
City of Middleton Annex

The City of Middleton is a western suburb of the State Capital Madison. Land use is dominated by commercial, industrial, a general aviation airport, and residential homes. According to the United States Census Bureau, the City of Middleton has a total area of 9 square miles. The total area is 0.25% water.

As of the 2010 Census, there are 17,442 people, 8,037 households, and 4,453 families residing in the City of Middleton. The population density is 1,941.8 people per square mile. There are 8,565 housing units at an average density of 953.5 per square mile. According to the information distributed by the Wisconsin Department of Administration, the 2017 population of Middleton is 20,151. Table 1 shows a population age profile for the City of Middleton as of the 2010 Census.

Table 1 Population Age Profile

Category	Number	Percent
Total population	17,442	100.0
Under 5 years	939	5.4
5 to 9 years	1,084	6.2
10 to 14 years	1,087	6.2
15 to 19 years	965	5.5
20 to 24 years	1,044	6.0
25 to 29 years	1,532	8.8
30 to 34 years	1,135	6.5
35 to 39 years	1,168	6.7
40 to 44 years	1,241	7.1
45 to 49 years	1,352	7.8
50 to 54 years	1,271	7.3
55 to 59 years	1,341	7.7
60 to 64 years	1,135	6.5
65 to 69 years	722	4.1
70 to 74 years	456	2.6
75 to 79 years	323	1.9
80 to 84 years	298	1.7
85 years and over	349	2.0

According to the 2014 American Community Survey, the median income for a household in the City of Middleton is \$62,238 and the median income for a family is \$83,026. The per capita income for the City of Middleton is \$41,470. 95.4% of the population has at least a high school degree, while 56.0% of the population holds at least a bachelor's level degree.

Hazard Identification and Risk Assessment

A hazard identification and vulnerability analysis was completed for the City of Middleton using the same methodology in the 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 2 outlines the hazard identification for the City of Middleton based on the Data Collection Guide.. The Data Collection Guide listed all of the hazards that could impact anywhere in Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. The City of Middleton’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 1. This matrix reflects the significance of the hazards relative to one another.

This matrix reflects that the City of Middleton is most vulnerable to tornadoes and flooding. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity. On the county level, these vulnerabilities were calculated with quantitative data as well.

Table 2 Vulnerability Assessment Matrix for the City of Middleton

Hazard	Hazard Attributes			Impact Attributes						Total
	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)			
	(1-5)	(1-5)	(1-5)	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	1	1	0	1	1	1	1	1	11
Extreme Heat	5	1	1	0	1	1	1	1	1	12
Drought	4	1	1	0	0	0	0	0	0	6
Expansive soils	0	0	0	0	0	0	0	0	0	0
Flood	2	3	3	2	2	2	0	2	2	18
Fog	1	1	1	0	0	0	0	0	0	3
Hail Storm	2	3	1	2	2	2	0	2	0	14
Landslide	1	1	1	0	0	0	0	0	0	3
Lightning	1	1	1	1	1	1	0	0	0	6
Tornado	2	2	2	3	3	4	2	4	4	26
Wildfire	1	1	1	0	0	0	0	0	0	3
Windstorm	3	2	2	1	1	1	1	0	0	11
Winter Storm	3	2	2	1	1	1	1	0	0	11

Data Source: City of Middleton Data Collection Guide

Previous Hazard Events

Through the Data Collection Guide, the City of Middleton noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the base 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 include:

Flood: June 2008

Flooding in the City of Middleton was caused by high lake levels on Lake Mendota. This caused flooding of Middleton Beach Road, Dewey Court, Tomahawk Court, and Lake Street. No deaths or injuries were reported during this incident. The City of Middleton received FEMA funds to help recover from the hazard. More information regarding this incident is available under Project File 08-129. The City of Middleton planning members feel such an event is very likely to occur again.

Winter Storm: February 5-6 2008

Record snow fall affected the entire City of Middleton during early February of 2008. There were no reports of injuries, deaths, property, crop or infrastructure damage, but impacts on business and the economy were unavailable. The snow resulted in delays and closures along roadways, and in schools and businesses. The City of Middleton received FEMA funds to help cover the expenses of salt/sand, labor and maintenance of vehicles used to remove the snow. The City of Middleton planning members feel such an event is very likely to occur again.

