

**Washington County**  
**All Hazard Mitigation Plan**  
**2022 - 2023 Update**

**Washington County  
All Hazard Mitigation Plan  
2023**

**Corrections to the Plan**

The plan text and appendices reflect currently available information for the Washington County area. Because some of this information will undoubtedly change over time, the plan will be periodically updated to reflect these changes. If you notice errors or can provide additional information, please take the opportunity to inform us. We will incorporate the corrected and new information into the next update version. Thank you for your assistance.

Corrections

Additional Information

Plan Section or Appendix \_\_\_\_\_

Page # (s) \_\_\_\_\_

Correction / Information \_\_\_\_\_

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*Please add additional pages, if necessary.*

Name \_\_\_\_\_

Telephone # \_\_\_\_\_ Date Information Provided \_\_\_\_\_

*Please return to:*  
Washington County Sheriff's Office - Emergency Management  
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Stillwater, MN 55082

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**This is a redacted version of the Washington County All Hazard Mitigation Plan. A full version of this plan, including appendices, is located in the Washington County Emergency Management Department.**

## I. EXECUTIVE SUMMARY

Washington County's Mission:

*Providing quality services through responsible leadership, innovation, and the cooperation of dedicated people.*

Washington County's All Hazard Mitigation Plan Mission:

*To work with surrounding communities, local emergency responders, businesses, organizations, and the public to create a proactive and results-oriented plan by identifying measures that will prevent loss of life and damage to property and reduce future risks in Washington County.*

In 2006, Washington County's Board of Commissioners adopted the Washington County All Hazard Mitigation Plan which identified the hazards faced in the county, certain vulnerabilities to these hazards, and mitigation strategies for the future. The document has since been reviewed and updated. This submitted revision is the latest official update to the Washington County All Hazard Mitigation Plan. The plan fulfills the requirements of the Federal Disaster Mitigation Act as administered by the Minnesota Division of Homeland Security and Emergency Management (HSEM) and the Federal Emergency Management Agency (FEMA).

### **Introduction**

Washington County is subject to many natural and human caused disasters. These events could cause injury or loss of life, property damage, and damage to the infrastructure that would affect the quality of life for its residents. As populations and demographics shift throughout the county, there is a correlating shift in the degree of vulnerability over a wide geographic area. Because of this, Washington County Emergency Management has taken the lead to update this countywide all hazard mitigation plan so that hazards are identified and goal/strategies are set for reducing or eliminating the effects of natural or human-caused disasters.

### **Purpose of the Plan**

The purpose of the All Hazard Mitigation Plan is to identify hazards, risks, and vulnerabilities throughout the county and determine how to reduce, minimize or eliminate the loss of life and property damage resulting from a variety of hazards – natural, technological, and human-caused.

## Scope of the Plan

The Washington County All Hazard Mitigation Plan is a guide for all communities and entities that participated in the plan's original development and update. Participating municipalities include the following:

City of Afton	City of Mahtomedi
City of Bayport	City of Marine on the St. Croix
Baytown Township	May Township
City of Birchwood	City of Scandia
City of Cottage Grove	City of Newport
City of Dellwood	City of Oakdale
Denmark Township	City of Oak Park Heights
City of Forest Lake	City of Pine Springs
City of Grant	City of St. Mary's Point
Grey Cloud Island Township	City of St. Paul Park
City of Hugo	City of Stillwater
City of Lake Elmo	Stillwater Township
City of Lakeland	West Lakeland Township
City of Lakeland Shores	City of Willernie
City of Lake St. Croix Beach	City of Woodbury
City of Landfall	

These communities were identified as participating in the 2007 Washington County All Hazard Mitigation Plan and have renewed their commitment for this plan update. Representatives from the listed communities participated which is explained in more detail in Annex A of this plan update.

## Authority

Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 106-390, Title 44 CFR, as amended by Section 102 of the Disaster Mitigation Act of 2000), provides the framework for state and local governments to evaluate and mitigate all natural hazards as a condition for receiving Federal disaster assistance. A major requirement of the law is the development of a local natural hazard mitigation plan.

## Plan Update

This plan serves as an update to the Washington County All Hazard Mitigation Plan. The community profile, hazard analysis, vulnerabilities and mitigation strategies have all been updated where applicable to reflect changes in demographics, land use development, hazard occurrences, new critical facilities and mitigation accomplishments since the last update. These revisions include updates of all graphics, including maps, charts and other images as deemed necessary.

## **Funding**

Approval and implementation of the plan does not incur direct costs. It involves, rather, a paradigm shift. A relatively small amount of money spent before a disaster can greatly reduce the damage and expense after it happens.

Review of this plan by the State of Minnesota Division of Homeland Security and Emergency Management and final approval by the Federal Emergency Management Agency (FEMA) will make Washington County and the municipalities that adopt this plan eligible for three Federal funding sources: Flood Mitigation Assistance (FMA), Building Resilient Infrastructure and Communities (BRIC), and Hazard Mitigation Grant Program (HMGP) project funds. These funds may help to offset the costs of the mitigation projects set forth in this plan.

## **Hazard Mitigation Overview**

### *Definition*

Federal Emergency Management Agency (FEMA) defines hazard mitigation as the effort to reduce loss of life and property by lessening the impact of disasters. For this purpose, mitigation involves:

- Prevention
- Property Protection
- Public Education and Awareness
- Natural Resource Protection
- Emergency Services
- Structural Protection

### *Overarching Goal*

To identify measures and strategies that will prevent loss of life and damage to property while reducing future risks in Washington County.

### *Benefits*

The benefits of hazard mitigation include, but are not limited to the following:

- Saving lives and reducing injuries
- Preventing or reducing property damage
- Reducing economic losses
- Reducing legal liability of government and public officials
- Maintaining critical facilities in functioning order
- Protecting infrastructure from damage
- Reducing agricultural loss
- Decreasing social displacement and stress

### *Process*

The process of hazard mitigation involves many steps, including the following:

- Organizing resources
- Assessing risks
- Developing the mitigation plan
- Implementing and monitoring progress

This plan update included a broad range of public, municipal and other entity participation opportunities over a three year time frame. The process used is more fully explained in Annex A.

### **Brief Summary of the Washington County All Hazard Mitigation Plan History**

#### *2004 – 2007 Plan Creation and Initial Adoption*

Washington County Emergency Management staff built an all hazard mitigation plan for the county through an inclusive and extensive participation process. The progression included meeting with thirty-one cities and townships as well as other agencies and local stakeholders such as the general public. Washington County's initial All Hazard Mitigation Plan was approved by the Minnesota State Homeland Security and Emergency Management agency and then later on by Federal Emergency Management Agency (FEMA) in April of 2007.

#### *2011 – 2012 Plan Update*

Due to the five year revision cycle required, the Washington County All Hazard Mitigation Plan was updated in 2011/2012 through a robust process including not only leadership from each of the thirty-one cities and townships, but also other non-governmental agencies. FEMA then approved the update in November of 2012. Subsequently, the Washington County Board of Commissioners and participating jurisdictions also approved the plan by resolution.

#### *2013 Mid-Term Revision and Approval*

A mid-term revision to the plan was done in 2013. Language was added to Annex E – Goals & Strategies to clarify the importance of building or maintaining storm shelters or the retrofitting of existing structures for residents and visitors in locations such as mobile home parks, parks, fairgrounds, schools and other areas that do not have safe areas to go in bad weather.

#### *2017 - 2018 Plan Update*

Washington County utilized an inclusive structure to update the Washington County All Hazard Mitigation Plan between 2016 and 2018. The process included a variety of stakeholders increasing the depth of professional experiences which contributed to a plan that is personalized to the risks and needs of Washington County communities. All thirty-one cities and townships located within Washington County were requested to be an active part of reviewing and updating the countywide plan. Additionally, external

partners were also invited to participate, as well as a survey used as just one of the tools to help engage the general public's input.

*2022 – 2023 Plan Update*

Washington County Emergency Management staff began the update process in January of 2022 by reviewing and assessing the approved 2018 plan. In May, a review of the FEMA requirements expected to go into effect in April of 2023 was accomplished based on early information provided by the State and FEMA. In June of 2022, the collection process of relevant information from subject matter experts began by meeting with local jurisdictions, the public, and contributing agencies. A public outreach survey was completed using all available electronic communication channels and social media platforms. Due to critical staff vacancy, the draft for the 2023 update was not completed until June of 2023. All thirty-one cities and townships were participants in the review and update process.

**II. ACKNOWLEDGEMENTS**

Washington County, local cities and townships, and other agencies and organizations understand the benefits of developing and implementing mitigation plans and strategies. Washington County elected officials, public safety organizations and many others have worked together to develop this plan update.

This project has been greatly assisted by the advice and review of many knowledgeable resources. Thanks to the work groups who participated and assisted in revision/update to the Washington County All Hazard Mitigation Plan.

**Emergency Management Council (EM Council)**

Municipal Representation

Alan Newman, City of Forest Lake	Dustin Kalis, City of Lake Elmo
Greg Weiss, City of Forest Lake	Kevin Wold, City of Oakdale
Earl Merchlewitz, City of Woodbury	Brian Mueller, City of Stillwater
Peter Koerner, City of Cottage Grove	Terry Fischer, City of Mahtomedi
Rick Redenius, City of Cottage Grove	Stuart Glaser, City of Stillwater
Jim Stanley, Lower St. Croix Valley Fire	Earl Merchlewitz, City of Woodbury

Emergency Medical Services

Jon Muller, Lakeview Hospital / Emergency Medical Services

Washington County

Doug Berglund, Emergency Management	Doug Anschutz, Sheriff's Office
Wayne Sandberg, Public Works	Dan Starry, Sheriff's Office
Andrew Ellickson, Sheriff's Office	Lee Dhein, Emergency Management
Adam Snegosky, GIS Support Unit	Kelli Matzek, Emergency Management
Douglas Berglund, Emergency Management	Nate Timm, Sheriff's Office
Angela Eastman, Public Health and Environment	Darlene Pankonie, Sheriff's Office

State of Minnesota

Jon Dotterer, Division of Homeland Security and Emergency Management

Thanks also to the following additional municipal, Washington County, State of Minnesota, and federal partner individuals for their support and assistance.

