning strikes is relatively low; however, a sizeable percentage of fires are the result of a lightning striking structures, woodlands, grassy areas, or even industrial sites containing highly combustible substances.

Thunderstorms are most likely to happen in the spring and summer months and during the afternoon and evening hours but can occur throughout the year and at all hours. The biggest threats from thunderstorms are flash flooding and lightning. In most cases, flash flooding occurs in small drainage areas where water quickly accumulates before it drains to the floodplains. When taken together, these local drainage problems can be as great a problem as flooding in the mapped floodplains. Other threats from thunderstorms include downburst winds, high winds, hail, and tornadoes.



The National Severe Storms Laboratory identifies a thunderstorm as severe if any of the following conditions are met: wind gusts in excess of 57.5 miles per hour, hail one inch or greater, and or if it produces a tornado²⁰. Compared with other atmospheric hazards (such as tropical cyclones and winter low-pressure systems), individual thunderstorms affect relatively small geographic areas. The average thunderstorm system is approximately 15 miles in diameter, covers 75 square miles, and lasts less than 30 minutes at a single location. However, weather monitoring reports indicate that coherent thunderstorm systems can travel intact for distances in excess of 600 miles.

History

According to the National Climatic Data Center, Brown County has experienced 14 significant lightning events and 103 significant thunderstorm wind events since January 1, 1990.

²⁰ <https://www.denmarkw.nssl.noaa.gov/education/svrwx101/thunderstorms/>

Lightning

Table 3.6: Lightning Strike Events since January 1990, Brown County, WI					
Location	Date	Deaths	Injuries	Crop Damage	Property Damage
Green Bay	7/29/96	0	0	0	\$20,000
Green Bay	6/29/97	0	0	0	\$20,000
Green Bay	9/16/97	0	0	0	\$10,000
De Pere	6/25/98	0	0	0	-
Holland	6/25/98	0	0	0	-
Green Bay	6/6/99	0	0	0	\$100,000
Green Bay	7/31/99	0	0	0	\$40,000
Ashwaubenon	7/8/00	0	0	0	-
Green Bay	9/14/04	0	0	0	-
Denmark	5/30/06	0	0	0	-
Green Bay	4/6/10	0	0	0	\$500
Little Rapids	7/25/12	0	0	0	\$5,000
Allouez	9/4/14	0	0	0	\$15,000
Suamico	8/2/15	0	0	0	\$25,000
Total		0	0	0	\$280,500

Source: NOAA National Climatic Data Center; June, 2019.

Thunderstorm Wind

Table 3.7: Thunderstorm Wind Events, Brown County, WI						
Location	Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
BROWN COUNTY	9/9/1991	0	0	0	0	0
BROWN COUNTY	6/17/1992	0	0	0	0	0
GREEN BAY	4/24/1994	0	0	0	50000	0
GREEN BAY	4/24/1994	0	0	0	50000	0
ALLOUEZ	7/23/1994	0	0	0	5000	0
BELLEVUE	7/23/1994	52	0	0	500000	0
DENMARK	7/23/1994	0	0	0	5000	5000
NEW FRANKEN	7/31/1995	0	0	0	0	0
GREEN BAY	8/11/1995	52	0	0	0	0
GREEN BAY	8/11/1995	52	0	0	0	0
GREEN BAY	5/21/1996	51	0	0	0	0
GREEN BAY	8/7/1996		0	0	2000	0
PULASKI	8/25/1996		0	0	1000	0
SUAMICO	8/25/1996		0	1	10000	0
ANSTON	6/25/1998		0	0	3000	0
SUAMICO	6/25/1998		0	0	10000	0
HOWARD	6/25/1998		0	0	1000	0
SUAMICO	6/25/1998	61	0	0	0	0
SUAMICO	6/25/1998	50	0	0	1000	0
HOWARD	9/26/1998	50	0	0	0	0

ASHWAUBENON	6/6/1999	54	0	0	0	0
ASHWAUBENON	6/6/1999	50	0	0	0	0
GREEN BAY	6/6/1999	50	0	0	0	0
DE PERE	6/6/1999	50	0	0	0	0
CHAMPION	6/6/1999	50	0	0	0	0
GREEN BAY	7/30/1999	50	0	0	0	0
ASHWAUBENON	4/23/2001	50	0	0	0	0
CHAMPION	6/30/2001	50	0	0	0	0
DE PERE	9/7/2001	50	0	0	0	0
GREEN BAY	9/7/2001	50	0	0	0	0
COUNTYWIDE	7/30/2002	50	0	0	0	0
GREEN BAY	8/6/2003	50	0	0	0	0
GREEN BAY	8/21/2003	50	0	0	0	0
GREEN BAY	8/27/2004	52	0	0	0	0
GREEN BAY	10/23/2004	52	0	0	0	0
ALLOUEZ	6/7/2005	55	0	0	0	0
BELLEVUE	6/10/2005	57	0	0	0	0
ASHWAUBENON	6/11/2005	50	0	0	0	0
HOWARD	9/13/2005	55	0	0	0	0
WRIGHTSTOWN	9/13/2005	56	0	0	0	0
ASHWAUBENON	9/13/2005	70	0	0	50000	0
DE PERE	9/13/2005	65	0	0	30000	0
GREEN BAY	9/13/2005	59	0	0	50000	0
SUAMICO	5/28/2006	50	0	0	0	0
ASHWAUBENON	7/24/2006	50	0	0	0	0
GREEN BAY	7/30/2006	55	0	0	0	0
CHAMPION	7/30/2006	50	0	0	0	0
DE PERE	9/8/2006	52	0	0	0	0
ASHWAUBENON	7/5/2007	52	0	0	0	0
SUAMICO	7/18/2007	52	0	0	0	0
GREEN BAY	7/18/2007	70	0	0	237000	0
GREEN BAY	4/25/2008	52	0	0	0	0
DE PERE NICOLET ARPT	6/12/2008	56	0	0	0	0
DENMARK	6/12/2008	52	0	0	0	0
ASKEATON	7/12/2008	52	0	0	1000	0
(GRB)STRAUBEL FLD GR	7/29/2008	50	0	0	0	0
GREEN BAY	7/14/2010	52	0	0	0	0
BELLEVUE	8/20/2010	54	0	0	0	0
GREENLEAF	8/20/2010	74	0	0	0	0
ASKEATON	4/10/2011	61	0	0	0	0

GREEN BAY	5/22/2011	52	0	0	0	0
CORMIER	5/22/2011	52	0	0	0	0
GREEN BAY	7/18/2011	52	0	0	10000	0
WRIGHTSTOWN	9/2/2011	68	0	0	10000	0
CORMIER	9/2/2011	50	0	0	0	0
KUNESH	9/2/2011	50	0	0	0	0
FLINTVILLE	9/2/2011	50	0	0	0	0
KUNESH	7/9/2012	56	0	0	0	0
DENMARK	8/7/2013	51	0	0	0	0
CORMIER	8/21/2013	70	0	0	50000	0
ASHWAUBENON	8/21/2013	54	0	0	0	0
GREEN BAY	9/7/2013	52	0	0	0	0
BELLEVUE	9/7/2013	52	0	0	0	0
SUAMICO	7/13/2015	52	0	0	0	0
GREEN BAY	7/18/2015	52	0	0	0	0
DENMARK	7/18/2015	52	0	0	0	0
ASHWAUBENON	8/14/2015	56	0	0	6500	0
GREEN BAY	8/14/2015	56	0	0	6500	0
ASHWAUBENON	8/14/2015	54	0	0	0	0
DE PERE	8/14/2015	52	0	0	3000	0
SUAMICO	8/14/2015	52	0	0	5000	0
CORMIER	8/14/2015	52	0	0	7000	0
GREEN BAY	6/5/2016	52	0	0	0	0
WRIGHTSTOWN	6/5/2016	52	0	0	0	0
ASHWAUBENON	6/5/2016	52	0	0	75000	0
DE PERE	6/10/2016	52	0	0	0	0
GREEN BAY	7/21/2016	52	0	0	0	0
GREEN BAY	5/17/2017	52	0	0	0	0
LITTLE RAPIDS	6/14/2017	56	0	0	0	0
DE PERE	6/14/2017	61	0	0	10000	0
ALLOUEZ	6/14/2017	52	0	0	0	0
BAY SETTLEMENT	6/14/2017	52	0	0	0	0
PULASKI	6/14/2017	56	0	0	0	0
ANSTON	7/15/2017	52	0	0	0	0
ASHWAUBENON	7/15/2017	56	0	0	1000	0
PULASKI	7/18/2017	52	0	0	0	0
GREEN BAY	7/1/2018	52	0	0	0	0
GREEN BAY	7/1/2018	52	0	0	10000	0
ASHWAUBENON	7/1/2018	52	0	0	0	0
GREEN BAY	8/27/2018	52	0	0	0	0
DE PERE	8/28/2018	52	0	0	5000	0

SUAMICO	9/17/2018	52	0	0	0	0
BELLEVUE	9/17/2018	50	0	0	5000	0

Source: NOAA National Climatic Data Center; June 2019.

Vulnerability

One hundred and seventeen lightning and/or thunderstorm wind events have occurred in Brown County between 1990 and February of 2019. As with many places around the US, Brown County residents are susceptible to lightning strikes and thunderstorm wind events. Trees and taller structures such as buildings and communication towers are most susceptible to lightning strikes.

Impacts

The following describes the various impacts that lightning and thunderstorms have on the county.

Critical Facilities

Hospitals can see increases in patient load with storms that produce cloud to ground lightning strikes. Schools can sustain damage, and if they do not sustain damage, they can function as temporary shelters in the aftermath of severe thunderstorms. Police and fire departments often see an increased workload during and after lightning storms and/or severe thunderstorms. Emergency operations can be disrupted as lightning storms and thunderstorms can affect radio communications, taking into consideration that antennas are a prime target for lightning.

Public Health

No health implications are attributable to lightning and thunderstorms. There is the potential for tetanus and other diseases that may arise from injuries sustained while navigating or cleaning up damaged property. In the case of lightning storms, when lightning strikes a person, serious burns or death are common outcomes. For those who survive a lightning strike, their injuries can possibly lead to permanent disabilities. Many lightning strike survivors suffer serious, long-term effects, including memory loss, sleep disorders, depression and fatigue.

Safety

Lightning and thunderstorms rarely cause loss of life and or injuries. From 1990 through February of 2019, lightning has been responsible for zero deaths and zero injuries in Brown County²¹. High winds associated with a storm can injure and kill people. Thankfully, since 1990 there has only been one reported injury and zero deaths reported²².

Most lightning and thunderstorm deaths can be prevented through safe practices. The first step to avoid injuries and death is to understand what a severe thunderstorm watch is and secondly, what a severe thunderstorm warning is. The following is a description of both a severe thunderstorm watch and a severe thunderstorm warning.

²¹ NOAA Storm Events Database – Lightning

²² NOAA Storm Events Database – Thunderstorm Wind

- Severe Thunderstorm Watch - Severe thunderstorms are possible in and near the watch area. Stay informed and be ready to act if a severe thunderstorm warning is issued.
- Severe Thunderstorm Warning - Severe weather has been reported by spotters or indicated by radar. Warnings indicate imminent danger to life and property.

If a thunderstorm is in the area the best action to take is seeking shelter inside a building. A building will provide protection against the majority of the possible hazards associated with a thunderstorm that have the potential to cause bodily harm.

Infrastructure

Street signs often face disrepair after severe thunderstorms, and debris often litters streets and highways requiring some clean up. Downed trees caused by lightning and thunderstorms can also cause property damage and be problematic for transportation.

Buildings

Damage to mobile homes from thunderstorms is possible and can be significant. Garages are also frequently damaged by thunderstorms. Wind and water damage can result when windows are broken by flying debris or hail. Lightning can cause direct damage to structures (especially those without lightning protection systems) and can set off fires that may lead to further damage.

Economic

Thunderstorms can have an impact on many sectors of the economy including agriculture, private businesses, and government services. While damage is usually not significant, some storms can cause costly repairs.

Crop damage from lightning and thunderstorms occurs quite frequently. While typically not significant, anything from high winds, hail, or flooding can impact a field or part thereof. Agricultural buildings and livestock are also susceptible to thunderstorm damage depending on the severity of the storm.

Impacts to businesses from lightning and thunderstorms can include damage to the main structure or to ancillary structures and signs. A business may be impacted by transportation limitations due to road closures as well.

Thunderstorms can also affect utilities. Power lines, transformers, and the poles supporting power lines can be knocked out by lightning or knocked down by wind and debris. Telephone lines and radio communications can be disrupted as well.

Transportation facilities such as airports, shipping ports, and roads can be negatively impacted by thunderstorms. Airplanes can be delayed for takeoff when thunderstorms are present and diverted to nearby airports for landing. There is potential for an airplane to crash when hit by downbursts or lightning. Shipping ports could also experience issues with high winds and lightning affecting tall structures. Thunderstorms can knock trees and branches into the road and if strong enough, may knock down power lines which can make roads impassable.

Areas at Greatest Risk

Based on review of the historic patterns of lightning and thunderstorms, there are no specific jurisdictions that have unusual risks (meaning higher than average for the entire county). The events are relatively uniform throughout Brown County.

Estimation of Potential Losses

No estimation of potential losses can be derived as there is no defined hazard area. Lightning and thunderstorms can occur anywhere in Brown County.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard including the following:

Flooding. Thunderstorms can cause flooding that can disrupt emergency response, transportation and communication.

Lightning - Lightning can cause property damage, loss of life, and personal injury, disrupt transportation, communication, and emergency services, and threaten public health and safety, as well as pose significant threat to essential public infrastructure and services such as power, water supply systems and sanitary systems.

Hailstorms. Lightning and thunderstorms are often accompanied by hailstorms. Hail can cause significant property damage including total destruction of a roof, vegetation loss, and vehicular damage.

Plans and Programs

Severe Storm Spotters Network. This program, sponsored by the National Weather Service (NWS), enlists the help of trained volunteers to identify, evaluate, and report severe weather events to the NWS. No tornado warning is given unless the storm has been spotted by someone or is confirmed by NWS radar reports. Brown County has several trained severe weather spotters, many of whom report directly to their respective public safety offices when severe weather is observed.

Gaps and Deficiencies

Redundancy is needed on communications towers.

Local radio and television stations do provide warnings but are effective only if viewers are tuned to one of the local stations.

Most of the power lines in the county are above ground and are subject to damage from wind and falling tree limbs. There are community requirements to manage trees near power lines.

Winter Storms

Winter storms in Wisconsin are caused by Canadian and Arctic cold fronts that push cold arctic air deep into the interior of the United States. These storms can vary in size and strength, and can include heavy snowstorms, blizzards, freezing rain, sleet, ice storms, and blowing and drifting snow conditions. Winter storms can include extremely cold temperatures accompanied by strong winds that result in wind chills dangerous enough to cause bodily injury such as frostbite, hypothermia, and death. Winter storms can occur as a single event or they can combine with other events to create multi hazard storms. For example, a moderate snowfall could create severe conditions if it were followed by a freezing rain and extremely cold temperatures. The aftermath of a winter storm can impact a community or region for weeks, and even months.



A variety of weather phenomena and conditions can occur during winter storms. For purposes of classification, the following are National Weather Service approved descriptions of winter storm elements:

Heavy Snowfall – the accumulation of six or more inches of snow in a 12-hour period, or eight or more inches in a 24-hour period.

Winter Storm – the occurrence of heavy snowfall accompanied by significant blowing snow, low wind chills, sleet or freezing rain.

Blizzard – the occurrence of sustained wind speeds in excess of 35 miles per hour accompanied by heavy snowfall or large amounts of blowing or drifting snow.

Ice Storm – an occurrence where rain falls from warmer upper layers of the atmosphere to the colder ground, freezing upon contact with the ground and exposed objects near the ground.

Freezing drizzle/freezing rain – the effect of drizzle or rain freezing upon impact on objects that have a temperature of 32 degrees Fahrenheit or below.

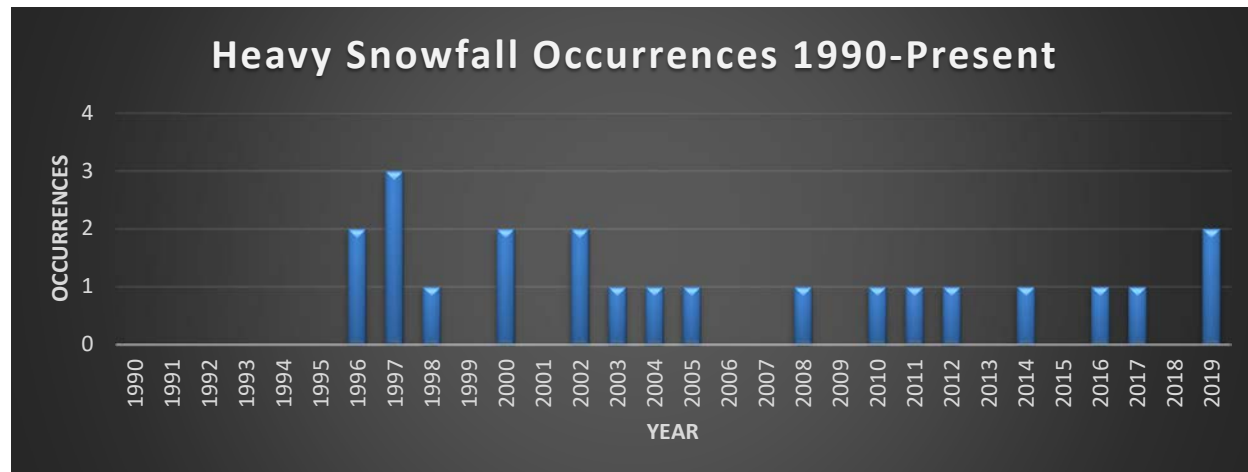
Sleet – solid grains or pellets of ice formed by the freezing of raindrops or the refreezing of largely melted snowflakes. This ice does not cling to surfaces.

Wind chill – an apparent temperature that describes the combined effect of wind and low air temperatures on exposed skin.²³

Much of the snowfall in Wisconsin occurs in small amounts of between one and three inches per occurrence. Heavy snowfalls producing at least eight to ten inches of accumulation fluctuate in their occurrence. As shown in the graph below, there are years

²³ National Weather Service

where no heavy snowfalls occurred while other years the occurrences were between one and three times.



True blizzards do occur in Wisconsin and have the potential to take a life. Oftentimes, blizzard conditions exist during heavy snowstorms when gusty winds cause severe blowing and drifting of snow. The state of Wisconsin experience 259 blizzard events since January of 1990. During the same time period, Brown County experienced 7 blizzard events²⁴.

Table 3.8: Brown County
Blizzard Events

1/29/1996
1/2/1999
2/16/2006
12/8/2009
12/11/2010
12/28/2015
4/15/2018

Both ice and sleet storms can occur at any time throughout the winter season from October into April. Early- and late-season ice and sleet storms generally occur in northern Wisconsin, however, the majority of these storms occur in the southern part of the state. During these events, if the storm produces a half inch of rain that freezes on trees and utility wires, extensive damage can occur especially if accompanied by winds that compound the effects of the added weight of the ice.

Winter storms present a serious threat to the health and safety of affected citizens and can result in significant damage to property and loss of life. This can occur when the heavy snow or accumulated ice causes structural collapse of buildings, downs power lines, severely affects electrical power distribution, cuts off people from assistance or services, and severely impacts travel conditions. Difficult and dangerous driving conditions caused by winter storms can result in large numbers of traffic accidents where motorists suffer varying injuries and possible death. These winter storm deaths are not accounted for in the statistics maintained by the National Climatic Data Center.

History

According to National Climatic Data Center, Brown County has experienced 57 winter storm events since January 1, 1990. These events included Blizzards, Winter Storms, and Winter Weather events.²⁵

²⁴ NOAA Storm Event Database - Blizzard

²⁵ NOAA Storm Event Database - Blizzards, Winter Storms, and Winter Weather



Vulnerability

On average, over the past 29 years (since 1990), Brown County has typically experienced about two significant winter storm events per year. Some areas in Wisconsin are more vulnerable to winter storms including northern portions of the state as well as areas adjacent to the shore of Lake Michigan. These areas often have higher moisture content from the Great Lakes which can produce prolonged winter storm events. Data collected by the national weather service was compiled to show the average snowfall across Wisconsin in the following map.

Impacts

The following describes the various impacts that winter storms have on the county.

Critical Facilities

Town and county road crews have an increased burden during and winter months. In some cases, winter storms can be so severe that these crews have to be called off the roads for safety purposes.

During winter storm events, hospitals and clinics may see and treat patients for frostbite, vehicular accident injuries, injuries associated with slips and falls, and injuries resulting from the shoveling of heavy snow (heart attacks). As is the case for any business, hospital and clinic employees may have difficulty getting to work because of the storm, which increases the workload for the staff who is already there (double shifts, etc.).

Police and rescue crews also see more activity during winter storms. More vehicular accidents require more resources from the County Sheriff and local Police departments and if there are injuries involved, it also required EMT's to respond as well. Utility and telephone companies have to respond to downed electrical and telephone lines, especially in the case of ice storms. And, schools may need to have early dismissal or cancel classes altogether.

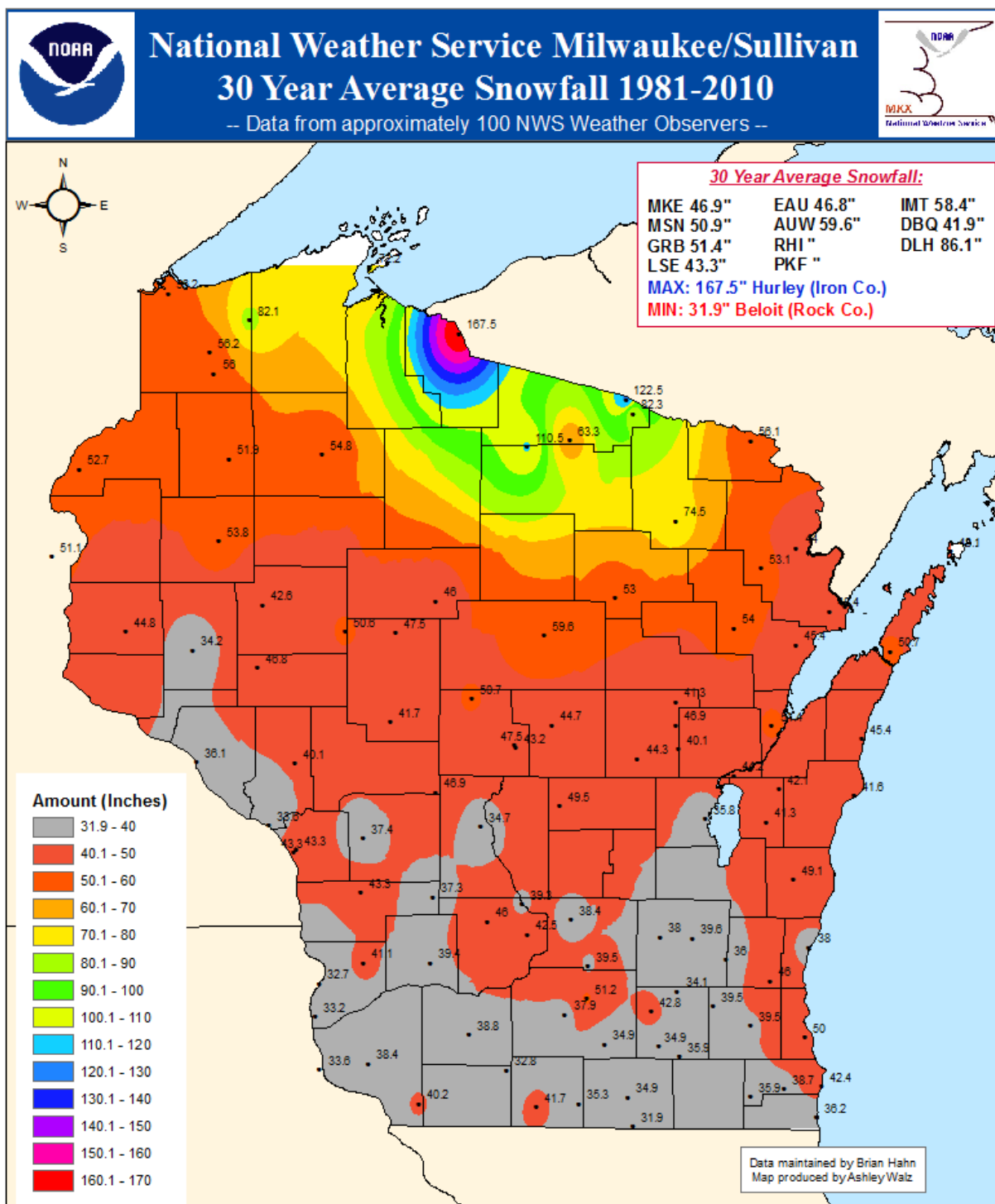


Figure 6 Source: Wisconsin State Climatology Office

Public Health

Most injuries caused by winter storms result from vehicle accidents. Frostbite and hypothermia occur frequently when these storms combine with extreme cold (these health concerns are discussed more under the extreme cold hazard). Heart attacks and back injuries from shoveling snow are also a public health concern.

