



Dane County Natural Hazard Mitigation Plan

Village of Belleville Annex

Summer 2022

Village of Belleville Annex

This annex is a part of the Dane County Natural Hazard Mitigation Plan (DCNHMP). The DCNHMP contains additional information to support the Federal Emergency Management Agency's (FEMA) recognition of the plan (including this annex) as the formal natural hazard mitigation plan for the county and participating local governments. This annex will be valid for as long as FEMA approves the DCNHMP. The strategies adopted in this annex are designed to guide community efforts to reduce risks from natural hazards. These strategies work in conjunction with neighboring communities and Dane County government to reduce risks from natural hazards.

COMMUNITY PROFILE

The Village of Belleville is located on the southern border of Dane County, surrounded on three sides by the Town of Montrose. Belleville straddles the Dane County – Green County boundary. Unless otherwise noted, the numbers given in this community profile reflect only the portion of Belleville that is within Dane County. Land use is primarily residential. According to the Dane County Land Information Office, the Village has a total area of 1.66 square miles. As of 2020, there are 817 households, and the average household size is 2.42.

The municipal population data provided by the American Community Survey, a product of the US Census Bureau, indicates that the 2019 population estimates for Village of Belleville, Dane County, is comprised of 1,898 people. Table 1 shows the population profile by age for the areas of the Village of Belleville *within Dane County*. This plan applies only to the Dane County areas of the Village.

Table 1 Population Profile of Village of Belleville, Dane County

Category	Number	Percent
Total Population	1,898	100%
Under 5 years	127	6.7%
5 to 9 years	95	5.0%
10 to 14 years	161	8.5%
15 to 19 years	97	5.1%
20 to 24 years	106	5.6%
25 to 29 years	78	4.1%
30 to 34 years	122	6.4%
35 to 39 years	106	5.6%
40 to 44 years	156	8.2%
45 to 49 years	180	9.5%
50 to 54 years	150	7.9%
55 to 59 years	166	8.7%
60 to 64 years	121	6.4%
65 to 69 years	50	2.6%
70 to 74 years	120	6.3%
75 to 79 years	8	0.4%
80 to 84 years	40	2.1%
85 years and over	15	0.8%

Data Source: 2019 ACS Estimates - U.S. Census

Growth & Development Trends

Table 2-3 illustrates how the entire Village of Belleville has grown in terms of population and number of households between 2010 and 2020. Housing data is to 2020 due to data availability. Table 2-3 is drawn from the Demographics Services Center at the Wisconsin Department of Administration, and shows population projections through 2040. This data is representative of Dane and Green county populations.

Table 2 Village of Belleville Change in Population and Households, 2010-2020

2010 Population	2020 Population	Percent Change (%) 2010-2020	2010 # of Households	2020 # of Households	Percent Change (%) 2010-2020
2,385	2,585	8.38%	986	1,082	9.73%

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Table 3 Village of Belleville Population Projections, 2020-2040

Population Projection	2020	2025	2030	2035	2040
Increase by half of percent of change (8.38%/2) every 5 years	2,585	2,693	2,805	2,922	3,055

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Note: Population estimates offered by the U.S. Census Bureau’s American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Population Summary

Tables 4-7 illustrates key population demographics within the Village of Belleville. Key demographics include: (1) Disability Characteristics, (2) Federal Income Poverty Levels, (3) Educational Attainment, and (4) Household Language with English Speaking Capabilities. Due to data availability, all key demographic information has been provided by the American Community Survey (ACS) 2019 estimates. The ACS is a self-reported survey and may include total sample size differences and statistical margin of error.

Table 4 Village of Belleville, Dane County – Disability Characteristics by Detailed Age

Category	Number	Percent
Total of Residents Self-Identified as Disabled	198	100%
With a hearing difficulty	59	29.8%
Population under 18 years	0	-
Population 18 to 64 years	27	-
Population 65 years and over	32	-
With a vision difficulty	9	4.5%
Population under 18 years	0	-
Population 18 to 64 years	5	-
Population 65 years and over	4	-
With a cognitive difficulty	31	15.7%
Population under 18 years	12	-
Population 18 to 64 years	19	-
Population 65 years and over	0	-
With an ambulatory difficulty	57	28.8%
Population under 18 years	0	-
Population 18 to 64 years	37	-
Population 65 years and over	20	-
With a self-care difficulty	10	5.1%
Population under 18 years	0	-
Population 18 to 64 years	6	-
Population 65 years and over	4	-
With an independent living difficulty	32	16.2%
Population 18 to 64 years	17	-
Population 18 to 34 years	6	-
Population 65 years and over	15	-

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.1: Village of Belleville, Dane County – Federal Income Poverty Levels (FIPL) by Families Summary

Category	Number of Families
50 percent of poverty level	8
125 percent of poverty level	24
150 percent of poverty level	24
185 percent of poverty level	36
200 percent of poverty level	44
300 percent of poverty level	124
400 percent of poverty level	221
500 percent of poverty level	316

Data Source: 2019 ACS Estimates - U.S. Census

Note: Use table 5.2 to interpret table 5.1:

5.1 identifies the *total number of families* (regardless of size) by percentage.

5.2 identifies *family size* in relation to annual family income and the percentage category of the FIPL.

Table 5.2: Village of Belleville, Dane County – Annual Federal Income Poverty Level Guide

Family Size	50%	100%	125%	150%	185%	200%	300%	400%	500%
1	\$6,440	\$12,880	\$16,100	\$19,320	\$23,828	\$25,760	\$38,640	\$51,520	\$64,400
2	\$8,710	\$17,420	\$21,775	\$26,130	\$32,227	\$34,840	\$52,260	\$69,680	\$87,100
3	\$10,980	\$21,960	\$27,450	\$32,940	\$40,626	\$43,920	\$65,880	\$87,840	\$109,800
4	\$13,250	\$26,500	\$33,125	\$39,750	\$49,025	\$53,000	\$79,500	\$106,000	\$132,500
5	\$15,520	\$31,040	\$38,800	\$46,560	\$57,424	\$62,080	\$93,120	\$124,160	\$155,200
6	\$17,790	\$35,580	\$44,475	\$53,370	\$65,823	\$71,160	\$106,740	\$142,320	\$177,900

Data Source: dhs.wisconsin.gov

Table 6: Village of Belleville, Dane County – Educational Attainment by Householders

Category	Number	Percent
Total of Householders	567	100%
Less than high school graduate	13	2.3%
High school graduate (includes equivalency)	86	15.2%
Some college, associate's degree	246	43.4%
Bachelor's degree or higher	222	39.2%

Data Source: 2019 ACS Estimates - U.S. Census

Table 7: Village of Belleville, Dane County – Household Language & English Speaking Capabilities

Category	Number	Percent
Total of Households	799	100%
English only	756	94.6%
Spanish:	34	4.3%
Limited English speaking household	12	-
Not a limited English speaking household	22	-
Other Indo-European languages:	9	1.1%
Limited English speaking household	0	-
Not a limited English speaking household	9	-
Asian and Pacific Island languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-
Other languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-

Data Source: 2019 American Community Survey

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of Belleville that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

General Property

Table 8 Property Exposure Summary

Property Type	Parcel Count	Improved Land Count	Improved Land Value (\$)	Content Value (\$)	Total Value (\$)
Total	1,102	1,065	167,622,000	8,3811,000	251,433,000
Agriculture	18	18	9,505,200	4752,600	14,257,800
Industrial	27	27	11,587,300	5793,650	17,380,950
Residential	942	942	120,148,400	6,0074,200	180,222,600
Utility	11	11	1,500	750	2,250
Commercial	59	59	26,241,800	1,3120,900	39,362,700
Other	21	0	0	0	0
Institutional/ Governmental	24	8	137,800	68,900	206,700

Data Source: Dane County Land Information Office, December 2021

Critical Facilities

The Village of Belleville has identified the critical facilities important to protect from disaster impacts. These are collected in Table 9. Table 9 is based on GIS data inventories from Dane County and information gathered from the Village. No further supplemental data was provided by the community through the Data Collection Guide.

Table 9 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
Wastewater Treatment Plant	EI	1	\$17,000,000.00
Lift Stations	EI	1+	\$500,000.00 Each
Bridge – STH 69	EI	1	N/A
Bridge – Remy Road	EI	1	\$300,000.00
Sugar River Dam	EI	1	N/A
Water Tower	EI	1	\$600,000.00
Lake Belle View / Sugar River / Wetland Islands	NA	1	N/A
Cell Phone Towers – US Cellular and Verizon	EI	1+	N/A
Residences in Floodplain	VF	N/A	\$3,000,000.00
Detention/Retention Ponds	EI	1+	N/A
Medical Clinic	VF	N/A	N/A
Heartsong CBRF	VF	1	N/A
Heritage CBRF, Apartment Building and Condos	VF	1	N/A
Gas Stations	VF	1+	N/A
Day Care Center	VF	1	N/A
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities			

Data Source: 2021 Village of Belleville Data Collection Guide

Other Assets

Other assets help define a community beyond the current composition of the Village of Belleville. These assets may provide economic benefit to the community, in addition to preserving the heritage and diversity of the community and may include natural, cultural and historic assets or economic assets such as major employers. It may also include more specific detail on critical facilities. The Village of Belleville has not identified any other assets.

VULNERABILITY ASSESSMENT

A hazard identification and vulnerability analysis was completed for the Village of Belleville using the same methodology in the County's base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 10 outlines the hazard identification for the Village of Belleville based on the Data Collection Guide issued in 2021. The Data Collection Guide listed all of the hazards that could impact Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. Brooklyn's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern." This matrix appears as Table 10. This matrix reflects the significance of the hazards relative to one another as perceived by the Example's planning team.

This matrix reflects that the Village of Belleville is most vulnerable to tornadoes, winter storms, floods. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 10: Vulnerability Assessment Matrix for the Village of Belleville

Name of Jurisdiction: <u>Village of Belleville</u>										
Hazard	Hazard Attributes			Impact Attributes						Total of Row Values
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
Impact on General Structures				Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards		
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	
Dam/Levee failure	2	1	2	2	2	0	2	2	1	14
Extreme Cold	3	3	2	1	2	4	3	3	3	24
Extreme Heat	3	3	2	1	2	4	3	3	3	24
Drought	3	3	2	0	0	2	2	2	2	16
Expansive soils	0	0	0	0	0	0	0	0	0	0
Flood	4	4	3	4	4	1	3	4	4	31
Fog	1	1	3	0	0	0	0	0	2	7
Hail Storm	1	2	3	4	2	1	1	3	2	19
Landslide	0	0	0	0	0	0	0	0	0	0
Lightning	2	4	3	2	4	2	2	3	3	25
Tornado	5	2	5	5	5	5	5	5	5	42
Wildfire	0	0	0	0	0	0	0	0	0	0
Windstorm	3	4	3	3	2	2	2	3	2	24
Winter Storm	5	5	4	3	3	4	3	3	4	34

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of Belleville. Table 11 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 11 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	None	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Drought	Minimal	None	None	Specifics unknown; See hazard profile in County Plan
Flooding	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below
Fog	None	None	None	Specifics unknown; See hazard profile in County Plan
Hailstorm	Minimal	See Property Exposure table 8	Moderate	Specifics unknown; See hazard profile in County Plan
Landslide/Sinkholes/Erosion	None	None	None	Specifics unknown; See hazard profile in County Plan
Lightning	Moderate	Moderate	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Severe Cold	See Tables 4-7 Population	Minimal	Moderate	Specifics unknown; See hazard profile in County Plan
Severe Heat	See Tables 4-7 Population	Minimal	Moderate	Specifics unknown; See hazard profile in County Plan
Winter Storm	See Tables 4-7 Population	See Property Exposure table 8	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 15 below	See Table 15 below	See Table 15 below	See Table 15 below
Wildfire	None	None	None	Specifics unknown; See hazard profile in County Plan
Windstorm	Moderate	See Property Exposure table 8	Moderate	Specifics unknown; See hazard profile in County Plan

Data Source: 2021 Village of Belleville Data Collection Guide – Prepared by DCEM

Previous Hazard Events

Through the Data Collection Guide, the Village of Belleville noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the main mitigation plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The events noted by this jurisdiction in the Data Collection Guide can be found in Table 12.

Table 12 Village of Belleville Historic Natural Hazards

Natural Hazard	Date	Impacted Structures	Comprehensive Harm to Jurisdiction	Other reported Losses (Fiscal reports, programs, etc)	Comments
Flood	08/21-22/2018	Multiple Impacted Structures	Heavy rains from previous night on west side of county made their way downstream. The magnitude of the event was significant.	N/A	Village EOC opened during event. Wastewater Treatment Plant placed on bypass for a period of time. Numerous residents were displaced from their residences.
Windstorm	2017	Multiple Impacted Structures	Trees blown over, limbs broken off trees, some minor damage (roof) to some residences. Gazebo destroyed.	Gazebo replacement was covered by Village of Belleville policy	N/A
Extreme Cold (Polar Vortex)	01/19/19	None	Schools were closed for several days.	None	N/A
Windstorm	10/1-2/2019	Multiple Impacted Structures	Numerous trees were blown over causing a gas line to break and at least one tree fell on a house. Several roads were closed.	N/A	Village EOC opened during event. Several blocks of residences had to be evacuated temporarily to High School until gas leak was fixed and residences were checked for gas.

Data Source: 2021 Village of Belleville Data Collection Guide

Flood Hazard

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 13 and 14 outline the primary structures on them within the Village of Belleville, Dane County. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County (2.37 people as of 2021). Estimated loss potentials for all structures on the floodway can be found within section 4.6 in chapter 4 of the county plan.

Table 13 Primary Structures in the 100 Year Floodplain

Residential Structures in 100 yr. Floodway	Non-Residential Structures in 100 yr. Floodplain	Total Structures in 100 yr. Floodplain	Potential # of People at Risk in 100 yr. Floodplain	Total Assessed Values (\$) of Structures in 100 yr. Floodplain
9	3	12	21	\$1,239,368

Source: Analysis based on Dane County Land Information Office Data

Table 14 Primary Structures in the 500 Year Floodplain

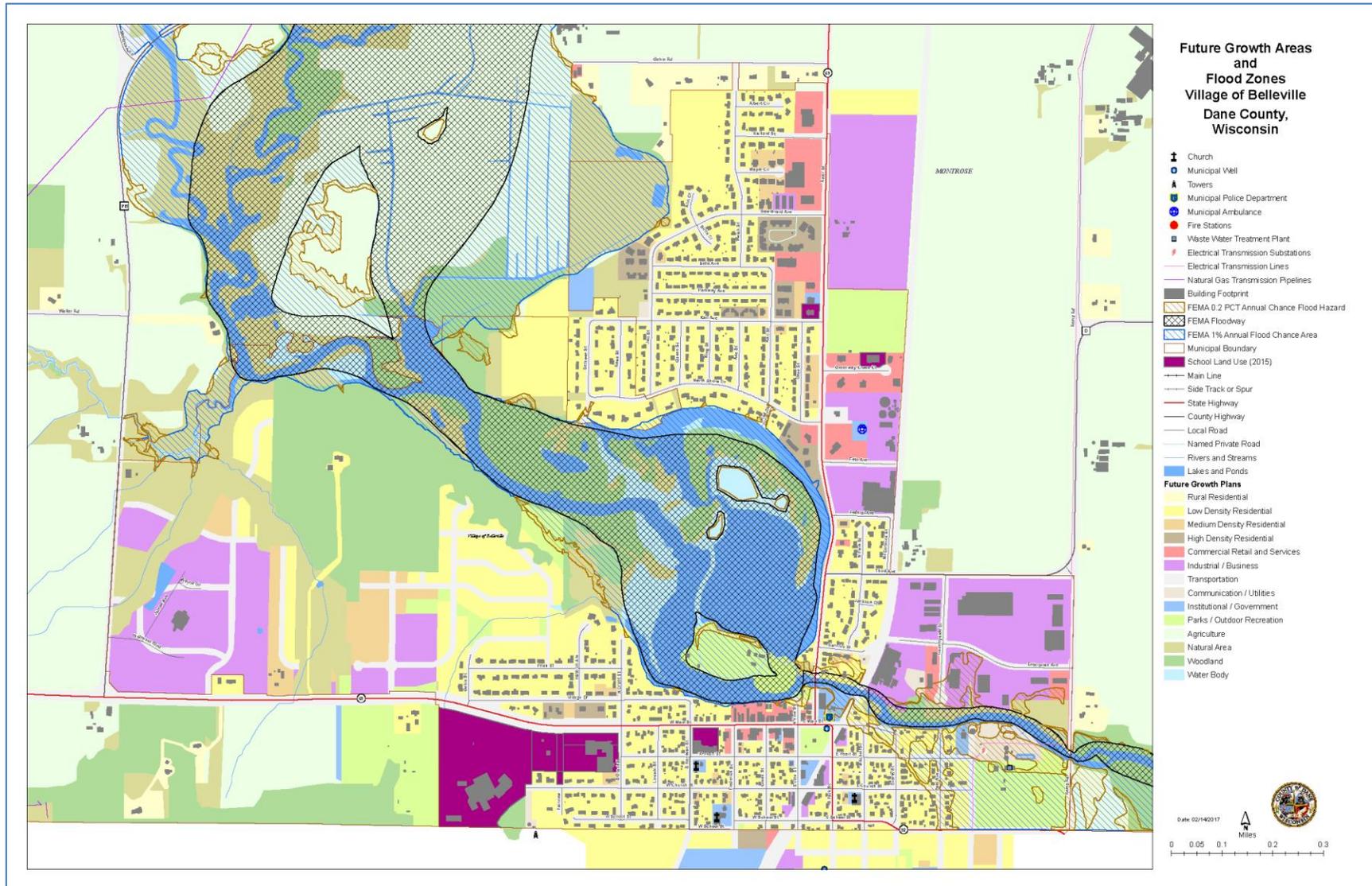
Residential Structures in 500 yr. Floodway	Non-Residential Structures in 500 yr. Floodplain	Total Structures in 500 yr. Floodplain	Potential # of People at Risk in 500 yr. Floodplain	Total Improved Values (\$) of Structures in 500 yr. Floodplain
34	3	37	81	\$3,702,291

Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Policies

- 9 repetitive loss properties have been reported in the Village of Belleville, Dane County.
- The Village of Belleville has 9 flood insurance policies in force within Dane County, with a total coverage of \$2,341,000.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2023 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 15 Tornado Loss Estimate

% Area impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value (\$)	Estimated Loss \$ (High Damage Range)	Estimated Loss \$ (Moderate Damage Range)	Estimated Loss \$ (Low Damage Range)	Loss Ratio for Moderate Damage Range
50.92%	1065	542	251,433,000	128,028,242	64,014,120	32,007,060	25%

Data Source: Analysis Based on Dane County Land Information Office’s data

Problems or Additional Vulnerability Issues

The Village of Belleville’s Data Collection Guide issued in 2021 listed:

- Residential growth in northern portion of village.
- Commercial/industrial growth in southeastern business park.
- Long-term potential growth in western portion of village currently farmland.
- No new development areas in floodplain.

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of Belleville.

Mitigation Capabilities Summary

Table 16 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of Belleville.

Table 16 Village of Belleville Regulatory Mitigation Capabilities

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Existing Natural Hazard Mitigation Plan	Yes	Dane/Green County Natural Hazard Mitigation Plan
General or Comprehensive plan	Yes	See Village of Belleville Website for Current Plan – Revised 2021
Zoning ordinance	Yes	See Village of Belleville Website for Current Ordinance
Subdivision ordinance	Yes	See Village of Belleville Website for Current Ordinance
Growth management ordinance		N/A
Shoreland/ wetland zoning ordinance	Yes	See Village of Belleville Website for Current Ordinance
Floodplain zoning ordinance	Yes	See Village of Belleville Website for Current Ordinance
FEMA / NFIP Community Rating System	No	N/A
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	See Village of Belleville Website for Current Ordinance
Building code	Yes	See Village of Belleville Website for Current Ordinance
Fire department ISO rating	Yes	Last Rating – 5, Last Audit in 2018
Climate change Impact program	No	N/A
Erosion or sediment control program	Yes	See Village of Belleville Website for Current Ordinance
Stormwater management program	Yes	See Village of Belleville Website for Current Ordinance
Site plan review requirements	Yes	See Village of Belleville Website for Current Ordinance
Capital improvements plan	Yes	Currently Being Revised
Economic development plan	Yes	See Village of Belleville Website for Available Locations, Resources and Construction Standards
Local emergency operations plan	Yes	N/A
Other special plans	No	N/A
Flood insurance study or other engineering study for streams	Yes	Engineering Flood Maps for Residences and LOMA's on File with FEMA
Elevation certificates (for floodplain development)	Yes	On File with FEMA

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Climate Action Plan	No	N/A

Data Source: Village of Belleville Data Collection Guide, 2021

Table 17 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of Belleville.

Table 17 Responsible Personnel and Departments for the Village of Belleville

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Village Contracted Building/Zoning Administrator	N/A
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Village Contracted Engineer	N/A
Planner/engineer/scientist with an understanding of natural hazards	Yes	Village Contracted Engineer, Wildlife Resources Committee Chair	N/A
Personnel skilled in GIS	Yes	Village Contracted Engineer	N/A
Full time building official	No	Duties Handled by Village Contracted Building/Zoning Administrator	N/A
Personnel skilled in Climate resilience	No		N/A
Floodplain manager	No	Duties Handled by Village Contracted Engineer	N/A
Emergency manager	No	Duties Handled by Emergency Management Committee and Chair	N/A
Real estate acquisition personnel	No	N/A	N/A
Grant writer	No	Duties Handled by Administrator as Needed	N/A

Data Source: Village of Belleville Data Collection Guide 2021

Table 18 identifies financial tools or resources that the Village of Belleville could potentially use to help fund mitigation activities.

Table 18 Financial Resources for the Village of Belleville

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Dedicated funding for land, easement or conservation easement acquisition	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activities	No
Withhold Spending in hazard prone areas	No

Data Source: Village of Belleville Data Collection Guide

Additional Capabilities

The Village of Belleville identified the following as past or ongoing public education or information programs:

- The Village of Belleville Formally recognized as a storm ready municipality, and will seek out additional information on renewing and/or reviewing storm ready qualifications.
- The Village of Belleville has looked at how to mitigate the flood damage on the east side of the Village. It really went nowhere because of the cost in the past. We will probably explore the possibility of some FEMA Pre Disaster Mitigation funding in the future.

National Flood Insurance Program Participation

The Village of Belleville currently participates in the National Flood Insurance Program, and is listed under Green and Dane County.

Public Involvement Activities

The Village of Belleville conducted a publically noticed listening session with the Village of Belleville Board on November 1, 2021. It was noticed on the village website, and an agenda was provided to discuss the draft mitigation strategies. No changes were made to the initial draft mitigation strategies.

MITIGATION STRATEGIES

Below are the identified mitigation strategies developed by the Village of Belleville’s NHMP steering committee. Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects. A *mitigation strategy* is a long-term vision for risk reduction in local jurisdictional or regional planning. A mitigation strategy can be achieved by a list of overall improvements to achieve (goals) that provide direction for community efforts to reduce potential losses identified in the risk assessment.

Strategy #1	Evaluate Back Up Power for Village and Private Critical Facilities
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
The Village of Belleville is susceptible to storms, especially tornado, lightning and wind storms. It is important to assure that critical Village facilities and other critical facilities be able to operate at all times, especially when power is interrupted.	
Defined steps to achieving this mitigation strategy	
<ol style="list-style-type: none"> 1. Determine Back Up Power Needs for Critical Village and Private Facilities <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Emergency Management Committee b. <i>Funding source</i> – Grants/Low Interest Loans/Village of Belleville c. <i>Completion date</i> – Ongoing 	
<ol style="list-style-type: none"> 2. Secure Back Up Power for Critical Village and Private Facilities <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Belleville/Private Entities b. <i>Funding source</i> – Grants/Low Interest Loans/Village of Belleville c. <i>Completion date</i> – Ongoing 	

Strategy #2	Flood Prevention	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>The Village of Belleville continually sees interest for further development with residential and commercial properties. The Village utilizes a contracted Engineering firm to review the developments proposed in the Village. The Village has a stormwater management ordinance that follows the Dane County ordinances. Development projects will be reviewed to meet the current ordinances in order to minimize stormwater effects from developments.</p>		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Review Village Ordinances to ensure they are current with County/State Ordinances/Statutes <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Belleville/General Engineering Company b. <i>Funding source</i> – Development Projects c. <i>Completion date</i> – 4/30/22 		
<ol style="list-style-type: none"> 2. Ensure developments meet current Village/County/State Ordinances/Statutes for new developments <ol style="list-style-type: none"> d. <i>Responsible Party</i> – Village of Belleville/General Engineering Company/MSA/Developers e. <i>Funding source</i> – Development Projects f. <i>Completion date</i> – Ongoing with Development(s) 		

Strategy #2	Flood Prevention
<p>3. Maintain retention/detention ponds and other flood prevention measures</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Belleville/MSA/Developers b. <i>Funding source</i> – Village of Belleville/Developers c. <i>Completion date</i> – Ongoing 	

Strategy #3	Flood Prevention	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>Construct a combination earthen and sheet pile levee on the south side of the Sugar River from approximately the Badger State Trail to the treatment plant facility to protect the facilities and residents within the Sugar River floodplain limits in the southeast corner of the Village. The project will include permanent easements and/or property acquisitions along the corridor for the levee construction. The Village of Belleville has a desire to protect the properties within the Village without impacting additional properties</p>		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Evaluate/study measures to alleviate/prevent flooding in affected areas <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Belleville b. <i>Funding source</i> – FEMA/WEM/DNR/Village c. <i>Completion date</i> – 5/31/22 		
<ol style="list-style-type: none"> 2. Implement measure from study above <ol style="list-style-type: none"> g. <i>Responsible Party</i> – Village of Belleville h. <i>Funding source</i> – FEMA/WEM/DNR/Village i. <i>Completion date</i> – Ongoing 		

Strategy #4	Mobile Homes Safety/Security
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
Although the Village does not have many mobile homes, they must work with the owners to assist them in securing their homes and educate them what to do in the event of severe storms.	
Defined steps to achieving this mitigation strategy	
<p>1. Determine mobile home properties in the Village</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Belleville/Private Property Owners b. <i>Funding source</i> – No funding needed c. <i>Completion date</i> – 5/31/2022 	
<p>2. Assist mobile home owners in securing their property.</p> <ul style="list-style-type: none"> j. <i>Responsible Party</i> – Village of Belleville/Private Property Owners k. <i>Funding source</i> – FEMA or WEM Funding/Private Property Owners l. <i>Completion date</i> – Ongoing 	
<p>3. Educate mobile home owners what to do in the event of severe weather (tornado, high winds)</p> <ul style="list-style-type: none"> d. <i>Responsible Party</i> – Village of Belleville e. <i>Funding source</i> – Village of Belleville f. <i>Completion date</i> – 5/31/22 	

Strategy #5	Educate Public Regarding Severe Weather	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
It is imperative for the citizens of Belleville to have as much advanced warning to impending storms. The public must be educated about the many ways to receive information regarding severe weather.		
Defined steps to achieving this mitigation strategy		
<p>1. Educate the public regarding severe weather and the many ways to receive information regarding impending weather</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Belleville/Emergency Services/Local Civic Organization b. <i>Funding source</i> – Village of Belleville/Local Civic Organizations/Donations c. <i>Completion date</i> – 5/31/2022 		
<p>2. Provide weather radios to those with no other means to receive severe weather information.</p> <ul style="list-style-type: none"> m. <i>Responsible Party</i> – Village of Belleville/Emergency Services/Local Civic Organization n. <i>Funding source</i> – Village of Belleville/Local Civic Organizations/Donations o. <i>Completion date</i> – 5/31/2022 		
<p>3. Identify residents who may need assistance in the event of severe weather, including prolonged power outages</p> <ul style="list-style-type: none"> g. <i>Responsible Party</i> – Village of Belleville/Emergency Services/Senior Citizens of Belleville, Local Churches h. <i>Funding source</i> – Village of Belleville/Senior Citizens of Belleville/Local Churches i. <i>Completion date</i> – 5/31/22 		

Strategy #5	Educate Public Regarding Severe Weather
<p>4. Update Village Forms and Applications Regarding the Need for Severe Weather Contingency Plans</p> <ul style="list-style-type: none">a. <i>Responsible Party</i> – Village of Bellevilleb. <i>Funding source</i> – No funding neededc. <i>Completion date</i> – 3/31/22	



Dane County Natural Hazard Mitigation Plan

Village of Black Earth Annex

Summer 2022

Village of Black Earth Annex

This annex is a part of the Dane County Natural Hazard Mitigation Plan (DCNHMP). The DCNHMP contains additional information to support the Federal Emergency Management Agency's (FEMA) recognition of the plan (including this annex) as the formal natural hazard mitigation plan for the county and participating local governments. This annex will be valid for as long as FEMA approves the DCNHMP. The strategies adopted in this annex are designed to guide community efforts to reduce risks from natural hazards. These strategies work in conjunction with neighboring communities and Dane County government to reduce risks from natural hazards.

COMMUNITY PROFILE

The Village of Black Earth is located in the northwest quadrant of the County, north of the Town of Vermont and south of the Village of Mazomanie. Land use is dominated by residential and commercial use. According to the United States Census Bureau, the Village of Black Earth has a total area of 0.86 square miles, of which 0.01 square miles consists of water. As of 2020, there were 591 households indicated by the Wisconsin Department of Administration, and an average household size of 2.32.

The municipal population data provided by the American Community Survey, a product of the US Census Bureau, indicates that the 2019 population estimates for Village of Black Earth, Dane County, is comprised of 1,418 people. Table 1 shows the population profile by age for the areas of the Village of Black Earth *within Dane County*. This plan applies only to the Dane County areas of the Village.

Table 1 Population Profile of Village of Black Earth, Dane County

Category	Number	Percent
Total Population	1,418	100%
Under 5 years	135	9.5%
5 to 9 years	78	5.5%
10 to 14 years	35	2.5%
15 to 19 years	66	4.7%
20 to 24 years	103	7.3%
25 to 29 years	95	6.7%
30 to 34 years	122	8.6%
35 to 39 years	78	5.5%
40 to 44 years	50	3.5%
45 to 49 years	129	9.1%
50 to 54 years	79	5.6%
55 to 59 years	153	10.8%
60 to 64 years	99	7.0%
65 to 69 years	73	5.1%
70 to 74 years	55	3.9%
75 to 79 years	31	2.2%
80 to 84 years	8	0.6%
85 years and over	29	2.0%

Data Source: 2019 ACS Estimates - U.S. Census

Growth & Development Trends

Table 2-3 illustrates how the entire Village of Black Earth has grown in terms of population and number of households between 2010 and 2020. Housing data is to 2020 due to data availability. Table 2-3 is drawn from the Demographics Services Center at the Wisconsin Department of Administration, and shows population projections through 2040.

Table 2 Village of Black Earth Change in Population and Households, 2010-2020

2010 Population	2020 Population	Percent Change (%) 2010-2020	2010 # of Households	2020 # of Households	Percent Change (%) 2010-2020
1,338	1,453	8.59%	559	591	5.72%

Data Source: Demographic Services Center, Wisconsin Department of Administration

Table 3 Village of Black Earth Population Projections, 2020-2040

Population Projection	2020	2025	2030	2035	2040
Increase by half of percent of change (4.25%/2) every 5 years	1,453	1,514	1,578	1,645	1,714

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Note: Population estimates offered by the U.S. Census Bureau’s American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Population Summary

Tables 4-7 illustrates key population demographics within the Village of Black Earth. Key demographics include: (1) Disability Characteristics, (2) Federal Income Poverty Levels, (3) Educational Attainment, and (4) Household Language with English Speaking Capabilities. Due to data availability, all key demographic information has been provided by the American Community Survey (ACS) 2019 estimates. The ACS is a self-reported survey and may include total sample size differences and statistical margin of error.

Table 4 Village of Black Earth, Dane County – Disability Characteristics by Detailed Age

Category	Number	Percent
Total of Residents Self-Identified as Disabled	199	100%
With a hearing difficulty	42	21.1%
Population under 18 years	0	-
Population 18 to 64 years	23	-
Population 65 years and over	19	-
With a vision difficulty	18	9.0%
Population under 18 years	3	-
Population 18 to 64 years	9	-
Population 65 years and over	6	-
With a cognitive difficulty	26	13.1%
Population under 18 years	10	-
Population 18 to 64 years	13	-
Population 65 years and over	3	-
With an ambulatory difficulty	56	28.1%
Population under 18 years	7	-
Population 18 to 64 years	33	-
Population 65 years and over	16	-
With a self-care difficulty	31	15.6%
Population under 18 years	7	-
Population 18 to 64 years	24	-
Population 65 years and over	0	-
With an independent living difficulty	26	4.8%
Population 18 to 64 years	17	-
Population 18 to 34 years	2	-
Population 65 years and over	9	-

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.1: Village of Black Earth, Dane County – Federal Income Poverty Levels (FIPL) by Families Summary

Category	Number of Families
50 percent of poverty level	17
125 percent of poverty level	29
150 percent of poverty level	29
185 percent of poverty level	40
200 percent of poverty level	40
300 percent of poverty level	103
400 percent of poverty level	146
500 percent of poverty level	189

Data Source: 2019 ACS Estimates - U.S. Census

Note: Use table 5.2 to interpret table 5.1:

5.1 identifies the *total number of families* (regardless of size) by percentage.

5.2 identifies *family size* in relation to annual family income and the percentage category of the FIPL.

Table 5.2: Village of Black Earth, Dane County – Annual Federal Income Poverty Level Guide

Family Size	50%	100%	125%	150%	185%	200%	300%	400%	500%
1	\$6,440	\$12,880	\$16,100	\$19,320	\$23,828	\$25,760	\$38,640	\$51,520	\$64,400
2	\$8,710	\$17,420	\$21,775	\$26,130	\$32,227	\$34,840	\$52,260	\$69,680	\$87,100
3	\$10,980	\$21,960	\$27,450	\$32,940	\$40,626	\$43,920	\$65,880	\$87,840	\$109,800
4	\$13,250	\$26,500	\$33,125	\$39,750	\$49,025	\$53,000	\$79,500	\$106,000	\$132,500
5	\$15,520	\$31,040	\$38,800	\$46,560	\$57,424	\$62,080	\$93,120	\$124,160	\$155,200
6	\$17,790	\$35,580	\$44,475	\$53,370	\$65,823	\$71,160	\$106,740	\$142,320	\$177,900

Data Source: dhs.wisconsin.gov

Table 6: Village of Black Earth, Dane County – Educational Attainment by Householders

Category	Number	Percent
Total of Householders	352	100%
Less than high school graduate	2	0.6%
High school graduate (includes equivalency)	101	28.7%
Some college, associate's degree	123	34.9%
Bachelor's degree or higher	126	35.8%

Data Source: 2019 ACS Estimates - U.S. Census

Table 7: Village of Black Earth, Dane County – Household Language & English Speaking Capabilities

Category	Number	Percent
Total of Households	631	100%
English only	608	96.4%
Spanish:	18	2.9%
Limited English speaking household	0	-
Not a limited English speaking household	18	-
Other Indo-European languages:	5	0.8%
Limited English speaking household	0	-
Not a limited English speaking household	5	-
Asian and Pacific Island languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-
Other languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-

Data Source: 2019 American Community Survey

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of Black Earth that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

General Property

Table 8 Property Exposure Summary

Property Type	Parcel Count	Improved Land Count	Improved Land Value (\$)	Content Value (\$)	Total Value (\$)
Total	893	877	119,692,900	59,846,450	179,539,350
Residential	818	818	108,337,000	54,168,500	162,505,500
Transportation	2	0	0	0	0
Utility	5	5	380,000	190,000	570,000
Commercial	43	43	10,293,900	5,146,950	15,440,850
Other	13	4	505,500	252,750	758,250
Institutional/ Governmental	12	7	176,500	88,250	264,750

Data Source: Dane County Land Information Office, December 2021

Critical Facilities

The Village of Black Earth has identified the critical facilities important to protect from disaster impacts. These are collected in Table 9. Table 9 is based on GIS data inventories from Dane County and information gathered from the Village. No further supplemental data was provided by the community through the Data Collection Guide.

Table 9 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
Benchmark Health Care	VF	1	2.5 million-estimate
Black Earth Fire Department	EI	1	2.5 million-estimate
Community Park	VF	1	1 million-estimate
Veterans Park	VF	1	\$200k-estimate
Black Earth Elementary School	VF	1	3 million-estimate
Well house 1	EI	1	1 million-estimate
Well house 2	EI	1	1 million-estimate
Water Reservoir	EI	1	2 million-estimate
Electrical Substation 1	EI	1	\$2 million estimate
Treatment house 1	EI	1	1 million-estimate
Lift Station 1	EI	1	\$500k - estimate
Lift Station 2	EI	1	\$500k - estimate
Public Works Building	EI	1	\$500k - estimate
Vanguard Electric Building	EI	1	Shared with Public Works Building
Village Hall/Police/Library	EI	3	\$500k - estimate
New Heights Lutheran Church	VF	1	1 million-estimate
Black Earth Creek	NA	1	N/A
Vermont Creek	NA	1	N/A
Red Hawk Park	VF	1	\$200k - estimate
Sunnyfield Park	VF	1	\$100k - estimate
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities			

Data Source: 2021 Village of Black Earth Data Collection Guide

Other Assets

Other assets help define a community beyond the current composition of the Village of Black Earth. These assets may provide economic benefit to the community, in addition to preserving the heritage and diversity of the community and may include natural, cultural and historic assets or economic assets such as major employers. It may also include more specific detail on critical facilities. The Village of Black Earth has not identified any other assets.

VULNERABILITY ASSESSMENT

A hazard identification and vulnerability analysis was completed for the Village of Black Earth using the same methodology in the County's base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 10 outlines the hazard identification for the Village of Black Earth based on the Data Collection Guide issued in 2021. The Data Collection Guide listed all of the hazards that could impact Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. Brooklyn's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern." This matrix appears as Table 10. This matrix reflects the significance of the hazards relative to one another as perceived by the Example's planning team.

This matrix reflects that the Village of Black Earth is most vulnerable to tornadoes, floods, and wildfires. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 10: Vulnerability Assessment Matrix for the Village of Black Earth

Name of Jurisdiction: <u>Village of Black Earth</u>										
Hazard	Hazard Attributes			Impact Attributes						Total of Row Values
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
Impact on General Structures				Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards		
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	
Dam/Levee failure	0	0	0	0	0	0	0	0	0	0
Extreme Cold	3	3	2	2	1	2	1	1	1	16
Extreme Heat	3	3	3	1	1	3	1	1	1	17
Drought	1	2	1	1	0	1	1	1	1	9
Expansive soils	0	0	0	0	0	0	0	0	0	0
Flood	3	3	3	2	3	2	3	3	2	24
Fog	1	3	3	0	0	1	0	0	0	8
Hail Storm	3	2	3	2	2	1	1	2	1	17
Landslide	0	0	0	0	0	0	0	0	0	0
Lightning	1	3	3	1	2	1	0	1	1	13
Tornado	3	2	3	3	3	3	3	3	3	26
Wildfire	1	1	3	3	3	3	3	3	3	23
Windstorm	3	3	3	3	1	2	1	1	1	18
Winter Storm	3	3	3	3	1	2	1	1	1	18

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of Black Earth. Table 11 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 11 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	None	None	None	Specifics unknown; See hazard profile in County Plan
Drought	Minimal	Minimal	None	Specifics unknown; See hazard profile in County Plan
Flooding	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below
Fog	Minimal	None	None	Specifics unknown; See hazard profile in County Plan
Hailstorm	Minimal	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Landslide/ Sinkholes/ Erosion	None	None	None	Specifics unknown; See hazard profile in County Plan
Lightning	Minimal	Minimal	Moderate	Specifics unknown; See hazard profile in County Plan
Severe Cold	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Heat	See Tables 4-7 Population e	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Winter Storm	See Tables 4-7 Population	See Property Exposure table 8	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 15 below	See Table 15 below	See Table 15 below	See Table 15 below
Wildfire	See Tables 4-7 Population	See Property Exposure table 8	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Windstorm	Moderate	Minimal	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan

Data Source: 2021 Village of Black Earth Data Collection Guide – Prepared by DCEM

Previous Hazard Events

Through the Data Collection Guide, the Village of Black Earth noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the main mitigation plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The events noted by this jurisdiction in the Data Collection Guide can be found in Table 12.

Table 12 Village of Black Earth Historic Natural Hazards

Natural Hazard	Date	Impacted Structures	Comprehensive Harm to Jurisdiction	Other reported Losses (Fiscal reports, programs, etc)	Comments
Flood	08/2021	Multiple Impacted Structures	11 residential properties with 1 foot of flooding, public works building was compromised, commercial use buildings faced closure. Significant damage to infrastructure for a long period of time.	Public Works shop and equipment was covered by insurance. Approximately \$362000	High likelihood of occurring again.

Data Source: 2021 Village of Black Earth Data Collection Guide

Flood Hazard

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 13 and 14 outline the primary structures on them within the Village of Black Earth, Dane County. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County (2.37 people as of 2021). Estimated loss potentials for all structures on the floodway can be found within section 4.6 in chapter 4 of the county plan.

Table 13 Primary Structures in the 100 Year Floodplain

Residential Structures in 100 yr. Floodway	Non-Residential Structures in 100 yr. Floodplain	Total Structures in 100 yr. Floodplain	Potential # of People at Risk in 100 yr. Floodplain	Total Assessed Values (\$) of Structures in 100 yr. Floodplain
13	1	14	31	\$2,182,928

Source: Analysis based on Dane County Land Information Office Data

Table 14 Primary Structures in the 500 Year Floodplain

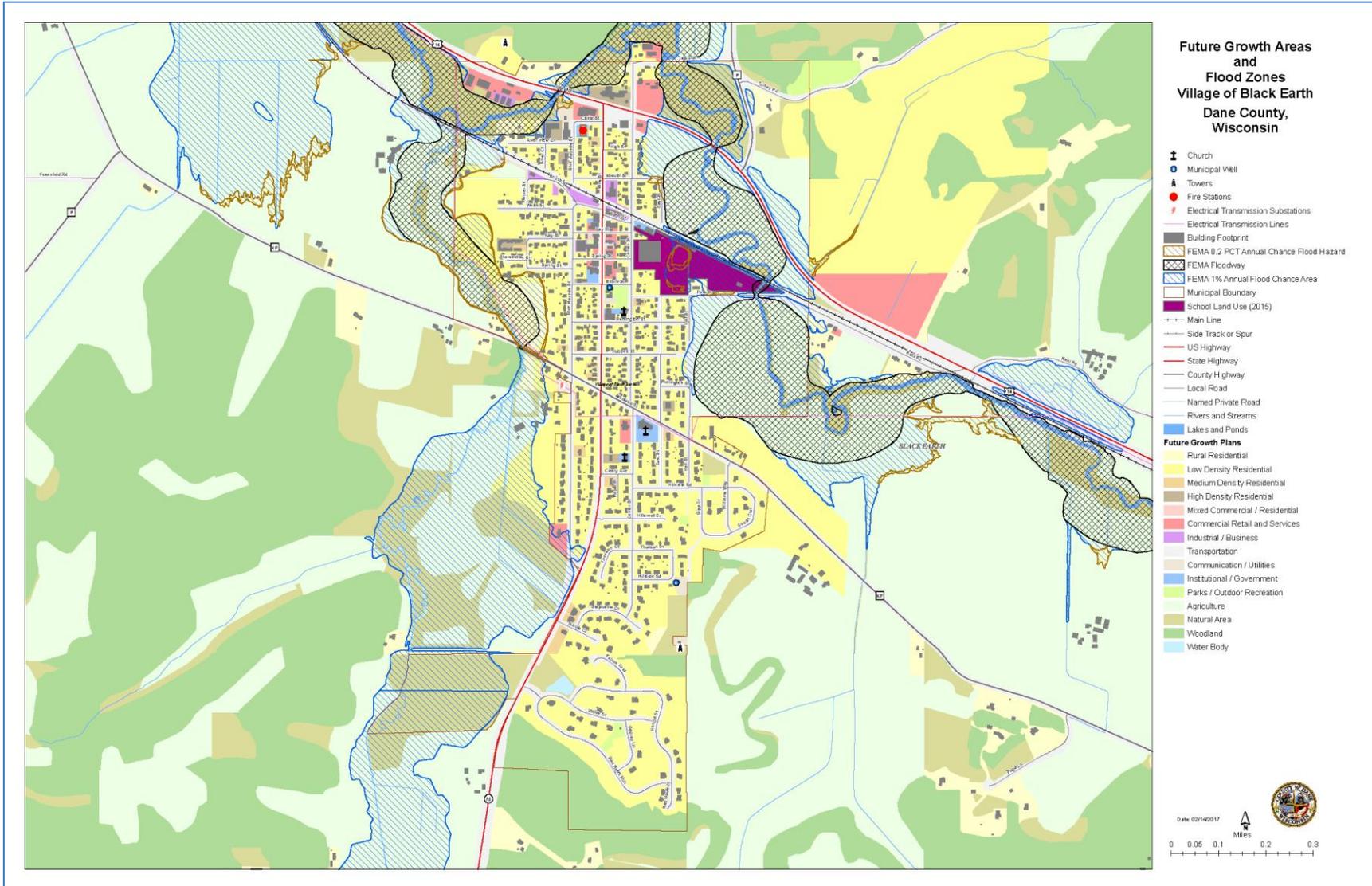
Residential Structures in 500 yr. Floodway	Non-Residential Structures in 500 yr. Floodplain	Total Structures in 500 yr. Floodplain	Potential # of People at Risk in 500 yr. Floodplain	Total Improved Values (\$) of Structures in 500 yr. Floodplain
12	2	14	28	N/A

Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Policies

- 14 repetitive loss properties has been reported in the Village of Black Earth, Dane County.
- The Village of Black Earth flood insurance policies in force within Dane County, with a total coverage of \$3,659,800.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2023 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 15 Tornado Loss Estimate

% Area impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value (\$)	Estimated Loss \$ (High Damage Range)	Estimated Loss \$ (Moderate Damage Range)	Estimated Loss \$ (Low Damage Range)	Loss Ratio for Moderate Damage Range
98.42%	877	863	179,539,350	176,701,990	88,350,995	44,175,497	49%

Data Source: Analysis Based on Dane County Land Information Office's data

Problems or Additional Vulnerability Issues

The Village of Black Earth's Data Collection Guide issued in 2021 listed:

- **Average Depth of 100 Year Floodplain:**
 - 36"
- **Hazard Concern (i.e. vulnerable populations):**
 - Elderly population: flooding; Heartland Nursing Home and Riverview Elderly Apartments are located along Black Earth Creek. Extreme flooding in 2018 and the need to possibly evacuate residents.
- **Growth Trends:**
 - Village of Black Earth has seen significant growth in residential homes south end of Village built on a hillside. Business growth has been slow due to economic factors. New homes create runoff issues that could contribute to flooding if not properly managed/controlled. New homes are elderly and single family with young children.

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of Black Earth.

Mitigation Capabilities Summary

Table 16 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of Black Earth.

Table 16 Village of Black Earth Regulatory Mitigation Capabilities

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Existing Natural Hazard Mitigation Plan	No	Currently in progress, jointly with Dane County
General or Comprehensive plan	Yes	Black Earth Comprehensive Plan (2009-2028)
Zoning ordinance	Yes	https://ecode360.com/BL2028
Subdivision ordinance	Yes	https://ecode360.com/BL2028
Growth management ordinance	No	N/A
Shoreland/ wetland zoning ordinance	Yes	https://ecode360.com/BL2028
Floodplain zoning ordinance	Yes	https://ecode360.com/BL2028
FEMA / NFIP Community Rating System	Yes	N/A
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Stormwater, Fire
Building code	Yes	https://ecode360.com/BL2028
Fire department ISO rating	Yes	N/A
Climate change Impact program	No	N/A
Erosion or sediment control program	Yes	Part of building permit application process
Stormwater management program	Yes	https://ecode360.com/BL2028
Site plan review requirements	Yes	https://ecode360.com/BL2028
Capital improvements plan	No	Work in Progress
Economic development plan	Yes	Part of the Comprehensive Plan
Local emergency operations plan	Yes	Being updated
Other special plans		N/A
Flood insurance study or other engineering study for streams	No	Working with Black Earth Creek Watershed on Green Infrastructure Plan

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Elevation certificates (for floodplain development)	N/A	N/A
Climate Action Plan	No	N/A

Data Source: Village of Black Earth Data Collection Guide, 2021

Table 17 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of Black Earth.

Table 17 Responsible Personnel and Departments for the Village of Black Earth

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Town & Country Engineering	N/A
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Town & Country Engineering	N/A
Planner/engineer/scientist with an understanding of natural hazards	Yes	Town & Country Engineering	N/A
Personnel skilled in GIS	Yes	Town & Country Engineering	N/A
Full time building official	No	Part time-Johnson Inspection	N/A
Personnel skilled in Climate resilience	No	N/A	N/A
Floodplain manager	No	N/A	N/A
Emergency manager	Yes	Village President/Fire Chief	N/A
Real estate acquisition personnel	No		N/A
Grant writer	Yes	Administrator/Clerk/Treasurer	N/A

Data Source: Village of Black Earth Data Collection Guide 2021

Table 18 identifies financial tools or resources that the Village of Black Earth could potentially use to help fund mitigation activities.

Table 18 Financial Resources for the Village of Black Earth

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	Accessible – Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Dedicated funding for land, easement or conservation easement acquisition	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes

Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activities	No
Withhold Spending in hazard prone areas	Yes

Data Source: Village of Black Earth Data Collection Guide

Additional Capabilities

The Village of Black Earth identified the following as past or ongoing public education or information programs:

- Village works with the school district and local fire department for educating children and community on responsible water use and fire safety.

National Flood Insurance Program Participation

The Village of Black Earth currently participates in the National Flood Insurance Program.

Public Involvement Activities

The Village of Black Earth provided a publically noticed listening session with the Village of Black Earth Emergency Management Committee on November 8, 2021. The session was noticed on the village website, the municipal board, the post office, and submitted to *Star News*. It was held in the village municipal building, and an agenda was provided to discuss the draft mitigation strategies. No changes were made to the initial draft mitigation strategies.

MITIGATION STRATEGIES

Below are the identified mitigation strategies developed by the Village of Black Earth’s NHMP steering committee. Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects. A *mitigation strategy* is a long-term vision for risk reduction in local jurisdictional or regional planning. A mitigation strategy can be achieved by a list of overall improvements to achieve (goals) that provide direction for community efforts to reduce potential losses identified in the risk assessment.