All municipal mayors, council/town board members, city administrators/clerks, and all public works, finance, community development, and public safety officials

Kristopher Keller, Washington County Epidemiologist  
Charlie Parent, Washington County Public Works  
Jessica Collin-Pilarski, Washington County Public Health & Environment  
BJ Battig, Dakota County Emergency Management

Ceil Strauss, MN Department of Natural Resources  
Jennifer Davis, MN Division of Homeland Security and Emergency Management

Scott Bailey, Program Analyst – Mitigation Division, FEMA Region 5

The Washington County All Hazard Mitigation Plan also utilizes a great deal of data from many different sources and in many different formats. The following resources were consulted to produce this updated mitigation plan. They include, but are not limited to:

- Washington County Emergency Operations Plan
- Washington County Comprehensive Plan
- Department of Natural Resources, Repetitive Loss Structure Database
- South Washington Watershed District Climate Resiliency Plan - 2018
- National Climatic Data Center, Storm Events Database
- U.S. Census Data
- Watershed Plans
- Flood Mitigation Plan and Emergency Response Evaluation
- Jurisdictional Comprehensive Plans
- FEMA Regulations
- Infrastructure Maps
- Utility Maps

The maps used in this plan were produced by the Washington County's GIS Support Unit located in the Information Technology Department. Information within the plan includes, but is not limited to, topographies, land use, soils, transportation systems, watershed and hydrology, and political subdivision boundaries.

### III. ACRONYMS

BCWD	Brown's Creek Watershed District
BRIC	Building Resilient Infrastructure and Communities
CAER	Community Awareness and Emergency Response
CBRNE	Chemical, Biological, Radiological, Nuclear, Explosives
CFR	Code of Federal Regulations
CMWD	Carnelian Marine Watershed District
CLFLWD	Comfort Lake – Forest Lake Watershed District
COOP	Continuity of Operations Plans
CTC	Cooperating Technical Community
DEM	Division of Emergency Management
DHSEM	Department of Homeland Security and Emergency Management
DMA	Disaster Mitigation Act
DNR	Department of Natural Resources
DOE	Department of Energy
EAS	Emergency Alert System
EMPG	Emergency Management Performance Grant
EMS	Emergency Medical Services
EMWIN	Emergency Managers Weather Information Network
ECHO	Emergency and Community Health Outreach
EOC	Emergency Operation Center
EOP	Emergency Operation Plan
EPA	Environmental Protection Agency
ESRI	Environmental Systems Research Institute
FDR	Flood Damage Reduction
FEMA	Federal Emergency Management Agency
FHBM	Flood Hazard Boundary Map
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance
GAP	Gap Analysis Program of USGS or Geographic Approach to Planning
GIS	Geographical Information System
GPS	Global Positioning System
HAN	Health Alert Network
HAZMAT	Hazardous Materials
HM	Hazard Mitigation
HMGP	Hazard Mitigation Grant Program
HSEM	Homeland Security Emergency Management
HUD	Housing and Urban Development
HVAC	Heat Ventilation/Air Conditioning
JAR	Jurisdictional Assessment Report
KTS	Knots – Wind speed
IA	Individual Assistance
LEPC	Local Emergency Planning Committee
MAC	Mitigation Advisory Committee

MDH	Minnesota Department of Health
MEMA	Metropolitan Emergency Managers Association
MGS	Minnesota Geological Survey
MIFC	Minnesota Interagency Fire Center
MNVOAD	Minnesota Volunteer Organizations Active in Disasters
NCDC	National Climatic Data Center
NDMC	National Drought Mitigation Center
NFIP	National Flood Insurance Program
NOAA	National Oceanic Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
NSP	Northern States Power
NWS	National Weather Service
PA	Public Assistance
PDM	Pre-Disaster Mitigation
PHE	Public Health and Environment
PTE	Potential Threat Element
REP	Radiological Emergency Preparedness
RFP	Request for Proposal
RWMWD	Ramsey – Washington Watershed District
RCWD	Rice Creek Watershed District
RMP	Risk Management Plan
SARA	Superfund Amendments and Reauthorization Act
SBA	Small Business Administration
SERC	State Emergency Response Commission
SKYWARN	Severe Storm Spotters' Network
SNA	Scientific and Natural Area
SWWD	South Washington Watershed District
USACE	US Army Corps of Engineers
USDA	US Department of Agriculture
USFS	US Forest Service
VBWD	Valley Branch Watershed District
WMD	Weapons of Mass Destruction
WMO	Water Management Organizations
WUI	Wildland-Urban Interface

## **Annex A – PLANNING PROCESS**

Washington County utilized a robust and inclusive process to update the Washington County All Hazard Mitigation Plan between 2021 and 2023. The inclusion of a variety of stakeholders throughout the process increased the depth of experiences, both personal and professional, to draw upon and contributed to a plan that is personalized to the risks and needs of Washington County communities. The process of discussing mitigation and the plan update with the participating stakeholders brought further clarity on the importance of incorporating mitigation into plans, processes, and policies whenever possible to improve the resilience within Washington County.

Annex A describes the planning process Washington County followed in updating the All Hazard Mitigation Plan between 2021 and 2023.

For a summary of the Washington County All Hazard Mitigation Plan creation and update process prior to 2021, please see page GP - 4 of the General Plan.

### **2021 - 2023 Washington County All Hazard Mitigation Plan Update**

Recognizing the need to officially update the plan again, the county initiated the planning process by contacting leadership from the thirty-one cities and townships located wholly within Washington County to seek their interest in continuing to be an active part of reviewing and updating the countywide plan. The interest was unanimous on the part of the cities and townships. Washington County Emergency Management staff met with or discussed the update to the mitigation plan with the thirty-one cities and townships located wholly within the county to update the various sections specific to their community.

An initial assessment was done of the existing plan and the areas that needed to be updated were identified. A process was laid out to include periodic reports to the Washington County Emergency Management Council (EM Council), which was utilized as the plan update's primary work group. Subject matter experts, such as Washington County Public Health were asked to review relevant portions of the plan. Due to the COVID-19 pandemic, routine EM Council meetings were not held as they had been in previous years. Mitigation Plan update information or utilizing FEMA mitigation funding was on the agenda and discussed at the following EM Council meetings:

- December 19, 2018
- September 11, 2019
- March 23, 2022
- March 29, 2023

A variety of meetings were attended by the lead planner for this document from Washington County Sheriff's Office – Emergency Management to discuss mitigation and the plan update. Throughout the process of updating the plan, public input was encouraged to provide their insight into mitigation through a variety of methods.

The final draft plan was made available on a cloud-based, secure extranet site. Access was provided for local representative review to every participating city and township, in addition to neighboring communities for review and comment prior to submission to the MN Homeland Security and Emergency Management (HSEM) or FEMA. After review and approval is received from HSEM and FEMA, the Washington County Board of Commissioners, the local City Councils, and the Town Boards will approve this plan by resolution. Copies of the resolutions of approval will be submitted to HSEM and FEMA for inclusion in the Washington County All Hazard Mitigation Plan.

More details of the planning process update are included below. This includes the identification of who was involved, when, what was discussed, their title, and their affiliation.

### **Overall Schedule Summary**

January 2022 – March 2022

- Assessed the existing plan, identified outdated information, and reviewed the plan requirements

May 2022 – June 2022

- Review new FEMA requirements that will go into effect April 2023

June 2022 – October 2022

- Collected relevant information for the plan update from subject matter experts, local jurisdictions, the public, other agencies, etc.
- Met with local jurisdictions, watershed districts, water consortium, local business owners, and others to gather information updates for the mitigation plan

September 2022 – December 2022

- Public outreach activities

November 2022 – February 2023

- Integrate feedback provided from follow up meetings and conversations with stakeholders
- Complete draft

June 2023 – July 2023

- Draft out for review by participants and neighboring jurisdictions
- Public version on website
- Review of Washington County All Hazard Mitigation Plan Final Draft Plan by Emergency Management Council, participating local jurisdictions, key county staff, and neighboring communities on a secure extranet site
- Revisions to plan based on feedback received

July 2023 – August 2023

- Review of Washington County All Hazard Mitigation Plan Final Draft Plan by Minnesota Homeland Security and Emergency Management State Hazard Mitigation Officer and/or designee
- Review of Washington County All Hazard Mitigation Plan Final Draft Plan by FEMA

September 2023 – November 2023

- Approval by the Washington County Board of Commissioners, City Councils, and Town Boards of the FEMA approved plan
- Submit formal approval resolutions to MN HSEM and FEMA

**Work Groups - *Emergency Management Council***

Washington County utilized the pre-existing multi-agency/multi-disciplinary Emergency Management Council policy board as its hazard mitigation work group. This council consists of representatives from fire, law enforcement, emergency management, 9-1-1 communications, emergency medical services, public works/transportation, public health, and geographic information systems. Membership of this group is detailed in the Acknowledgements section of the General Plan as well as further in this annex. This group meets three to four times a year to discuss local hazards, needs, and grant allocations. A summary of discussions related to the mitigation plan update at the meetings are identified below.