Mental health is also a concern during the winter months. Many people that live in the Great Lakes region experience the known seasons including summer, spring, fall, and winter. There are individuals that suffer from depression during the winter months due to the lack of natural light and long hours spent indoors. This condition is known as Seasonal Affective Disorder. For many people the winter months make it harder to get outdoors and exercise regularly. Exercise is well known amongst health and wellness professionals to have positive affects both physically and mentally. Without exercise it can be hard to find healthy ways to relieve stress.

Safety

Winter storms can produce weather related hazards, including hazardous driving and walking conditions and injuries from shoveling snow. In some winter storm events, extreme cold from low temperatures, wind chill, and loss of heat due to power outages can create safety concerns. There are a number of agencies including the Centers for Disease Control and Prevention (CDC) that provide information on how to stay safe in the cold and how to improve your chances of survival in the event that someone may get stranded in cold.

Infrastructure

The major impacts of winter storms on infrastructure are to utilities and roads. Power lines and tree limbs can be coated with heavy ice in some winter storms, resulting in disrupted power and telephone service, often for days. Cable and satellite television services can also be negatively impacted in certain winter storm events. In the case of transportation, even small accumulations of ice can be extremely dangerous to motorists and pedestrians. Bridges and overpasses are particularly dangerous because they freeze before other surfaces.

Buildings

Occasionally, heavy snow or accumulated ice will cause structural collapse of buildings (particularly roofs), but most buildings are now constructed with low temperatures, snow loads, and ice storms in mind. Despite the changes to requirements for new construction, older buildings may still be susceptible to winter conditions as was seen in 2018 when a massive snow storm caused several structural roof failures in Brown County.

It should be noted that new construction that utilizes new materials and construction methods is typically more energy efficient and helps to minimize the effects of extreme winter weather.

Economic

Loss of power often means that businesses and manufacturing concerns must close down. Loss of access due to snow or ice covered roads can have a similar effect, especially when trucks cannot travel on major thoroughfares to make “just in time”

deliveries to businesses and industries in the county. The effects are particularly difficult when the storm is widespread.

Typically, crops are either not planted or are harvested and are not at risk of winter storms. However, farmers that own large numbers of livestock can be negatively impacted by winter weather if it is extreme or if it occurs over a long period of time.

Areas at Greatest Risk

Winter storms have no defined hazard area within the county. The events are relatively uniform throughout Brown County.

Estimation of Potential Losses

No estimation of potential losses can be derived as there is no defined hazard area. Winter storms can occur anywhere in Brown County.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Extreme Cold. Extreme cold and wind chill effects can greatly exacerbate any winter storm event.

Flooding. Heavy snows and snowmelt can cause flooding that can disrupt emergency response, transportation, and communication.

Plans and Programs

Wind Chill Warnings. The local radio and TV media in concert with the National Weather Service issues a wind chill warning when temperatures are -40° F or lower for a period longer than three hours. Severe wind chill warnings are provided when conditions warrant and when severe risk and safety is a factor.

School Closings. The county's school districts have a policy of closing schools when the National Weather Service issues a wind chill warning or when snow accumulations create unsafe travel conditions. Information is typically gathered from transportation providers, Brown County Highway Department, and weather service providers to assist in making the school closure determinations. Local television and radio stations partner with the districts to make sure the announcements are out by 5:30 am. Some school districts have an automated phone system that contacts the homes of students as well.

Gaps and Deficiencies

Winter storms are typically longer events lasting several hours or even multiple days that are easier to predict and plan for. Local radio and television stations do provide warnings but are effective only if tuned to one of the local stations.

A majority of the power lines in the county are above ground and subject to damage from ice, wind, and falling tree limbs. There are community requirements to manage trees near power lines.

Storm Water Flooding

The waterways and storm water drainage systems provide essential flood protection. Storm water drainage systems cope well with most storms. However, occasionally storms can cause the storm water infrastructure to be overwhelmed and unable to manage all of the water. These types of events are characterized as flash floods. Flash floods are storm events that include a large amount of rain fall in a localized area over a very short period.

Most stormwater drains and pipe systems are not designed to accommodate a large storm event. The WDNR identifies that peak flow rates be based on the 2-, 10-, and 100- year storm events.²⁶ Most stormwater facilities are designed around the 10 year storm event with a check of the 25-year event.²⁷ A 10-year event does not mean that a storm of this magnitude will only occur once every 10 years but rather that there is a 10 percent chance that a storm of that magnitude can occur. Localized stormwater flooding can be exacerbated if drains in the area are blocked. It is important to keep the drainage system clear of litter and debris to avoid blocked drains. This is also necessary to protect and improve the health of Brown County's waterways.



Figure 7 Source: Greatlakesresilience.org

Today, new developments and redevelopments incorporate storm water management measures such as storm water detention and retention basins that provide greater flood protection. Detention basins slow the flow of storm water being carried in the drainage system by storing it for a time, while retention basins (i.e. ponds) hold water during most of the year. Detention basins can also function as parks and playing fields.

Storm water flooding is not always reported, and it can be very localized. Because of this, the NOAA Storm Events Database does not keep statistics on this type of event.

History

The history of stormwater flooding has not been tracked in the past and is often reported as a flash flood event or a flood. Because of the lack of reporting/record keeping of these types of events, anecdotally, it is known that these types of events do occur and can occur on a fairly frequent basis. However, the severity of the event is extremely variable due to numerous factors.

²⁶ WDNR, Technical Design Guidelines for Storm Water Management Practices, <https://dnr.wi.gov/topic/stormwater/documents/StormwaterManual2-TechnicalDesign.pdf>

²⁷ BC Highway Department referencing the WisDOT Facilities Design Manual (FDM)

Vulnerability

There are several areas throughout Brown County that are susceptible to recurrent storm water flooding. Many of these areas are noted by local public works and highway departments with signage to warn drivers of potential high water problems during heavy rain events. None of the Steering Committee members or community officials deemed storm water flooding to be a significant risk to residents or visitors. Street and ditch flooding after heavy rains have historically caused little damage or traffic disruption in the past.

Impacts

The following describes the various impacts that storm water flooding has on the county.

Critical Facilities

The most vulnerable facilities during a stormwater flood include roadway and transportation interruptions and stormwater facility degradation caused by erosion.

Public Health

There is not much of a public health risk as the situation is usually alleviated quickly and any cases of prolonged standing water would be rare.

Safety

Some stormwater flooding may include swift moving water. Driving through moving/flowing water should never be attempted and is a serious safety risk. Electrocution could occur from a building experiencing storm drain backup flooding and electrical wires or appliances short out and carry current through standing water. Fire is also a possible byproduct that can cause injuries.

Infrastructure

Erosion damage to roads can occur from storm water flooding, especially if the storm water facilities in the area are defective.

Economic

Clean up and replacement of damaged items can be costly after a building has experienced storm drain backup flooding.

Maintenance of roads and parking lots after storm water flooding damage can be costly.

Areas at Greatest Risk

The areas at greatest risk for storm water flooding are older parts of urban areas that have aging or undersized infrastructure and bridges and roads at the town level as they often do not have storm water facilities. Additional areas of concern are those that have waterways that have not been studied for flooding potential.

Estimation of Potential Losses

No estimation of potential losses can be derived as the hazard area is vaguely defined.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Fire. Fire can occur due to infrastructure compromise of electrical and natural gas systems.

Transportation Disruption. Disruptions of transportation routes can be disrupted due to standing water in roadways.

Plans and Programs

Repair and Maintenance. Repair and maintenance is performed by Brown County and the local municipalities on areas that experience storm water flooding damage. The urbanized area communities are also required to submit an annual Municipal Separate Storm Sewer System (MS4) permit to the DNR each year. This permit requires that stormwater facilities are inventoried and checked annually for needed maintenance.

Storm Drain Cleaning Program. Many of the communities in Brown County have some type of storm drain cleaning program that involves utilizing a vacuum to remove debris from storm drains in the fall of each year.

WisDOT Flood Mitigation Program. Wisconsin Department of Transportation assists local governments with replacing or improving roads and roadway structures that have had major damage caused by flooding, by providing help to defray the costs of repairing any public highway, street, alley, or bridge not located on the State Trunk Highway system.

Gaps and Deficiencies

There is a need to correct defective storm water facilities to prevent infrastructure damage. Correcting damaged storm water facilities is difficult due to most of the facilities being buried. This makes them difficult to thoroughly inspect. There is also a need to improve preventative measures such as cleaning storm drains to maximize their ability to manage storm water as designed. Municipalities within the urbanized area have permits with the Wisconsin Department of Natural Resources to address municipal storm water through storm water permits. The permits cover monitoring outfalls for contamination, setting up ordinances and procedures to address illicit discharges, and a program to clean clogged and damaged storm drains. Brown County and the City of Green Bay, for example, check stormwater outfalls under their jurisdiction at least once every five years.

Extreme Cold

Dangerously cold conditions can be the result of extremely cold temperatures, or the combination of cold temperatures and high winds. Wind chill is defined as “a still-air temperature that would have the same cooling effect on exposed human skin as a given combination of temperature and wind speed”²⁸. When wind blows across the skin, it removes the insulating layer of warm air adjacent to the skin. As winds increase, heat is carried away from the body at a faster rate, driving down both the skin temperature and eventually the internal body temperature. Extreme cold events are most likely during the months of January and February.

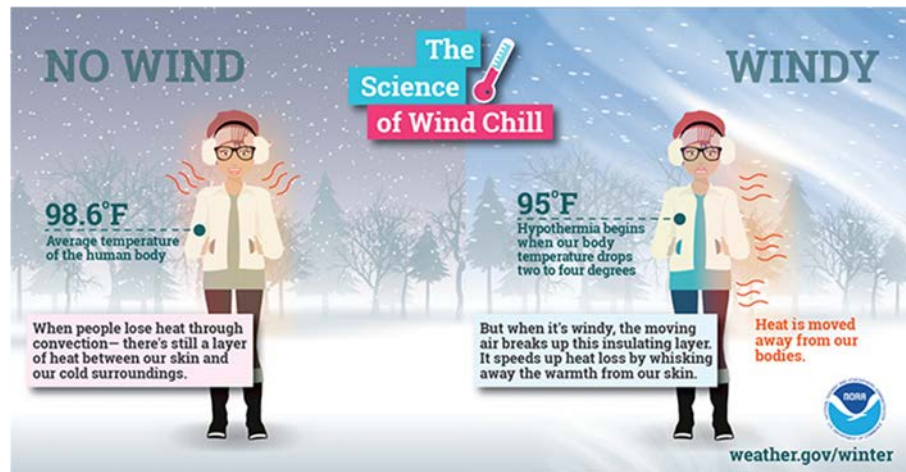


Figure 8 Source: Weather.gov/winter

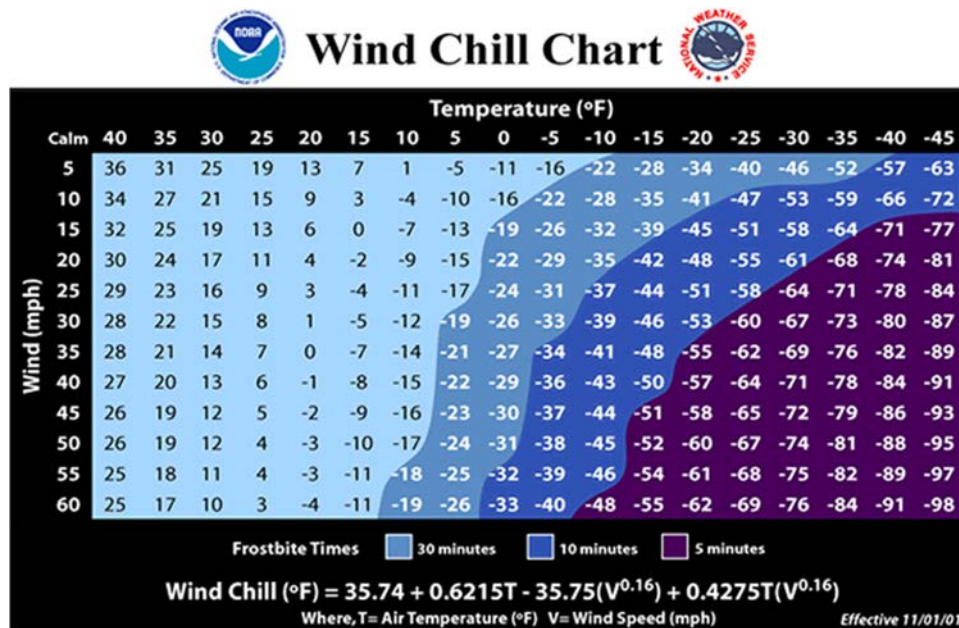


Figure 9 Source: National Weather Service, Wind Chill Chart

²⁸ Wind Chill : <https://www.merriam-webster.com/dictionary/windchill>

History

According to National Climatic Data Center, Brown County has experienced four extreme cold/wind chill events and 14 cold/wind chill events since January 1, 1990.

January 30, 1996

Bitter cold arctic air settled in across central and northeast Wisconsin. Record low temperatures were set in a few locations.

February 1, 1996

At least 20 record low temperatures were set across central and northeast Wisconsin during the early part of February, as a frigid arctic air mass remained entrenched across the area. The cold weather resulted in a hypothermia-related death in Green Bay on the first day of the month. Temperatures dropped to colder than 40 degrees below zero in parts of north central Wisconsin. Temperatures remained below zero for 137 hours straight in Green Bay. The cold weather was responsible for numerous school closures, stalled vehicles, frozen pipes, and broken water lines. Electrical and telephone outages occurred due to snapped wires and lines. Extreme cold temperatures combined with west winds of 10 to 15 mph to produce wind chill readings in the 50 to 70 degree below zero range on February 2, 1996.

June 7 & 8, 1998

Record low temperatures were set in Green Bay two mornings in a row, and in Appleton on three mornings. A low of 37 degrees F was reached on the morning of June 7. The next morning, the mercury dropped to 36 degrees F.

June 14, 1999

Temperatures dropped into the upper 20s and 30s overnight across much of north-central and northeast Wisconsin.

October 4, 1999

The low temperature at Austin Straubel International Airport in Green Bay was 25 degrees. This tied the record low that was set in 1989.

July 18, 2000

The high temperature of 58 degrees in Green Bay (Brown Co.) on the 18th tied the record for the lowest maximum temperature for the month that was set on July 11, 1917. It also broke the record for the lowest maximum temperature for July 18th, set in 1924. The low temperature of 46 degrees tied the record low for the date, set in 1956.

July 23, 2000

The low temperature at Green Bay (Brown Co.) of 46 degrees tied the record low for the 23rd, set in 1985.

February 17, 2006

A bitter cold air mass settled over the Western Great Lakes region on the February 17 and 18, 2006. On the morning of the 18th, temperatures dropped into the 15 below to 20 below zero range across east central Wisconsin, 18 below to 24 below zero across central Wisconsin, and 22 below to 27 below zero across northern Wisconsin. The cold temperatures combined with west winds of 5 to 15 mph to produce extremely cold wind chill readings. Green Bay recorded a wind chill of -41.

January 30, 2008

After an arctic front passed through the area, air temperatures fell into the 10 below to 20 below zero range and west winds increased to speeds of 20 to near 40 mph. The combination of cold temperatures and strong winds produced wind chills of 40 below to near 50 below zero across most of the area.

February 10, 2008

Strong northwest winds behind a departing low pressure system brought cold air into Wisconsin. Temperatures fell into the 10 below zero to 20 below zero range at most locations overnight and combined with 15 to 30 mph winds, with gusts as high as 40 mph, to produce bitter cold wind chills.

January 24, 2009

Northwest winds between a departing cold front and an approaching high pressure system brought much colder air into the area. Low temperatures ranged from the single digits below zero from the Fox Valley east to Lake Michigan, to the teens below zero in north-central and parts of central Wisconsin. Wind chills across the area were mostly in the 20 below zero to 30 below zero range. There were two fatalities due to hypothermia during the morning of the 24th.

January 20, 2013

Brisk northwest winds brought bitterly cold arctic air into Wisconsin. A Green Bay man died of hypothermia outside his home early on the morning of January 21st. Temperatures were in the single digits with wind chills of 10 below to 15 below zero.

January 6, 2014

A bitterly cold arctic air mass, the coldest to impact the region in years, spread across the area following the passage of a cold front. Temperatures fell to lows in the 16 below to 32 below zero range. The cold temperatures, combined with west winds of 10 to 20 mph, produced wind chills in the 40 below to 55 below zero range.

January 27, 2014

High pressure over the Plains and upper level flow from the Canadian Plains brought extremely cold temperatures and wind chills to the area. Temperatures fell to lows in the 15 below to 28 below zero range. West winds of 10 to 20 mph combined with the frigid air to produce wind chills in the 35 below to 45 below zero range.

January 10, 2016

Wind chills at Green Bay were generally in the 20 below to 23 below zero range from late on the night of January 10th through early morning January 11th. One death was associated with the cold weather when a woman was found outside of a Green Bay tavern the following morning.

January 2, 2018

Subzero low temperatures, highs mainly in the single digits, and wind chills in the 20 below to 34 below zero range were common during the first week of January. Two people died of exposure. One of them died outside her Green Bay (Brown Co.) home. It is believed that the Green Bay woman tripped and hit her head while looking for her keys.

January 29, 2019

Cold air moved into northern Wisconsin as a strong low pressure system departed and high pressure over the Plains moved toward the region. Low temperatures on the morning of January 30th were mainly in the -15F to -30F range and wind chills mostly -35 to -55. Temperatures across the area remained below zero throughout the day on the 30th. Schools and many businesses closed, public transportation suspended or curtailed service, and the U.S. Postal Service even suspended deliveries due to the bitter cold.

Storm Events Source: NOAA Storm Events Database – Extreme Cold/Wind Chill & Cold/Wind Chill

Vulnerability

Typically, an extreme cold episode affects Brown County once every couple of years, however; more recently it appears that extreme cold/wind chill events are becoming more common with nearly one event each year since 2013. Extreme cold episodes also tend to be a regional phenomenon in that the episode affects much of the northeastern region of Wisconsin on nearly all of the occasions in which the episodes affected Brown County.

Impacts

The following describes the various impacts that extreme cold events have on the county.

Critical Facilities

All buildings, including critical facilities, will have an increased demand for heat fuels during an extreme cold event. Increased demand will impact local natural gas energy utilities serving the planning area. Hospitals and clinics may see patients suffering from exposure and emergency shelters may take in additional patrons. Area schools may cancel classes or call for early dismissal in extreme cold events. Water lines may burst forcing water utilities to repair damaged water mains. Local fire departments and rescue services may also deal with direct or indirect consequences of the extreme cold event.

Public Health

Exposure to cold temperatures can cause serious and/or life threatening conditions. Some of these conditions include frostbite or hypothermia and can become life threatening.

Hypothermia can occur when someone is exposed to cold temperatures or low wind chills. When someone experiences hypothermia, their body will begin to lose heat faster than it can be produced. Hypothermia is clinically significant when the body temperature is below 95 degrees. Severe hypothermia occurs when the body's temperature drops below 85 degrees, resulting in unconsciousness. When body temperatures drop too low, the brain may be affected, making the victim unable to think clearly or loose ambulation. Most often, hypothermia occurs at very cold temperatures, but can occur even at cool temperatures (above 40 degrees) if a person becomes chilled from rain, sweat or submersion in cold water. Victims of hypothermia are most often elderly people with inadequate food, clothing or heating; babies sleeping in cold bedrooms; children left unattended; adults under the influence of alcohol; mentally ill persons; and people who remain outdoors for long periods (such as the homeless). In cases of hypothermia, if help does not come, death is imminent. Great care is needed to properly re-warm victims with even mild cases of hypothermia.

Frostbite is an injury to the body that is caused by the freezing of body tissue. When exposed to the cold for extended periods of time, parts of the body are susceptible to the formation of ice crystals within the soft tissue. Frostbite is characterized similar to burns (degrees) and will cause a loss of feeling and color in affected areas. It most often affects the nose, ears, cheeks, chin, fingers or toes, all of which are extremities that experience circulation difficulties. Frostbite can permanently damage the body, and severe cases can lead to amputation.

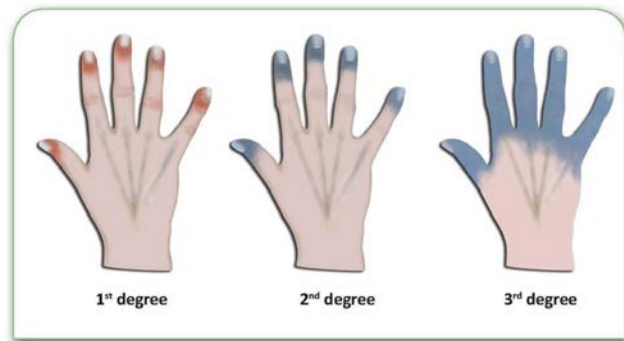


Figure 10 Source: UIAA, Mountain Skills: How

Safety

In addition to the health risks directly related to exposure to cold temperatures, Brown County residents are also susceptible to other risks associated with extremely cold temperatures. For example, residents may be in danger of extreme cold due to power failures, inadequate maintenance of heating systems (mechanical failure), or inability to pay gas and electric bills. The risks of household fires and carbon monoxide poisoning can also increase when people begin to use space heaters and fireplaces to stay warm.

Infrastructure

Public domain water pipes can burst in extreme cold conditions, which can also ruin the street above the water pipes. In addition, damage to fiber optic cables can occur

during extreme cold episodes, which can negatively affect commerce and hospitals in the planning area.

It is possible that extreme cold conditions combined with low lake levels might have led to the freezing of the water intake pipe in Lake Michigan in early 2004. Now, with historic high levels of water in Lake Michigan, a deep freeze could cause new issues.

Buildings

Extreme cold conditions can result various issues for buildings. Many of the issues such as problems with heating elements and frozen pipes have been addressed in previous sections.

Economic

Economic impacts of extreme cold events can include lack of motivation to participate in the local economy unless necessary during the event. Utility bills following the event will also be higher, which will give consumer less ability to purchase discretionary goods about a month after the event (unless that consumer is on a monthly even payment plan with the local utility). If area school districts need to call off school early on extremely cold days, there may be expenses involved with early busing and with paying staff for a full day while only having the benefit of a partial day of instruction. Non-profit organizations will incur expenses in the provision of emergency shelters. The private sector incurs economic losses and production decreases during an extreme cold event.

Areas at Greatest Risk

Extreme cold events have no defined hazard area within the planning area. The events are relatively uniform throughout Brown County.

Estimation of Potential Losses

No estimation of potential losses can be derived as there is no defined hazard area. Extreme cold events can occur anywhere in Brown County.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Winter Storms. Winter storm events will exacerbate extreme cold conditions.

Plans and Programs

Heating Moratorium. A Wisconsin rule, adopted in 1984, prohibits utilities from disconnecting natural gas and electric service during the winter months, between November 1 and April 15.

School Closings. The county's school districts have a policy of closing schools when the National Weather Service issues a wind chill warning or when snow accumulations create unsafe travel conditions. Information is typically gathered from transportation providers, Brown County Highway Department, and weather service providers to assist in making the school closure determinations. Local television and radio stations partner with the districts to make sure the announcements are out by 5:30 am. Some school districts have an automated phone system that contacts the homes of students as well.