Strategy #1	Assess the capability to shelter residents during hazard events
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
<p>Assess if the village has the resources to provide shelter to residents during hazard events, and to what capacity. This includes providing public conditioned spaces during extreme heat/cold, catastrophic loss or prolonged power outages. The desired outcome is to adequately assess whether our current infrastructure can handle this and if said resources can protect enough of the citizens in our village during these times.</p> <p>There is limited developable space left in Black Earth, so if a storm shelter is determined to be needed, we should seek funding options to help build it sooner than later.</p>	
Defined steps to achieving this mitigation strategy	
<ol style="list-style-type: none"> 1. Determine publicspaces, and temporary occupancy limits <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works Director & Fire Chief b. <i>Funding source</i> – existing salary c. <i>Completion date</i> – November 30, 2021 	

Strategy #1	Assess the capability to shelter residents during hazard events
	<p>2. Assess backup power & heating capabilities for public facilities (heat/AC/water/sewer)</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works Director b. <i>Funding source</i> – existing salary c. <i>Completion date</i> – November 30, 2021
	<p>3. Assess furniture available to provide respite during outages or extreme temps (daytime in summer, night-time in winter, full days during catastrophic property loss)</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administrator/Clerk/Treasurer & Public Works Director b. <i>Funding source</i> – existing salary c. <i>Completion date</i> – November 30, 2021
	<p>4. Assess capability to provide emergency sleeping quarters for residents during catastrophic loss</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administrator/Clerk/Treasurer & Public Works Director b. <i>Funding source</i> – existing salary c. <i>Completion date</i> – November 30, 2021
	<p>5. Determine options for construction of new storm shelter</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Administrator/Clerk/Treasurer, Emergency Management Committee Chair & Village Board b. <i>Funding source</i> – n/a c. <i>Completion date</i> – December 31, 2021

Strategy #2	Closely monitor the placement and maintenance of trees on public property and rights-of-way	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>Trees are a necessary part of an attractive community, but should also be managed in a way that does not deteriorate public utilities, impede rights-of-way, or cause safety hazards to the public or the homeowner. Determine ordinances as to how to deal with dead trees that can fall on passers-by, trees planted in the right of way where the roots may affect the storm sewer and remove dead trees from the creek bank that may cause damming during heavy rainfall events.</p>		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Identify trees planted in the ROW that may have roots impacting the storm sewer <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works Director b. <i>Funding source</i> – existing salary c. <i>Completion date</i> – December 31, 2021 		
<ol style="list-style-type: none"> 2. Identify dead trees that may cause public harm and enforce ordinances that require the tree to be removed <ol style="list-style-type: none"> d. <i>Responsible Party</i> – Building Inspector e. <i>Funding source</i> – fees f. <i>Completion date</i> – June 30, 2022 		

Strategy #2	Closely monitor the placement and maintenance of trees on public property and rights-of-way
<p>3. Adopt ordinance that restricts planting of trees in ROW that will adversely affect the operation of the public utilities and ROW.</p> <p>d. <i>Responsible Party</i> – Plan Commission & Village Board</p> <p>e. <i>Funding source</i> – n/a</p> <p>f. <i>Completion date</i> – December 31, 2022</p>	
<p>4. Obtain permits to perform debris and tree removal from specific areas in the creek that may cause damming and undue flooding</p> <p>d. <i>Responsible Party</i> – Public Works Director</p> <p>e. <i>Funding source</i> – ARPA funds</p> <p>f. <i>Completion date</i> – June 30, 2022</p>	

Strategy #3	Emergency Sandbag Supply	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
Determine staffing needs to adequately provide sandbag generation and delivery during responses		
Defined steps to achieving this mitigation strategy		
<p>1. Determine how many residents in the community will need help with sandbag deployment</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works Director b. <i>Funding source</i> – existing salary c. <i>Completion date</i> – December 31, 2021 		
<p>2. Determine labor and equipment needed to meet the deployment needs for those unable to place sandbags or reasonably transport sandbags.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works Director b. <i>Funding source</i> – existing salary c. <i>Completion date</i> – December 31, 2021 		
<p>3. Purchase truck/trailer (if needed), sand, sandbags and other equipment</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Director of Public Works b. <i>Funding source</i> – unknown c. <i>Completion date</i> – June 30, 2022 		

Strategy #4	Identify and pursue funding sources for flood abatement projects
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
Look to secure funding to help upgrade stormwater sewers, sewer lift station pumps and also to manage the natural flow of Black Earth creek to break the trend of an elevated water level in order to achieve the same flow in the creek.	
Defined steps to achieving this mitigation strategy	
<ol style="list-style-type: none"> 1. Search public funding options for flood abatement measures <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Administrator & Emergency Management Committee Members b. <i>Funding source</i> – n/a c. <i>Completion date</i> – ongoing 	
<ol style="list-style-type: none"> 2. Complete necessary documents to apply for funding options <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Administrator & Emergency Management Board Chair b. <i>Funding source</i> – n/a c. <i>Completion date</i> – dependent on funding sources found 	
<ol style="list-style-type: none"> 3. Manage received funds <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administrator/Clerk/Treasurer b. <i>Funding source</i> – Grants or loans c. <i>Completion date</i> – dependent upon funding sources received. 	

Strategy #5	Maintain and enhance cleaning of stormwater collection and conveyance system, including the creek itself	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>Work with surface water engineers and DNR to determine what measures can be taken to allow the Black Earth Creek and the village storm water sewer to transmit sufficient volumetric flows to reduce flooding. This can include regular street sweeping of gutters and storm sewer jetting practices, as well as riparian reconstruction actions to the creek.</p>		
Defined steps to achieving this mitigation strategy		
<p>1. Determine what permits are needed to remove unnatural material from the creek bed to help return it to a natural flow, and what measures can be taken to reduce sediment loading of the creek</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works Director b. <i>Funding source</i> – existing salary c. <i>Completion date</i> – December 31, 2021 		
<p>2. Approve costs for a street sweeper and sewer jetter or subcontract this work out regularly</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Board b. <i>Funding source</i> – Village budget and/or grant money c. <i>Completion date</i> – December 31, 2022 		

<p>Strategy #5</p>	<p>Maintain and enhance cleaning of stormwater collection and conveyance system, including the creek itself</p>
<p>3. Approve costs to do more than the minimum government requirements with regards to storm water infrastructure during future construction projects</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village board and Administrator/Clerk/Treasurer b. <i>Funding source</i> – Village budget and/or grant money c. <i>Completion date</i> – December 31, 2022 	

Strategy #6	Develop a public information outreach program for residents
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
<p>Implement additional alert systems to make sure residents know that there is a hazard present. Either by means of additional tornado sirens or a public alert system via cell phone. Include public announcement of this alert system by all means possible, post-card mailers, newspaper, social media, village website, etc.</p>	
Defined steps to achieving this mitigation strategy	
<p>1. Identify parts of the village that do not have adequate tornado siren warning</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works Director & Fire Chief b. <i>Funding source</i> – existing salary c. <i>Completion date</i> – December 31, 2021 	
<p>2. Determine cost to construct additional tornado siren for the previously identified areas.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Building Inspector b. <i>Funding source</i> – future budget c. <i>Completion date</i> – June 30, 2022 	
<p>3. Identify option for Text Message alert system</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administrator/Clerk/Treasurer b. <i>Funding source</i> – existing salary c. <i>Completion date</i> – December 31, 2022 	

Strategy #6	Develop a public information outreach program for residents
	<p>4. Purchase and implement text message alert system</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administrator/Clerk/Treasurer b. <i>Funding source</i> – ARPA funds c. <i>Completion date</i> – June 30, 2022
	<p>5. Implement mailer and notifications of plan to implement an emergency alert system</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administrator/Clerk/Treasurer b. <i>Funding source</i> – ARPA funds c. <i>Completion date</i> – June 30, 2022



Dane County Natural Hazard Mitigation Plan

Village of Blue Mounds Annex

Summer 2022

Village of Blue Mounds Annex

This annex is a part of the Dane County Natural Hazard Mitigation Plan (DCNHMP). The DCNHMP contains additional information to support the Federal Emergency Management Agency's (FEMA) recognition of the plan (including this annex) as the formal natural hazard mitigation plan for the county and participating local governments. This annex will be valid for as long as FEMA approves the DCNHMP. The strategies adopted in this annex are designed to guide community efforts to reduce risks from natural hazards. These strategies work in conjunction with neighboring communities and Dane County government to reduce risks from natural hazards

COMMUNITY PROFILE

The Village of Blue Mounds is located in the southwest quadrant of the County, west of the Village of Mt. Horeb and east of the Iowa County border. Land use primarily consists of residential and commercial use. According to the United States Census Bureau, the Village of Blue Mounds has a total area of 0.91 square miles, all of which is land. As of 2020, there were 391 households indicated by the Wisconsin Department of Administration, and an average household size of 2.54.

The municipal population data provided by the American Community Survey, a product of the US Census Bureau, indicates that the 2019 population estimates for Village of Blue Mounds, Dane County, is comprised of 1,094 people. Table 1 shows the population profile by age for the village.

Table 1 Population Profile of Village of Blue Mounds, Dane County

Category	Number	Percent
Total Population	1,094	100%
Under 5 years	119	10.9%
5 to 9 years	73	6.7%
10 to 14 years	86	7.9%
15 to 19 years	58	5.3%
20 to 24 years	65	5.9%
25 to 29 years	66	6.0%
30 to 34 years	65	5.9%
35 to 39 years	68	6.2%
40 to 44 years	103	9.4%
45 to 49 years	64	5.9%
50 to 54 years	77	7.0%
55 to 59 years	66	6.0%
60 to 64 years	69	6.3%
65 to 69 years	48	4.4%
70 to 74 years	13	1.2%
75 to 79 years	17	1.6%
80 to 84 years	21	1.9%
85 years and over	16	1.5%

Data Source: 2019 ACS Estimates - U.S. Census

Growth & Development Trends

Table 2-3 illustrates how the entire Village of Blue Mounds has grown in terms of population and number of households between 2010 and 2020. Housing data is to 2020 due to data availability. Table 2-3 is drawn from the Demographics Services Center at the Wisconsin Department of Administration, and shows population projections through 2040.

Table 2 Village of Blue Mounds Change in Population and Households, 2010-2020

2010 Population	2020 Population	Percent Change (%) 2010-2020	2010 # of Households	2020 # of Households	Percent Change (%) 2010-2020
855	972	13.68%	336	391	16.37%

Data Source: Demographic Services Center, Wisconsin Department of Administration

Table 3 Village of Blue Mounds Population Projections, 2020-2040 6.84

Population Projection	2020	2025	2030	2035	2040
Increase by half of percent of change (13.68%/2) every 5 years	972	1,038	1109	1,184	1,264

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Note: Population estimates offered by the U.S. Census Bureau’s American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Population Summary

Tables 4-7 illustrates key population demographics within the Village of Blue Mounds. Key demographics include: (1) Disability Characteristics, (2) Federal Income Poverty Levels, (3) Educational Attainment, and (4) Household Language with English Speaking Capabilities. Due to data availability, all key demographic information has been provided by the American Community Survey (ACS) 2019 estimates. The ACS is a self-reported survey and may include total sample size differences and statistical margin of error.

Table 4 Village of Blue Mounds, Dane County – Disability Characteristics by Detailed Age

Category	Number	Percent
Total of Residents Self-Identified as Disabled	111	100%
With a hearing difficulty	22	19.8%
Population under 18 years	0	
Population 18 to 64 years	7	
Population 65 years and over	15	
With a vision difficulty	6	5.4%
Population under 18 years	0	
Population 18 to 64 years	2	
Population 65 years and over	4	
With a cognitive difficulty	27	24.3%
Population under 18 years	6	
Population 18 to 64 years	17	
Population 65 years and over	4	
With an ambulatory difficulty	28	25.2%
Population under 18 years	0	
Population 18 to 64 years	14	
Population 65 years and over	14	
With a self-care difficulty	4	3.6%
Population under 18 years	0	
Population 18 to 64 years	2	
Population 65 years and over	2	
With an independent living difficulty	24	21.6%
Population 18 to 64 years	18	
Population 18 to 34 years	7	
Population 65 years and over	6	

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.1: Village of Blue Mounds, Dane County – Federal Income Poverty Levels (FIPL) by Families Summary

Category	Number of Families
50 percent of poverty level	2
125 percent of poverty level	16
150 percent of poverty level	29
185 percent of poverty level	50
200 percent of poverty level	57
300 percent of poverty level	93
400 percent of poverty level	131
500 percent of poverty level	185

Data Source: 2019 ACS Estimates - U.S. Census

Note: Use table 5.2 to interpret table 5.1:

5.1 identifies the *total number of families* (regardless of size) by percentage.

5.2 identifies *family size* in relation to annual family income and the percentage category of the FIPL.

Table 5.2: Village of Blue Mounds, Dane County – Annual Federal Income Poverty Level Guide

Family Size	50%	100%	125%	150%	185%	200%	300%	400%	500%
1	\$6,440	\$12,880	\$16,100	\$19,320	\$23,828	\$25,760	\$38,640	\$51,520	\$64,400
2	\$8,710	\$17,420	\$21,775	\$26,130	\$32,227	\$34,840	\$52,260	\$69,680	\$87,100
3	\$10,980	\$21,960	\$27,450	\$32,940	\$40,626	\$43,920	\$65,880	\$87,840	\$109,800
4	\$13,250	\$26,500	\$33,125	\$39,750	\$49,025	\$53,000	\$79,500	\$106,000	\$132,500
5	\$15,520	\$31,040	\$38,800	\$46,560	\$57,424	\$62,080	\$93,120	\$124,160	\$155,200
6	\$17,790	\$35,580	\$44,475	\$53,370	\$65,823	\$71,160	\$106,740	\$142,320	\$177,900

Data Source: dhs.wisconsin.gov

Table 6: Village of Blue Mounds, Dane County – Educational Attainment by Householders

Category	Number	Percent
Total of Householders	299	100%
Less than high school graduate	17	5.7%
High school graduate (includes equivalency)	76	25.4%
Some college, associate's degree	114	38.1%
Bachelor's degree or higher	92	30.8%

Data Source: 2019 ACS Estimates - U.S. Census

Table 7: Village of Blue Mounds, Dane County – Household Language & English Speaking Capabilities

Category	Number	Percent
Total of Households	395	100%
English only	385	97.5%
Spanish:	7	1.8%
Limited English speaking household	0	-
Not a limited English speaking household	7	-
Other Indo-European languages:	3	0.8%
Limited English speaking household	0	-
Not a limited English speaking household	3	-
Asian and Pacific Island languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-
Other languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-

Data Source: 2019 American Community Survey

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of Blue Mounds that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

General Property

Table 8 Property Exposure Summary

Property Type	Parcel Count	Improved Land Count	Improved Land Value (\$)	Content Value (\$)	Total Value (\$)
Total	562	550	221,289,400	110,644,700	331,934,100
Agriculture	3	3	33,900	16,950	50,850
Industrial	14	14	11,966,700	5,983,350	17,950,050
Residential	506	506	206,238,500	103,119,250	309,357,750
Utility	10	0	0	0	0
Commercial	20	20	2,973,200	1,486,600	4,459,800
Other	4	4	3,000	1,500	4,500
Institutional/ Governmental	5	3	74,100	37,050	111,150

Data Source: Dane County Land Information Office, December 2021

Critical Facilities

The Village of Blue Mounds has identified the critical facilities important to protect from disaster impacts. These are collected in Table 9. Table 9 is based on GIS data inventories from Dane County and information gathered from the Village. No further supplemental data was provided by the community through the Data Collection Guide.

Table 9 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
Village hall & police department	EI	2	750,000
Village PD garage	EI	1	225,000
Well #1	EI	1	500,000
Well #2	EI	1	500,000
Water booster station	EI	1	N/A
Water Reservoir	EI	1	1.5 million
Salt Shed	EI/HM	1	175,000
Lift Station	EI	1	N/A
Wastewater Treatment plant	EI	1	3 million
Park Shelter	VF	1	125,000
Bike trail bridge	VF	1	300,000
Public works shed	EI	1	200,000
Dairy Food USA	HM	1	N/A
Midwest BioAg	HM	1	N/A
Mobile Homes	VF	108	N/A
Treatment plant outbuildings	EI	1	225,000
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities			

Data Source: 2021 Village of Blue Mounds Data Collection Guide

Other Assets

Other assets help define a community beyond the current composition of the Village of Blue Mounds. These assets may provide economic benefit to the community, in addition to preserving the heritage and diversity of the community and may include natural, cultural and historic assets or economic assets such as major employers. It may also include more specific detail on critical facilities. The Village of Blue Mounds has not identified any other assets.

VULNERABILITY ASSESSMENT

A hazard identification and vulnerability analysis was completed for the Village of Blue Mounds using the same methodology in the County's base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 10 outlines the hazard identification for the Village of Blue Mounds based on the Data Collection Guide issued in 2021. The Data Collection Guide listed all of the hazards that could impact Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. Brooklyn's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern." This matrix appears as Table 10. This matrix reflects the significance of the hazards relative to one another as perceived by the Example's planning team.

This matrix reflects that the Village of Blue Mounds is most vulnerable to tornadoes, winter storms, and wind storms. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 10: Vulnerability Assessment Matrix for the Village of Blue Mounds

Name of Jurisdiction: <u>Village of Blue Mounds</u>										
Hazard	Hazard Attributes			Impact Attributes						Total of Row Values
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
Impact on General Structures				Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards		
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	
Dam/Levee failure	0	0	0	0	0	0	0	0	0	0
Extreme Cold	4	4	2	2	3	3	1	2	1	22
Extreme Heat	3	3	1	1	1	3	1	1	1	15
Drought	1	2	1	0	1	0	0	0	0	5
Expansive soils	0	0	0	0	0	0	0	0	0	0
Flood	4	3	3	3	4	4	3	3	3	30
Fog	2	2	2	0	0	0	0	0	0	6
Hail Storm	1	3	2	2	2	1	0	1	1	14
Landslide	1	2	1	1	2	2	0	1	1	11
Lightning	3	3	3	2	4	2	1	2	2	22
Tornado	5	5	5	5	5	5	5	5	5	45
Wildfire	3	1	1	1	1	1	1	1	1	11
Windstorm	4	4	4	4	4	4	4	4	4	36
Winter Storm	4	4	4	3	3	2	3	4	4	31

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of Blue Mounds. Table 11 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 11 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	None	None	None	Specifics unknown; See hazard profile in County Plan
Drought	None	None	Minimal	Specifics unknown; See hazard profile in County Plan
Flooding	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below
Fog	None	None	None	Specifics unknown; See hazard profile in County Plan
Hailstorm	See Tables 4-7 Population	See Property Exposure table 8	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Landslide/Sinkholes/Erosion	None	None	None	Specifics unknown; See hazard profile in County Plan
Lightning	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Cold	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Heat	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Winter Storm	See Tables 4-7 Population	See Property Exposure table 8	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 15 below	See Table 15 below	See Table 15 below	See Table 15 below
Wildfire	See Tables 4-7 Population	Minimal	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Windstorm	See Tables 4-7 Population	Minimal	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan

Data Source: 2021 Village of Blue Mounds Data Collection Guide – Prepared by DCEM

Previous Hazard Events

Through the Data Collection Guide, the Village of Blue Mounds noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the main mitigation plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The events noted by this jurisdiction in the Data Collection Guide can be found in Table 12.

Table 12 Village of Blue Mounds Historic Natural Hazards

Natural Hazard	Date	Impacted Structures	Comprehensive Harm to Jurisdiction	Other reported Losses (Fiscal reports, programs, etc)	Comments
Windstorm	06-15-2016	Multiple Impacted Structures	Damage to sewer mains, pumps, residential property, and structures.	\$10,000+ in damages	2.4" of rain with snow cover and deep frost levels

Data Source: 2021 Village of Blue Mounds Data Collection Guide

Flood Hazard

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 13 and 14 outline the primary structures on them within the Village of Blue Mounds, Dane County. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County (2.37 people as of 2021). Estimated loss potentials for all structures on the floodway can be found within section 4.6 in chapter 4 of the county plan.

Table 13 Primary Structures in the 100 Year Floodplain

Residential Structures in 100 yr. Floodway	Non-Residential Structures in 100 yr. Floodplain	Total Structures in 100 yr. Floodplain	Potential # of People at Risk in 100 yr. Floodplain	Total Assessed Values (\$) of Structures in 100 yr. Floodplain
0	0	0	0	\$0

Source: Analysis based on Dane County Land Information Office Data

Table 14 Primary Structures in the 500 Year Floodplain

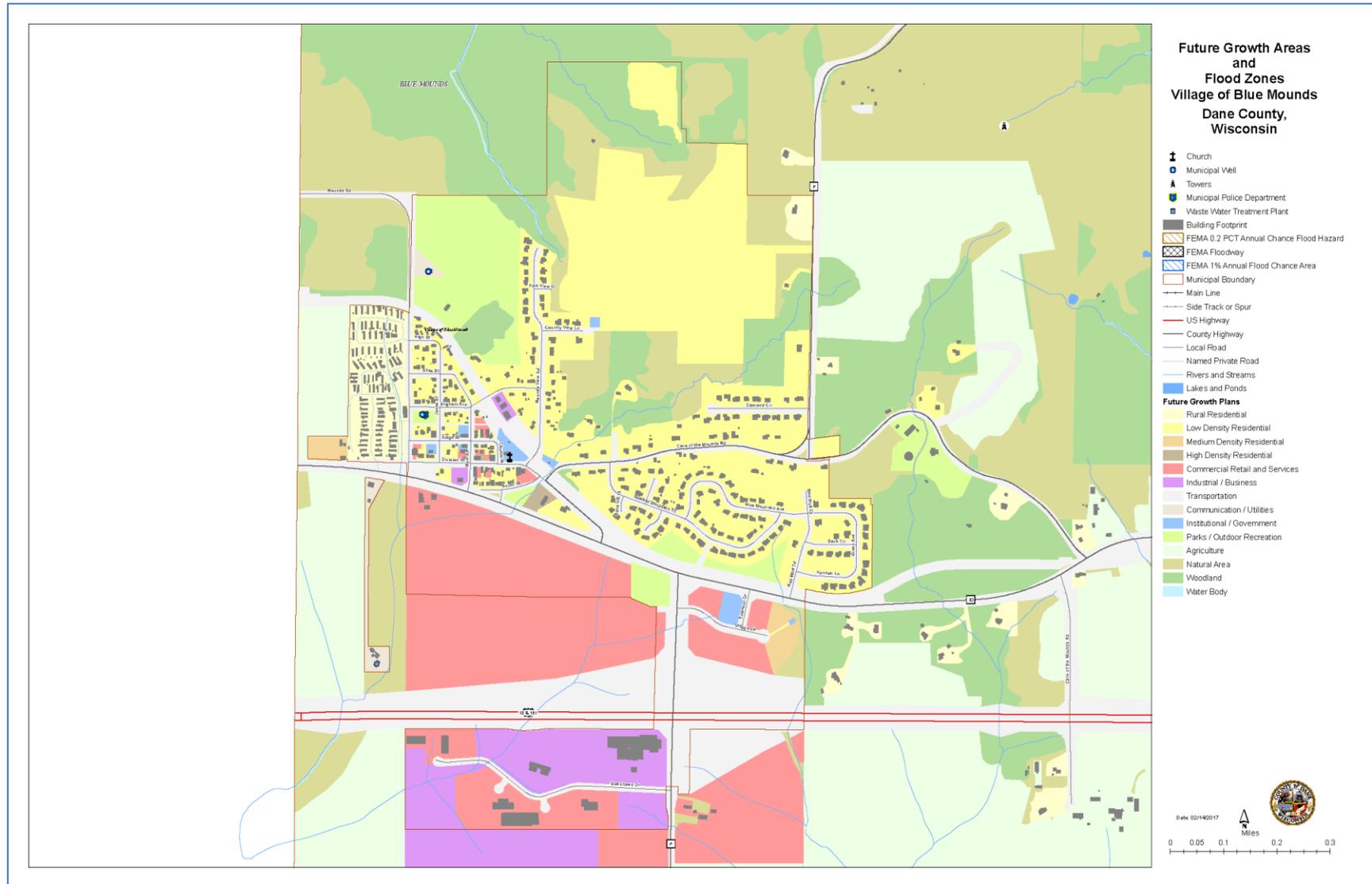
Residential Structures in 500 yr. Floodway	Non-Residential Structures in 500 yr. Floodplain	Total Structures in 500 yr. Floodplain	Potential # of People at Risk in 500 yr. Floodplain	Total Improved Values (\$) of Structures in 500 yr. Floodplain
0	0	0	0	\$0

Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Policies

- Repetitive loss properties have not been reported in the Village of Blue Mounds, Dane County.
- The Village of Blue Mounds has 0 flood insurance policies in force within Dane County.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2023 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 15 Tornado Loss Estimate

% Area impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value (\$)	Estimated Loss \$ (High Damage Range)	Estimated Loss \$ (Moderate Damage Range)	Estimated Loss \$ (Low Damage Range)	Loss Ratio for Moderate Damage Range
96.26%	550	529	331,934,100	319,506,259	159,753,129	79,876,564	48%

Data Source: Analysis Based on Dane County Land Information Office's data

Problems or Additional Vulnerability Issues

The Village of Blue Mounds' did not identify additional vulnerabilities in the 2021 Data Collection Guide.

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of Blue Mounds.

Mitigation Capabilities Summary

Table 16 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of Blue Mounds.

Table 16 Village of Blue Mounds Regulatory Mitigation Capabilities

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Existing Natural Hazard Mitigation Plan	Yes	N/A
General or Comprehensive plan	Yes	Updated in 2020
Zoning ordinance	Yes	N/A
Subdivision ordinance	Yes	N/A
Growth management ordinance	No	N/A
Shoreland/wetland zoning ordinance	No	N/A
Floodplain zoning ordinance	Yes	N/A
FEMA/NFIP Community Rating System	No	N/A
Other special purpose ordinance (stormwater, steep slope, wildfire)	N/A	N/A
Building code	Yes	N/A
Fire department ISO rating	Yes	N/A
Climate change impact program	No	N/A
Erosion or sediment control program	Yes	N/A
Stormwater management program	Yes	N/A
Site plan review requirements	Yes	N/A
Capital improvements plan	Yes	N/A
Economic development plan	Yes	N/A
Local emergency operations plan	Yes	N/A
Other special plans	No	N/A
Flood insurance study or other engineering study for streams	No	N/A
Elevation certificates (for floodplain development)	No	N/A
Climate Action Plan	No	N/A

Data Source: Village of Blue Mounds Data Collection Guide, 2021

Table 17 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of Blue Mounds.

Table 17 Responsible Personnel and Departments for the Village of Blue Mounds

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Town & Country Engineering	
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Town & Country Engineering	
Planner/engineer/scientist with an understanding of natural hazards	Yes	Town & Country Engineering	
Personnel skilled in GIS	Yes	Town & Country Engineering	Dane County also
Full time building official	No	Part Time residential and Commercial	
Personnel skilled in Climate resilience	No		
Floodplain manager	No		
Emergency manager	Yes	Police Chief	
Real estate acquisition personnel	No		
Grant writer	No		If necessary Clerk handles grants
Other personnel	No		
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	No		
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes		

Data Source: Village of Blue Mounds Data Collection Guide 2021

Table 18 identifies financial tools or resources that the Village of Blue Mounds could potentially use to help fund mitigation activities.

Table 18 Financial Resources for the Village of Blue Mounds

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Dedicated funding for land, easement or conservation easement acquisition	No

Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activities	No
Withhold Spending in hazard prone areas	No

Data Source: Village of Blue Mounds Data Collection Guide

Additional Capabilities

The Village of Blue Mounds identified the following as past or ongoing public education or information programs:

- Issued quarterly newsletters, and public works educates residents on water issues.
- In 2020 we rehabilitated a large storm water area to control run off, which could impact both private residents and the Military Ridge Bike Trail. In 2021 the village hired a company to remove multiple dead trees that posed a hazard.

National Flood Insurance Program Participation

The Village of Blue Mounds currently participates in the National Flood Insurance Program.

Public Involvement Activities

The Village of Blue Mounds provided a publically noticed listening session with the Village of Blue Mounds Hazard Mitigation Steering Committee on November 3, 2021. It was noticed on the village website, and provided an agenda discussing the draft mitigation strategies. No changes were made to the initial draft mitigation strategies.

MITIGATION STRATEGIES

Below are the identified mitigation strategies developed by the Village of Blue Mounds’ NHMP steering committee. Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects. A *mitigation strategy* is a long-term vision for risk reduction in local jurisdictional or regional planning. A mitigation strategy can be achieved by a list of overall improvements to achieve (goals) that provide direction for community efforts to reduce potential losses identified in the risk assessment.

Strategy #1	Provide clean safe drinking water
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
The current booster station is aged and vulnerable to flooding. By improving the water booster station and the surrounding area clean water can be provided to 1/3 of the village residents. Education for residents to keep debris out of water way is essential.	
Defined steps to achieving this mitigation strategy	
<ol style="list-style-type: none"> 1. Improve waterway that approaches booster station area, with education and cooperation. <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Superintendent of Water/Sewer, Village Board b. <i>Funding source</i> – general fund, minimal costs c. <i>Completion date</i> – 2 years and continuing. 	
<ol style="list-style-type: none"> 2. Rebuild the Water Booster Station <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village Engineer, Superintendent of Water/Sewer b. <i>Funding source</i> – Clean Water Fund Program Loan c. <i>Completion date</i> – 3 years 	

Strategy #2	Prevent loss of salt and prevent contamination of soil	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>The current salt shed is in disrepair, leaning heavily and the roof needs repair, by building a new salt shed we can assure salt is available for road crews to keep passage safe and the soil and waterway near the current shed will not be contaminated when the shed is replaced.</p>		
Defined steps to achieving this mitigation strategy		
<p>1. Find and purchase land for placement of a new salt shed.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Board, Public Works Director b. <i>Funding source</i> – Will seek donation of land or incur general obligation debt. c. <i>Completion date</i> – 2 years. 		
<p>2. Build a new salt shed.</p> <ul style="list-style-type: none"> d. <i>Responsible Party</i> – Village Administrator, Public Works Director e. <i>Funding source</i> – General Obligation Debt f. <i>Completion date</i> – 4+ years 		

Strategy #3	Resident Protection
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
Establish a safe place for mobile home park residents to be during extreme wind, tornado events. Educate the residents on how to prevent property and life loss during those events	
Defined steps to achieving this mitigation strategy	
<p>1. Educate Mobile Home residents</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Emergency Management Director, Police Chief, Building Inspector b. <i>Funding source</i> – N/A c. <i>Completion date</i> – January 2022 and continuing on an on-going basis. 	
<p>2. Determine Grants/Funding for Storm Shelter</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Emergency Management Director, Village Board, Clerk b. <i>Funding source</i> – FEMA-pre-disaster mitigation grant, HUD-Comm Development Block Grant c. <i>Completion date</i> – 2+ years 	
<p>3. Build a FEMA approved storm shelter</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Emergency Management Director, Village Board b. <i>Funding source</i> – Grants if available c. <i>Completion date</i> – 3-5+ years 	



Dane County Natural Hazard Mitigation Plan

Village of Brooklyn Annex
Summer 2022

Village of Brooklyn Annex

This annex is a part of the Dane County Natural Hazard Mitigation Plan (DCNHMP). The DCNHMP contains additional information to support the Federal Emergency Management Agency's (FEMA) recognition of the plan (including this annex) as the formal natural hazard mitigation plan for the county and participating local governments. This annex will be valid for as long as FEMA approves the DCNHMP. The strategies adopted in this annex are designed to guide community efforts to reduce risks from natural hazards. These strategies work in conjunction with neighboring communities and Dane County government to reduce risks from natural hazards.

COMMUNITY PROFILE

The Village of Brooklyn is located in the southeast quadrant of the County, north of Rock County, east of the Town of Oregon, and south of the Town of Rutland. Land use is dominated by agriculture and woodlands, and dispersed one- and two-family homes. According to the United States Census Bureau, the Village of Brooklyn has a total area of 1.09 square miles, all of it land. Brooklyn straddles the border of Dane County and Green County. As of 2020, there were 1,467 people and 262 households residing in the Village of Brooklyn, indicated by the Wisconsin Department of Administration. The population density is 1646 per square mile.

The municipal population data provided by the American Community Survey, a product of the US Census Bureau, indicates that the 2019 population estimates for Village of Brooklyn, Dane County, is comprised of 850 people. Table 1 shows the population profile by age for the areas of the Village of Brooklyn *within Dane County*. This plan applies only to the Dane County areas of the Village.

Table 1 Population Profile of Village of Brooklyn, Dane County

Category	Number	Percent
Total Population	850	100%
Under 5 years	69	8.1%
5 to 9 years	81	9.5%
10 to 14 years	35	4.1%
15 to 19 years	45	5.3%
20 to 24 years	45	5.3%
25 to 29 years	78	9.2%
30 to 34 years	78	9.2%
35 to 39 years	95	11.2%
40 to 44 years	52	6.1%
45 to 49 years	81	9.5%
50 to 54 years	41	4.8%
55 to 59 years	50	5.9%
60 to 64 years	42	4.9%
65 to 69 years	25	2.9%
70 to 74 years	14	1.6%
75 to 79 years	15	1.8%
80 to 84 years	0	0.0%
85 years and over	4	0.5%

Data Source: 2019 ACS Estimates - U.S. Census

Growth & Development Trends

Table 2-3 illustrates how the entire Village of Brooklyn has grown in terms of population and number of households between 2010 and 2020. Housing data is to 2020 due to data availability. Table 2-3 is drawn from the Demographics Services Center at the Wisconsin Department of Administration, and shows population projections through 2040. This data is representative of Dane and Rock county populations.

Table 2 Village of Brooklyn Change in Population and Households, 2010-2020

2010 Population	2020 Population	Percent Change (%) 2010-2020	2010 # of Households	2020 # of Households	Percent Change (%) 2010-2020
1,401	1,467	4.71%	509	591	15.1046%

Data Source: Demographic Services Center, Wisconsin Department of Administration

Table 3 Village of Brooklyn Population Projections, 2020-2040

Population Projection	2020	2025	2030	2035	2040
Increase by half of percent of change (4.71%/2) every 5 years	1,467	1,501	1,536	1,572	1,608

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Population Summary

Tables 4-7 illustrates key population demographics within the Village of Brooklyn. Key demographics include: (1) Disability Characteristics, (2) Federal Income Poverty Levels, (3) Educational Attainment, and (4) Household Language with English Speaking Capabilities. Due to data availability, all key demographic information has been provided by the American Community Survey (ACS) 2019 estimates. The ACS is a self-reported survey and may include total sample size differences and statistical margin of error. Tables 4-7 indicate the 850 Dane county residents within the Village of Brooklyn, and does not include the entire village's population.

Table 4 Village of Brooklyn, Dane County – Disability Characteristics by Detailed Age

Category	Number	Percent
Total of Residents Self-Identified as Disabled	141	100%
With a hearing difficulty	36	25.5%
Population under 18 years	9	-
Population 18 to 64 years	10	-
Population 65 years and over	17	-
With a vision difficulty	15	10.6%
Population under 18 years	0	-
Population 18 to 64 years	3	-
Population 65 years and over	12	-
With a cognitive difficulty	31	22.0%
Population under 18 years	4	-
Population 18 to 64 years	19	-
Population 65 years and over	8	-
With an ambulatory difficulty	15	10.6%
Population under 18 years	0	-
Population 18 to 64 years	6	-
Population 65 years and over	9	-
With a self-care difficulty	18	12.8%
Population under 18 years	0	-
Population 18 to 64 years	13	-
Population 65 years and over	5	-
With an independent living difficulty	26	18.4%
Population 18 to 64 years	14	-
Population 18 to 34 years	8	-
Population 65 years and over	12	-

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.1: Village of Brooklyn, Dane County – Federal Income Poverty Levels (FIPL) by Families Summary

Category	Number of Families
50 percent of poverty level	3
125 percent of poverty level	12
150 percent of poverty level	14
185 percent of poverty level	14
200 percent of poverty level	14
300 percent of poverty level	44
400 percent of poverty level	83
500 percent of poverty level	131

Data Source: 2019 ACS Estimates - U.S. Census

Note: Use table 5.2 to interpret table 5.1:

5.1 identifies the *total number of families* (regardless of size) by percentage.

5.2 identifies *family size* in relation to annual family income and the percentage category of the FIPL.

Table 5.2: Village of Brooklyn, Dane County – Annual Federal Income Poverty Level Guide

Family Size	50%	100%	125%	150%	185%	200%	300%	400%	500%
1	\$6,440	\$12,880	\$16,100	\$19,320	\$23,828	\$25,760	\$38,640	\$51,520	\$64,400
2	\$8,710	\$17,420	\$21,775	\$26,130	\$32,227	\$34,840	\$52,260	\$69,680	\$87,100
3	\$10,980	\$21,960	\$27,450	\$32,940	\$40,626	\$43,920	\$65,880	\$87,840	\$109,800
4	\$13,250	\$26,500	\$33,125	\$39,750	\$49,025	\$53,000	\$79,500	\$106,000	\$132,500
5	\$15,520	\$31,040	\$38,800	\$46,560	\$57,424	\$62,080	\$93,120	\$124,160	\$155,200
6	\$17,790	\$35,580	\$44,475	\$53,370	\$65,823	\$71,160	\$106,740	\$142,320	\$177,900

Data Source: dhs.wisconsin.gov

Table 6: Village of Brooklyn, Dane County – Educational Attainment by Householders

Category	Number	Percent
Total of Householders	226	100%
Less than high school graduate	4	1.8%
High school graduate (includes equivalency)	53	23.5%
Some college, associate's degree	91	40.3%
Bachelor's degree or higher	78	34.5%

Data Source: 2019 ACS Estimates - U.S. Census

Table 7: Village of Brooklyn, Dane County – Household Language & English Speaking Capabilities

Category	Number	Percent
Total of Households	326	100%
English only	307	94.2%
Spanish:	16	4.9%
Limited English speaking household	3	
Not a limited English speaking household	13	
Other Indo-European languages:	3	0.9%
Limited English speaking household	0	
Not a limited English speaking household	3	
Asian and Pacific Island languages:	0	0.0%
Limited English speaking household	0	
Not a limited English speaking household	0	
Other languages:	0	0.0%
Limited English speaking household	0	
Not a limited English speaking household	0	

Data Source: 2019 American Community Survey

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of Brooklyn that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

General Property

Table 8 Property Exposure Summary

Property Type	Parcel Count	Improved Land Count	Improved Land Value (\$)	Content Value (\$)	Total Value (\$)
Total	430	411	64,508,900	32,254,450	96,763,350
Agriculture	1	1	7,600	3,800	11,400
Commercial	9	7	3,280,400	1,640,200	4,920,600
Industrial	7	7	1,558,000	779,000	2,337,000
Residential	405	396	59,662,900	29,831,450	89,494,350
Utility	3	0	0	0	0
Other	5	0	0	0	0
Institutional/ Governmental	2	0	0	0	0

Data Source: Dane County Land Information Office, December 2021

Critical Facilities

The Village of Brooklyn has identified the critical facilities important to protect from disaster impacts. These are collected in Table 9. Table 9 is based on GIS data inventories from Dane County and information gathered from the Town. No further supplemental data was provided by the community through the Data Collection Guide.

Table 9 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
Brooklyn Elementary School	VF	1	6,000,000
Brooklyn Township	E1	N/A	1,100,000
Fire/EMS Station	E1	1	5,000,000
Genesis (retirement Home)	E1	1	500,000
Public Works Facility	E1	1	1,000,000
Community Building/ police department	E1	1	2,500,000
Wastewater treatment plant	E1	1	4,500,000
Water Tower	E1	1	750,000
Well #1	E1	1	225,000
Well #2	E1	1	275,000
Village Hall	E1	1	700,000
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities			

Data Source: 2021 Village of Brooklyn Data Collection Guide

Other Assets

Other assets help define a community beyond the current composition of the Village of Brooklyn. These assets may provide economic benefit to the community, in addition to preserving the heritage and diversity of the community and may include natural, cultural and historic assets or economic assets such as major employers. It may also include more specific detail on critical facilities. The Village of Brooklyn has not identified any other assets.

VULNERABILITY ASSESSMENT

A hazard identification and vulnerability analysis was completed for the Village of Brooklyn using the same methodology in the County's base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 10 outlines the hazard identification for the Village of Brooklyn based on the Data Collection Guide issued in 2021. The Data Collection Guide listed all of the hazards that could impact Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. Brooklyn's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern." This matrix appears as Table 10. This matrix reflects the significance of the hazards relative to one another as perceived by the Example's planning team.

This matrix reflects that the Village of Brooklyn is most vulnerable to flooding, tornadoes and wildfires. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 10: Vulnerability Assessment Matrix for the Village of Brooklyn

Name of Jurisdiction: <u>Village of Brooklyn</u>										
Hazard	Hazard Attributes			Impact Attributes						Total of Row Values
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
Impact on General Structures				Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards		
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	
Dam/Levee failure	1	1	1	1	1	1	0	1	1	8
Extreme Cold	1	1	1	1	1	1	1	1	1	9
Extreme Heat	1	1	1	1	1	1	1	1	1	9
Drought	1	1	1	1	1	1	1	1	1	9
Expansive soils	1	1	1	1	1	1	1	1	1	9
Flood	2	2	2	1	1	2	2	2	2	16
Fog	1	1	1	1	1	1	1	1	1	9
Hail Storm	1	1	1	2	2	2	2	2	2	15
Landslide	1	1	1	0	0	0	0	0	0	3
Lightning	1	1	1	1	1	1	1	1	1	9
Tornado	2	2	1	1	2	2	2	2	2	16
Wildfire	2	2	1	1	2	2	2	2	2	16
Windstorm	1	1	1	1	2	2	2	2	2	14
Winter Storm	1	1	1	2	2	2	2	2	2	15

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of Brooklyn. Table 11 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 11 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Drought	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Flooding	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below
Fog	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Hailstorm	See Tables 4-7 Population	See Property Exposure table 8	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Landslide/Sinkholes/Erosion	None	None	None	Specifics unknown; See hazard profile in County Plan
Lightning	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Cold	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Heat	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Winter Storm	See Tables 4-7 Population	See Property Exposure table 8	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 15 below	See Table 15 below	See Table 15 below	See Table 15 below
Wildfire	See Tables 4-7 Population	Minimal	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Windstorm	See Tables 4-7 Population	Minimal	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan

Data Source: 2021 Village of Brooklyn Data Collection Guide – Prepared by DCEM

Previous Hazard Events

Through the Data Collection Guide, the Village of Brooklyn noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the main mitigation plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The events noted by this jurisdiction in the Data Collection Guide can be found in Table 12.

Table 12 Village of Brooklyn Historic Natural Hazards

Natural Hazard	Date	Impacted Structures	Comprehensive Harm to Jurisdiction	Other reported Losses (Fiscal reports, programs, etc.)	Comments
Flood	02/21/2021 02/22/2021	Multiple Impacted Structures	Damage to sewer mains, pumps, residential property, and structures.	\$10,000+ in damages	2.4" of rain with snow cover and deep frost levels
Flood	08/21/2021	Multiple Impacted Structures	Damage to sanitary sewer lines and residential property	N/A	9.04" inches of rain
Freezing Issues	2013-2014	Multiple Impacted Structures	Frozen water laterals and broken water mains	\$17,545 in damages	N/A
Winter Storm	12/19/2012 12/21/2012	Multiple Impacted Structures	School closings	N/A	18" of snow in 24 hours

Data Source: 2021 Village of Brooklyn Data Collection Guide

Flood Hazard

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 13 and 14 outline the primary structures on them within the Village of Brooklyn, Dane County. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County (2.37 people as of 2021). Estimated loss potentials for all structures on the floodway can be found within section 4.6 in chapter 4 of the county plan.

Table 13 Primary Structures in the 100 Year Floodplain

Residential Structures in 100 yr. Floodway	Non-Residential Structures in 100 yr. Floodplain	Total Structures in 100 yr. Floodplain	Potential # of People at Risk in 100 yr. Floodplain	Total Assessed Values (\$) of Structures in 100 yr. Floodplain
0	0	0	0	\$0

Source: Analysis based on Dane County Land Information Office Data

Table 14 Primary Structures in the 500 Year Floodplain

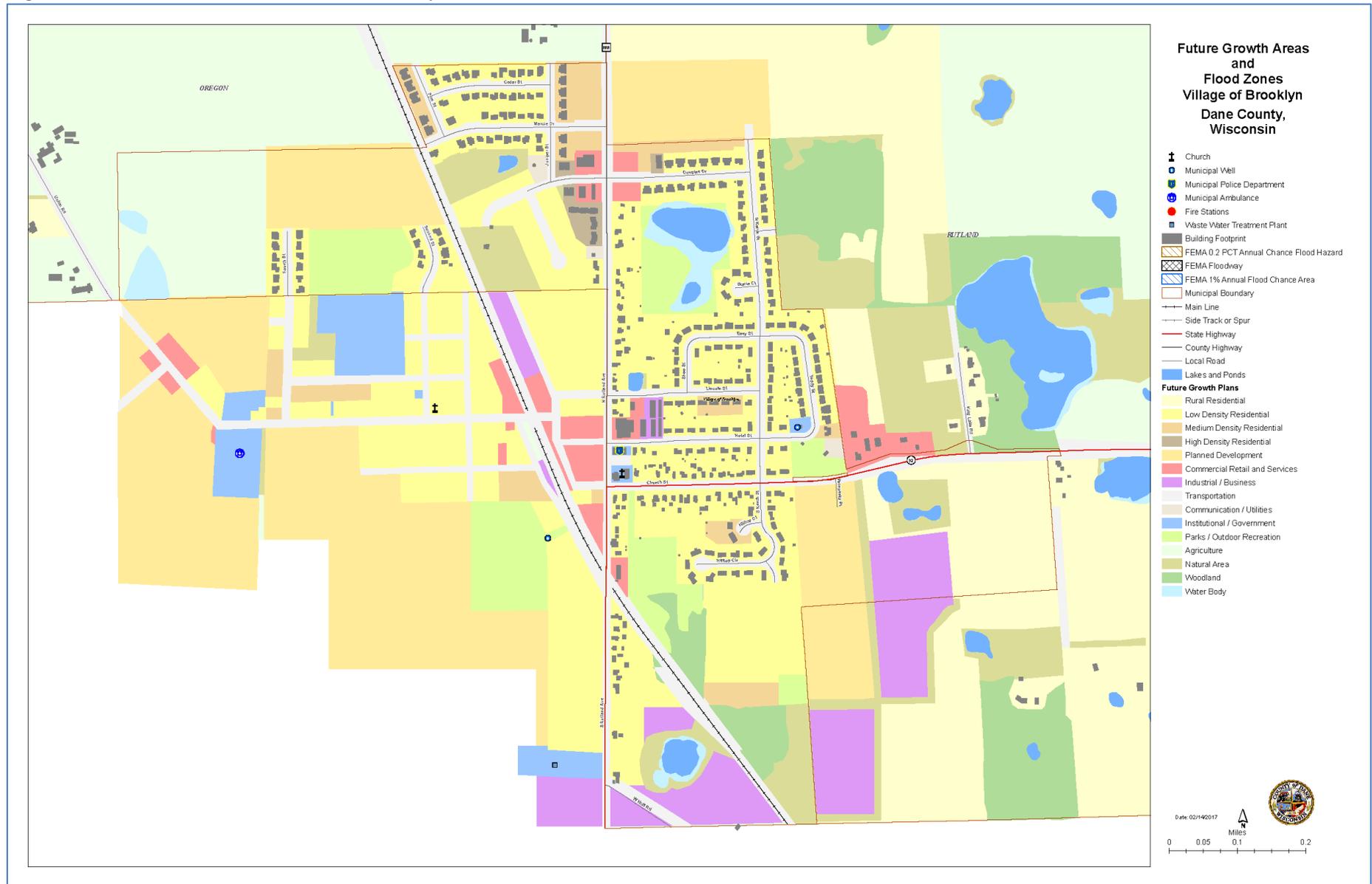
Residential Structures in 500 yr. Floodway	Non-Residential Structures in 500 yr. Floodplain	Total Structures in 500 yr. Floodplain	Potential # of People at Risk in 500 yr. Floodplain	Total Improved Values (\$) of Structures in 500 yr. Floodplain
0	0	0	0	\$0

Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Policies

- Repetitive loss properties have not been reported in Village of Brooklyn, Dane County.
- There are 0 flood insurance policies in force within The Village of Brooklyn, Dane County.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2023 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 15 Tornado Loss Estimate

% Area impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value (\$)	Estimated Loss \$ (High Damage Range)	Estimated Loss \$ (Moderate Damage Range)	Estimated Loss \$ (Low Damage Range)	Loss Ratio for Moderate Damage Range
100%	411	411	\$96,763,350	\$96,763,350	\$48,381,675	\$24,190,837	50%

Data Source: Analysis Based on Dane County Land Information Office's data

Problems or Additional Vulnerability Issues

The Village of Brooklyn's Data Collection Guide issued in 2021 listed:

- Residential growth in northern portion of village.
- Commercial/industrial growth in southeastern business park.
- Long-term potential growth in western portion of village currently farmland.
- No new development areas in floodplain.

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of Brooklyn.

Mitigation Capabilities Summary

Table 16 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of Brooklyn.

Table 16 Village of Brooklyn Regulatory Mitigation Capabilities

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Existing Natural Hazard Mitigation Plan	Yes	N/A
General or Comprehensive plan	Yes	N/A
Zoning ordinance	Yes	N/A
Subdivision ordinance	Yes	N/A
Growth management ordinance	Yes	N/A
Shoreland/wetland zoning ordinance	Yes	N/A
Floodplain zoning ordinance	Yes	N/A
FEMA / NFIP Community Rating System	Yes	N/A
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	N/A
Building code	Yes	N/A
Fire department ISO rating	Yes	N/A
Climate change Impact program	No	N/A
Erosion or sediment control program	Yes	N/A
Stormwater management program	Yes	N/A
Site plan review requirements	Yes	N/A
Capital improvements plan	Yes	N/A
Economic development plan	Yes	N/A
Local emergency operations plan	Yes	N/A
Other special plans	No	N/A
Flood insurance study or other engineering study for streams	No	N/A
Elevation certificates (for floodplain development)	Yes	N/A
Climate Action Plan	No	N/A

Data Source: Village of Brooklyn Data Collection Guide, 2021

Table 17 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of Brooklyn.

Table 17 Responsible Personnel and Departments for the Village of Brooklyn

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	General Engineering	N/A
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Strand Associates	N/A
Planner/engineer/scientist with an understanding of natural hazards	Yes	General/Contract	N/A
Personnel skilled in GIS	Yes	Public works	N/A
Full-time Building Official	No	N/A	N/A
Floodplain Manager	No	N/A	N/A
Emergency Manager	No	N/A	N/A
Grant Writer	Yes	General/Contract	N/A
GIS Data Resources – (land use, building footprints, etc.)	No	N/A	N/A
Warning systems/services	No	N/A	N/A

Data Source: Village of Brooklyn Data Collection Guide 2021

Table 18 identifies financial tools or resources that the Village of Brooklyn could potentially use to help fund mitigation activities.

Table 18 Financial Resources for the Village of Brooklyn

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Dedicated funding for land, easement or conservation easement acquisition	No
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activities	No
Withhold Spending in hazard prone areas	No

Data Source: Village of Brooklyn Data Collection Guide

Additional Capabilities

The Village of Brooklyn identified the following as past or ongoing public education or information programs:

- Weather radio program
- Family Emergency Plan Pamphlet
- Emergency Siren Pamphlet
- Smoke Detector Program
- NIXLE Program

National Flood Insurance Program Participation

The Village of Brooklyn currently participates in the National Flood Insurance Program as a stand-alone entity, and is listed under Green County.

Public Involvement Activities

The Village of Brooklyn provided a publically noticed listening session with the Village of Brooklyn Public Works Committee on November 16, 2021. It was noticed on four websites, and provided an agenda discussing the draft mitigation strategies. No changes were made to the initial draft mitigation strategies.

MITIGATION STRATEGIES

Below are the identified mitigation strategies developed by the Village of Brooklyn’s NHMP steering committee. Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects. A *mitigation strategy* is a long-term vision for risk reduction in local jurisdictional or regional planning. A mitigation strategy can be achieved by a list of overall improvements to achieve (goals) that provide direction for community efforts to reduce potential losses identified in the risk assessment.

Strategy #1	Property Protection - Douglas Street Pond
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
<p>The Village of Brooklyn is working with the property owners around the Douglas Street Pond to address pond flooding. Because of the defined number of Village residents surrounding the pond and the nature of the flooding potential, the Village will work with residents to develop a local association to seek out solutions specific for the body of water and identify means to promulgate these solutions.</p>	
Defined steps to achieving this mitigation strategy	
<p>1. Assisting residents organize a “pond association” for the purposes of addressing flooding concerns of the Douglas Street Pond.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village staff and property owners around the pond. b. <i>Funding source</i> – Village budget will cover staff time. c. <i>Completion date</i> – July 2022 	

Strategy #1	Property Protection - Douglas Street Pond
	<p>2. Supporting the pond association in their identification of a flood-fighting strategy(s) by providing technical expertise from Village Staff.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Property owners living around the pond. b. <i>Funding source</i> – Village budget will cover staff time. c. <i>Completion date</i> – Dec. 2022
	<p>3. Supporting the Pond Association’s search for funding opportunities to cover the expense of identified Douglas Pond flood-fighting solutions. This can include supporting grant applications.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Pond association and village Brooklyn. b. <i>Funding source</i> – Village budget will cover staff time. c. <i>Completion date</i> – June 2023



Dane County Natural Hazard Mitigation Plan

Village of Cottage Grove Annex
Summer 2022

Village of Cottage Grove Annex

This annex is a part of the Dane County Natural Hazard Mitigation Plan (DCNHMP). The DCNHMP contains additional information to support the Federal Emergency Management Agency's (FEMA) recognition of the plan (including this annex) as the formal natural hazard mitigation plan for the county and participating local governments. This annex will be valid for as long as FEMA approves the DCNHMP. The strategies adopted in this annex are designed to guide community efforts to reduce risks from natural hazards. These strategies work in conjunction with neighboring communities and Dane County government to reduce risks from natural hazards.

COMMUNITY PROFILE

The Village of Cottage Grove is located in the southeast quadrant of the County, north of the Town of Pleasant Springs, east of the City of Madison, and south of the Town of Sun Prairie. Land use is dominated almost entirely by residential uses. According to the United States Census Bureau, the Village of Cottage Grove has a total area of 2.29 square miles, all of it land. As of 2020, the village has 2,408 households, with an average of 2.90 people per household.

The municipal population data provided by the American Community Survey, a product of the US Census Bureau, indicates that the 2019 population estimates for Village of Cottage Grove, Dane County, is comprised of 7,020 people. Table 1 shows the population profile by age for the village.