*November 2016 – Overview & Revision Process*

County Emergency Management staff gave the Council an overview of the hazard mitigation process, the current mitigation plan, and the need to revise the plan.

Staff recommended changes be focused on the Risk Assessment, Goals & Strategies, Completed and Current Projects, and Mitigation Projects. Some statistical and demographic may need updates throughout the plan as well. The first step identified was to reach out to the thirty-one cities and townships who have chosen to participate and be a part of the plan previously.

The Washington County Emergency Management Council agreed with Staff's proposed planning process.

*January 2017 – General Update*

Staff gave an update to the Council on progress on the plan and asked for input on local contacts.

*April 2017 – Community Participation and Mitigation Project Update*

County Emergency Management staff updated the group that in-person meetings had been held with approximately one-third of the local jurisdictions.

In addition, an online survey had been set up for public input, which had been advertised through various means.

Mitigation plan information had been established on the Washington County Emergency Management website. Information is provided on the website identifying the efforts made to update the countywide mitigation plan and emergency management staff contact information should there be any questions.

The Emergency Management Council was reminded of their role in the process of updating the mitigation plan. They will be a sounding board for the process in addition to reviewing a draft plan and will be asked to recommend forwarding the final draft plan to the State and FEMA for review.

*December 2017 – General Update*

County Emergency Management staff gave the Council an update on the meetings being held with individual communities. Staff thanked those that had already met to discuss the mitigation projects completed at the individual jurisdiction level as well as those mitigation projects to be included in the updated plan.

*May 9, 2018 – General Update*

The EM Council was given an overview of the progression of the plan update, including meetings that were held by emergency management staff to discuss mitigation and the plan's update.

*August 2018 – Review of the Draft All Hazard Mitigation Plan*

The Council was sent a link to a secure extranet site and were asked to review and provide feedback on the draft Washington County All Hazard Mitigation Plan.

*March 29, 2023 - General Update*

The Council conducted one last review of the update process, discussed the public survey conducted in 2022 and the newly required FEMA changes incorporated for this current update. An overall summary of the projects from cities was provided to the group.

## Community Organizations Active in Disasters

The county's Community Organizations Active in Disasters (COAD) group was also consulted for their input.

### *October 28, 2021 – Re-Introduction & Revision Process*

County Emergency Management staff provided the COAD with a re-introduction to hazard mitigation and discussion of the current plan update. Attendees of the meeting included:

- Doug Berglund, Emergency Management Director, Washington County Emergency Management – Sheriff's Office
- Kelli Matzek, Emergency Management Deputy Director, Washington County Emergency Management – Sheriff's Office
- Lee Dhein, Emergency Management Specialist, Washington County Emergency Management – Sheriff's Office
- Angela Mens-Eastman, Emergency Preparedness Coordinator with Washington County Public Health and Environment
- Rebecca Conroy, Community Services Policy Analyst, Washington County Community Services
- Dave Schultz, Amateur Radio Emergency Services (ARES)
- John Regan, Amateur Radio Emergency Services (ARES)
- Ryc Lyden, President of the Minnesota Volunteer Organizations Active in Disaster (MNVOAD)
- Carroll Davis-Johnson, Senior Community Health Specialist/Community Thread, Washington County Public Health and Environment
- David Dynes, Emergency Disaster Services Staff, Salvation Army

## County and State Participation

Additional input was solicited throughout the planning process from Washington County and Minnesota state departments and agencies in addition to other Emergency Management agencies from the metro area. County and state departments/agencies involved in the revision process include:

### Washington County Department Participation

#### Information Technology Department

- Adam Snegosky, IT Spatial Data Analyst Developer Senior with the Geographic Information Systems Support Unit, assisted with updates to Maps, Figures & Charts and is a member of the multi-agency/multi-disciplinary Emergency Management Council (EMC). He also reviewed relevant portions of the plan and updated the maps as needed.
- Emergency Management staff spoke with Washington County IT Manager Zachary Cory in October 2022. The conversation explained the purpose of the mitigation plan update, risks in the county, potential future mitigation projects, and the associated FEMA grants.

#### Public Health and Environment Department

- Angela Eastman, Emergency Preparedness Coordinator for Washington County Public Health and Environment, assisted by reviewing portions of the plan such as the Public Health Emergencies and Infectious Disease portion of Annex D for accuracy and completeness. She is also a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC).
- Kristofer Keller, Washington County Epidemiologist, assisted with robust updates to Annex D: Hazard Analysis (Public Health Emergencies/Infectious Disease).
- Emily Robb, Program Manager of Nursing Services, reviewed portions of the Infectious Disease section and assisted in providing robust updates to include COVID-19 information.
- Colette Henke, Public Health Informatics Specialist, reviewed portions of Annex B and D for accuracy and completeness.
- Julie Winner, Public Health Nurse Supervisor, reviewed portions of Annex B and D as well.
- Tom Dietrich, Planner II, reviewed portions of the Mitigation Plan with regards to water related risks and data in Annexes B and D.

Public Works Department

- Erik Jalowitz, Building Services Capital Projects Manager, discussed the mitigation plan update with County Emergency Management Staff on May 24, 2022. He participated in the conversation of what mitigation projects were already completed and what risks the county was susceptible to. A list of mitigation projects was discussed and added to the plan.
- Greg Wood, Building Services Director, discussed the mitigation plan update with County Emergency Management Staff on May 24, 2022. He participated in the conversation of what mitigation projects were already completed and what risks the county was susceptible to. A list of mitigation projects was discussed and added to the plan.
- Brad Swenson, Parks Manager, discussed the mitigation plan update with County Emergency Management Staff on June 21, 2022. He participated in the conversation of what mitigation projects were already completed and what risks the county was susceptible to. A list of mitigation projects was discussed and added to the plan.
- Alex McKinney, Parks Manager, discussed the mitigation plan update with County Emergency Management Staff on June 21, 2022. He participated in the conversation of what mitigation projects were already completed and what risks the county was susceptible to. A list of mitigation projects was discussed and added to the plan.
- Sandy Breuer, Parks Director, discussed the mitigation plan update with County Emergency Management Staff on June 21, 2022. She participated in the conversation of what mitigation projects were already completed and what risks the county was susceptible to. A list of mitigation projects was discussed and added to the plan.
- Cory Slagle, Assistant County Engineer, discussed the plan update with County Emergency Management Staff on June 28, 2022. He participated in conversations with his staff to discuss areas of concern and mitigation needs. A list of mitigation projects was discussed and added to the plan.
- Frank Ticknor, Design Engineer, discussed the plan update with County Emergency Management Staff on June 28, 2022. He participated in conversations with his staff to discuss areas of concern and mitigation needs. A list of mitigation projects was discussed and added to the plan.
- Cory Farver, Highway Maintenance Supervisor II, discussed the plan update with County Emergency Management Staff on June 28, 2022. He participated in conversations with his staff to discuss areas of concern and mitigation needs. A list of mitigation projects was discussed and added to the plan.

- Lyssa Leitner regarding the county’s recent recodification to the Floodplain Management ordinance. In addition, floodplain ordinances and maps were discussed with regards to the autonomy of the cities.
- Andrea Rehm provided a review of county public works responsibilities in Annex E on March 20, 2023.

Sheriff’s Office

- Dan Starry, Washington County Sheriff, is a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC).
- Darlene Pankonie, 9-1-1 Communication Center Division Manager, is a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC). In addition, Ms. Pankonie provided additional information about the Code Red System utilized throughout Washington County.
- Nate Timm, Public Safety Systems Manager, is a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC) which Washington County utilized as its hazard mitigation work group.
- Doug Anschutz, Chief Deputy in the Sheriff’s Office, is a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC).
- Douglas Berglund, Emergency Services Manager and Emergency Management Director, is a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC). In addition, Mr. Berglund assumed lead planning responsibilities for the second half of the planning update for the 2023 update.
- Lee Dhein, Emergency Management Specialist, is a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC).
- Kelli Matzek, Management Analyst II, was a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC) which Washington County utilized as its hazard mitigation work group. In addition, Mrs. Matzek started the update for the Washington County All Hazard Mitigation Plan and worked as lead planner for the first half of the 2023 update.
- Emergency Management staff met with Washington County Sheriff’s Office Sergeant of Security Operations, Joel Legut on

May 24, 2022. He participated in the conversation of what mitigation projects were already completed and what risks the county was susceptible to. A list of mitigation projects was discussed and added to the plan based on his participation.

- Emergency Management staff met with Washington County Sheriff's Office Water, Parks, and Trails Commander Kyle Schenck on March 14, 2023. At the meeting, mitigation planning was discussed in addition to risks in the county and potential future mitigation projects. Kyle referenced experiencing adjustments in the river currents which affects navigating the river by boat due to unforeseen changes in depth. Also, when river inlets experience high water levels debris gets caught and creates escalating problems down river. Perhaps a study to solve this issue or equipment that could prevent it could be explored.

#### Human Resources Department

- Emergency Management staff talked with Julie Sorrem, Washington County Risk Manager in the Human Resources Department on October 3, 2022. As part of the conversation, Ms. Sorrem agreed to review portions of the mitigation plan and provide feedback. Ms. Sorrem identified a need to update county fire alarm systems including severe weather communication and notification in all county buildings.

#### Minnesota State Department Participation

##### MN Department of Public Safety – Division of Homeland Security and Emergency Management

- Jennifer Davis, State Hazard Mitigation Officer, provided overall guidance and support throughout the revision process.
- Jon Dotterer, Regional Program Coordinator for Region 6 (Metro), is a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC).

##### MN Department of Natural Resources

- Ceil Strauss, State NFIP Coordinator, provided 2023 draft data for the Flood Risk Review and also provided repetitive loss data with PII requirements implemented.