Wind Chill Warnings. The local radio and TV media in concert with the National Weather Service issue a wind chill warning when temperatures are negative 30° F or lower. Severe wind chill warnings are provided when conditions warrant and when severe risk and safety is a factor.

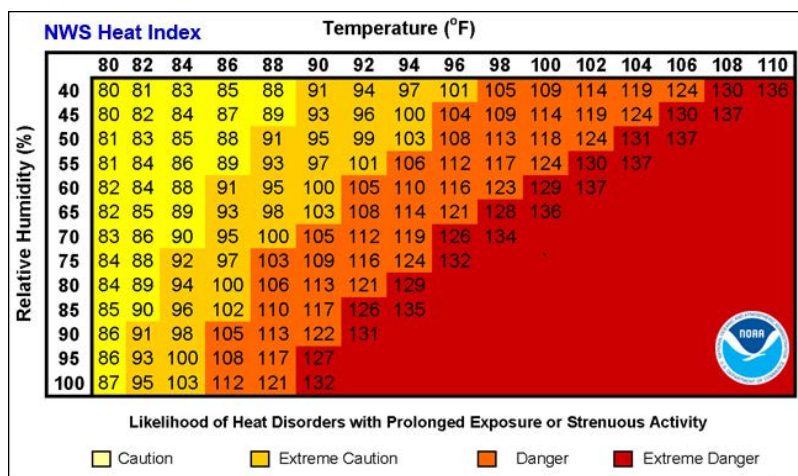
Gaps and Deficiencies

- Not all school districts have a transportation manager providing information on current weather and road conditions.
- Local radio and television stations do provide warnings but, are effective only if viewers are tuned to one of the local stations.
- A majority of the power lines in the county are above ground and subject to damage from ice, wind, and falling tree limbs. There are community requirements to manage trees near power lines.
- Residents that have had their heat disconnected prior to the heating moratorium beginning on November 1 must make arrangements with their local utility to pay outstanding bills in order to have their service restored. If a consumer has not made arrangements to pay an outstanding bill, the utility is not required to provide heat until an agreed-upon payment schedule has been reached.
- Residents could be without needed heating during any out-of-season cold spells that occur between April 16 and October 31.

Extreme Heat

Extreme heat is responsible for an average of 658 deaths per year (1999-2009)²⁹ in the US, making heat the number one weather killer in this country. Extreme heat and humid weather can create significant risks for people, particularly the elderly who may lack air conditioning or proper insulation or ventilation in their homes. Animals are also at risk during extended periods of heat and humidity.

The National Weather Service will issue a Heat Advisory when the Heat Index ranges from 105 to 114 degrees during the day and remains at or above 80 degrees at night, during a 24-hour period. The following Heat Index Chart displays the National Weather Service Heat Index. The heat index combines the effects of heat and humidity to reflect the risk of warm weather to animals and people. When heat and humidity combine to reduce the amount of



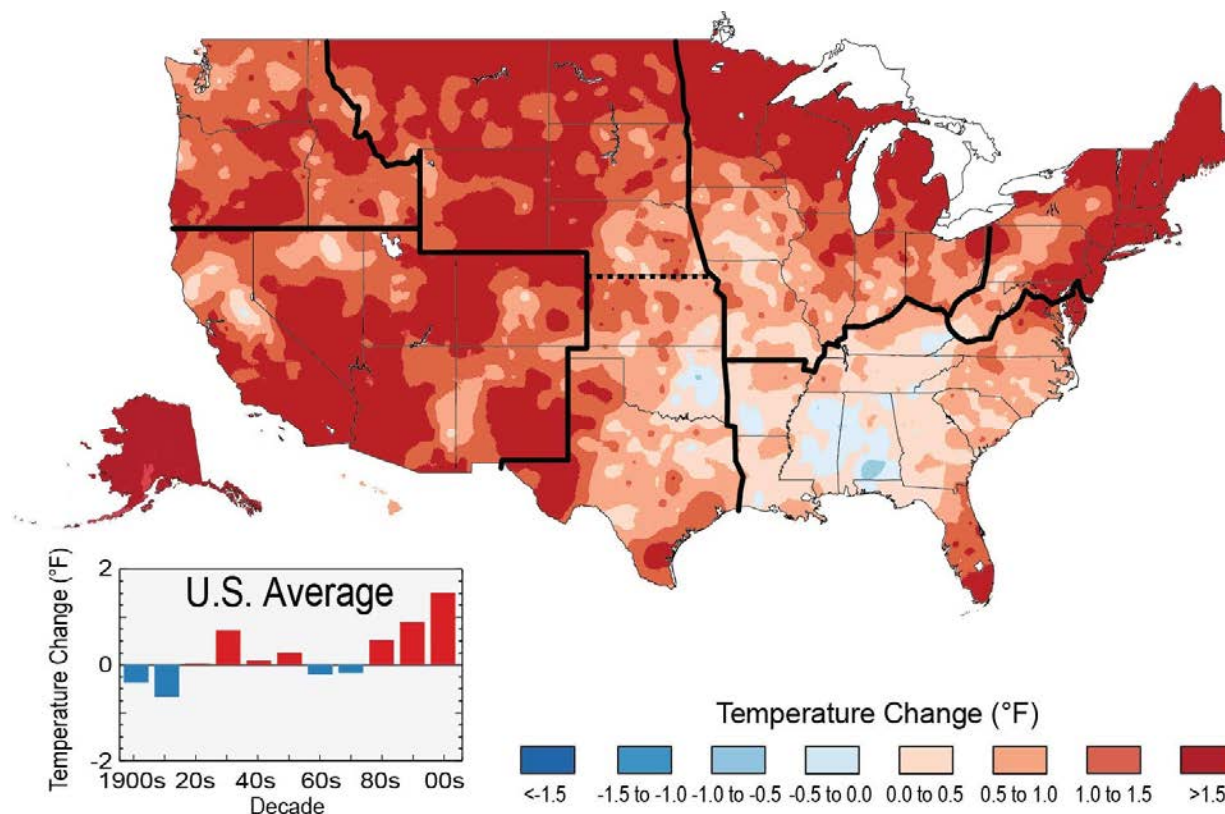
²⁹ American Public Health Association, Differences in Heat-related Mortality by Citizenship

evaporation of sweat from the body, outdoor activity becomes dangerous even for those in good shape. The index measures the apparent temperature in the shade. People exposed to the sun would experience an even higher apparent temperature. A heat index of 105 is considered dangerous and prolonged exposure can result in heat stroke, heat exhaustion, and heat cramps. People are reminded to use extreme caution when the heat index is between 95 and 105.

Based on the NOAA Storm Events Database, Wisconsin has had 12 deaths due to excessive heat since January 1, 1990. During the same time period, Brown County has not reported a death due to excessive heat.

History

According to NOAA Storm Events Database, Brown County has experienced six “extreme heat” events and 10 “heat” events since January 1, 1990. Meteorologists and climate scientists have been keeping track of temperatures in the U.S. for over a century. Over this period of time data shows that the average temperatures recorded across the U.S. are increasing, however, “quantifying long-term increases of temperature in a single number is challenging because the increase has not been constant over time. The increase can be quantified in a number of ways, but all of them show significant warming over the U.S. since the instrumental record began in 1895. For example, fitting a linear trend over the period 1895 to 2012 yields an increase in the range of 1.3 to 1.9°F.”³⁰ This trend is depicted in the map below.



³⁰ <https://nca2014.globalchange.gov/report/our-changing-climate/recent-us-temperature-trends>

The following list identifies the previously mentioned “extreme heat” and “heat” events in Brown County since January 1, 1990.

February 25-27, 1998

Record high temperatures were set at Green Bay on the 25th (47 degrees) and the 26th (54 degrees).

May 19, 1998

Temperatures typical of mid-summer affected much of central and northeast Wisconsin in mid-May. Green Bay (Brown Co.) recorded a record-tying 88 degree maximum on the 19th. The balmy weather caused pavement to pop on freeways around Green Bay

November 29, 1998

Record high temperatures were set across much of central and northeast Wisconsin late in the month. One of the warmest readings included Green Bay (Brown Co) at 63 degrees.

February 11, 1999

Southerly winds ahead of an approaching cold front brought unseasonably warm and moist air into Wisconsin. Much of central and northeast Wisconsin still had snow on the ground and the warm, moist air moving over the snow-covered ground resulted in widespread dense fog. Near zero visibility was common across much of central and northeast Wisconsin, resulting in numerous vehicular accidents. A new record high temperature was set in Green Bay (58 degrees).

July 23, 1999

Over one week of hot and very humid conditions across northeast Wisconsin resulted in numerous heat related illnesses and three deaths (none in Brown County) due to excessive heat. The heat caused concrete on many roads to buckle.

November 8 & 9, 1999

Record high temperatures were set across central and east-central Wisconsin on November 8th and 9th. Green Bay (Brown County) set new record highs of 69 degrees on the 8th and 74 degrees on the 9th. The 74 degrees reached on the 9th tied the record for the highest November temperature in Green Bay.

November 13, 1999

Record high temperatures were set across central and east-central Wisconsin on November 13th. Green Bay (Brown County) set a new record high of 67 degrees.

February 25, 2000

Green Bay (Brown Co.) set new record high temperatures of 49 degrees on the 25th and 61 degrees on the 26th. The 61 degree reading was the warmest ever recorded in Green Bay during the month of February.

February 29, 2000

The temperature reached 59 degrees in Green Bay (Brown County) which set a new record high.

March 4, 2000

Record high temperatures were set or tied in Green Bay (Brown Co.) on the 4th (57 degrees), the 5th (57 degrees), the 6th (69 degrees), the 7th (78 degrees), the 8th (74 degrees) and the 9th (56 degrees). The new record high of 78 degrees on the 7th was the second warmest March day ever in Green Bay and their new record high of 74 degrees on the 8th was the fifth warmest March day ever.

March 23, 2000

Green Bay (Brown County) tied their record high temperature of 65 degrees that was set in 1939.

November 1, 2001

The average temperature (43.4 degrees) for the month set the record in Green Bay.

July 31, 2006

Temperatures in the 90's to around 100 degrees combined with dew points in the 60's and lower 70's to produce heat index values approaching 110 during the afternoon hours. Several people in Green Bay (Brown Co.) were treated for heat exhaustion at local hospitals.

July 3, 2012

A hot air mass settled over Wisconsin in early July, bringing highs of 100 degrees or hotter to central Wisconsin from July 4th through July 6th. Relative humidity was relatively low, but heat indices still managed to reach the 100 and 110 range.

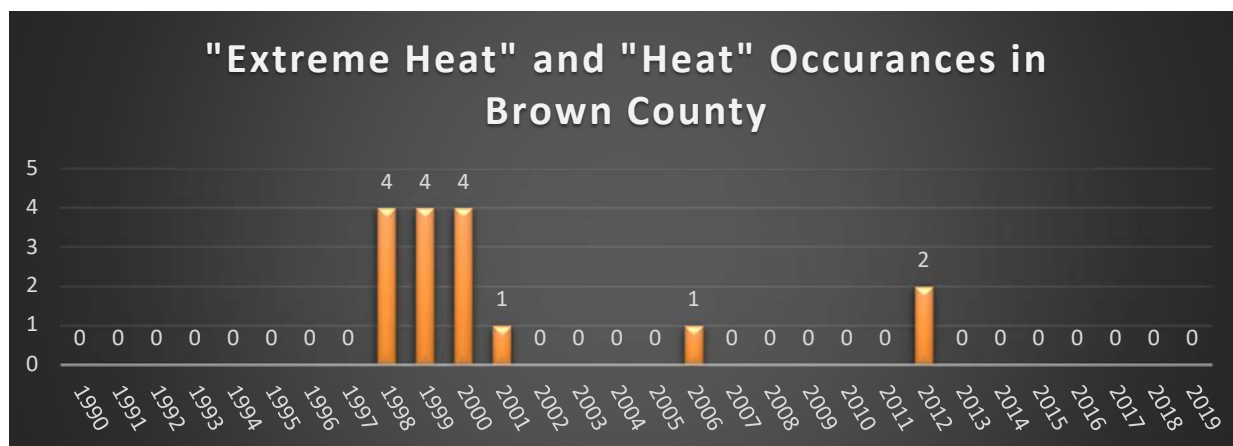
July 16, 2012

Hot temperatures returned to central and east central Wisconsin during the middle of the month. High temperatures were mainly in the 90s but heat index values topped out at 95 to 105.

Storm Events Source: NOAA Storm Events Database – Heat & Excessive Heat

Vulnerability

Based on past observations, it is likely that one to two “extreme heat” or “heat” episodes will affect Brown County in any given year. These heat episodes tend to be a regional event in that they affect much of the northeastern part of Wisconsin on nearly all of the occasions in which they affected Brown County. Heat related episodes tend to be broader geographically and can vary slightly due to local geographical features such as Lake Michigan. Lake Michigan tends to keep the areas along the lakeshore cooler throughout the year and these locations may not experience the same conditions as others located about 5-10 miles away from the shoreline.



Impacts

The following describes the various impacts that extreme heat events have on the county.

Critical Facilities

Utilities companies may experience increases in services during extreme heat episodes. Episodes such as the power grid collapse in the northeastern United States and in eastern Canada in the summer of 2003 serve as an example of how devastating a grid collapse can be during a heat event. For many people, summer is the season when people plan their outdoor adventures and it should be no surprise that the incidents of heat related health issues increases. During heat events rescue services, hospitals, and clinics may experience increased demand due to heat related illnesses including heat exhaustion and heat stroke. In some unique scenarios, the use of emergency shelters may be required during a heat event, however, these are rare. Finally, there is usually increased water demand during heat events both for human consumption as well as for lawn watering.

Public Health

Large numbers of persons can experience serious illnesses and ailments during a heat event. The most common of these illnesses include heat cramps, heat exhaustion and heat (sun) stroke. Symptoms of heat cramps include painful spasms usually occurring in the leg and abdominal muscles, along with heavy sweating. Symptoms of heat exhaustion include³¹:

- Cool, moist skin with goose bumps when in the heat
- Heavy sweating
- Faintness
- Dizziness
- Fatigue
- Weak, rapid pulse
- Low blood pressure upon standing
- Muscle cramps
- Nausea
- Headache

³¹ Heat Exhaustion Symptoms: <https://www.mayoclinic.org/diseases-conditions/heat-exhaustion/symptoms-causes/syc-20373250>

Symptoms of heat/sun stroke include³²:

- High body temperature. A core body temperature of 104 F (40 C) or higher, obtained with a rectal thermometer, is the main sign of heatstroke.
- Altered mental state or behavior. Confusion, agitation, slurred speech, irritability, delirium, seizures and coma can all result from heatstroke.
- Alteration in sweating. In heatstroke brought on by hot weather, your skin will feel hot and dry to the touch. However, in heatstroke brought on by strenuous exercise, your skin may feel dry or slightly moist.
- Nausea and vomiting. You may feel sick to your stomach or vomit.
- Flushed skin. Your skin may turn red as your body temperature increases.
- Rapid breathing. Your breathing may become rapid and shallow.
- Racing heart rate. Your pulse may significantly increase because heat stress places a tremendous burden on your heart to help cool your body.
- Headache. Your head may throb.

Heat stroke is a medical emergency, while heat exhaustion requires medical attention if persistent. Sunburn is also a common issues associated with extended exposure to the sun. Symptoms of sunburn include skin redness and pain, possible swelling, blisters, fever and headaches.

In addition to these common heat related illnesses, Brown County residents may be exposed to levels of ground-level ozone (smog) which exceeds the federal standard. Albeit, meteorological conditions must be correct for this to occur. Ozone can induce the following:

- Induction of respiratory symptoms,
- Decrements in lung function,
- Inflammation of airways.

Respiratory symptoms can include:

- Coughing,
- Throat irritation,
- Pain, burning, or discomfort in the chest when taking a deep breath,
- Chest tightness, wheezing, or shortness of breath.

In addition to these effects, evidence from observational studies strongly indicates that higher daily ozone concentrations are associated with increased asthma attacks, increased hospital admissions, increased daily mortality, and other markers of morbidity³³. People with respiratory problems are at increased risk, but even healthy people who are active outdoors can be affected when ozone levels are high. Repeated exposure to ozone pollution for several months may cause permanent lung damage. Anyone who spends time outdoors in the summer is at risk, particularly children and individuals who are active outdoors.

³² Heat Stroke Symptoms: <https://www.mayoclinic.org/diseases-conditions/heat-stroke/symptoms-causes/syc-20353581>

³³ Ozone Symptoms: <https://www.epa.gov/ozone-pollution-and-your-patients-health/health-effects-ozone-general-population>

Safety

The safety impacts of heat related events mirror the potential health impacts. Simple safety precautions should be practiced during heat events including public service announcements across all forms of media and preventative planning for the young and elderly populations who are most susceptible to excessive heat.

Infrastructure

There are not many impacts associated with extreme heat on publicly owned infrastructure. However, one impact that extreme heat can have on publicly owned infrastructure is pavement buckling. In some cases, such as those that occurred on STH 29 in 2012 that sent a vehicle flying into the air at a high rate of speed, emergency repairs may be required immediately. Another notable but not critical is a potentially higher demand for water recreation in city parks and at beaches along Lake Michigan and other swimming venues (pools, inland lakes, etc.).

Buildings

While there are no direct impacts on buildings, periods of excessive heat can affect the ability of buildings to be comfortable and safe for human habitation if they are not equipped with air conditioning. Periods of excessive heat can result in high electrical consumption and put a strain on air conditioning units requiring them to run longer and more often to keep the building cool.

Economic

There are numerous economic impacts including but not limited to; higher electrical prices due to increased demand, crop losses, infrastructure failure, tourism loss, and increased demands for medical treatment. Local, county, and state governments may incur expenses when repairing streets due to buckling and lose out on tax revenue associated with crop loss and decreased tourism. Non-profit organizations may also incur expenses if emergency shelters are activated.

A less tangible but equally important consideration is the loss in productivity amongst laborers and individuals who work in a non-climate controlled environment. These workers are at increased risk of the aforementioned health impact associated with heat as well as the potential of death. Between 1992 and 2016, excessive heat killed 783 US workers and seriously injured 69,374³⁴.

Areas at Greatest Risk

Extreme heat usually occurs throughout the entire planning area.

Estimation of Potential Losses

No estimation of potential losses can be derived as there is no defined hazard area. Extreme heat events can occur anywhere in Brown County.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

³⁴ Bureau of Labor Statistics

Drought. Extended high temperatures can result in drought.

Wildfire. Dry, hot conditions can increase the risk for wildfires.

Plans and Programs

Heat Advisories. The local radio and TV media in concert with the National Weather Service issues a heat advisory when the combination of temperature and humidity create risks for people and animals. In the state of Wisconsin, a heat index of 100 or more warrants a heat advisory. Advisories can also be issued if the expected heat index is expected to be 95 to 99 degrees for four consecutive days or more. An excessive heat warning is issued when daytime heat index values are expected to reach 105 or higher and nighttime values will be 75 degrees or higher for a 48 hour period³⁵.

School Closings. The county's school districts have a policy of closing summer schools when the National Weather Service issues a heat index warning. Local television and radio stations partner with the districts to make sure the announcements are out by 5:30 am.

Cooling Site/Shelter. The County does not have a designated cooling shelter; however, a cooling shelter may be made available through partnerships with organizations like the Red Cross and the Salvation Army/211. The authorization to open a cooling center would be determined by the Brown County Health and would require conditions to meet or exceed heat indices of 100 or more for multiple days with warm night.

Gaps and Deficiencies

Not all school districts have a transportation manager providing information on current weather conditions, however, heat events can usually be predicted by meteorologists and can be planned for in advance.

Although Wisconsin requires utilities to provide residents heating between November 1 and April 15, there is no guarantee that residents will have access to cooling during times of extreme heat.

Cooling systems are lacking in many elderly housing developments.

Fog

Fog is a hazard that should not be discounted. Fog is a cloud consisting of minute droplets or ice crystals that touches the ground. In order for fog to form, dust or some other air pollutant needs to be in the air. The water vapor then condenses around these solid particles to form fog. Airport delays, automobile accidents, shipwrecks, and plane crashes can be attributed to fog. Fog is responsible for an average of over \$1,000,000 in property damage, dozens of injuries, and several deaths every year throughout the U.S. The financial cost of transportation delays, although not collected or calculated, are thought to be substantial.

³⁵ Extreme Heat Toolkit, Wisconsin Climate and Health Program - <https://www.dhs.wisconsin.gov/publications/p0/p00632.pdf>

Fog can occur almost anywhere and during any season. There are certain locations that, due to geographical features such as the presence of hills and valleys, water, and vegetation, are more likely to experience fog. Seasonal shifts in temperatures also impact the presence and frequency of fog. Furthermore, not all fog is the same.

Fog is classified based on how it forms, which is often related to where it forms. The following are the four most common types of fog:



Figure 12 Source: WAOW

- **Advection fog** forms when warm, moist air passes over a cool surface. This process is called advection, a scientific name describing the movement of fluid. In the atmosphere, the fluid is wind. When the moist, warm air makes contact with the cooler surface air, water vapor condenses to create fog. Advection fog shows up mostly in places where warm, tropical air meets cooler water. This type of fog is most commonly found near the oceans, however, locally, this type of fog can occur along the shores of the Great Lakes and the Bay of Green Bay.
- **Freezing fog** happens when the liquid fog droplets freeze to solid surfaces. Mountaintops that are covered by clouds are often covered in freezing fog. As the freezing fog lifts, the ground, the trees, and even objects like spider webs, are blanketed by a layer of frost. The white landscapes of freezing fog are common in places with cold, moist climates.
- **Radiation fog** forms in the evening when heat absorbed by the Earth's surface during the day is radiated into the air. As heat is transferred from the ground to the air, water droplets form. Also known as "ground fog" it usually forms at night and typically does not reach as high as any of the clouds overhead. Fog that is said to "burn off" in the morning sun is radiation fog.
- **Valley fog** forms in mountain valleys, usually during winter. Valley fog develops when mountains prevent the dense air from escaping. The fog is trapped in the bowl of the valley. This type of fog is rare in Wisconsin and especially rare in Brown County as the topography does not lend itself to the formation of valley fog.³⁶

The National Weather Service forecasts fog and issues dense fog advisories when visibility is decreased to less than one quarter of a mile. These advisories alert travelers to potentially dangerous conditions. Traveling in fog will often require reduced speed and an increased level of preparedness. At night, traveling in fog is especially dangerous because darkness combines with fog to further reduce visibility. In addition, light from automobile headlights and other navigational lights is scattered off the water droplets of the fog, limiting sight to only a short distance. In response to this problem, automobiles are often equipped with specially designed lights that illuminate a usually dry (and therefore clear) area just above the roadway surface.

³⁶ Fog types, National Geographic - <https://www.nationalgeographic.org/encyclopedia/fog/>

History

According to National Climatic Data Center, Brown County has experienced 12 fog events since January 1, 1990.

March 18, 1996

Dense fog reduced visibilities to one-quarter mile or less across a large portion of northeast and east central Wisconsin.

May 9, 1996

Dense fog reduced visibilities to one-quarter mile or less across most of central and east central Wisconsin.

June 10, 1996

Dense fog affected parts of northeast and east central Wisconsin, especially near the Bay of Green Bay and Lake Michigan. The Fox Valley was also affected by the thick fog, which reduced visibilities to one-quarter mile or less at times.

September 6, 1996

Dense fog affected most of northeast and east central Wisconsin, reducing visibilities to one-quarter mile or less.

September 21, 1996

Dense fog dropped visibilities to one-quarter mile or less across east central Wisconsin.

October 16, 1996

Dense fog developed across most of central, northeast, and east central Wisconsin, reducing visibilities to one-quarter mile or less.

October 21, 1996

Dense fog reduced visibilities to one-quarter mile or less across most of northeast and east central Wisconsin.

January 2, 1997

Dense fog reduced visibilities to one-quarter mile or less across much of northeast, central, and east central Wisconsin. A warm air advection over the top of snow-covered ground led to the fog development.