Table 1 Population Profile of Village of Cottage Grove, Dane County

Category	Number	Percent
Total Population	7,020	100%
Under 5 years	556	7.9%
5 to 9 years	525	7.5%
10 to 14 years	764	10.9%
15 to 19 years	368	5.2%
20 to 24 years	377	5.4%
25 to 29 years	195	2.8%
30 to 34 years	575	8.2%
35 to 39 years	735	10.5%
40 to 44 years	369	5.3%
45 to 49 years	732	10.4%
50 to 54 years	429	6.1%
55 to 59 years	332	4.7%
60 to 64 years	397	5.7%
65 to 69 years	181	2.6%
70 to 74 years	102	1.5%
75 to 79 years	227	3.2%
80 to 84 years	92	1.3%
85 years and over	64	0.9%

Data Source: 2019 ACS Estimates - U.S. Census

Growth & Development Trends

Table 2-3 illustrates how the entire Village of Cottage Grove has grown in terms of population and number of households between 2010 and 2020. Housing data is to 2020 due to data availability. Table 2-3 is drawn from the Demographics Services Center at the Wisconsin Department of Administration, and shows population projections through 2040.

Table 2 Village of Cottage Grove Change in Population and Households, 2010-2020

2010 Population	2020 Population	Percent Change (%) 2010-2020	2010 # of Households	2020 # of Households	Percent Change (%) 2010-2020
6,192	7,070	14.18%	2,210	2,408	16.37%

Data Source: Demographic Services Center, Wisconsin Department of Administration

Table 3 Village of Cottage Grove Population Projections, 2020-2040 6.84

Population Projection	2020	2025	2030	2035	2040
Increase by half of percent of change (14.18%/2) every 5 years	7,070	7,571	8,107	8,681	9,296

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Population Summary

Tables 4-7 illustrates key population demographics within the Village of Cottage Grove. Key demographics include: (1) Disability Characteristics, (2) Federal Income Poverty Levels, (3) Educational Attainment, and (4) Household Language with English Speaking Capabilities. Due to data availability, all key demographic information has been provided by the American Community Survey (ACS) 2019 estimates. The ACS is a self-reported survey and may include total sample size differences and statistical margin of error.

Table 4 Village of Cottage Grove, Dane County – Disability Characteristics by Detailed Age

Category	Number	Percent
Total of Residents Self-Identified as Disabled	878	100%
With a hearing difficulty	165	18.8%
Population under 18 years	0	-
Population 18 to 64 years	90	-
Population 65 years and over	75	-
With a vision difficulty	92	10.5%
Population under 18 years	0	-
Population 18 to 64 years	77	-
Population 65 years and over	15	-
With a cognitive difficulty	120	13.7%
Population under 18 years	17	-
Population 18 to 64 years	78	-
Population 65 years and over	25	-
With an ambulatory difficulty	296	33.7%
Population under 18 years	19	-
Population 18 to 64 years	151	-
Population 65 years and over	126	-
With a self-care difficulty	88	10.0%
Population under 18 years	0	-
Population 18 to 64 years	63	-
Population 65 years and over	25	-
With an independent living difficulty	117	13.3%
Population 18 to 64 years	68	-
Population 18 to 34 years	0	-
Population 65 years and over	49	-

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.1: Village of Cottage Grove, Dane County – Federal Income Poverty Levels (FIPL) by Families Summary

Category	Number of Families
50 percent of poverty level	0
125 percent of poverty level	44
150 percent of poverty level	56
185 percent of poverty level	73
200 percent of poverty level	115
300 percent of poverty level	429
400 percent of poverty level	822
500 percent of poverty level	1,155

Data Source: 2019 ACS Estimates - U.S. Census

Note: Use table 5.2 to interpret table 5.1:

5.1 identifies the *total number of families* (regardless of size) by percentage.

5.2 identifies *family size* in relation to annual family income and the percentage category of the FIPL.

Table 5.2: Village of Cottage Grove, Dane County – Annual Federal Income Poverty Level Guide

Family Size	50%	100%	125%	150%	185%	200%	300%	400%	500%
1	\$6,440	\$12,880	\$16,100	\$19,320	\$23,828	\$25,760	\$38,640	\$51,520	\$64,400
2	\$8,710	\$17,420	\$21,775	\$26,130	\$32,227	\$34,840	\$52,260	\$69,680	\$87,100
3	\$10,980	\$21,960	\$27,450	\$32,940	\$40,626	\$43,920	\$65,880	\$87,840	\$109,800
4	\$13,250	\$26,500	\$33,125	\$39,750	\$49,025	\$53,000	\$79,500	\$106,000	\$132,500
5	\$15,520	\$31,040	\$38,800	\$46,560	\$57,424	\$62,080	\$93,120	\$124,160	\$155,200
6	\$17,790	\$35,580	\$44,475	\$53,370	\$65,823	\$71,160	\$106,740	\$142,320	\$177,900

Data Source: dhs.wisconsin.gov

Table 6: Village of Cottage Grove, Dane County – Educational Attainment by Householders

Category	Number	Percent
Total of Householders	2,080	100%
Less than high school graduate	60	2.9%
High school graduate (includes equivalency)	288	13.8%
Some college, associate's degree	590	28.4%
Bachelor's degree or higher	1,142	54.9%

Data Source: 2019 ACS Estimates - U.S. Census

Table 7: Village of Cottage Grove, Dane County – Household Language & English Speaking Capabilities

Category	Number	Percent
Total of Households	2,408	100%
English only	2,216	92.0%
Spanish:	87	3.6%
Limited English speaking household	0	-
Not a limited English speaking household	87	-
Other Indo-European languages:	7	0.3%
Limited English speaking household	0	-
Not a limited English speaking household	7	-
Asian and Pacific Island languages:	98	4.1%
Limited English speaking household	0	-
Not a limited English speaking household	98	-
Other languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-

Data Source: 2019 American Community Survey

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of Cottage Grove that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

General Property

Table 8 Property Exposure Summary

Property Type	Parcel Count	Improved Land Count	Improved Land Value (\$)	Content Value (\$)	Total Value (\$)
Total	2,291	2,266	520,187,200	260,093,600	780,280,800
Agriculture	21	21	2,068,100	1,034,050	3,102,150
Industrial	30	30	49,310,400	24,655,200	73,965,600
Residential	2,113	2,113	417,086,100	208,543,050	625,629,150
Transportation	16	16	1,506,800	753,400	2,260,200
Utility	7	0	0	0	0
Commercial	76	76	49,084,900	24,542,450	73,627,350
Other	14	0	0	0	0
Institutional/ Governmental	14	10	1,130,900	565,450	1,696,350

Data Source: Dane County Land Information Office, December 2021

Critical Facilities

The Village of Cottage Grove has identified the critical facilities important to protect from disaster impacts. These are collected in Table 9. Table 9 is based on GIS data inventories from Dane County and information gathered from the Town. No further supplemental data was provided by the community through the Data Collection Guide.

Table 9 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
Airport	EI	1	N/A
Village Hall	EI	1	\$ 1,300,000
Water Utility – 3 Active Well Houses, 2 water storage	EI	5	\$ 4,000,000
Sewer Utility – 4 Active Lift Stations	EI	4	\$ 5,000,000
Municipal Services Building (Police, Public Works, Parks & Rec)	EI	3	\$ 5,000,000
Public Works Shop Building	EI	1	\$ 900,000
Hazardous Substances (4)	HM	4	N/A
Hazardous Chemicals (2)	HM	2	N/A
Child Care (7)	VF	7	N/A
Community Based Residential (2)	VF	2	N/A
Historic Site (2)	VF	2	N/A
Public Schools (4)	VF	4	N/A
Residential Care Apartment	VF	1	N/A
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities			

Data Source: 2021 Village of Cottage Grove Data Collection Guide

Other Assets

Other assets help define a community beyond the current composition of the Village of Cottage Grove. These assets may provide economic benefit to the community, in addition to preserving the heritage and diversity of the community and may include natural, cultural and historic assets or economic assets such as major employers. It may also include more specific detail on critical facilities. The Village of Cottage Grove has not identified any other assets.

VULNERABILITY ASSESSMENT

A hazard identification and vulnerability analysis was completed for the Village of Cottage Grove using the same methodology in the County's base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 10 outlines the hazard identification for the Village of Cottage Grove based on the Data Collection Guide issued in 2021. The Data Collection Guide listed all of the hazards that could impact Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. Brooklyn's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern." This matrix appears as Table 10. This matrix reflects the significance of the hazards relative to one another as perceived by the Example's planning team.

This matrix reflects that the Village of Cottage Grove is most vulnerable to tornadoes, winter storms, and wind storms. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 10: Vulnerability Assessment Matrix for the Village of Cottage Grove

Name of Jurisdiction: <u>Village of Cottage Grove</u>										
Hazard	Hazard Attributes			Impact Attributes						Total of Row Values
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
Impact on General Structures				Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards		
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	
Dam/Levee failure	1	1	1	0	0	0	0	0	0	3
Extreme Cold	3	3	1	1	1	1	0	0	0	10
Extreme Heat	3	3	1	1	1	1	0	0	0	10
Drought	3	2	1	0	0	2	3	3	1	15
Expansive soils	1	1	1	0	0	0	0	0	0	3
Flood	3	3	3	2	0	1	1	3	3	19
Fog	3	3	3	0	0	0	0	0	0	9
Hail Storm	3	3	3	1	0	0	0	1	0	11
Landslide	1	1	1	0	0	0	0	0	0	3
Lightning	3	3	3	1	3	0	0	3	3	19
Tornado	3	3	3	3	3	3	3	3	3	27
Wildfire	1	1	3	1	0	0	0	1	1	8
Windstorm	3	3	3	3	3	3	3	3	3	27
Winter Storm	3	3	3	3	1	1	2	2	2	20

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of Cottage Grove. Table 11 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 11 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	None	None	None	Specifics unknown; See hazard profile in County Plan
Drought	Moderate	None	None	Specifics unknown; See hazard profile in County Plan
Flooding	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below
Fog	None	None	None	Specifics unknown; See hazard profile in County Plan
Hailstorm	None	See Property Exposure table 8	None	Specifics unknown; See hazard profile in County Plan
Landslide/ Sinkholes/ Erosion	None	None	None	Specifics unknown; See hazard profile in County Plan
Lightning	None	Minimal	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Severe Cold	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Heat	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Winter Storm	Minimal	See Property Exposure table 8	Minimal	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 15 below	See Table 15 below	See Table 15 below	See Table 15 below
Wildfire	None	See Property Exposure table 8	None	Specifics unknown; See hazard profile in County Plan
Windstorm	See Tables 4-7 Population	See Property Exposure table 8	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan

Data Source: 2021 Village of Cottage Grove Data Collection Guide – Prepared by DCEM

Previous Hazard Events

Through the Data Collection Guide, municipalities report specific historic hazard events to include in their community profile. These events have been incorporated into the appropriate hazard chapters in the main mitigation plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The Village of Cottage Grove did not report identify historic natural hazards in the 2021 Data Collection Guide.

Natural Hazard	Date	Impacted Structures	Comprehensive Harm to Jurisdiction	Other reported Losses (Fiscal reports, programs, etc.)	Comments
Tornado	06/07/2008	N/A	Straight line winds developed into a tornado, which resulted in minor flora damage.	None	EFO Tornado.

Flood Hazard

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 13 and 14 outline the primary structures on them within the Village of Cottage Grove, Dane County. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County (2.37 people as of 2021). Estimated loss potentials for all structures on the floodway can be found within section 4.6 in chapter 4 of the county plan.

Table 13 Primary Structures in the 100 Year Floodplain

Residential Structures in 100 yr. Floodway	Non-Residential Structures in 100 yr. Floodplain	Total Structures in 100 yr. Floodplain	Potential # of People at Risk in 100 yr. Floodplain	Total Assessed Values (\$) of Structures in 100 yr. Floodplain
0	0	0	0	\$0

Source: Analysis based on Dane County Land Information Office Data

Table 14 Primary Structures in the 500 Year Floodplain

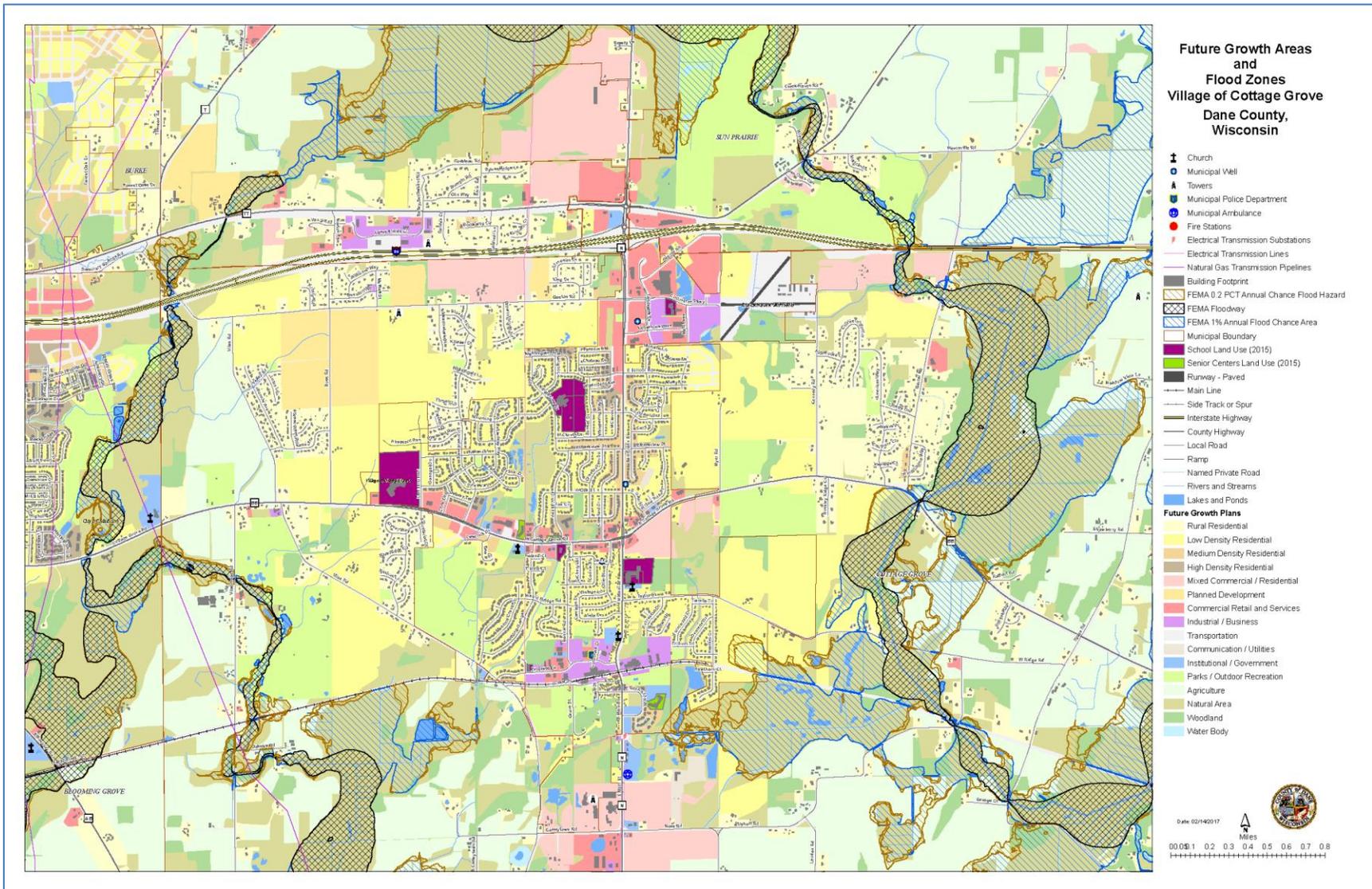
Residential Structures in 500 yr. Floodway	Non-Residential Structures in 500 yr. Floodplain	Total Structures in 500 yr. Floodplain	Potential # of People at Risk in 500 yr. Floodplain	Total Improved Values (\$) of Structures in 500 yr. Floodplain
0	0	0	0	\$0

Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Policies

- One repetitive loss property has been reported in the Village of Cottage, Dane County.
- There are 9 flood insurance policies in force within the Village of Cottage Grove, with a total coverage of \$2,928,000.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2023 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 15 Tornado Loss Estimate

% Area impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value (\$)	Estimated Loss \$ (High Damage Range)	Estimated Loss \$ (Moderate Damage Range)	Estimated Loss \$ (Low Damage Range)	Loss Ratio for Moderate Damage Range
21.82%	2,266	494	780,280,800	170,232,817	85,116,408	42,558,204	11%

Data Source: Analysis Based on Dane County Land Information Office’s data

Problems or Additional Vulnerability Issues

The Village of Cottage Grove’ identified the following additional vulnerabilities in the 2021 Data Collection Guide.

- **Growth Trends:**
 - Village continues to grow responsibly. All commercial and residential growth includes extensive stormwater management infrastructure and occurs outside of low-lying areas to mitigate the risk of flooding.
- **Changes since 2018 DC NHMP Update**
 - The Village has completed a number of sanitary, water and stormwater projects to mitigate risk.
 - The Main St. Lift Station upgrade and force main replacement (2018) ensures capacity and redundancy for the lift station serving much of the south and east side of the Village.
 - Westlawn Wetland Restoration (2018); returned a wetland to previous performance levels to mitigate flooding.
 - Seldal neighborhood reconstruction (2017); water and sewer mains replaced and stormwater infrastructure added to mitigate potential flooding.

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of Cottage Grove.

Mitigation Capabilities Summary

Table 16 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of Cottage Grove.

Table 16 Village of Cottage Grove Regulatory Mitigation Capabilities

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Existing Natural Hazard Mitigation Plan	Yes	N/A
General or Comprehensive plan	Yes	https://www.vi.cottagegrove.wi.gov/212/Planning
Zoning ordinance	Yes	https://ecode360.com/CO1851
Subdivision ordinance	Yes	https://ecode360.com/CO1851
Growth management ordinance	Yes	https://ecode360.com/CO1851
Shoreland/ wetland zoning ordinance	Yes	https://ecode360.com/CO1851
Floodplain zoning ordinance	Yes	https://ecode360.com/CO1851
FEMA / NFIP Community Rating System	Yes	N/A
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	https://ecode360.com/CO1851
Building code	Yes	https://ecode360.com/CO1851
Fire department ISO rating	Yes	Email Fire Department
Climate change Impact program	Yes	N/A
Erosion or sediment control program	Yes	N/A
Stormwater management program	Yes	N/A
Site plan review requirements	Yes	N/A
Capital improvements plan	Yes	N/A
Economic development plan	Yes	N/A
Local emergency operations plan	Yes	N/A
Other special plans	Yes	N/A
Flood insurance study or other engineering study for streams	Yes	N/A
Elevation certificates (for floodplain development)	Yes	N/A
Climate Action Plan	Yes	N/A

Data Source: Village of Cottage Grove Data Collection Guide, 2021

Table 17 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of Cottage Grove.

Table 17 Responsible Personnel and Departments for the Village of Cottage Grove

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Planning & Contracted Engineering Firm	N/A
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Contracted Engineering Firm & Public Works	N/A
Planner/engineer/scientist with an understanding of natural hazards	Yes	Contracted Engineering Firm, Public Works, Planning	N/A
Personnel skilled in GIS	Yes	Contracted Engineering Firm	N/A
Full time building official	No	N/A	N/A
Personnel skilled in Climate resilience	No	N/A	N/A
Floodplain manager	No	N/A	N/A
Emergency manager	Yes	Police Department/ Emergency Management	N/A
Real estate acquisition personnel	Yes	Contracted	N/A
Grant writer	Yes	Planning & Public Works Staff & Contracted Engineers	N/A
Other personnel		N/A	N/A
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Planning, Public Works & Contracted Engineering Firm	N/A
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	No	N/A	N/A

Data Source: Village of Cottage Grove Data Collection Guide 2021

Table 18 identifies financial tools or resources that the Village of Cottage Grove could potentially use to help fund mitigation activities.

Table 18 Financial Resources for the Village of Cottage Grove

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Dedicated funding for land, easement or conservation easement acquisition	Yes

Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activities	Yes
Withhold Spending in hazard prone areas	Yes

Data Source: Village of Cottage Grove Data Collection Guide

Additional Capabilities

The Village of Cottage Grove identified the following as past or ongoing public education or information programs:

- The Cottage Grove Fire Department holds an educational open house annually. Stormwater and water-use education events are held annually (Rain Barrell Sale, Earth Day events, etc.) and informational materials are available on the website and at municipal buildings.
- Village Capital Plan has a large stormwater pond project planned which will not only help meet water quality goals, but offer increased capacity and flood protection. Village Forester actively maintains urban forest to ensure that Village-owned trees are well managed to avoid unnecessary storm damage.

National Flood Insurance Program Participation

The Village of Cottage Grove currently participates in the National Flood Insurance Program.

Public Involvement Activities

The Village of Cottage Grove provided a publically noticed listening session with the Village of Cottage Grove Hazard Mitigation Steering Committee on November 3, 2021. It was noticed on the village website, and provided an agenda discussing the draft mitigation strategies. No changes were made to the initial draft mitigation strategies.

MITIGATION STRATEGIES

Below are the identified mitigation strategies developed by the Village of Cottage Grove’s NHMP steering committee. Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects. A *mitigation strategy* is a long-term vision for risk reduction in local jurisdictional or regional planning. A mitigation strategy can be achieved by a list of overall improvements to achieve (goals) that provide direction for community efforts to reduce potential losses identified in the risk assessment.

Strategy #1	Sanitary Sewer Interceptor
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
<p>This long-planned project will relieve the steadily increasing flows on the Village’s southwest portion of the system. Presently a large main under Southing Grange is handling the flow from most of the Village to convey the last few thousand feet to the Vilas Road Lift Station. Steady growth over the last decade, and continued growth already approved for the immediate future has made providing system relief along the western side of the Village a priority. The Utility Commission authorized expenditure on a shared project two years ago with the owners of the former Farm Golf Course, this project brought sanitary interceptor along Vilas Rd. in the hopes that it would spur a developer to buy the property and install the needed interceptor; to date this development has not occurred.</p>	
Defined steps to achieving this mitigation strategy	
<ol style="list-style-type: none"> 1. Sanitary sewer interceptor project completion components. <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Department of Public Works b. <i>Funding source</i> – ARPA Funds (estimated Cost \$460,000) c. <i>Completion date</i> – 2022-2023 	

Strategy #2	Thaden Pond	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>This project will improve the performance of this vital BMP (Best Management Practice) in the Village’s stormwater system. It will involve analysis, engineering, cleanout, dredging and potential re-shaping of the stormwater treatment pond. The project will incur significant administrative and review costs due to the amount of regulatory permitting required. The project is the most cost-effective way for the Village to take big steps at improving the TSS (total suspended solids) and TP (total phosphorus) removal from our stormwater.</p>		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Thaden Pond Project completion components. <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Department of Public Works b. <i>Funding source</i> – ARPA Funds, Grants, Capital Budget (estimated Cost \$660,000) c. <i>Completion date</i> – 2023 		

Strategy #3	Public Outreach	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
Historically the Village communicates with the citizenry through the local paper, paper postings and through our outdated Village website. We have upgraded the Village website but want to continue to grow our social media following on the Village, Parks, Police Department, and other community resources. Expanding our reach to social media will allow us to give citizens live updates in the event of a natural disaster.		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Public Outreach project completion components. <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Department of Public Works/ Village Administration Staff b. <i>Funding source</i> – Village Cable Fund c. <i>Completion date</i> – Ongoing 		



Dane County Natural Hazard Mitigation Plan

Village of Cross Plains Annex
Summer 2022

Village of Cross Plains Annex

This annex is a part of the Dane County Natural Hazard Mitigation Plan (DCNHMP). The DCNHMP contains additional information to support the Federal Emergency Management Agency's (FEMA) recognition of the plan (including this annex) as the formal natural hazard mitigation plan for the county and participating local governments. This annex will be valid for as long as FEMA approves the DCNHMP. The strategies adopted in this annex are designed to guide community efforts to reduce risks from natural hazards. These strategies work in conjunction with neighboring communities and Dane County government to reduce risks from natural hazards.

COMMUNITY PROFILE

The Village of Cross Plains is located in the western area of the County, just north of the Town of Cross Plains, east of Black Earth, and south of the Town of Berry. Land use is primarily residential. According to the United States Census Bureau, the Village of Cross Plains has a total area of 1.76 square miles, all of it land. As of 2020, it is estimated that the Village of Cross Plains has 1,532 households with an average household size of 2.55 people.

The municipal population data provided by the American Community Survey, a product of the US Census Bureau, indicates that the 2019 population estimates for Village of Cross Plains, Dane County, is comprised of 4,187 people. Table 1 shows the population profile by age for the village.

Table 1 Population Profile of Village of Cross Plains, Dane County

Category	Number	Percent
Total Population	4,187	100%
Under 5 years	271	6.5%
5 to 9 years	260	6.2%
10 to 14 years	467	11.2%
15 to 19 years	212	5.1%
20 to 24 years	108	2.6%
25 to 29 years	330	7.9%
30 to 34 years	327	7.8%
35 to 39 years	278	6.6%
40 to 44 years	337	8.0%
45 to 49 years	339	8.1%
50 to 54 years	316	7.5%
55 to 59 years	230	5.5%
60 to 64 years	218	5.2%
65 to 69 years	172	4.1%
70 to 74 years	150	3.6%
75 to 79 years	73	1.7%
80 to 84 years	39	0.9%
85 years and over	60	1.4%

Data Source: 2019 ACS Estimates - U.S. Census

Growth & Development Trends

Table 2-3 illustrates how the entire Village of Cross Plains has grown in terms of population and number of households between 2010 and 2020. Housing data is to 2020 due to data availability. Table 2-3 is drawn from the Demographics Services Center at the Wisconsin Department of Administration, and shows population projections through 2040.

Table 2 Village of Cross Plains Change in Population and Households, 2010-2020

2010 Population	2020 Population	Percent Change (%) 2010-2020	2010 # of Households	2020 # of Households	Percent Change (%) 2010-2020
3,538	4,032	13.96%	1,386	1,532	10.53%

Data Source: Demographic Services Center, Wisconsin Department of Administration

Table 3 Village of Cross Plains Population Projections, 2020-2040

Population Projection	2020	2025	2030	2035	2040
Increase by half of percent of change (13.96%/2) every 5 years	4,032	4,313	4,614	4,936	5,280

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Note: Population estimates offered by the U.S. Census Bureau’s American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Population Summary

Tables 4-7 illustrates key population demographics within the Village of Cross Plains. Key demographics include: (1) Disability Characteristics, (2) Federal Income Poverty Levels, (3) Educational Attainment, and (4) Household Language with English Speaking Capabilities. Due to data availability, all key demographic information has been provided by the American Community Survey (ACS) 2019 estimates. The ACS is a self-reported survey and may include total sample size differences and statistical margin of error.

Table 4 Village of Cross Plains, Dane County – Disability Characteristics by Detailed Age

Category	Number	Percent
Total of Residents Self-Identified as Disabled	466	100%
With a hearing difficulty	113	24.2%
Population under 18 years	0	-
Population 18 to 64 years	32	-
Population 65 years and over	81	-
With a vision difficulty	11	2.4%
Population under 18 years	0	-
Population 18 to 64 years	0	-
Population 65 years and over	11	-
With a cognitive difficulty	93	20.0%
Population under 18 years	9	-
Population 18 to 64 years	50	-
Population 65 years and over	34	-
With an ambulatory difficulty	107	23.0%
Population under 18 years	0	-
Population 18 to 64 years	35	-
Population 65 years and over	72	-
With a self-care difficulty	64	13.7%
Population under 18 years	18	-
Population 18 to 64 years	27	-
Population 65 years and over	19	-
With an independent living difficulty	78	16.7%
Population 18 to 64 years	27	-
Population 18 to 34 years	17	-
Population 65 years and over	51	-

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.1: Village of Cross Plains, Dane County – Federal Income Poverty Levels (FIPL) by Families Summary

Category	Number of Families
50 percent of poverty level	0
125 percent of poverty level	9
150 percent of poverty level	17
185 percent of poverty level	36
200 percent of poverty level	45
300 percent of poverty level	200
400 percent of poverty level	430
500 percent of poverty level	579

Data Source: 2019 ACS Estimates - U.S. Census

Note: Use table 5.2 to interpret table 5.1:

5.1 identifies the *total number of families* (regardless of size) by percentage.

5.2 identifies *family size* in relation to annual family income and the percentage category of the FIPL.

Table 5.2: Village of Cross Plains, Dane County – Annual Federal Income Poverty Level Guide

Family Size	50%	100%	125%	150%	185%	200%	300%	400%	500%
1	\$6,440	\$12,880	\$16,100	\$19,320	\$23,828	\$25,760	\$38,640	\$51,520	\$64,400
2	\$8,710	\$17,420	\$21,775	\$26,130	\$32,227	\$34,840	\$52,260	\$69,680	\$87,100
3	\$10,980	\$21,960	\$27,450	\$32,940	\$40,626	\$43,920	\$65,880	\$87,840	\$109,800
4	\$13,250	\$26,500	\$33,125	\$39,750	\$49,025	\$53,000	\$79,500	\$106,000	\$132,500
5	\$15,520	\$31,040	\$38,800	\$46,560	\$57,424	\$62,080	\$93,120	\$124,160	\$155,200
6	\$17,790	\$35,580	\$44,475	\$53,370	\$65,823	\$71,160	\$106,740	\$142,320	\$177,900

Data Source: dhs.wisconsin.gov

Table 6: Village of Cross Plains, Dane County – Educational Attainment by Householders

Category	Number	Percent
Total of Householders	1,101	100%
Less than high school graduate	0	0.0%
High school graduate (includes equivalency)	248	22.5%
Some college, associate's degree	321	29.2%
Bachelor's degree or higher	532	48.3%

Data Source: 2019 ACS Estimates - U.S. Census

Table 7: Village of Cross Plains, Dane County – Household Language & English Speaking Capabilities

Category	Number	Percent
Total of Households	1,653	100%
English only	1,576	95.3
Spanish:	49	3.0%
Limited English speaking household	0	-
Not a limited English speaking household	49	-
Other Indo-European languages:	11	0.7%
Limited English speaking household	0	-
Not a limited English speaking household	11	-
Asian and Pacific Island languages:	17	1.0%
Limited English speaking household	0	-
Not a limited English speaking household	17	-
Other languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-

Data Source: 2019 American Community Survey

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of Cross Plains that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

General Property

Table 8 Property Exposure Summary

Property Type	Parcel Count	Improved Land Count	Improved Land Value (\$)	Content Value (\$)	Total Value (\$)
Total	1,533	1,504	346,248,200	173,124,100	519,372,300
Agriculture	6	6	962,000	481,000	1,443,000
Industrial	18	18	11,377,200	5,688,600	17,065,800
Residential	1,408	1,408	310,176,500	155,088,250	465,264,750
Utility	12	0	0	0	0
Commercial	56	56	22,695,000	11,347,500	34,042,500
Other	13	0	0	0	0
Institutional/ Governmental	20	16	1,037,500	518,750	1,556,250

Data Source: Dane County Land Information Office, December 2021

Critical Facilities

The Village of Cross Plains has identified the critical facilities important to protect from disaster impacts. These are collected in Table 9. Table 9 is based on GIS data inventories from Dane County and information gathered from the Town. No further supplemental data was provided by the community through the Data Collection Guide.

Table 9 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
Wastewater Treatment Facility	EI	1	12,000,000
Well #1	EI	1	300,000
Well #2	EI	1	400,000
Well #3	EI	1	2,000,000
Large Reservoir	EI	1	700,000
Fire Station	EI	1	9,000,000
EMS Building	EI	1	4,500,000
Village Office	VF	1	850,000
Library	VF	1	4,100,000
Schools – 3 total	VF	3	200,000,000
Day Care – 2 total	VF	2	1,000,000
Elderly Housing – 4 total	VF	4	5,000,000
Healthcare – 6 total	VF	6	4,000,000
County Highway P Bridge	EI	1	500,000
County Highway KP Bridge	EI	1	500,000
US Highway 14 Bridge	EI	1	550,000
Culvert system	EI	1	500,000
Cellular Telephone Tower	EI	1	Unknown
Public Facilities Building	EI	1	1,600,000
Gas Station	HM	1	2,000,000
Manufacturing	HM	1	4,000,000
Black Earth Creek	NA	1	Unknown
Brewery Creek	NA	1	Unknown
Enchanted Valley Creek	NA	1	Unknown
Conservation and Park Lands	NA	1	Unknown
Municipal Pool and Bathhouse	VF	1	950,000
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities			

Data Source: 2021 Village of Cross Plains Data Collection Guide

Other Assets

Other assets help define a community beyond the current composition of the Village of Cross Plains. These assets may provide economic benefit to the community, in addition to preserving the heritage and diversity of the community and may include natural, cultural and historic assets or economic assets such as major employers. It may also include more specific detail on critical facilities. The Village of Cross Plains has not identified any other assets.

VULNERABILITY ASSESSMENT

A hazard identification and vulnerability analysis was completed for the Village of Cross Plains using the same methodology in the County's base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 10 outlines the hazard identification for the Village of Cross Plains based on the Data Collection Guide issued in 2021. The Data Collection Guide listed all of the hazards that could impact Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. Brooklyn's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern." This matrix appears as Table 10. This matrix reflects the significance of the hazards relative to one another as perceived by the Example's planning team.

This matrix reflects that the Village of Cross Plains is most vulnerable to tornadoes, floods, and wind storms. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 10: Vulnerability Assessment Matrix for the Village of Cross Plains

Name of Jurisdiction: <u>Village of Cross Plains</u>										
Hazard	Hazard Attributes			Impact Attributes						Total of Row Values
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
Impact on General Structures				Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards		
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	
Dam/Levee failure	3	1	3	2	2	2	1	3	2	19
Extreme Cold	1	1	1	1	0	0	0	0	1	5
Extreme Heat	4	3	2	3	3	4	1	1	1	22
Drought	4	3	2	1	1	4	2	2	2	21
Expansive soils	3	1	1	1	1	1	2	2	1	13
Flood	5	4	3	4	3	3	4	4	2	32
Fog	3	3	2	1	1	1	1	1	1	14
Hail Storm	4	3	2	2	2	1	2	2	2	20
Landslide	2	1	2	3	1	1	1	1	1	13
Lightning	5	4	3	3	4	1	1	1	2	24
Tornado	5	4	4	5	5	3	4	5	3	38
Wildfire	3	1	2	2	3	1	1	1	2	16
Windstorm	2	1	2	2	2	1	1	1	1	13
Winter Storm	4	3	4	4	3	3	2	2	2	28

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of Cross Plains. Table 11 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 11 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	None	See Property Exposure table 8	None	Specifics unknown; See hazard profile in County Plan
Drought	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Flooding	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below
Fog	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Hailstorm	Minimal	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Landslide/ Sinkholes/ Erosion	Minimal	See Property Exposure table 8	Minimal	Specifics unknown; See hazard profile in County Plan
Lightning	Minimal	See Property Exposure table 8	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Severe Cold	See Tables 4-7 Population	See Property Exposure table 8	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Severe Heat	See Tables 4-7 Population	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Winter Storm	See Tables 4-7 Population	See Property Exposure table 8	Minimal	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 15 below	See Table 15 below	See Table 15 below	See Table 15 below
Wildfire	Minimal	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Windstorm	See Tables 4-7 Population	See Property Exposure table 8	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan

Data Source: 2021 Village of Cross Plains Data Collection Guide – Prepared by DCEM

Previous Hazard Events

Through the Data Collection Guide, the Village of Cross Plains noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the main mitigation plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The events noted by this jurisdiction in the Data Collection Guide can be found in Table 12.

Table 12 Village of Cross Plains Historic Natural Hazards

Natural Hazard	Date	Impacted Structures	Comprehensive Harm to Jurisdiction	Other reported Losses (Fiscal reports, programs, etc.)	Comments
Tornado	07/28/2021	Multiple Impacted Structures	Parks and conservancies sustained significant tree damage. Minor damage to a village shelter. Multiple commercial/business signs were supplanted. One business sustained roof damage.	None	12 tornadoes from straight line winds. EF0 and EF1 tornadoes confirmed by NWS.

Data Source: 2021 Village of Cross Plains Data Collection Guide

Flood Hazard

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 13 and 14 outline the primary structures on them within the Village of Cross Plains, Dane County. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County (2.37 people as of 2021). Estimated loss potentials for all structures on the floodway can be found within section 4.6 in chapter 4 of the county plan.

Table 13 Primary Structures in the 100 Year Floodplain

Residential Structures in 100 yr. Floodway	Non-Residential Structures in 100 yr. Floodplain	Total Structures in 100 yr. Floodplain	Potential # of People at Risk in 100 yr. Floodplain	Total Assessed Values (\$) of Structures in 100 yr. Floodplain
36	11	47	85	\$12,154,890

Source: Analysis based on Dane County Land Information Office Data

Table 14 Primary Structures in the 500 Year Floodplain

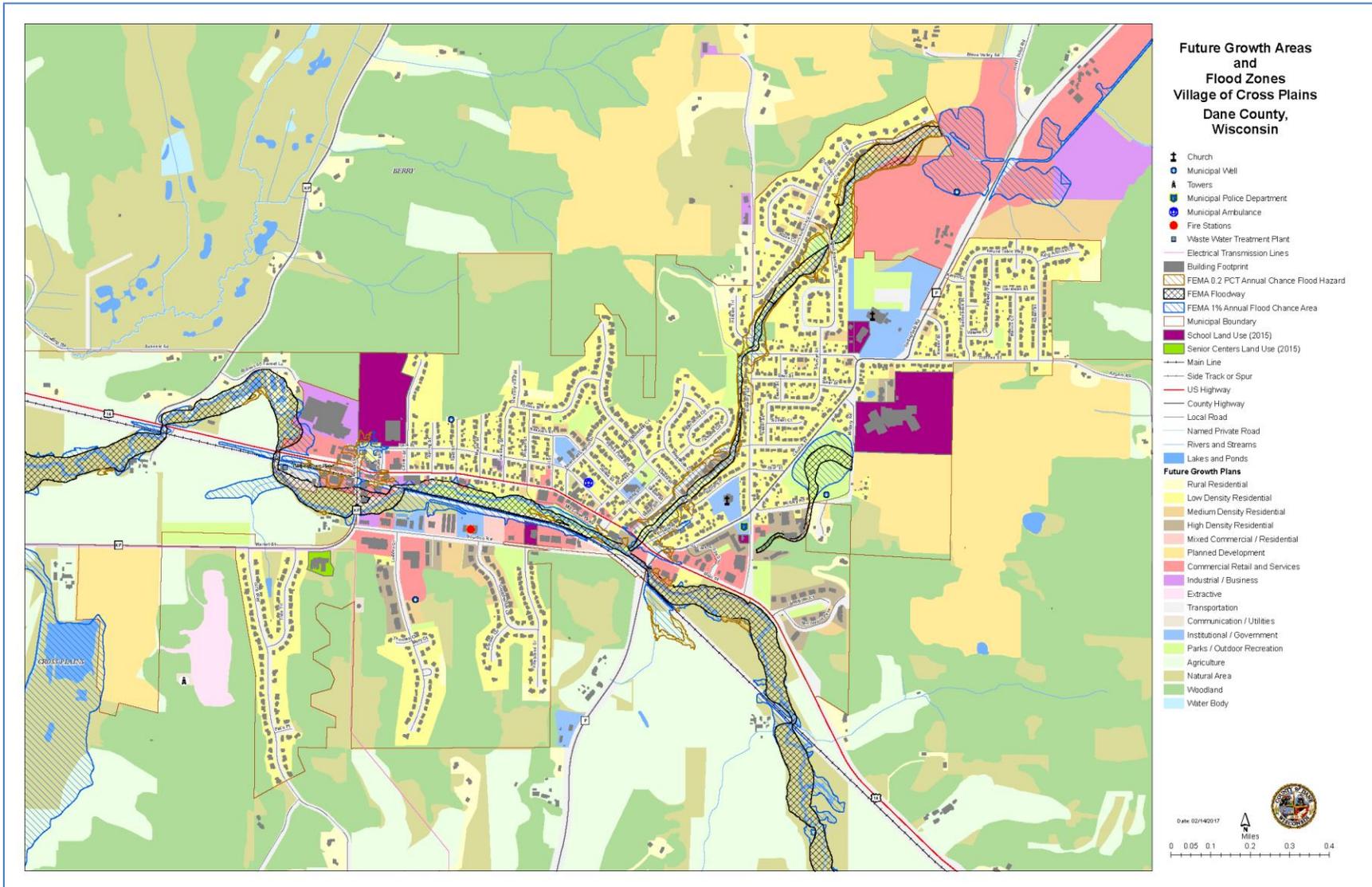
Residential Structures in 500 yr. Floodway	Non-Residential Structures in 500 yr. Floodplain	Total Structures in 500 yr. Floodplain	Potential # of People at Risk in 500 yr. Floodplain	Total Improved Values (\$) of Structures in 500 yr. Floodplain
66	4	70	156	\$7,363,34

Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Policies

- Repetitive loss properties have not been reported in the Village of Cross Plains, Dane County.
- The Village of Cross Plains has 28 flood insurance policies in force within Dane County, with a total coverage of \$8,346,700.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2023 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 15 Tornado Loss Estimate

% Area impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value (\$)	Estimated Loss \$ (High Damage Range)	Estimated Loss \$ (Moderate Damage Range)	Estimated Loss \$ (Low Damage Range)	Loss Ratio for Moderate Damage Range
50.22%	1,504	755	519,372,300	260,804,996	130,402,498	65,201,249	25%

Data Source: Analysis Based on Dane County Land Information Office’s data

Problems or Additional Vulnerability Issues

The Village of Cross Plains identified the following additional vulnerabilities in the 2021 Data Collection Guide:

- **Average Depth of 100 Year Floodplain:**
 - 2 feet
- **Hazard Concerns:**
 - General concerns for the elderly or young population include extreme heat and freezing.
- **Growth Trends:**
 - Future growth trends point to continued residential expansion onto hilltops and along Brewery Creek. Commercial redevelopment of the downtown area along Black Earth Creek is desired. The Village strives to balance development growth with environmental stewardship and hazard reduction.
- **Changes since 2018 DC NHMP Update**
 - Objective 1: *DaneCom* system is in place and the Village is an active member. Communications and coordination efforts work as it should and community is better prepared.
 - Objective 2: New flood maps implemented and which the village uses for planning. The ordinance and flood map continues to be updated as required for new growth. Village currently participates in the NFIP. Village has also updated its subdivision ordinance to require identification of the .2% flood on plats and will incorporate FEMA flood layers into GIS. The Village conducted an independent flood study following the 2018 flood and found some discrepancies with the flood zone at Brewery Creek. This is being addressed with WDNR.

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of Cross Plains.

Mitigation Capabilities Summary

Table 16 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of Cross Plains.

Table 16 Village of Cross Plains Regulatory Mitigation Capabilities

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Existing Natural Hazard Mitigation Plan	Yes	Updated in 2017/2018, Village is participating for 2023
General or Comprehensive plan	Yes	Revised December 17, 2018
Zoning ordinance	Yes	See Chapter 84, recodified in 2015, updated incrementally
Subdivision ordinance	Yes	See Chapter 83, repeal and recreated in 2021
Growth management ordinance	No	
Shoreland/ wetland zoning ordinance	Yes	See Chapter 86; recodified in 2014
Floodplain zoning ordinance	Yes	See Chapter 85; recodified in 2014, updated in 2020
FEMA / NFIP Community Rating System	No	
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	See Chapter 12 (Emergency Management), Chapter 33 (Fire Protection), Chapter 32 (Drainage District), Chapter 65 Erosion Control and Stormwater Management
Building code	Yes	See Chapter 31, recodified in 2013, repealed and recreated in 2021
Fire department ISO rating	Yes	Class 4 for 1 and 2 family dwellings and all other uses
Climate change Impact program	Yes	Ad Hoc Sustainability Committee created in 2019, which provides climate recommendations to the Village Board. Currently drafting sustainability and resilience plan.
Erosion or sediment control program	Yes	See Chapter 65 Erosion Control and Stormwater Management
Stormwater management program	Yes	See Chapter 65 Erosion Control and Stormwater Management
Site plan review requirements	Yes	See Chapter 84, Zoning requirements
Capital improvements plan	Yes	5-year Capital Improvement Plan reviewed and adopted annually. Current adopted plan is 2022-2026
Economic development plan	Yes	TID #3 Project Plan adopted in 2008 and amended in 2011 and 2013. Market Analysis in 2017.
Local emergency operations plan	Yes	Approved in 2003. Currently updating.

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Other special plans	N/A	N/A
Flood insurance study or other engineering study for streams	Yes	Village wide flood study and mitigation plan conducted by Jewell Associates and Engineers in 2020.
Elevation certificates (for floodplain development)	No	N/A
Climate Action Plan	No	N/A

Data Source: Village of Cross Plains Data Collection Guide, 2021

Table 17 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of Cross Plains.

Table 17 Responsible Personnel and Departments for the Village of Cross Plains

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Contracted Planner and Engineer	Multiple staff also have experience with land development and management practices
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Contracted Engineer and Building Inspector	Public Facilities Director also trained
Planner/engineer/scientist with an understanding of natural hazards	Yes	Contracted Planner and Engineer	Multiple staff also have experience with natural hazard
Personnel skilled in GIS	Yes	Contracted Planner and Engineer	Multiple staff also have experience with GIS
Full time building official	Yes	Contracted Building Inspector	
Personnel skilled in Climate resilience	Yes	Contracted Planner, Sustainability Committee Chair	Also advised by Dane County and State agencies regarding climate resilience
Floodplain manager	Yes	Zoning administrator and consultants as needed	N/A
Emergency manager	Yes	Village Administrator	N/A
Real estate acquisition personnel	Yes	Village Administrator	N/A
Grant writer	Yes	Multiple staff positions and consultants as needed	N/A
Other personnel	Yes	Police Chief, Fire Chief, EMS Chief, Dane County Sheriff's Office, Park & Recreation Director, Finance Director	N/A
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Internal capacity contracted through Engineering	N/A

Warning Systems/Services (Reverse 9-11, cable override, outdoor warningsignals)	Yes	County dispatching, local radio, internal public communications, sirens, internal portable radios, website and text alert system	N/A
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Data Source: Village of Cross Plains Data Collection Guide 2021

Table 18 identifies financial tools or resources that the Village of Cross Plains could potentially use to help fund mitigation activities.

Table 18 Financial Resources for the Village of Cross Plains

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	N/A
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Dedicated funding for land, easement or conservation easement acquisition	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activities	No
Withhold Spending in hazard prone areas	No

Data Source: Village of Cross Plains Data Collection Guide

Additional Capabilities

The Village of Cross Plains identified the following as past or ongoing public education or information programs:

- Ongoing projects include construction of Well #3 to be completed in 2022/2023 for water redundancy. Village also continues to work on flood mitigation and green infrastructure planning with CARPC. Village Sustainability Committee is drafting a Sustainability Plan to be presented to the Village Board for approval at the end of 2021.

National Flood Insurance Program Participation

The Village of Cross Plains currently participates in the National Flood Insurance Program.

Public Involvement Activities

The Village of Cross Plains provided a publically noticed listening session with the Village of Cross Plains Board of Trustees on October 25, 2021. It was noticed on the village website, and streamed via

YouTube. The listening session provided an agenda in order to discuss the draft mitigation strategies. No changes were made to the initial draft mitigation strategies.

MITIGATION STRATEGIES

Below are the identified mitigation strategies developed by the Village of Cross Plains’ NHMP steering committee. Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects. A *mitigation strategy* is a long-term vision for risk reduction in local jurisdictional or regional planning. A mitigation strategy can be achieved by a list of overall improvements to achieve (goals) that provide direction for community efforts to reduce potential losses identified in the risk assessment.

Strategy #1	Creating additional storm water retainage upstream County Highway P – Brewery Creek
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
<p>During the 2018 flood, various on-hand accounts reported that the Village sustained its heaviest damage when storm water from the Brewery Creek watershed inundated County Highway P. The resulting influx of water washed out Brewery Road, backed up sewer lines, and devastated downtown.</p> <p>The Village conducted a flood impact study, which identified this project as a primary project. The proposed mitigation project includes a series of water control measures to retain storm water to the north of County Highway P and allows for slower release. The Village intends to do this through the creation of a large retention area planted with native wetland plants, re-establishing a more natural creek alignment, and providing a secondary berm to hold back a surge event.</p>	
Defined steps to achieving this mitigation strategy	
<ol style="list-style-type: none"> 1. Acquire additional private property for water retention <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village, Village Partners b. <i>Funding source</i> – Grants, Village Borrowing, Development dedication/fees c. <i>Completion date</i> – When funding is attained 	

Strategy #1	Creating additional storm water retainage upstream County Highway P – Brewery Creek
	<p>2. Construct retention pond/wetland, re-align creek, construct levee, establish native plantings</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village b. <i>Funding source</i> – Grants, Village Borrowing, Developer assessments c. <i>Completion date</i> – When funding is attained
	<p>3. Maintain</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village b. <i>Funding source</i> – Annual Budgeting process c. <i>Completion date</i> – To be determined when project is constructed

Strategy #2	Improvement of creek crossing structures within the Village.	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>The Village has a vast system of culverts and bridges which impede on rising flood waters. These items should be removed and/or improved to provide Brewery Creek and Black Earth Creek more efficiencies.</p> <p>These improvements help to reduce blockages and keep flood waters within designated areas in order to reduce loss of property by providing a more predictable path.</p>		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Increase size of culverts at Brewery Road, Valley Street, and Lewis Street. <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village b. <i>Funding source</i> – Grants, Village Borrowing, on hand funds. c. <i>Completion date</i> – When funding is attained 		
<ol style="list-style-type: none"> 2. Raise railroad bridges. <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Wisconsin Southern Railroad, WI Department of Transportation (Property owner) b. <i>Funding source</i> – Grants, Rates, Capital Improvement Budgets c. <i>Completion date</i> – When funding is attained, during capital project and redevelopment. 		

Strategy #2	Improvement of creek crossing structures within the Village.
<p>3. Raise County Highway KP Bridge</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Dane County b. <i>Funding source</i> – Dane County and Village c. <i>Completion date</i> – 2023 	
<p>4. Raise US Highway 14 Bridges (downstream of Village)</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – WI Department of Transportation b. <i>Funding source</i> – WIDOT, Village c. <i>Completion date</i> – Future redevelopment, whenever US 14 Highway is considered for reconstruction. 	

Strategy #3	Stormwater and Floodplain Management Plan	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>Developing a Stormwater and Floodplain management plan will provide the Village with a long-term plan to mitigate flooding issues in the future. The document will also address action items that deal explicitly with the management of storm water and water systems, including riverine improvements, native plantings, and other management practices.</p> <p>This document will also serve as a public education and awareness tool and provide guidance to private improvements.</p>		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Develop and Implement a Village wide Storm Water Management Plan <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village b. <i>Funding source</i> – Grants, Village Funds c. <i>Completion date</i> – When funding is attained 		
<ol style="list-style-type: none"> 2. Development and implement a Flood Plain Management Plan <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village, Regional development coordination b. <i>Funding source</i> – Grants, Village Funds, State and County funding. c. <i>Completion date</i> – When funding is attained 		

Strategy #4	Construction of a Mass Community Space	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>Construction of a large (300-500 capacity) community facility in order to house emergency operations, shelter, mass gathering, and short – medium term refuge. This space can also be used for 3rd party agencies to assist with local emergency recover.</p> <p>Currently, the Village does not own or operate such a place. Although, there are gymnasiums and meeting halls within the community, these are privately held and often are in conflict when there is an emergent need.</p>		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Construction of Community facility for mass gathering <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village b. <i>Funding source</i> – Grants, Village Borrowing c. <i>Completion date</i> – When funding is attained 		

Strategy #5	Construction of high-water overflow routes.	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>Construct a network of high flow overflow route to divert flood water and reduce flood impacts to property. This includes strategically identifying street overflow routes and implementation of early detection/warning for residents.</p> <p>Overflow routes may be considered as a part of a road reconstruction or development project in which the natural course of flood water may be more likely to discharge through the route.</p>		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Construct a high flow overflow route to divert trapped flood water from Market Street to the Black Earth Creek (north section). <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village b. <i>Funding source</i> – Grants, Village Borrowing, Private investment. c. <i>Completion date</i> – When funding is attained 		
<ol style="list-style-type: none"> 2. Acquire land and construct a high flow diversion overflow route from the County Highway KP Bridge to the Black Earth Creek (south section). <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village b. <i>Funding source</i> – Grants, Village Borrowing, Private investment. c. <i>Completion date</i> – When funding is attained 		

<p>Strategy #5</p>	<p>Construction of high-water overflow routes.</p>
<p>3. Strategical plan and implement the use certain street routes to divert flood water.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village, Fire District, Emergency Management b. <i>Funding source</i> – Village c. <i>Completion date</i> – Ongoing 	

Strategy #6	Construction of a Community Tornado Shelter	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
Construct a community tornado shelter at the library/municipal pool. The shelter will provide enough space to provide shelter for the capacity of pool participants, park visitors, and library patrons.		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Construct shelter <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village b. <i>Funding source</i> – Grants, Village GO Borrowing c. <i>Completion date</i> – When funding is attained 		



Dane County Natural Hazard Mitigation Plan

Village of Dane Annex

Summer 2022

Village of Dane Annex

This annex is a part of the Dane County Natural Hazard Mitigation Plan (DCNHMP). The DCNHMP contains additional information to support the Federal Emergency Management Agency's (FEMA) recognition of the plan (including this annex) as the formal natural hazard mitigation plan for the county and participating local governments. This annex will be valid for as long as FEMA approves the DCNHMP. The strategies adopted in this annex are designed to guide community efforts to reduce risks from natural hazards. These strategies work in conjunction with neighboring communities and Dane County government to reduce risks from natural hazards.