## Academia

Washington County Sheriff’s Office Sergeant of Security Operations, Joel Legut, has been working with the Washington County schools since the beginning of 2019 to identify risks and hazards, identify mitigation strategies, and action items, and move forward on implementation. The coalition most recently convened on February 14, 2023 where Mitigation discussion topics included (projects, grants, and planning), recent incidents and events requiring law enforcement intervention, and upcoming exercises and trainings.



Washington County Emergency Management works closely with all school districts within the county regarding reunification planning. EM is helping each district to develop a comprehensive plan for relocation and reunification of the student body following an event that requires evacuation of students and faculty.

Kevin Klecker, Safety and Emergency Supervisor with the White Bear Lake Area School District, is also a part of the security focused educational group run by the Washington County Sheriff’s Office. Through those meetings and conversations, he submitted mitigation projects to be included as a part of this plan update.

## Other Metro Area Agency Participation – Neighboring Communities

Ramsey County – Emergency Management and Homeland Security

Bryan Mayer, Emergency Management Coordinator, reviewed the draft Washington County All Hazard Mitigation Plan in April of 2023.

City of St. Paul – Department of Emergency Management

Mike Sand, Critical Infrastructure Planner, reviewed the draft Washington County All Hazard Mitigation Plan in July of 2023.

Chisago County – Sheriff’s Office – Emergency Management

Scott Sellman, Emergency Management Director, reviewed the draft Washington County All Hazard Mitigation Plan in July of 2023.

Dakota County – Sheriff’s Office – Emergency Management

James Iliff, Sergeant – Emergency Preparedness & Professional Development, reviewed the draft Washington County All Hazard Mitigation Plan in July of 2023.

## Other Agencies

### Washington County Community Development Agency (CDA)

- The CDA declined the county invitation to meet and discuss mitigation.

### Federal Emergency Management Agency (FEMA)

- Scott Bailey, Program Analyst – Mitigation Division, provided HAZUS data for the Washington County All Hazard Mitigation Plan.

### Lake Elmo Airport

- Philip Tiedeman, Airport Manager for the Lake Elmo Airport and employee of the Metropolitan Airports Commission, discussed the mitigation plan update on September 28, 2022, with Washington County Emergency Management staff. The conversation was collaborative and informative to discuss existing plans the airport has and projects that are being worked on. A large construction project is being worked on in 2022 for water management and the airfield is undergoing realignment work. In speaking with Mr. Tiedeman, he was asked if the Lake Elmo Airport would like to have a project listed in the updated plan. Mitigation ideas and funding sources were discussed, but he decided not to include a project within the mitigation plan update.
  - Current Plans in place for the Lake Elmo Airport:
    - Emergency Operations Plan
    - Pollution Control Plan
    - Facilities Management Plan
    - Schedules for replacing pavement

### Washington County Fairgrounds

- Washington County Emergency Management staff met with the Washington County Agricultural Society which owns the property where the annual Washington County Fair is held. The monthly Fair Board meeting was held on April 6, 2023 at which county EM staff spoke to board members about mitigation and the county-wide mitigation plan. Hazards and risks were discussed for the property which annually holds numerous events open to the public.
  - Discussion at the meeting included the possibility of a safe room (tornado/high wind shelter) due to limited current capabilities. Also discussed were other projects including lightning prediction capability for advanced warning and stormwater planning and implementation to eliminate flooding issues which occur repeatedly.
  - After the meetings, it was determined that the Washington County Agricultural Society did not have the funding available to move forward with identified projects due to budget limitations.
  - The Fair Manager, Dorie Ostertag, and the Agricultural Society Board was informed of the ongoing update to the Washington County All Hazard Mitigation Plan on April 6, 2023, and was asked if they would

be interested in more information or if the fairground would like to keep the three previous mitigation projects listed in the plan as neither none been completed. It was decided that several new projects would be listed, and the previous three projects would be kept as they adequately addressed the hazards and risks faced by the privately owned property.

#### Washington County Hospitals

##### Lakeview Hospital

- The Emergency Management Director and Deputy Director from Washington County Emergency Management staff met with representatives from Lakeview Hospital on Friday, September 30<sup>th</sup>, 2022. The sole topic discussed at the meeting was the Mitigation Plan update. EM staff explained what mitigation is, the current update occurring to the Washington County All Hazard Mitigation Plan, and asked for input on the plan. The group discussed hazards faced by the hospital, mitigation actions already taken since the last mitigation plan update, and future mitigation projects they would like to see included in the mitigation plan. The following were attendees at the meeting:
  - Jon Muller, Emergency Medical Services Director with Lakeview Hospital is a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC).
  - Darren Van Blaricom, Valley Emergency Preparedness Manager with Lakeview Hospital. Mr. Van Blaricom holds quarterly meetings with local stakeholders, including Washington County Emergency Management staff, to keep updated on ongoing projects being done.
  - Eric Siskow, Director of Facilities with HealthPartners Stillwater clinics and Lakeview Hospital.

##### Woodwinds Hospital

- Washington County Emergency Management staff spoke with Steve Joswiak, the System Emergency Management Specialist with Fairview Health. Woodwinds Hospital is located within the City of Woodbury and is a campus that is part of the larger Fairview Health network.
- On September 27, 2022 a conversation was had explaining the Washington County All Hazard Mitigation Plan, the update work being done, and the FEMA mitigation grants. After discussing the grants, Mr. Joswiak discussed their current use of HealthCare Preparedness Program funds through HHS and that at this time he did not have any mitigation projects to include in this plan update.
- Existing Plans:
  - Emergency Operations Plan – updated in 2022
  - Evacuation Plan – updated in 2021

Washington County Amateur Radio

- Dave Schultz, Member of Amateur Radio Board, reviewed the existing language in Annex B specific to Emergency Supplemental Communication Services for accuracy and completeness in September 2022. He had no changes and indicated it was accurate.

Valley Branch Watershed District

- Over many years, Washington County EM staff have had numerous conversations with John Hanson from Barr Engineering, who works as the watershed district's engineer, regarding mitigation and the county All Hazard Mitigation Plan.
- In 2019 the VBWD purchased multiple residential properties severely threatened by flooding. The properties were purchased from 2018 – 2020 and are now vacant property.
- Risk areas were identified by watershed district board members and a project was identified to include in the plan update.
- John Hanson reviewed the 2018 version of the mitigation plan and provided updates and comments primarily in Annex D and Annex E with some additional information to add to Annex F. His comments were provided in September of 2022 and incorporated in October 2022.
- An additional follow up conversation was had between county emergency management staff and Mr. Hanson on October 4, 2022 regarding mitigation activities completed by the watershed district.

South Washington Watershed District (SWWD)

- Washington County Emergency Management staff attended the December 14, 2021 meeting of the South Washington Watershed District. At that meeting WCEM staff gave an overview of the mitigation plan and the update. In attendance at the meeting was:
  - Brian Johnson, SWWD President
  - Sharon Doucette, SWWD Vice President
  - Kevin ChapdeLaine, SWWD Treasurer
  - Mike Madigan, SWWD Secretary
  - Cole Williams, SWWD Manager
  - Matt Moore, SWWD District Administrator
  - Melissa Imse, SWWD Operations Manager
  - John Loomis, SWWD Programs Manager
  - Tony Randazzo, SWWD Watershed Restoration Specialist
  - Jack Clinton, Attorney
  - Wayne Johnson, Washington County Commissioner
- A request for updates was submitted to Mr. Loomis and Mr. Moore on January 19, 2023 for most recent mitigation projects and plans. No return communication was received.

Water Consortium

- Washington County Emergency Management Staff was one of three speakers at the Washington County Water Consortium meeting on August 3, 2022. The sole topic covered was the mitigation plan update with details given regarding currently identified risk areas, FEMA mitigation grants, and the opportunity for attendees to provide information for inclusion in the plan. The group had many questions and a good conversation was had with follow up discussions after the meeting was over.
- Those in attendance:
  - Tom Dietrich, Planner II, Washington County’s Department of Public Health and Environment
  - Angie Hong, Water Education Senior Specialist, East Metro Water Resource Education Program
  - George Vania, Citizen’s Advisory Committee Member, Brown’s Creek Watershed District
  - Ann Warner, General Public
  - Joe Fox, Project Engineer, City of Cottage Grove
  - Dawn Bulera, Lake St. Croix Beach Elected Councilmember
  - Lizzy Dawson, District Conservationist, Natural Resources Conservation Service (Farmington Office)
  - Emily Heinz, Planning Coordinator, Comfort Lake-Forest Lake Watershed District
  - Jeff Brower, Inspector, Valley Branch Watershed District
  - Brian Johnson, President of the South Washington Watershed District
  - Paul Richert, Board Manager, Carnelian Marine – St. Croix Watershed District
  - Jennifer Vieth, General Public
  - Mike MacDonald, Pesticide & Fertilizer Management, MN Department of Agriculture
  - Emily Steinweg, Water Supply Engineer, Metropolitan Council
  - Sara Taylor, Assistant City Administrator and Planner, City of Bayport
  - Kim Kaiser, Hydrologist, MN Department of Agriculture
  - Michele Jordan, Board Conservationist, Board of Water and Soil Resources
  - Craig Schmidt, Senior Service Hydrologist, National Weather Service’s Twin Cities Office
  - June Mathiowetz, Senior Planner, Washington County’s Office of Administration
  - Daniel Henely, Assistant Manager Water Resources Unit, Environmental Quality Assurance, Metropolitan Council Environmental Services
  - Karen Kill, District Administrator, Brown’s Creek Watershed District

- John Clark, Senior Environmental Scientist, Water Supply Planning, Metropolitan Council
- Jessica Collin-Pilarski, Senior Planner, Washington County’s Department of Public Health and Environment
- Ryan Fleming, Water Resources Engineer, EOR Engineering
- Madison Rogers, Water Resources Engineer, EOR Engineering

**Private Sector Involvement** – Meeting Date 5/9/23

As stated by their website (<http://wakotacaer.org>):

“Wakota CAER is a non-profit organization initiated by industry and dedicated to provide and support preparedness for public safety and environmental preservation. Wakota CAER works to ensure that plans for responding to emergencies are coordinated between the public and private sectors and various government jurisdictions.”