March 1, 1997

Dense fog enshrouded much of central and northeast Wisconsin, reducing visibilities to one-quarter mile or less.

December 12, 1999

Dense fog reduced visibilities to near zero over much of north central, northeast, central, and east central Wisconsin. Moisture, trapped near the surface by weak high pressure, combined with cool temperatures and light winds to form widespread dense fog.

January 9, 2000

A warm front moving north through Wisconsin brought warm and moist air to central and east central Wisconsin. The snow-covered ground cooled the moist air, resulting in widespread dense fog that first developed in the Fox Valley early in the morning of the January 9, 2000 and then overspread most of central and east central Wisconsin by evening. The fog began to dissipate a bit shortly after midnight on the 10th.

February 24, 2000

Moisture from rainfall and melting snow combined with light winds to produce widespread dense fog across most of northeast Wisconsin.

Vulnerability

Twelve fog events occurred between 1990 and April of 2019, which covers nearly 30 years. Fog is not reported and recorded in the storm events database nearly as often as it occurs. As previously mentioned, fog can be extremely localized and can vary in density based on the conditions present which can drastically change conditions every 100 feet.

It is probable that residents living in Northeast Wisconsin and more specifically, Brown County, will experience fog on an annual basis. For individuals that live and travel near Lake Michigan, that likelihood increases.

Impacts

The following describes the various impacts that fog events have on the county.

Critical Facilities

Law enforcement will likely respond to accidents more frequently during fog events also increasing the likelihood that hospitals and clinics treat individuals injured in said accidents. Rescue services will also see an increase in service requests if accidents occur. Municipal public works and county highway departments may need to perform emergency repairs to infrastructure resulting from crashes during the fog event. Schools may also see schedule disruptions due to slower bus service.

In winter fog events, utility companies may need to repair above ground lines if weighted down by the freezing fog accumulation.

Austin Straubel International Airport and other area airports can experience flight delays and cancellations during certain fog events.

Ships entering the Bay of Green Bay will need to proceed with extra caution during fog events. The shipping channel and some of the bridges on the Lower Fox River are narrow requiring precise navigation with visibility playing a key role.

Public Health

Most injuries caused by fog events result from vehicle accidents. Few other public health impacts occur during fog events.

Safety

The main safety concern associated with fog are injuries from traffic accidents. Freezing fog can also create hazardous walking and driving conditions if the fog condenses on contact with objects and accumulates into ice. Although rare, ship wrecks and plane crashes are also concerns that could have serious impacts to the public's health and safety as well as to the economy.

Infrastructure

The main impact on infrastructure from a fog event is when accidents occur on the roadways. Accidents can cause damage to the roadway, guardrails, signs, and possibly to bridges and overpasses. In the event that an accident occurs, emergency personnel and law enforcement officers may need to reroute motorists to bypass the accident site. Power lines and tree limbs can also become problematic during winter fog events. Branches and power lines that cross or overhang the roadways can be weighted down and even fall into the roadway.

Buildings

There are no direct impacts to buildings from a fog event, except under certain winter circumstances, when freezing of power lines can occasionally lead to disruptions in power to buildings.

Economic

There are economic costs associated with accidents caused by fog. Vehicular accidents usually involve property damage, and some vehicular accidents during fog events involve injuries and/or fatalities. All of these consequences to vehicular accidents have costs both to the individual involved and to society. Fog events can also cost businesses in lost time involving late workers and/or late shipments. If area school districts need to delay school during a fog event, there may be expenses involved with delayed busing and with paying staff for a full day while only having the benefit of a partial day of instruction. Airline delays due to fog have economic impacts for travelers as well as for commerce. There are additional economic impacts if the fog event occurs in conjunction with the icing of power lines in cases where the power lines are damaged, and residents lose power.

Areas at Greatest Risk

Areas of Brown County situated along the Bay of Green Bay and in river valleys and other low-lying areas can be at greater risk for fog under certain meteorological conditions. However, no portion of the planning area is free of the possibility of experiencing fog.

Estimation of Potential Losses

No estimation of potential losses can be derived as there is no defined hazard area. Fog events can occur anywhere in Brown County.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Winter Storms. Winter storm conditions with freezing rain and icy roads can mix with fog to create deadly roadway conditions.

Plans and Programs

Fog Warning Signs. Flashing signals or fog warning signs are in place on roads within Brown County that are known to be prone to fog.

NOAA Weather Radio Program. Brown County has a NOAA Weather Radio purchasing program in place that encourages and assists residents in acquiring a weather radio.

Local News Stations. Local news stations can predict and issue fog advisories. These advisories can help inform people of the potential for fog before traveling.

Gaps and Deficiencies

Local radio and television stations provide warnings but are effective only if tuned to one of the local stations.

Fog warning signs may be ineffective if drivers are traveling at an unsafe speed for the weather conditions.

Hailstorms

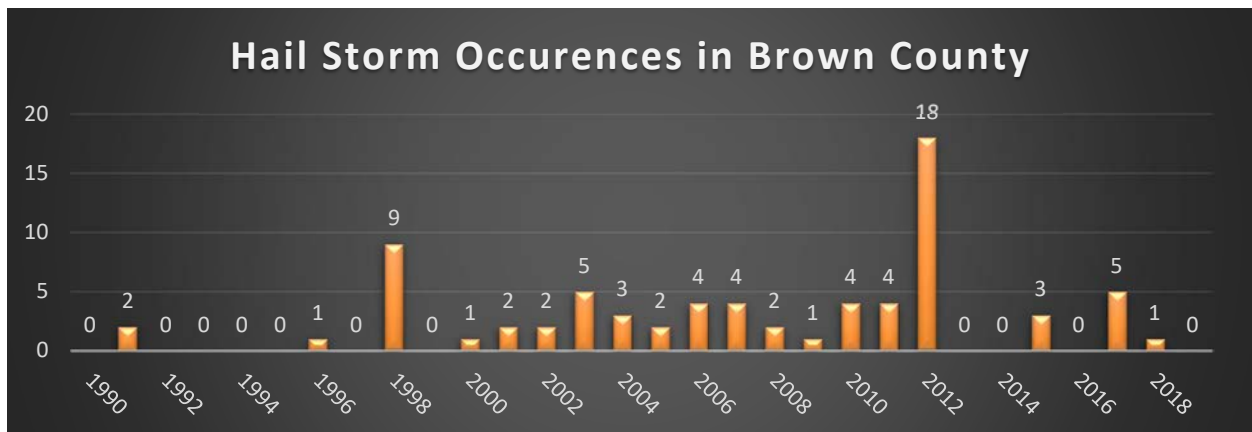
Hail is a form of precipitation that occurs when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere where they freeze into ice³⁷. Frozen droplets gradually accumulate on the ice crystals until they develop sufficient weight and fall as a solid piece of ice as shown to the right. The size of hailstones is a direct function of the severity and size of the storm. Significant damage usually does not result until the hailstones reach 1.5 inches in diameter, which occurs in less than half of all hailstorms. The majority of hail events in Wisconsin range from pea-sized to golf ball-sized however, it is possible that, given the right conditions, larger hail could develop.



Figure 13 Source: theweathernetwork.com

History

According to the National Climatic Data Center, Brown County has experienced 73 hail events since January 1, 1990. As shown in the following tables, hail storms do occur frequently in Brown County.



³⁷ <https://www.nssl.noaa.gov/research/hail/>

Table 3.9: Hail Storm Details			
Location	Date	Size of Hail	Storm Description
UNKNOWN	5/28/1991	0.75	
UNKNOWN	5/28/1991	2.38	
PULASKI	9/21/1996	0.75	
WRIGHTSTOWN & GREENLEAF	3/29/1998	2.75	Two prolific hail-producing thunderstorms dropped hail as large as baseballs and grapefruits across parts of central and east-central Wisconsin during the late morning and afternoon of March 29. Total damage to property from the storms in Waushara, Winnebago, Outagamie, Brown and Calumet counties topped \$10 million. Cash crop damage was minimal.
WRIGHTSTOWN	5/31/1998	0.88	A series of thunderstorms roared across the area late on May 30 and early on the 31st, causing about \$1.8 million dollars in damage and injuring two people. Two tornadoes were also reported.
BELLEVUE	9/1/1998	0.75	Thunderstorms with strong winds and hail moved across central and northeast Wisconsin. A few trees were knocked down across the region. Wind-driven hail caused minor damage.
HOWARD, GREEN BAY, BELLEVUE, & ASHWAUBENON	9/26/1998	1.75-0.88	Numerous thunderstorms with large hail, heavy rain and strong winds rumbled across northern and east-central Wisconsin during the early morning of September 26. Brown County was hit hard. Local flooding in Howard occurred after 3 inches of rain fell in only 2 hours, accompanied by large hail and strong winds.
GREEN BAY	7/13/2000	1.25	The storms downed trees and power lines and dropped large hail as they moved through northeast Wisconsin.
NEW FRANKEN	6/16/2001	0.75	Thunderstorms developed across northern Wisconsin as a weak cold front and an upper level disturbance moved across the state. Some of the thunderstorms downed trees and power lines and produced large hail.
GREEN BAY	8/9/2001	0.88	Severe thunderstorms, associated with a strong cold front, moved across east-central and northeast Wisconsin during the early afternoon hours. Winds from the storms downed trees and power lines, causing 6,700 customers to lose electricity.

WRIGHTSTOWN	5/6/2002	0.88	A low pressure system over southeast Minnesota moved east across central Wisconsin during the late afternoon and early evening hours. Severe thunderstorms developed in the unstable air near the intersection of a warm front and a cold front. There were numerous reports of large hail and some funnel clouds.
DE PERE	5/30/2002	1.5	Severe thunderstorms moved through northeast and east-central Wisconsin ahead of an approaching cold front. Dime size to golf ball size hail fell as the storms moved through the area.
PULASKI & FLINTVILLE	4/15/2003	0.88	Severe thunderstorms developed north of a strong cold front. Temperatures dropped as much as 30 degrees in one hour in some areas as the front moved south across Wisconsin. The hail produced ranged from dime size at numerous locations to as large as a tennis ball.
GREEN BAY	8/2/2003	0.75	Low pressure and unstable air over Wisconsin led to the development of thunderstorms. The storms moved very slowly, resulting in heavy rainfall in some areas. Flooding and large hail was reported with these storms.
PULASKI & SUAMICO	8/28/2003	0.75	Thunderstorms developed ahead of a warm front that moved north across Wisconsin. Dime size hail fell for 10 minutes one mile east of Pulaski.
WRIGHTSTOWN	7/13/2004	0.75	Thunderstorms developed in moist and unstable air as a cold front and upper level trough moved through northeast Wisconsin. Tennis ball size hail was reported in Manitowoc County.
ASHWAUBENON & GREEN BAY	10/23/2004	0.88	A front made its way through Wisconsin as a strong low pressure system moved across the northwest part of the state. Severe thunderstorms developed in a moist air mass ahead of the front. Nickel size hail fell in Ashwaubenon.

ASHWAUBENON	5/6/2005	0.75	Thunderstorms developed in east central Wisconsin as moisture interacted with a trough that moved into the area. The storms produced a tornado, numerous reports of large hail and torrential rain.
GREEN BAY	6/7/2005	1	Thunderstorms developed in the vicinity of a warm front that lifted north through the state during the afternoon and early evening hours. High winds downed trees, power lines and large branches in several locations in central and northeast Wisconsin and there were several reports of large hail.
DE PERE	6/21/2006	1	Thunderstorms that moved through Brown County during the morning produced quarter-size hail in De Pere.
HOWARD	6/28/2006	0.88	Scattered thunderstorms produced penny to nicked size hail in northeast Wisconsin.
PULASKI	7/24/2006	1.25	Half dollar size hail fell 3 miles west of Ashwaubenon and there were several reports of penny to quarter size hail across the area. An apparent wet microburst occurred in Brown County when extremely heavy rain fell as a 50 knot south wind was measured at the National Weather Service in Green Bay. Two airplanes at the airport sustained damage. Trees and tree limbs were knocked down in the Green Bay, De Pere and Hobart areas of Brown County.
BELLEVUE	8/23/2006	0.88	As thunderstorms made their way across northeast Wisconsin some of the storms produced hail as large as a quarter.
SUAMICO	6/20/2007	1	The southeast-moving storms produced copious amounts of large hail, up to golf ball size, high winds that downed trees and power lines, and a funnel cloud.
HOWARD & SUAMICO	7/5/2007	0.88	An upper trough initiated convection in northeast Wisconsin. Outflow from these storms initiated additional severe thunderstorms.
NICOLET ARPT	10/5/2007	0.88	Pulse thunderstorms that developed in unstable air across northeast Wisconsin produced isolated severe weather.

WRIGHTSTOWN	6/28/2008	1	Thunderstorms developed as winds in the upper atmosphere brought colder air over Wisconsin, causing the air mass to become unstable. Some of the storms produced large hail.
(GRB)STRAUBEL FLD GR	7/29/2008	0.75	Thunderstorms developed in unstable air ahead of a cold front that pushed east across Wisconsin. The storms produced large hail, wind damage and three weak tornadoes.
NICOLET ARPT	6/14/2009	0.88	Thunderstorms, associated with a passing cold front, produced nickel size hail near De Pere. The hail was mainly 0.50 inch to 0.75 inch diameter and partially covered the ground.
ALLOUEZ, GREEN BAY, & BELLEVUE	8/20/2010	1.5	Severe storms with heavy rains, hail, high winds, and a tornado, moved across the Fox Valley and Green Bay late in the afternoon. Hail over an inch in diameter fell in Green Bay and De Pere. Intense rains caused flooding in Green Bay.
NEW ROME	4/10/2011	1	Thunderstorms developed along and ahead of a cold front as it encountered moist and unstable air across Wisconsin. Fifteen twisters affected the state as a strong spring storm moved across the western Great Lakes. In addition to the tornadoes, the lines of thunderstorms that developed produced plenty of straight line wind damage and large hail. The largest hail reported was baseball size near Winneconne in Winnebago County.
CORMIER, WRIGHTSTOWN, & ALLOUEZ	5/22/2011	1.5- 0.88	Severe thunderstorms produced high winds, large hail, and a tornado across central and northeast Wisconsin on May 22, 2011.
HOWARD	5/3/2012	0.88	Thunderstorms developed over northeast Iowa Wednesday evening before tracking over east central Wisconsin overnight on May 2nd into the morning of May 3rd. Heavy rain produced flooding along with hail up to nickel size.

CORMIER, ASHWAUBENON, PREBLE, KOLB, ALLOUEZ, DE PERE, & SHIRLEY	6/22/2012	1.00-0.75	Thunderstorms that developed in response to an upper level disturbance produced isolated large hail and heavy rainfall as they moved through east-central Wisconsin.
KUNESH	7/9/2012	0.75	Scattered strong thunderstorms developed over northeast Wisconsin due to an upper air disturbance and an unstable air mass. One of the storms produced wind damage near Pulaski and Pittsfield.
CORMIER, GREEN BAY, SUAMICO, BELLEVUE, MORRISON, WRIGHTSTOWN, & GREENLEAF	7/30/2012	2.5-0.75	An upper level disturbance and a cold front interacting with an unstable air mass resulted in the formation of thunderstorms. The strongest storms produced hail as large as tennis ball size and wind gusts to 60 mph.
SUAMICO & ASHWAUBENON	8/2/2015	1.75	Another round of severe thunderstorms with large hail and damaging straight-line winds affected parts of central and northeast Wisconsin during the afternoon of August 2nd. Some of the first severe storms of the event developed just north of Green Bay and produced hail in excess of three inches in diameter.
PULASKI	8/14/2015	1.75	Storms produced heavy rainfall that caused minor urban flooding, damaging winds that downed trees and power lines, and hail up to golf ball size across eastern Wisconsin.
GREEN BAY & BELLEVUE	8/10/2017	1.25-0.75	Scattered thunderstorms developed when a cold front encountered moderately unstable air. The strongest storms contained heavy rain, large hail, and wind gusts of 40 to 50 mph. The largest reported hail was half dollar size in Green Bay.
DENMARK	7/30/2018	0.75	Thunderstorms in east-central Wisconsin produced penny size hail in Denmark.

Source: NOAA National Climatic Data Center; July, 2019

Vulnerability

Seventy-three hail events occurred between 1990 and April of 2019. Hail can impact any part of Brown County and most of the reported damage from hail storms occurs to; buildings, vehicles, infrastructure, and agricultural crops. As noted in some of the storm descriptions in the table above, hail damage can become extremely costly with reports of damage in the millions of dollars.

Impacts

The following describes the various impacts that hail events have on Brown County.

Critical Facilities

Hail can inflict severe damage to buildings, mainly the roofs, windows and siding, depending on hailstone size and winds.

Public Health

Hail is unlikely to cause any public health concerns.

Safety

As noted in the storm reports since 1990, hail can cause injuries but rarely causes anything more than minor injuries.

Infrastructure

Buildings

Hail can inflict severe damage to roofs, windows and siding, depending on hailstone size and winds.

Economic

Costly hailstorms are increasing in the United States, with the average year now accumulating between \$8 and \$10 billion in damage. Additionally, hailstorms account for 70 percent of insured loss from severe storms. In 2017 alone, there were two \$2 billion hailstorms, one in Denver and the other in Minneapolis³⁸. Most of the cost incurred is to vehicle and building damage, however, damage to agricultural crops can be costly as well. Taller crops, such as corn are particularly vulnerable to hail.

Areas at Greatest Risk

Based on review of the historic hailstorm patterns, there are no specific areas with higher than average risks in Brown County. The events occur relatively uniformly throughout the county.

Estimation of Potential Losses

No estimation of potential losses can be derived as there is no defined hazard area. Hailstorms can occur anywhere in Brown County.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Lightning and Thunderstorms. Lightning and thunderstorms often accompany hailstorms, increasing the damage potential to the planning area.

Plans and Programs

Severe Storm Spotters Network. This program, sponsored by the National Weather Service (NWS), enlists the help of trained volunteers to identify, evaluate, and report severe weather events to the NWS. Brown County has several trained severe weather

³⁸ Washington Post – August 8, 2018

spotters, many of whom report directly to their respective public safety offices when severe weather is observed.

Gaps and Deficiencies

Local radio and television stations do provide warnings but are only effective only if viewers are tuned to one of the local stations.

A majority of the power lines in the county are above ground and subject to damage from ice, wind, and falling tree limbs. There are community requirements to manage trees near power lines.

Dam Failure Flooding

There are 50 dams of various sizes located throughout Brown County according to the “Dam Safety” data received from WDNR in 2019. The definition of a dam is any artificial barrier in or across a watercourse which has the primary purpose of impounding or diverting water and includes all appurtenant works, such as a dike, canal or powerhouse³⁹. Of the county’s dams, 18 were owned by the county or a local municipality; one was owned by the WDNR, one by the Army Corp. of Engineers, two by Northwestern Wisconsin Technical College; two by the Wisconsin Department of Transportation, and the remaining dams were owned by individuals or private entities. The WDNR regulates the permitting of new dam construction, repairs, reconstruction, ownership transfers, water levels, and abandonment.

A dam with a structural height of over 6 feet and impounding 50 acre-feet or more, or having a structural height of 25 feet or more and impounding more than 15 acre-feet is classified as a large dam.

Dams are classified as Low, Significant, or High Hazard. A dam is assigned a rating of High Hazard when its failure would put lives at risk. The hazard rating is not based on the physical attributes, quality or strength of the dam itself, but rather the potential for loss of life or property damage should the dam fail.

History

There is no significant hazard history for any dams in Brown County.



Figure 14: Lake Delton Dam Failure
Source: wiscnews.com

³⁹ WDNR Dam Safety: <https://dnr.wi.gov/topic/dams/>

Vulnerability

Of the 52 dams within the county, there are five large dams with one having a “high” hazard rating, two have a “significant” hazard rating, and the final two have a “low” hazard rating. As shown in the table below, the Lamers Pond Dam in the Village of Ashwaubenon serving the Dutchman’s Creek Tributary is the lone dam in Brown County with a “high” hazard rating. Please see Chapter 2 for more information on the *Emergency Action Plan* prepared for this dam.

Table 3.10: Brown County Dams with Hazard Ratings

Dam Name	Dam Size	Hazard Rating
Lamers Pond	LARGE	H
Macco Pond	LARGE	L
Pouwels	SMALL	L
Colwitz	SMALL	L
Koerner	SMALL	L
Imig	SMALL	L
Upper Pamperin Park	SMALL	L
Lower Pamperin Park	SMALL	L
Blazie Investments	LARGE	L
Oneida Golf And Riding Club	SMALL	L
Heritage Hill Pond	SMALL	L
Little Kaukauna	LARGE	S
De Pere	LARGE	S

Hazard ratings are determined based on an assessment of the existing land use downstream of the dam.

Source: WDNR

The areas vulnerable to dam failure flooding include those locations within the hydraulic shadow of the dam. The hydraulic shadow of the dam is the area of land downstream from a dam that would be inundated by water upon failure of the dam during the regional flood.

Impacts

The following describes the various impacts that wildland fires have on the county.

Critical Facilities

There are no critical facilities vulnerable to flooding if the Lamers Pond Dam were to fail.

Public Health

Three types of health concerns could accompany dam failure flooding. The first hazard comes from the water itself in the form of illnesses resulting from contaminants carried in the water.

The second type of health hazard comes from the creation of stagnant pools which provide habitat for vectors and the production of mold spores.

The third health hazard is the long-term psychological impact of having experienced the destruction of a flood due to dam failure. This type of hazard can happen suddenly

and without warning leading to extreme levels of stress and possible anxiety in the future.

Safety

During a dam failure flooding event a massive amount of water is released all at once. When a large volume of water begins moving it can move large objects like cars and destroy structures. This can be dangerous for everyone and everything in the path of the water. Floods of this nature can also cause damage to utilities such as power and gas lines creating secondary hazards such as electrocution and gas leaks, unsafe structures and possibly fires.



Figure 15:
Lake Delton, WI Dam Failure Flood Damage
Source: Twincities.com

Infrastructure

Infrastructure impacts of flooding from a dam failure include impacts to roads, bridges, sewer and water line damage, and electrical and gas lines.

Economic

Floods from dam failures cause wide sweeping damage and the economic impacts can be at a scale that is in-comprehensible. Everything from infrastructure damage noted above to private property damage and agricultural loss can add up quickly. The economic impact however, is directly proportional to the size of the dam and its hazard rating. A dam with a higher rating has the potential to cause more damage and even take lives.

Other

Public expenditures spent on clean up and on repairs to damaged infrastructure and public property affect all residents of the planning area, not just those in the shadow of the dam.

Areas at Greatest Risk

The areas of greatest risk from dam failure are those areas within the hydraulic shadow of the dam of the large Lamers Pond Dam in the Village of Ashwaubenon, which has a “high” hazard rating.

The Little Kaukauna Dam in Little Rapids (Town of Lawrence) and the De Pere dam are both large dams with “significant” hazard ratings that present a noteworthy risk potential.

Estimation of Potential Losses

The hydraulic shadow for the Lamers Pond Dam in Ashwaubenon encompasses one residential structure with a total assessed valuation of \$195,300 (tax year 2020).

For the Little Kaukauna Dam in Little Rapids (Town of Lawrence) and the De Pere dam, no estimation of potential losses can be derived without a defined hazard area as the hydraulic shadow of the dam delineations are confidential and unavailable.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Flood. Inundation of floodplain areas or possibly a larger area would occur if the dam or levee structures fail.

Fire. Fire can occur due to compromised electrical and natural gas infrastructure.

Hazardous Materials. Hazardous material releases can occur due to improper storage of materials in flood prone areas.

Infectious Disease. Infectious disease outbreaks are possible during prolonged flood events where floodwaters can support disease vectors.

Transportation Disruption. Destruction or disruptions to transportation routes roads, bridges, railroads, and by river navigation can be disrupted due to inundation and/or substantial flow velocities.

Power Outages. Power outages can occur if portions of the electrical grid are compromised by floodwaters. The power outages may be longer than those incurred from high winds due to the floodwaters needing time to recede.