Asset Inventory

Assets include the people, property, and critical facilities within the City of Middleton 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.

Population

Table 3 Vulnerable Population Summary

Disability Status from the 2014 American Community Survey	Number	Percent of Group with Disability
Population Under 5 years old with a Disability	0	0%
Population 5-17 years old with a Disability	109	4.3
Population 18-64 with a Disability	927	7.6

Population Over 65 years old with a Disability	680	26.9
Total Population with Disability	1716	9.5
Other Vulnerable Populations	Estimate	Percentage
Families Below Poverty Level	270	5.4
Individuals Below Poverty Level	1346	7.4
Of those poverty: Individuals Under 18	336	9.8
Of those poverty: Individuals Over 65	90	3.6
Total Population Over 5 who Speak English less than “very well”	849	4.9
2014 ACS Total Population Estimate	18185	100%

Data Source: 2014 American Community Survey

General Property

Table 4 Property Exposure Summary

Property Type	Total Parcel Count	Improved Parcel Count	Improved Values (\$)	Content (\$)	Total Value (\$)
Totals	5,149	4,410	1,460,916,900	730,458,450	2,191,375,350
Agriculture	11	5	1,750,700	875,350	2,626,050
Commercial	320	276	377,805,700	188,902,850	566,708,550
Utilities	27	3	1,973,100	986,550	2,959,650
Industrial	64	60	61,474,800	30,737,400	92,212,200
Institutional/ Governmental	65	11	19,115,400	9,557,700	28,673,100
Other	647	169	57,101,700	28,550,850	85,652,550
Residential	4,015	3,886	941,695,500	470,847,750	1,412,543,250

Data Source: Dane County Land Information Office, 2015

Note: Total values are considered an estimate based on parcel values in 2015. Current total assessed value for the City of Middleton is approximately \$3 billion.

Critical Facilities

The City of Middleton has identified the following critical facilities important to protect from disaster impacts. These are collected in Table 5.

Table 5 Critical Facility Summary/Essential Infrastructure

Name of Asset	Type*	Replacement value	Occupancy/capacity
Airport	EI	16,200,000	20
City Hall	EI		50
Police Department	EI		75
Fire Station	EI		75
EMS Station	EI		25
Municipal Operation Center	EI		50
Library	EI		100
Food Pantry	EI		50
Senior Center	EI		100
Water Utility	EI		
Wells	EI		
Clinics (4)	VF		
Community Based Residences	VF		
Nursing Home	VF		100
Public School (6)	VF		3,500

*VF – Vulnerable Facility, EI – Essential Infrastructure
 Data Source: City of Middleton

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 City of Middleton. Table 6 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 5 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 6 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	None	Minimal	Specifics unknown; See hazard profile in County Plan
Flooding	See section below	See section below	See section below	See section below
Fog	Minimal	None	None	Specifics unknown; See hazard profile in County Plan
Hailstorm	Minimal	See Property	See Critical Facility	Specifics unknown; See

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
		Exposure table 3	Inventory Table(s)	hazard profile in County Plan
Landslide/ Sinkholes/ Erosion	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Lightning	See Table 2 Population	See Table 3 Property Exposure	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Severe Cold	See Table 2 Population	See Table 3 Property Exposure	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Severe Heat	See Table 2 Population	None	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Winter Storm	See Table 2 Population	See Table 3 Property Exposure	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 2 Population	See section below	See Critical Facility Inventory Table(s)	See section below
Wildfire	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Windstorm	See Table 2 Population	See Table 3 Property Exposure	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan

Flood Hazard

Structures and Properties in the Floodplain

Only a small area City has a mapped flood hazard area (see map in Figure 1). Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Tables 7 and 8 outline the primary structures and properties with primary structures on them within the City of Middleton. Based on the average household size in Dane County and the count of residential parcels in the floodplain, there are seven or 242 individuals potentially at risk to either the 100 year or the 500 year flood events, respectively, within the jurisdiction.