This group consists primarily of representatives from private organizations that could have a role in oil spills to rivers, chemical fires and many other emergency situations. The group meets monthly to talk about riverine emergency planning, response, and recovery in addition to other related topics.

County Emergency Management staff attended the Wakota CAER meeting on May 9, 2023. County EM staff presented on and discussed the update to the Washington All Hazard Mitigation Plan. Those who attended the meeting and subsequent question and answer time were primarily private sector partners and are listed below.

- 3M – Cottage Grove
- Aggregate Industries
- BP Pipeline
- Bay West
- Canadian Pacific Railway
- CF Industries, Inc.
- CHS Inc.
- Flint Hills Resources LP
- Hastings Fire Department
- Holiday Companies
- Koch Pipeline
- Northern Tier Energy
- Metropolitan Council Environmental Services
- Minnesota Pollution Control Agency
- Tiller Corporation
- United States Coast Guard
- Wakota CAER
- West Central Environmental Consultants
- XCEL Energy
- Magellan Mistream Partners



**RSVP list for May 9th Luncheon/Meeting**

1 message

Wakota CAER <info@wakotacaer.org>

Mon, May 8, 2023 at 8:51 PM

To: William Lazarz - WCEC <wlazarz@wcec.com>, Camilla Pederson <camillapede1@gmail.com>

Here is the total list as of this evening for tomorrows Luncheon/meeting. We are at 34 attending.

	<u>Name</u>	<u>Company</u>	<u>Invoice Sent</u>	<u>Paid</u>
1	Kristin Heutmaker	Marathon	yes	paid
2	Cami Pederson <i>CP</i>	Wakota	pays direct	pays direct
3	Camie Pederson <i>CP</i>	Wakota	pays direct	pays direct
4	Sarah Horning <i>SH</i>	Rock leaf Water	yes	paid
5	Bill Lazarz <i>BL</i>	WCEC	yes	
6	Doug Stahman <i>DS</i>	WCEC	yes	
7	Samanta Obermoller <i>SO</i>	WCEC	yes	
8	Peter Herpst <i>PH</i>		yes	paid
9	Brandon Block <i>BB</i>	CHS	yes	paid
10	Sam Binsfeld <i>SB</i>	Rock leaf Water	yes	paid
11	Kayla Hovde	MPCA	yes (removed 3%)	

12	Mike Schulte		MPCA	yes (removed 3%)	
13	Ryan Stafne		MPCA	yes (removed 3%)	
14	Jeremy Nutter	<i>JS</i>	Tiller	yes	paid
15	Martin Marietta	<i>MM</i>	Tiller	yes	paid
16	Jim Stanley		Fire Chief	yes	paid
17	1 person		Baywest	yes	paid
18	2 person		Baywest	yes	paid
19	Michelle Stryker		MN Pollution	yes (removed 3%)	
20	2 person		mn Pollution	yes (removed 3%)	
21	3 person		mn Pollution	yes (removed 3%)	
22	Andrew Lemieux		Flint Hills	yes	paid
23	Russ Ellis	<i>RE</i>	CHS	yes	paid
24	Hollie Hennigir	<i>HH</i>	Xcel Energy	yes	
25	Jon Giebenhain		Presenting		
26	Ed Dankbar		Presenting		
27	Paul hester	<i>PBH</i>	BNSF	yes	paid
28	Cort Teff	<i>CT</i>	Pinegn	yes	✓
29	Cort Teff	<i>JA</i>	Pinegn	yes	✓
30	Cort Teff	<i>Jan H</i>	Pinegn	yes	✓
31	Cort Teff	<i>MB</i>	Pinegn	yes	✓
32	Cort Teff	<i>PC</i>	Pinegn	yes	✓

33 Brian Black

Xcel Energy      yes

34 Lee Dhein

Wash Co Sheriff      yes

*AD*

*Matt Stevens      Susस्पत      ~~MS~~*

Amy Petersen

*John Wright*

*~~MS~~      Marathon      JW*

Office Coordinator

Wakota CAER

P.O. Box 16

Cottage Grove, MN 55016

[Wakota CAER](#)

P 651-226-3071



## Local Jurisdiction Involvement

Washington County Emergency Management staff worked with representatives of each jurisdiction to collect data and narratives for specific sections of the plan. This information included city and township critical infrastructure as well as priorities found in Annex C: Risk Assessment. Each community was also involved in the updating of information from the last version of the mitigation plan, including areas identifying progress made on previously identified mitigation actions/projects and worked to identify new and/or continuing projects for the 2023 plan.

A summary of each community’s involvement in the planning process and mitigation plan revision follows.

### *City of Afton*

- An article was written by Washington County Emergency Management and sent to Afton City Hall representatives in the Sheriff’s Office Newsletter. This included information about the mitigation plan update.
- A Washington County Emergency Management staff member met with representatives from Afton on July 25, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Afton including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following city representatives:
  - Ron Moorse, City Administrator
  - Ken Johnson, Public Works Supervisor
  - Jenny Moore, Office Assistant
  - Julie Yoho, City Clerk
  - Jim Stanley, Fire Chief



*City of Bayport*

- A Washington County Emergency Management staff member met with Allen Eisinger, Fire Chief of Bayport on October 10, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Bayport including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G).
- After the meeting by both Chief Eisinger and Washington County Emergency Management Staff, Chief Eisinger engaged additional City Hall staff via email by summarizing the meeting discussion and requesting their additional input on the mitigation plan update.
  - Laura Eastman, Police Chief
  - Adam Bell, City Administrator
  - Sara Taylor, Assistant City Administrator / City Planner
  - Matt Kline, Public Works Director

*Baytown Township*

- A Washington County Emergency Management staff member met with a representative from Baytown Township on November, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. EM Staff met with Rick Weyrauch, Baytown Supervisor/Vice Chair. Various sections of the plan were discussed and updated as they pertained to Baytown including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G).

*City of Birchwood*

- Emergency Management staff members met with a representative from Birchwood on October 3, 2022 to discuss updates to the county-wide All Hazard Mitigation Plan. EM Staff spoke with Rebecca Kellen, City Administrator and Clerk regarding mitigation, floodplain management, the plan update, and Birchwood's past mitigation work in addition to future projects. Various sections of the plan (Annex C, F, and G in particular) were updated with the information obtained in the discussion.

*City of Cottage Grove*

- Two Washington County Emergency Management staff members met with representatives from Cottage Grove on July 11, 2022 to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Cottage Grove including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following city representatives:
  - Christine Costello, Community Development Director
  - Ryan Burfeind, Public Works Director / City Engineer
  - Rick Redenius, Fire Chief
  - Jon Pritchard, Deputy Fire Chief
  - Amanda Meyer, Assistant City Engineer
  - Mike Mroska, Senior Planner
  - Jim Fohrman, Parks Superintendent
  - Rick Alt, Utility Superintendent
  - Gary Orloff, Streets Superintendent
  - Pete Koerner, Public Safety Director
  - Gwen Martin, Deputy Director of Public Safety
  - Gretchen Larson, Director of Economic Development
  - Brenda Malinowski, Finance Director
  - Brian Bluhm, IT Manager
  - Zac Dockter, Park and Rec Director
  - Adam Moshier, Fleet and Facilities Manager
- Rick Redenius, is a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC) which Washington County utilized as its hazard mitigation work group.
- Pete Koerner, Public Safety Director for Cottage Grove, is a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC) which Washington County utilized as its hazard mitigation work group.

*City of Dellwood*

- A Washington County Emergency Management staff member met with a representative from Dellwood on June 21, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. EM Staff met with Joel Holstad, City Clerk/Administrator. Various sections of the plan were discussed and updated as they pertained to Dellwood including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G).

*Denmark Township*

- A Washington County Emergency Management staff member met with a representative from Denmark Township on December 9, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. EM Staff met with John Strofus, Town Chair, and Dawn Johnson from the Town Board. Various sections of the plan were discussed and updated as they pertained to Denmark Township including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G).

*City of Forest Lake*

- A Washington County Emergency Management staff member met with representative from Forest Lake on October 10, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Forest Lake, including the Risk/vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following Forest Lake representatives:
  - Patrick Casey, City Administrator.
  - Greg Weiss, Police Captain.
- Greg Weiss is a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC) which Washington County utilized as its hazard mitigation work group.

*City of Grant*

- Washington County Emergency Management staff members met with a representative from Grant on October 4, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. EM Staff met with Kim Points, City Administrator and Clerk. Various sections of the plan were discussed and updated as they pertained to Grant including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G).

*Grey Cloud Island Township*

- A Washington County Emergency Management staff member met with a representative from Grey Cloud Island Township on July 11, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Grey Cloud Island Township including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). The meeting was held with Paul Schoenecker, Chairman of the Town Board.