Plans and Programs

Regulation of Dams and Bridges. Chapter 31 of the Wisconsin Statutes, created in 1917 under the Water Power Law, was developed to ensure that dams are safely built, operated and maintained. NR 333 of the Administrative Code provides design and construction standards for large dams, and NR 335 (Wis. Admin. Code) covers the administration of the Municipal Dam Grant Program and the Dam Removal Grant Program. Wisconsin DNR is responsible for administration of these regulations. Chapter 31 covers dam construction, permitting, safety, operation and maintenance. It also covers alteration or repair of dams, dam transfer and removal, and water level and flow control.

Municipal Dam Grant Program. The Municipal Dam grant program provides a cost-sharing opportunity for eligible engineering and construction costs for dam maintenance, repair, modification or abandonment and removal up to a maximum of \$400,000. More information can be found at: <https://dnr.wisconsin.gov/aid/DamMunicipal.html>

NOAA Weather Radio Program. Brown County has a NOAA Weather Radio purchasing program in place that encourages and assists residents in acquiring a weather radio.

Gaps and Deficiencies

Many of the dams in Wisconsin were built in the late 1800s and early 1900s. Over time, water pressure, weathering, and animal activity will slowly break down a dam. Dams need constant maintenance and repairs. If dams are allowed to naturally degrade, they have a greater risk for problems such as sudden breaks.

Fires (Forest and Wildland)

A wildland fire is any non-structure fire, other than prescribed fire, that occurs in the wildland⁴⁰. Typical causes of these fires are lightning, human carelessness, or arson. Wildland fires can occur at any time of the year and during any time of the day if conditions are right. The primary factors/conditions that contribute to a wildland fire are land use, vegetation, amount of combustible materials present, and weather conditions such as wind, low humidity, and lack of precipitation. Generally, fires are more likely to occur when vegetation is dry from a winter with little snow or a spring and summer with sparse rainfall. In recent times, development of homes and other structures in areas of highly flammable vegetation have caused an increase in wildfire danger. This condition is known as the wildland-urban interface (WUI).

The WUI is the zone/area where structures and other human developments meet, or intermingle with, undeveloped wildlands. Therefore, the WUI fire interface is any point where the fuel feeding a wildfire changes from natural (wildland) fuel to man-made (urban) fuel⁴¹.



Figure 16 Source: Ethan Miller

If preventative measures are not taken the chances of a wildland fire increase. If a wildland fire develops, it can turn into an emergency or even a disaster if not caught early. Fires threaten lives, resources, and property. In addition, fires can affect livestock and other domesticated pets.

History

The Wisconsin Department of Natural Resources no longer maintains data on wildland fires. However, according to local fire fighters, wildland fires are a frequent occurrence throughout the county, primarily in the spring of the year when the snow has melted and the vegetation is dry and yet to begin growing. Other times of the year can be subject to wildland fires due to drought conditions or through human actions such as the burning of refuse or yard waste. Fire departments serving the fringe of the Green Bay Metro Area and rural departments have been upgrading equipment to better combat these types of fires.

Since January of 1990, there have been no major incidences of wildland fires in the county. According to Steering Committee members, small fires have claimed some structures, however, vegetation and wildlife habitat have been the primary impact areas.

⁴⁰ National Park Service, Fire and Fuels Management: Definitions, Ambiguous Terminology and References

⁴¹ National Park Service, Fire and Fuels Management: Definitions, Ambiguous Terminology and References

Vulnerability

Brown County is not extensively forested and does not contain the hazards and risks necessary to warrant intensive fire protection. Therefore, there are no Wisconsin DNR ranger stations or suppression resources located in the county.

According to the U.S. Forest Service Wildland Fire Assessment System, Brown County regularly falls within a low fire danger class. A low rating indicates that “Fuels do not ignite readily from small firebrands although a more intense heat source, such as lightning, may start fires in duff or punky wood. Fires in open cured grasslands may burn freely a few hours after rain, but woods fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting⁴².”

Overall, the probability of a naturally occurring wildland fire is low for the entire county. However, the probability that at least one wildland fire will occur in the county remains high because local ordinances, typically in rural communities, allow for burning to occur on private property.

Impacts

The following describes the various impacts that wildland fires have on the county.

Critical Facilities

Police, fire, and emergency response departments are greatly affected by wildland fires incurring increased workloads during and after events. Hospitals may see patients with burn related injuries and/or suffering from the effects of smoke inhalation. Schools, if not affected by a fire, could potentially be used as a temporary shelter for individuals that cannot return to their homes. All critical facilities located in the path of a wildland fire can be affected if the facility cannot be protected by fire suppression efforts.

Public Health

Wildland fires can lead to various injuries and even fatalities. Most individuals affected by wildland fires suffer from injuries related to burns and smoke inhalation.

Safety

Wildland fires present a serious threat to public safety. Residential areas and other locations that may be at risk of experiencing wildland fires are typically evacuated to ensure the safety of the public.

Infrastructure

A wildfire has the potential to impact a wide variety of public infrastructure including; traffic lights, railroad crossings, street signage, communication and power transmission structures, and if the fire is hot enough, pavement/asphalt can be damaged.

Buildings

The potential for property damage and structural losses increases as more development occurs in wooded areas and as human activity increases in recreational

⁴² USFS – Wildland Fire Assessment System (WFAS): <https://www.wfas.net/index.php/fire-danger-rating-fire-potential--danger-32/class-rating-fire-potential-danger-51>

areas. Homes and other structures on wooded lots and near the urban rural interface are at higher risk. This risk increases when buildings are surrounded by fuel sources such as unmowed grass, unraked leaves, flammable vegetation, and dead branches. If a wildfire does reach a structure, building materials that may melt or ignite can increase the risk of a structural loss.

Residential housing is typically the most dominant type of structure at the urban rural interface. Though many parts of a home can be affected by wildfire damage, the roof is the most exposed portion of the building and is more at risk from flying embers. Attics may also be affected by airborne embers that enter through open eaves and vents. Structures attached to homes, such as decks, garages, and fences, can ignite and lead to the fire engulfing a home.

Economic

Wildland fires can have an impact on the economy causing thousands of dollars in damages to both public and private property. Direct costs associated with wildland fires include the salvage and removal of downed timber and debris and any necessary restoration of the burned area. Wildland fires can also have a significant impact on local agriculture. Fires can destroy entire fields of crops as well as harm the soil and waterways. Soil exposed to intense heat may lose its capability to absorb moisture and support life.

Areas at Greatest Risk

Brown County contains approximately 79,122 acres of natural areas, including forests, wetlands, and floodplains. Of these, few contain timbers that are very susceptible to burning. Therefore, lands covered in grass fuels pose the highest risk for the planning area. Furthermore, grasslands that abut heavy residential development present an even greater danger, especially when residents practice unapproved outdoor burning of leaves, garbage and other items of which they wish to dispose of by incineration. The likelihood that any wildland fire in Brown County would be catastrophic is low as most susceptible areas lack enough acreage to allow for continuous burning.

Estimation of Potential Losses

Estimating the potential loss to a wildland fire is impossible. To help prevent a scenario where a wildland fire could start and grow to a catastrophic degree will require a combination of education and enforcement efforts at the local level.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Flooding and Erosion. Major wildfires can destroy ground cover, which can lead to heavy erosion and loss of vegetation. If heavy rains follow a wildland fire, flash floods, landslides and mudflows can occur. The preservation of vegetation is essential in deterring flooding during heavy rainfalls or spring runoff.

Hazardous Materials. Major wildfires that reach structures that contain hazardous materials can lead to explosions or rupturing of storage structures that can release hazardous materials that can impact the soil, ground water, surface water, and air quality.

Plans and Programs

Fire Districts/Departments. Brown County is served by 33 fire departments, including the Austin Straubel Airport Fire Department. Each department is responsible for wildfires within their department boundaries. However, many fire departments have mutual aid agreements which allows them to work together on larger fires, including a wildfire if it were to occur.

Fire Department Wildland Training. Wisconsin DNR - Division of Forestry provides free wildland fire training to fire departments in cooperative fire protection areas of Wisconsin. Brown County is within a cooperative fire protection area.

Zoning. The zoning departments, which include building inspectors, regulate the development of new housing. The departments oversee enforcing safety restrictions including setbacks, lot coverage, depth, and structure height. In addition, the Unified Building Code sets standards for roofing. The building inspector is responsible for inspecting residential structures, while the fire marshal inspects commercial structures for potential fire hazards.

Fire Mutual Aid Agreements. There are formal mutual aid agreements between all fire departments in Brown County. The county has become a Mutual Aid Box Alarm System (MABAS) organization (Division 112). As a MABAS agency, Brown County fire departments will agree to standards of operation, incident command, minimal equipment staffing, safety, and on-scene terminology. MABAS agencies, regardless of their geopolitical origin, can work together seamlessly on any emergency scene. All MABAS agencies operate on a common radio frequency, Interagency Fire Emergency Radio Network (IFERN) and are activated for response through protocols developed to meet local risk needs. MABAS also provides mutual aid station coverage to a stricken community when their Fire/EMS resources are committed to an incident for an extended period.

Coastal Hazards

Coastal hazards are natural hazards affecting the Wisconsin Great Lakes shoreline. Coastal areas in Brown County are specific to areas along the Bay of Green Bay. According to the Wisconsin Coastal Management Program of the National Oceanic and Atmospheric Administration, the coastal hazards of concern include:



Figure 17 Green Bay
Source: US Navy

- Erosion of coastal bluffs, banks, beaches and near shore lake beds (including erosion from freezing and thawing of lake ice);
- Flooding from upland runoff, high lake levels and storm-induced surge (temporary water level changes); and
- Damage to shoreline structures from storm waves.

In addition, Brown County has experienced property damage from rising water levels in the Fox River and East River due to heavy rain events and coastal flooding events that occur when wind conditions push water into the bay causing coastal wave run-up. The worst scenarios occur when great lake levels are high and a storm pushes in from the northeast. This scenario presents a triple threat where the rain and wind produced by the storm combined with the high lake levels creates both coastal flooding as well as flash flooding along the major waterways.

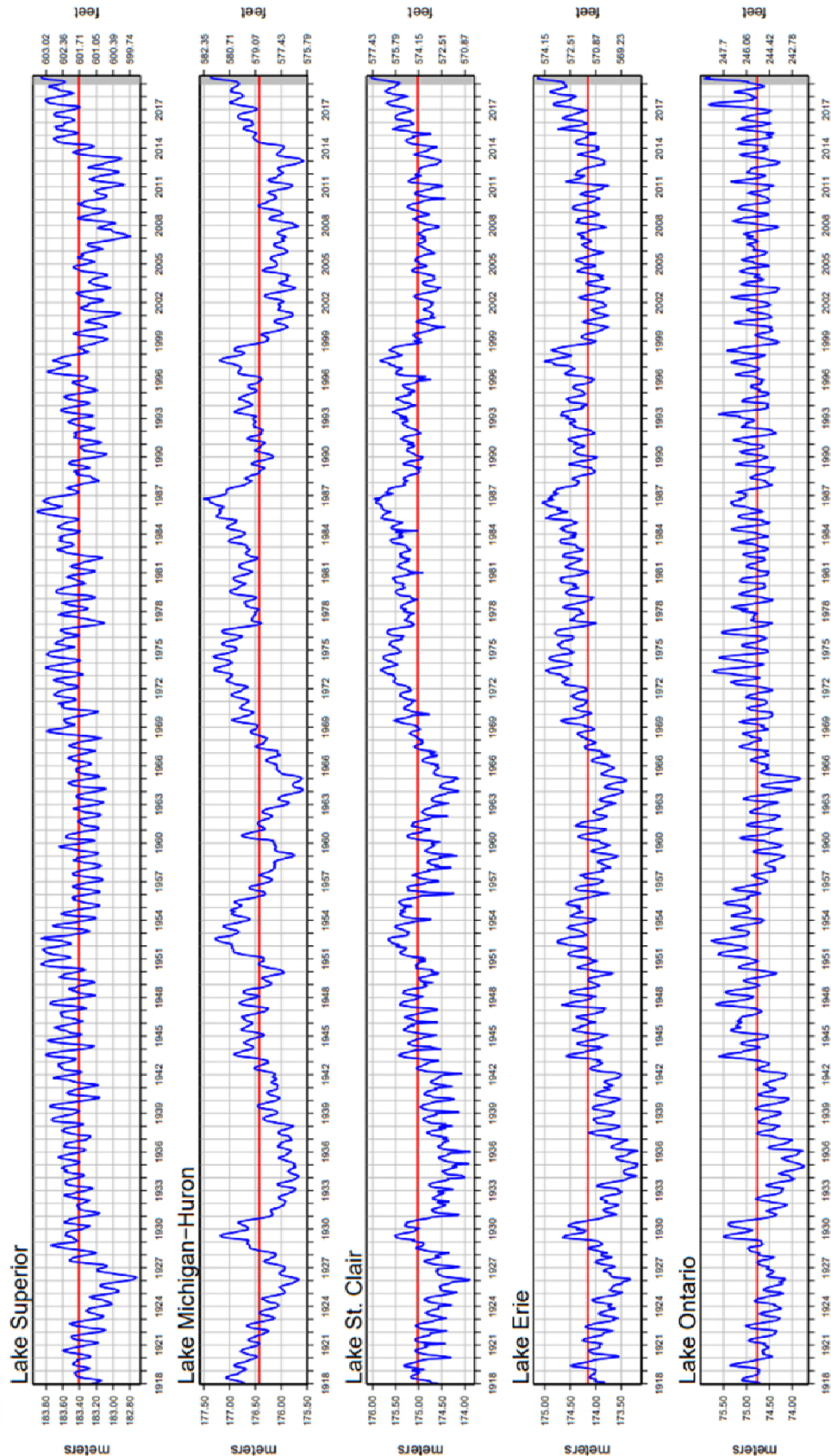
Effects of Fluctuating Lake Water Levels

Since about 2014, water levels on the Great Lakes have been trending toward record highs. The water levels on the Great Lakes have been recorded since the early 1900's. While we are currently experiencing water levels approaching records, the data shown in the following graphic from the US Army Corps of Engineers suggests the water levels fluctuate by as much as two feet.



Great Lakes Water Levels (1918–2019)

— Monthly Mean Level — Long Term Average Annual



The monthly average levels are based on a network of water level gages located around the lakes. Elevations are referenced to the International Great Lakes Datum (1985).

Water levels have been coordinated through 2018. Values highlighted in gray are provisional.

When water levels are high, properties adjacent to the water are at a heightened risk of multiple types of flooding and coastal and streambank erosion. Waves during high water levels are capable of undercutting shoreline and creating unstable conditions along bluffs and possibly along roadways or private property. Conversely, when the water level is low, wave energy dissipates as waves break along the exposed beach instead of the shoreline.

The fluctuations in the water level can have an impact on development adjacent the water. It is important for Brown County communities to consider this when development is proposed on or near the bank of waterways and along the shoreline of the Bay of Green Bay.

Coastal Ice Effects

Properties adjacent to the Bay of Green Bay are susceptible to events known as ice shoves. Ice shoves occur when the wind pushes ice on to shore. The ice, when pushed/piled up on shore, can damage structures, destroy vegetation, and move sand or stones from beaches.

As shown in the image to the right, ice shoves are typically isolated events and do not impact large areas. The right conditions are also required to produce these ice shoves and their occurrence is infrequent.



Figure 18 Source: The Door County Pulse

Coastal ice may also impact small streams if they become blocked by ice jams. The confined backwater builds up a hydrostatic head that may cause a breach in the stream bank or cut a new outlet through the lake bank, with possible damage to structures built near the stream or lake bank. Ice jams blocking stream outlets may cause backwater with resulting inundation of low-lying inland areas.

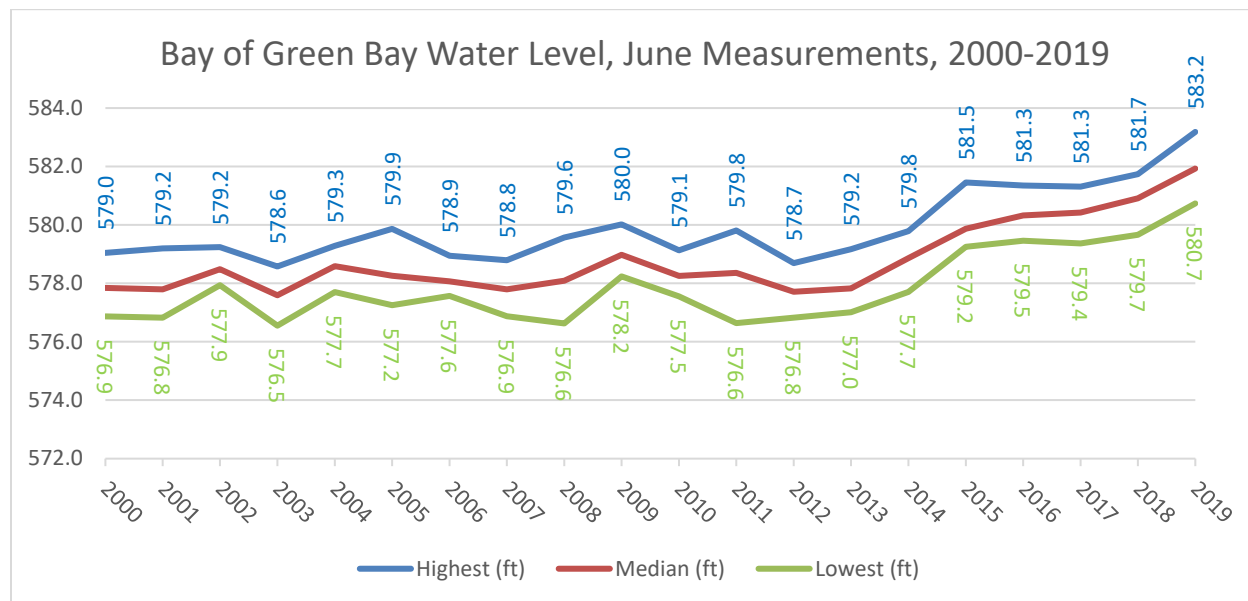
History

Lake Water Levels

The previous chart details the annual mean water level for all of the Great Lakes. This graph, while helpful in understanding the water levels over time, does not capture the high or low water levels throughout the year. Because high water levels pose the greatest threat to human life and habitation, data was collected from the month of June, which is most often the month with the highest water levels, dating back to 2000. The graph below shows the water levels measured in the Bay of Green Bay. During this 19 year span, the lowest water level was recorded in 2005 (576.5 feet) while the highest level occurred in 2019 at 583.2 feet. This is a difference in 6.7 feet.

There is a trend beginning in 2012 and continuing through 2019. Water levels have been relatively consistent from 2000 to 2012 with the recorded high dropping 0.3 feet. However, since 2012 there has been a steady increase in water levels. Conditions that have contributed to the increasing water levels include a combination of above average annual precipitation, above average snow accumulation, and below average winter temperatures that freeze more of the great lakes thereby reducing evaporation during the winter months. The current lake levels are within inches of the record set in 1986.

It is important to note that even during periods of lower water levels; severe storms can result in flooding.



Source: NOAA Tides and Currents; August, 2019

Vulnerability

All coastal counties in Wisconsin are vulnerable to erosion, flooding, and damage to shoreline structures. More specifically, the communities adjacent to the Bay of Green Bay including the Villages of Howard, Suamico, the City of Green Bay, and the Towns of Scott and Green Bay are at risk of coastal flooding. For communities that do not share a border with the Bay of Green Bay but that do have a border with the Fox River and the East River, flooding is a concern and can be a result of the high water levels in the Bay of Green Bay.

Impacts

The following describes the various impacts that coastal hazards have on the county.

Critical Facilities

Of the 1,223 critical facilities located in Brown County, 44 are located within the FEMA coastal run-up zone associated with the Bay of Green Bay and the Lower Fox River.

Public Health

Coastal hazard events may result in contaminants such as raw sewage containing E. coli to be washed into Green Bay/Lake Michigan. When these events occur public health concerns for swimmers and other patrons increases. It may be necessary to

close swimming areas and to provide public notices informing the public of the potential for health risks.

Safety

Coastal hazards present a public safety concern for boaters, swimmers, and near-shore visitors or residents during severe weather and high water conditions.

Infrastructure

Coastal hazards such as bluff erosion and coastal flooding can cause damage to private property and public infrastructure such as roadways and other facilities.

Economic

Coastal hazards can cause significant financial losses. Beach erosion, coastal flooding, and bluff failures are all possible around the great lakes.

Water level fluctuations in Green Bay/Lake Michigan significantly affect the revenues of the shipping industry. Commercial carriers' revenues decrease during periods of low water levels because shipping is dependent on the amount of draft available in shipping channels. When the draft is reduced, the amount of cargo must also be reduced. Economic losses also arise from restricted marina and launch traffic for charter boats, pleasure boats, commercial fishing, and sport fishing when lake levels are low. Although dredging can improve access to the lakes, it is often damaging to the aquatic environment and very costly.

Areas at Greatest Risk

The areas at greatest risk include those that are identified on the FEMA Flood Maps as either within the 100 year or 1 percent chance flood zone and areas adjacent to the water that include steep slopes that are often prone to erosion and degradation. There are parts of the Bay of Green Bay that have coastal run-up zones. Flooding in those areas is described in the graphic below.

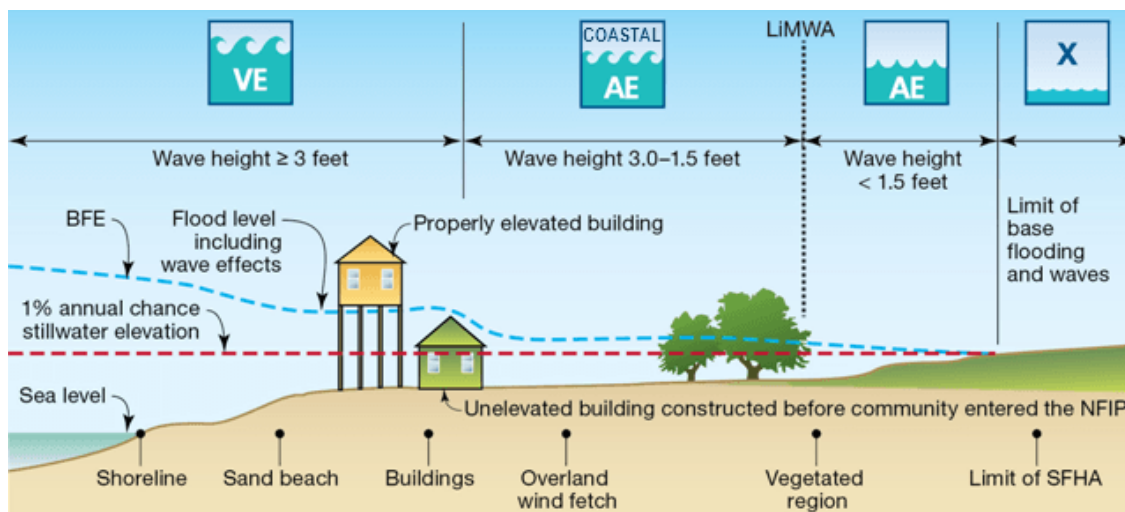


Figure 19 Source: The City of Portsmouth

Estimation of Potential Losses

Coastal Flooding and Bluff Erosion. Coastal flooding and bluff erosion can cause significant financial losses to homes, business, government facilities, and public infrastructure. Estimating the potential losses would be nearly impossible due to the unpredictable nature of coastal flooding. To estimate the potential losses, Brown County utilized the FEMA “wave run-up zone” to identify areas where coastal flooding could occur. The primary coastal communities accounted for nearly 700 million dollars in value that can be impacted.

Table 3.11: Estimate value in Coastal Flood Areas		
Municipality	Parcels Impacted	Total Value*
City of Green Bay	2725	\$567,249,600
Town of Green Bay	192	\$52,827,100
Town of Scott	306	\$7,059,660
Village of Howard	162	\$16,713,600
Village of Suamico	414	\$57,630,300
Total	3799	\$701,480,260

Source: Brown County Tax Records combined with GIS analysis of FEMA data.

Low Lake Levels. A 1,000-foot long vessel forfeits 270 tons of cargo for each one-inch reduction in draft. The loss of one foot of water means a typical 1,000-foot iron ore carrier would lose 3,240 tons of cargo. The ship would have to make 2.5 extra trips to make up the difference over the season, costing the shipping company tens of thousands of dollars (Lake Carrier’s Association/Army Corps of Engineers, 1999).