COMMUNITY PROFILE

The Village of Dane is located in the northern area of the County, just north of the Village of Waunakee, and west of the Village of DeForest, and south of Lodi in Columbia County. Land use is primarily residential. According to the United States Census Bureau, the Village of Dane has a total area of 1.14 square miles, 0.01 square miles of it being water. As of 2020, it is estimated that the Village of Dane has 427 households with an average household size of 2.74 people.

The municipal population data provided by the American Community Survey, a product of the US Census Bureau, indicates that the 2019 population estimates for Village of Dane, Dane County, is comprised of 1,004 people. Table 1 shows the population profile by age for the village.

Table 1 Population Profile of Village of Dane, Dane County

Category	Number	Percent
Total Population	1,004	100%
Under 5 years	99	9.9%
5 to 9 years	52	5.2%
10 to 14 years	54	5.4%
15 to 19 years	36	3.6%
20 to 24 years	36	3.6%
25 to 29 years	111	11.1%
30 to 34 years	118	11.8%
35 to 39 years	75	7.5%
40 to 44 years	54	5.4%
45 to 49 years	82	8.2%
50 to 54 years	61	6.1%
55 to 59 years	60	6.0%
60 to 64 years	63	6.3%
65 to 69 years	36	3.6%
70 to 74 years	18	1.8%
75 to 79 years	21	2.1%
80 to 84 years	18	1.8%
85 years and over	10	1.0%

Data Source: 2019 ACS Estimates - U.S. Census

Growth & Development Trends

Table 2-3 illustrates how the entire Village of Dane has grown in terms of population and number of households between 2010 and 2020. Housing data is to 2020 due to data availability. Table 2-3 is drawn from the Demographics Services Center at the Wisconsin Department of Administration, and shows population projections through 2040.

Table 2 Village of Dane Change in Population and Households, 2010-2020

2010 Population	2020 Population	Percent Change (%) 2010-2020	2010 # of Households	2020 # of Households	Percent Change (%) 2010-2020
995	1,108	11.36%	363	427	17.63%

Data Source: Demographic Services Center, Wisconsin Department of Administration

Table 3 Village of Dane Population Projections, 2020-2040

Population Projection	2020	2025	2030	2035	2040
Increase by half of percent of change (11.36%/2) every 5 years	1,108	1,170	1,236	1,306	1,380

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Population Summary

Tables 4-7 illustrates key population demographics within the Village of Dane. Key demographics include: (1) Disability Characteristics, (2) Federal Income Poverty Levels, (3) Educational Attainment, and (4) Household Language with English Speaking Capabilities. Due to data availability, all key demographic information has been provided by the American Community Survey (ACS) 2019 estimates. The ACS is a self-reported survey and may include total sample size differences and statistical margin of error.

Table 4 Village of Dane, Dane County – Disability Characteristics by Detailed Age

Category	Number	Percent
Total of Residents Self-Identified as Disabled	186	100%
With a hearing difficulty	41	22.0%
Population under 18 years	2	
Population 18 to 64 years	19	-
Population 65 years and over	20	-
With a vision difficulty	16	8.6%
Population under 18 years	0	-
Population 18 to 64 years	10	-
Population 65 years and over	6	-
With a cognitive difficulty	34	18.3%
Population under 18 years	4	-
Population 18 to 64 years	21	-
Population 65 years and over	9	-
With an ambulatory difficulty	42	22.6%
Population under 18 years	0	-
Population 18 to 64 years	23	-
Population 65 years and over	19	-
With a self-care difficulty	21	11.3%
Population under 18 years	0	-
Population 18 to 64 years	4	-
Population 65 years and over	17	-
With an independent living difficulty	32	17.2%
Population 18 to 64 years	12	-
Population 18 to 34 years	2	-
Population 65 years and over	20	-

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.1: Village of Dane, Dane County – Federal Income Poverty Levels (FIPL) by Families Summary

Category	Number of Families
50 percent of poverty level	3
125 percent of poverty level	6
150 percent of poverty level	6
185 percent of poverty level	23
200 percent of poverty level	23
300 percent of poverty level	54
400 percent of poverty level	96
500 percent of poverty level	150

Note: Use table 5.2 to interpret table 5.1:

5.1 identifies the *total number of families* (regardless of size) by percentage.

5.2 identifies *family size* in relation to annual family income and the percentage category of the FIPL.

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.2: Village of Dane, Dane County – Annual Federal Income Poverty Level Guide

Family Size	50%	100%	125%	150%	185%	200%	300%	400%	500%
1	\$6,440	\$12,880	\$16,100	\$19,320	\$23,828	\$25,760	\$38,640	\$51,520	\$64,400
2	\$8,710	\$17,420	\$21,775	\$26,130	\$32,227	\$34,840	\$52,260	\$69,680	\$87,100
3	\$10,980	\$21,960	\$27,450	\$32,940	\$40,626	\$43,920	\$65,880	\$87,840	\$109,800
4	\$13,250	\$26,500	\$33,125	\$39,750	\$49,025	\$53,000	\$79,500	\$106,000	\$132,500
5	\$15,520	\$31,040	\$38,800	\$46,560	\$57,424	\$62,080	\$93,120	\$124,160	\$155,200
6	\$17,790	\$35,580	\$44,475	\$53,370	\$65,823	\$71,160	\$106,740	\$142,320	\$177,900

Data Source: dhs.wisconsin.gov

Table 6: Village of Dane, Dane County – Educational Attainment by Household

Category	Number	Percent
Total of Household	283	100%
Less than high school graduate	25	8.8%
High school graduate (includes equivalency)	68	24.0%
Some college, associate's degree	105	37.1%
Bachelor's degree or higher	85	30.0%

Data Source: 2019 ACS Estimates - U.S. Census

Table 7: Village of Dane, Dane County – Household Language & English Speaking Capabilities

Category	Number	Percent
Total of Households	410	100%
English only	373	91.0%
Spanish:	9	2.2%
Limited English speaking household	9	-
Not a limited English speaking household	0	-
Other Indo-European languages:	17	4.1%
Limited English speaking household	3	-
Not a limited English speaking household	14	-
Asian and Pacific Island languages:	11	2.7%
Limited English speaking household	0	-
Not a limited English speaking household	11	-
Other languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-

Data Source: 2019 American Community Survey

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of Dane that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

General Property

Table 8 Property Exposure Summary

Property Type	Parcel Count	Improved Land Count	Improved Land Value (\$)	Content Value (\$)	Total Value (\$)
Total	551	541	80,310,400	40,155,200	120,465,600
Agriculture	22	22	1,893,900	946,950	2,840,850
Industrial	5	5	1,663,500	831,750	2,495,250
Residential	473	473	74,505,000	37,252,500	111,757,500
Transportation	2	2	26,900	13,450	40,350
Utility	7	0	0	0	0
Commercial	23	23	2,052,000	1,026,000	3,078,000
Other	10	10	120,300	60,150	180,450
Institutional/ Governmental	9	6	48,800	24,400	73,200

Data Source: Dane County Land Information Office, December 2021

Critical Facilities

The Village of Dane has identified the critical facilities important to protect from disaster impacts. These are collected in Table 9. Table 9 is based on GIS data inventories from Dane County and information gathered from the Town. No further supplemental data was provided by the community through the Data Collection Guide.

Table 9 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
Electric Substation	EI	1	N/A
Fire Station/Municipal Hall	EI	2	1,500,000
Police Station	EI	1	300,000
Well	EI	1	1,500,000
Well	EI	1	1,500,000
Lift Station	EI	1	850,000
Water Tower	EI	1	2,000,000
School (private)	VF	1	N/A
Dane Manufacturing	HM	1	2,000,000
Vollrath	HM	1	3,500,000
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities			

Data Source: 2021 Village of Dane Data Collection Guide

Other Assets

Other assets help define a community beyond the current composition of the Village of Dane. These assets may provide economic benefit to the community, in addition to preserving the heritage and diversity of the community and may include natural, cultural and historic assets or economic assets such as major employers. It may also include more specific detail on critical facilities. The Village of Dane has not identified any other assets.

VULNERABILITY ASSESSMENT

A hazard identification and vulnerability analysis was completed for the Village of Dane using the same methodology in the County's base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 10 outlines the hazard identification for the Village of Dane based on the Data Collection Guide issued in 2021. The Data Collection Guide listed all of the hazards that could impact Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. Brooklyn's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern." This matrix appears as Table 10. This matrix reflects the significance of the hazards relative to one another as perceived by the Example's planning team.

This matrix reflects that the Village of Dane is most vulnerable to tornadoes, winter storms, and extreme cold. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 10: Vulnerability Assessment Matrix for the Village of Dane

Name of Jurisdiction: <u>Village of Dane</u>										
Hazard	<u>Hazard Attributes</u>			<u>Impact Attributes</u>						Total of Row Values
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
Impact on General Structures				Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards		
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	
Dam/Levee failure	0	0	0	0	0	0	0	0	0	0
Extreme Cold	5	1	1	1	1	1	1	1	1	13
Extreme Heat	5	1	1	0	0	1	1	0	0	9
Drought	3	1	1	0	0	0	1	2	1	9
Expansive soils	1	1	1	0	0	0	0	0	0	3
Flood	1	1	1	0	0	0	0	0	0	3
Fog	1	1	1	0	0	0	0	0	0	3
Hail Storm	1	1	1	0	0	0	0	1	1	5
Landslide	0	0	0	0	0	0	0	0	0	0
Lightning	1	1	1	1	1	0	0	1	1	7
Tornado	1	1	1	2	2	2	2	2	2	15
Wildfire	1	1	1	0	0	0	0	0	0	3
Windstorm	1	1	1	1	1	1	1	1	1	9
Winter Storm	4	2	1	1	1	1	1	1	2	14

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of Dane. Table 11 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 11 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	None	None	None	Specifics unknown; See hazard profile in County Plan
Drought	None	None	None	Specifics unknown; See hazard profile in County Plan
Flooding	See Tables 13-14 below			
Fog	None	None	None	Specifics unknown; See hazard profile in County Plan
Hailstorm	None	None	None	Specifics unknown; See hazard profile in County Plan
Landslide/ Sinkholes/ Erosion	None	None	None	Specifics unknown; See hazard profile in County Plan
Lightning	None	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Cold	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Heat	Minimal	None	None	Specifics unknown; See hazard profile in County Plan
Winter Storm	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 15 below			
Wildfire	None	None	None	Specifics unknown; See hazard profile in County Plan
Windstorm	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan

Data Source: 2021 Village of Dane Data Collection Guide – Prepared by DCEM

Previous Hazard Events

Through the Data Collection Guide, the Village of Dane noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the main mitigation plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The events noted by this jurisdiction in the Data Collection Guide can be found in Table 12.

Table 12 Village of Dane Historic Natural Hazards

Natural Hazard	Date	Impacted Structures	Comprehensive Harm to Jurisdiction	Other reported Losses (Fiscal reports, programs, etc.)	Comments
Flood	07/05/1993	Multiple Impacted Structures	Flood waters caused closed roads and businesses. Lift station damage. No cost documented.	Loss was substantial enough for Village to receive FEMA funds, in the amount of \$2,289.	Actions have been taken to minimize the impact of heavy rain events in this area.
Flood	08/18/2007	Multiple Impacted Structures	Sewer backups, and flooding to basements totaling \$43,500.	N/A	Actions have been taken to minimize the impact of heavy rain events in this area.

Data Source: 2021 Village of Dane Data Collection Guide

Flood Hazard

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 13 and 14 outline the primary structures on them within the Village of Dane, Dane County. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County (2.37 people as of 2021). Estimated loss potentials for all structures on the floodway can be found within section 4.6 in chapter 4 of the county plan.

Table 13 Primary Structures in the 100 Year Floodplain

Residential Structures in 100 yr. Floodway	Non-Residential Structures in 100 yr. Floodplain	Total Structures in 100 yr. Floodplain	Potential # of People at Risk in 100 yr. Floodplain	Total Assessed Values (\$) of Structures in 100 yr. Floodplain
0	0	0	0	\$0

Source: Analysis based on Dane County Land Information Office Data

Table 14 Primary Structures in the 500 Year Floodplain

Residential Structures in 500 yr. Floodway	Non-Residential Structures in 500 yr. Floodplain	Total Structures in 500 yr. Floodplain	Potential # of People at Risk in 500 yr. Floodplain	Total Improved Values (\$) of Structures in 500 yr. Floodplain
0	0	0	0	\$0

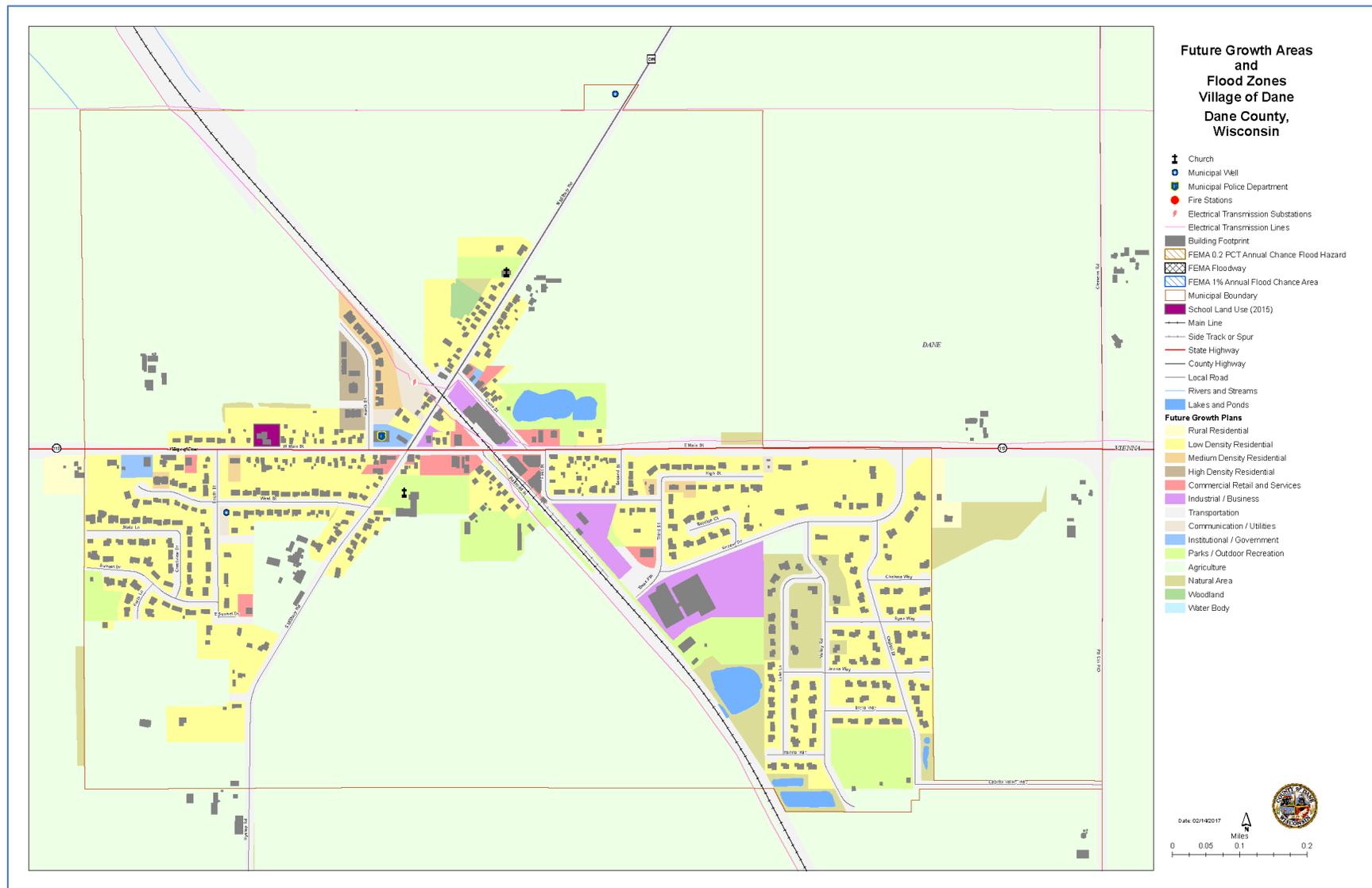
Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Policies

- Repetitive loss properties have not been reported in the Village of Dane, Dane County.
- There are 0 flood insurance policies in force within Village of Dane, Dane County.

The Village of Dane does not participate in the National Flood Insurance Program because they do not have areas vulnerable to surface flooding.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2023 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 15 Tornado Loss Estimate

% Area impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value (\$)	Estimated Loss \$ (High Damage Range)	Estimated Loss \$ (Moderate Damage Range)	Estimated Loss \$ (Low Damage Range)	Loss Ratio for Moderate Damage Range
73.10%	541	395	120,465,600	88,065,661	44,032,830	22,016,415	37%

Data Source: Analysis Based on Dane County Land Information Office's data

Problems or Additional Vulnerability Issues

The Village of Dane identified the following additional vulnerabilities in the 2021 Data Collection Guide:

- **Changes since 2018 DC NHMP Update**
 - Measures have been taken to divert storm water away from Village center to mitigate vulnerability.

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of Dane.

Mitigation Capabilities Summary

Table 16 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of Dane.

Table 16 Village of Dane Regulatory Mitigation Capabilities

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Existing Natural Hazard Mitigation Plan	Yes	October 2009
General or Comprehensive plan	Yes	https://villageofdane.org/
Zoning ordinance	Yes	https://villageofdane.org/
Subdivision ordinance	Yes	https://villageofdane.org/
Growth management ordinance	Yes	https://villageofdane.org/
Shoreland / wetland zoning ordinance	Yes	https://villageofdane.org/
Floodplain zoning ordinance	Yes	https://villageofdane.org/
FEMA / NFIP Community Rating System	No	N/A
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	https://villageofdane.org/
Building code	Yes	https://villageofdane.org/
Fire department ISO rating	Yes	5
Climate change Impact program	No	N/A
Erosion or sediment control program	Yes	https://villageofdane.org/
Stormwater management program	Yes	https://villageofdane.org/
Site plan review requirements	Yes	https://villageofdane.org/
Capital improvements plan	Yes	https://villageofdane.org/
Economic development plan	Yes	https://villageofdane.org/
Local emergency operations plan	Yes	https://villageofdane.org/
Other special plans	No	N/A
Flood insurance study or other engineering study for streams	No	N/A
Elevation certificates (for floodplain development)	No	N/A
Climate Action Plan	No	N/A

Data Source: Village of Dane Data Collection Guide, 2021

Table 17 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of Dane.

Table 17 Responsible Personnel and Departments for the Village of Dane

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Engineer	MSA
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Engineer	MSA
Planner/engineer/scientist with an understanding of natural hazards	Yes	Engineer	MSA
Personnel skilled in GIS	Yes	Public Works Operator	Assistance from MSA
Full time building official	No	Dedicated Building Inspector	GEC
Personnel skilled in Climate resilience	No	N/A	N/A
Floodplain manager	No	N/A	N/A
Emergency manager	Yes	Public Works Operator	Assistance from Fire Chief
Real estate acquisition personnel	Yes	Village Board	N/A
Grant writer	No	N/A	N/A
Other personnel	Yes	Public Works Director, Public Works Operator, Clerk/Treasurer	N/A
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Public Works Operator	Assistance from MSA
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Siren	N/A

Data Source: Village of Dane Data Collection Guide 2021

Table 18 identifies financial tools or resources that the Village of Dane could potentially use to help fund mitigation activities.

Table 18 Financial Resources for the Village of Dane

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes

Dedicated funding for land, easement or conservation easement acquisition	No
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activities	No
Withhold Spending in hazard prone areas	No

Data Source: Village of Dane Data Collection Guide

Additional Capabilities

The Village of Dane identified the following as past or ongoing public education or information programs:

- Monthly newsletter mailed to all water utility customers touching on various responsible water use practices and educational tips for conservation of natural resources as well as village systems. Fire Department conducts fire safety education at the fire station, local school, and throughout the community.
- Generator installed at lift station in 2020 to minimize the risk of sewage related losses in the event of a power outage. New pump installed at retention pond to aid in maintaining water level suitable for receiving influent storm water.

National Flood Insurance Program Participation

The Village of Dane does not currently participate in the National Flood Insurance Program. The Village does not participate because it is not prone to surface flooding.

Public Involvement Activities

The Village of Dane provided a publically noticed listening session with the Village of Dane Board of Trustees on November 1, 2021. It was noticed on the village website. The listening session provided an agenda in order to discuss the draft mitigation strategies. No changes were made to the initial draft mitigation strategies.

MITIGATION STRATEGIES

Below are the identified mitigation strategies developed by the Village of Dane’ NHMP steering committee. Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects. A *mitigation strategy* is a long-term vision for risk reduction in local jurisdictional or regional planning. A mitigation strategy can be achieved by a list of overall improvements to achieve (goals) that provide direction for community efforts to reduce potential losses identified in the risk assessment.

Strategy #1	Storm Water System Awareness	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
Through education and awareness, we will provide understanding of our storm water system and with the support of our residents remove or mitigate flooding along the 100 block of East Main St. This will remove or mitigate reduced travel along East Main St during heavy rain/melt events.		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Develop educational materials <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Municipal PW b. <i>Funding source</i> – Municipal budget c. <i>Completion date</i> – December 31, 2021 		
<ol style="list-style-type: none"> 2. Distribute educational materials <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Municipal Clerk b. <i>Funding source</i> – Municipal budget c. <i>Completion date</i> – January 31, 2022 		

Strategy #1	Storm Water System Awareness
<p>3. Follow up with residents regarding materials received</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Municipal Clerk b. <i>Funding source</i> – Municipal budget c. <i>Completion date</i> – February 14, 2022 	
<p>4. Assess performance</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Municipal PW b. <i>Funding source</i> – Municipal budget c. <i>Completion date</i> – March 1, 2022 	
<p>5. Continuing education</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Municipal PW/Clerk b. <i>Funding source</i> – Municipal budget c. <i>Completion date</i> – Ongoing 	



Dane County Natural Hazard Mitigation Plan

Village of DeForest Annex

Summer 2022

Village of DeForest Annex

This annex is a part of the Dane County Natural Hazard Mitigation Plan (DCNHMP). The DCNHMP contains additional information to support the Federal Emergency Management Agency's (FEMA) recognition of the plan (including this annex) as the formal natural hazard mitigation plan for the county and participating local governments. This annex will be valid for as long as FEMA approves the DCNHMP. The strategies adopted in this annex are designed to guide community efforts to reduce risks from natural hazards. These strategies work in conjunction with neighboring communities and Dane County government to reduce risks from natural hazards.

COMMUNITY PROFILE

The Village of DeForest is approximately 10 miles north of the State Capitol in the City of Madison. The Town of Vienna to the west, the Town of Burke to the south and the Village of Windsor to the east and north surround it. Land use within the Village is dominated by residential neighborhoods, areas developed for commercial and industrial uses, and an extensive environmental corridor network particularly along the Yahara River. According to the United States Census Bureau, the Village of DeForest has a total area of 7.42 square miles. As of 2020, it is estimated that the Village of DeForest has 3,833 households with an average household size of 2.66 people.

The municipal population data provided by the American Community Survey, a product of the US Census Bureau, indicates that the 2019 population estimates for Village of DeForest, Dane County, is comprised of 10,179 people. Table 1 shows the population profile by age for the village.

Table 1 Population Profile of Village of DeForest, Dane County

Category	Number	Percent
Total Population	10,179	100%
Under 5 years	818	8.0%
5 to 9 years	728	7.2%
10 to 14 years	679	6.7%
15 to 19 years	771	7.6%
20 to 24 years	467	4.6%
25 to 29 years	607	6.0%
30 to 34 years	705	6.9%
35 to 39 years	915	9.0%
40 to 44 years	670	6.6%
45 to 49 years	749	7.4%
50 to 54 years	743	7.3%
55 to 59 years	594	5.8%
60 to 64 years	674	6.6%
65 to 69 years	299	2.9%
70 to 74 years	314	3.1%
75 to 79 years	185	1.8%
80 to 84 years	138	1.4%
85 years and over	123	1.2%

Data Source: 2019 ACS Estimates - U.S. Census

Growth & Development Trends

Table 2-3 illustrates how the entire Village of DeForest has grown in terms of population and number of households between 2010 and 2020. Housing data is to 2020 due to data availability. Table 2-3 is drawn from the Demographics Services Center at the Wisconsin Department of Administration, and shows population projections through 2040.

Table 2 Village of DeForest Change in Population and Households, 2010-2020

2010 Population	2020 Population	Percent Change (%) 2010-2020	2010 # of Households	2020 # of Households	Percent Change (%) 2010-2020
8,936	10,835	21.25%	3,400	3,833	13.32%

Data Source: Demographic Services Center, Wisconsin Department of Administration

Table 3 Village of DeForest Population Projections, 2020-2040

Population Projection	2020	2025	2030	2035	2040
Increase by half of percent of change (11.36%/2) every 5 years	10,835	11,985	13,257	14,664	16,221

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Population Summary

Tables 4-7 illustrates key population demographics within the Village of DeForest. Key demographics include: (1) Disability Characteristics, (2) Federal Income Poverty Levels, (3) Educational Attainment, and (4) Household Language with English Speaking Capabilities. Due to data availability, all key demographic information has been provided by the American Community Survey (ACS) 2019 estimates. The ACS is a self-reported survey and may include total sample size differences and statistical margin of error.

Table 4 Village of DeForest, Dane County – Disability Characteristics by Detailed Age

Category	Number	Percent
Total of Residents Self-Identified as Disabled	1,587	100%
With a hearing difficulty	340	21.4%
Population under 18 years	26	-
Population 18 to 64 years	219	-
Population 65 years and over	95	-
With a vision difficulty	80	5.0%
Population under 18 years	10	-
Population 18 to 64 years	23	-
Population 65 years and over	47	-
With a cognitive difficulty	274	17.3%
Population under 18 years	42	-
Population 18 to 64 years	188	-
Population 65 years and over	44	-
With an ambulatory difficulty	372	23.4%
Population under 18 years	0	-
Population 18 to 64 years	205	-
Population 65 years and over	167	-
With a self-care difficulty	203	12.8%
Population under 18 years	0	-
Population 18 to 64 years	110	-
Population 65 years and over	93	-
With an independent living difficulty	318	20.0%
Population 18 to 64 years	220	-
Population 18 to 34 years	91	-
Population 65 years and over	98	-

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.1: Village of DeForest, Dane County – Federal Income Poverty Levels (FIPL) by Families Summary

Category	Number of Families
50 percent of poverty level	38
125 percent of poverty level	207
150 percent of poverty level	274
185 percent of poverty level	366
200 percent of poverty level	387
300 percent of poverty level	617
400 percent of poverty level	975
500 percent of poverty level	1,446

Data Source: 2019 ACS Estimates - U.S. Census

Note: Use table 5.2 to interpret table 5.1:

5.1 identifies the *total number of families* (regardless of size) by percentage.

5.2 identifies *family size* in relation to annual family income and the percentage category of the FIPL.

Table 5.2: Village of DeForest, Dane County – Annual Federal Income Poverty Level Guide

Family Size	50%	100%	125%	150%	185%	200%	300%	400%	500%
1	\$6,440	\$12,880	\$16,100	\$19,320	\$23,828	\$25,760	\$38,640	\$51,520	\$64,400
2	\$8,710	\$17,420	\$21,775	\$26,130	\$32,227	\$34,840	\$52,260	\$69,680	\$87,100
3	\$10,980	\$21,960	\$27,450	\$32,940	\$40,626	\$43,920	\$65,880	\$87,840	\$109,800
4	\$13,250	\$26,500	\$33,125	\$39,750	\$49,025	\$53,000	\$79,500	\$106,000	\$132,500
5	\$15,520	\$31,040	\$38,800	\$46,560	\$57,424	\$62,080	\$93,120	\$124,160	\$155,200
6	\$17,790	\$35,580	\$44,475	\$53,370	\$65,823	\$71,160	\$106,740	\$142,320	\$177,900

Data Source: dhs.wisconsin.gov

Table 6: Village of DeForest, Dane County – Educational Attainment by Householders

Category	Number	Percent
Total of Householders	2,750	100%
Less than high school graduate	64	2.3%
High school graduate (includes equivalency)	523	19.0%
Some college, associate's degree	1,010	36.7%
Bachelor's degree or higher	1,153	41.9%

Data Source: 2019 ACS Estimates - U.S. Census

Table 7: Village of DeForest, Dane County – Household Language & English Speaking Capabilities

Category	Number	Percent
Total of Households	3,833	100%
English only	3,676	95.9%
Spanish:	51	1.3%
Limited English speaking household	0	-
Not a limited English speaking household	51	-
Other Indo-European languages:	81	2.1%
Limited English speaking household	0	-
Not a limited English speaking household	81	-
Asian and Pacific Island languages:	25	0.7%
Limited English speaking household	0	-
Not a limited English speaking household	25	-
Other languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-

Data Source: 2019 American Community Survey

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of DeForest that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

General Property

Table 8 Property Exposure Summary

Property Type	Parcel Count	Improved Land Count	Improved Land Value (\$)	Content Value (\$)	Total Value (\$)
Total	3577	3548	1191923400	595961700	1787885100
Agriculture	86	86	77869100	38934550	116803650
Industrial	84	84	194486100	97243050	291729150
Residential	3211	3211	755242200	377621100	1132863300
Transportation	4	4	879000	439500	1318500
Utility	13			0	0
Commercial	125	125	161065200	80532600	241597800
Other	29	22	1002500	501250	1503750
Institutional/ Governmental	25	16	1379300	689650	2068950

Data Source: Dane County Land Information Office, December 2021

Critical Facilities

The Village of DeForest has identified the critical facilities important to protect from disaster impacts. These are collected in Table 9. Table 9 is based on GIS data inventories from Dane County and information gathered from the Town. No further supplemental data was provided by the community through the Data Collection Guide.

Table 9 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
Public Schools	VF	N/A	\$128,203,872
Public Safety Building housing fire, EMS, Police, Courts, Probation & Parole and Human Services	EI	4	\$5,940,759
Residential Parcels (improved)	VF	N/A	\$684,994,100
Commercial and Manufacturing Parcels (improved)	VF, HM	N/A	\$363,807,200
Communication Towers	EI	N/A	\$200,000
Electrical Generation Distribution	EI	1	Unknown
Village Hall/Municipal Building	EI, VF	1	\$2,651,261
Public Works Buildings (x2)	EI, VF	2	\$3,656,477
Water Utilities	EI	1	\$839,675
Sewer Utilities	EI	1	\$218,381
Child Care Centers	VF	N/A	\$1,703,100
Community Based Residential Facilities (CBRF) and Special Needs Housing	VF	N/A	\$29,402,500
Public Library	VF	1	\$6,212,613
Senior Center	VF	1	\$3,166,800
Medical Clinics	VF	N/A	\$11,206,700
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities			

Data Source: 2021 Village of DeForest Data Collection Guide

Other Assets

Other assets help define a community beyond the current composition of the Village of DeForest. These assets may provide economic benefit to the community, in addition to preserving the heritage and diversity of the community and may include natural, cultural and historic assets or economic assets such as major employers. It may also include more specific detail on critical facilities. The Village of DeForest has not identified any other assets.

VULNERABILITY ASSESSMENT

A hazard identification and vulnerability analysis was completed for the Village of DeForest using the same methodology in the County's base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 10 outlines the hazard identification for the Village of DeForest based on the Data Collection Guide issued in 2021. The Data Collection Guide listed all of the hazards that could impact Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. Brooklyn's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern." This matrix appears as Table 10. This matrix reflects the significance of the hazards relative to one another as perceived by the Example's planning team.

This matrix reflects that the Village of DeForest is most vulnerable to tornadoes, floods, and winter storms. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 10: Vulnerability Assessment Matrix for the Village of DeForest

Name of Jurisdiction: <u>Village of DeForest</u>										
Hazard	Hazard Attributes			Impact Attributes						Total of Row Values
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
Impact on General Structures				Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards		
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	
Dam/Levee failure	1	1	1	0	0	0	0	0	0	3
Extreme Cold	4	2	3	1	2	2	2	1	0	17
Extreme Heat	4	3	3	2	2	3	3	1	1	22
Drought	4	2	3	1	2	2	1	3	1	19
Expansive soils	1	1	1	3	1	1	1	2	0	11
Flood	3	4	3	2	1	2	3	3	2	23
Fog	3	3	3	0	2	1	3	0	1	16
Hail Storm	2	3	2	1	1	1	1	2	1	14
Landslide	1	2	2	0	0	0	0	0	0	5
Lightning	1	2	3	1	1	1	1	1	0	11
Tornado	3	2	4	2	2	3	3	2	2	23
Wildfire	1	1	1	0	0	0	0	0	0	3
Windstorm	2	2	2	1	2	1	1	1	1	13
Winter Storm	4	4	3	1	2	3	2	2	1	22

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of DeForest. Table 11 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 11 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	None	None	None	Specifics unknown; See hazard profile in County Plan
Drought	Moderate	Minimal	Moderate	Specifics unknown; See hazard profile in County Plan
Flooding	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below
Fog	Minimal	None	Moderate	Specifics unknown; See hazard profile in County Plan
Hailstorm	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Landslide/ Sinkholes/ Erosion	None	None	None	Specifics unknown; See hazard profile in County Plan
Lightning	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Cold	Moderate	Minimal	Moderate	Specifics unknown; See hazard profile in County Plan
Severe Heat	See Tables 4-7 Populations	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Winter Storm	See Tables 4-7 Populations	Minimal	Moderate	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 15 below	See Table 15 below	See Table 15 below	See Table 15 below
Wildfire	None	None	None	Specifics unknown; See hazard profile in County Plan
Windstorm	Minimal	Minimal	Moderate	Specifics unknown; See hazard profile in County Plan

Data Source: 2021 Village of DeForest Data Collection Guide – Prepared by DCEM

Previous Hazard Events

Through the Data Collection Guide, the Village of DeForest noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the main mitigation plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The events noted by this jurisdiction in the Data Collection Guide can be found in Table 12.

Table 12 Village of DeForest Historic Natural Hazards

Natural Hazard	Date	Impacted Structures	Comprehensive Harm to Jurisdiction	Other reported Losses (Fiscal reports, programs, etc.)	Comments
Flood	03/15-17/2019	Multiple Impacted Structures	A dozen or more homes had to be evacuated due to flooding. Dozens of other homes had water in basements. Road closures, traffic diversions, and undeveloped land damage ensued.	Loss was substantial enough for Village to receive FEMA funds, in the amount of \$2,289.	Planned mixed use development of the Karow property has been delayed in part to understand water storage and conveyance needs.

Data Source: 2021 Village of DeForest Data Collection Guide

Flood Hazard

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 13 and 14 outline the primary structures on them within the Village of DeForest, Dane County. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County (2.37 people as of 2021). Estimated loss potentials for all structures on the floodway can be found within section 4.6 in chapter 4 of the county plan.

Table 13 Primary Structures in the 100 Year Floodplain

Residential Structures in 100 yr. Floodway	Non-Residential Structures in 100 yr. Floodplain	Total Structures in 100 yr. Floodplain	Potential # of People at Risk in 100 yr. Floodplain	Total Assessed Values (\$) of Structures in 100 yr. Floodplain
5	0	5	12	\$574,932

Source: Analysis based on Dane County Land Information Office Data

Table 14 Primary Structures in the 500 Year Floodplain

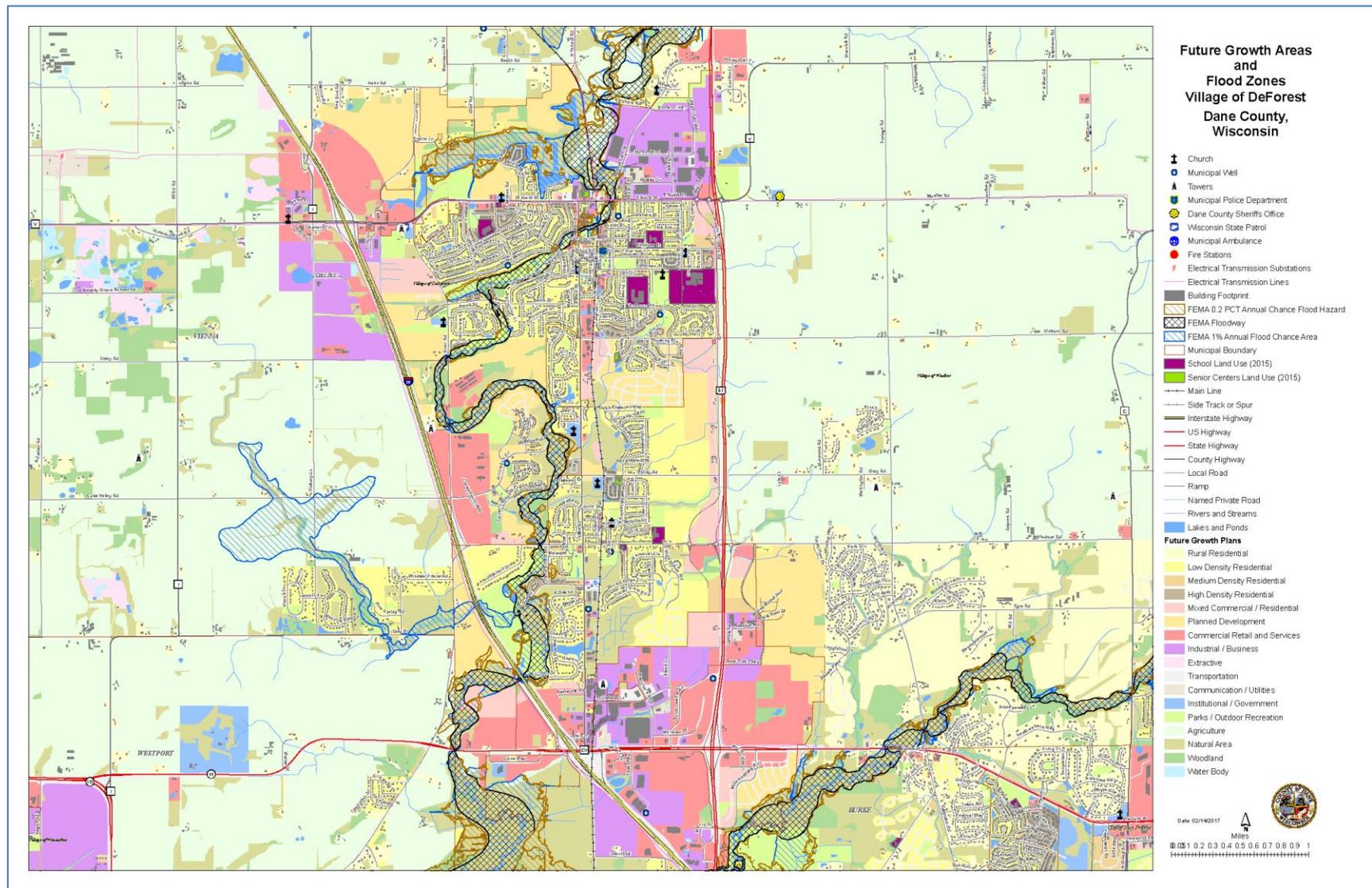
Residential Structures in 500 yr. Floodway	Non-Residential Structures in 500 yr. Floodplain	Total Structures in 500 yr. Floodplain	Potential # of People at Risk in 500 yr. Floodplain	Total Improved Values (\$) of Structures in 500 yr. Floodplain
13	3	16	31	\$418,858

Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Policies

- One repetitive loss property has been reported in Village of DeForest, Dane County.
- There are 18 flood insurance policies in force within the Village of DeForest, Dane County, with a total coverage of \$6,468,900.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2023 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 15 Tornado Loss Estimate

% Area impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value (\$)	Estimated Loss \$ (High Damage Range)	Estimated Loss \$ (Moderate Damage Range)	Estimated Loss \$ (Low Damage Range)	Loss Ratio for Moderate Damage Range
11.17%	3,548	396	1,787,885,100	199,766,890	99,883,445	49,941,722	6%

Data Source: Analysis Based on Dane County Land Information Office’s data

Problems or Additional Vulnerability Issues

The Village of DeForest identified the following additional vulnerabilities in the 2021 Data Collection Guide:

- **Average Depth of 100 Year Floodplain**
 - North DeForest (Northern Corridor Park) - 932.9 feet
 - Northwest DeForest (Western Green Area Park) – 927.2 feet
 - Central DeForest (Conservancy Place) – 884.3 feet
 - South Central DeForest (Sunfish Pond) – 875.1 feet
 - Southwest DeForest (west of Fleet Farm) – 862.6 feet
 - Southeast DeForest (Token Creek Wildlife Area) – 865.3 feet
- **Hazard Concerns:**
 - Village housing/community development authority operates a 42-unit affordable rental housing facility at 509 North Main Street. Residents are primarily elderly and some have mobility challenges. Facility is located relatively close to the Yahara River at the north dead-end of Main Street, making it relatively vulnerable to hazards.
 - DeForest Elderly Housing located at 829 Southbound Drive is a HUD affordable rental housing facility composed of 61 apartments for elderly residents. The facility is located relatively close to a large retention pond, which drains excess water from a significant amount of land nearby. The retention pond has never flooded, but is located less than 50 feet from the building.
- **Growth Trends**
 - Residential development has been attracted to natural areas in and near the Village, such as the Upper Yahara River and Token Creek corridors. New development proposals in this area have been subject to careful environmental review, stormwater management design, and development design standards (e.g., lowest building opening

2+ feet above base flood elevations, 2+ ways in and out of development) to minimize potential for flooding and other natural hazards affecting new homes and infrastructure.

- Village has attempted to work with owner of property on northeast side of Village that experienced flooding in March 2019 (Karow) to make sure that sufficient flood storage and water conveyance provided on that property with any new development there. Karow property has been identified as a possible location for affordable senior and/or workforce housing in the future, with without proper planning and mitigation could increase vulnerable populations near a flood prone area. Size of Karow property almost certainly allows for proper flood mitigation in some locations and open space in more flood prone areas.
- **Changes since 2018 DC NHMP Update**
 - After the polar vortex in the winter of 2014, during which many Village residents experienced frozen water lines, the Village purchased a line thawer to thaw frozen laterals. This purchase will minimize impacts to residents when another similar period of extreme cold weather happens again.
 - After the flooding experienced in March 2019:
 - Drainage was improved behind the 500 block of Holum Street by installing a larger storm sewer pipe in residential backyards.
 - The Village bought 750 feet of Aqua Dam which can be quickly deployed to protect homes and public facilities during flooding.
 - Adjacent to the High School, the Village spent \$25,000 to excavate the ditch line along Renata Court from N. Towne Road to Jefferson Street to improve drainage during times of excess water flow.

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of DeForest.

Mitigation Capabilities Summary

Table 16 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of DeForest.

Table 16 Village of DeForest Regulatory Mitigation Capabilities

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Existing Natural Hazard Mitigation Plan	Yes	N/A
General or Comprehensive plan	Yes	Village of DeForest Comprehensive Plan last updated in 2015 and available at https://www.vi.deforest.wi.us/index.asp?Type=B_BASIC&SEC=%7BF8D439BC-F444-432A-992F-D714CE3556C0%7D . Another update expected by 2022.
Zoning ordinance	Yes	Available online at https://www.vi.deforest.wi.us/ordinances . Amended from time-to-time as needed. Update in progress.
Subdivision ordinance	Yes	Available online at https://www.vi.deforest.wi.us/ordinances . Amended from time-to-time as needed.
Growth management ordinance	No	No, but Village Comprehensive Plan includes growth phasing policy for new development areas.
Shoreland/wetland zoning ordinance	Yes	Updated in March 2021 and available online at https://www.vi.deforest.wi.us/ordinances
Floodplain zoning ordinance	Yes	Updated in September 2014 and available online at https://www.vi.deforest.wi.us/ordinances
FEMA / NFIP Community Rating System	No	N/A
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Snow and Ice Control Policy and Procedures and Erosion Control and Storm Water Management Ordinances available online at https://www.vi.deforest.wi.us/ordinances
Building code	Yes	Updated in January 2014 and available online at https://www.vi.deforest.wi.us/ordinances
Fire department ISO rating	Yes	The DeForest Windsor Fire and EMS Department has an ISO Class 4 Rating
Climate change Impact program	No	N/A
Erosion or sediment control program	Yes	Erosion Control and Storm Water Management Ordinances available online at https://www.vi.deforest.wi.us/ordinances
Stormwater management	Yes	N/A

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
program		
Site plan review requirements	Yes	Through zoning ordinance, all non-residential and multiple-family residential development is subject to site plan approval by Village.
Capital improvements plan	Yes	The Village has a Capital Improvements Plan which can be accessed through the Director of Public Services – Judd Blau (blauj@vi.deforest.wi.us).
Economic development plan	Yes	Comprehensive Plan has an Economic Development chapter, with draft update completed in 2021. Scheduled for adoption by 2022.
Local emergency operations plan	Yes	DeForest has an Emergency Operations Center Plan, prepared in 2014 and revised in 2016. A copy of this Plan can be obtained by Police Chief James Olson at olsonj@vi.deforest.wi.us .
Other special plans	Yes	Parks and Open Space Plan, 2019 available online at https://www.vi.deforest.wi.us/vertical/sites/%7B5DDB5418-8268-440C-BD18-45CB7768531A%7D/uploads/POSP_-_2020-2024_Plan.pdf
Flood insurance study or other engineering study for streams	No	No special flood studies have been performed for the Yahara River or other waterways in the Village.
Elevation certificates (for floodplain development)	No	No development authorized in floodplain.
Climate Action Plan	No	N/A

Data Source: Village of DeForest Data Collection Guide, 2021

Table 17 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of DeForest.

Table 17 Responsible Personnel and Departments for the Village of DeForest

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Public Services Director, Zoning Administrator, Village Engineer, Village Planner	Outside consultants used extensively in both planning and engineering
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Village Engineer, Public Services Project Coordinator (PSPC)	Village Engineer is a hired consultant and PE; PSPC is Village staff person
Planner/engineer/scientist with an understanding of natural hazards	Yes	Public Services Director, Consultants	Consulting Village Planner has natural hazard planning experience
Personnel skilled in GIS	Yes	Consultants	Village has on-line interactive GIS
Full time building official	Yes	Zoning Administrator, Consulting Building Inspector	Together, positions are full-time as it relates to building
Personnel skilled in climate resilience	No	N/A	N/A

Floodplain manager	Yes	Zoning Administrator	
Emergency manager	Yes	Police Chief	Police Chief is designated as Emergency Management Director by ordinance
Real estate acquisition personnel	No	Village Administrator manages function	N/A
Grant writer	No	Community Development Director manages	N/A
Other personnel			N/A
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Consulting Engineer and GIS Professionals	N/A
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Police Department/Chief	Have sirens
Other: Emergency Preparedness Commission	Yes	Police Department	Comprised of village officials and citizen member

Data Source: Village of DeForest Data Collection Guide 2021

Table 18 identifies financial tools or resources that the Village of DeForest could potentially use to help fund mitigation activities.

Table 18 Financial Resources for the Village of DeForest

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Dedicated funding for land, easement or conservation easement acquisition	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activities	Yes
Withhold Spending in hazard prone areas	No

Data Source: Village of DeForest Data Collection Guide

Additional Capabilities

The Village of DeForest identified the following as past or ongoing public education or information programs:

- The Fire Department participates in Fire Prevention Week Education to schools and other education activities throughout the year.
- The Fire Department works with schools for practicing emergency drills.
- Public Services Department engages in wintertime education, such as distributing information fliers during the severe cold events.
- The Village uses census meters to monitor water usage through the community. If there are users experiencing higher-than-average water use, the Village calls these users to inform them that they may have a leak.
- The Village routinely informs residents about environmental best practices by use of social media (i.e., Facebook). This includes posts about best practices for washing vehicles, watering lawns, and information about Clean Sweep and the appropriate disposal of hazardous chemicals and medications.
- Village spent \$25,000 excavate the ditch line along Renata Court from N. Towne Road to Jefferson Street to improve drainage during times of excess water flow.
- Initiated flood control effort near Lexington Parkway to address basement flooding.
- Improvements to the South Street drainage way.
- Purchased two-way radios aiding in emergency communications.
- Purchased four new firetrucks.
- Created a new Emergency Action Plan (EAP) with the Village of Windsor, including setting up an Emergency Operations Center (EOC) which helps DeForest by giving a second EOC location.
- Added repeater for public services communication.
- Emergency Management Plan for future disasters (most recently updated in 2016).

National Flood Insurance Program Participation

The Village of DeForest currently participates in the National Flood Insurance Program.

Public Involvement Activities

The Village of DeForest provided a publically noticed listening session with the Village of DeForest Board on December 7, 2021. It was noticed on the village website, and held remotely. The listening session provided an agenda in order to discuss the draft mitigation strategies. No changes were made to the initial draft mitigation strategies.

MITIGATION STRATEGIES

Below are the identified mitigation strategies developed by the Village of DeForest’ NHMP steering committee. Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects. A *mitigation strategy* is a long-term vision for risk reduction in local jurisdictional or regional planning. A mitigation strategy can be achieved by a list of overall improvements to achieve (goals) that provide direction for community efforts to reduce potential losses identified in the risk assessment.

Strategy #1	General Action Steps to Address Localized Flooding
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
<p>Implementing the strategies below will help protect residents and their property from localized flooding in the Village. These strategies are based on suggestion from a community survey conducted in October 2021 to gather resident input on prioritizing and assessing natural hazards in the Village of DeForest.</p>	
Defined steps to achieving this mitigation strategy	
<ol style="list-style-type: none"> 1. Train snowplow drivers to plow storm sewer drains clear. <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Public Services Department b. <i>Funding source</i> – Village operational funding c. <i>Completion date</i> – ongoing, every year during and after storm events and periods of melting 	
<ol style="list-style-type: none"> 2. Implement a public educational campaign through social media, posters at Village Hall and local schools, and other methods to inform the public about clearing storm sewer drains of snow, ice, leaves, and other debris. <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Public Services Department, Community Ambassador b. <i>Funding source</i> – Village operational funding c. <i>Completion date</i> – ongoing, every year and after storm events and periods of melting 	

Strategy #1	General Action Steps to Address Localized Flooding
	<p>3. Connect with non-profit organizations or groups (such as local Scouts’ troops) to help clear storm sewer drains as an act of community service.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Public Services Department, Community Ambassador b. <i>Funding source</i> – N/A c. <i>Completion date</i> – ongoing, every year and after storm events and periods of melting
	<p>4. Implement green infrastructure, such as bio-retention areas and rain gardens, where possible in already developed areas of the Village to maximize stormwater infiltration.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Public Services Department, Planning and Zoning b. <i>Funding source</i> – Hazard mitigation or other grants and/or the Village’s Stormwater Utility Fund, in conjunction with street or other public works or park projects, or by private entities in conjunction with (re)development proposals c. <i>Completion date</i> – as opportunities present themselves

Strategy #2	Mitigate flooding along Scott Drive, N. Halsor Street, E. Holum Street, Dahl Park, Karow property	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>Implementing the strategies below will ensure the health and property of Village residents along Scott Drive, N. Halsor Street, and E. Holum Street. The strategies below will also ensure consistent public access and use of Dahl Park, which is the only public park accessible within 1/2 mile from portions of the Sunrise Estates and Timber Hill Meadows neighborhoods. Finally, these improvements will allow the Karow property, along the North Towne Road corridor to the east, to be developed in a manner that minimizes flood risk. The Karow property is already served by Village infrastructure and is in an appropriate location to help meet area workforce and/or senior housing needs.</p>		
Defined steps to achieving this mitigation strategy		
<p>1. Continue to survey Dahl Park ponds every 10 years to ensure adequate water retention capacity.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Public Services Department b. <i>Funding source</i> – Village of DeForest Stormwater Utility Fund a. <i>Completion date</i> – by 2028 		
<p>2. Continue to survey channels, swales, and grates around the area to ensure there are no blockages from trees, ice, or other debris.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Public Services Department b. <i>Funding source</i> – Village of DeForest Stormwater Utility Fund b. <i>Completion date</i> – ongoing (see also general flood mitigation strategy above) 		
<p>3. Raise curb elevation at the E. Holum Street and Cleveland Avenue intersection when street is reconstructed.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Public Services Department b. <i>Funding source</i> – Village of DeForest Stormwater Utility Fund d. <i>Completion date</i> – ~2031 		

Strategy #2	Mitigate flooding along Scott Drive, N. Halsor Street, E. Holum Street, Dahl Park, Karow property
	<p>4. Deepen infiltration basin north of Linde Fields, east of Highway 51 (Yankee Detention Basin).</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Public Services Department b. <i>Funding source</i> – Village of DeForest Stormwater Utility Fund d. <i>Completion date</i> – uncertain
	<p>5. Ensure there is adequate design and capacity in new stormwater basins to retain and infiltrate water from planned development on Karow land plus, to the extent practical, from lands to the northeast across Highway 51, both to minimize flood risk on the remainder of the Karow property and on lands downstream.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Planning & Zoning, Village Engineer b. <i>Funding source</i> – potentially hazard mitigation funds and Village match (possibly through its Stormwater Utility Fund or even park land impact fee fund) to support developer contributions to or construction of stormwater management facilities c. <i>Completion date</i> – prior to or when the Karow property develops. At time of writing, Karow property is the subject of a Village redevelopment planning effort, which may yield a desired direction for stormwater management.