Table 7 Primary Structures in the Floodplain

Total Floodway Structures	Floodway Residential Structures	Total Structures in 100 year Floodplain	Residential Structures in 100 year Floodplain	Total Structures in 500 year Floodplain	Residential Structures in 500 year Floodplain
0	0	3	3	104	104

Source: Analysis based on Dane County Land Information Office Data

Table 8 Properties with Primary Structures in the Floodplain

Total Floodway Properties	Floodway Improved Values	Floodway Residential Properties	Total Properties in 100 year Floodplain	Total Improved Value of Properties in 100 year Floodplain	Residential Properties in 100 year Floodplain	Total Properties in 500 year Floodplain	Total Improved Value of Properties in 500 year Floodplain	Residential Properties in 500 year Floodplain
0	\$0	0	3	\$488,500	3	104	\$21,515,000	104

Source: Analysis based on Dane County Land Information Office Data

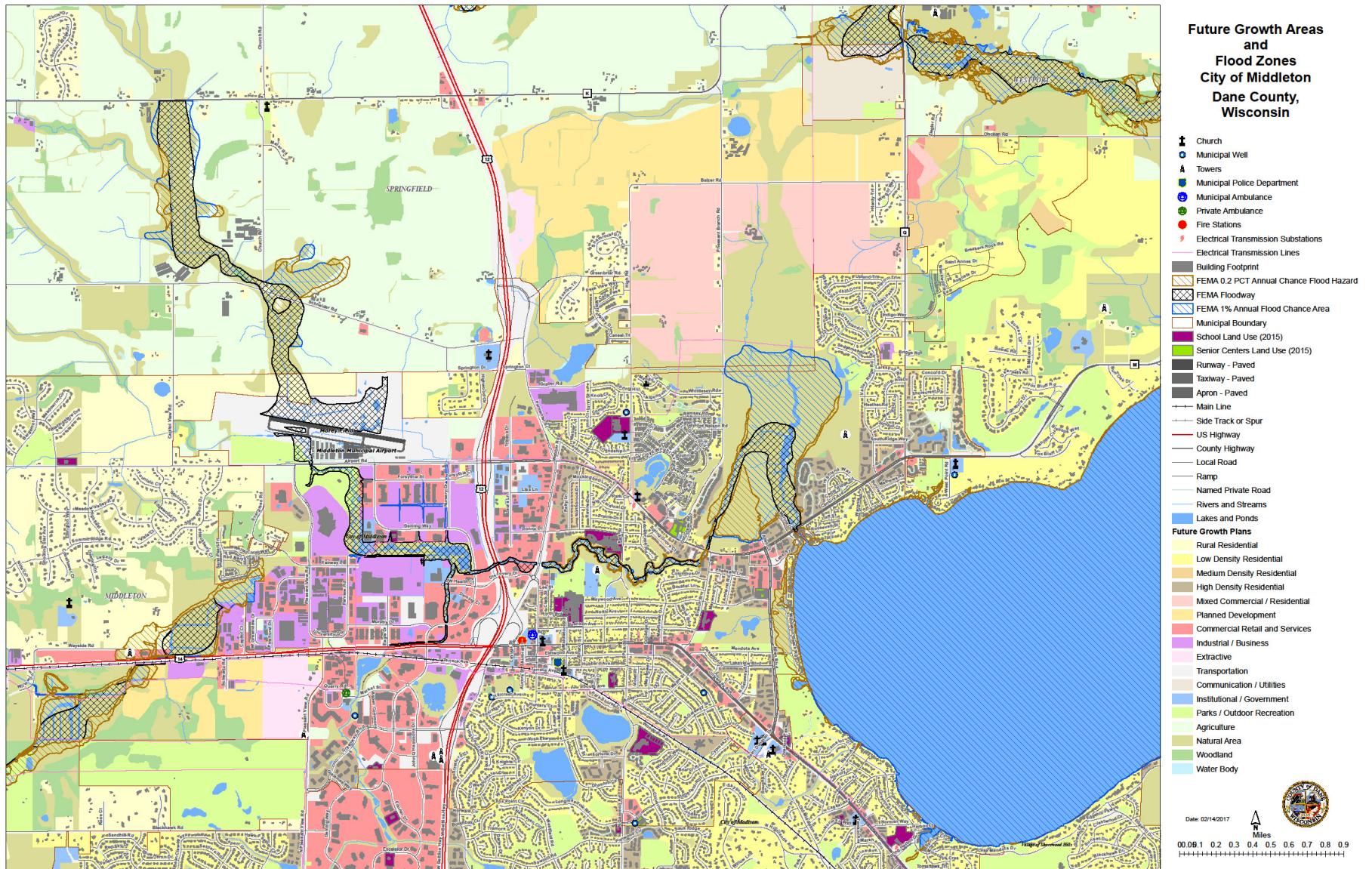
Based on the average household size in Dane County and the count of residential parcels in the floodplain, there are no individuals potentially at risk to either the 100 year or the 500 year flood events within the jurisdiction.