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Flooding. Flooding of tributaries to Green Bay/Lake Michigan could exacerbate flooding and coastal erosion in those areas.

Drought. Drought conditions over much of the Great Lakes area could lower lake levels decreasing the ability to ship materials through the port of Green Bay.

Plans and Programs

Shoreland Management Program: The shoreland program is a partnership between state and local government that requires the adoption of county shoreland zoning ordinances to regulate development near navigable lakes and streams in compliance with statewide minimum standards.

Brown County Subdivision Ordinance: The Brown County Subdivision Ordinance regulates land divisions throughout the county with the exception of the City of Green Bay and the City of De Pere, each of which have their own land division review. The Brown County Subdivision Ordinance incorporates the identification of natural resource features critical to the protection of water quality. Development is prohibited within these natural resource features and their associated setbacks as identified by the Brown County Subdivision Ordinance.

Wisconsin Coastal Management Program (WCMP): WCMP oversees the management of the state's coastal resources and strives to maintain a balance between preservation and economic needs.

WCMP Grant Program: WCMP provides grants to encourage the management and protection of the state's coastal resources and increase public access to the Great Lakes.

NOAA Weather Radio Program: Brown County has a NOAA Weather Radio purchasing program in place that encourages and assists residents in acquiring weather radios.

Gaps and Deficiencies

Development adjacent to water features like the Bay of Green Bay and many of the waterways that drain into it are under constant development pressure. The development adjacent to these water features are at an increased risk of flooding and where steep slopes are present, bank or bluff erosion.

Historical information on coastal hazards is not complete or easily available to emergency management planners in coastal communities.

Riprap is often viewed as an effective tool/solution to manage bluff erosion. However, riprap shifts due to the force of the water and can still be undermined if the water overtops the riprap or if the riprap is damaged and not repaired quickly.

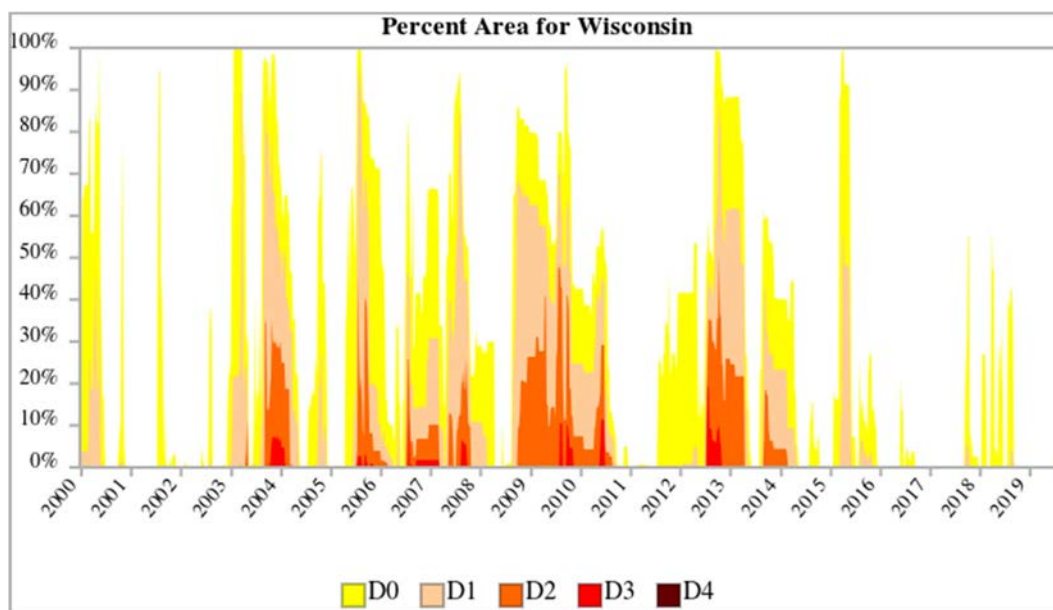
Drought

Drought is a complex phenomenon which is difficult to monitor and define. It is a creeping phenomenon that slowly sneaks up and impacts many sectors of the economy, and operates on many different time scales. As a result, the climatological community has defined four types of drought: 1) meteorological drought, 2) hydrological drought, 3) agricultural drought, and 4) socioeconomic drought. Meteorological drought happens when dry weather patterns dominate an area. Hydrological drought occurs when low water supply becomes evident, especially in streams, reservoirs, and groundwater levels, usually after many months of meteorological drought. Agricultural drought happens when crops become affected. And socioeconomic drought relates the supply and demand of various commodities to drought. Meteorological drought can begin and end rapidly, while hydrological drought takes much longer to develop and then recover.⁴³

	D0 - Abnormally Dry - Short-term dryness slowing planting, growth of crops - Some lingering water deficits - Pastures or crops not fully recovered	0.0% of State	0.0% D0-D4
	D1 - Moderate Drought - Some damage to crops, pastures - Some water shortages developing - Voluntary water-use restrictions requested	0.0% of State	0.0% D1-D4
	D2 - Severe Drought - Crop or pasture loss likely - Water shortages common - Water restrictions imposed	0.0% of State	0.0% D2-D4
	D3 - Extreme Drought - Major crop/pasture losses - Widespread water shortages or restrictions	0.0% of State	0.0% D3-D4
	D4 - Exceptional Drought - Exceptional and widespread crop/pasture losses - Shortages of water creating water emergencies	0.0% of State	

⁴³ NOAA: Definition of Drought - <https://www.ncdc.noaa.gov/monitoring-references/dyk/drought-definition>

Brown County has not experienced prolonged periods (lasting more than 2 months) without rainfall in the last 25 years. Brown County agriculture, the sector of the economy most susceptible to drought, has never experienced a total crop failure from drought. Some issues have arisen where private wells failed, requiring the affected parties to re-drill to reliable aquifers. To date, no other activities, areas, or infrastructure, including public water supply, have been affected by drought in the county.



Source: NIDIS, U.S. Drought Monitor

History

Wisconsin is a state that is susceptible to drought. In 2000, the National Integrated Drought Information System (NIDIS) was created as a partnership between seven different federal agencies to better track and manage the impacts of drought. NIDIS collects drought information as it relates to the drought (above graph). Since NIDIS began collecting the data, Wisconsin has seen periods of drought as shown in the graph above, with the most intense event occurring in July of 2012 where 19.69% of the state reached level D3. The following is a list of the drought events recorded with NOAA's Storm Events Database.

March 1, 1999

It was a very dry month across northeast Wisconsin with numerous small grass fires. Many locations received less than a quarter inch of precipitation for the month. Green Bay not only had its driest March on record with 0.15 inch, but it was also the 6th driest month of all time. No measurable precipitation was recorded in Green Bay during the last 22 days of the month.

July 19, 2005

Below normal rainfall and temperatures that averaged about 5 degrees above normal for the month of July combined with below normal precipitation during the first half of the year to result in the development of drought conditions. Precipitation for the month of July was 1.98 inches below normal in Green Bay. The January through July 2005 precipitation deficit was 3.25 inches in Green Bay. The U.S. Drought Monitor began categorizing parts of east central Wisconsin as being in moderate drought (D1) on June 28, 2005, and by July 12, 2005 northeast, central, east central, and most of northeast Wisconsin had reached the moderate drought category. Central, east central, and much of northeast Wisconsin were upgraded to severe drought (D2) on July 19, 2005. Severe drought conditions remained for the rest of the month for most of the area.

August 1, 2005

Below normal rainfall in most areas and slightly above normal temperatures for the month of August allowed drought conditions to persist through at least the first half of the month. Precipitation for the month of August was 0.46 inch above normal in Green Bay. The January through August 2005 precipitation deficit was 2.79 inches in Green Bay. The U.S. Drought Monitor continued to categorize much of northeast and most of east central Wisconsin as being in severe drought (D2) since July. By the end of August the entire area was either in the abnormally dry (D0), or moderate drought category.

March 1, 2013

Despite another month of above normal precipitation across parts of Wisconsin, Brown County remained in the severe drought (D2) category throughout March 2013.

Vulnerability

According to NOAA records, from 1999 to 2019 four significant periods of drought affected Brown County. Drought tends to be a regional phenomenon in that it affects much of the northeastern part of Wisconsin for all of the occasions in which a drought event was reported for Brown County.

Impacts

The following describes the various impacts that drought events have on the county.

Critical Facilities

There are few direct impacts on critical facilities because of drought conditions. However, droughts can trigger other natural and man-made hazards, such as wildfires and post-drought flooding, both of which can impact critical facilities.

Public Health

Drought conditions can directly affect human health. Lower levels of water in lakes and streams increase the concentration of pollutants and can lead to standing water. Dusty conditions and an increased risk of wildfires can affect those with chronic respiratory illness and can also increase risk of infection. Droughts can also pose a risk to people who get their water from a private well.⁴⁴

Safety

Negative impacts on safety are similar to those imposed on public health.

Infrastructure

Droughts have the most impact on municipal water supplies. Droughts will likely cause a shortage of potable water. Additionally, other water reserves like shallow aquifers may dry up. In addition, water quality is generally an issue before and after a drought event, which places an additional burden on wastewater treatment facilities.

Economic

The State of Wisconsin is susceptible to the economic impacts of agricultural drought. Even small droughts of limited duration can significantly reduce crop growth and yields, which adversely affects farm income. Substantial drought events can lead to complete crop loss. During severe drought periods, farmers must often seek financial assistance from the government to supplement lost income.

Livestock can also be adversely affected by droughts. Lack of water can lead to animal deaths. In addition, as drought conditions are often accompanied by periods of prolonged sunshine and high temperatures, animals are at risk to overexposure and heatstroke. Death of livestock can also lead to substantial loss of income for farmers.

Drought can also affect local commercial and industrial businesses. During times of severe drought, limitations can be placed on water usage. These limitations could have a negative impact on businesses such as car washes and landscapers as their businesses rely heavily on water. Industries that utilize large amounts of water in processing materials could also face production declines.

Areas at Greatest Risk

Droughts have no defined hazard area within Brown County and when a drought occurs it typically includes all of the county. Drought also tends to be a regional phenomenon in that it affects large areas at one time.

⁴⁴ WI Department of Health Services, Drought and Your Health - <https://www.dhs.wisconsin.gov/climate/drought.htm>

Estimation of Potential Losses

Agricultural crops are most vulnerable to losses from drought events. A “worst case scenario” would involve the total destruction of all 183,953 acres of agricultural lands in the county. In this “worst case scenario,” the total destruction of all crops would cause a loss of \$1,483,029,086.00, which is the estimated market value for farmland in Brown County at \$8,062⁴⁵ per acre.

Relationship to Other Hazards - Cumulative Effects

Cumulative effects are the combinations of hazards that occur in relationship to another hazard.

Wildfires. Drought creates additional stress for vegetation and increases the risk of wildfires.

Plans and Programs

NOAA Weather Radio Program. Brown County has a NOAA Weather Radio purchasing program in place that encourages and aids residents in acquiring weather radio.

Gaps and Deficiencies

Water conservation provisions and use restrictions in times of drought are not included in county or city ordinances.

MAN-MADE HAZARD PROFILES

Hazard profiles are intended to describe the frequency, severity, and probability of future man-made hazards that could impact Brown County. These hazard profiles attempt to describe the cause and characteristics of man-made hazards, and how they could impact the population, infrastructure, and environment of the county. The potential risks are evaluated to determine their likelihood of occurrence or reoccurrence, and to gauge potential impacts to people and property. Hazard probabilities are represented as high, moderate, and low based on consensus of the steering committee after considering the anticipated economic, social, and environmental impact of each hazard.

⁴⁵ AcreValue - <https://www.acrevalue.com/map/WI/Brown/?lat=44.460518&lng=-88.007465&zoom=10>

Fire

Description of Hazard

Structure fires are far more common than wildland fires in Brown County. Structure fires typically occur through accidental, natural, or criminal activity. Accidental fire causes include unattended cooking, improper use of or defective heating appliances, improper use of candles, the failure of electrical wiring, circuits, etc., and improper use of smoking materials, to name a few. Natural causes such as lightning strikes are also common.

Municipal fire departments are responsible for the prevention of and response to structural fires in Outagamie County. Municipal fire departments located throughout the county respond in accordance with established response procedures, while local zoning setback controls, building and fire prevention codes provide additional mitigation measures. For large fires, the responding departments will utilize the Mutual Aid Box Alarm System (MABAS) in obtaining additional resources from neighboring departments to assist with firefighting operations.



House fire on Green Bay's east side
Figure 20 Source: Green Bay Press Gazette

History and Frequency

There have been about 3200 structure fire calls in Brown County since 2015. National Fires and Losses Trends and Patterns of U.S. Fire Loss identified an estimated 1,345,500 fires in 2015, resulting in 3,280 civilian deaths, 15,700 civilian injuries, and \$14.3 billion in direct property loss. In terms of estimates of fires, fire deaths and fire injuries, the estimates are lower than they were 10 years ago. When USFA was established in 1974, annual fire deaths were estimated at 12,000. The goal was to reduce deaths by 50 percent within 25 years; that goal was met. By 2012, estimates of civilian fire deaths were at their lowest level (2,855). While the trend in fire deaths has generally leveled off, injuries and dollar loss has declined over the last 10 years.

Based on previous hazard occurrences as reported by the Brown County Dispatch, Brown County experiences an average of 530 structure fire calls every year.

Probability of Occurrence or Reoccurrence

As noted in the previous Natural Hazards section, the probability of a wildland fire in Brown County is low to moderate and the likelihood that any wildland fire would be catastrophic is low.

However, the probability of a structural fire in the county is high.

Areas at Greatest Risk

All developed areas are vulnerable to structure fires.

Utility Failure

Description of Hazard

A utility failure emergency is a disruption to the building services, usually defined as electrical power, water, natural gas and/or sewage that restricts the ability of people to safely occupy the facility. Electrical power or natural gas outages are often caused by a fuel shortage caused by an oil embargo, power failure, or natural disaster. Disruptions to the water and sewage systems are often the direct result of a natural disaster (e.g., flooding) or are indirect losses due to another failure (e.g., a power outage disrupts the pumping of water and/or sewage).

History and Frequency

Brown County has several short power outages (i.e., lasting less than six hours) per year but does not have a history of extended power outages. The possibility always exists that a man-made or natural disaster could affect the power system for an extended period of time.

A significant utility failure has been defined as an outage event lasting 24 hours or more or involving over 1,000 people. The local utility provider for most Brown County residents was able to identify significant storm dates and the total number of customers affected. The data has limitations however, and the number of Brown County residents impacted is undetermined. The following table describes the significant storms and their impacts from storms known to impact Brown County and the surrounding areas.

Table 3.12: Storm Related Power Disruptions, WPS					
Storm outages start time	Storm outages end time	Customers affected	Company regions affected	Type of damage	Mutual assistance received
2015					
April 6 @0300	April 6 @1700	13,975			
June 22 @ 1100	June 22 @ 2200	26,299			
August 2 @0700	August 3 @0000	37,766			
August 14 @1400	August 14 @2200	10,760			
November 18 @0300	November 19 @2200	30,330			
December 23 @2300	December 24 @1600	17,924			
2016					
June 5 @ 1400	June 6 @ 900	27,948	WPS-Eastern WPS-Western	Thunderstorm	Yes
June 10 @ 1600	June 13 @ 0800	67,133	All	Thunderstorm	Yes
June 25 @ 1600	June 26 @ 0900	26,721	WPS-Northern	Thunderstorm	
July 12 @ 0100	July 12 @ 1600	18,653	WPS-Northern	Thunderstorm	Yes
July 21 @0500	July 21 @ 1700	32,551	All	Thunderstorm	
Table Continued on the next page					

Storm outages start time	Storm outages end time	Customers affected	Company regions affected	Type of damage	Mutual assistance received
2016 Continued					
November 18 @1400	November 19 @1400	14,556	All	Wind storm	Yes
December 25 @1700	December 26 @2000	25,211	All	Wind storm	Yes
2017					
March 6 @ 2200	March 9 @ 1600	98,622	WPS-Northern WPS-Western	Wind storm	Yes
April 9 @ 2200	April 10 @2300	17,016	WPS-Northern WPS-Western	Thunderstorm and tornado	Yes
April 11 @0100	April 11 @2000	11,370	WPS-Northern WPS-Western	Snow storm	Yes
May 17 @1400	May 18 @1700	38,410	WPS-Northern WPS-Western	Thunderstorm	Yes
June 10 @1000	June 10 @2200	14,604	WPS-Northern WPS-Western	Wind storm	No
June 11 @1000	June 14 @1400	121,260	WPS-Northern WPS-Western	Thunderstorm	Yes
June 14 @1400	June 15 @2100	30,490	All	Thunderstorm	Yes
December 4 @2100	December 5 @1800	17,651	All	Wind storm	
2018					
April 13 @ 2100	April 15 @ 1500	13,110	WPS-Eastern WPS-Western	Wind storm/ blizzard	Yes
April 17 @ 1700	April 18 @ 1400	14,604	All	Thunderstorm	No
August 27 @ 1900	August 28 @ 1500	16,532	All	Thunderstorm	Yes
September 20 @ 2000	September 21 @ 2100	22,833	All	Thunderstorm	Yes
October 3 @ 1500	October 4 @ 1000	13,407	All	Thunderstorm	No
2019					
February 12 @ 200	February 13 @ 1900	15,395	WPS-North Central	Snow storm	Yes
February 23 @ 2300	February 24 @ 2300	34,097	All	Snow storm	Yes
May 22 @ 200	May 22 @ 2300	50,097	WPS-North Central WPS-Northwest	Wind storm	Yes
July 19 @1900	July 26 @2300	170,046	All	Thunderstorms, tornados, derecho	Yes
August 7 @1400	August 7 @2300	21,242	All	Thunderstorms	
November 27 @0100	November 29 @1800	50,355	All	Snow storm, wind storm	Yes
December 1 @0300	December 1 @2200	33,828	All	Snow storm, wind storm	Yes

Source: WPS

Probability of Occurrence or Reoccurrence

In general, Brown County has a medium likelihood of utility failures occurring due to the age of some of the infrastructure and the extreme weather conditions experienced in Wisconsin. Utility failures present a high risk of damage, death, or injury due to a loss.

Areas at Greatest Risk

Power outages are more likely to occur and the severity is greater in areas of higher human population (i.e., urban areas) but the loss of power to rural customers, while affecting fewer people, generally lasts longer and can be as life-threatening, especially if a person with special needs (e.g., the elderly, the young, those on special medical equipment) is involved.

Hazardous Materials Spill

Description of Hazard

Brown County is concerned about the possibility of hazardous materials incidents from:

- Fixed Facility - A facility containing hazardous substances when either accidental or intentionally released cause concern for life safety and environment containment.
- Pipeline - Accidental or intentional release of natural gas from the pipeline resulting in a potential evacuation or explosion.
- Railway - Train derailment, train/vehicle collision or intentional release causing ruptured rail cars to release hazardous substances resulting in life safety and environmental concerns.
- Roadway - Vehicle accident involving hazardous chemicals in transport on the roadway resulting in life safety and environmental concerns.

Each Wisconsin County is designated as an emergency planning district and has a Local Emergency Planning Committee (LEPC) to administer the local hazardous chemical planning program under the Emergency Planning and Community Right-To Know Act, also known as SARA Title III.

The Brown County LEPC was established in 1986 to comply with the Emergency Planning Community Right to Know Act. The community right-to-know Act created new rights for members of the public and local governments to obtain information concerning potential threats in their neighborhoods involving hazardous substances.

History and Frequency

Thorough communication and preparedness (i.e., planning, training and exercising) measures between stakeholders help to ensure that significant hazardous materials events are not common, but these incidents can and do occur (about 25 since 2015). Based on previous hazard occurrences as reported by Brown County dispatch, Brown County experiences approximately 4 hazardous materials incidents every year.

Probability of Occurrence or Reoccurrence

In general, Brown County has a medium likelihood of hazardous materials spills occurring. Hazardous material spills present a high risk of damage, death, or injury due to the variety of materials and the way in which they can spread and impact people.

Areas at Greatest Risk

Hazardous materials incidents have the potential to impact large parts of the county because roadways, pipelines, and railway corridors run through residential, agricultural, and commercial neighborhoods in the county. Areas of greatest risk are those areas where chemicals are stored on site or corridors through which chemicals are frequently transported. Facilities subject to SARA Title III, while concentrated in industrial areas, can also be found in business, residential, and agricultural areas.

Manure Spill

Description of Hazard

A manure spill incident is a release of manure from a holding tank or pit, or from a truck while in transport to a field. Such incidents have the potential to contaminate groundwater and/or surface water. Contaminated groundwater can impact municipal and private drinking water wells.

Liquid manure stored in holding tanks or pits has a low solids content, giving it a consistency and therefore physical properties similar to that of water. As a result, liquid manure, when released in a spill, flows in the same manner as water, thereby placing surface water and conduits to groundwater at risk of contamination.



Figure 21 Source: Minnesota Trout Forums

According to the Wisconsin Department of Agriculture, Trade and Consumer Protection, the decomposition of manure in storage or handling systems generates gases, some of which are toxic, explosive and oxygen displacing. The most hazardous gases are hydrogen sulfide (H₂S), ammonia (NH₃), methane (CH₄) and carbon dioxide (CO₂). Dangerous levels of these gases can accumulate in and around manure management systems particularly when manure is being agitated or otherwise disturbed.

- Hydrogen sulfide levels may increase a thousand-fold during agitation. This extremely toxic gas is the most dangerous manure gas as it is colorless, heavier than air and may cause death in seconds at high concentrations. While hydrogen sulfide is commonly known for its rotten egg odor, the odor is not detectable by the human sense of smell at higher concentrations. It affects the eyes and the respiratory and central nervous systems.
- Ammonia is lighter than air, has a sharp pungent odor and at higher concentrations, it may cause permanent lung damage. Ammonia causes irritation of the eyes and respiratory tract and it is generally found in higher concentrations in poultry manure.
- Methane is highly flammable. A spark from equipment, open flames, smoking materials, faulty wiring or welding could provide an ignition source for an explosion or fire. Methane is odorless, colorless and lighter than air. By displacing air at high

concentrations, methane which is itself non-toxic, can become an asphyxiant and will cause rapid breathing, dizziness and fatigue.

- Carbon dioxide is heavier than air and will displace oxygen. Carbon dioxide exposure may result in headaches and dizziness. Death by asphyxiation is possible at high concentrations.

History and Frequency

Small manure spills occur frequently and, while they can be a contributing factor to environmental degradation, they rarely immediately affect the health and safety of the general population. Based on previous hazard occurrences as reported by Brown County Land and Water Conservation, Brown County experiences between three and five manure spill incidents every year.

Probability of Occurrence or Reoccurrence

Large spills of the type that are immediately and directly dangerous are rare. However, factors like increased precipitation and the concentration of Concentrated Animal Feed Operations (CAFOs) can increase the probability of a spill occurring.

Brown County has a moderately low probability of experiencing a large spill incident, but the risk to the county is moderate if it occurs.

Areas at Greatest Risk

Wisconsin, like many places in the United States, is seeing the closure of traditional, small family farms and is seeing more industrial, large-scale farms opening and operating. These businesses, due to the scale of their operations, are much more likely to see the large manure quantities that require transport and storage facilities that may fail. Brown County expects, like the rest of the state, to see industrial farming increase in the future.

Public Health Incidents

Description of Hazard

Public health is a community-based approach to preventing disease, prolonging life and promoting health. Public health emergencies include both those events for which public health is the primary focus (e.g., pandemic influenza) as well as those for which public health is one of many concerns (e.g., a bioterrorism incident, disease concerns related to a flood, or mental health care after a mass casualty incident).

Brown County is concerned about the possibility of loss of life due to public health incidents such as infectious disease, poor air quality and contaminated water supply. The goals of a response to pandemic influenza or another communicable disease outbreak are to limit the spread of a pandemic, treat (as possible) the disease, minimize suffering and death and sustain infrastructure and lessen the impact on the economy and the functioning of society. Brown County and other local public health departments, along with state and federal partners, work hard to prepare for the dangers of communicable diseases with comprehensive and integrated planning, training and exercises.