*City of Hugo*

- A Washington County Emergency Management staff member met with representatives from Hugo on October 17, 2022 to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Hugo including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following city representatives:
  - Bryan Bear, City Administrator
  - Jim Compton, Fire Chief

*City of Lake Elmo*

- Two Washington County Emergency Management staff members met with representatives from Lake Elmo on August 17, 2022 to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Lake Elmo including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following city representatives:
  - Marty Powers, Public Works Director
  - Jack Griffin, City Engineer
  - Molly Just, Planning Director
  - Dustin Kalis, Fire Chief
- Chief Kalis is a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC) which Washington County utilized as its hazard mitigation work group.

*City of Lakeland*

- Washington County Emergency Management staff met with representatives from Lakeland on July 15, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Lakeland including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following:
  - Michelle Elsner, City Clerk
  - Simon Wirth, Water and Wastewater Operator with People Service, Inc
  - Jim Stanley, Fire Chief

*City of Lakeland Shores*

- Washington County Emergency Management staff met with representatives from Lakeland Shores on July 25, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. EM Staff met with John Bischoff, Acting Mayor and Jim Stanley, Fire Chief. Various sections of the plan were discussed and updated as they pertained to Lakeland Shores including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G).

*City of Lake St. Croix Beach*

- Washington County Emergency Management staff met with representatives from Lake St. Croix Beach on July 25, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Lake St. Croix Beach including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following:
  - Dave Engstrom, City Administrator
  - Thomas McCarthy, Mayor
  - Jim Stanley, Fire Chief
- Washington County Emergency Management Staff exchanged emails and phone calls with John Parotti, City Engineer after the initial meeting. Mr. Parotti works with the engineering company SEH. Mr. Parotti and EM staff discussed the mitigation plan, mitigation projects, and the potential for mitigation grants. The conversations occurred in the first half of October, 2022.

*City of Landfall*

- Washington County Emergency Management staff met with representatives from Landfall on August 17, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Landfall including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following city representatives:
  - Troy Carlson, Maintenance (Public Works)
  - Tobin Lay, City Administrator/HRA Executive Director
  - Rebecca Kinsey, Park Manager
  - Stuart Bonniwell, Finance Officer

*City of Mahtomedi*

- Washington County Emergency Management staff met with representatives from Mahtomedi on October 5, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Mahtomedi including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following city representatives:

- Terry Fischer, Fire Chief
- Jerene Rogers, City Clerk
- Scott Neilson, City Administrator
- Scott Schaefer, Finance Director
- John Sachi, City Engineer

- Chief Fischer is a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC).

*City of Marine on St. Croix*

- Washington County Emergency Management staff met with representatives from Marine on St. Croix on January 24, 2018, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Marine on St. Croix including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following city representatives:

- Lynette Peterson, City Clerk
- Charlie Anderson, City Council
- Tommy Boesel, Public Works Lead



*May Township*

- Washington County Emergency Management staff met with representatives from May Township on December 16, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to May Township including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following township representatives:
  - Steve Magner, Town Board Supervisor
  - Bobbi Hummel, City Clerk
  - Katie Koscielak, Town Project Engineer from WSB & Associates, Inc.

*City of Newport*

- A Washington County Emergency Management staff member met with representatives from Newport on July 11, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Newport including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following city representatives:
  - Steve Wiley, Fire Chief
  - Deb Hill, City Administrator
  - Matt Yokiell, Public Works Superintendent
  - Travis Brierley, Assistant to the City Administrator

*City of Oakdale*

- Washington County Emergency Management staff member met with representatives from Oakdale on October 7, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Oakdale including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following city representatives:
  - Kevin Wold, Fire Chief
  - Joe Carpentier, Assistant Fire Chief
  - Nick Newton, Police Chief
  - Lori Pulkrabeck, Communications Director
  - Jason Zimmerman, Finance Director
  - Christina Volkers, City Administrator
- The Community Development Director Andrew Gitzlaff and Public Works Manager Jim Romanik were unable to attend the meeting and were engaged after the meeting for additional information (October 2022).
- Chief Wold is a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC) which Washington County utilized as its hazard mitigation work group.

*City of Oak Park Heights*

- Washington County Emergency Management staff member met with representatives from Oak Park Heights on October 12, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Oak Park Heights including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following city representatives:
  - Steve Hansen, Police Chief / Emergency Manager
  - Allen Eisinger, Bayport Fire Chief (response coverage for this area)
  - Eric Johnson, City Administrator
  - Scott Richards, City Planning Consultant with TPC, Inc.
  - Jenni Pinski, Assistant City Administrator / City Clerk
  - Lee Mann, City Engineer with Stantec
  - Andy Kegley, Public Works Director
  - Kevin Sandstrom, City Attorney with Eckberg Lammers P.C.

*City of Pine Springs*

- Washington County Emergency Management staff members met with a representative from Pine Springs on October 4, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. EM Staff met with Vickie Keating, Pine Springs City Administrator and Clerk. Various sections of the plan were discussed and updated as they pertained to Pine Springs including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G).

*City of St. Mary's Point*

- Washington County Emergency Management staff met with representatives from St. Mary's Point on July 15, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. At the meeting various sections of the plan were discussed and updated as they pertained to St. Mary's Point including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). The following were in attendance and participated in the discussion:
  - Gary Williams, City Councilmember
  - Dale Pierson, City Councilmember
  - Jim Stanley, Fire Chief

*City of St. Paul Park*

- A Washington County Emergency Management staff member met with representatives from St. Paul Park on July 11, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to St. Paul Park including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following city representatives:
  - Jessica Danberg, Chief of Police
  - Jeff Dionisopoulos, Public Works Supervisor
  - Kevin Walsh, City Administrator

*City of Scandia*

- Emergency Management staff members met with representatives from Scandia on September 30, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Scandia including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following:
  - Mike Hinz, Fire Chief
  - Charlie Fischer, Public Works Director

*City of Stillwater*

- A Washington County Emergency Management staff member met with representatives from Stillwater on October 12, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Stillwater including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). At the meeting EM Staff met with the following city representatives:
  - Joe Kohlmann, City Administrator
  - Rose Holman, IT Manager
  - Sharon Provos, Finance Director
  - Beth Wolf, City Clerk
  - Shawn Sanders, Public Works Director
  - Donna Robole, Human Resources Manager
  - Tim Gladhill, Community Development Director
  - Brian Mueller, Chief of Police / Emergency Management Director
  - Stuart Glaser, Fire Chief
- Fire Chief Stuart Glaser is a member of the Emergency Management Council, the pre-existing multi-agency/multi-disciplinary Emergency Management Council (EMC) which Washington County utilized as its hazard mitigation work group.

*Stillwater Township*

- Washington County Emergency Management staff met with representatives from Stillwater Township on November 15, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Stillwater Township including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following township representatives:
  - Sheila-Marie Untiedt, Town Board Chair
  - Mark Caroon, Community Services Officer
  - Barbara Riehle, Town Clerk.

*West Lakeland Township*

- A Washington County Emergency Management staff member met with representatives from West Lakeland Township on September 30, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to West Lakeland Township including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following township representatives:
  - Carrie Seifert, Town Clerk
  - Dave Schultz, Town Board Supervisor

*City of Willernie*

- Washington County Emergency Management staff met with a representative from Willernie on October 4, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. EM Staff met with Vickie Keating, City Clerk. Various sections of the plan were discussed and updated as they pertained to Willernie including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G).

*City of Woodbury*

- Washington County Emergency Management staff met with representatives from Woodbury on July 7, 2022, to discuss updates to the county-wide All Hazard Mitigation Plan. Various sections of the plan were discussed and updated as they pertained to Woodbury including the Risk/Vulnerability Assessment (Annex C), the Completed and Current Projects (Annex F), and Future Mitigation Projects (Annex G). EM Staff met with the following city representatives:
  - Omar Maklad, Assistant Public Safety Director/Police chief
  - Robert James, Information and Communication Technology Director
  - Mike Wentlandt, Assistant Streets Manager
  - Janelle Schmitz, Community Development Director
  - Jim Westerman, Assistant Public Works Director
  - Danyell Lundell, Assistant Utility Manager
  - Mary Hurliman, Public Works Director
  - Kevin Burshten, Assistant Parks Manager
  - Michelle Okada, Parks and Recreation Director

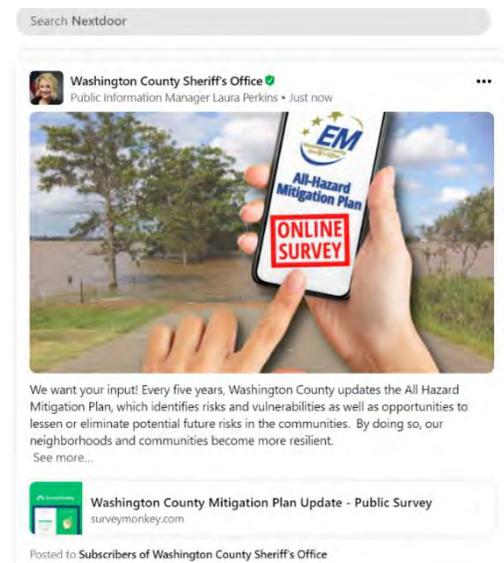
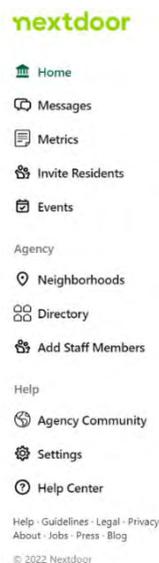
**Public Participation and Outreach**

Online Survey Seeking Public Input – 2022

Washington County Emergency Management created an online survey in August of 2022 to collect information from the public regarding their concerns and vulnerabilities to a variety of hazards. The survey was advertised through multiple avenues and 474 responses were received. The survey letter is illustrated in Annex C, C-10. The online survey was promoted by:

- Advertising multiple times on the Washington County Sheriff’s Office Facebook page (approximately 25,000 social media followers).
- Advertising on the NextDoor app for Washington County, which has the potential to be seen by the 90,000 households who subscribe to

NextDoor. The survey posts geographically by address, so all accounts are verified as Washington County residents.