Repetitive Loss Properties and Flood Insurance Policies

There is are no repetitive loss properties within the City of Middleton.

According to FEMA Policy and Claim Statistics for Flood Insurance, the community has 21 flood insurance policies, with a total coverage amount of \$6,684,000. There has been one claim, which was closed without payment.

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 2015 update. Table 9 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 9 Tornado Loss Estimate

% Area of 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
9.30%	6727	626	\$3,814,051,950	\$354,703,430	\$177,351,714	\$88,675,857	4.6%

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

Growth and Development Trends

Planned land use is shown in Figure 1, in relation to the flood hazard. Table 10 illustrates how the City of Middleton has grown in terms of population and number of housing units between 2010 and 2014. The US Census bureau has estimated populations and is included in City of Middleton's comprehensive plan. Table 11, drawn from the Comprehensive Plan for the City of Middleton, shows population projections through 2025.

Table 10 City of Middleton Change in Population and Housing Units, 2010-2014/15

2010 Population	2015 Population	Percent Change (%) 2010-2015	2010 # of Housing Units	2014 # of Housing Units	Percent Change (%) 2010-2014
17,442	18,810	7.61	8,565	8,894	3.84

Source: Dane County and the City of Middleton Comprehensive Plan.

Table 11 City of Middleton Population Projections, 2015-2035

Population Change	5 year Growth %	2015	2020	2025	2030	2035
Increase by same percentage each year	1.52%	18,810	20,241	21,781	23,438	25,221

Data Source: Wisconsin Department of Administration

Problems or Additional Vulnerability issues

The Data Collection Guide returned by the City of Middleton did not identify current problems or additional vulnerability issues.

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 City of Middleton.

Mitigation Capabilities Summary

Table 12 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 City of Middleton.

Table 12 City of Middleton Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
General or Comprehensive plan	Yes	
Zoning ordinance	Yes	
Subdivision ordinance	Yes	
Growth management ordinance	No	
Floodplain ordinance	Yes	
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Stormwater
Building code	Yes	
Fire department ISO rating	3	
Erosion or sediment control program	Yes	
Stormwater management program	Yes	
Site plan review requirements	Yes	
Capital improvements plan	Yes	
Economic development plan	Yes	
Local emergency operations plan	Yes	
Other special plans	Yes	Wetland, bike/ped corridor and neighborhood
Flood insurance study or other engineering study for streams		
Elevation certificates (for floodplain development)	No	N/A

Data Source: City of Middleton Data Collection Guide

Table 13 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the City of Middleton.

Table 13 Responsible Personnel and Departments for the City of Middleton

Personnel Resources	Yes/No	Department/Position
Planner/engineer with knowledge of land development/land management practices	Yes	Planning – Eileen Kelley. Public Works – Shawn Stauske
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Building Inspector – Scott Ellarson
Planner/engineer/scientist with an understanding of natural hazards	Yes	Public Works – Shawn Stauske
Personnel skilled in GIS	Yes	IT – Todd Foreman
Full time building official	Yes	Building Inspector – Bill Neitzel
Floodplain manager	Yes	Planning – Eileen Kelley.
Emergency manager	Yes	Police Chief – Charles Foulke
Grant writer	Yes	Various.
Other personnel		
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	IT – Todd Foreman
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	

Data Source: City of Middleton Data Collection Guide

Table 14 identifies financial tools or resources that the City of Middleton could potentially use to help fund mitigation activities.