History and Frequency

There has been 1 significant public health incident in Brown County since 2015 that has required activation of the county Emergency Operations Center (EOC). In addition to activating the county EOC, Public Health Emergency Plans have been activated to respond to events for communicable diseases (2019 Measles in Wisconsin), vaccine preventable diseases, natural disasters, contaminated water, and biological threats.

Probability of Occurrence or Reoccurrence

As much of the world is experiencing, we are all at risk, but the level of risk depends largely on the amount of preventative measures the community has or is taking in relationship to health threats. Brown County has a moderate risk of public health incidents with a varying risk of death or injury if an incident does occur based on the type and timing of incident/threat, health status of the individuals and prophylaxis available for the threat.

Areas at Greatest Risk

Public health incidents can impact anywhere in the county and no area is at a greater risk than another. However, some public health incidents may be exacerbated with a greater level of human-to-human contact, which occurs in more populous areas of the county.

Mass Casualty

Description of Hazard

A mass casualty incident is any incident in which emergency medical services resources, such as personnel and equipment, are overwhelmed by the number and severity of casualties. Mass casualty incidents can quickly overwhelm local municipalities' capabilities and resources for responding. The definition of a mass casualty incident is determined by the responding agency, not by a hard number of victims because a mass casualty incident is one that exceeds the responding jurisdiction's ability and resources to manage it.

History and Frequency

There have been no mass casualty incidents in Brown County since 2015.

Although there have been no mass casualty incidents in the county, in preparation for potential occurrences, emergency management and emergency response departments have undertaken training specific to mass casualty incidents.

Probability of Occurrence or Reoccurrence

Among other potential mass casualty events, the increase in random acts of violence around the U.S. certainly cannot be ignored. Determining the probability of a mass casualty event is impossible. However, due to the recent trends an incident could occur Brown County has a low risk of a mass casualty incident.

Areas at Greatest Risk

Mass casualty incidents can impact anywhere in the county and no area is at a greater risk than another.

Aircraft Incidents

Description of Hazard

The Austin Straubel International Airport (GRB), is located along STH 172 just west of I41 in the Villages of Ashwaubenon and Hobart. It is the fourth busiest commercial airport in Wisconsin based on 2016 FAA records for enplanements.

An aircraft incident is an occurrence associated with the operation of an aircraft, which takes place between the time any person boards the aircraft with the intention of flight until all such persons have disembarked, where a person is fatally or seriously injured, the aircraft sustains damage or structural failure or the aircraft is missing or is completely inaccessible.

History and Frequency

Aircraft accidents are very rare and may be caused by bad weather, mechanical failure, human error, or an intentional act of terrorism. There have been no significant aircraft incidents in Brown County since 2015.

Probability of Occurrence or Reoccurrence

Brown County has a low risk of an aircraft incident.

Areas at Greatest Risk

Austin Straubel International Airport, the adjacent grounds, and flight paths, are areas of greatest risk for aircraft incidents in Brown County.

Terrorism/International Acts of Violence

Description of Hazard

Terrorism or Intentional Acts of Violence are defined as the use of violence or the threat of violence to cause fear and intimidation to the community and/or government. This can be accomplished using explosives, weapons, biological agents, cyber-attacks, food supply tampering, and other means.

History and Frequency

Intentional acts of violence have become very common, but, for the purposes of this plan we are discussing those that are large-scale and draw a large amount of response resources and/or attention. The difference between these events and terrorism is that they may be personal in nature (e.g., school or workplace violence) versus having a political goal, as is seen in terrorism. Significant terrorism and intentional acts of violence incidents in Brown County are rare. There have been no legitimate terrorism/intentional acts of violence incidents in Brown County.

Probability of Occurrence or Reoccurrence

Brown County residents are at a low risk of terrorism/intentional acts of violence incidents.

Areas at Greatest Risk

Terrorism/intentional acts of violence incidents can impact anywhere in the county and no area is at a greater risk than another.

NATURAL HAZARDS AND CLIMATE CHANGE

Hazard profiles provide information and predictions based on past hazard occurrence data. Climate change may make past trends unreliable sources for predicting future impacts, frequency, probability, and vulnerabilities. Climate change has and will continue to impact average annual temperatures causing increased frequency in heat waves; increased frequency and intensity of severe rainstorms; shorter, warmer winters with decreased lake ice cover; increased drought frequency, and other impacts. Based on the best information available, over the next 30-50 years, Brown County's climate will begin to resemble that of current Toledo, Ohio.⁴⁶

Analysis of historical data, combined with climate model downscaling, suggests a trend towards wetter conditions and more intense rainfall. Climate models also suggest that increased winter snowpack, and late winter rainfall, may result in high regional groundwater tables and lake levels, and saturated soil conditions.⁴⁷

Vulnerabilities

Local and state government and private sector developers make significant investments in long-lived infrastructure that controls or is affected by storm water runoff from large rainfalls. Likewise, municipal wastewater treatment plant operators make substantial long-term investments in their system capacity that anticipates development, but not increased storm water inflow and groundwater infiltration. This infrastructure is designed using standards based on rainfall data from the latter half of the 20th century. By having assumed "stationarity" of climate in the design of our infrastructure, Brown County is now vulnerable to the potential impacts from more intense rainfall events and elevated groundwater.

In summary, our previous investment in public safety and environmental protection is at risk of being overwhelmed by precipitation impacts that are beyond those anticipated by past infrastructure designers and water resource managers.⁴⁸

Potential Impacts

The WICCI working groups have investigated how potential changes in Wisconsin's climate might impact natural and human systems around the state. Some potential impacts of concern for Brown County with regard to storm water management and large rainfalls include:

- Conveyance systems filled beyond capacity cause flooded homes and urban streets;
- Roadways and bridges are washed-out or become impassable;
- Groundwater flooding of property and cropland increases;



⁴⁶ Wisconsin Initiative on Climate Change Impacts, Interactive Mapping Tool, <http://www.wicci.wisc.edu/climate-map.php>.

⁴⁷ Wisconsin Initiative on Climate Change Impacts, Stormwater Working Group, <http://www.wicci.wisc.edu/stormwater-working-group.php#2>.

⁴⁸ Ibid

- Rural residential wellheads are contaminated by flood waters and high groundwater;
- Impoundments and storm water detention ponds fail more frequently;
- Raingardens and other bio-filtration best management practices (BMPs) fail due to saturated soil conditions;
- Increased erosion of slopes by intense rainfall events leads to high sediment and phosphorus loading to surface waters;
- Runoff of manure from fields, and accompanying fish kills, are more frequent;
- Storm water inflow and groundwater infiltration to sanitary sewers, results in untreated municipal wastewater flowing into lakes and streams.

Other potential impacts of concern for Brown County include:

- Warmer nighttime temperatures might lead to more extreme heat waves, increasing the risk for heat stroke in some populations. At the same time, observed and projected trends show fewer cold temperature extremes, which may mean reduced health risks due to exposure in the winters.
- Air pollution, increasing temperatures, changing circulation patterns, and other processes combine to increase ground-level ozone, which affects respiratory health.
- Heavy rains and flooding can overwhelm sewer and stormwater systems, leading to a rise in water pollution and the risk of waterborne diseases such as cryptosporidium and giardia.
- Changes in temperatures and precipitation could result in an increase in disease carrying insects, including ticks and mosquitoes. This means people may be at a greater risk for contracting vector-borne diseases, such as Lyme disease, West Nile encephalitis, and Zika virus.
- Changes in temperature and precipitation could affect growing seasons, crop yields, weed and pest infestations, and dairy productivity.

Solutions/Adaptations

Although the impacts of climate change are already being seen in Wisconsin, there are things Brown County policymakers, business leaders, and residents can do to help reduce potential impacts from climate change. The development of climate change mitigation programs can help decrease the impacts from climate change while advancing other community priorities. Examples include implementing cost-effective clean energy policies and programs, and reducing carbon emissions. Climate change and clean energy policies and programs can reduce greenhouse gas emissions, lower energy costs, improve air quality and public health, and help achieve economic development goals. The following are some solutions or adaptations to climate change impacts that could be employed in Brown County. Many of the identified solutions/ adaptations were developed by the WICCI working groups.

- Strengthen public health response and warning systems.
- Increase energy efficiency.
- Incorporate renewable energy sources such as wind, solar, geothermal, and biomass.
- Increase vehicle fuel economy.
- Invest in clean transportation choices.
- Encourage bicycle and pedestrian transportation and expand availability options.
- Implement beach improvement projects that reduce stormwater runoff to beaches and nearshore waters and integrate natural infiltration features such as vegetated swales.
- Improve or restore natural shore protection features.
- Protect floodplains, wetlands, and other natural “green infrastructure” features that can hold flood waters and enable water infiltration.
- Implement development setbacks based on defensible scientific data.
- Relocate structures that are threatened by flooding or erosion.
- Provide education for developers, bankers, and insurance agents.
- Ongoing comprehensive planning and improved implementation of existing plans.
- Use best management practices for site design to control stormwater runoff.
- Develop plans for bluff stability enhancement, e.g. slow erosion by planting vegetation on bluffs.
- Design port and harbor infrastructure that can accommodate increased variability in lake levels, e.g. harbor slips that float.
- Use a risk/consequence approach to evaluating and modifying existing infrastructure to accommodate observed and predicted changes in climate.
- Develop and evaluate alternative tools and strategies for the design of stormwater-related infrastructure, using a collaborative process that includes climate scientists, water resource managers, design engineers, and regulators, and members of relevant business communities.

VULNERABILITIES

Vulnerable Critical Facilities by Municipality

The Brown County Hazard Mitigation Plan Steering Committee determined which critical facilities and infrastructure were to be addressed within this hazard's mitigation plan. Based on this list, Brown County worked with each individual community and or Non-Governmental Organizations to identify and map critical facilities. The Steering Committee and the Individuals that provided the critical facility data reviewed and confirmed the accuracy of the information. Table 3.13 summarizes the critical facilities and infrastructure by municipality. A detailed list of critical facilities and infrastructure for each community is provided in Appendix H of this plan.

Table 3.13: Critical Facilities and Infrastructure, Brown County, Wisconsin

<u>Location</u>	<u>Number of Critical Facilities</u>
Cities	
Green Bay	321
De Pere	68
Villages	
Allouez	42
Ashwaubenon	103
Bellevue	94
Denmark	23
Hobart	55
Howard	130
Pulaski (part)	20
Suamico	46
Wrightstown	20
Towns	
Eaton	8
Glenmore	14
Green Bay	17
Holland	22
Humboldt	4
Lawrence	41
Ledgeview	43
Morrison	22
New Denmark	34
Pittsfield	30
Rockland	12
Scott	19
Wrightstown	32
TOTAL	1223

Source: Brown County Hazard Mitigation Plan Steering Committee. Brown County Planning Commission. Brown County Land Information Office

County Gaps and Deficiencies

- Repetitive loss properties remain an issue in the Village of Ashwaubenon, Village of Howard, Village of Suamico, and the City of Green Bay. As state and federal funds become available, Brown County and the individual municipalities will work with willing sellers to purchase floodplain structures.
- A significant number of homes in the county lack basements that would provide shelter in the event of a tornado or damaging winds from a severe thunderstorm. Moreover, in many of the nursing homes, residents are moved to an interior hall away from windows in the event of a violent storm.
- Local radio and television stations do provide warnings but are effective only if tuned to one of the local stations.
- Most power lines in the county are above ground and subject to damage from wind and falling tree limbs. Many communities have requirements to manage trees near power lines.
- There is a constant need to improve/replace defective storm water facilities to prevent infrastructure damage.
- Some communities in Brown County may need to incorporate a storm drain cleaning program.
- Not all school districts have a transportation manager providing information on current weather and road conditions.
- Residents that have had their heat disconnected prior to the heating moratorium beginning on November 1 must make arrangements with their local utility to pay outstanding bills in order to have their service restored. If a consumer has not made arrangements to pay an outstanding bill, the utility is not required to provide heat until an agreed-upon payment schedule has been reached.
- Residents could be without needed heating during any out-of-season cold spells that occur between April 16 and October 31.
- Although Wisconsin requires utilities to provide residents heating between November 1 and April 15, there is no guarantee that residents will have access to cooling during times of extreme heat.
- Cooling systems are lacking in many elderly housing developments.
- Fog warning signs may be ineffective due to lack of visibility.
- Many of the dams in Wisconsin were built in the late 1800s and early 1900s. Over time, water pressure and weathering will slowly break down a dam. Dams need constant maintenance and repairs. If dams are allowed to naturally degrade, they have a greater risk for problems such as sudden breaks during flood conditions.
- Development continues very near the Green Bay/Lake Michigan coastline putting additional homes, business, and infrastructure at risk to coastal hazards.

- Riprap to manage bluff erosion shifts the eroding force of the water from the riprapped area to the coastal areas lacking the bluff reinforcement.
- Water conservation provisions and use restrictions in times of drought are not included in county or city ordinances for those water users that rely on groundwater.

SUPPORTING OPERATIONS PLANS AND DOCUMENTS

Plans

Agency

County Emergency Operations Plan	Brown County Emergency Management
County Disaster Plan	Brown County Emergency Management
County Hazard Analysis	Brown County Emergency Management
County Hazardous (Hazmat) Strategic Plan	Brown County Emergency Management
County Mass Casualty Plan	Brown County Emergency Management
Emergency Action Plan-Lamers Dam	Village of Ashwaubenon
Emergency Operations Plans	City of Green Bay, City of De Pere, and Village of Ashwaubenon
Emergency Operations Plans	Brown County School Districts
Emergency Operations Plan	University of Wisconsin-Green Bay
Emergency Operations Plan	St. Norbert College
Emergency Operations Plan	Oneida Nation
Emergency Operations Plan	Bellin Health
Emergency Operations Plan	Aurora Baycare
Emergency Operations Plan	St. Vincent Hospital
Emergency Operations Plan	St. Mary's Hospital
Emergency Response Plan	Austin Straubel International Airport
Emergency Response Plan	Lambeau Field
Green Bay Correctional Institution Disturbance Plan	

**RESOLUTION ACCEPTING DEDICATION
OF RIGHT-OF-WAY AND PUBLIC IMPROVEMENTS
IN EXCALIBUR 3RD ADDITION SUBDIVISION
February 17, 2021**

BY THE COMMON CONCIL OF THE CITY OF GREEN BAY, RESOLVED:

WHEREAS, the Common Council on August 15, 2017 approved the request of HL&H to enter into a Developer's Agreement with the City of Green Bay for the purpose of constructing sewer, water and street improvements for Excalibur 3rd Addition Subdivision;

WHEREAS, said Agreement was made by both parties on March 29, 2018;

WHEREAS, said Agreement requires HL&H upon completion of the sewer, water and street improvements, to unconditionally, and without charge to the City of Green Bay, give, grant, convey and fully dedicate the same with the exception of sanitary and storm sewer laterals and water laterals lying outside of dedicated right-of-way, to the City of Green Bay, its successors and assigns forever, free and clear of all encumbrances whatever; together with (without limitation because of enumeration) all land, structures, mains, conduits, pipes, lines, and appurtenances, together with any and all necessary easements for access thereto;

WHEREAS, HL&H has met all of the terms of the agreement, as determined by the Director of Public Works, and has requested that the City of Green Bay accept dedication of the improvements;

WHEREAS, the Director of Public Works has reported on and recommends the acceptance and dedication of the following streets, sanitary sewer, storm sewer, and water main and laterals:

PAULA STREET – 180' E/O DURHAM ROAD TO 600' E/O DURHAM ROAD

NOW THEREFORE, BE IT RESOLVED, that the above streets including sanitary sewer, storm sewer and water improvements be and are hereby accepted by the City of Green Bay.

Adopted _____, 2021

Approved _____, 2021

ATTEST:

Mayor

City Clerk

JMB:jld

**FINAL RESOLUTION AUTHORIZING
ASPHALT RESURFACING IMPROVEMENTS AND
LEVYING SPECIAL ASSESSMENTS AGAINST PROPERTY
February 17, 2021**

WHEREAS, the Improvement & Services Committee of the City of Green Bay, Wisconsin, held a virtual public hearing at 6:00 p.m. on the 10th day of February 2021, for the purpose of hearing all interested persons concerning the preliminary resolution and Report of the Director of Public Works on the proposed improvement and has heard all persons desiring audience at such hearings on the following streets or portion of streets:

**GUNS ROAD – Main Street to south City limits
HARVEST ROAD – Finger Road to Crest Lane
IRENE STREET – Crooks Street to Main Street**

NOW, THEREFORE, BE IT RESOLVED BY THE COMMON COUNCIL OF THE CITY OF GREEN BAY:

1. That the Report of the Director of Public Works pertaining to the construction of the above described improvement, including plans and specifications therefore as modified, having been reviewed and discussed by members of the Improvement and Services Committee, is hereby adopted and approved.
2. That the Improvement & Services Committee is directed to advertise for bids and to carry out the work of such improvements in accordance with the Report of the Director of Public Works as approved and authorized by the appropriate Committee.
3. That the payment for improvements be made by assessing the cost to the property as indicated in said Report of the Director of Public Works.
4. That the assessments shown on and confirmed by the Report of the Director of Public Works as modified are true and correct, and found to be in the public interest are hereby confirmed.
5. That those special assessments not paid in cash shall be payable to the City of Green Bay in five (5) annual installments with interest thereon at the rate of two and nine tenths percent (2.9%) per annum.
6. That the City Clerk shall be directed to publish this resolution in the official newspaper of the City of Green Bay.
7. That the City Clerk shall be further directed to mail a copy of this resolution to every property owner whose name appears on the assessment roll, whose post office address is known, or can with reasonable diligence be ascertained.

Adopted _____, 2021

Approved: _____, 2021

Mayor

ATTEST:

City Clerk

jld

**FINAL RESOLUTION AUTHORIZING
CONCRETE PAVEMENT IMPROVEMENTS
AND LEVYING SPECIAL ASSESSMENTS
AGAINST PROPERTY
February 17, 2021**

WHEREAS, the Improvement & Services Committee of the City of Green Bay, Wisconsin, held a virtual public hearing at 6:00 p.m. on the 10th day of February 2021, for the purpose of hearing all interested persons concerning the preliminary resolution and Report of the Director of Public Works on the proposed improvement and has heard all persons desiring audience at such hearings on the following streets or portions of streets:

GRAY STREET – Dousman Street to Mather Street

NOW, THEREFORE, BE IT RESOLVED BY THE COMMON COUNCIL OF THE CITY OF GREEN BAY:

1. That the Report of the Director of Public Works pertaining to the construction of the above described improvement, including plans and specifications therefore as modified, having been reviewed and discussed by members of the Improvement & Services Committee, is hereby adopted and approved.
2. That the Improvement & Services Committee is directed to advertise for bids and to carry out the work of such improvement in accordance with the Report of the Director of Public Works as approved and authorized by the appropriate Committee.
3. That the payment for improvements be made by assessing the cost to the property as indicated in said Report of the Director of Public Works.
4. That the assessments shown on and confirmed by the Report of the Director of Public Works as modified are true and correct, and found to be in the public interest are hereby confirmed.
5. That those special assessments not paid in cash within thirty (30) days of the date of the billing will be placed on the current tax roll as a lien against the property and shall be payable to the City of Green Bay in five (5) annual installments with interest thereon at the rate of two and nine tenths percent (2.9%) per annum.
6. That the City Clerk shall be directed to publish this resolution in the official newspaper of the City of Green Bay.

7. That the City Clerk shall be further directed to mail a copy of this resolution to every property owner whose name appears on the assessment roll, whose post office address is known, or can with reasonable diligence be ascertained.

Adopted _____, 2021

Approved _____, 2021

Mayor

ATTEST:

City Clerk

jld

**RESOLUTION ACCEPTING DEDICATION
OF RIGHT-OF-WAY AND PUBLIC IMPROVEMENTS
LOCATED AT 420 AND 520 NORTH BROADWAY
February 17, 2021**

BY THE COMMON CONCIL OF THE CITY OF GREEN BAY, RESOLVED:

WHEREAS, on December 1, 2017 DDL Holdings and the City of Green Bay entered into a Public Infrastructure Agreement for the purpose of constructing sewer, water and street improvements for The Railyard;

WHEREAS, said Agreement was made by both parties on December 1, 2017;

WHEREAS, said Agreement requires DDL Holdings upon completion of the sewer, water and street improvements, to unconditionally, and without charge to the City of Green Bay, give, grant, convey and fully dedicate the same with the exception of sanitary and storm sewer laterals and water laterals lying outside of dedicated right-of-way, to the City of Green Bay, its successors and assigns forever, free and clear of all encumbrances whatever; together with (without limitation because of enumeration) all land, structures, mains, conduits, pipes, lines, and appurtenances, together with any and all necessary easements for access thereto;

WHEREAS, DDL Holdings has met all of the terms of the agreement, as determined by the Director of Public Works, and has requested that the City of Green Bay accept dedication of the improvements;

WHEREAS, the Director of Public Works has reported on and recommends the acceptance and dedication of the following streets, sanitary sewer, storm sewer, and water main and laterals:

DONALD DRIVER WAY – KELLOGG STREET TO BOND STREET
BOND STREET – DONALD DRIVER WAY TO BROADWAY

NOW THEREFORE, BE IT RESOLVED, that the above streets including sanitary sewer, storm sewer and water improvements be and are hereby accepted by the City of Green Bay.

Adopted _____, 2021

Approved _____, 2021

ATTEST:

Mayor

City Clerk

JMB:jld

**RESOLUTION IN SUPPORT OF
GREEN BAY AREA PUBLIC SCHOOL DISTRICT
STUDENTS, PARENTS, TEACHERS, AND EMPLOYEES
IN URGING THE SCHOOL BOARD AND ADMINISTRATION
TO TRANSITION QUICKLY BUT SAFELY TOWARD
AN IN-PERSON OPTION FOR ALL STUDENTS**

February 17, 2021

BY THE COMMON COUNCIL OF THE CITY OF GREEN BAY:

WHEREAS, COVID-19 has required all levels of government to implement sensible policies and procedures to confront the public health crisis while still providing quality public services for the betterment of all people; and

WHEREAS, the Green Bay Area Public School District serves students in the City of Green Bay, Village of Allouez, Village of Bellevue, Town of Scott, and parts of the Towns of Ledgeview, Eaton, and Humboldt; and

WHEREAS, the Green Bay Area Public School District includes 4 high schools, 2 charter schools, 4 middle schools, 3 K-8 schools, 24 elementary schools, 1 alternative school, and 3 early childhood schools; and

WHEREAS, the Green Bay Area Public School District is responsible for teaching over 20,000 students, including 14.8% with disabilities, 64.5% economically disadvantaged, and 21.1% English learners; and

WHEREAS, the Green Bay Area Public School District employs over 3,500 people; and

WHEREAS, the demographic makeup of the student body of the Green Bay Area Public School District is 43.1% White, 29.7% Hispanic, 9.1% Black, 7.5% Asian, 3.6% American Indian, less than 1% Pacific Islander, and 6.9% with two or more of the preceding; and

WHEREAS, the stated Mission of the Green Bay Area Public School District is, "We educate all students to be college, career and community ready, inspired to succeed in our diverse world"; and

WHEREAS, the Green Bay Area Public School District has developed and disseminated a plan offering in-person learning as an option for students beginning on March 29, 2021;

NOW, THEREFORE, BE IT RESOLVED that the Common Council of the City of Green Bay is in support of the Green Bay Area Public School District as it prepares to offer a safe, in-person option of learning for students.

Adopted _____

Approved _____

Mayor

Clerk

ZONING ORDINANCE NO. 02-21

**AN ORDINANCE REZONING PROPERTY LOCATED
AT 1500 N IRWIN FROM GENERAL COMMERCIAL (C1) DISTRICT TO
HIGHWAY COMMERCIAL (C2) DISTRICT
(ZP 20-37)**

THE COMMON COUNCIL OF THE CITY OF GREEN BAY DOES ORDAIN AS
FOLLOWS:

SECTION 1. Section 13-108, Green Bay Municipal Code, together with the zoning map referred to therein, is hereby amended by rezoning the following described property located at 1500 N Irwin Avenue from General Commercial (C1) to Highway Commercial (C2) District:

DESCRIPTION OF PARCEL 21-1688
(1500 N. IRWIN AVENUE)

All of Lots Twenty-Four (24), Twenty-Five (25) and Twenty-Six (26), Block Eighty-Two (82), according to the recorded Plat of Eastman's Addition, in the City of Green Bay, Brown County, Wisconsin

Tax Parcel 21-1688

SECTION 2. All ordinances or parts of ordinances, in conflict herewith are hereby repealed.