Strategy #3	Mitigate flooding in and near Liberty Land Park	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>Implementing the strategy below will ensure the health and property of Village residents near Liberty Land Park and will also ensure consistent public access and use of Liberty Land Park, which is the largest public park in and around the Liberty Land, High Field Terraces, High Field Terraces West, and Antique Acres residential subdivisions.</p>		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Continue to survey channels, swales, and grates in and around Liberty Land Park to ensure there are no blockages from trees, ice, or other debris and keep water free flowing. <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Public Services Department b. <i>Funding source</i> – Village of DeForest Stormwater Utility Fund c. <i>Completion date</i> – ongoing (see also general flood mitigation strategy above) 		

Strategy #4	Mitigate flooding near Shooting Star Circle	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>Implementing the strategies below will protect from flooding residents and their property on Shooting Star Circle, within the Heritage Gardens subdivision. The strategies below will also ensure when planned development occurs to the east, it does not unduly increase stormwater flows in the greenway south of these Shooting Star Circle properties.</p>		
Defined steps to achieving this mitigation strategy		
<p>1. When the property to the east develops, ensure the plans and site development include appropriate stormwater retention capacity and proper grading with special attention to minimizing flows to downstream property by following current storm water ordinance.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Planning & Zoning Department, Village Engineer b. <i>Funding source</i> – Developer funds, potentially supplemented by Village Stormwater Utility if extraordinary developer expenses would otherwise result d. <i>Completion date</i> – when proposal(s) for development present for the property to the east and when the property develops 		
<p>2. Educate property owners about creating a possible water conveyance system to send excess water north or south away from the residences along Shooting Star Circle. This would require collaboration with other nearby property owners.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest/private homeowners along Shooting Star Circle b. <i>Funding source</i> – N/A c. <i>Completion date</i> – to be determined 		
<p>3. During times of extreme snowmelt or heavy rainfall, the Village will provide sandbags to these residents.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Public Services Department b. <i>Funding source</i> – Village of DeForest Stormwater Utility Fund d. <i>Completion date</i> – as periods of significant rainfall or snow melt occur 		

Strategy #5	Mitigate flooding of vacant land east of South Street/Main Street intersection
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
<p>Implementing the strategies below will ensure adequate stormwater management practices and flood mitigation will be put in place if the upland parts of this currently-undeveloped site (Parcel 091017387395) develops, which will increase development prospects and reduce disruption to future business activity. This site could alternatively be publicly acquired for a regional stormwater basin, natural area, or other dedicated open or recreational space.</p>	
Defined steps to achieving this mitigation strategy	
<p>1. Continue to inspect the storm swale to the north every 1-2 years to ensure it stays clear of ice, trees, and other debris.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Public Services Department b. <i>Funding source</i> – Village of DeForest Stormwater Utility Fund c. <i>Completion date</i> – 2022, and then every 1-2 years 	
<p>2. When development occurs on this site, ensure it provides enough stormwater management in the form of detention ponds, channeling, and other methods for water to be easily collected and held and/or easily flow through the site without negatively affecting other properties by following current storm water ordinance.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Planning & Zoning Department b. <i>Funding source</i> – Developer funding and/or installation, which may be supplemented by hazard mitigation or other grants and/or the Village’s Stormwater Utility Fund. c. <i>Completion date</i> – when proposal for development present itself 	

Strategy #5	Mitigate flooding of vacant land east of South Street/Main Street intersection
<p>3. Alternatively, consider public acquisition of the site for a regional stormwater basin, natural area, or other dedicated open or recreational space.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Board and Administration, upon advice from Public Services Dept. b. <i>Funding source</i> – Hazard mitigation or other grants, potentially with Village of DeForest Stormwater Utility Fund and/or parkland impact fees c. <i>Completion date</i> – Site plus developed lands to the south are currently subject to a redevelopment planning process, which will likely suggest a future use and potential outcome for this site, in consultation with its current land owner 	

Strategy #6	Mitigate impacts from extreme heat and extreme cold events	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>Implementing the strategies below will ensure the health and lives of Village residents, especially those most at-risk to extreme heat or cold events. These strategies will become even more important over the next decade or two as DeForest’s senior population is expected to grow significantly, and as extreme weather events may become more common.</p>		
Defined steps to achieving this mitigation strategy		
<p>1. Provide public education and awareness in the form of social media posts so the public is aware of warming/cooling centers (such as the Senior Center and library) as well as where they can acquire any needed resources, water, or shelter.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Community Ambassador b. <i>Funding source</i> – Village operational funding c. <i>Completion date</i> – as needed when extreme cold or extreme heat events occur 		
<p>2. Collaborate with the DeForest Area School District on using gyms and classroom spaces and other school areas for heating and cooling centers to provide more locations for heating and cooling centers across the community and collaborate with a local bus or transportation company to provide transportation to and from area schools for vulnerable populations such as seniors.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Public Services Department b. <i>Funding source</i> – Village operational funding c. <i>Completion date</i> – 2022 and thereafter 		
<p>3. Provide public education and awareness in the form of social media posts during times of extreme cold so that the public is aware on how to avoid frozen water faucets.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Public Services Department, Community Ambassador b. <i>Funding source</i> – Village operational funding c. <i>Completion date</i> – as needed when extreme cold events occur 		

Strategy #7	Mitigate impacts from a possible tornado	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
Implementing the strategies listed below will ensure appropriate, timely, and necessary response to those affected by a tornado in the Village.		
Defined steps to achieving this mitigation strategy		
<p>1. Review and make any necessary updates to the Emergency Operations Plan to incorporate best practices and lessons learned since the Plan was created in 2016.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Department of Public Services, Village of DeForest Emergency Preparedness Committee b. <i>Funding source</i> – to be determined; grant funding may be sought c. <i>Completion date</i> – 2022, and every two years thereafter 		
<p>2. Purchase a mini-excavator, which would be important and useful after a major natural hazard (like a tornado) for helping to remove debris and perform clean up.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Department of Public Services b. <i>Funding source</i> – to be determined; grant funding may be sought c. <i>Completion date</i> – when funds become available 		
<p>3. As the Village expands geographically, make sure existing tornado sirens can be heard from new areas in the Village. If necessary, add new tornado sirens in new subdivisions and commercial/industrial developments.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Department of Public Services, Planning & Zoning Department, Police Department b. <i>Funding source</i> – to be determined; grant funding may be sought c. <i>Completion date</i> – as Village expands geographically 		

Strategy #7	Mitigate impacts from a possible tornado
	<p>4. Perform a weather radio drive, the last one being done in 2011.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Police Department b. <i>Funding source</i> – to be determined c. <i>Completion date</i> – 2023
	<p>5. Perform an analysis of infrastructure, municipal buildings, and utility buildings (such as public wells) to ensure each critical building has access to a backup generator in times of power outages due to a tornado.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Department of Public Services b. <i>Funding source</i> – to be determined c. <i>Completion date</i> – 2022
	<p>6. Integrate redundancies in municipal utilities, such as water system looping, which makes the water system less vulnerable to water main breaks, aids in firefighting, and improves water quality.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Department of Public Services, Planning & Zoning Department b. <i>Funding source</i> – to be determined; grant funding may be sought c. <i>Completion date</i> – as opportunities present themselves
	<p>7. As new parts of the Village develop, implement best practices so that new areas have multiple points of entry and exit. This provides multiple ways for people and emergency services to access developments during times downed power lines, downed trees, buckled roadways, and other damage to roads.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Department of Public Services, Planning & Zoning Department, Fire Department b. <i>Funding source</i> – Village operational funds c. <i>Completion date</i> – as opportunities present themselves

Strategy #7	Mitigate impacts from a possible tornado
	<p>8. Provide public education and awareness in the form of social media posts during the spring and summer to ensure the public is aware of best practices to avoid loss of property and lives during a tornado.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Community Ambassador b. <i>Funding source</i> – Village operational funds c. <i>Completion date</i> – every year during the spring and summer months
	<p>9. Utilize social media, local television and news networks, and local radio stations to communicate with Village residents after a tornado and inform them of available resources and where they can access those resources.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Department of Public Services, Village of DeForest Police Department, Village of DeForest Administration Department b. <i>Funding source</i> – N/A c. <i>Completion date</i> – as needed
	<p>10. Continue to require Village staff to live close to the Village of DeForest so they can be called upon to quickly help during time of need or during an emergency.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest b. <i>Funding source</i> – N/A c. <i>Completion date</i> – ongoing

Strategy #8	Mitigate impacts from a major blizzard	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
Implementing the strategies listed below will ensure appropriate, timely, and necessary response to those affected by a major blizzard in the Village.		
Defined steps to achieving this mitigation strategy		
<p>1. Purchase a mini-excavator, which would be important and useful after a major natural hazard (like a major blizzard) for helping to remove snow, debris, and perform clean up.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Department of Public Services b. <i>Funding source</i> – to be determined; grant funding will be considered c. <i>Completion date</i> – when funds become available 		
<p>2. Review street standards and ordinances to incorporate wider terraces, which provides greater capacity for snow storage.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Planning & Zoning Department b. <i>Funding source</i> – Village operational funds c. <i>Completion date</i> – 2022 		
<p>3. Perform an analysis of infrastructure, municipal buildings, and utility buildings (such as public wells) to ensure each critical building has access to a backup generator in times of power outages due to a major blizzard.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Department of Public Services b. <i>Funding source</i> – to be determined c. <i>Completion date</i> – 2022 		

Strategy #8	Mitigate impacts from a major blizzard
	<p>4. As the Village expands geographically, incorporate new roads into the existing plan for clearing major roadways for emergency vehicles to respond if needed, prioritizing roads which provide access to vulnerable populations.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Department of Public Services, Planning & Zoning Department b. <i>Funding source</i> – N/A c. <i>Completion date</i> – as opportunities present themselves
	<p>5. Integrate redundancies in municipal utilities, such as water system looping, which makes the water system less vulnerable to water main breaks, aids in firefighting, and improves water quality.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Department of Public Services, Village Engineer b. <i>Funding source</i> – to be determined c. <i>Completion date</i> – as opportunities present themselves
	<p>6. As new parts of the Village develop, implement best practices so that new areas have multiple points of entry and exit. This helps provide multiple ways for people and emergency services to access neighborhoods during times heavy snowfall.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Department of Public Services, Planning & Zoning Department b. <i>Funding source</i> – Village operational funds c. <i>Completion date</i> – as opportunities present themselves
	<p>7. Provide public education and awareness in the form of social media posts during the fall, winter, and spring to ensure the public is aware of best practices to avoid loss of property and lives during a major blizzard.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest Community Ambassador b. <i>Funding source</i> – Village operational funds c. <i>Completion date</i> – ongoing, every year

Strategy #8	Mitigate impacts from a major blizzard
	<p>8. Continue to require Village staff to live close to the Village of DeForest so they can be called upon to quickly help during time of need or during an emergency.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of DeForest b. <i>Funding source</i> – N/A c. <i>Completion date</i> – ongoing



Dane County Natural Hazard Mitigation Plan

Village of Marshall Annex

Summer 2022

Village of Marshall Annex

This annex is a part of the Dane County Natural Hazard Mitigation Plan (DCNHMP). The DCNHMP contains additional information to support the Federal Emergency Management Agency's (FEMA) recognition of the plan (including this annex) as the formal natural hazard mitigation plan for the county and participating local governments. This annex will be valid for as long as FEMA approves the DCNHMP. The strategies adopted in this annex are designed to guide community efforts to reduce risks from natural hazards. These strategies work in conjunction with neighboring communities and Dane County government to reduce risks from natural hazards.

COMMUNITY PROFILE

The Village of Marshall is located in the northeast quadrant of the County, north of the Village of Deerfield, east of the Town of Sun Prairie, and south of the Town of York. Land use is dominated by agriculture and woodlands, and dispersed mobile homes, one, two and multi-family homes. The village has a total area of 1.78 square miles, 1.7 square miles of it is land and 0.08 square miles is water. As of 2020, it is estimated that the Village of Marshall has 1,573 households with an average household size of 2.68 people.

The municipal population data provided by the American Community Survey, a product of the US Census Bureau, indicates that the 2019 population estimates for Village of Marshall, Dane County, is comprised of 3,966 people. Table 1 shows the population profile by age for the village.

Table 1 Population Profile of Village of Marshall, Dane County

Category	Number	Percent
Total Population	3,966	100%
Under 5 years	380	9.6%
5 to 9 years	333	8.4%
10 to 14 years	306	7.7%
15 to 19 years	157	4.0%
20 to 24 years	227	5.7%
25 to 29 years	250	6.3%
30 to 34 years	360	9.1%
35 to 39 years	313	7.9%
40 to 44 years	208	5.2%
45 to 49 years	203	5.1%
50 to 54 years	180	4.5%
55 to 59 years	391	9.9%
60 to 64 years	284	7.2%
65 to 69 years	148	3.7%
70 to 74 years	118	3.0%
75 to 79 years	82	2.1%
80 to 84 years	0	0.0%
85 years and over	26	0.7%

Data Source: 2019 ACS Estimates - U.S. Census

Growth & Development Trends

Table 2-3 illustrates how the entire Village of Marshall has grown in terms of population and number of households between 2010 and 2020. Housing data is to 2020 due to data availability. Table 2-3 is drawn from the Demographics Services Center at the Wisconsin Department of Administration, and shows population projections through 2040.

Table 2 Village of Marshall Change in Population and Households, 2010-2020

2010 Population	2020 Population	Percent Change (%) 2010-2020	2010 # of Households	2020 # of Households	Percent Change (%) 2010-2020
3,862	3,964	2.64%	1,437	1,573	6.9%

Data Source: Demographic Services Center, Wisconsin Department of Administration

Table 3 Village of Marshall Population Projections, 2020-2040

Population Projection	2020	2025	2030	2035	2040
Increase by half of percent of change (2.64%/2) every 5 years	3,964	4,016	4,069	4,122	4,176

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Population Summary

Tables 4-7 illustrates key population demographics within the Village of Marshall. Key demographics include: (1) Disability Characteristics, (2) Federal Income Poverty Levels, (3) Educational Attainment, and (4) Household Language with English Speaking Capabilities. Due to data availability, all key demographic information has been provided by the American Community Survey (ACS) 2019 estimates. The ACS is a self-reported survey and may include total sample size differences and statistical margin of error.

Table 4 Village of Marshall, Dane County – Disability Characteristics by Detailed Age

Category	Number	Percent
Total of Residents Self-Identified as Disabled	576	100%
With a hearing difficulty	42	7.3%
Population under 18 years	0	-
Population 18 to 64 years	13	-
Population 65 years and over	29	-
With a vision difficulty	48	8.3%
Population under 18 years	0	-
Population 18 to 64 years	48	-
Population 65 years and over	0	-
With a cognitive difficulty	77	13.4%
Population under 18 years	0	-
Population 18 to 64 years	48	-
Population 65 years and over	29	-
With an ambulatory difficulty	203	35.2%
Population under 18 years	0	-
Population 18 to 64 years	113	-
Population 65 years and over	90	-
With a self-care difficulty	90	15.6%
Population under 18 years	0	-
Population 18 to 64 years	57	-
Population 65 years and over	33	-
With an independent living difficulty	116	20.1%
Population 18 to 64 years	76	-
Population 18 to 34 years	25	-
Population 65 years and over	40	-

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.1: Village of Marshall, Dane County – Federal Income Poverty Levels (FIPL) by Families Summary

Category	Number of Families
50 percent of poverty level	32
125 percent of poverty level	133
150 percent of poverty level	166
185 percent of poverty level	303
200 percent of poverty level	303
300 percent of poverty level	432
400 percent of poverty level	604
500 percent of poverty level	785

Data Source: 2019 ACS Estimates - U.S. Census

Note: Use table 5.2 to interpret table 5.1:

5.1 identifies the *total number of families* (regardless of size) by percentage.

5.2 identifies *family size* in relation to annual family income and the percentage category of the FIPL.

Table 5.2: Village of Marshall, Dane County – Annual Federal Income Poverty Level Guide

Family Size	50%	100%	125%	150%	185%	200%	300%	400%	500%
1	\$6,440	\$12,880	\$16,100	\$19,320	\$23,828	\$25,760	\$38,640	\$51,520	\$64,400
2	\$8,710	\$17,420	\$21,775	\$26,130	\$32,227	\$34,840	\$52,260	\$69,680	\$87,100
3	\$10,980	\$21,960	\$27,450	\$32,940	\$40,626	\$43,920	\$65,880	\$87,840	\$109,800
4	\$13,250	\$26,500	\$33,125	\$39,750	\$49,025	\$53,000	\$79,500	\$106,000	\$132,500
5	\$15,520	\$31,040	\$38,800	\$46,560	\$57,424	\$62,080	\$93,120	\$124,160	\$155,200
6	\$17,790	\$35,580	\$44,475	\$53,370	\$65,823	\$71,160	\$106,740	\$142,320	\$177,900

Data Source: dhs.wisconsin.gov

Table 6: Village of Marshall, Dane County – Educational Attainment by Householders

Category	Number	Percent
Total of Householders	962	100%
Less than high school graduate	71	7.4%
High school graduate (includes equivalency)	277	28.8%
Some college, associate's degree	349	36.3%
Bachelor's degree or higher	265	27.5%

Data Source: 2019 ACS Estimates - U.S. Census

Table 7: Village of Marshall, Dane County – Household Language & English Speaking Capabilities

Category	Number	Percent
Total of Households	1,310	100%
English only	1,072	81.8%
Spanish:	186	14.2%
Limited English speaking household	46	-
Not a limited English speaking household	140	-
Other Indo-European languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-
Asian and Pacific Island languages:	33	2.5%
Limited English speaking household	0	-
Not a limited English speaking household	33	-
Other languages:	19	1.5%
Limited English speaking household	0	-
Not a limited English speaking household	19	-

Data Source: 2019 American Community Survey

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of Marshall that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

General Property

Table 8 Property Exposure Summary

Property Type	Parcel Count	Improved Land Count	Improved Land Value (\$)	Content Value (\$)	Total Value (\$)
Total	1,808	1,762	2,023,747,300	1,011,873,650	3,035,620,950
Agriculture	10	10	403,200	201,600	604,800
Industrial	26	26	4,604,200	2,302,100	6,906,300
Residential	1,622	1,622	1,990,022,900	995,011,450	2,985,034,350
Transportation	6	6	1,717,000	858,500	2,575,500
Utility	11	0	0	0	0
Commercial	80	80	26,703,700	13,351,850	40,055,550
Other	22	0	0	0	0
Institutional/ Governmental	31	18	296,300	148,150	444,450

Data Source: Dane County Land Information Office, December 2021

Critical Facilities

The Village of Marshall has identified the critical facilities important to protect from disaster impacts. These are collected in Table 9. Table 9 is based on GIS data inventories from Dane County and information gathered from the Town. No further supplemental data was provided by the community through the Data Collection Guide.

Table 9 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
Ems Station	EI	1	2,500,000
Fire Station	EI	1	2,500,000
Municipal Hall/Police Dept	EI	2	3,000,000
Waste Water Treatment	EI	1	200,000,000
Water Tower	EI	1	1,000,000
Wells (3)	EI	3	1,800,000
Extremely Haz. Substances	HM	1	200,000
Hazardous Chemicals	HM	1	4,000
Child Care (2 Registered)	VF	2	436,000
Community Based Residential (2)	VF	2	1,393,000
Historic Site	VF	1	135,500
Manufactured Homes (298)	VF	298	6,233,800
Public Schools (4)	VF	4	N/A
Prairie Ridge Clinic	VF	1	755,800
Whistle Stop Campground	VF	1	500,000
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities			

Data Source: 2021 Village of Marshall Data Collection Guide

Other Assets

Other assets help define a community beyond the current composition of the Village of Marshall. These assets may provide economic benefit to the community, in addition to preserving the heritage and diversity of the community and may include natural, cultural and historic assets or economic assets such as major employers. It may also include more specific detail on critical facilities. The Village of Marshall has not identified any other assets.

VULNERABILITY ASSESSMENT

A hazard identification and vulnerability analysis was completed for the Village of Marshall using the same methodology in the County's base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 10 outlines the hazard identification for the Village of Marshall based on the Data Collection Guide issued in 2021. The Data Collection Guide listed all of the hazards that could impact Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. Brooklyn's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern." This matrix appears as Table 10. This matrix reflects the significance of the hazards relative to one another as perceived by the Example's planning team.

This matrix reflects that the Village of Marshall is most vulnerable to dam/levee failure, expansive soils, tornadoes. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 10: Vulnerability Assessment Matrix for the Village of Marshall

Name of Jurisdiction: <u>Village of Marshall</u>										
Hazard	Hazard Attributes			Impact Attributes						Total of Row Values
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
Impact on General Structures				Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards		
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	
Dam/Levee failure	5	3	3	3	4	3	4	3	5	33
Extreme Cold	3	3	1	1	1	3	2	2	1	17
Extreme Heat	3	3	1	1	1	3	2	2	1	17
Drought	1	3	1	1	1	1	1	1	1	11
Expansive soils	0	0	0	0	0	0	0	0	0	0
Flood	5	3	3	3	4	3	4	3	5	33
Fog	1	3	1	1	1	1	1	1	1	11
Hail Storm	2	3	2	2	2	2	2	2	3	20
Landslide	0	0	0	0	0	0	0	0	0	0
Lightning	1	3	2	2	3	2	2	2	3	20
Tornado	3	1	3	3	3	3	3	3	3	25
Wildfire	0	0	0	0	0	0	0	0	0	0
Windstorm	3	3	3	3	3	3	3	3	3	27
Winter Storm	4	3	1	2	2	2	2	2	2	20

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of Marshall. Table 11 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 11 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	See Tables 4-7 Population	See Property Exposure table 8	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Drought	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Flooding	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below
Fog	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Hailstorm	Moderate	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Landslide/ Sinkholes/ Erosion	None	None	None	Specifics unknown; See hazard profile in County Plan
Lightning	Moderate	Moderate	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Severe Cold	See Tables 4-7 Population	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Heat	See Tables 4-7 Population	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Winter Storm	Moderate	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 15 below	See Table 15 below	See Table 15 below	See Table 15 below
Wildfire	None	None	None	Specifics unknown; See hazard profile in County Plan
Windstorm	See Tables 4-7 Population	See Property Exposure table 8	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan

Data Source: 2021 Village of Marshall Data Collection Guide – Prepared by DCEM

Previous Hazard Events

Through the Data Collection Guide, the Village of Marshall noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the main mitigation plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The events noted by this jurisdiction in the Data Collection Guide can be found in Table 12.

Table 12 Village of Marshall Historic Natural Hazards

Natural Hazard	Date	Impacted Structures	Comprehensive Harm to Jurisdiction	Other reported Losses (Fiscal reports, programs, etc.)	Comments
Flood	06/2008	Multiple Impacted Structures	Crop damage, businesses temporarily closed, and road closures.	There's been 2 claims & \$15,572 in losses paid in flood insurance claims since 1978.	N/A

Data Source: 2021 Village of Marshall Data Collection Guide

Flood Hazard

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 13 and 14 outline the primary structures on them within the Village of Marshall, Dane County. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County (2.37 people as of 2021). Estimated loss potentials for all structures on the floodway can be found within section 4.6 in chapter 4 of the county plan.

Table 13 Primary Structures in the 100 Year Floodplain

Residential Structures in 100 yr. Floodway	Non-Residential Structures in 100 yr. Floodplain	Total Structures in 100 yr. Floodplain	Potential # of People at Risk in 100 yr. Floodplain	Total Assessed Values (\$) of Structures in 100 yr. Floodplain
0	2	2	0	\$195,585

Source: Analysis based on Dane County Land Information Office Data

Table 14 Primary Structures in the 500 Year Floodplain

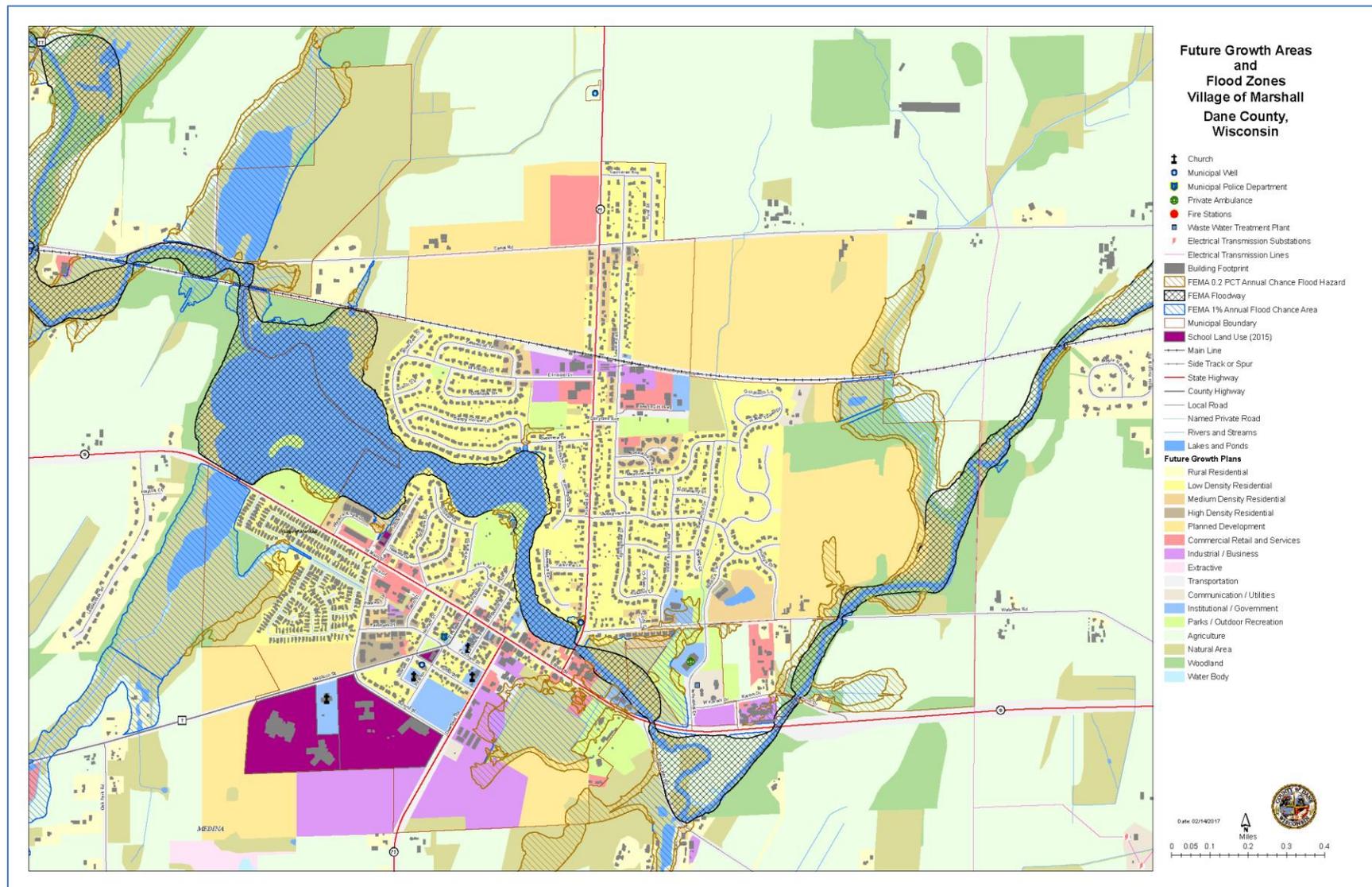
Residential Structures in 500 yr. Floodway	Non-Residential Structures in 500 yr. Floodplain	Total Structures in 500 yr. Floodplain	Potential # of People at Risk in 500 yr. Floodplain	Total Improved Values (\$) of Structures in 500 yr. Floodplain
7	4	11	17	\$158,633

Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Policies

- Repetitive loss properties have not been reported in the Village of Marshall, Dane County.
- There are 4 flood insurance policies in force within Village of Marshall, Dane County, with a total coverage of \$1,400,000.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2023 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 15 Tornado Loss Estimate

% Area impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value (\$)	Estimated Loss \$ (High Damage Range)	Estimated Loss \$ (Moderate Damage Range)	Estimated Loss \$ (Low Damage Range)	Loss Ratio for Moderate Damage Range
36.83%	1,762	649	3,035,620,950	1,117,881,520	558,940,759	279,470,379	18%

Data Source: Analysis Based on Dane County Land Information Office’s data

Problems or Additional Vulnerability Issues

The Village of Marshall identified the following additional vulnerabilities in the 2021 Data Collection Guide:

- **Average Depth of 100 Year Floodplain:**
 - 3 feet or less
- **Hazard Concerns:**
 - Communication, transportation, and providing adequate sheltering and services.
- **Growth Trends:**
 - Several new homes have been built on the northeast side of the village in the last 2 -3 years. There are still some land lots available for residential development. They are not located in a hazard area or have vulnerability concerns, however, have increased the population.
 - A new campground was built in 2017-18 and is owned by the village. The campground has approximately 60 sites and a club house. There could be vulnerability/hazard concerns for campers in the event of a tornado/storm.

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of Marshall.

Mitigation Capabilities Summary

Table 16 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of Marshall.

Table 16 Village of Marshall Regulatory Mitigation Capabilities

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Existing Natural Hazard Mitigation Plan	Yes	N/A
General or Comprehensive plan	Yes	www.marshall-wi.com
Zoning ordinance	Yes	www.marshall-wi.com
Subdivision ordinance	Yes	www.marshall-wi.com
Growth management ordinance	No	N/A
Shoreland/ wetland zoning ordinance	Yes	www.marshall-wi.com
Floodplain zoning ordinance	Yes	www.marshall-wi.com
FEMA / NFIP Community Rating System	No	N/A
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	www.marshall-wi.com
Building code	Yes	www.marshall-wi.com
Fire department ISO rating	Yes	N/A
Climate change Impact program	No	N/A
Erosion or sediment control program	Yes	www.marshall-wi.com
Stormwater management program	Yes	www.marshall-wi.com
Site plan review requirements	Yes	www.marshall-wi.com
Capital improvements plan	Yes	N/A
Economic development plan	No	N/A
Local emergency operations plan	Yes	N/A
Other special plans	No	N/A
Flood insurance study or other engineering study for streams	Yes	FEMA
Elevation certificates (for floodplain development)	Yes	N/A

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Climate Action Plan	No	N/A

Data Source: Village of Marshall Data Collection Guide, 2021

Table 17 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of Marshall.

Table 17 Responsible Personnel and Departments for the Village of Marshall

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	N/A	Outsourced contractor
Engineer/professional trained in construction practices related to buildings and/or infrastructure	No	N/A	N/A
Planner/engineer/scientist with an understanding of natural hazards	No	N/A	N/A
Personnel skilled in GIS	No	Town & Country Engineering Dane Co LIO	N/A
Full time building official	No	N/A	Part-time Contract Service
Personnel skilled in Climate resilience	No	N/A	N/A
Floodplain manager	No	N/A	N/A
Emergency manager	Yes	Police Chief	N/A
Real estate acquisition personnel	No		N/A
Grant writer	No	Dane Co Emerg. Management	N/A
Other personnel	Yes	LT Kristine Quam Police Clerk Deanna Chadwick	N/A
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	No	N/A	N/A
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	DANE CO 911	N/A

Data Source: Village of Marshall Data Collection Guide 2021

Table 18 identifies financial tools or resources that the Village of Marshall could potentially use to help fund mitigation activities.

Table 18 Financial Resources for the Village of Marshall

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Dedicated funding for land, easement or conservation easement acquisition	No
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activities	No
Withhold Spending in hazard prone areas	No

Data Source: Village of Marshall Data Collection Guide

Additional Capabilities

The Village of Marshall identified the following as past or ongoing public education or information programs:

The Village of Marshall has promoted safe and responsible water use through public forums for years during school open house, Fire Safety Week, EMS Appreciation Week. Police Department promotes household preparedness for all natural disasters. All village entities utilize social media.

National Flood Insurance Program Participation

The Village of Marshall currently participates in the National Flood Insurance Program.

Public Involvement Activities

The Village of Marshall provided a publically noticed listening session with the Village of Marshall Board on November 9, 2021. It was noticed on the village website. The listening session provided an agenda in order to discuss the draft mitigation strategies. No changes were made to the initial draft mitigation strategies.

MITIGATION STRATEGIES

Below are the identified mitigation strategies developed by the Village of Marshall’ NHMP steering committee. Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects. A *mitigation strategy* is a long-term vision for risk reduction in local jurisdictional or regional planning. A mitigation strategy can be achieved by a list of overall improvements to achieve (goals) that provide direction for community efforts to reduce potential losses identified in the risk assessment.

Strategy #1	Blaschka Family Dam Maintenance
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
<p>The village has the responsibility of ensuring the privately-owned Blaschka Family dam is safe and has structural integrity. This can be done through dam assessments and inspections. The dam was recently inspected by a private firm and submitted to WI DNR in February 2021, and subsequently revised and resubmitted in May 2021. The dam condition was classified as “FAIR”, although in good structural condition overall, several minor repairs are ongoing, and some other items needed to include an update to the Inspection/Operation/Maintenance plan and a DAM Failure Analysis (DFA). The DNR established a schedule for addressing deficiencies and improving the safety of the dam. Implementing this strategy will help in prevention of future dam failure, protecting the property below the dam which includes residential, commercial, and critical facilities.</p>	
Defined steps to achieving this mitigation strategy	
<ol style="list-style-type: none"> 1. Plan meeting with stakeholders <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Marshall b. <i>Funding source</i> – c. <i>Completion date</i> – By April of 2022 (DNR already has June 2022 deadline for Blaschka Family). 	

Strategy #1	Blaschka Family Dam Maintenance
	<p>2. Funding Development</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Blaschka Family / Village of Marshall b. <i>Funding source</i> – FEMA Grant Programs / WI DNR Grant Programs / Village of Marshall (budget/CIP) c. <i>Completion date</i> – Six (6) months after project initiation
	<p>3. Implementation</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Blaschka Family / Village of Marshall / WI DNR b. <i>Funding source</i> – c. <i>Completion date</i> – Twelve (12) months after project initiation

Strategy #2	Flooding & Heavy Rain Preparedness	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>Common impacts of flooding include damage to personal property, buildings, and infrastructure; bridge and road closures; service disruptions; and injuries or even fatalities. Implement sound flood plain management practices to reduce flooding of residential, commercial, and village owned property (i.e. stormwater management, regulate land development, participate in National Flood Insurance Program (NFIP). Protect infrastructure and critical facilities. Encourage and educate persons/property owners on the benefits of flood insurance, flood proofing, and other flood mitigation techniques. Reduce displacement of residents, financial impacts, and impact on services that flooding can cause. Identify special needs populations. Utilize social media, websites, or mass mailings for public awareness.</p> <p>Ensuring DAM is properly inspected, is functional, and has structural integrity is part of another mitigation strategy but goes hand in hand with flooding & heavy rain preparedness.</p>		
Defined steps to achieving this mitigation strategy		
<p>1. Plan meeting with stakeholders</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Marshall b. <i>Funding source</i> – N/A c. <i>Completion date</i> – Within six (6) months of completion of Hazard Mitigation Plan 		
<p>2. Funding Development</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Marshall / Dane County Emergency Management / Town of Medina b. <i>Funding source</i> – Village of Marshall / Town of Medina / FEMA / WI State or Local Grants c. <i>Completion date</i> – Within six (6) months of above stakeholders meeting 		

Strategy #2	Flooding & Heavy Rain Preparedness
<p>3. Implementation</p> <ul style="list-style-type: none">a. <i>Responsible Party</i> – Village of Marshall / Town of Medinab. <i>Funding source</i> – N/Ac. <i>Completion date</i> – Ongoing	

Strategy #3	Construct Storm Shelter For Severe Weather	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>Implement a plan to construct a storm shelter to protect the residents from severe weather & tornados who do not have proper shelter. Shelters can be used for more than tornados. Storm shelters can be used for extreme hot or cold temperatures. Determine how many people are in need of a shelter, the most ideal location for a shelter, and educate and inform residents about the use of the shelter and its availability. When people think of storm shelters, they generally think of tornados. Tornadoes cause the greatest damage to structures of light construction, including residential dwellings and particularly manufactured homes. Tornadoes are more likely to occur during the months of March through May and tend to form in the late afternoon and early evening. Conduct tornado awareness activities.</p>		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Plan meeting with stakeholders <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Marshall b. <i>Funding source</i> – N/A c. <i>Completion date</i> – As soon as possible after completion of Hazard Mitigation Plan 		
<ol style="list-style-type: none"> 2. Funding Development <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Marshall b. <i>Funding source</i> – FEMA / Village of Marshall c. <i>Completion date</i> – Within Six (6) months after stakeholders meeting 		

Strategy #3	Construct Storm Shelter For Severe Weather
<p>3. Implementation</p> <ul style="list-style-type: none">a. <i>Responsible Party</i> – Village of Marshallb. <i>Funding source</i> – N/Ac. <i>Completion date</i> – Within One (1) year from completion of Hazard Mitigation Plan	

Strategy #4	Winter Weather- Snow/Ice/Severe Preparedness	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>Winter weather is generally an event that notice is given in advance. Severe winter storms may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Severe winter weather can down trees, cause widespread power outages, damage property, and cause fatalities and injuries. Protect power lines and impact to roadways/infrastructures. Have a plan for snow and ice removal. Access to generators for large scale power outages. Testing and inspection of heating systems for those in need. Identify residents of higher risk. Access to weather radios for all. Improve public awareness to residents of severe winter storms.</p> <p>Ensure residents have access to a shelter if lack heat, water, etc. Building a shelter is part of another mitigation strategy but goes hand in hand with severe winter weather preparedness.</p>		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Plan meeting with stakeholders <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Marshall b. <i>Funding source</i> – N/A c. <i>Completion date</i> – Within six (6) months of completion of Hazard Mitigation Plan. 		
<ol style="list-style-type: none"> 2. Funding Development <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Marshall b. <i>Funding source</i> – Village of Marshall / Private residents / State and Local Grants c. <i>Completion date</i> – Within six (6) months of above stakeholders meeting 		

Strategy #4	Winter Weather- Snow/Ice/Severe Preparedness
<p>3. Implementation</p> <ul style="list-style-type: none">a. <i>Responsible Party</i> – Village of Marshall / Private residentsb. <i>Funding source</i> – N/Ac. <i>Completion date</i> – Ongoing	



Dane County Natural Hazard Mitigation Plan

Village of Mazomanie Annex

Summer 2022

Village of Mazomanie Annex

This annex is a part of the Dane County Natural Hazard Mitigation Plan (DCNHMP). The DCNHMP contains additional information to support the Federal Emergency Management Agency's (FEMA) recognition of the plan (including this annex) as the formal natural hazard mitigation plan for the county and participating local governments. This annex will be valid for as long as FEMA approves the DCNHMP. The strategies adopted in this annex are designed to guide community efforts to reduce risks from natural hazards. These strategies work in conjunction with neighboring communities and Dane County government to reduce risks from natural hazards.

COMMUNITY PROFILE

The Village of Mazomanie is located in the far northwest quadrant of the County, north of the Village of Black Earth and encompassed by the Town of Mazomanie. Land use is primarily residential and commercial. According to the United States Census Bureau, the Village of Mazomanie has a total area of 1.8 square miles. As of 2020, it is estimated that the Village of Mazomanie has 744 households with an average household size of 2.40 people.

The municipal population data provided by the American Community Survey, a product of the US Census Bureau, indicates that the 2019 population estimates for Village of Mazomanie, Dane County, is comprised of 1,858 people. Table 1 shows the population profile by age for the village.

Table 1 Population Profile of Village of Mazomanie, Dane County

Category	Number	Percent
Total Population	1,858	100%
Under 5 years	133	7.2%
5 to 9 years	154	8.3%
10 to 14 years	91	4.9%
15 to 19 years	129	6.9%
20 to 24 years	72	3.9%
25 to 29 years	100	5.4%
30 to 34 years	192	10.3%
35 to 39 years	132	7.1%
40 to 44 years	101	5.4%
45 to 49 years	132	7.1%
50 to 54 years	108	5.8%
55 to 59 years	132	7.1%
60 to 64 years	107	5.8%
65 to 69 years	86	4.6%
70 to 74 years	76	4.1%
75 to 79 years	27	1.5%
80 to 84 years	57	3.1%
85 years and over	29	1.6%

Data Source: 2019 ACS Estimates - U.S. Census

Growth & Development Trends

Table 2-3 illustrates how the entire Village of Mazomanie has grown in terms of population and number of households between 2010 and 2020. Housing data is to 2020 due to data availability. Table 2-3 is drawn from the Demographics Services Center at the Wisconsin Department of Administration, and shows population projections through 2040.

Table 2 Village of Mazomanie Change in Population and Households, 2010-2020

2010 Population	2020 Population	Percent Change (%) 2010-2020	2010 # of Households	2020 # of Households	Percent Change (%) 2010-2020
1,652	1,700	2.9%	689	744	7.9%

Data Source: Demographic Services Center, Wisconsin Department of Administration

Table 3 Village of Mazomanie Population Projections, 2020-2040

Population Projection	2020	2025	2030	2035	2040
Increase by half of percent of change (2.64%/2) every 5 years	1,700	1,724	1,748	1,773	1,798

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Note: Population estimates offered by the U.S. Census Bureau’s American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Population Summary

Tables 4-7 illustrates key population demographics within the Village of Mazomanie. Key demographics include: (1) Disability Characteristics, (2) Federal Income Poverty Levels, (3) Educational Attainment, and (4) Household Language with English Speaking Capabilities. Due to data availability, all key demographic information has been provided by the American Community Survey (ACS) 2019 estimates. The ACS is a self-reported survey and may include total sample size differences and statistical margin of error.

Table 4 Village of Mazomanie, Dane County – Disability Characteristics by Detailed Age

Category	Number	Percent
Total of Residents Self-Identified as Disabled	681	100%
With a hearing difficulty	60	8.8%
Population under 18 years	0	-
Population 18 to 64 years	30	-
Population 65 years and over	30	-
With a vision difficulty	9	1.3%
Population under 18 years	0	-
Population 18 to 64 years	3	-
Population 65 years and over	6	-
With a cognitive difficulty	80	11.7%
Population under 18 years	10	-
Population 18 to 64 years	46	-
Population 65 years and over	24	-
With an ambulatory difficulty	91	13.4%
Population under 18 years	3	-
Population 18 to 64 years	47	-
Population 65 years and over	41	-
With a self-care difficulty	27	4.0%
Population under 18 years	3	-
Population 18 to 64 years	17	-
Population 65 years and over	7	-
With an independent living difficulty	67	9.8%
Population 18 to 64 years	46	-
Population 18 to 34 years	13	-
Population 65 years and over	21	-

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.1: Village of Mazomanie, Dane County – Federal Income Poverty Levels (FIPL) by Families Summary

Category	Number of Families
50 percent of poverty level	39
125 percent of poverty level	74
150 percent of poverty level	88
185 percent of poverty level	104
200 percent of poverty level	124
300 percent of poverty level	186
400 percent of poverty level	269
500 percent of poverty level	329

Data Source: 2019 ACS Estimates - U.S. Census

Note: Use table 5.2 to interpret table 5.1:

5.1 identifies the *total number of families* (regardless of size) by percentage.

5.2 identifies *family size* in relation to annual family income and the percentage category of the FIPL..

Table 5.2: Village of Mazomanie, Dane County – Annual Federal Income Poverty Level Guide

Family Size	50%	100%	125%	150%	185%	200%	300%	400%	500%
1	\$6,440	\$12,880	\$16,100	\$19,320	\$23,828	\$25,760	\$38,640	\$51,520	\$64,400
2	\$8,710	\$17,420	\$21,775	\$26,130	\$32,227	\$34,840	\$52,260	\$69,680	\$87,100
3	\$10,980	\$21,960	\$27,450	\$32,940	\$40,626	\$43,920	\$65,880	\$87,840	\$109,800
4	\$13,250	\$26,500	\$33,125	\$39,750	\$49,025	\$53,000	\$79,500	\$106,000	\$132,500
5	\$15,520	\$31,040	\$38,800	\$46,560	\$57,424	\$62,080	\$93,120	\$124,160	\$155,200
6	\$17,790	\$35,580	\$44,475	\$53,370	\$65,823	\$71,160	\$106,740	\$142,320	\$177,900

Data Source: dhs.wisconsin.gov

Table 6: Village of Mazomanie, Dane County – Educational Attainment by Householders

Category	Number	Percent
Total of Householders	492	100%
Less than high school graduate	23	4.7%
High school graduate (includes equivalency)	134	27.2%
Some college, associate's degree	170	34.6%
Bachelor's degree or higher	165	33.5%

Data Source: 2019 ACS Estimates - U.S. Census

Table 7: Village of Mazomanie, Dane County – Household Language & English Speaking Capabilities

Category	Number	Percent
Total of Households	761	100%
English only	736	96.7%
Spanish:	13	1.7%
Limited English speaking household	4	-
Not a limited English speaking household	9	-
Other Indo-European languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-
Asian and Pacific Island languages:	12	1.6%
Limited English speaking household	5	-
Not a limited English speaking household	7	-
Other languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-

Data Source: 2019 American Community Survey

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of Mazomanie that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

General Property

Table 8 Property Exposure Summary

Property Type	Parcel Count	Improved Land Count	Improved Land Value (\$)	Content Value (\$)	Total Value (\$)
Total	1,114	1,100	163,518,900	81,759,450	245,278,350
Agriculture	8	8	389,000	194,500	583,500
Industrial	25	25	31,228,900	15,614,450	46,843,350
Residential	993	993	122,158,800	61,079,400	183,238,200
Transportation	3	0	0	0	0
Utility	8	8	262,700	131,350	394,050
Commercial	53	53	8,896,300	4,448,150	13,344,450
Other	11	1	193,600	96,800	290,400
Institutional/ Governmental	13	12	389,600	194,800	584,400

Data Source: Dane County Land Information Office, December 2021

Critical Facilities

The Village of Mazomanie has identified the critical facilities important to protect from disaster impacts. These are collected in Table 9. Table 9 is based on GIS data inventories from Dane County and information gathered from the Town. No further supplemental data was provided by the community through the Data Collection Guide.

Table 9 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
Well #2	EI	1	2,000,000
Well #3	EI	1	2,000,000
92,000 Gallon Reservoir	EI	1	1,250,000
300,000 Gallon Reservoir	EI	1	2,000,000
Booster Station #1	EI	1	250,000
Sewer Lift Station	EI	1	250,000
Village Municipal Building	EI	1	8,000,000
Public Works Garage	EI	1	1,000,000
EMS Building	EI	1	1,000,000
West Substation	EI	1	3,000,000
Industrial Substation	EI	1	1,800,000
Bridge Street Bridge	EI	1	1,000,000
State Street Bridge	EI	1	1,000,000
Voss Road Bridge	EI	1	800,000
Heavy Traffic Streets	EI	1	300/ft
Village Streets	EI	N/A	250/ft
Community Building	VF	1	1,500,000
Downtown Historic District	VF	1	Private
Mazomanie Elementary School	VF	1	Private
Wisconsin Heights Clinic	VF	1	Private
Iron Horse Apartments	VF	N/A	Private
Wisconsin Management Apartments Downtown	VF	N/A	Private
Walter Road Apartments	VF	N/A	Private
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities			

Data Source: 2021 Village of Mazomanie Data Collection Guide

Other Assets

Other assets help define a community beyond the current composition of the Village of Mazomanie. These assets may provide economic benefit to the community, in addition to preserving the heritage and diversity of the community and may include natural, cultural and historic assets or economic assets such as major employers. It may also include more specific detail on critical facilities. The Village of Mazomanie has not identified any other assets.

VULNERABILITY ASSESSMENT

A hazard identification and vulnerability analysis was completed for the Village of Mazomanie using the same methodology in the County's base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 10 outlines the hazard identification for the Village of Mazomanie based on the Data Collection Guide issued in 2021. The Data Collection Guide listed all of the hazards that could impact Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. Brooklyn's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern." This matrix appears as Table 10. This matrix reflects the significance of the hazards relative to one another as perceived by the Example's planning team.

This matrix reflects that the Village of Mazomanie is most vulnerable to floods, tornadoes, and windstorms. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 10: Vulnerability Assessment Matrix for the Village of Mazomanie

Name of Jurisdiction: <u>Village of Mazomanie</u>										
Hazard	Hazard Attributes			Impact Attributes						Total of Row Values
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
Impact on General Structures				Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards		
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	
Dam/Levee failure	2	1	1.3	2	2	3.3	2.7	2.7	2	19
Extreme Cold	3.7	3.7	2.7	.7	1.3	2.7	2.7	2.3	2.3	22.1
Extreme Heat	3.7	3.3	2.7	1	1	4.3	2.1	2	1.7	21.8
Drought	3.7	2	2.3	0	0	.3	1	2	1.7	13
Expansive soils	1	1	1	0	0	0	0	0	0	3
Flood	5	5	3.7	5	3.7	5	4.3	4.3	4.3	40.3
Fog	4.7	3	3.3	0	0	.7	.3	0	.3	12.3
Hail Storm	4.7	5	3	2.7	1.7	2	.7	1.7	1	22.5
Landslide	1	1	1	0	0	0	0	0	0	3
Lightning	2.3	4.7	4	3.3	2.7	2	.3	1.3	1.3	21.9
Tornado	5	3	3.7	4.7	4.7	4.7	4	4.3	4.7	38.8
Wildfire	3.3	1	3.3	3	2.7	2.7	1.7	1.7	2	21.4
Windstorm	4.3	5	3.3	3.3	2.3	3.7	2.3	2.7	4.3	31.2
Winter Storm	4.3	4.3	2.7	1.3	1.3	3.3	2.7	2	3	24.9

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of Mazomanie. Table 11 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 11 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	See Tables 4-7 Population	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Drought	Minimal	None	None	Specifics unknown; See hazard profile in County Plan
Flooding	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below
Fog	Minimal	None	None	Specifics unknown; See hazard profile in County Plan
Hailstorm	Moderate	Moderate	Minimal	Specifics unknown; See hazard profile in County Plan
Landslide/ Sinkholes/ Erosion	None	None	None	Specifics unknown; See hazard profile in County Plan
Lightning	See Tables 4-7 Population	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Severe Cold	See Tables 4-7 Population	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Heat	See Tables 4-7 Population	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Winter Storm	See Tables 4-7 Population	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 15 below	See Table 15 below	See Table 15 below	See Table 15 below
Wildfire	Moderate	See Property Exposure table 8	Moderate	Specifics unknown; See hazard profile in County Plan
Windstorm	See Tables 4-7 Population	See Property Exposure table 8	Moderate	Specifics unknown; See hazard profile in County Plan

Data Source: 2021 Village of Mazomanie Data Collection Guide – Prepared by DCEM

Previous Hazard Events

Through the Data Collection Guide, the Village of Mazomanie noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the main mitigation plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The events noted by this jurisdiction in the Data Collection Guide can be found in Table 12.