Table 14 Financial Resources for the City of Middleton

Financial Resources	Accessible/Eligible to Use (Yes/No)	Comments
Community Development Block Grants	Yes	Through Dane County.
Capital improvements project funding	Yes	
Authority to levy taxes for specific purposes	Yes	Utility District
Fees for water, storm 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: City of Middleton Data Collection Guide

Additional Capabilities

Adopted Flood Plain Ordinance to prohibit development in vulnerable areas. Information sent to residents and on website on responsible water use, fire safety and environmental education.

National Flood Insurance Program Participation

Table 15 City of Middleton National Flood Insurance Program Information

Floodplain Ordinance	Dane County FIRM Panels	NFIP Participation	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Reg-Emer Date
Yes	Several – See County Index	Yes	12/07/73	8/1/1980	9/17/14	8/1/1980

Mitigation Actions

Completed Mitigation Actions

The City of Middleton has implemented a floodplain ordinance to control development in hazard prone areas. Additionally, Tiedeman Pond and Esser Pond now have pump stations to mitigate flood potential.

Proposed Mitigation Actions

The following are continuations of mitigation objectives from 2010 Natural Hazard Mitigation Plan. While progress has been made, these projects continue to be priorities.

Objective 1: Train a contingent of volunteers to assist public safety and public works/public lands in the event of a major incident.

Steps:

- 1) Identify goals and objectives for volunteers (consider established CERT training guidelines).
- 2) Identify communications and supply needs for volunteers.
- 3) Identify funding needs and sources.
- 4) Utilize the current Middleton Volunteers in Policing Organization to recruit and train volunteers.

Lead Implementing Agency: Middleton Police Department

Supporting Agencies:

- Dane Co. Emergency Management
- Middleton V.I.P. Board of Directors

Possible Funding and Technical Assistance:

- Public Donations
- Dane County Emergency Management
- Wisconsin Emergency Management

Timeline: Continue recruitment and training.

Priority: Medium

Estimated Cost: Unknown

Objective 2: Complete the migration of all City departments to the new County-Wide radio communications network.

Steps:

- 1) Update city-wide radio needs.

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- 2) Ensure funding is adequate for replacement needs.
 - 3) Purchase and program all radios.

Lead Implementing Agency: City of Middleton

Supporting Agencies:

- Dane County Emergency Management
- City of Madison Radio Shop

Possible Funding and Technical Assistance:

- Capital Borrowing
- OJA Radio Interoperability Grants
- Madison Radio Shop
- Identified Vendor(s)

Time Line: DaneCom completion.

Priority: High

Estimated Cost: \$1.4 million

Objective #3: Continue to implement sound floodplain management practices through continued compliance with the National Flood Insurance Program, to include floodplain ordinance enforcement and periodic review, promoting the benefits of flood insurance, and continued staff training and development in floodplain management.

Steps:

- 1) Evaluate through the existing staff, County planning staff, and additional DNR staff if necessary, the regulatory deficiencies and enforcement shortcomings in flood-related ordinances and programs (see related County objective).
- 2) Periodically update ordinances as necessary.
- 3) Ensure that stop work orders and other means of compliance are being used as authorized by each ordinance.
- 4) Suggest changes to improve enforcement of and compliance with regulations and programs;
- 5) Encourage floodplain management staff to become Certified Floodplain Managers (CFM) or maintain their CFM status.
- 6) Participate in Flood Insurance Rate Map updates by adopting new maps or amendments to maps.
- 7) Utilize recently completed Digital Flood Insurance Rate maps in conjunction with GIS to improve floodplain management, such as improved risk assessment and tracking of floodplain permits.
- 8) Promote and disperse information on the benefits of flood insurance, with assistance from partners such as the County, WDNR, or ASFPM.
- 9) Evaluate the potential costs and benefits of becoming a participant in the Community Rating System.

Lead Implementing Agency: The Middleton Planning and Zoning Department

Supporting Agencies:

- Dane County Planning and Development
- Lakes and Watershed Commission
- Land Conservation Department
- Association of State Floodplain Managers
- Wisconsin Department of Natural Resources

Possible Funding and Technical Assistance:

- Staff Time

Timeline: On going

Priority: High

Estimated Costs: Low; can be accomplished with existing staff and within existing department budget.