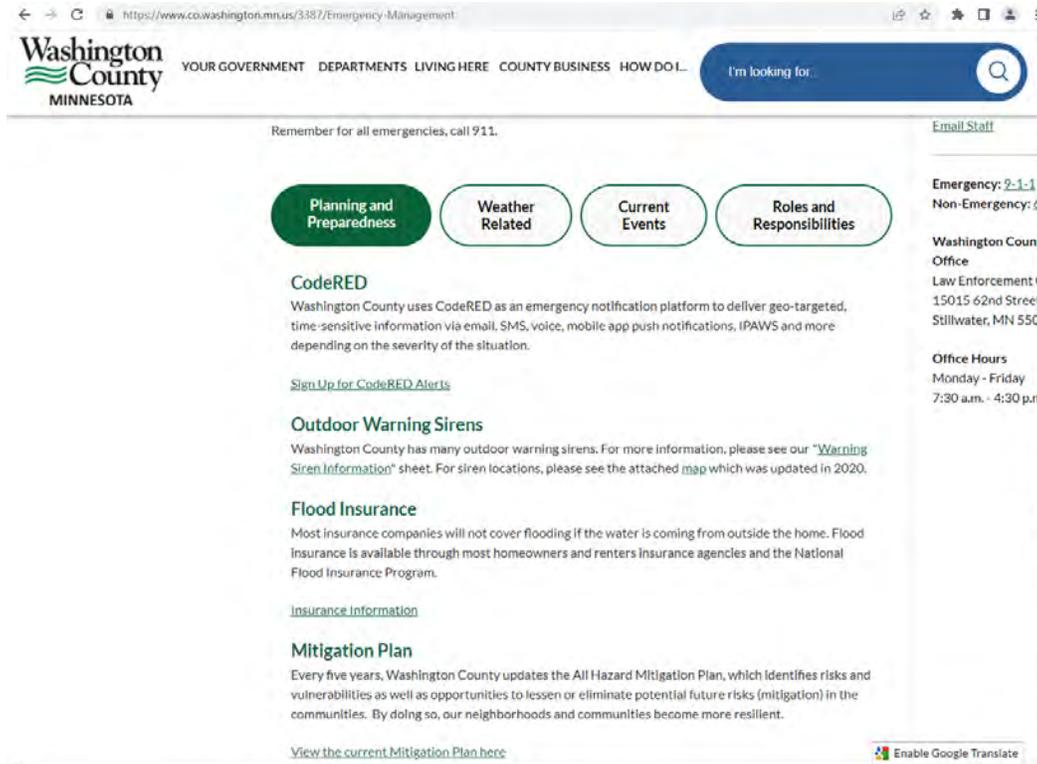


- Printed in a countywide newsletter called Staying in Touch for the Winter 2022 edition which is distributed to approximately 114,000 residential households in the county.
- Created links to the survey on some local city and township official websites.

The questionnaire asked respondents to rank mitigation project types. The survey results were then compiled for each local jurisdiction and was distributed to the local city and township staff. In addition, the aggregate results are included in the appendix of this plan as well as highlighted and summarized in the Risk Assessment.

### County Website - Ongoing

Another venue by which public input was sought was through the Washington County website. Information about the update to the plan was added to the county’s emergency management website. This informed the public of the need to revise the plan and the steps Washington County was taking to complete the update (see below for a screen shot of the Washington County Mitigation Website). The website also provided the public with contact information for emergency management staff, should they wish to seek more information about the plan, the update, or mitigation in general. The website outlines the opportunity to review sections of the Mitigation Plan by request and to provide comments via phone and email back to emergency management staff.



### County Library Visits

Washington County Emergency Management employees staffed a table at two different county libraries to engage the public in conversations regarding emergency preparedness and mitigation planning updates. Emergency Management worked with county library staff to choose days of the week and times of the day to create better opportunities to engage with the public.



On September 7, 2022, staff set up a table at the Washington County R.H. Stafford Library in Woodbury, Minnesota during the evening hours.



Conversations were had with the public regarding the update to the All Hazard Mitigation Plan, advertised the online public survey QR code, and discussed National Preparedness Month topics.

On September 28<sup>th</sup>, 2022, Washington County Emergency

Management also staffed a table at the Oakdale Library during evening hours.

Feedback was received through the online survey.



## Assessing Risks

The Risk and Vulnerability update was completed utilizing local knowledge from county, city, and township representatives as well as utilizing existing risk assessments performed by others.

### *High Level Assessment*

Washington County routinely reassess the risks within the county and the surrounding metropolitan area. This has been done at a metropolitan level through the Twin Cities Urban Area Threat Hazard Identification Risk Assessment (THIRA), which has been updated annually since 2012. In addition, Washington County has periodically reviewed and updated the county THIRA. The county level THIRA was last completed in 2022.

Washington County is aware of what is going on nationally as well as world-wide. Plans, trainings, and exercises occur based in part on what is occurring outside of Washington County, but could, in reality, occur anywhere.

Washington County’s department of Public Health and Environment has a Hazard Vulnerability Assessment as well, last completed in 2020. This risk assessment tool identifies the probability and impact for identified risks and vulnerabilities. The document then identifies mitigation action items.

### *Local Assessment*

During meetings with local cities and townships as identified earlier in this Annex, the previously specified “Risks” and “Vulnerabilities/Community Impact” from Annex C – Risk Assessment of this plan were reviewed and updated to reflect any changes deemed necessary by the knowledgeable, local representatives.

### *Public Assessment*

Information collected from the public survey conducted in 2022 along with the results from the public engagement opportunities held at several Washington County libraries were included in Annex C – Risk Assessment and as appendices to the plan.

### *School Assessment*

As mentioned previously in this annex, the Washington County Sheriff’s Office has worked with local school districts to identify risks to their buildings, grounds, and staff. Onsite assessments have been conducted with districts to assess, among other risk items, vulnerabilities to natural and intentional threats.

### *Local Health Care Vulnerability Assessments*

Washington County Public Health and Environment, along with other local partners, participate in the Metro Health and Medical Coalition, which conducts their own vulnerability assessments.

Independent of this process, local hospitals also perform risk assessments through a Hazard Vulnerability Assessment (HVA). An example of this is Lakeview Hospital located within Washington County, who completed their HVA most recently in 2022.

### *Other Assessments*

The Washington County HAZUS report provided by Scott Bailey (FEMA), the list of repetitive loss structures received from Ceil Strauss (MN DNR), and other data collected have been integrated into this plan where necessary. More information can be found in Annex C – Risk Assessment and Annex D – Hazard Analysis.

### *Data Resources*

Updates were made to this plan, including in Annex D - Hazard Analysis, utilizing data from sources such as:

- National Climactic Data Center (NCDC)
- MN Department of Natural Resources (DNR)
- State of Minnesota All Hazard Mitigation Plan
- National Weather Service
- Washington County Infectious Disease Reports
- Washington County Historical Society
- Federal Emergency Management Agency (FEMA)
- Metropolitan Council
- Social Vulnerability Index

(See Annex D Hazard Analysis for more information)

### **Updating the Goals, Objectives, and Strategies**

For this latest plan update, county emergency management staff reviewed the existing Hazard Mitigation Plan goals, objectives and strategies in combination with the updated risk assessment. From the data collected, county staff proposed minor modifications to the existing plan. Annex E was reviewed to ensure the goals, objectives, and strategies corresponded with the identified risks and vulnerabilities in Annex C and Annex D in addition to the projects proposed by the plan participants listed in Annex G. The proposed changes reflected the results of the community meetings as well as increased the language consistency across the document.

More information is available in Annex I of this plan.

## **Review of Updated Plan**

Counties contiguous with Washington County were provided copies of the updated 2023 plan for review and feedback. In addition, the EM Council members were provided the opportunity to review the draft version. A list of those included in the review of the final draft can be found in the Appendices.

## **Formal Adoption**

The updated plan was submitted to the State of Minnesota Hazard Mitigation Officer (SHMO) for review in July of 2023. Upon recommendation of the SHMO, the Washington County Emergency Management Office or the SHMO will then send the plan to FEMA for review. When all necessary alterations have been made from feedback received from FEMA, resolutions of approval from the county, cities, and townships will be sought for their official inclusion in the Washington County All Hazard Mitigation Plan.

Documentation from each jurisdiction indicating approval will be kept on file with Washington County Emergency Management and copies will be submitted to the Minnesota Division of Homeland Security and Emergency Management.

## **Implementing the Plan**

Implementation of the projects identified in this plan will depend on availability of local funding or mitigation funds from the Minnesota Division of Homeland Security and Emergency Management, federal government, and other funding sources. Once Washington County Emergency Management has been notified of the availability of mitigation funds, information will be sent on to the cities and townships who adopted the approved plan. They will then be encouraged to apply for funding to implement mitigation projects. A cost-benefit analysis will be conducted at the time of application if required or deemed necessary by the State of Minnesota HSEM or FEMA.

Each jurisdiction participating in this plan update would likely be the lead agency for implementation of the identified mitigation projects, though they may work with other agencies such as the Washington County HRA or a local watershed district. Implementation of mitigation actions may occur when outside funding sources, such as grants or donations, become available. As funds become available, additional local prioritization of risks and vulnerabilities will take place which allows for the most current and pressing issues to be considered at the time of analysis rather than committing to a project that may move to a lower priority due to circumstances at the time of application.