Table 12 Village of Mazomanie Historic Natural Hazards

Natural Hazard	Date	Impacted Structures	Comprehensive Harm to Jurisdiction	Other reported Losses (Fiscal reports, programs, etc.)	Comments
Flood	07/06/1993	Multiple Impacted Structures	Water in basements and road closures.	N/A	N/A
Flood	02/20/1994	Multiple Impacted Structures	Water in basements and road closures.	N/A	N/A
Flood	03/31/1998	Multiple Impacted Structures	Water in basements and road closures.	N/A	N/A
Flood	06/2/2000	Multiple Impacted Structures	Water in basements and road closures.	N/A	N/A
Flood	08/02/2001	Multiple Impacted Structures	Streets closed and some homes isolated. Water in many basements, some up to the bottom of the first floor.	N/A	N/A
Flood	05/22/2004	Multiple Impacted Structures	Water in basements and road closures.	N/A	N/A
Flood	06/2008	Multiple Impacted Structures	Crop damage, businesses temporarily closed, and road closures.	There's been 2 claims & \$15,572 in losses paid in flood insurance claims since 1978.	N/A

Windstorms	05/28/2016	N/A	Many power lines down and some streets closed. Trees and branches down. Power out for a portion of the Village. Received mutual aid from three other municipalities.	N/A	N/A
Windstorm	07/19/2017	Multiple Impacted Structures	Some power lines down and some streets closed. Trees and branches down. Required several days of cleanup, including over 40 truckloads of brush hauled away.	N/A	N/A
Flood	08/21/2018	Multiple Impacted Structures	Approximately a third of the Village underwater including 110 homes evacuated. Many streets closed, some into the next day. Homes flooded, some up to the ceiling of the first floor with 12 homes lost. Vehicles, appliances, HVAC, and belongings all ruined.	Homes covered by flood insurance received payments for structures and belongings. However, a large amount of damage was not in the floodplain and because it was not required to have flood insurance most damaged homes did not have it and all of their losses were not covered.	Relief funding provided by FEMA IHP, FEMA PA, FEMA HMGP, CDBG DR.
Flood	03/04/2019	Multiple Impacted Structures	Water up to many houses, and in some basements.	N/A	N/A

Data Source: 2021 Village of Mazomanie Data Collection Guide

Flood Hazard

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 13 and 14 outline the primary structures on them within the Village of Mazomanie, Dane County. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County (2.37 people as of 2021). Estimated loss potentials for all structures on the floodway can be found within section 4.6 in chapter 4 of the county plan.

Table 13 Primary Structures in the 100 Year Floodplain

Residential Structures in 100 yr. Floodway	Non-Residential Structures in 100 yr. Floodplain	Total Structures in 100 yr. Floodplain	Potential # of People at Risk in 100 yr. Floodplain	Total Assessed Values (\$) of Structures in 100 yr. Floodplain
39	2	41	92	\$4,557,241

Source: Analysis based on Dane County Land Information Office Data

Table 14 Primary Structures in the 500 Year Floodplain

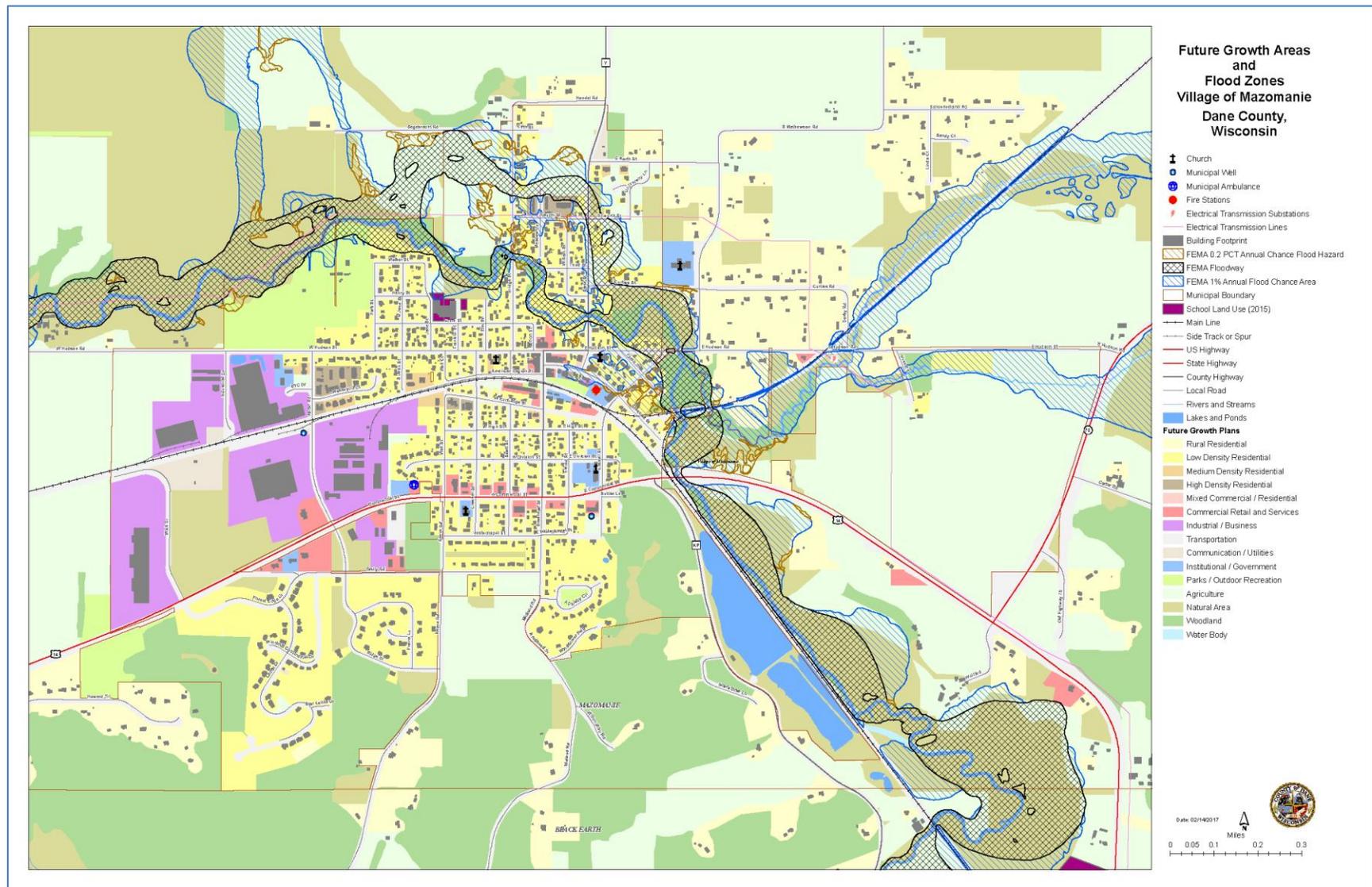
Residential Structures in 500 yr. Floodway	Non-Residential Structures in 500 yr. Floodplain	Total Structures in 500 yr. Floodplain	Potential # of People at Risk in 500 yr. Floodplain	Total Improved Values (\$) of Structures in 500 yr. Floodplain
40	2	42	95	\$1,757,568

Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Polices

- One repetitive loss property has been reported in the Village of Mazomanie, Dane County.
- There are 36 flood insurance policies in force within Village of Mazomanie, Dane County, with a total coverage of \$8,199,100.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2023 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 15 Tornado Loss Estimate

% Area impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value (\$)	Estimated Loss \$ (High Damage Range)	Estimated Loss \$ (Moderate Damage Range)	Estimated Loss \$ (Low Damage Range)	Loss Ratio for Moderate Damage Range
47.45%	1,100	522	245,278,350	116,396,621	58,198,310	29,099,155	24%

Data Source: Analysis Based on Dane County Land Information Office’s data

Problems or Additional Vulnerability Issues

The Village of Mazomanie identified the following additional vulnerabilities in the 2021 Data Collection Guide:

- **Average Depth of 100 Year Floodplain:**
 - 770 Feet
- **Hazard Concerns:**
 - Displacement
 - Options for Short Term Shelter
 - Resources for Early Warning
 - Resources for Recovery
 - Medical Care
 - Lack of Food and Water
 - Transportation
- **Growth Trends:**
 - Building near floodplains puts more properties at risk.
- **Changes since 2018 DC NHMP Update:**
 - The Village Fire Department has increased its capabilities for flood rescues with boats and a swift water rescue team.

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of Mazomanie.

Mitigation Capabilities Summary

Table 16 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of Mazomanie.

Table 16 Village of Mazomanie Regulatory Mitigation Capabilities

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Existing Natural Hazard Mitigation Plan	Yes	N/A
General or Comprehensive plan	Yes	N/A
Zoning ordinance	Yes	N/A
Subdivision ordinance	Yes	N/A
Growth management ordinance	No	N/A
Shoreland/ wetland zoning ordinance	Yes	N/A
Floodplain zoning ordinance	Yes	N/A
FEMA / NFIP Community Rating System	Yes	N/A
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	N/A
Building code	Yes	N/A
Fire department ISO rating	Yes	N/A
Climate change Impact program	No	N/A
Erosion or sediment control program	Yes	N/A
Stormwater management program	Yes	N/A
Site plan review requirements	Yes	N/A
Capital improvements plan	Yes	N/A
Economic development plan	Yes	N/A
Local emergency operations plan	Yes	N/A
Other special plans	No	N/A
Flood insurance study or other engineering study for streams	Yes	N/A
Elevation certificates (for floodplain development)	Yes	N/A

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Climate Action Plan	No	N/A

Data Source: Village of Mazomanie Data Collection Guide, 2021

Table 17 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of Mazomanie.

Table 17 Responsible Personnel and Departments for the Village of Mazomanie

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	No	N/A	N/A
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	N/A	N/A
Planner/engineer/scientist with an understanding of natural hazards	No	N/A	N/A
Personnel skilled in GIS	Yes	N/A	N/A
Full time building official	No	N/A	N/A
Personnel skilled in Climate resilience	No	N/A	N/A
Floodplain manager	No	N/A	N/A
Emergency manager	Yes	N/A	N/A
Real estate acquisition personnel	No	N/A	N/A
Grant writer	Yes	N/A	N/A
Other personnel	No	N/A	N/A
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	N/A	N/A
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	N/A	N/A

Data Source: Village of Mazomanie Data Collection Guide 2021

Table 18 identifies financial tools or resources that the Village of Mazomanie could potentially use to help fund mitigation activities.

Table 18 Financial Resources for the Village of Mazomanie

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Dedicated funding for land, easement or conservation easement acquisition	No
Fees for water, stormwater, sewer, gas, or electric services	Yes
Impact fees for new development	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activities	Yes
Withhold spending in hazard prone areas	No

Data Source: Village of Mazomanie Data Collection Guide

Additional Capabilities

The Village of Mazomanie identified the following as past or ongoing public education or information programs, as well as hazard certifications:

- Fire Department ISO rating of 3
- CRS Level 8
- Flood Page on Village Website
- Fire Prevention Community Efforts by Fire Department
- Purchase and Demolition of Flood Damaged Properties
- Repair of Black Earth Creek Corridor

National Flood Insurance Program Participation

The Village of Mazomanie currently participates in the National Flood Insurance Program.

Public Involvement Activities

The Village of Mazomanie provided a publically noticed listening session with the Village of Mazomanie Board on November 9, 2021. It was noticed on the village website. The listening session provided an agenda in order to discuss the draft mitigation strategies. No changes were made to the initial draft mitigation strategies.

MITIGATION STRATEGIES

Below are the identified mitigation strategies developed by the Village of Mazomanie’ NHMP steering committee. Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects. A *mitigation strategy* is a long-term vision for risk reduction in local jurisdictional or regional planning. A mitigation strategy can be achieved by a list of overall improvements to achieve (goals) that provide direction for community efforts to reduce potential losses identified in the risk assessment.

Strategy #1	Flood Mitigation
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
<p>To reduce the impact of future flood events for Village residents and facilities, the Village will undergo, or attempt to undergo, several mitigation projects. The projects are listed below but the Village is not restricting itself to only these. If new opportunities arise, the Village would evaluate them and possibly move forward with them also.</p> <p>These projects, both small and large, would benefit the entire Village. When flooding occurs it not only effects those directly in the flood with an unsafe situation and loss of property, but it adversely effects the rest of the community with interruptions in public services, utilities, and infrastructure.</p>	
Defined steps to achieving this mitigation strategy	
<ol style="list-style-type: none"> 1. Remove Structures from the Floodway. <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Mazomanie b. <i>Funding source</i> – Federal, State, and Local funding c. <i>Completion date</i> – Ongoing 	

Strategy #1	Flood Mitigation
	<p>2. Repair of Black Earth Creek Corridor</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Mazomanie b. <i>Funding source</i> – Federal Funding—CDBG DR Funds c. <i>Completion date</i> – 12/31/22
	<p>3. Flood Bypass Channel</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Mazomanie b. <i>Funding source</i> – Federal, State, and Local funding c. <i>Completion date</i> – Ongoing
	<p>4. Water Rescue Operations</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Mazomanie Fire Department b. <i>Funding source</i> – Federal, State, and Local funding c. <i>Completion date</i> – ongoing

Strategy #2	Reduce Damage from Wind Event	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>To reduce the negative impact on Village residents, infrastructure, and facilities during and after future wind events the Village will be using the strategies listed below. This list is not meant to be all inclusive and if any new opportunities arise, they will be evaluated and possibly utilized. These projects would benefit the entire Village as a wind event could cause damage Village-wide to the Electric Utility, and Village infrastructure and facilities.</p>		
Defined steps to achieving this mitigation strategy		
<p>1. Continue the replacement of Overhead Electric Lines with Underground.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Mazomanie Electric Utility b. <i>Funding source</i> – Electric Utility rate payers c. <i>Completion date</i> – Ongoing 		
<p>2. Right of Way Tree Trimming</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of Mazomanie Public Works and Electric Utility b. <i>Funding source</i> – Local funding and rate payers c. <i>Completion date</i> – Ongoing 		



Dane County Natural Hazard Mitigation Plan

Village of McFarland Annex

Summer 2022

Village of McFarland Annex

This annex is a part of the Dane County Natural Hazard Mitigation Plan (DCNHMP). The DCNHMP contains additional information to support the Federal Emergency Management Agency's (FEMA) recognition of the plan (including this annex) as the formal natural hazard mitigation plan for the county and participating local governments. This annex will be valid for as long as FEMA approves the DCNHMP. The strategies adopted in this annex are designed to guide community efforts to reduce risks from natural hazards. These strategies work in conjunction with neighboring communities and Dane County government to reduce risks from natural hazards.

COMMUNITY PROFILE

The Village of McFarland is located in the southeast quadrant of the County, north of the Town of Dunn, east of the City of Fitchburg, and south of the City of Madison. Land use is primarily residential and commercial. According to the United States Census Bureau, the Village of McFarland has a total area of 3.55 square miles. As of 2020, it is estimated that the Village of McFarland has 3,409 households with an average household size of 2.54 people.

The municipal population data provided by the American Community Survey, a product of the US Census Bureau, indicates that the 2019 population estimates for Village of McFarland, Dane County, is comprised of 8,650 people. Table 1 shows the population profile by age for the village.

Table 1 Population Profile of Village of McFarland, Dane County

Category	Number	Percent
Total Population	8,650	100%
Under 5 years	589	6.8%
5 to 9 years	583	6.7%
10 to 14 years	423	4.9%
15 to 19 years	530	6.1%
20 to 24 years	449	5.2%
25 to 29 years	375	4.3%
30 to 34 years	458	5.3%
35 to 39 years	646	7.5%
40 to 44 years	558	6.5%
45 to 49 years	539	6.2%
50 to 54 years	538	6.2%
55 to 59 years	760	8.8%
60 to 64 years	789	9.1%
65 to 69 years	566	6.5%
70 to 74 years	314	3.6%
75 to 79 years	263	3.0%
80 to 84 years	147	1.7%
85 years and over	123	1.4%

Data Source: 2019 ACS Estimates - U.S. Census

Growth & Development Trends

Table 2-3 illustrates how the entire Village of McFarland has grown in terms of population and number of households between 2010 and 2020. Housing data is to 2020 due to data availability. Table 2-3 is drawn from the Demographics Services Center at the Wisconsin Department of Administration, and shows population projections through 2040.

Table 2 Village of McFarland Change in Population and Households, 2010-2020

2010 Population	2020 Population	Percent Change (%) 2010-2020	2010 # of Households	2020 # of Households	Percent Change (%) 2010-2020
7,808	8,991	15.15%	3,079	3,409	10.7%

Data Source: Demographic Services Center, Wisconsin Department of Administration

Table 3 Village of McFarland Population Projections, 2020-2040

Population Projection	2020	2025	2030	2035	2040
Increase by half of percent of change (15.15%/2) every 5 years	8,991	9,665	10,389	11,168	12,005

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Population Summary

Tables 4-7 illustrates key population demographics within the Village of McFarland. Key demographics include: (1) Disability Characteristics, (2) Federal Income Poverty Levels, (3) Educational Attainment, and (4) Household Language with English Speaking Capabilities. Due to data availability, all key demographic information has been provided by the American Community Survey (ACS) 2019 estimates. The ACS is a self-reported survey and may include total sample size differences and statistical margin of error.

Table 4 Village of McFarland, Dane County – Disability Characteristics by Detailed Age

Category	Number	Percent
Total of Residents Self-Identified as Disabled	1,892	100%
With a hearing difficulty	351	18.6%
Population under 18 years	0	-
Population 18 to 64 years	194	-
Population 65 years and over	157	-
With a vision difficulty	120	6.3%
Population under 18 years	0	-
Population 18 to 64 years	69	-
Population 65 years and over	51	-
With a cognitive difficulty	365	19.3%
Population under 18 years	53	-
Population 18 to 64 years	193	-
Population 65 years and over	119	-
With an ambulatory difficulty	352	18.6%
Population under 18 years	0	-
Population 18 to 64 years	129	-
Population 65 years and over	223	-
With a self-care difficulty	292	15.4%
Population under 18 years	12	-
Population 18 to 64 years	133	-
Population 65 years and over	147	-
With an independent living difficulty	412	21.8%
Population 18 to 64 years	209	-
Population 18 to 34 years	75	-
Population 65 years and over	203	-

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.1: Village of McFarland, Dane County – Federal Income Poverty Levels (FIPL) by Families Summary

Category	Number of Families
50 percent of poverty level	16
125 percent of poverty level	87
150 percent of poverty level	144
185 percent of poverty level	185
200 percent of poverty level	185
300 percent of poverty level	404
400 percent of poverty level	789
500 percent of poverty level	1,172

Data Source: 2019 ACS Estimates - U.S. Census

Note: Use table 5.2 to interpret table 5.1:

5.1 identifies the *total number of families* (regardless of size) by percentage.

5.2 identifies *family size* in relation to annual family income and the percentage category of the FIPL.

Table 5.2: Village of McFarland, Dane County – Annual Federal Income Poverty Level Guide

Family Size	50%	100%	125%	150%	185%	200%	300%	400%	500%
1	\$6,440	\$12,880	\$16,100	\$19,320	\$23,828	\$25,760	\$38,640	\$51,520	\$64,400
2	\$8,710	\$17,420	\$21,775	\$26,130	\$32,227	\$34,840	\$52,260	\$69,680	\$87,100
3	\$10,980	\$21,960	\$27,450	\$32,940	\$40,626	\$43,920	\$65,880	\$87,840	\$109,800
4	\$13,250	\$26,500	\$33,125	\$39,750	\$49,025	\$53,000	\$79,500	\$106,000	\$132,500
5	\$15,520	\$31,040	\$38,800	\$46,560	\$57,424	\$62,080	\$93,120	\$124,160	\$155,200
6	\$17,790	\$35,580	\$44,475	\$53,370	\$65,823	\$71,160	\$106,740	\$142,320	\$177,900

Data Source: dhs.wisconsin.gov

Table 6: Village of McFarland, Dane County – Educational Attainment by Householders

Category	Number	Percent
Total of Householders	2,419	100%
Less than high school graduate	33	1.4%
High school graduate (includes equivalency)	408	16.9%
Some college, associate's degree	896	37.0%
Bachelor's degree or higher	1,082	44.7%

Data Source: 2019 ACS Estimates - U.S. Census

Table 7: Village of McFarland, Dane County – Household Language & English Speaking Capabilities

Category	Number	Percent
Total of Households	3,409	100%
English only	3,106	91.1%
Spanish:	99	2.9%
Limited English speaking household	0	-
Not a limited English speaking household	99	-
Other Indo-European languages:	129	3.8%
Limited English speaking household	0	-
Not a limited English speaking household	129	-
Asian and Pacific Island languages:	46	1.3%
Limited English speaking household	0	-
Not a limited English speaking household	46	-
Other languages:	29	0.9%
Limited English speaking household	0	-
Not a limited English speaking household	29	-

Data Source: 2019 American Community Survey

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of McFarland that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

General Property

Table 8 Property Exposure Summary

Property Type	Parcel Count	Improved Land Count	Improved Land Value (\$)	Content Value (\$)	Total Value (\$)
Total	3,740	3,708	978,873,195	489,436,598	1,468,309,793
Agriculture	30	30	1,942,300	971,150	2,913,450
Industrial	136	136	104,462,400	52,231,200	156,693,600
Residential	3,351	3,351	804,594,195	402,297,098	1,206,891,293
Transportation	6	6	1,617,600	808,800	2,426,400
Utility	14	14	470,200	235,100	705,300
Commercial	138	138	65,375,000	32,687,500	98,062,500
Other	26	26	216,500	108,250	324,750
Institutional/ Governmental	39	7	195,000	97,500	292,500

Data Source: Dane County Land Information Office, December 2021

Critical Facilities

The Village of McFarland has identified the critical facilities important to protect from disaster impacts. These are collected in Table 9. Table 9 is based on GIS data inventories from Dane County and information gathered from the Town. No further supplemental data was provided by the community through the Data Collection Guide.

Table 9 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
All Village Roads	EI	N/A	\$41 million
Hwy 51 Bridge – WSOR Railroad	EI	1	Owned by DOT, \$6.5 million
Hwy 51 Bridge – Yahara River	EI	1	Owned by DOT, \$2.5 million
Terminal Drive Bridge	EI	1	\$2.0 million
Lake Edge Road Bridge	EI	1	\$250k
Burma Road Bridge	EI	1	\$650k
Burma Road Water Tower	EI	1	\$1.75 million
Holscher Road Water Tower	EI	1	\$1.75 million
Public Works Facility 5115 Terminal Drive	EI	1	\$6.34 million
Municipal Center	EI	1	\$9.88 million
McFarland Public Library – Youth Center	EI	1	\$544k
McFarland E.D. Locke Public Library	EI	1	\$6.34 million
Alliant Energy Substation (near 3457 Siggelkow Road)	EI	1	Owned by Alliant Energy
ANR Pipeline Pumping Station	EI	1	\$872k
Sanitary Sewer Lift Station #1: 5107 Erling Ave	EI	1	\$173k
Sanitary Sewer Lift Station #2: 6407 Pheasant Run	EI	1	\$393k
Sanitary Sewer Lift Station #3: 6623 Meredith Way	EI	1	\$173k
Sanitary Sewer Lift Station #4: 4704 Terminal Drive	EI	1	\$225k
Sanitary Sewer Lift Station #5: 5107 Holscher Road	EI	1	\$535k
Water Tower #1 – Burma Road	EI	1	\$1.6 million
Water Tower #2 – Holscher Road	EI	1	\$2.22 million
Well #1: 5412 Long Street	EI	1	\$1.8 million
Well #3: 5001 North Autumn Lane	EI	1	\$2.2 million
Well #4: 5703 Bird Song Court	EI	1	\$2.2 million
Waterways and Wetlands In and Around Community	NA	N/A	N/A
American Eagle Propane	HM	1	\$477k
ARC Terminals	HM	1	\$995k

ATC- Cottage Grove Site	HM	1	\$62.4k
CHS Petroleum Terminal	HM	1	\$1.2 million
Citgo Petroleum	HM	N/A	\$446k
Entwhistle Metal Fab Inc	HM	1	\$837k
Flint Hills Resources Pine Bend LLC	HM	1	\$1.77 million
Hightrack LLC DBA: Midwest Refrigerated Services Inc	HM	1	\$11.76 million
Klemm Tank Lines	HM	1	\$242k
Kwik Trip #766	HM	1	\$1.59 million
BP Gas Station	HM	1	\$510k
U.S. Oil	HM	N/A	\$2.78 million
Venture Fuels LLC	HM	1	\$365k
Ginger Bread House (Farwell)	VF	1	\$743k
Ginger Bread House (Larson)	VF	1	\$1.56 million
McFarland Conrad Elvehjem Primary School ¹	VF	1	\$20.1 million
Waubesa Intermediate School	VF	1	\$20.4 million
Indian Mound Middle School	VF	1	\$25.0 million
McFarland High School	VF	1	\$62.8 million
Homestead Apartments	VF	N/A	\$1.75 million
Williamstown Bay Apartments	VF	N/A	\$1.29 million
The Cottage Apartments	VF	N/A	\$1.74 million
Prairie Stone Condos	VF	N/A	\$17.20 million
McFarland Villa	VF	N/A	\$1.87 million
Skaalen Village	VF	1	N/A
Mariannes Elder House	VF	1	\$312k
Brandt Park Shelter	VF	1	\$389k
Lewis Park Shelter	VF	1	\$771k
William McFarland Park – Soccer Building	VF	1	\$486k
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities			

Data Source: 2021 Village of McFarland Data Collection Guide

Other Assets

Other assets help define a community beyond the current composition of the Village of McFarland. These assets may provide economic benefit to the community, in addition to preserving the heritage and diversity of the community and may include natural, cultural and historic assets or economic assets such as major employers. It may also include more specific detail on critical facilities. The Village of McFarland has not identified any other assets.

VULNERABILITY ASSESSMENT

A hazard identification and vulnerability analysis was completed for the Village of McFarland using the same methodology in the County's base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 10 outlines the hazard identification for the Village of McFarland based on the Data Collection Guide issued in 2021. The Data Collection Guide listed all of the hazards that could impact Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. Brooklyn's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern." This matrix appears as Table 10. This matrix reflects the significance of the hazards relative to one another as perceived by the Example's planning team.

This matrix reflects that the Village of McFarland is most vulnerable to tornadoes, windstorms, winter storms, and extreme cold. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 10: Vulnerability Assessment Matrix for the Village of McFarland

Name of Jurisdiction: <u>Village of McFarland</u>										
Hazard	Hazard Attributes			Impact Attributes						Total of Row Values
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
Impact on General Structures				Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards		
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	
Dam/Levee failure	4	2	3	1	0	1	1	1	1	14
Extreme Cold	5	3	3	1	3	5	3	3	3	29
Extreme Heat	5	3	3	1	1	5	3	3	3	27
Drought	5	2	1	0	0	1	1	2	3	15
Expansive soils	1	1	4	3	3	1	1	1	2	17
Flood	5	5	3	1	0	1	3	3	3	24
Fog	5	5	3	0	0	1	0	1	2	17
Hail Storm	5	3	3	5	3	1	2	3	3	28
Landslide	1	1	3	1	0	1	1	1	1	10
Lightning	1	5	5	1	1	1	1	1	3	19
Tornado	5	5	5	5	5	5	3	5	5	43
Wildfire	1	1	1	1	1	3	1	1	1	11
Windstorm	3	3	5	3	3	4	3	3	3	30
Winter Storm	5	3	3	2	2	4	3	4	3	29

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of McFarland. Table 11 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 11 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	Minimal	Minimal	None	Specifics unknown; See hazard profile in County Plan
Drought	Minimal	None	None	Specifics unknown; See hazard profile in County Plan
Flooding	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below
Fog	Minimal	None	None	Specifics unknown; See hazard profile in County Plan
Hailstorm	Minimal	See Property Exposure table 8	See Table 9 Critical Facilities Summary	Specifics unknown; See hazard profile in County Plan
Landslide/ Sinkholes/ Erosion	Minimal	Minimal	None	Specifics unknown; See hazard profile in County Plan
Lightning	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Cold	See Tables 4-7 Population	Minimal	See Table 9 Critical Facilities Summary	Specifics unknown; See hazard profile in County Plan
Severe Heat	See Tables 4-7 Population	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Winter Storm	See Tables 4-7 Population	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 15 below	See Table 15 below	See Table 15 below	See Table 15 below
Wildfire	See Tables 4-7 Population	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Windstorm	See Tables 4-7 Population	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan

Data Source: 2021 Village of McFarland Data Collection Guide – Prepared by DCEM

Previous Hazard Events

Through the Data Collection Guide, the Village of McFarland noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the main mitigation plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The events noted by this jurisdiction in the Data Collection Guide can be found in Table 12.

Table 12 Village of McFarland Historic Natural Hazards

Natural Hazard	Date	Impacted Structures	Comprehensive Harm to Jurisdiction	Other reported Losses (Fiscal reports, programs, etc.)	Comments
Flood	08-09/2018	Multiple Impacted Structures	Local business flooded 2-3 inches; homes received water entering requiring pumping, and others had up to 12" of flooding, 2-3 cars were flooded. 6-12" culbert was washed out as well.	N/A	N/A

Data Source: 2021 Village of McFarland Data Collection Guide

Flood Hazard

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 13 and 14 outline the primary structures on them within the Village of McFarland, Dane County. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County (2.37 people as of 2021). Estimated loss potentials for all structures on the floodway can be found within section 4.6 in chapter 4 of the county plan.

Table 13 Primary Structures in the 100 Year Floodplain

Residential Structures in 100 yr. Floodway	Non-Residential Structures in 100 yr. Floodplain	Total Structures in 100 yr. Floodplain	Potential # of People at Risk in 100 yr. Floodplain	Total Assessed Values (\$) of Structures in 100 yr. Floodplain
1	0	1	2	\$19,669

Source: Analysis based on Dane County Land Information Office Data

Table 14 Primary Structures in the 500 Year Floodplain

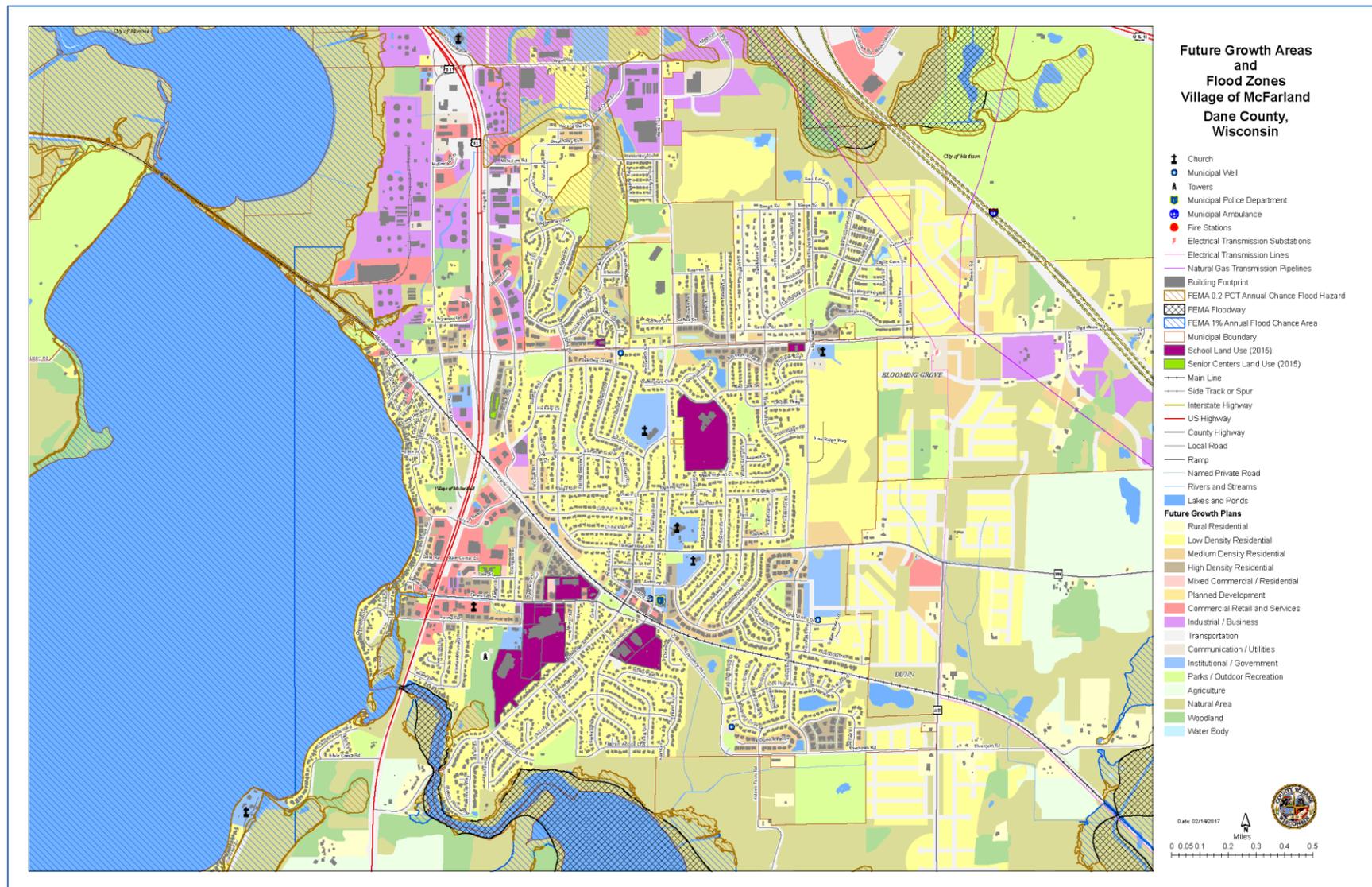
Residential Structures in 500 yr. Floodway	Non-Residential Structures in 500 yr. Floodplain	Total Structures in 500 yr. Floodplain	Potential # of People at Risk in 500 yr. Floodplain	Total Improved Values (\$) of Structures in 500 yr. Floodplain
10	3	13	24	\$3,632,315

Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Policies

- No repetitive loss properties have been reported in the Village of McFarland, Dane County.
- There are 18 flood insurance policies in force within the Village of McFarland, Dane County, with a total coverage of \$5,382,000.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2023 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 15 Tornado Loss Estimate

% Area impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value (\$)	Estimated Loss \$ (High Damage Range)	Estimated Loss \$ (Moderate Damage Range)	Estimated Loss \$ (Low Damage Range)	Loss Ratio for Moderate Damage Range
24.13%	3,708	895	1,468,309,793	354,232,896	177,116,448	88,558,224	12%

Data Source: Analysis Based on Dane County Land Information Office’s data

Problems or Additional Vulnerability Issues

The Village of McFarland identified the following additional vulnerabilities in the 2021 Data Collection Guide:

- **Average Depth of 100 Year Floodplain:**
 - 847 Feet
- **Hazard Concerns:**
 - Lack of access to resources/supports, financial issues, transportation, food insecurity, caregiver, internet are common among senior housing homes such as Homestead, Williamstown Bay, Cottages. Similarly, at-risk residents are conscious of any chemical or breathing hazards, mobility issues, need for adaptive equipment/oxygen, potential language barriers, cognitive and dementia type issues, medication needs.
- **Growth Trends:**
 - See Table 2: Growth and Development.
- **Changes since 2018 DC NHMP Update :**
 - Since the flooding in 2018, the Village of McFarland has increased its efforts to support a more reliable and efficient stormwater system. One project by the Village’s Public Works extends an open channel ditch to run between Taylor Road and Farwell Street to alleviate water flow. The concrete bottom is dedicated to avoiding potential flooding within Village boundaries. Additionally, maintenance has become less problematic in this area.

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of McFarland.

Mitigation Capabilities Summary

Table 16 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of McFarland.

Table 16 Village of McFarland Regulatory Mitigation Capabilities

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Existing Natural Hazard Mitigation Plan	No	Participate in Dane County Hazard Mitigation Plan
General or Comprehensive plan	Yes	Last updated 2017
Zoning ordinance	Yes	N/A
Subdivision ordinance	Yes	N/A
Growth management ordinance	Yes	Code only for East Side Neighborhood Growth Plan 2008
Shoreland/ wetland zoning ordinance	Yes	N/A
Floodplain zoning ordinance	Yes	N/A
FEMA / NFIP Community Rating System	No	Participate in NFIP Community Rating System
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	N/A
Building code	Yes	N/A
Fire department ISO rating	Yes (4)	N/A
Climate change Impact program	No	N/A
Erosion or sediment control program	Yes	N/A
Stormwater management program	Yes	N/A
Site plan review requirements	Yes	N/A
Capital improvements plan	Yes	N/A
Economic development plan	Yes	For certain areas, such as Tax Increment Finance Districts
Local emergency operations plan	Yes	N/A
Other special plans	Yes	Park Master Plans, Downtown Master Plan
Flood insurance study or other engineering study for streams	Yes	FEMA Report
Elevation certificates (for floodplain development)	Yes	Part of Flood Plan Mapping

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Climate Action Plan	Yes	McFarland Sustainability Plan, 2021

Data Source: Village of McFarland Data Collection Guide, 2021

Table 17 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of McFarland.

Table 17 Responsible Personnel and Departments for the Village of McFarland

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Community Development Director & Village Engineer	Contracted service through an engineering Firm
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Community Development Director, Building Inspector and Fire Inspector	Community Development Department/Building Inspector
Planner/engineer/scientist with an understanding of natural hazards	Yes	McFarland Emergency Management/Director	Staff specific depending on department
Personnel skilled in GIS	Yes	Community Development Director & Building Inspector	Dane County Land Information Office & CARPC
Full time building official	Yes	Building Inspector	
Personnel skilled in Climate resilience	No		Dane County Office of Energy and Climate Change
Floodplain manager	Yes	Community Development Director	
Emergency manager	Yes	Fire Chief, Police Chief	
Real estate acquisition personnel	No		
Grant writer	Yes	Staff specific depending on department	
Other personnel	Yes	Dane County Land Information Office	Dane County 911 Center
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)		McFarland Emergency Management/Director, Building Inspector	
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Do use Dane County Land Information	Community Development Department/Building Inspector

Data Source: Village of McFarland Data Collection Guide 2021

Table 18 identifies financial tools or resources that the Village of McFarland could potentially use to help fund mitigation activities.

Table 18 Financial Resources for the Village of McFarland

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	No
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Dedicated funding for land, easement or conservation easement acquisition	Yes
Fees for water, stormwater, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activities	No
Withhold spending in hazard prone areas	No

Data Source: Village of McFarland Data Collection Guide

Additional Capabilities

The Village of McFarland identified the following as past or ongoing public education or information programs, as well as hazard certifications:

- The Village conducts aggressive fire and building code inspections. These inspections include terminal fuel storage facility inspections and cooperative response plans.
- The Village of McFarland provides regular information for the public via website, Village newsletters and educational programs on water usage, fire safety and emergency preparedness. The community also sponsors an Earth Day event, wetland preservation and urban forest programs.
- The Village of McFarland is finalizing their plans on the new Public Safety Center. This facility will house the Fire & Rescue, Municipal Court, and Police Departments within a shared use facility, vacating the existing space in the Municipal Center. The facility itself is estimated at 58,000 square feet and will be a net-zero energy facility using geothermal heating, ventilation, and air conditioning (HVAC) and solar panels. This means the facility will produce more energy than it consumes.

National Flood Insurance Program Participation

The Village of McFarland currently participates in the National Flood Insurance Program.

Public Involvement Activities

The Village of McFarland provided a publically noticed listening session with the Village of McFarland Board on November 13, 2021. It was noticed on the village website. The listening session provided an agenda in order to discuss the draft mitigation strategies. No changes were made to the initial draft mitigation strategies.

MITIGATION STRATEGIES

Below are the identified mitigation strategies developed by the Village of McFarland’ NHMP steering committee. Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects. A *mitigation strategy* is a long-term vision for risk reduction in local jurisdictional or regional planning. A mitigation strategy can be achieved by a list of overall improvements to achieve (goals) that provide direction for community efforts to reduce potential losses identified in the risk assessment.

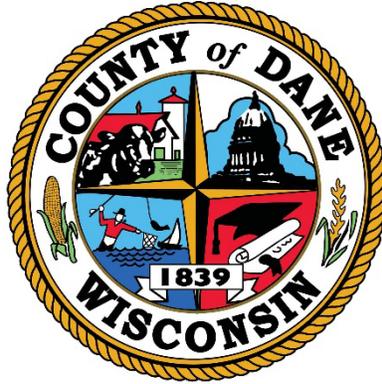
Strategy #1	Critical Facilities Protection for Uninterrupted Services
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
<p>It is the intended purpose of the Village of McFarland to develop strategies that optimally support the safety and resilience of the community. The continued operation of critical facilities within the Village, such as the Public Works building or the Municipal Center, are vital to the recovery efforts in the aftermath of a disaster. With routine building inspections and maintenances practices, the Village can be confident its structural buildings are effective in dealing with matters related to natural hazards and mitigation efforts. Commonly associated with the Village of McFarland and its region, as indicated in the problem statement, the south-central Wisconsin region is susceptible to tornados and extreme winter weathers such as winter storms and extreme cold.</p> <p>The desired outcome would be to reduce recovery costs and maintain uninterrupted operation through any extreme weather-related condition, while meeting the demands of the community’s access to water, electricity, sewer, and other municipal services. With emergency management, effective communication and preparedness leads to increased flow of services. This starts with having the infrastructure that are well equipped to handle extreme situations that might otherwise result in temporary loss of critical services.</p> <p>The following information references several McFarland adopted plans and projects, highlighting existing practices in preventative action and protection towards critical infrastructure. These tactics not only help to regulate development but are sustainable as well.</p>	

Strategy #1	Critical Facilities Protection for Uninterrupted Services
<p>Public Safety Center</p> <p>In 2021/2022 the Village is constructing a new Public Safety Center to relocate McFarland’s Fire & Rescue, Municipal Court and Police Center from the existing Municipal Center. Located at the southeast corner of Holscher Road and Broadhead Street, the building will be an estimated 58,000 square feet. A key component in this buildings design is its net-zero energy feature, utilizing geothermal heating, ventilation, and air conditioning (HVAC) and solar panels to meet its energy needs.</p> <p>The Public Safety Center has been designed to provide a more reliable facility with a backup generator sized to allow the building to function year-round. In contrast, the current Municipal Center does not offer generator power for hot water, heating, or cooling. The Public Safety Center will also be equipped with a portable generator inlet to allow a portable generator to replace the permanent generator if it fails. The Public Safety Center will also house a new Emergency Operations Center and offer a more secure location for the critical component of the Village Government during a disaster.</p>	
<p>Public Works Solar Panel Installation</p> <p>In December 2020, the Public Works installed solar panels to this building’s roof to support its energy use and to make the facility more resilient to power outages. Since that time, it has generated over 18MWh of energy, this is over 28,700lb of CO2 emission saved and 217 trees planted.</p>	

Strategy #1	Critical Facilities Protection for Uninterrupted Services
McFarland Sustainability Plan 2021	
<p>The Sustainability Plan was adopted in the summer of 2021 with the assistance from the Ad-Hoc Sustainability Committee. Sustainability is a whole systems approach which works to balance and incorporate the three “E’s,” which are commonly identified as environmental, equity, and economy. The McFarland Sustainability Plan’s guiding principles addresses natural resource protection and prevention strategies as described below:</p> <ol style="list-style-type: none"> 1. Reduce dependence on fossil fuels and extracted underground metals and minerals. 2. Reduce dependence on chemicals and other manufactured substances that can accumulate in nature. 3. Reduce dependence on activities that harm life-sustaining ecosystems. 4. Reduce barriers to achieving present and future human needs equitably and efficiently. <p>Relevant plan actions include:</p> <ul style="list-style-type: none"> • Conducting energy audits of all municipal facilities to identify potential energy efficiency improvements. This strategy would include the potential installation of on-site renewable energy systems to make critical municipal facilities and infrastructure more resilient to energy outages from natural hazard events. 	
Village of McFarland Comprehensive Plan	
<p>McFarland Comprehensive Plan, Chapter 7, Utilities and Community Facilities – Policies for Utilities and Community Facilities:</p> <ol style="list-style-type: none"> 7. Invest in sustainable buildings and infrastructure to reduce costs, promote stewardship, and protect the environment 9. Complete regular maintenance of utilities and community facilities in accordance with best practices and requirements. 	
Defined steps to achieving this mitigation strategy	

Strategy #1	Critical Facilities Protection for Uninterrupted Services
	<p>1. Routine Building Inspection and Maintenance</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works b. <i>Funding source</i> –Municipal Budget, Capital Improvement c. <i>Completion date</i> – Ongoing
	<p>2. Routine Fire Prevention Inspections</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Fire Inspector and Fire Department b. <i>Funding source</i> – Municipal Budget c. <i>Completion date</i> – Ongoing
	<p>3. Review/Approval of Building Addition & Alternation under Code Regulation</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Community & Economic Development Department and Building Inspector b. <i>Funding source</i> – Municipal Budget, Capital Improvement Funds c. <i>Completion date</i> – Ongoing

Strategy #2	South Court Floodwall Project	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>This potential future project would involve the raising of South Court (north end at Lake Edge Road) along with the construction of a sump pit to aid in the diversion of storm water to prevent possible flooding from adjacent Lake Waubesa.</p>		
Defined steps to achieving this mitigation strategy		
<p>1. Design</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of McFarland b. <i>Funding source</i> – Tax Levy and/or Capital Expense c. <i>Completion date</i> – Unknown at this time as this is a <i>possible</i> future project 		
<p>2. Construction</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village of McFarland b. <i>Funding source</i> – Tax Levy and/or Capital Expense c. <i>Completion date</i> – Unknown at this time as this is a <i>possible</i> future project 		



Dane County Natural Hazard Mitigation Plan

Village of Mount Horeb Annex
Summer 2022

Village of Mount Horeb Annex

This annex is a part of the Dane County Natural Hazard Mitigation Plan (DCNHMP). The DCNHMP contains additional information to support the Federal Emergency Management Agency's (FEMA) recognition of the plan (including this annex) as the formal natural hazard mitigation plan for the county and participating local governments. This annex will be valid for as long as FEMA approves the DCNHMP. The strategies adopted in this annex are designed to guide community efforts to reduce risks from natural hazards. These strategies work in conjunction with neighboring communities and Dane County government to reduce risks from natural hazards

COMMUNITY PROFILE

The Village of Mount Horeb is located in the southeast quadrant of the County, north of the Town of Primrose, east of the Village of Blue Mounds, and south of the Town of Vermont. Land use is primarily residential and commercial. According to the United States Census Bureau, the Village of Mt. Horeb has a total area of 3.25 square miles. As of 2020, it is estimated that the Village of Mt. Horeb has 2,709 households with an average household size of 2.72 people.

The municipal population data provided by the American Community Survey, a product of the US Census Bureau, indicates that the 2019 population estimates for Village of Mt. Horeb, Dane County, is comprised of 7,449 people. Table 1 shows the population profile by age for the village.

Table 1 Population Profile of Village of Mt. Horeb, Dane County

Category	Number	Percent
Total Population	7,449	100%
Under 5 years	462	6.2%
5 to 9 years	819	11.0%
10 to 14 years	799	10.7%
15 to 19 years	462	6.2%
20 to 24 years	104	1.4%
25 to 29 years	401	5.4%
30 to 34 years	467	6.3%
35 to 39 years	762	10.2%
40 to 44 years	545	7.3%
45 to 49 years	495	6.6%
50 to 54 years	617	8.3%
55 to 59 years	375	5.0%
60 to 64 years	199	2.7%
65 to 69 years	369	5.0%
70 to 74 years	123	1.7%
75 to 79 years	65	0.9%
80 to 84 years	172	2.3%
85 years and over	213	2.9%

Data Source: 2019 ACS Estimates - U.S. Census

Growth & Development Trends

Table 2-3 illustrates how the entire Village of Mt. Horeb has grown in terms of population and number of households between 2010 and 2020. Housing data is to 2020 due to data availability. Table 2-3 is drawn from the Demographics Services Center at the Wisconsin Department of Administration, and shows population projections through 2040.

Table 2 Village of Mt. Horeb Change in Population and Households, 2010-2020

2010 Population	2020 Population	Percent Change (%) 2010-2020	2010 # of Households	2020 # of Households	Percent Change (%) 2010-2020
7,009	7,486	6.8%	2,696	2,709	0.48%

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Table 3 Village of Mt. Horeb Population Projections, 2020-2040

Population Projection	2020	2025	2030	2035	2040
Increase by half of percent of change (15.15%/2) every 5 years	7,486	7,740	8,003	8,275	8,556

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Note: Population estimates offered by the U.S. Census Bureau’s American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Population Summary

Tables 4-7 illustrates key population demographics within the Village of Mt. Horeb. Key demographics include: (1) Disability Characteristics, (2) Federal Income Poverty Levels, (3) Educational Attainment, and (4) Household Language with English Speaking Capabilities. Due to data availability, all key demographic information has been provided by the American Community Survey (ACS) 2019 estimates. The ACS is a self-reported survey and may include total sample size differences and statistical margin of error.

Table 4 Village of Mt. Horeb, Dane County – Disability Characteristics by Detailed Age

Category	Number	Percent
Total of Residents Self-Identified as Disabled	1537	100%
With a hearing difficulty	320	20.8%
Population under 18 years	0	-
Population 18 to 64 years	137	-
Population 65 years and over	183	-
With a vision difficulty	182	11.8%
Population under 18 years	0	-
Population 18 to 64 years	85	-
Population 65 years and over	97	-
With a cognitive difficulty	321	20.9%
Population under 18 years	67	-
Population 18 to 64 years	139	-
Population 65 years and over	115	-
With an ambulatory difficulty	340	22.12%
Population under 18 years	0	-
Population 18 to 64 years	109	-
Population 65 years and over	231	-
With a self-care difficulty	161	10.5%
Population under 18 years	33	-
Population 18 to 64 years	44	-
Population 65 years and over	84	-
With an independent living difficulty	213	13.9%
Population 18 to 64 years	52	-
Population 18 to 34 years	0	-
Population 65 years and over	161	-

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.1: Village of Mt. Horeb, Dane County – Federal Income Poverty Levels (FIPL) by Families
Summary

Category	Number of Families
50 percent of poverty level	28
125 percent of poverty level	42
150 percent of poverty level	83
185 percent of poverty level	167
200 percent of poverty level	211
300 percent of poverty level	394
400 percent of poverty level	744
500 percent of poverty level	1,147

Data Source: 2019 ACS Estimates - U.S. Census

Note: Use table 5.2 to interpret table 5.1:

5.1 identifies the *total number of families* (regardless of size) by percentage.

5.2 identifies *family size* in relation to annual family income and the percentage category of the FIPL.

Table 5.2: Village of Mt. Horeb, Dane County – Annual Federal Income Poverty Level Guide

Family Size	50%	100%	125%	150%	185%	200%	300%	400%	500%
1	\$6,440	\$12,880	\$16,100	\$19,320	\$23,828	\$25,760	\$38,640	\$51,520	\$64,400
2	\$8,710	\$17,420	\$21,775	\$26,130	\$32,227	\$34,840	\$52,260	\$69,680	\$87,100
3	\$10,980	\$21,960	\$27,450	\$32,940	\$40,626	\$43,920	\$65,880	\$87,840	\$109,800
4	\$13,250	\$26,500	\$33,125	\$39,750	\$49,025	\$53,000	\$79,500	\$106,000	\$132,500
5	\$15,520	\$31,040	\$38,800	\$46,560	\$57,424	\$62,080	\$93,120	\$124,160	\$155,200
6	\$17,790	\$35,580	\$44,475	\$53,370	\$65,823	\$71,160	\$106,740	\$142,320	\$177,900

Data Source: dhs.wisconsin.gov

Table 6: Village of Mt. Horeb, Dane County – Educational Attainment by Householders

Category	Number	Percent
Total of Householders	1,823	100%
Less than high school graduate	0	0.0%
High school graduate (includes equivalency)	180	9.9%
Some college, associate's degree	489	26.8%
Bachelor's degree or higher	1,154	63.3%

Data Source: 2019 ACS Estimates - U.S. Census

Table 7: Village of Mt. Horeb, Dane County – Household Language & English Speaking Capabilities

Category	Number	Percent
Total of Households	2,709	100%
English only	2,611	96.4%
Spanish:	47	1.7%
Limited English speaking household	17	-
Not a limited English speaking household	30	-
Other Indo-European languages:	51	1.9%
Limited English speaking household	0	-
Not a limited English speaking household	51	-
Asian and Pacific Island languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-
Other languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-

Data Source: 2019 American Community Survey

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of Mt. Horeb that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

General Property

Table 8 Property Exposure Summary

Property Type	Parcel Count	Improved Land Count	Improved Land Value (\$)	Content Value (\$)	Total Value (\$)
Total	3,026	2,966	609,357,660	304,678,830	914,036,490
Agriculture	7	7	1,309,600	654,800	1,964,400
Industrial	17	17	22,127,900	11,063,950	33,191,850
Residential	2,778	2,778	519,573,560	259,786,780	779,360,340
Transportation	3	0	0	0	0
Utility	27	0	0	0	0
Commercial	138	138	65,553,400	32,776,700	98,330,100
Other	25	4	233,000	116,500	349,500
Institutional/ Governmental	31	22	560,200	280,100	840,300

Data Source: Dane County Land Information Office, December 2021

Critical Facilities

The Village of Mt. Horeb has identified the critical facilities important to protect from disaster impacts. These are collected in Table 9. Table 9 is based on GIS data inventories from Dane County and information gathered from the Village. No further supplemental data was provided by the community through the Data Collection Guide.