SECTION 3. This ordinance shall not take effect until a public hearing is held thereon as provided by Section 13-204, Green Bay Municipal Code, and the adoption and publication of this ordinance.

Dated at Green Bay, Wisconsin, this _____ day of _____, 2021.

APPROVED:

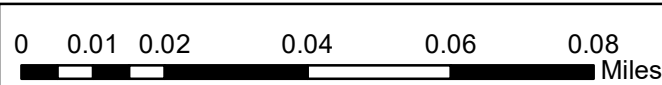
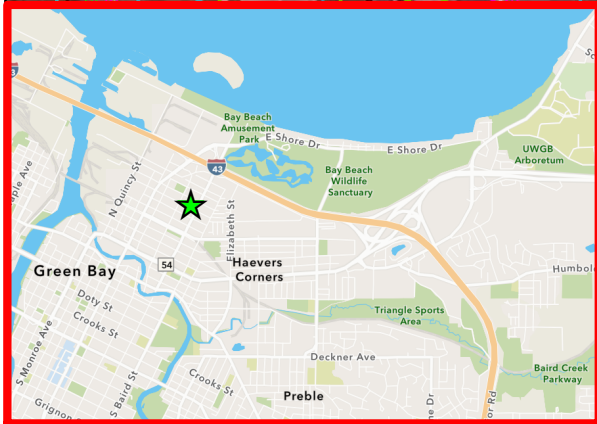
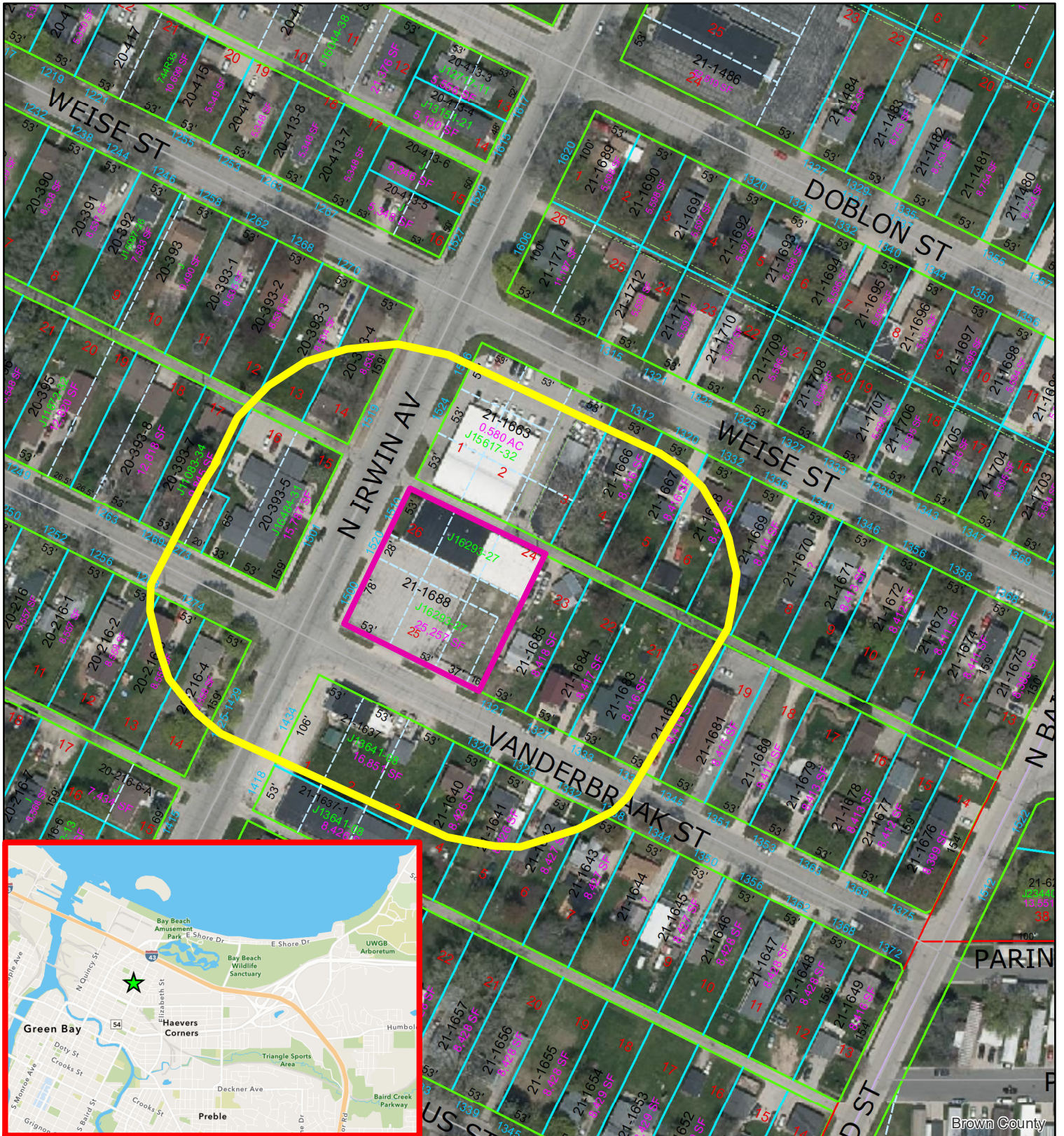
Mayor

ATTEST:

Clerk

ms
Attachment – Map

1500 N Irwin Avenue



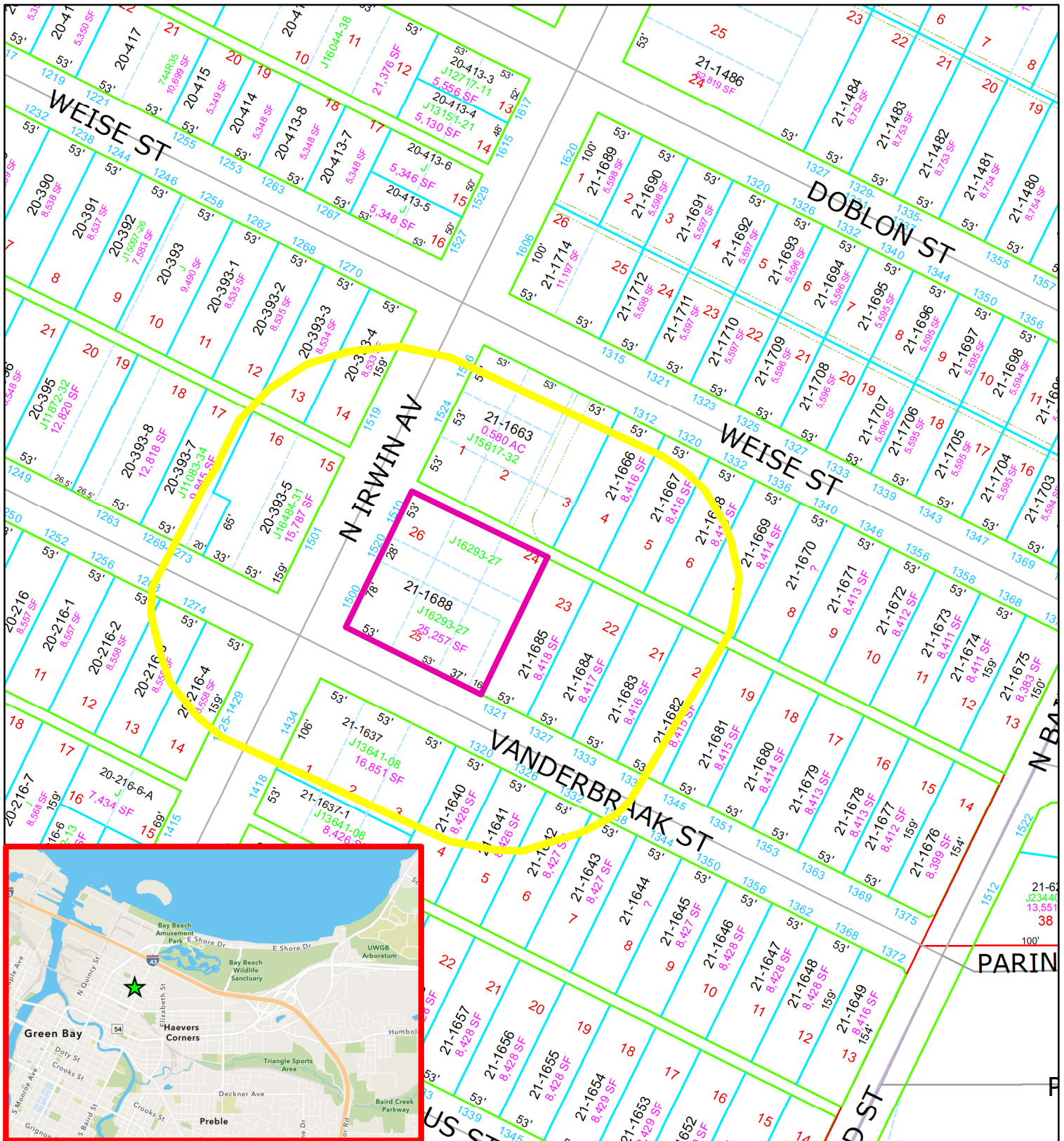
- ★ Subject Parcel 21-1688
- ▭ Subject Area
- ▭ 200' Property Owner Notice

Zoning Petition (ZP 20-37) Proposed Rezoning 1500 N Irwin Avenue

This is a compilation of records and data located in various City of Green Bay offices and is to be used for reference purposes only. The City of Green Bay is not responsible for any inaccuracies or unauthorized use of the information contained within. No warranties are implied. Map prepared by City of Green Bay Department of Community and Economic Development; MS



1500 N Irwin Avenue



0 0.01 0.02 0.04 0.06 0.08 Miles

- ★ Subject Parcel 21-1688
- ▭ Subject Area
- ▭ 200' Property Owner Notice

Zoning Petition (ZP 20-37) Proposed Rezoning 1500 N Irwin Avenue

This is a compilation of records and data located in various City of Green Bay offices and is to be used for reference purposes only. The City of Green Bay is not responsible for any inaccuracies or unauthorized use of the information contained within. No warranties are implied. Map prepared by City of Green Bay Department of Community and Economic Development; MS



For Official Notice:

**Public Notification
Proposed Rezoning
1500 N Irwin Ave
(ZP 20-37)**

The Green Bay Plan Commission will hold a public hearing on **Monday, February 8, 2021**, at 6:00 p.m. The meeting will be conducted at a virtual location. If you wish to participate in the Public Hearing, you may access the meeting by the internet or telephone, using the access code below.

Join Zoom Meeting

<https://us02web.zoom.us/j/84137675822?pwd=L2EyVlpDSiZGZlFjcmlpWnZlOEVnUT09>

Meeting ID: 841 3767 5822

Password: 483400

One tap mobile

+1 312 626 6799,,841 3767 5822# US (Chicago)

+1 646 876 9923,,841 3767 5822# US (New York)

Dial by your location

+1 312 626 6799 US (Chicago)

+1 646 876 9923 US (New York)

Find your local number: <https://us02web.zoom.us/j/84137675822?pwd=L2EyVlpDSiZGZlFjcmlpWnZlOEVnUT09>

The hearing is regarding the following:

(ZP 20-37) Public Hearing on the request to rezone 1500 North Irwin Avenue from General Commercial (C1) to Highway Commercial (C2), submitted by Rocco Canadeo, property owner. (Ald. K. Lefebvre, District 6).

Public comments will be invited at the public hearing or can be sent in writing to:

City of Green Bay

Department of Community and Economic Development

Attn: Madison Smith

100 N. Jefferson St., Rm. 608

Green Bay, WI 54301

For additional information, contact Madison Smith at (920) 448-3407 or madison.smith@greenbaywi.gov.

Publication Dates: January 25, 2021 and February 1, 2021

ZONING ORDINANCE NO. 03-21

**AN ORDINANCE REZONING THE PROPERTY
LOCATED AT 2226 MAIN STREET FROM GENERAL COMMERCIAL (C1)
DISTRICT TO HIGHWAY COMMERCIAL (C2) DISTRICT
(ZP 20-39)**

THE COMMON COUNCIL OF THE CITY OF GREEN BAY DOES ORDAIN AS
FOLLOWS:

SECTION 1. Section 13-108, Green Bay Municipal Code, together with the zoning map referred to therein, is hereby amended by rezoning the following described property located at 2226 Main Street from General Commercial (C1) District to Highway Commercial (C2) District:

28,481 SQ FT LOT 2 OF 9 CSM 55 BNG PART OF LOT 28 ASTOR
SUBD OF PC 3-7 ESFR

SECTION 2. All ordinances or parts of ordinances, in conflict herewith are hereby repealed.

SECTION 3. This ordinance shall not take effect until a public hearing is held thereon as provided by Section 13-204, Green Bay Municipal Code, and the adoption and publication of this ordinance.

Dated at Green Bay, Wisconsin, this _____ day of _____, 2021.

APPROVED:

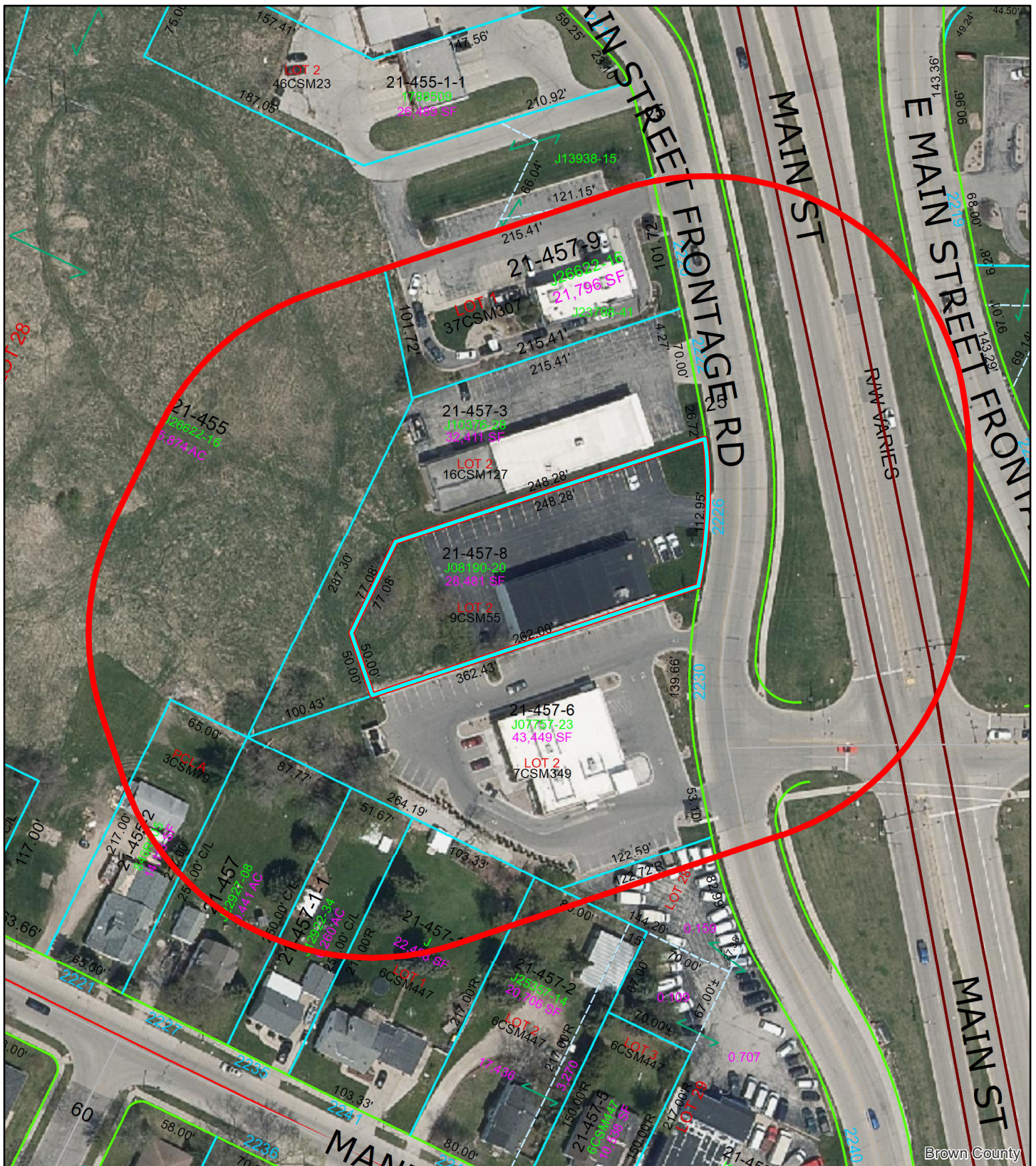
Mayor

ATTEST:

Clerk

sjh

Attachment – Map



(ZP 20-39) Rezone from C1 to C2 at 2226 Main Street

0 25 50 100 Feet



This is a compilation of records and data located in various City of Green Bay offices and is to be used for reference purposes only. The City of Green Bay is not responsible for any inaccuracies or unauthorized use of the information contained within. No warranties are implied. Map prepared by City of Green Bay Department of Community and Economic Development. sjh 25 Jan 2021 X:\Planning\Basemaps\template_8.5x11.mxd

 Subject Parcel, 2226 Main Street

 200' Notification Area

For Official Notice:

**Public Notification
Proposed Rezoning
2226 Main Street
(ZP 20-39)**

The Green Bay Plan Commission will hold a public hearing on **Monday, February 8, 2021**, at 6:00 p.m. The meeting will be conducted at a virtual location. If you wish to participate in a Public Hearing, you may access the meeting by the internet or telephone, using the access code below.

Join Zoom Meeting

<https://us02web.zoom.us/j/84137675822?pwd=L2EyVlpDSiZGZlFjcmlpWnZlOEVnUT09>

Meeting ID: 841 3767 5822

Passcode: 483400

One tap mobile

+1 312 626 6799,,84137675822# US (Chicago)

+1 646 876 9923,,84137675822# US (New York)

Dial by your Location:

+1 312 626 6799 US (Chicago)

+1 646 876 9923 US (New York)

Find your local number: <https://us02web.zoom.us/j/84137675822?pwd=L2EyVlpDSiZGZlFjcmlpWnZlOEVnUT09>

The hearing is regarding the following:

(ZP 20-39) Consideration and possible action on the request to rezone 2226 Main Street from General Commercial (C1) to Highway Commercial (C2), submitted by Doug Reiser, on behalf of Enterprise Rent-A-Car Company of Wisconsin, applicant, LLC. (Ald. L. Gerlach, District 3)

Public comments will be invited at the public hearing or can be sent in writing to:

City of Green Bay
Department of Community and Economic Development
Attn: Stephanie Hummel
100 N. Jefferson St., Rm. 608
Green Bay, WI 54301

For additional information, contact Stephanie Hummel at (920) 448-3424 or Stephanie.Hummel@greenbaywi.gov.

Publication Dates: January 25, 2021 and February 1, 2021

MISCELLANEOUS ORDINANCE NO. 01-21

**AN ORDINANCE
ADOPTING AN AMENDMENT TO THE
SMART GROWTH 2022 COMPREHENSIVE PLAN OF THE CITY OF
GREEN BAY PERTAINING TO PROPERTY LOCATED AT
215 ELIZABETH STREET
(CPA 20-01)**

WHEREAS, pursuant to Wis. Stats. §§ 62.23(2) and (3), the City of Green Bay is authorized to prepare, adopt, and amend a comprehensive plan, as defined in Wis. Stats. § 66.1001(4)(a); and

WHEREAS, the Common Council has adopted the Smart Growth 2022 Comprehensive Plan for the purpose of guiding future land-use decision making, but recognizes that from time to time amendments may be necessary to reflect changes in the land use and planning needs of the community; and

WHEREAS, the Common Council of the City of Green Bay has adopted written procedures (known as the Public Participation Plan for Periodic Comprehensive Plan Amendments) designed to foster public participation in every stage of the preparation of periodic comprehensive plan amendments required by Wis. Stats. § 66.1001(4)(a); and

WHEREAS, the Plan Commission of the City of Green Bay, by a majority vote of the entire Commission recorded in its official minutes, has adopted a resolution recommending the Common Council adopt Comprehensive Plan Amendment CPA 20-01; and

WHEREAS, the City of Green Bay has held at least one public hearing on this ordinance in compliance with the requirements of Wis. Stats. § 66.1001(4)(d), and it is the Common Council's belief that this comprehensive plan amendment is necessary and consistent with the overall goals, policies, and other related elements of the plan.

NOW, THEREFORE, THE COMMON COUNCIL OF THE CITY OF GREEN BAY DOES ORDAIN AS FOLLOWS:

SECTION 1. Comprehensive Plan Amendment CPA 20-01 is hereby adopted pursuant to Wis. Stats. § 66.1001(4)(c). A copy of the comprehensive plan amendment is attached to this ordinance.

SECTION 2. This ordinance shall take effect upon its passage and publication.

Dated at Green Bay, Wisconsin, this _____ day of _____, 2021.

APPROVED:

Mayor

ATTEST:

Clerk

Enclosure – Map

For Official Notice:

**Public Notification
Proposed Amendment to the City of Green Bay
Smart Growth 2022 Comprehensive Plan
(CPA 20-01)**

The Green Bay Plan Commission will hold a public hearing on **Monday, August 31, 2020**, at 6:00 p.m. The meeting will be conducted at a virtual location. If you wish to participate in the Public Hearing, you may access the meeting by the internet or telephone, using the access code below.

Join Zoom Meeting

<https://us02web.zoom.us/j/84137675822?pwd=L2EyVlpDSiZGZlFjcmlpWnZlOEVnUT09>

Meeting ID: 841 3767 5822

Password: 483400

One tap mobile

+1 312 626 6799,,84137675822# US (Chicago)

+1 646 876 9923,,84137675822# US (New York)

Dial by your location

+1 312 626 6799 US (Chicago)

+1 646 876 9923 US (New York)

+1 301 715 8592 US (Germantown)

+1 408 638 0968 US (San Jose)

+1 669 900 6833 US (San Jose)

+1 253 215 8782 US (Tacoma)

+1 346 248 7799 US (Houston)

Meeting ID: 841 3767 5822

Password: 483400

Find your local number: <https://us02web.zoom.us/j/84137675822?pwd=L2EyVlpDSiZGZlFjcmlpWnZlOEVnUT09>

The hearing is regarding the following proposed amendment to the City of Green Bay Smart Growth 2022 Comprehensive Plan (CPA 20-01): A request to amend the Comprehensive Plan for the property located at 215 Elizabeth Street from Medium Density Retail, Office or Housing (MIROH) to Commercial (C) (Figure 22-5). An image depicting the affected area is available in the office of the Department of Community and Economic Development for the City of Green Bay.

The proposed comprehensive plan amendment would allow for the future rezoning of the property for used car sales.

Public comments will be invited at the public hearing or can be sent in writing to:

City of Green Bay

Department of Community and Economic Development

Attn: Paul Neumeyer

100 N. Jefferson St., Rm. 608

Green Bay, WI 54301

For additional information, contact Paul Neumeyer at (920) 448-3405 or paulne@greenbaywi.gov.

ACCESSIBILITY: Any person wishing to attend who, because of a disability, requires special accommodation should contact the City Safety Manager at (920) 448-3125 at least 48 hours before the scheduled meeting time so that arrangements can be made.

Publication Date: August 21, 2020

Hello,

I am submitting this request:

TO: Plan Commission

RE: Request that the property at 1022 Ridge Rd, operating as Darjune Recovery House, be required to apply for a conditional use permit. This would be in accordance with Green Bay Municipal Code §13.602 and 13.1603.

Respectfully submitted,

Alderman Chris Wery

920-490-9282

chriswery@att.net

Facebook: Alderman Chris Wery, District 8 City of Green Bay