Table 9 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
Public Services Garage	EI	1	800,000
Municipal Building	EI	1	2,100,000
Community Center	VF	1	990,000
Library	VF	1	3,200,000
BeeHive Homes	VF	N/A	875,000
Academy of Little Vikings	VF	1	1,100,000
Tigers Corner Daycare	VF	1	200,000
Agape Christian Preschool	VF	1	1,500,000
Happy Family Daycare	VF	1	100,000
TLC Daycare	VF	1	325,000
A Place to Grow Child Care	VF	1	1,700,000
Childrens Community School	VF	1	1,000,000
Hartogs Family Treehouse	VF	1	160,000
Mary's Family Daycare	VF	1	235,000
Pam Collins Daycare	VF	1	185,000
Rainbow Family Day Care	VF	1	200,000
Ingleside Communities	VF	1	10,000,000
Girlie's Manor	VF	1	700,000
Mount Horeb Public Safety	EI	1	14,000,000
Premier Cooperative	HM	1	1,500,000
Winfield United	HM	1	500,000
Mount Horeb Early Learning Center	EI	1	25,000,000
Mount Horeb Primary Center	EI	1	25,000,000
Mount Horeb Intermedia Center	EI	1	25,000,000
Mount Horeb Middle School	EI	1	25,000,000
Mount Horeb High School	EI	1	75,000,000
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities			

Data Source: 2021 Village of Mt. Horeb Data Collection Guide

Other Assets

Other assets help define a community beyond the current composition of the Village of Mt. Horeb. These assets may provide economic benefit to the community, in addition to preserving the heritage and diversity of the community and may include natural, cultural and historic assets or economic assets such as major employers. It may also include more specific detail on critical facilities. The Village of Mt. Horeb has not identified any other assets.

VULNERABILITY ASSESSMENT

A hazard identification and vulnerability analysis was completed for the Village of Mt. Horeb using the same methodology in the County's base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 10 outlines the hazard identification for the Village of Mt. Horeb based on the Data Collection Guide issued in 2021. The Data Collection Guide listed all of the hazards that could impact Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. Brooklyn's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern." This matrix appears as Table 10. This matrix reflects the significance of the hazards relative to one another as perceived by the Example's planning team.

This matrix reflects that the Village of Mt. Horeb is most vulnerable to lightening, winter storms, extreme heat. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 10: Vulnerability Assessment Matrix for the Village of Mt. Horeb

Name of Jurisdiction: <u>Village of Mt. Horeb</u>										
Hazard	Hazard Attributes			Impact Attributes						Total of Row Values
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
Impact on General Structures				Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards		
	<i>(1-5)</i>	<i>(1-5)</i>	<i>(1-5)</i>	<i>(0-5)</i>	<i>(0-5)</i>	<i>(0-5)</i>	<i>(0-5)</i>	<i>(0-5)</i>	<i>(0-5)</i>	
Dam/Levee failure	1	1	1	0	0	0	0	0	0	3
Extreme Cold	5	4	2	3	4	4	2	3	3	30
Extreme Heat	5	4	3	3	3	4	3	3	4	32
Drought	3	3	2	1	2	2	1	3	3	20
Expansive soils	1	1	1	0	0	0	0	0	0	3
Flood	2	2	3	2	3	2	2	3	3	22
Fog	3	3	3	1	1	1	1	1	1	15
Hail Storm	3	3	4	2	2	1	1	3	2	21
Landslide	1	1	2	0	0	0	0	0	0	4
Lightning	3	4	3	3	3	1	3	4	4	28
Tornado	4	3	3	5	5	4	4	5	4	37
Wildfire	1	1	1	2	1	1	1	1	1	10
Windstorm	4	3	3	3	3	3	2	3	3	27
Winter Storm	4	4	4	3	4	4	3	3	4	33

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of Mt. Horeb. Table 11 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 11 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	None	None	None	Specifics unknown; See hazard profile in County Plan
Drought	Moderate	Minimal	Moderate	Specifics unknown; See hazard profile in County Plan
Flooding	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below
Fog	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Hailstorm	Minimal	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Landslide/ Sinkholes/ Erosion	None	None	None	Specifics unknown; See hazard profile in County Plan
Lightning	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Cold	See Tables 4-7 Population	See Property Exposure Table 8	See Table 9 Critical Facilities Summary	Specifics unknown; See hazard profile in County Plan
Severe Heat	See Tables 4-7 Population	See Property Exposure Table 8	See Table 9 Critical Facilities Summary	Specifics unknown; See hazard profile in County Plan
Winter Storm	See Tables 4-7 Population	See Property Exposure Table 8	See Table 9 Critical Facilities Summary	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 15 below	See Table 15 below	See Table 15 below	See Table 15 below
Wildfire	Minimal	Moderate	Minimal	Specifics unknown; See hazard profile in County Plan
Windstorm	See Tables 4-7 Population	See Property Exposure Table 8	See Table 9 Critical Facilities Summary	Specifics unknown; See hazard profile in County Plan

Data Source: 2021 Village of Mt. Horeb Data Collection Guide – Prepared by DCEM

Previous Hazard Events

Through the Data Collection Guide, the Village of Mt. Horeb noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the main mitigation plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The events noted by this jurisdiction in the Data Collection Guide can be found in Table 12.

Table 12 Village of Mt. Horeb Historic Natural Hazards

Natural Hazard	Date	Impacted Structures	Comprehensive Harm to Jurisdiction	Other reported Losses (Fiscal reports, programs, etc.)	Comments
Winter Storm	02/5-6/2008	N/A	Roads covered in snow and impassible.	N/A	N/A
Winter Storm	02/1-2/2011	N/A	Heavy snow caused closed roads.	N/A	N/A
Excessive Heat	07/1-7/2012	N/A	Long duration heat	N/A	N/A
Winter storm	12/20/2012	N/A	Heavy snow throughout day and night, businesses and schools closed. 20 inches in total.	N/A	N/A
Windstorm	07/19-20/2017	Multiple Impacted Structures	Electrical wire damage was widespread, several trees caught fire from open wires.	N/A	N/A
Flood / Severe Weather	08/20-21/2018	Multiple Impacted Structures	Flooded basements, Water Pumping Station was flooded due to lower elevation.	N/A	N/A

Data Source: 2021 Village of Mt. Horeb Data Collection Guide

Flood Hazard

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 13 and 14 outline the primary structures on them within the Village of Mt. Horeb, Dane County. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County (2.37 people as of 2021). Estimated loss potentials for all structures on the floodway can be found within section 4.6 in chapter 4 of the county plan.

Table 13 Primary Structures in the 100 Year Floodplain

Residential Structures in 100 yr. Floodway	Non-Residential Structures in 100 yr. Floodplain	Total Structures in 100 yr. Floodplain	Potential # of People at Risk in 100 yr. Floodplain	Total Assessed Values (\$) of Structures in 100 yr. Floodplain
0	1	1	0	\$0

Source: Analysis based on Dane County Land Information Office Data

Table 14 Primary Structures in the 500 Year Floodplain

Residential Structures in 500 yr. Floodway	Non-Residential Structures in 500 yr. Floodplain	Total Structures in 500 yr. Floodplain	Potential # of People at Risk in 500 yr. Floodplain	Total Improved Values (\$) of Structures in 500 yr. Floodplain
0	0	0	0	\$0

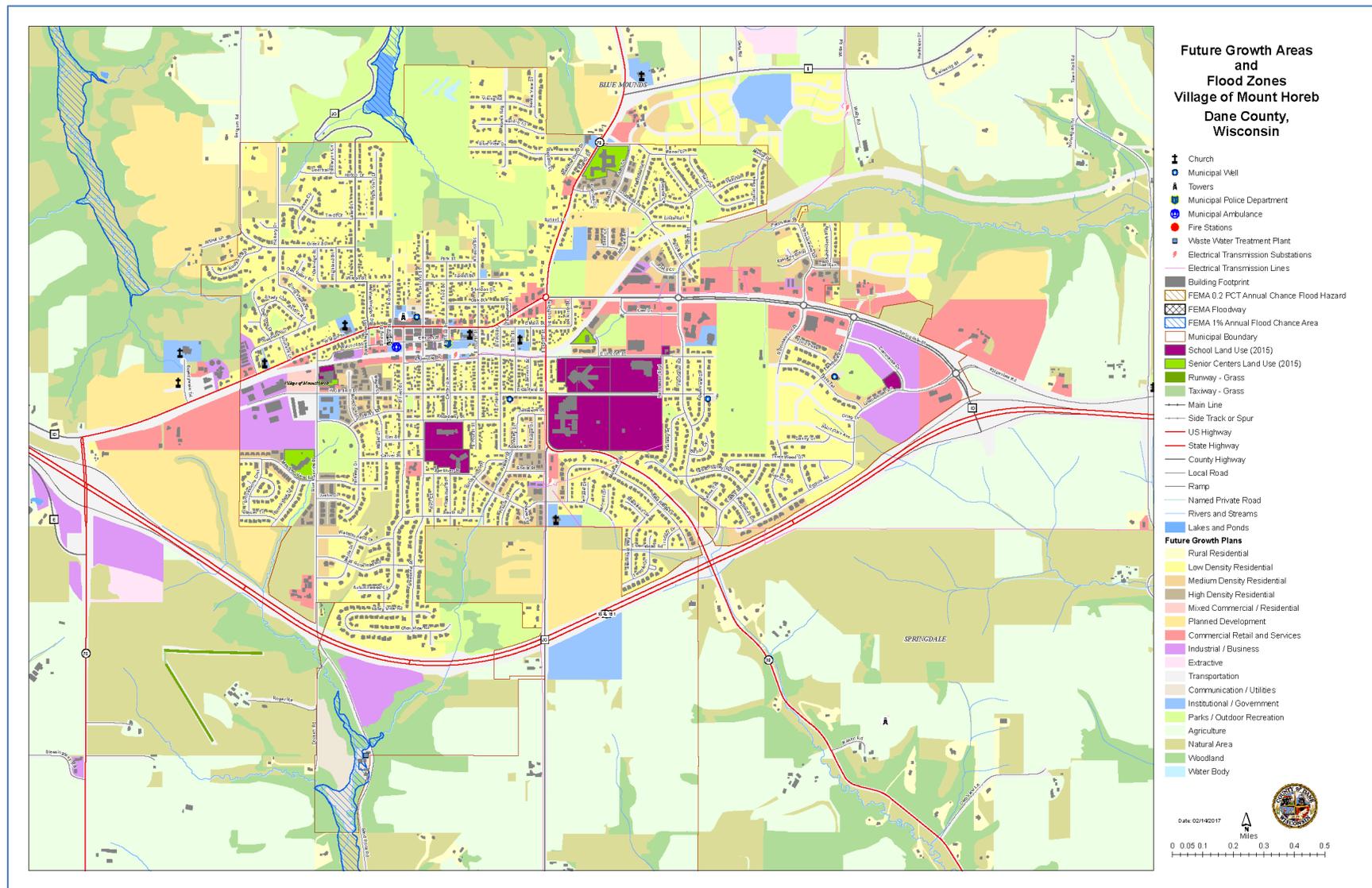
Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Policies

- No repetitive loss properties have been reported in the Village of Mt. Horeb, Dane County.
- There are no flood insurance policies in force within the Village of Mt. Horeb, Dane County.

The Village of Dane does not participate in the National Flood Insurance Program because they do not have areas vulnerable to flooding.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2023 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 15 Tornado Loss Estimate

% Area impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value (\$)	Estimated Loss \$ (High Damage Range)	Estimated Loss \$ (Moderate Damage Range)	Estimated Loss \$ (Low Damage Range)	Loss Ratio for Moderate Damage Range
26.15%	2,966	776	914,036,490	239,010,116	119,505,058	59,752,529	13%

Data Source: Analysis Based on Dane County Land Information Office's data

Problems or Additional Vulnerability Issues

The Village of Mt. Horeb did not identify any additional vulnerabilities in the 2021 Data Collection Guide.

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of Mt. Horeb.

Mitigation Capabilities Summary

Table 16 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of Mt. Horeb.

Table 16 Village of Mt. Horeb Regulatory Mitigation Capabilities

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Existing Natural Hazard Mitigation Plan	No	N/A
General or Comprehensive plan	Yes	Currently undergoing 10 year update
Zoning ordinance	Yes	N/A
Subdivision ordinance	Yes	N/A
Growth management ordinance	Yes	N/A
Shoreland/ wetland zoning ordinance	Yes	N/A
Floodplain zoning ordinance	No	No significant floodplain in Village
FEMA / NFIP Community Rating System		N/A
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	N/A
Building code	Yes	N/A
Fire department ISO rating	Yes	N/A
Climate change Impact program	No	N/A
Erosion or sediment control program	Yes	N/A
Stormwater management program	Yes	N/A
Site plan review requirements	Yes	N/A
Capital improvements plan	Yes	N/A
Economic development plan	Yes	N/A
Local emergency operations plan	Yes	N/A
Other special plans		N/A
Flood insurance study or other engineering study for streams	No	N/A
Elevation certificates (for floodplain development)	No	N/A

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Climate Action Plan	No	N/A

Data Source: Village of Mt. Horeb Data Collection Guide, 2021

Table 17 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of Mt. Horeb.

Table 17 Responsible Personnel and Departments for the Village of Mt. Horeb

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Contract consultant	N/A
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	N/A	N/A
Planner/engineer/scientist with an understanding of natural hazards	Yes	N/A	N/A
Personnel skilled in GIS	Yes	N/A	N/A
Full time building official	Yes	N/A	N/A
Personnel skilled in Climate resilience	No	N/A	N/A
Floodplain manager	No	N/A	N/A
Emergency manager	No	N/A	N/A
Real estate acquisition personnel	No	N/A	N/A
Grant writer	No	N/A	N/A
Other personnel		N/A	N/A
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)		N/A	N/A
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	With County	N/A

Data Source: Village of Mt. Horeb Data Collection Guide 2021

Table 18 identifies financial tools or resources that the Village of Mt. Horeb could potentially use to help fund mitigation activities.

Table 18 Financial Resources for the Village of Mt. Horeb

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Dedicated funding for land, easement or conservation easement acquisition	Yes
Fees for water, stormwater, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activities	N/A
Withhold spending in hazard prone areas	N/A

Data Source: Village of Mt. Horeb Data Collection Guide

Additional Capabilities

The Village of Mt. Horeb did not identify any significant past or ongoing public education or information programs, as well as hazard certifications.

National Flood Insurance Program Participation

The Village of Mt. Horeb does not participate in the National Flood Insurance Program. The Village does not participate because the Village is not prone to surface flooding.

Public Involvement Activities

The Village of Mt. Horeb provided a publically noticed listening session with the Village of Mt. Horeb Board on November 3, 2021. It was noticed on the village website. The listening session provided an agenda in order to discuss the draft mitigation strategies. A virtual option was offered for remote viewing. No changes were made to the initial draft mitigation strategies.

MITIGATION STRATEGIES

Below are the identified mitigation strategies developed by the Village of Mt. Horeb’ NHMP steering committee. Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects. A *mitigation strategy* is a long-term vision for risk reduction in local jurisdictional or regional planning. A mitigation strategy can be achieved by a list of overall improvements to achieve (goals) that provide direction for community efforts to reduce potential losses identified in the risk assessment.

Strategy #1	County Collaboration	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
Support Dane County efforts to mitigate natural hazards at the local level through continued collaboration with County projects in the Village of Mount Horeb area. The Village will continue to lower its vulnerability to natural hazards by distributing County hazard mitigation information and evaluating grant opportunities for potential use on hazard mitigation projects within the Village.		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Consider Dane County hazard mitigation information and its relevance to Village hazard mitigation efforts and resident safety 		
<ol style="list-style-type: none"> 2. Take necessary steps to apply for hazard mitigation grant money when available. Responsible Party – Village of Mount Horeb Funding source – Ongoing using current village staff and resources Completion date – Continuous 		

Strategy #2	Resident Education	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
The Village of Mount Horeb will seek to inform residents of the educational and awareness opportunities available through Dane County and other weather and disaster related sites.		
Defined steps to achieving this mitigation strategy		
<p>1. The Village of Mount Horeb will utilize social media, village announcements, and other postings to make residents aware of education and alerts related to storms and other natural disasters. This includes but is not limited to: Tornado Awareness Month- Typically April which also encompasses Wisconsin Severe Weather Awareness Week. The Village will promote the National Weather Service storm spotter classes and other related educational opportunities. Winter Weather Week- Typically in November. The Village will promote educational opportunities related to winter storm safety and awareness Dane County Emergency Management (DCEM)- Encourage residents to sign up to receive emergency alerts via phone, email, and text. Promote DCEM Twitter and Facebook and reposting locally relevant posts.</p> <p>Responsible Party– Village of Mount Horeb</p> <p>Funding source – Ongoing using current village staff and resources</p> <p>Completion date – Continuous</p>		



Dane County Natural Hazard Mitigation Plan

Village of Shorewood Hills Annex

Summer 2022

Village of Shorewood Hills Annex

This annex is a part of the Dane County Natural Hazard Mitigation Plan (DCNHMP). The DCNHMP contains additional information to support the Federal Emergency Management Agency's (FEMA) recognition of the plan (including this annex) as the formal natural hazard mitigation plan for the county and participating local governments. This annex will be valid for as long as FEMA approves the DCNHMP. The strategies adopted in this annex are designed to guide community efforts to reduce risks from natural hazards. These strategies work in conjunction with neighboring communities and Dane County government to reduce risks from natural hazards.

COMMUNITY PROFILE

The Village of Shorewood Hills is located in the center of the County, just south of Lake Mendota and surrounded on all sides by the City of Madison. Land use is dominated by agriculture and woodlands, and dispersed one, two and multi-family homes. According to the United States Census Bureau, the Village of Shorewood Hills has a total area of .81 square miles, all of it land. As of 2020, it is estimated that the Village of Shorewood Hills has 629 households with an average household size of 2.39 people.

The municipal population data provided by the American Community Survey, a product of the US Census Bureau, indicates that the 2019 population estimates for Village of Shorewood Hills, Dane County, is comprised of 2,277 people. Table 1 shows the population profile by age for the village.

Table 1 Population Profile of Village of Shorewood Hills, Dane County

Category	Number	Percent
Total Population	2,277	100%
Under 5 years	113	5.0%
5 to 9 years	117	5.1%
10 to 14 years	166	7.3%
15 to 19 years	146	6.4%
20 to 24 years	149	6.5%
25 to 29 years	154	6.8%
30 to 34 years	145	6.4%
35 to 39 years	145	6.4%
40 to 44 years	85	3.7%
45 to 49 years	132	5.8%
50 to 54 years	198	8.7%
55 to 59 years	150	6.6%
60 to 64 years	153	6.7%
65 to 69 years	142	6.2%
70 to 74 years	119	5.2%
75 to 79 years	90	4.0%
80 to 84 years	33	1.4%
85 years and over	40	1.8%

Data Source: 2019 ACS Estimates - U.S. Census

Growth & Development Trends

Table 2-3 illustrates how the entire Village of Shorewood Hills has grown in terms of population and number of households between 2010 and 2020. Housing data is to 2020 due to data availability. Table 2-3 is drawn from the Demographics Services Center at the Wisconsin Department of Administration, and shows population projections through 2040.

Table 2 Village of Shorewood Hills Change in Population and Households, 2010-2020

2010 Population	2020 Population	Percent Change (%) 2010-2020	2010 # of Households	2020 # of Households	Percent Change (%) 2010-2020
1,565	2,376	51.82%	620	629	1.4%

Data Source: Demographic Services Center, Wisconsin Department of Administration

Table 3 Village of Shorewood Hills Population Projections, 2020-2040

Population Projection	2020	2025	2030	2035	2040
Increase by half of percent of change (51.82%/2) every 5 years	2,376	2,976	3,728	4,670	5,851

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Note: Population estimates offered by the U.S. Census Bureau’s American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Population Summary

Tables 4-7 illustrates key population demographics within the Village of Shorewood Hills. Key demographics include: (1) Disability Characteristics, (2) Federal Income Poverty Levels, (3) Educational Attainment, and (4) Household Language with English Speaking Capabilities. Due to data availability, all key demographic information has been provided by the American Community Survey (ACS) 2019 estimates. The ACS is a self-reported survey and may include total sample size differences and statistical margin of error.

Table 4 Village of Shorewood Hills, Dane County – Disability Characteristics by Detailed Age

Category	Number	Percent
Total of Residents Self-Identified as Disabled	207	100%
With a hearing difficulty	44	21.3
Population under 18 years	0	-
Population 18 to 64 years	6	-
Population 65 years and over	38	-
With a vision difficulty	27	13.0
Population under 18 years	2	-
Population 18 to 64 years	6	-
Population 65 years and over	19	-
With a cognitive difficulty	34	16.4
Population under 18 years	2	-
Population 18 to 64 years	20	-
Population 65 years and over	12	-
With an ambulatory difficulty	46	22.2
Population under 18 years	0	-
Population 18 to 64 years	14	-
Population 65 years and over	32	-
With a self-care difficulty	19	9.2
Population under 18 years	0	-
Population 18 to 64 years	7	-
Population 65 years and over	12	-
With an independent living difficulty	37	17.9
Population 18 to 64 years	16	-
Population 18 to 34 years	13	-
Population 65 years and over	21	-

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.1: Village of Shorewood Hills, Dane County – Federal Income Poverty Levels (FIPL) by Families Summary

Category	Number of Families
50 percent of poverty level	10
125 percent of poverty level	27
150 percent of poverty level	33
185 percent of poverty level	51
200 percent of poverty level	54
300 percent of poverty level	72
400 percent of poverty level	110
500 percent of poverty level	161

Data Source: 2019 ACS Estimates - U.S. Census

Note: Use table 5.2 to interpret table 5.1:

5.1 identifies the *total number of families* (regardless of size) by percentage.

5.2 identifies *family size* in relation to annual family income and the percentage category of the FIPL.

Table 5.2: Village of Shorewood Hills, Dane County – Annual Federal Income Poverty Level Guide

Family Size	50%	100%	125%	150%	185%	200%	300%	400%	500%
1	\$6,440	\$12,880	\$16,100	\$19,320	\$23,828	\$25,760	\$38,640	\$51,520	\$64,400
2	\$8,710	\$17,420	\$21,775	\$26,130	\$32,227	\$34,840	\$52,260	\$69,680	\$87,100
3	\$10,980	\$21,960	\$27,450	\$32,940	\$40,626	\$43,920	\$65,880	\$87,840	\$109,800
4	\$13,250	\$26,500	\$33,125	\$39,750	\$49,025	\$53,000	\$79,500	\$106,000	\$132,500
5	\$15,520	\$31,040	\$38,800	\$46,560	\$57,424	\$62,080	\$93,120	\$124,160	\$155,200
6	\$17,790	\$35,580	\$44,475	\$53,370	\$65,823	\$71,160	\$106,740	\$142,320	\$177,900

Data Source: dhs.wisconsin.gov

Table 6: Village of Shorewood Hills, Dane County – Educational Attainment by Householders

Category	Number	Percent
Total of Householders	625	100%
Less than high school graduate	3	0.5%
High school graduate (includes equivalency)	23	3.7%
Some college, associate's degree	32	5.1%
Bachelor's degree or higher	567	90.7%

Data Source: 2019 ACS Estimates - U.S. Census

Table 7: Village of Shorewood Hills, Dane County – Household Language & English Speaking Capabilities

Category	Number	Percent
Total of Households	950	100%
English only	797	83.9%
Spanish:	28	2.9%
Limited English speaking household	0	-
Not a limited English speaking household	28	-
Other Indo-European languages:	59	6.2%
Limited English speaking household	6	-
Not a limited English speaking household	53	-
Asian and Pacific Island languages:	50	5.3%
Limited English speaking household	0	-
Not a limited English speaking household	50	-
Other languages:	16	1.7%
Limited English speaking household	0	-
Not a limited English speaking household	16	-

Data Source: 2019 American Community Survey

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of Shorewood Hills that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

General Property

Table 8 Property Exposure Summary

Property Type	Parcel Count	Improved Land Count	Improved Land Value (\$)	Content Value (\$)	Total Value (\$)
Total	745	723	352,877,700	176,438,850	529,316,550
Residential	681	681	279,783,300	139,891,650	419,674,950
Transportation	1	0	0	0	0
Commercial	42	42	73,094,400	36,547,200	109,641,600
Other	9	0	0	0	0
Institutional/ Governmental	12	0	0	0	0

Data Source: Dane County Land Information Office, December 2021

Critical Facilities

The Village of Shorewood Hills has identified the critical facilities important to protect from disaster impacts. These are collected in Table 9. Table 9 is based on GIS data inventories from Dane County and information gathered from the Village. No further supplemental data was provided by the community through the Data Collection Guide.

Table 9 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
University Ave.	EI	1	\$6M
Village Hall*	EI	1	\$2M
Police Department*	EI	1	\$1.5M
Public Works Building	EI	1	\$2.5M
School	VF	N/A	N/A
Marina/Quonset Hut	VF	1	\$70K
Boathouse	VF	1	\$400K
Public Works Cold Storage	EI	1	\$1M
Public Works Salt Shed	EI	1	\$500K
Water System Pumps	EI	N/A	\$1.2M
Sanitary Sewer Lift Station	EI	1	\$800K
Community Center**	VF	1	\$1.5M
Swimming Pool**	VF	1	\$2M
Pool Storage Area	HM	1	N/A
Meeting House Nursery School	VF	1	N/A
University Station Clinic	VF	1	N/A
BHCC Maintenance Bldg.	HM	1	N/a
Heiden Haus	EI	1	\$500k
Four Corners	EI	1	\$200k
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities			

Data Source: 2021 Village of Shorewood Hills Data Collection Guide

Other Assets

Other assets help define a community beyond the current composition of the Village of Shorewood Hills. These assets may provide economic benefit to the community, in addition to preserving the heritage and diversity of the community and may include natural, cultural and historic assets or economic assets such as major employers. It may also include more specific detail on critical facilities. The Village of Shorewood Hills has not identified any other assets.

VULNERABILITY ASSESSMENT

A hazard identification and vulnerability analysis was completed for the Village of Shorewood Hills using the same methodology in the County's base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 10 outlines the hazard identification for the Village of Shorewood Hills based on the Data Collection Guide issued in 2021. The Data Collection Guide listed all of the hazards that could impact Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. Brooklyn's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern." This matrix appears as Table 10. This matrix reflects the significance of the hazards relative to one another as perceived by the Example's planning team.

This matrix reflects that the Village of Shorewood Hills is most vulnerable to tornado, floods, winter storms. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 10: Vulnerability Assessment Matrix for the Village of Shorewood Hills

Name of Jurisdiction: <u>Village of Shorewood Hills</u>										
Hazard	Hazard Attributes			Impact Attributes						Total of Row Values
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
Impact on General Structures				Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards		
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	
Dam/Levee failure	1	1	1	1	1	1	0	1	1	7
Extreme Cold	2	1	1	2	2	3	1	2	2	16
Extreme Heat	2	1	1	1	1	3	1	2	2	14
Drought	2	2	1	0	0	0	1	2	2	10
Expansive soils	0	0	0	0	0	0	0	0	0	0
Flood	3	4	4	2	2	2	3	3	2	25
Fog	1	1	1	0	0	0	0	0	0	3
Hail Storm	2	1	1	1	1	1	1	1	1	10
Landslide	2	1	1	2	1	1	1	2	2	13
Lightning	4	2	2	2	2	2	1	2	3	20
Tornado	4	2	2	3	3	3	3	4	4	28
Wildfire	1	1	1	0	0	0	0	0	0	3
Windstorm	4	2	2	2	2	2	2	3	3	22
Winter Storm	5	3	1	2	2	2	2	3	3	27

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of Shorewood Hills. Table 11 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 11 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Drought	None	None	None	Specifics unknown; See hazard profile in County Plan
Flooding	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below
Fog	None	None	None	Specifics unknown; See hazard profile in County Plan
Hailstorm	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Landslide/ Sinkholes/ Erosion	Minimal	Moderate	Minimal	Specifics unknown; See hazard profile in County Plan
Lightning	See Tables 4-7 Population	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Severe Cold	See Tables 4-7 Population	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Severe Heat	See Tables 4-7 Population	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Winter Storm	Moderate	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 15 below	See Table 15 below	See Table 15 below	See Table 15 below
Wildfire	None	None	None	Specifics unknown; See hazard profile in County Plan
Windstorm	Moderate	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan

Data Source: 2021 Village of Shorewood Hills Data Collection Guide – Prepared by DCEM

Previous Hazard Events

Through the Data Collection Guide, the Village of Shorewood Hills noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the main mitigation plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The events noted by this jurisdiction in the Data Collection Guide can be found in Table 12.

Table 12 Village of Shorewood Hills Historic Natural Hazards

Natural Hazard	Date	Impacted Structures	Comprehensive Harm to Jurisdiction	Other reported Losses (Fiscal reports, programs, etc.)	Comments
Winter Storm	12/20/2012	N/A	Roads impassable due to depth of snow and wires down. No impact to school.	N/A	N/A
Flood	06/26/2013	Multiple Impacted Structures	Road closures due to impassibility, water damage to private residences, and storm sewers backed up. Additionally, loss of business due to closures.	N/A	N/A
Flood	08/20/2018	Multiple Impacted Structures	Many homes damaged, some beyond repair were demolished. Flood wall overtopped, railroad ballast breached. Water damage to buildings, elevators, electrical equipment.	N/A	High likelihood of reoccurring

Data Source: 2021 Village of Shorewood Hills Data Collection Guide

Flood Hazard

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 13 and 14 outline the primary structures on them within the Village of Shorewood Hills, Dane County. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County (2.37 people as of 2021). Estimated loss potentials for all structures on the floodway can be found within section 4.6 in chapter 4 of the county plan.

Table 13 Primary Structures in the 100 Year Floodplain

Residential Structures in 100 yr. Floodway	Non-Residential Structures in 100 yr. Floodplain	Total Structures in 100 yr. Floodplain	Potential # of People at Risk in 100 yr. Floodplain	Total Assessed Values (\$) of Structures in 100 yr. Floodplain
1	0	1	2	\$0

Source: Analysis based on Dane County Land Information Office Data

Table 14 Primary Structures in the 500 Year Floodplain

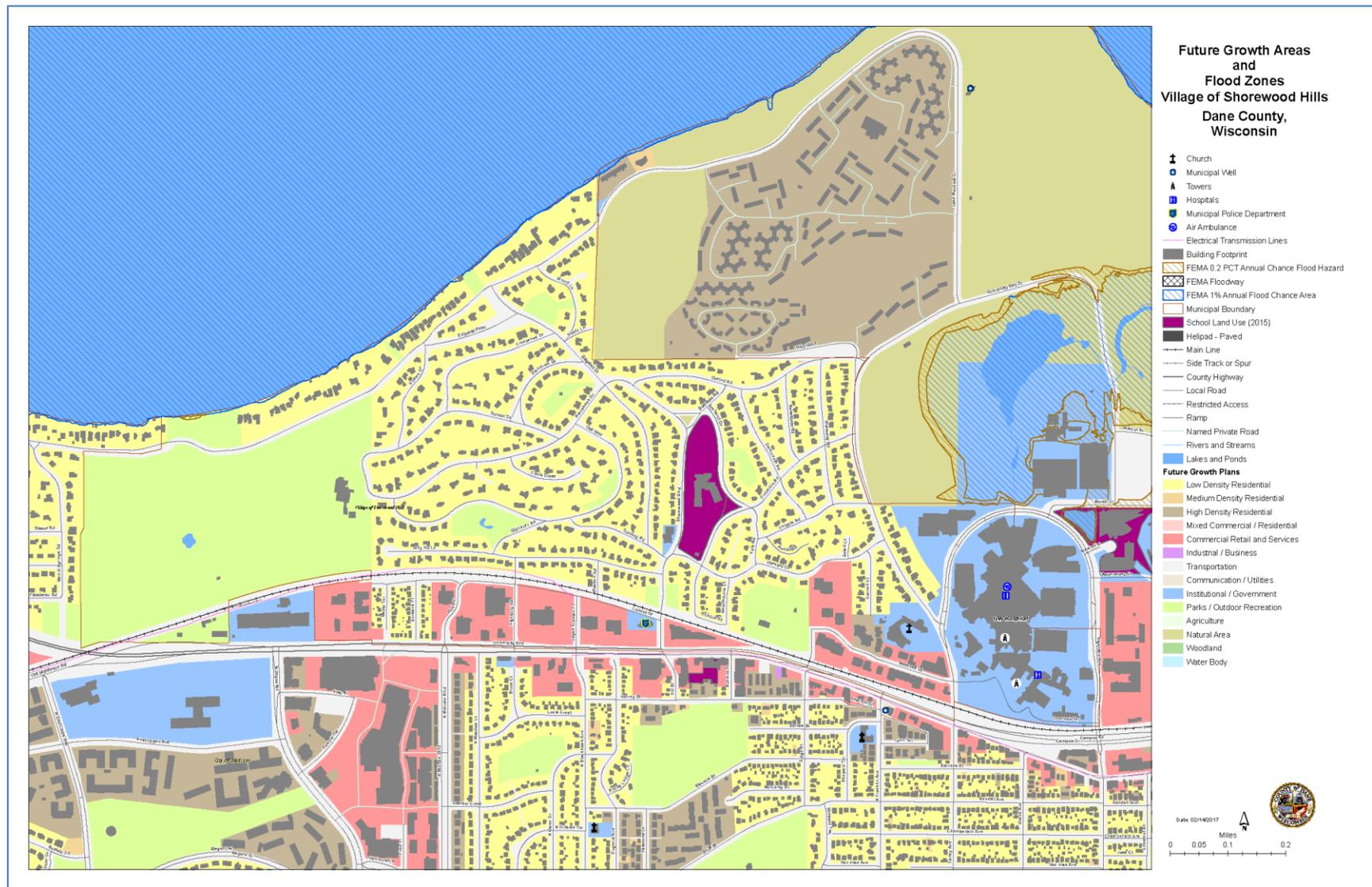
Residential Structures in 500 yr. Floodway	Non-Residential Structures in 500 yr. Floodplain	Total Structures in 500 yr. Floodplain	Potential # of People at Risk in 500 yr. Floodplain	Total Improved Values (\$) of Structures in 500 yr. Floodplain
0	0	0	0	\$0

Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Policies

- No repetitive loss properties have been reported in the Village of Shorewood Hills, Dane County.
- There are 24 flood insurance policies in force within the Village of Shorewood Hills, Dane County, with a coverage of \$7,680,000.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2023 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 15 Tornado Loss Estimate

% Area impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value (\$)	Estimated Loss \$ (High Damage Range)	Estimated Loss \$ (Moderate Damage Range)	Estimated Loss \$ (Low Damage Range)	Loss Ratio for Moderate Damage Range
100%	723	723	529,316,550	529,316,550	264,658,275	132,329,138	50%

Data Source: Analysis Based on Dane County Land Information Office’s data

Problems or Additional Vulnerability Issues

The Village of Shorewood Hills identified the following additional vulnerabilities in the 2021 Data Collection Guide:

- **Growth Trends:**
 - The recent trend has been addition of apartment buildings to the community, providing more density, particularly in the University Avenue corridor, which has been vulnerable to urban flash flooding.
- **Changes since 2018 DC NHMP Update:**
 - A joint project with the City of Madison to install a 96” stormwater relief pipe along University Avenue between Shorewood Blvd. and Grand Ave. beginning in 2022 is expected to relieve the majority of flooding events in the University Avenue corridor.

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of Shorewood Hills.

Mitigation Capabilities Summary

Table 16 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of Shorewood Hills.

Table 16 Village of Shorewood Hills Regulatory Mitigation Capabilities

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Existing Natural Hazard Mitigation Plan	Yes	2018 Shorewood Hills Annex included in DC Plan
General or Comprehensive plan	Yes	2021 Comprehensive Plan Update is online at www.shorewood-hills.org
Zoning ordinance	Yes	Online at www.shorewood-hills.org
Subdivision ordinance	No	N/A
Growth management ordinance	Yes	Included with Comprehensive Plan
Shoreland/ wetland zoning ordinance	No	N/A
Floodplain zoning ordinance	Yes	Online at www.shorewood-hills.org
FEMA / NFIP Community Rating System	Yes	Joined NFIP in 2018
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Stormwater management utility, erosion control program, illicit stormwater discharge regulations
Building code	Yes	State of Wisconsin UDC
Fire department ISO rating	No	Contract with the City of Madison for fire and ambulance services since October 1, 2013
Climate change Impact program	No	N/A
Erosion or sediment control program	Yes	Online at www.shorewood-hills.org
Stormwater management program	Yes	Online at www.shorewood-hills.org
Site plan review requirements	Yes	Plan Commission / Zoning Administrator / Madison Fire
Capital improvements plan	Yes	Online at www.shorewood-hills.org
Economic development plan	No	N/A
Local emergency operations plan	Yes	Formal plan in development
Other special plans		N/A
Flood insurance study or other engineering study for streams	N/A	No streams in corporate limits
Elevation certificates (for floodplain	N/A	Not in floodplain, just flood fringe along Lake Mendota

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
development)		
Climate Action Plan	No	N/A

Data Source: Village of Shorewood Hills Data Collection Guide, 2021

Table 17 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of Shorewood Hills.

Table 17 Responsible Personnel and Departments for the Village of Shorewood Hills

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Contracted Engineer	Town & Country Engineers
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Contracted Engineer, Contracted Building Inspector	Town & Country Engineers, Carl Anderson
Planner/engineer/scientist with an understanding of natural hazards	Yes	Contracted Planner, Contracted Engineer	Vandewalle, Town & Country Engineers
Personnel skilled in GIS	Yes	Contracted Engineer, Village Forester	Town & Country Engineers, Mike Meier, Corey George
Full time building official	No	Part-Time Building Inspector	Carl Anderson
Personnel skilled in Climate resilience	No		
Floodplain manager	Yes	Contracted Engineer, Village Administrator	Town & Country Engineers, Karl Frantz
Emergency manager	Yes	Police Chief, Administrative Services Manager, Contracted Fire Services	Jeff Pharo, David Sykes, Madison Fire Dept.
Real estate acquisition personnel	No	N/A	N/A
Grant writer	No	N/A	N/A
Other personnel	N/A	N/A	N/A
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	N/A	N/A	N/A
Warning Systems/Services (Reverse 9-1-1, cable override, outdoor warning signals)	Yes	Dane County Emergency Management, local staff	Reverse 9-1-1, outdoor warning signal, Nixle® alert system

Data Source: Village of Shorewood Hills Data Collection Guide 2021

Table 18 identifies financial tools or resources that the Village of Shorewood Hills could potentially use to help fund mitigation activities.

Table 18 Financial Resources for the Village of Shorewood Hills

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Dedicated funding for land, easement or conservation easement acquisition	No
Fees for water, stormwater, sewer, gas, or electric services	Yes
Impact fees for new development	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activities	Yes
Withhold spending in hazard prone areas	No

Data Source: Village of Shorewood Hills Data Collection Guide

Additional Capabilities

The Village of Shorewood Hills identified the following as past or ongoing public education or information programs, as well as hazard certifications:

- Our monthly newsletter includes various articles about fire safety, water conservation, seasonal preparedness, and environmental education. We are always looking for additional information to share about these topics and other safety, environmental education topics.
- The 96" relief stormwater pipe along University Avenue between Shorewood Blvd. and Grand Ave. will reduce urban flash flooding along the University Avenue corridor, which should reduce disaster losses.

National Flood Insurance Program Participation

The Village of Shorewood Hills currently participates in the National Flood Insurance Program.

Public Involvement Activities

The Village of Shorewood Hills provided a publically noticed listening session with the Village of Shorewood Hills Public Health and Safety Committee meeting on November 11, 2021. It was noticed on the village and police department website. The listening session provided an agenda in order to discuss the draft mitigation strategies. Changes were made to the draft mitigation strategies following this meeting.

MITIGATION STRATEGIES

Below are the identified mitigation strategies developed by the Village of Shorewood Hills’ NHMP steering committee. Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects. A *mitigation strategy* is a long-term vision for risk reduction in local jurisdictional or regional planning. A mitigation strategy can be achieved by a list of overall improvements to achieve (goals) that provide direction for community efforts to reduce potential losses identified in the risk assessment.

Strategy #1	Flooding
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
<p>To decrease the likelihood of personal injury, damage to property, loss of utilities, road closures, access issues, and to ensure economic viability, the village will work to minimize the likelihood of flooding during heavy rain events. Priorities of this strategy are to maintain power, communication, access to people and property with needed equipment and supplies.</p>	
Defined steps to achieving this mitigation strategy	
<ol style="list-style-type: none"> 1. Work to ensure that stormwater is controlled and diverted from flood-prone areas using rain gardens, swales, detention ponds. Minimize the use of impervious surfaces and monitor erosion control practices. <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration, Public Works, Planning & Engineering b. <i>Funding source</i> – Grants, capital budget, matching funds/cost share c. <i>Completion date</i> – Ongoing 	

Strategy #1	Flooding
	<p>2. Ensure that emergency responders and public works personnel and equipment are in a ready state. Responders determine what resources are needed and secure those resources prior to need. Responders should know what resources are available through partner agencies.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works, Police Department b. <i>Funding source</i> – No funding necessary for day-to-day operations, Capital budget c. <i>Completion date</i> – Ongoing. Departments remain in a ready state
	<p>3. Community Education regarding home and personal mitigation strategies. Educational material to include information on use of weather radios and emergency alert systems.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration b. <i>Funding source</i> – No funding needed c. <i>Completion date</i> – Ongoing
	<p>4. Coordinate with other governmental agencies to monitor lake levels and effects of prior mitigation strategies.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration, Public Works b. <i>Funding source</i> – No funding needed c. <i>Completion date</i> – Ongoing
	<p>5. Follow-through on previously identified and planned projects to include reconstruction of University Av.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration, Planning Commission b. <i>Funding source</i> – No funding needed. Projects already funded. c. <i>Completion date</i> – Ongoing

Strategy #1	Flooding
<p>6. Ensure floodplain ordinance compliance.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration, Planning Commission, Building Inspection b. <i>Funding source</i> – No funding needed c. <i>Completion date</i> – Ongoing 	
<p>7. Investigate use of Village facilities as temporary shelters in the event of power loss, extensive damage, or other community need for shelter.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration, Police Chief, Public Works b. <i>Funding source</i> – Dependent on need. Some options require no additional funding. Other options may require that emergency power and staff are available. c. <i>Completion date</i> – Ongoing 	
<p>8. Ensure that existing and expected government and public – private sector relationships and partnerships are strong. Entities such as Madison Gas & Electric, Madison Water Utility, Dane County Emergency Management, and others should be considered.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration b. <i>Funding source</i> – No funding needed c. <i>Completion date</i> – Ongoing 	

Strategy #2	Tornado	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>To decrease the likelihood of personal injury, damage to property, loss of utilities, road closures, and access issues, the village will work to ensure that trees are healthy and trimmed, that emergency responders are prepared, that the community is aware of what they can do to minimize loss and are notified in the event of a tornado. Priorities of this strategy are to maintain power, communication, access to people and property with needed equipment and supplies.</p>		
Defined steps to achieving this mitigation strategy		
<p>1. Ensure that trees are trimmed, healthy, and not a threat to utilities/infrastructure. Develop a method for citizen reporting of dangerous trees.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Forester, Public Works Department b. <i>Funding source</i> – Funded through annual budget. c. <i>Completion date</i> – Ongoing 		
<p>2. Ensure that emergency responders and public works personnel and equipment are in a ready state. Responders determine what resources are needed and secure those resources prior to need. Responders should know what resources are available through partner agencies.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works, Forestry, Police Department b. <i>Funding source</i> – No funding necessary for day-to-day operations. Capital budget. c. <i>Completion date</i> – Ongoing. Departments remain in a ready state 		

Strategy #2	Tornado
	<p>3. Community Education regarding home and personal mitigation strategies. Educational material to include information on use of weather radios, emergency alert systems, tree health and pruning.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration, Police Department b. <i>Funding source</i> – No funding needed. c. <i>Completion date</i> – Ongoing
	<p>4. Ensure that public warning systems (outdoor sirens) are working properly.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Dane County Emergency Management, Public Works b. <i>Funding source</i> – No funding needed. c. <i>Completion date</i> – Monthly tests
	<p>5. Investigate use of additional warning systems (Nixle, other communication methods). See step 3 for additional notification methods considered. It may be beneficial to use already existing notification systems that convey consistent messaging.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration b. <i>Funding source</i> – No funding needed. c. <i>Completion date</i> – Ongoing
	<p>6. Investigate options for emergency power at Village Hall & Police Department to ensure facility, computer, and communications systems remain operational.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration, Police Chief b. <i>Funding source</i> – Capital budget, potential grants. c. <i>Completion date</i> – Ongoing

Strategy #2	Tornado
	<p>7. Investigate use of Village facilities as temporary shelters in the event of power loss, extensive damage, or other community need for shelter.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration, Police Chief, Public Works b. <i>Funding source</i> – Dependent on need. Some options require no additional funding. Other options may require that emergency power and staff are available. c. <i>Completion date</i> – Ongoing
	<p>8. Ensure that existing and expected government and public – private sector relationships and partnerships are strong. Entities such as Madison Gas & Electric, Madison Water Utility, Dane County Emergency Management, and others should be considered.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration b. <i>Funding source</i> – No funding needed. c. <i>Completion date</i> – Ongoing

Strategy #3	Windstorm
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
<p>To decrease the likelihood of personal injury, damage to property, loss of utilities, road closures, and access issues, the village will work to ensure that trees are healthy and trimmed, that emergency responders are prepared, that the community is aware of what they can do to minimize loss and are notified in the event of a windstorm. Priorities of this strategy are to maintain power, communication, access to people and property with needed equipment and supplies.</p>	
Defined steps to achieving this mitigation strategy	
<p>1. Ensure that trees are trimmed, healthy, and not a threat to utilities/infrastructure. Develop a method for citizen reporting of dangerous trees.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Forester, Public Works Department b. <i>Funding source</i> – Funded through annual budget. c. <i>Completion date</i> – Ongoing 	
<p>2. Ensure that emergency responders and public works personnel and equipment are in a ready state. Responders determine what resources are needed and secure those resources prior to need. Responders should know what resources are available through partner agencies.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works, Forestry, Police Department b. <i>Funding source</i> – No funding necessary for day-to-day operations. Capital budget. c. <i>Completion date</i> – Ongoing. Departments remain in a ready state 	

Strategy #3	Windstorm
<p>3. Community Education regarding home and personal mitigation strategies. Educational material to include information on use of weather radios, emergency alert systems, tree health and pruning.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration, Police Department b. <i>Funding source</i> – No funding needed. c. <i>Completion date</i> – Ongoing 	
<p>4. Investigate use of additional warning systems (Nixle, other communication methods). See step 3 for additional notification methods considered. It may be beneficial to use already existing notification systems that convey consistent messaging.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration b. <i>Funding source</i> – No funding needed. c. <i>Completion date</i> – Ongoing 	
<p>5. Investigate options for emergency power at Village Hall & Police Department to ensure facility, computer, and communications systems remain operational.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration, Police Chief b. <i>Funding source</i> – Capital budget, potential grants. c. <i>Completion date</i> - Ongoing 	
<p>6. Investigate use of Village facilities as temporary shelters in the event of power loss, extensive damage, or other community need for shelter.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration, Police Chief, Public Works b. <i>Funding source</i> – Dependent on need. Some options require no additional funding. Other options may require that emergency power and staff are available . c. <i>Completion date</i> – Ongoing 	

<p>Strategy #3</p>	<p>Windstorm</p>
<p>7. Ensure that existing and expected government and public – private sector relationships and partnerships are strong. Entities such as Madison Gas & Electric, Madison Water Utility, Dane County Emergency Management, and others should be considered.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration b. <i>Funding source</i> – No funding needed. c. <i>Completion date</i> – Ongoing 	

Strategy #4	Winter Storm	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>To decrease the likelihood of personal injury, damage to property, loss of utilities, road closures, and access issues, the village will work to ensure that trees are healthy and trimmed, that emergency responders are prepared, that the community is aware of what they can do to minimize loss and are notified in the event of a winter storm. Priorities of this strategy are to maintain power, communication, access to people and property with needed equipment and supplies.</p>		
Defined steps to achieving this mitigation strategy		
<p>1. Ensure that trees are trimmed, healthy, and not a threat to utilities/infrastructure. Develop a method for citizen reporting of dangerous trees.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Forester, Public Works Department b. <i>Funding source</i> – Funded through annual budget c. <i>Completion date</i> – Ongoing 		
<p>2. Ensure that emergency responders and public works personnel and equipment are in a ready state. Responders determine what resources are needed and secure those resources prior to need. Responders should know what resources are available through partner agencies.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works, Forestry, Police Department b. <i>Funding source</i> – No funding necessary for day-to-day operations. Capital budget. c. <i>Completion date</i> – Ongoing. Departments remain in a ready state 		

Strategy #4	Winter Storm
<p>3. Community Education regarding home and personal mitigation strategies. Educational material to include information on use of weather radios, emergency alert systems, tree health and pruning.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration, Police Department b. <i>Funding source</i> – No funding needed c. <i>Completion date</i> – Ongoing 	
<p>4. Investigate use of additional warning systems (Nixle, other communication methods). See step 3 for additional notification methods considered. It may be beneficial to use already existing notification systems that convey consistent messaging.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration b. <i>Funding source</i> – No funding needed c. <i>Completion date</i> – Ongoing 	
<p>5. Investigate options for emergency power at Village Hall & Police Department to ensure facility, computer, and communications systems remain operational.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration, Police Chief b. <i>Funding source</i> – Capital budget, potential grants c. <i>Completion date</i> – Ongoing 	
<p>6. Investigate use of Village facilities as temporary shelters in the event of power loss, extensive damage, or other community need for shelter.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration, Police Chief, Public Works b. <i>Funding source</i> – Dependent on need. Some options require no additional funding. Other options may require that emergency power and staff are available. c. <i>Completion date</i> – Ongoing 	

<p>Strategy #4</p>	<p>Winter Storm</p>
<p>7. Ensure that existing and expected government and public – private sector relationships and partnerships are strong. Entities such as Madison Gas & Electric, Madison Water Utility, Dane County Emergency Management, and others should be considered.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Village Administration b. <i>Funding source</i> – No funding needed. c. <i>Completion date</i> – Ongoing 	



Dane County Natural Hazard Mitigation Plan

Village of Waunakee Annex
Summer 2022

Village of Waunakee Annex

This annex is a part of the Dane County Natural Hazard Mitigation Plan (DCNHMP). The DCNHMP contains additional information to support the Federal Emergency Management Agency's (FEMA) recognition of the plan (including this annex) as the formal natural hazard mitigation plan for the county and participating local governments. This annex will be valid for as long as FEMA approves the DCNHMP. The strategies adopted in this annex are designed to guide community efforts to reduce risks from natural hazards. These strategies work in conjunction with neighboring communities and Dane County government to reduce risks from natural hazards.

COMMUNITY PROFILE

The Village of Waunakee is located in the north central part of the County, north of the Town of Westport, east of the Town of Springfield, and south of the Town of Vienna. Land use includes agriculture and woodlands, and dispersed one, two and multi-family homes. According to the United States Census Bureau, the Village of Waunakee has a total area of 5.96 square miles, all of it land. As of 2020, it is estimated that the Village of Waunakee has 5,006 households with an average household size of 2.73 people.

The municipal population data provided by the American Community Survey, a product of the US Census Bureau, indicates that the 2019 population estimates for Village of Waunakee, Dane County, is comprised of 13,730 people. Table 1 shows the population profile by age for the village.

Table 1 Population Profile of Village of Waunakee, Dane County

Category	Number	Percent
Total Population	13,730	100%
Under 5 years	957	7.0%
5 to 9 years	1,086	7.9%
10 to 14 years	1,116	8.1%
15 to 19 years	1,002	7.3%
20 to 24 years	709	5.2%
25 to 29 years	462	3.4%
30 to 34 years	690	5.0%
35 to 39 years	929	6.8%
40 to 44 years	1,113	8.1%
45 to 49 years	1,120	8.2%
50 to 54 years	1,187	8.6%
55 to 59 years	995	7.2%
60 to 64 years	537	3.9%
65 to 69 years	498	3.6%
70 to 74 years	381	2.8%
75 to 79 years	328	2.4%
80 to 84 years	218	1.6%
85 years and over	402	2.9%

Data Source: 2019 ACS Estimates - U.S. Census

Growth & Development Trends

Table 2-3 illustrates how the entire Village of Waunakee has grown in terms of population and number of households between 2010 and 2020. Housing data is to 2020 due to data availability. Table 2-3 is drawn from the Demographics Services Center at the Wisconsin Department of Administration, and shows population projections through 2040.

Table 2 Village of Waunakee Change in Population and Households, 2010-2020

2010 Population	2020 Population	Percent Change (%) 2010-2020	2010 # of Households	2020 # of Households	Percent Change (%) 2010-2020
12,097	14,673	21.29%	4,344	5,006	13.22%

Data Source: Demographic Services Center, Wisconsin Department of Administration

Table 3 Village of Waunakee Population Projections, 2020-2040

Population Projection	2020	2025	2030	2035	2040
Increase by half of percent of change (21.29%/2) every 5 years	14,673	16,234	17,961	19,872	21,986

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Note: Population estimates offered by the U.S. Census Bureau’s American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Population Summary

Tables 4-7 illustrates key population demographics within the Village of Waunakee. Key demographics include: (1) Disability Characteristics, (2) Federal Income Poverty Levels, (3) Educational Attainment, and (4) Household Language with English Speaking Capabilities. Due to data availability, all key demographic information has been provided by the American Community Survey (ACS) 2019 estimates. The ACS is a self-reported survey and may include total sample size differences and statistical margin of error.

Table 4 Village of Waunakee, Dane County – Disability Characteristics by Detailed Age

Category	Number	Percent
Total of Residents Self-Identified as Disabled	1,881	100%
With a hearing difficulty	339	18.0%
Population under 18 years	0	-
Population 18 to 64 years	96	-
Population 65 years and over	243	-
With a vision difficulty	178	9.5%
Population under 18 years	0	-
Population 18 to 64 years	81	-
Population 65 years and over	97	-
With a cognitive difficulty	283	15.0%
Population under 18 years	34	-
Population 18 to 64 years	127	-
Population 65 years and over	122	-
With an ambulatory difficulty	514	27.3%
Population under 18 years	13	-
Population 18 to 64 years	152	-
Population 65 years and over	349	-
With a self-care difficulty	196	10.4%
Population under 18 years	27	-
Population 18 to 64 years	81	-
Population 65 years and over	88	-
With an independent living difficulty	371	19.7%
Population 18 to 64 years	124	-
Population 18 to 34 years	17	-
Population 65 years and over	247	-

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.1: Village of Waunakee, Dane County – Federal Income Poverty Levels (FIPL) by Families Summary

Category	Number of Families
50 percent of poverty level	55
125 percent of poverty level	181
150 percent of poverty level	229
185 percent of poverty level	294
200 percent of poverty level	294
300 percent of poverty level	616
400 percent of poverty level	890
500 percent of poverty level	1,288

Data Source: 2019 ACS Estimates - U.S. Census

Note: Use table 5.2 to interpret table 5.1:

5.1 identifies the *total number of families* (regardless of size) by percentage.

5.2 identifies *family size* in relation to annual family income and the percentage category of the FIPL.

Table 5.2: Village of Waunakee, Dane County – Annual Federal Income Poverty Level Guide

Family Size	50%	100%	125%	150%	185%	200%	300%	400%	500%
1	\$6,440	\$12,880	\$16,100	\$19,320	\$23,828	\$25,760	\$38,640	\$51,520	\$64,400
2	\$8,710	\$17,420	\$21,775	\$26,130	\$32,227	\$34,840	\$52,260	\$69,680	\$87,100
3	\$10,980	\$21,960	\$27,450	\$32,940	\$40,626	\$43,920	\$65,880	\$87,840	\$109,800
4	\$13,250	\$26,500	\$33,125	\$39,750	\$49,025	\$53,000	\$79,500	\$106,000	\$132,500
5	\$15,520	\$31,040	\$38,800	\$46,560	\$57,424	\$62,080	\$93,120	\$124,160	\$155,200
6	\$17,790	\$35,580	\$44,475	\$53,370	\$65,823	\$71,160	\$106,740	\$142,320	\$177,900

Data Source: dhs.wisconsin.gov

Table 6: Village of Waunakee, Dane County – Educational Attainment by Householders

Category	Number	Percent
Total of Householders	3,594	100%
Less than high school graduate	9	0.3%
High school graduate (includes equivalency)	428	11.9%
Some college, associate's degree	946	26.3%
Bachelor's degree or higher	2,211	61.5%

Data Source: 2019 ACS Estimates - U.S. Census

Table 7: Village of Waunakee, Dane County – Household Language & English Speaking Capabilities

Category	Number	Percent
Total of Households	5,006	100%
English only	4,804	96.0%
Spanish:	73	1.5%
Limited English speaking household	0	-
Not a limited English speaking household	73	-
Other Indo-European languages:	75	1.5%
Limited English speaking household	0	-
Not a limited English speaking household	75	-
Asian and Pacific Island languages:	54	1.1%
Limited English speaking household	0	-
Not a limited English speaking household	54	-
Other languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-

Data Source: 2019 American Community Survey

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of Waunakee that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

General Property

Table 8 Property Exposure Summary

Property Type	Parcel Count	Improved Land Count	Improved Land Value (\$)	Content Value (\$)	Total Value (\$)
Total	4772	4746	1508079300	754039650	2262118950
Agriculture	16	16	2,681,600	1,340,800	4,022,400
Industrial	47	47	94,350,600	47,175,300	141,525,900
Residential	4,439	4,439	1,266,313,000	633,156,500	1,899,469,500
Transportation	8	8	2,877,900	1,438,950	4,316,850
Utility	14	14	1,524,400	762,200	2,286,600
Commercial	174	174	135,952,100	67,976,050	203,928,150
Other	39	38	4,108,500	2,054,250	6,162,750
Institutional/ Governmental	35	10	271,200	135,600	406,800

Data Source: Dane County Land Information Office, December 2021

Critical Facilities

The Village of Waunakee has identified the critical facilities important to protect from disaster impacts. These are collected in Table 9. Table 9 is based on GIS data inventories from Dane County and information gathered from the Village. No further supplemental data was provided by the community through the Data Collection Guide.

Table 9 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
Blue Ridge Park: Park Shelter	VF	1	\$164,799
Booster Station: Castle Creek	EI	1	\$244,135
Booster Station: Simon	EI	1	\$319,187
Booster Station: Waunakee Heights	EI	1	\$411,386
Centennial Park: Park Shelter	VF	1	\$367,484
Centennial Park: Shelter/Concessions	VF	N/A	\$243,355
Community Center	EI	1	\$9,582,116
Hanover Park, Picnic Pavilion	VF	1	\$138,057
Kilkenny Farms Park: Shelter	VF	1	\$277,849
Lift Station: Ashlawn	EI	1	\$235,442
Lift Station: Meadowbrook	EI	1	\$235,442
Lift Station: West Ridge	EI	1	\$235,442
Meadowbrook Park: Park Shelter	VF	1	\$431,619
New Library	EI	1	\$14,464,008
Old Library	EI	1	\$1,732,123
Parks Maintenance Buildings	EI	N/A	\$201,011
Peaceful Valley Park: Shelter	VF	1	261,447
Public Safety Facility	EI	1	\$2,738,304
Public Works Facility	EI	1	\$3,697,797
Reve Park: Train Depot	VF	1	\$244,469
Ripp Park: North Shelter	EI	1	\$161,345
Ripp Park: South Shelter	EI	1	\$230,986
Savannah Park: Picnic Pavilion	VF	1	\$50,253
Scenic Valley Park: Picnic Pavilion	VF	1	\$35,990
Substation: Division Street	EI	1	\$1,437,735
Substation: Industrial Park	EI	1	\$1,586,489
Substation: Northside	EI	1	\$1,256,221
Substation: Westside	EI	1	\$1,654,571
Tierney Park: Picnic Pavilion	VF	1	\$360,575
Utilities Facilities	EI	1	\$4,950,452
Village Hall	EI	1	\$2,408,705

Village Park: Concession Building	VF	1	\$26,073
Village Park: Gazebo/Restrooms	VF	1	\$135,828
Village Park: Park Shelter	VF	1	\$353,444
Water tank: Division St	EI	1	\$739,425
Water tower: Industrial Park	EI	1	\$1,908,511
Water tower: Ripp Park	EI	1	\$1,176,328
Water tower: Water tower Park	EI	1	\$971,192
Water tower: West Main St	EI	1	\$629,336
Wayside Park: Shelter	VF	1	\$107,109
Well #1	EI	1	\$1,054,316
Well #2	EI	1	\$400,578
Well #3	EI	1	\$669,672
Well #4	EI	1	\$505,318
Westridge Park: Concessions	VF	N/A	\$854,417
Westridge Park: Shelter	VF	1	\$275,828
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities			

Data Source: 2021 Village of Waunakee Data Collection Guide

Other Assets

Other assets help define a community beyond the current composition of the Village of Waunakee. These assets may provide economic benefit to the community, in addition to preserving the heritage and diversity of the community and may include natural, cultural and historic assets or economic assets such as major employers. It may also include more specific detail on critical facilities. The Village of Waunakee has not identified any other assets.

VULNERABILITY ASSESSMENT

A hazard identification and vulnerability analysis was completed for the Village of Waunakee using the same methodology in the County's base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 10 outlines the hazard identification for the Village of Waunakee based on the Data Collection Guide issued in 2021. The Data Collection Guide listed all of the hazards that could impact Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. Brooklyn's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern." This matrix appears as Table 10. This matrix reflects the significance of the hazards relative to one another as perceived by the Example's planning team.

This matrix reflects that the Village of Waunakee is most vulnerable to wildfires, windstorms, and landslides. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 10: Vulnerability Assessment Matrix for the Village of Waunakee

Name of Jurisdiction: <u>Village of Waunakee</u>										
Hazard	Hazard Attributes			Impact Attributes						Total of Row Values
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
Impact on General Structures				Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards		
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	
Dam/Levee failure	0	0	0	0	0	0	0	0	0	0
Extreme Cold	5	2	2	1	1	3	1	1	1	17
Extreme Heat	5	2	2	1	1	3	1	1	1	17
Drought	5	2	2	1	1	2	1	1	3	18
Expansive soils	1	1	1	1	1	1	1	1	1	9
Flood	5	3	4	1	1	2	1	1	3	21
Fog	3	3	2	1	1	1	1	1	1	14
Hail Storm	3	3	2	2	1	1	2	1	3	18
Landslide	3	3	3	3	3	3	3	3	3	27
Lightning	1	1	5	1	1	2	1	1	2	15
Tornado	3	2	2	3	3	3	3	3	2	24
Wildfire	3	3	3	3	3	3	3	3	3	27
Windstorm	3	3	3	3	3	3	3	3	3	27
Winter Storm	5	4	2	1	1	3	2	2	3	23

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of Waunakee. Table 11 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 11 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	None	None	None	Specifics unknown; See hazard profile in County Plan
Drought	Moderate	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Flooding	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below
Fog	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Hailstorm	Minimal	Moderate	Minimal	Specifics unknown; See hazard profile in County Plan
Landslide/ Sinkholes/ Erosion	See Tables 4-7 Population	See Property Exposure table 8	See Critical Facilities Table 9	Specifics unknown; See hazard profile in County Plan
Lightning	Moderate	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Cold	See Tables 4-7 Population	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Heat	See Tables 4-7 Population	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Winter Storm	See Tables 4-7 Population	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 15 below	See Table 15 below	See Table 15 below	See Table 15 below
Wildfire	See Tables 4-7 Population	See Property Exposure table 8	See Critical Facilities Table 9	Specifics unknown; See hazard profile in County Plan
Windstorm	See Tables 4-7 Population	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan

Data Source: 2021 Village of Waunakee Data Collection Guide – Prepared by DCEM

Previous Hazard Events

Through the Data Collection Guide, local jurisdictions note specific historic hazard events to include in their community profile. These events have been incorporated into the appropriate hazard chapters in the main mitigation plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The Village of Waunakee did not note any relevant specific historic hazards in the 2021 Data Collection guide.

Table 12 Village of Waunakee Historic Natural Hazards

Natural Hazard	Date	Impacted Structures	Comprehensive Harm to Jurisdiction	Other reported Losses (Fiscal reports, programs, etc.)	Comments
N/A	N/A	N/A	N/A	N/A	N/A

Data Source: 2021 Village of Waunakee Data Collection Guide

Flood Hazard

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 13 and 14 outline the primary structures on them within the Village of Waunakee, Dane County. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County (2.37 people as of 2021). Estimated loss potentials for all structures on the floodway can be found within section 4.6 in chapter 4 of the county plan.

Table 13 Primary Structures in the 100 Year Floodplain

Residential Structures in 100 yr. Floodway	Non-Residential Structures in 100 yr. Floodplain	Total Structures in 100 yr. Floodplain	Potential # of People at Risk in 100 yr. Floodplain	Total Assessed Values (\$) of Structures in 100 yr. Floodplain
14	4	18	33	\$2,839,298

Source: Analysis based on Dane County Land Information Office Data

Table 14 Primary Structures in the 500 Year Floodplain

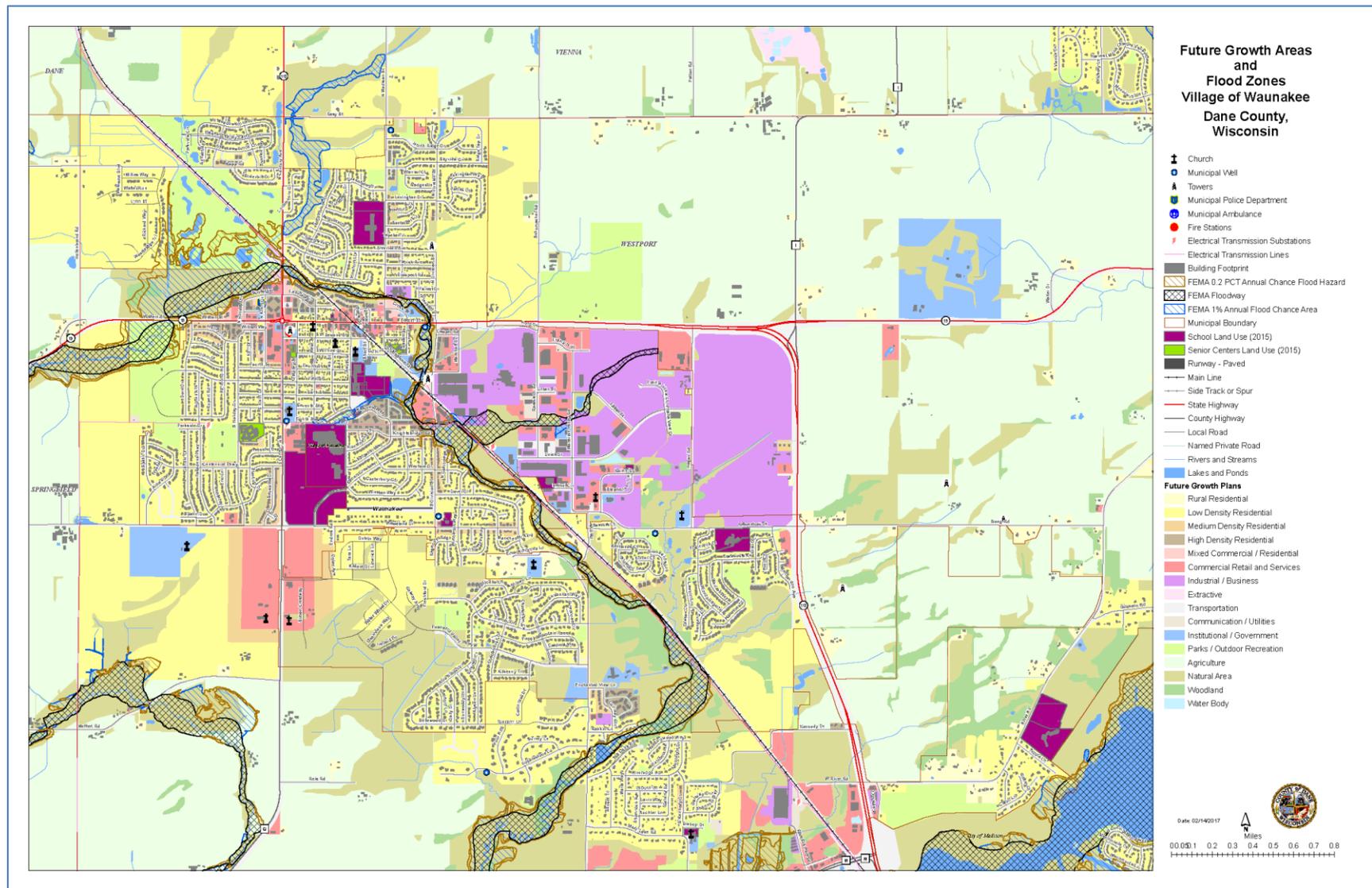
Residential Structures in 500 yr. Floodway	Non-Residential Structures in 500 yr. Floodplain	Total Structures in 500 yr. Floodplain	Potential # of People at Risk in 500 yr. Floodplain	Total Improved Values (\$) of Structures in 500 yr. Floodplain
31	4	35	73	\$7,573,496

Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Policies

- No repetitive loss properties have been reported in the Village of Shorewood Hills, Dane County.
- There are 17 flood insurance policies in force within the Village of Shorewood Hills, Dane County, with a coverage of \$4,028,000.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2023 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 15 Tornado Loss Estimate

% Area impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value (\$)	Estimated Loss \$ (High Damage Range)	Estimated Loss \$ (Moderate Damage Range)	Estimated Loss \$ (Low Damage Range)	Loss Ratio for Moderate Damage Range
12.46%	4,746	591	2,262,118,950	281,774,873	140,887,436	70,443,718	6%

Data Source: Analysis Based on Dane County Land Information Office’s data

Problems or Additional Vulnerability Issues

The Village of Waunakee identified the following additional vulnerabilities in the 2021 Data Collection Guide:

- **Hazard Concerns:**
 - The Village has policies put in place that vulnerable populations may go to the Library and Village Center upon Hot or cold days, or for short term hazards that may arise while awaiting longer term solutions.
- **Growth Trends:**
 - New growth is directed away from areas prone to flooding.
- **Changes since 2018 DC NHMP Update:**
 - Vulnerability has not had any substantive changes since the 2018 plan aside from the addition of some EI and VF categorized assets that were not on the previous plan attachment.

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of Waunakee.

Mitigation Capabilities Summary

Table 16 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of Waunakee.

Table 16 Village of Waunakee Regulatory Mitigation Capabilities

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Existing Natural Hazard Mitigation Plan	Yes	N/A
General or Comprehensive plan	Yes	N/A
Zoning ordinance	Yes	N/A
Subdivision ordinance	Yes	N/A
Growth management ordinance	No	Found within Comprehensive Plan
Shoreland/ wetland zoning ordinance	Yes	N/A
Floodplain zoning ordinance	Yes	N/A
FEMA / NFIP Community Rating System	No	N/A
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Subject to regional plan commission environmental corridors regulations
Building code	Yes	N/A
Fire department ISO rating	Yes	3
Climate change Impact program	No	N/A
Erosion or sediment control program	Yes	N/A
Stormwater management program	Yes	N/A
Site plan review requirements	Yes	N/A
Capital improvements plan	Yes	N/A
Economic development plan	No	See Comprehensive Plan
Local emergency operations plan	Yes	N/A
Other special plans	Yes	Comprehensive Outdoor Recreation Plan (CORP)
Flood insurance study or other engineering study for streams	Yes	N/A
Elevation certificates (for floodplain development)	No	N/A

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Climate Action Plan	No	N/A

Data Source: Village of Waunakee Data Collection Guide, 2021

Table 17 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of Waunakee.

Table 17 Responsible Personnel and Departments for the Village of Waunakee

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Community Development & Public Works	N/A
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Public Works	N/A
Planner/engineer/scientist with an understanding of natural hazards	Yes	Community Development	N/A
Personnel skilled in GIS	Yes	Community Development & Public Work & Utilities	N/A
Full time building official	Yes	Community Development	Consultants
Personnel skilled in Climate resilience	No		N/A
Floodplain manager	Yes	Community Development	N/A
Emergency manager	Yes	EMS	N/A
Real estate acquisition personnel	No	N/A	N/A
Grant writer	No	N/A	N/A
Other personnel	Yes	Assistant EM manager	N/A
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	No	N/A	N/A
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	EM Manager, Public Works Director	N/A

Data Source: Village of Waunakee Data Collection Guide 2021

Table 18 identifies financial tools or resources that the Village of Waunakee could potentially use to help fund mitigation activities.

Table 18 Financial Resources for the Village of Waunakee

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	No
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Dedicated funding for land, easement or conservation easement acquisition	No
Fees for water, stormwater, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activities	No
Withhold spending in hazard prone areas	No

Data Source: Village of Waunakee Data Collection Guide

Additional Capabilities

The Village of Waunakee identified the following as past or ongoing public education or information programs, as well as hazard certifications:

- Safety coordinator from MEUW conducts fire safety and household preparedness.

National Flood Insurance Program Participation

The Village of Waunakee currently participates in the National Flood Insurance Program.

Public Involvement Activities

The Village of Waunakee provided a publically noticed listening session with the Village of Waunakee Board on December 6, 2021. It was noticed on the village website and village hall board. The listening session provided an agenda in order to discuss the draft mitigation strategies. No changes were made to the initial draft mitigation strategies.

MITIGATION STRATEGIES

Below are the identified mitigation strategies developed by the Village of Waunakee’ NHMP steering committee. Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects. A *mitigation strategy* is a long-term vision for risk reduction in local jurisdictional or regional planning. A mitigation strategy can be achieved by a list of overall improvements to achieve (goals) that provide direction for community efforts to reduce potential losses identified in the risk assessment.

Strategy #1	Continuous strategic planning and active mitigation.
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
<p>The overall arching effort of the Village of Waunakee is to support Dane County efforts to mitigate natural hazards and their potential effects at the local level through continued collaboration with the County, neighboring communities and Village departments to continue to lower the Village’s vulnerability to natural hazards by distributing hazard mitigation information and continually evaluating grant opportunities at the local and County level for potential use on hazard mitigation projects within the Village and shared opportunities with neighboring communities.</p>	
Defined steps to achieving this mitigation strategy	
<ol style="list-style-type: none"> 1. Identify strategies to successfully mitigate Village’s vulnerability to natural hazards. <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Individual Village’s Department, Community input b. <i>Funding source</i> – Mixture of Village provided funds and available grant opportunities as they arise. c. <i>Completion date</i> – Continuous 	

Strategy #1	Continuous strategic planning and active mitigation.
<p>2. Implement projects and strategies identified in step one (1).</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Individual Village’s Department, Community input b. <i>Funding source</i> – Mixture of Village provided funds and available grant opportunities as they arise. c. <i>Completion date</i> – Continuous 	



Dane County Natural Hazard Mitigation Plan

Village of Windsor Annex

Summer 2022

Village of Windsor Annex

This annex is a part of the Dane County Natural Hazard Mitigation Plan (DCNHMP). The DCNHMP contains additional information to support the Federal Emergency Management Agency's (FEMA) recognition of the plan (including this annex) as the formal natural hazard mitigation plan for the county and participating local governments. This annex will be valid for as long as FEMA approves the DCNHMP. The strategies adopted in this annex are designed to guide community efforts to reduce risks from natural hazards. These strategies work in conjunction with neighboring communities and Dane County government to reduce risks from natural hazards.

COMMUNITY PROFILE

The Village of Windsor is located in the Northeast quadrant of the County, north of the City Madison, east of the Town of Vienna, and south of Columbia County. Until 2015, the Village was the Town of Windsor. According to the United States Census Bureau, the Village of Windsor has a total area of 3.11 square miles, all of it land. As of 2020, it is estimated that the Village of Windsor has 2,710 households with an average household size of 2.61 people.

The municipal population data provided by the American Community Survey, a product of the US Census Bureau, indicates that the 2019 population estimates for Village of Windsor, Dane County, is comprised of 7,110 people. Table 1 shows the population profile by age for the village.

Table 1 Population Profile of Village of Windsor, Dane County

Category	Number	Percent
Total Population	7,110	100%
Under 5 years	566	8.0%
5 to 9 years	673	9.5%
10 to 14 years	425	6.0%
15 to 19 years	255	3.6%
20 to 24 years	232	3.3%
25 to 29 years	321	4.5%
30 to 34 years	502	7.1%
35 to 39 years	573	8.1%
40 to 44 years	631	8.9%
45 to 49 years	412	5.8%
50 to 54 years	323	4.5%
55 to 59 years	520	7.3%
60 to 64 years	540	7.6%
65 to 69 years	313	4.4%
70 to 74 years	253	3.6%
75 to 79 years	46	0.6%
80 to 84 years	132	1.9%
85 years and over	393	5.5%

Data Source: 2019 ACS Estimates - U.S. Census

Growth & Development Trends

Table 2-3 illustrates how the entire Village of Windsor has grown in terms of population and number of households between 2010 and 2020. Housing data is to 2020 due to data availability. Table 2-3 is drawn from the Demographics Services Center at the Wisconsin Department of Administration, and shows population projections through 2040. Due to the Village incorporating near the 2010 decennial census, raw household data before 2015 is not available.

Table 2 Village of Windsor Change in Population and Households, 2010-2020

2010 Population	2020 Population	Percent Change (%) 2010-2020	2010 # of Households	2020 # of Households	Percent Change (%) 2010-2020
6,345	8,754	37.96%	N/A	2,710	X%

Data Source: Demographic Services Center, Wisconsin Department of Administration

Table 3 Village of Windsor Population Projections, 2020-2040

Population Projection	2020	2025	2030	2035	2040
Increase by half of percent of change (37.96%/2) every 5 years	8,754	10,415	12,434	14,793	17,600

Data Source: Demographic Services Center, Wisconsin Department of Administration, 2021

Note: Population estimates offered by the U.S. Census Bureau’s American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Population Summary

Tables 4-7 illustrates key population demographics within the Village of Windsor. Key demographics include: (1) Disability Characteristics, (2) Federal Income Poverty Levels, (3) Educational Attainment, and (4) Household Language with English Speaking Capabilities. Due to data availability, all key demographic information has been provided by the American Community Survey (ACS) 2019 estimates. The ACS is a self-reported survey and may include total sample size differences and statistical margin of error.

Table 4 Village of Windsor, Dane County – Disability Characteristics by Detailed Age

Category	Number	Percent
Total of Residents Self-Identified as Disabled	1,426	100%
With a hearing difficulty	266	18.7%
Population under 18 years	0	-
Population 18 to 64 years	80	-
Population 65 years and over	186	-
With a vision difficulty	27	1.9%
Population under 18 years	0	-
Population 18 to 64 years	9	-
Population 65 years and over	18	-
With a cognitive difficulty	322	22.6%
Population under 18 years	98	-
Population 18 to 64 years	73	-
Population 65 years and over	151	-
With an ambulatory difficulty	354	24.8%
Population under 18 years	0	-
Population 18 to 64 years	89	-
Population 65 years and over	265	-
With a self-care difficulty	120	8.4%
Population under 18 years	16	-
Population 18 to 64 years	13	-
Population 65 years and over	91	-
With an independent living difficulty	337	23.6%
Population 18 to 64 years	84	-
Population 18 to 34 years	47	-
Population 65 years and over	253	-

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.1: Village of Windsor, Dane County – Federal Income Poverty Levels (FIPL) by Families Summary

Category	Number of Families
50 percent of poverty level	14
125 percent of poverty level	30
150 percent of poverty level	30
185 percent of poverty level	77
200 percent of poverty level	77
300 percent of poverty level	209
400 percent of poverty level	454
500 percent of poverty level	869

Note: Use table 5.2 to interpret table 5.1:

5.1 identifies the *total number of families* (regardless of size) by percentage.

5.2 identifies *family size* in relation to annual family income and the percentage category of the FIPL.

Data Source: 2019 ACS Estimates - U.S. Census

Table 5.2: Village of Windsor, Dane County – Annual Federal Income Poverty Level Guide

Family Size	50%	100%	125%	150%	185%	200%	300%	400%	500%
1	\$6,440	\$12,880	\$16,100	\$19,320	\$23,828	\$25,760	\$38,640	\$51,520	\$64,400
2	\$8,710	\$17,420	\$21,775	\$26,130	\$32,227	\$34,840	\$52,260	\$69,680	\$87,100
3	\$10,980	\$21,960	\$27,450	\$32,940	\$40,626	\$43,920	\$65,880	\$87,840	\$109,800
4	\$13,250	\$26,500	\$33,125	\$39,750	\$49,025	\$53,000	\$79,500	\$106,000	\$132,500
5	\$15,520	\$31,040	\$38,800	\$46,560	\$57,424	\$62,080	\$93,120	\$124,160	\$155,200
6	\$17,790	\$35,580	\$44,475	\$53,370	\$65,823	\$71,160	\$106,740	\$142,320	\$177,900

Data Source: dhs.wisconsin.gov

Table 6: Village of Windsor, Dane County – Educational Attainment by Householders

Category	Number	Percent
Total of Householders	2,013	100%
Less than high school graduate	0	0.0%
High school graduate (includes equivalency)	256	12.7%
Some college, associate's degree	709	35.2%
Bachelor's degree or higher	1,048	52.1%

Data Source: 2019 ACS Estimates - U.S. Census

Table 7: Village of Windsor, Dane County – Household Language & English Speaking Capabilities

Category	Number	Percent
Total of Households	761	100%
English only	736	96.7%
Spanish:	13	1.7%
Limited English speaking household	4	-
Not a limited English speaking household	9	-
Other Indo-European languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-
Asian and Pacific Island languages:	12	1.6%
Limited English speaking household	5	-
Not a limited English speaking household	7	-
Other languages:	0	0.0%
Limited English speaking household	0	-
Not a limited English speaking household	0	-

Data Source: 2019 American Community Survey

Note: Population estimates offered by the U.S. Census Bureau's American Community Survey may differ from the WDOA due to sourcing, margin of error, and data availability.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of Windsor that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

General Property

Table 8 Property Exposure Summary

Property Type	Parcel Count	Improved Land Count	Improved Land Value (\$)	Content Value (\$)	Total Value (\$)
Total	1,114	1,100	163,518,900	81,759,450	245,278,350
Agriculture	8	8	389,000	194,500	583,500
Industrial	25	25	31,228,900	15,614,450	46,843,350
Residential	993	993	122,158,800	61,079,400	183,238,200
Transportation	3	0	0	0	0
Utility	8	8	262,700	131,350	394,050
Commercial	53	53	8,896,300	4,448,150	13,344,450
Other	11	1	193,600	96,800	290,400
Institutional/ Governmental	13	12	389,600	194,800	584,400

Data Source: Dane County Land Information Office, December 2021

Critical Facilities

The Village of Windsor has identified the critical facilities important to protect from disaster impacts. These are collected in Table 9. Table 9 is based on GIS data inventories from Dane County and information gathered from the Village. No further supplemental data was provided by the community through the Data Collection Guide.

Table 9 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
Municipal Building	EI	1	\$3,000,000
Public Works – Hwy V	EI	1	\$7,000,000
Public Works – Mueller Rd	EI	1	\$500,000
Police/Public Works - Depot St	EI	1	\$1,200,000
Neighborhood Center	VF	1	\$500,000
Post Office - Windsor	VF	1	\$200,000
Post Office – Morrisonville	VF	1	\$250,000
Utility Building	EI	1	\$250,000
Wellhouse – Fireman’s Park	EI	1	\$2,500,000
Booster Station – Windsor Xing	EI	1	\$825,000
Booster Stations – Morrisonville	EI	1	\$1,000,000
Booster Station – Cradle Hill	EI	1	\$2,000,000
Lift Station – 3 in Windsor	EI	1	\$500,000
Fire & EMS Station	EI	1	Unknown
Lift Stations - 2 in Morrisonville	EI	1	\$500,000
Water Tower	EI	1	\$1,200,000
Senior Center	VF	1	Unknown
2 Childcare Centers	VF	2	\$1,600,000
Parkside Senior Living	VF	1	Unknown
Windsor Elementary	VF	1	Unknown
Harvest Intermediate School	VF	1	Unknown
Bridges (4) Smith Road, Windsor Road, Yahara River, Portage Road	EI	4	\$4,000,000
Communication Towers	EI	N/A	\$400,000
Historic Site – Token Creek Cemetery	VF	1	\$40,000
Token Creek Conservancy	NA	1	Unknown
Windsor Crossing Conservancy	NA	1	Unknown
Hazardous Chemicals	HM	N/A	Unknown
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities; NA: Natural Assets			

Data Source: 2021 Village of Windsor Data Collection Guide

Other Assets

Other assets help define a community beyond the current composition of the Village of Windsor. These assets may provide economic benefit to the community, in addition to preserving the heritage and diversity of the community and may include natural, cultural and historic assets or economic assets such as major employers. It may also include more specific detail on critical facilities. The Village of Windsor has not identified any other assets.

VULNERABILITY ASSESSMENT

A hazard identification and vulnerability analysis was completed for the Village of Windsor using the same methodology in the County's base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 10 outlines the hazard identification for the Village of Windsor based on the Data Collection Guide issued in 2021. The Data Collection Guide listed all of the hazards that could impact Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. Brooklyn's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern." This matrix appears as Table 10. This matrix reflects the significance of the hazards relative to one another as perceived by the Example's planning team.

This matrix reflects that the Village of Windsor is most vulnerable to floods, tornadoes, and winter storms. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 10: Vulnerability Assessment Matrix for the Village of Windsor

Name of Jurisdiction: <u>Village of Windsor</u>										
Hazard	Hazard Attributes			Impact Attributes						Total of Row Values
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
Impact on General Structures				Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards		
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	
Dam/Levee failure	1	1	1=	3	3	0	3	2	2	16
Extreme Cold	2	5	5	1	1	2	3	2	1	22
Extreme Heat	2	5	5	1	1	2	3	2	1	22
Drought	3	5	5	0	0	2	2	4	2	23
Expansive soils	1	1	1	0	0	0	0	0	0	3
Flood	4	5	5	5	5	5	5	5	5	44
Fog	2	5	2	0	0	0	0	0	0	9
Hail Storm	2	5	3	2	2	0	1	0	0	15
Landslide	1	1	1	0	0	0	0	0	0	3
Lightning	1	5	1	2	2	0	0	1	3	15
Tornado	4	5	5	5	5	5	5	5	5	44
Wildfire	1	1	1	1	1	0	1	1	1	8
Windstorm	2	5	5	3	2	0	2	2	0	21
Winter Storm	4	5	5	2	2	2	2	5	2	29

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of Windsor. Table 11 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 11 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	None	See Property Exposure table 8	See Critical Facilities table 9	Specifics unknown; See hazard profile in County Plan
Drought	Moderate	None	None	Specifics unknown; See hazard profile in County Plan
Flooding	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below	See Tables 13-14 below
Fog	None	None	None	Specifics unknown; See hazard profile in County Plan
Hailstorm	None	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Landslide/ Sinkholes/ Erosion	None	None	None	Specifics unknown; See hazard profile in County Plan
Lightning	None	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Severe Cold	Moderate	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Heat	Moderate	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Winter Storm	Moderate	Moderate	Moderate	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 15 below	See Table 15 below	See Table 15 below	See Table 15 below
Wildfire	None	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Windstorm	See Population Tables 4-7	See Property Exposure table 8	Moderate	Specifics unknown; See hazard profile in County Plan

Data Source: 2021 Village of Windsor Data Collection Guide – Prepared by DCEM

Previous Hazard Events

Through the Data Collection Guide, the Village of Windsor noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the main mitigation plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The events noted by this jurisdiction in the Data Collection Guide can be found in Table 12.

Table 12 Village of Windsor Historic Natural Hazards

Natural Hazard	Date	Impacted Structures	Comprehensive Harm to Jurisdiction	Other reported Losses (Fiscal reports, programs, etc.)	Comments
Flood	06/2007	Multiple Impacted Structures	Flooded basements and general property.	N/A	High likelihood on reoccurring
Flood	06/2008	Multiple Impacted Structures	Flooded basements and general property.	N/A	High likelihood on reoccurring
Flood	03/2019	Multiple Impacted Structures	Flooded basements and general property. Some residents displaced due to high water levels.	N/A	High likelihood on reoccurring

Data Source: 2021 Village of Windsor Data Collection Guide

Flood Hazard

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 13 and 14 outline the primary structures on them within the Village of Windsor, Dane County. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County (2.37 people as of 2021). Estimated loss potentials for all structures on floodway can be found within section 4.6 in chapter 4 of the county plan.

Table 13 Primary Structures in the 100 Year Floodplain

Residential Structures in 100 yr. Floodway	Non-Residential Structures in 100 yr. Floodplain	Total Structures in 100 yr. Floodplain	Potential # of People at Risk in 100 yr. Floodplain	Total Assessed Values (\$) of Structures in 100 yr. Floodplain
4	0	4	9.48	\$720,018

Source: Analysis based on Dane County Land Information Office Data

Table 14 Primary Structures in the 500 Year Floodplain

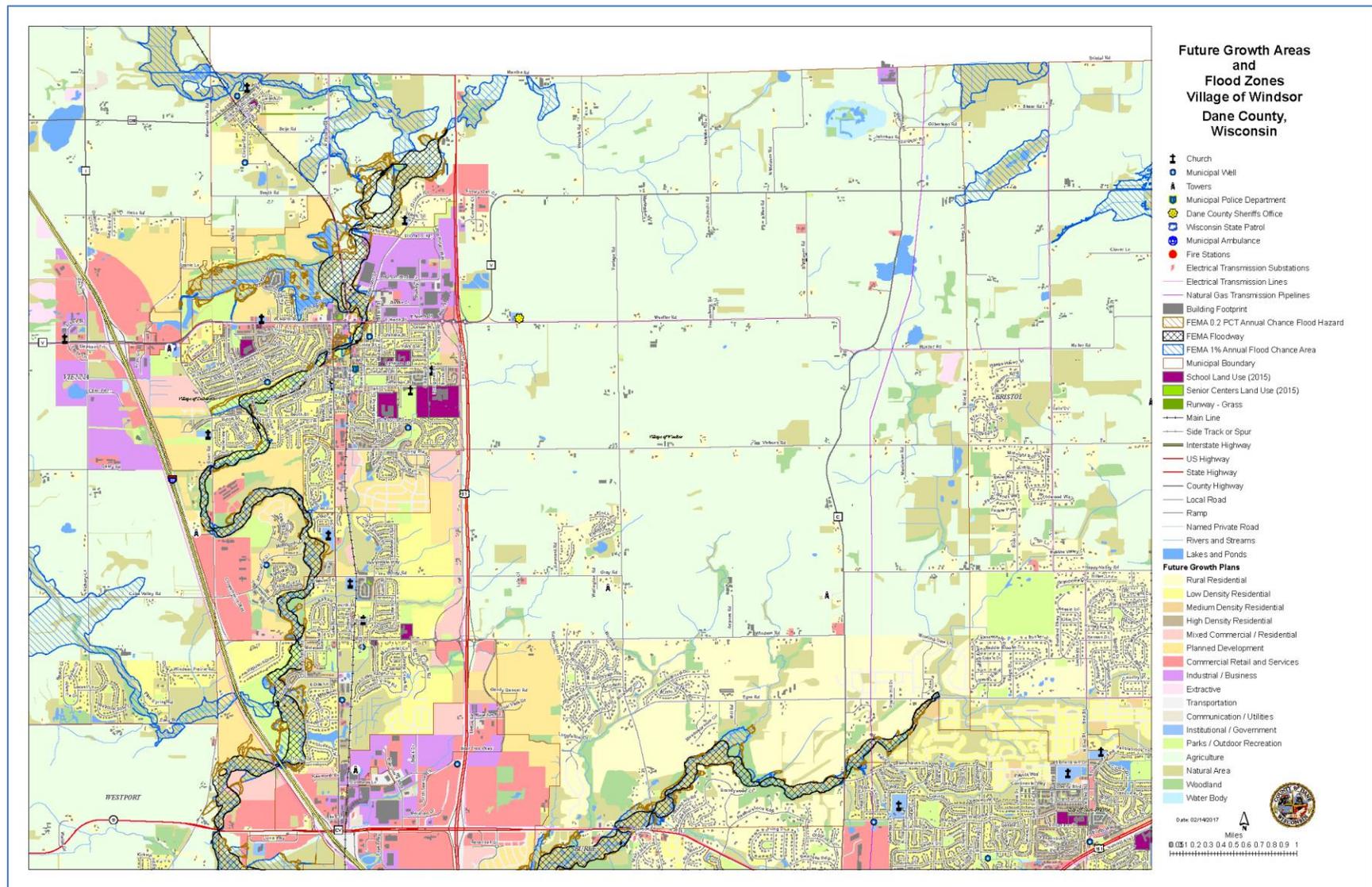
Residential Structures in 500 yr. Floodway	Non-Residential Structures in 500 yr. Floodplain	Total Structures in 500 yr. Floodplain	Potential # of People at Risk in 500 yr. Floodplain	Total Improved Values (\$) of Structures in 500 yr. Floodplain
6	2	8	14.22	\$269,731

Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Policies

- Two repetitive loss property have been reported in the Village of Windsor, Dane County.
- The Village of Windsor does not have any flood insurance policies in force.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2023 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 15 Tornado Loss Estimate

% Area impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value (\$)	Estimated Loss \$ (High Damage Range)	Estimated Loss \$ (Moderate Damage Range)	Estimated Loss \$ (Low Damage Range)	Loss Ratio for Moderate Damage Range
2.95%	3,725	110	1,371,615,750	40,447,117	20,223,559	10,111,779	1%

Data Source: Analysis Based on Dane County Land Information Office’s data

Problems or Additional Vulnerability Issues

The Village of Windsor identified the following additional vulnerabilities in the 2021 Data Collection Guide:

- **Hazard Concerns:**
 - There is a lower income area on Golf Drive near t habitualflooding area.
 - Parkside Senior Living area has only on way in/out to entire property
- **Growth Trends:**
 - New development is regulated by Dane County Land and Water Resource Dept. which takes all of this into consideration

CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of Windsor.

Mitigation Capabilities Summary

Table 16 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of Windsor.

Table 16 Village of Windsor Regulatory Mitigation Capabilities

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
Existing Natural Hazard Mitigation Plan	Yes	N/A
General or Comprehensive plan	Yes	N/A
Zoning ordinance	Yes	N/A
Subdivision ordinance	Yes	N/A
Growth management ordinance	No	In Comprehensive Plan and Zoning Ordinance
Shoreland/ wetland zoning ordinance	Yes	N/A
Floodplain zoning ordinance	Yes	N/A
FEMA/ NFIP Community Rating System	Yes	Use FEMA Maps
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Grading Plan Ordinance for New Construction
Building code	Yes	N/A
Fire department ISO rating	Yes	N/A
Climate change Impact program	No	N/A
Erosion or sediment control program	Yes	Dane County
Stormwater management program	Yes	Dane County
Site plan review requirements	Yes	N/A
Capital improvements plan	Yes	N/A
Economic development plan	No	N/A
Local emergency operations plan	Yes	N/A
Other special plans	Yes	Redevelopment Plans, Comprehensive Outdoor Recreation Plan (CORP)
Flood insurance study or other engineering study for streams	Yes	N/A
Elevation certificates (for floodplain	Yes	N/A

Regulatory Tools (ordinances, codes, plans)	Yes/No	Comments
development)		
Climate Action Plan	No	N/A

Data Source: Village of Windsor Data Collection Guide, 2021

Table 17 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of Windsor.

Table 17 Responsible Personnel and Departments for the Village of Windsor

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Planning, Zoning and Development Department	N/A
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Engineering Consultants	N/A
Planner/engineer/scientist with a understanding of natural hazards	Yes	Planning, Zoning and Development Department	N/A
Personnel skilled in GIS	Yes	Planning, Zoning and Development Department	N/A
Full time building official	Yes	Contracted Building Inspector	N/A
Personnel skilled in Climate resilience	No	N/A	N/A
Floodplain manager	Yes	Planning, Zoning and Development Department	N/A
Emergency manager	Yes	Administrator	N/A
Real estate acquisition personnel	Yes	Consultant	N/A
Grant writer	Yes	Deputy Administrator	N/A
Other personnel		N/A	N/A
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Planning, Zoning and Development Department	N/A
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Dane County	N/A

Data Source: Village of Windsor Data Collection Guide 2021

Table 18 identifies financial tools or resources that the Village of Windsor could potentially use to help fund mitigation activities.

Table 18 Financial Resources for the Village of Windsor

Financial Resources	Accessible/Eligible to Use (Yes/No)
Community Development Block Grants	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
Dedicated funding for land, easement or conservation easement acquisition	Yes
Fees for water, stormwater, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activities	Yes
Withhold spending in hazard prone areas	No

Data Source: Village of Windsor Data Collection Guide

Additional Capabilities

The Village of Windsor identified the following as past or ongoing public education or information programs, as well as hazard certifications:

- MS4 permitting through Dane County
- Monthly social media information
- Quarterly newsletter articles
- Holland Fields Stormwater Ponds, replacing the outlets.
- Egge Road box culver replacement
- Hwy DM Road/Stormwater project – added curb and gutter, storm sewers and culvert replacements
- Token Creek Ponds – suck the muck so they work properly

National Flood Insurance Program Participation

The Village of Windsor currently participates in the National Flood Insurance Program.

Public Involvement Activities

The Village of Windsor provided a publically noticed listening session with the Village of Windsor Emergency Management Committee on November 4, 2021. It was noticed on the village website. The listening session provided an agenda in order to discuss the draft mitigation strategies. No changes were made to the initial draft mitigation strategies.

MITIGATION STRATEGIES

Below are the identified mitigation strategies developed by the Village of Windsor’ NHMP steering committee. Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects. A *mitigation strategy* is a long-term vision for risk reduction in local jurisdictional or regional planning. A mitigation strategy can be achieved by a list of overall improvements to achieve (goals) that provide direction for community efforts to reduce potential losses identified in the risk assessment.

Strategy #1	Increase Siren Coverage
Mitigation strategy goal	
Prevention	Natural Resource Protection
Property Protection	Critical Facilities Protection
Public Education & Awareness	Structural Project
<p>Windsor’s population has grown by 24% (roughly 2,000) in the past 10 years. There has been a lot of growth in the rural area as developers convert agricultural lands to single and multi-family homes and there will continue to be. Subdivisions east of Hwy 51 and south of Windsor Road (Bear Tree, Revere Trails, Terrace Park, Millstone Heights, Raintree, Wynbrooke, Schroeder’s Fields, Windsor Gardens, Migration Path), Token Creek Conservancy and Windsor Sports Commons have no siren coverage. In looking at the siren coverage maps, this is a significant geographic area with multiple parks and a conservancy that are used heavily. In the event of a tornado, people and pet lives could be at risk if caught outside in severe storms. Adding additional sirens to attain better outdoor comprehensive coverage would allow people who are outdoors time to seek safety from an approaching tornado.</p>	
Defined steps to achieving this mitigation strategy	
<ol style="list-style-type: none"> 1. Evaluate current siren coverage and identify gaps. Look at sport facilities/community parks and conservancies. Work with neighboring communities to identify joint locations. <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Christine Capstran b. <i>Funding source</i> – N/A c. <i>Completion date</i> – December 2021 	

Strategy #1	Increase Siren Coverage
	<p>2. Apply for USDA Grant, develop fundraising campaign for Windsorfest and with club sports at tournaments</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Christine Capstran b. <i>Funding source</i> – N/A c. <i>Completion date</i> – October 2022
	<p>3. Recommend sirens and locations to Village Board for approval based on available funding</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Christine Capstran b. <i>Funding source</i> – Grants, fundraising and possible budget expenditure c. <i>Completion date</i> – November 2022
	<p>4. Installation of siren(s)</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Christine Capstran b. <i>Funding source</i> – Grants, fundraising and possible budget expenditure c. <i>Completion date</i> – 2023

Strategy #2	Install Barrier to Protect Lift Stations	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>3 Windsor lift stations are in close proximity to the Yahara River. Severe flooding from rains and/or snow melt jeopardize the function of the lift stations. In addition to financial risks, environmental and public health risks exist when a sanitary waste overflow occurs. Protecting these stations from flooding by adding barriers or modifying the site elevation protects homes, public health and waterways.</p>		
Defined steps to achieving this mitigation strategy		
<p>1. Assess the flooding risks at each lift station</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works b. <i>Funding source</i> – N/A c. <i>Completion date</i> – May 2022 		
<p>2. Seek and evaluate options (barriers or site modifications)</p> <ul style="list-style-type: none"> d. <i>Responsible Party</i> – Public Works e. <i>Funding source</i> – N/A f. <i>Completion date</i> – September 2022 		
<p>3. Review funding options and apply for grants, if available</p> <ul style="list-style-type: none"> d. <i>Responsible Party</i> – Public Works e. <i>Funding source</i> – N/A f. <i>Completion date</i> – October 2022 		

Strategy #2	Install Barrier to Protect Lift Stations
<p>4. Install desired solution(s)</p> <ul style="list-style-type: none">d. <i>Responsible Party</i> –Public Workse. <i>Funding source</i> – Budget, Infrastructure Bill, Grantsf. <i>Completion date</i> – 2023-2024	

Strategy #3	Install Barrier to Protect Lift Stations in Morrisonville	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
<p>The Morrisonville wastewater lift station was constructed in 1998 and is located at 4689 Peck St, just north of County Hwy DM, in Morrisonville WI. The station includes an enclosed concrete block structure with pump controls, SCADA communication equipment, and a natural gas generator. Outside of the structure there is a 20 foot deep, 8 foot diameter wet well with 2 submersible pumps, a dry access pit and a meter manhole. The property is less than .1 acres, and is completely enclosed with a 7 foot tall security fence with a sliding gate and a man gate. The north and west of the property is agricultural, to the south is a restaurant, and to the east is a rail road line and drive way access. Wastewater from the 155 residential and commercial customers is pumped over 2 miles to the Vienna wastewater system. In 2019 flood waters from rain and melting snow began encroaching on the lift station from the ditches in the agricultural area north of the station. Staff began placing sandbags around the perimeter of the building and the wet well five to six layers high, or approximately 30-36 inches tall. Water levels rose to approximately 24 inches on the sandbags before receding. If the flood waters had reached the lift station and disrupted or overwhelmed the pumping capacity, homes and businesses could have been damaged by the backed up or overflowing sewer system. In addition to financial risks, environmental and public health risks exist when a sanitary waste overflow occurs. Protecting this station from flooding by adding barriers or modifying the site elevation protects homes, public health and waterways.</p>		
Defined steps to achieving this mitigation strategy		
<ol style="list-style-type: none"> 1. Assess risk for flooding and site vulnerabilities <ol style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works b. <i>Funding source</i> – N/A c. <i>Completion date</i> – December 2021 		

Strategy #3	Install Barrier to Protect Lift Stations in Morrisonville
<p>2. Seek and evaluate options (barriers or site modifications)</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works b. <i>Funding source</i> – N/A c. <i>Completion date</i> – September 2022 	
<p>3. Review funding options and apply for grants, if available</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works b. <i>Funding source</i> – N/A c. <i>Completion date</i> – October 2022 	
<p>4. Install desired solution</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Public Works b. <i>Funding source</i> – Budget, Infrastructure Bill, Grants c. <i>Completion date</i> – 2023 	

Strategy #4	Reconstruction of Charlie Grimm Rd.	
Mitigation strategy goal		
Prevention	Natural Resource Protection	
Property Protection	Critical Facilities Protection	
Public Education & Awareness	Structural Project	
Charlie Grimm Road is a well-traveled road that runs from a main collector road to a popular golf course. This road is in very poor shape and has a PASER Rating of 2. Charlie Grimm Road was built adjacent to a wetland area and near the Yahara River which causes the road to flood quite often resulting in flooded basements, sewage backups, impassable roads and road subgrade and subbase failures. The reconstruction of this road would allow the Village to add a much needed underground storm water system instead of current culverts to reduce the flooding of the homes along this road.		
Defined steps to achieving this mitigation strategy		
1. Evaluate the road condition. Work with engineering department to identify possible solutions to flooding. <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Davis Clark b. <i>Funding source</i> – N/A c. <i>Completion date</i> – June 2022 		
2. Apply for LRIP Grant with Dane County. Develop plans and specifications for the project. <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Davis Clark b. <i>Funding source</i> – N/A c. <i>Completion date</i> – August 2022 		
3. Recommend to Public Works Committee that we advertise for bids. <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Davis Clark b. <i>Funding source</i> – Budget expenditure. c. <i>Completion date</i> – November 2022 		

Strategy #4	Reconstruction of Charlie Grimm Rd.
	<p>4. Receive and review bids for the reconstruction of Charlie Grimm Road.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Davis Clark b. <i>Funding source</i> – N/A c. <i>Completion date</i> – February 2023
	<p>5. Award bids and begin project.</p> <ul style="list-style-type: none"> a. <i>Responsible Party</i> – Davis Clark b. <i>Funding source</i> – Budget expenditure c. <i>Completion date</i> – October 2023