Jurisdictions covered by this plan are encouraged to consult this plan for possible mitigation opportunities when considering:

- Climate change projects
- Major building/infrastructure projects;
- Changes to water plans, zoning ordinances, and building codes;
- Road repairs;
- New and redevelopment projects;
- Comprehensive Plan updates;
- Decision making on land use issues.

The Washington County All Hazard Mitigation Plan has been written to function as a separate plan, but it is designed to be a supporting document to other plans and planning processes throughout the County. The plan will be utilized as a resource in formulating other plans such as the Washington County Comprehensive Plan and additional plans mentioned in **Annex I** of this plan.

### **Monitoring, Evaluating, and Updating the Plan**

See **Annex I**.

### **Plan Distribution**

The plan, and any changes to it, will be available in a hardcover format within the Washington County Emergency Operations Center.

Inquiries about the plan should be directed to:

Washington County Emergency Management  
15015 62<sup>nd</sup> St. N. PO Box 3801  
Stillwater, MN 55082-0006  
Emergency Operations Center Phone: (651) 430-7938  
E-Mail: [Douglas.Berglund@co.washington.mn.us](mailto:Douglas.Berglund@co.washington.mn.us)  
Website: [www.co.washington.mn.us/emergencymanagement](http://www.co.washington.mn.us/emergencymanagement)

**Annex B – COMMUNITY PROFILE**

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## Annex B – COMMUNITY PROFILE

This section of the Washington County All Hazard Mitigation Plan is written in order to summarize the county’s attributes. Reviewing the county’s features is helpful in knowing what hazards may be faced in the future and preparing for them.

### A. History

Once home to the Dakota and Sioux Indian tribes, the formation of Washington County follows the establishment of the Northwest Ordinance of 1787, and the subsequent creation of both the Michigan and Wisconsin territories. When Wisconsin became a state in 1848, it voluntarily limited its western boundary to the St. Croix River, leaving the land area between the St. Croix and the Mississippi rivers available for eventual inclusion in the state of Minnesota.

In August 1848, a territorial convention was held in downtown Stillwater (the “Stillwater Convention”) to draft a letter to Congress, requesting the organization of the Minnesota Territory; the request was approved on March 3, 1849. Washington County, one of the original nine counties, was formed soon thereafter on October 27, 1849, by the territorial government; it was named after George Washington, the first President of the United States.

Figure B.1 Minnesota’s Original Territories



Source: [www.ancestry.com](http://www.ancestry.com)

Other Important Dates:

#### Economic

- 1839 - Marine Mill; the start of Minnesota’s lumber industry
- 1914 - Last log through St. Croix Boom; end of lumbering on the St. Croix
- 1939 - Founding of Northwestern Oil Refinery (currently Northern Tier Oil Refinery)

#### Transportation

- 1870 - First railroad station in Washington County (Forest Lake)
- 1876 - First Stillwater bridge opens
- 1923 - Prescott-Point Douglas Bridge opens
- 1931 - Stillwater Lift Bridge opens

Historic/Cultural

- 1850 - First Swedish settlement in Minnesota established (Scandia)
- 1851 - Stillwater selected for Minnesota Territorial Prison; burned in 2002
- 1870 - Historic Courthouse completed, oldest standing courthouse in Minnesota
- 1940 - County Land Use Plan was developed for the area

**B. Geography**

*Location and Area*

Washington County, MN is located on the mid-eastern edge of the state and is one of the seven Twin Cities Metropolitan Area counties. The county covers an area of 423 square miles (270,761 acres) spanning 40 miles from north to south and 14 miles from east to west. The county is bordered on the north by Chisago County, Anoka and Ramsey counties on the west, the Mississippi National River and Recreation Area to the south and southwest, and on the east by the St. Croix National Scenic Riverway, separating it from the State of Wisconsin.

See “**General Location**” **Figure B.2** for a map of Washington County’s location in the state and its relation to neighboring counties.

*Topography*

Elevations in the county range from a low of 675 feet at Lake St. Croix to over 1,100 feet in Woodbury. A great deal of the lower regions in the county lies along the Mississippi and St. Croix riverbanks. The communities of Newport, St. Paul Park, Grey Cloud Island, St. Mary’s Point, Lakeland, Lakeland Shores, and Bayport are among the lowest areas in the county and are located along the major rivers.

See “**Topography**” **Figure B.3** for a map of Washington County’s elevations.

*Municipalities*

Washington County consists of twenty-five cities and six townships along with small portions of White Bear Lake (Ramsey County) and Hastings (Dakota County).

<u>Cities</u>			
Afton	Hugo	Marine on St. Croix	Scandia
Bayport	Lake Elmo	Newport	Stillwater
Birchwood Village	Lakeland	Oakdale	Willernie
Cottage Grove	Lakeland Shores	Oak Park Heights	Woodbury
Dellwood	Lake St. Croix Beach	Pine Springs	
Forest Lake	Landfall	St. Mary’s Point	
Grant	Mahtomedi	St. Paul Park	
<u>Townships</u>			
Baytown Township	Grey Cloud Island Township	Stillwater Township	
Denmark Township	May Township	West Lakeland Township	

### C. Divisions

#### *Commissioner Districts*

The thirty-one jurisdictions in the county are organized into five County Commissioner districts for the management and control of property and the management of business affairs. Washington County Commissioner Districts are designated as follows:

#### Board of Commissioners

District 1 – Fran Miron	District 4 – Karla Bigham
District 2 – Stan Karwoski	District 5 – Michelle Clasen
District 3 - Gary Kriesel	

See **Figure B.4** for the division of Commissioner Districts in Washington County.

#### *Wards and Precincts*

The county is divided into multiple wards and precincts for voting purposes. See “**Wards and Precincts**” **Figure B.5** map for the division of Washington County into wards and precincts.

#### *Schools*

Washington County has eight school districts. Listed below are the districts and the approximate number of students attending within each district as of October 2022.

Independent School District 200 – Hastings: [REDACTED]  
Independent School District 622 - North St. Paul/Maplewood/Oakdale: [REDACTED]  
Independent School District 624 - White Bear Lake: [REDACTED]  
Independent School District 831 - Forest Lake Area: [REDACTED]  
Independent School District 832 - Mahtomedi: [REDACTED]  
Independent School District 833 - South Washington County: [REDACTED]  
Independent School District 834 - Stillwater Area: [REDACTED]  
Independent School District 2144 - Chisago Lakes: [REDACTED]

In 2017, the St. Paul School District (District 625) acquired the Crosswinds School, which is located at 600 Weir Drive in Woodbury.

See “**School Districts**” **Figure B.6** map to view the divisions for the eight public school districts within Washington County.

Century College is the primary higher education campus offered in Washington County. This community and technical college campus is located in both Mahtomedi and White Bear Lake, and enrolls approximately [REDACTED] full time students, but [REDACTED] credit and non-credit students.

**D. Hydrology**

Washington County is bordered on the east by the St. Croix River and on the south by the Mississippi River. The presence of the two large rivers along with smaller streams and numerous lakes and wetlands in Washington County create planning and flooding challenges.

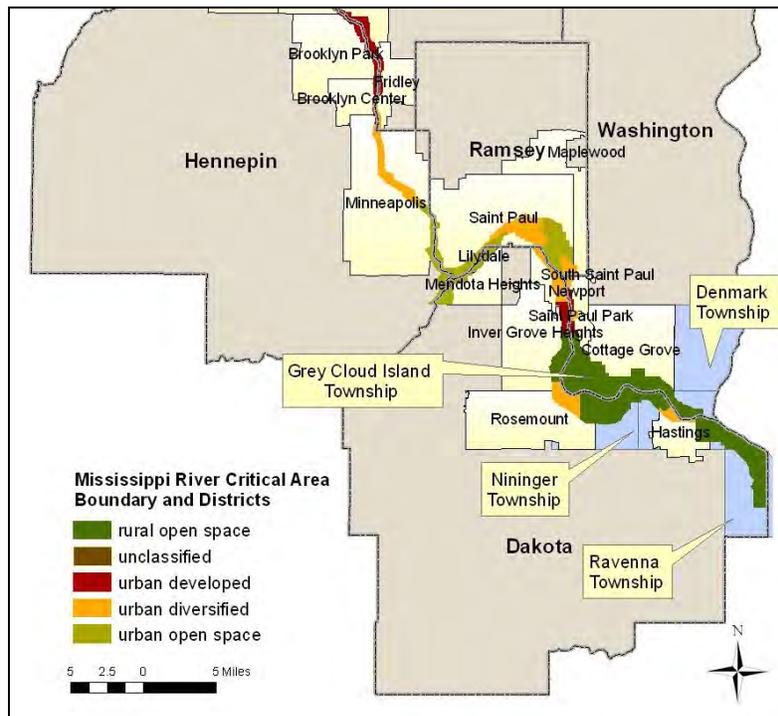
*Major Rivers – St. Croix River*

The St. Croix River flows south along the entire eastern border of Washington County. The river separates Washington County from the counties of Polk, St. Croix, and Pierce in Wisconsin. The Lower St. Croix River was the first river way segment added to the National Wild and Scenic Rivers Program by Congress in 1972. The last 25 miles before it reaches the Mississippi River is jointly administered by the states of Minnesota and Wisconsin. This section of the St. Croix River is a popular river way for recreational uses.

*Major Rivers – Mississippi River*

The Mississippi River flows east along the southern border of the county. Washington County is bounded on the south by 16 miles of commercially navigable river. Much of the river flows through parks and open spaces. The Mississippi River is divided into four Critical Area Districts. A majority of the Washington County border along the Mississippi is designated as Rural Open Space, with large portions of Newport and St. Paul Park designated Urban Developed.

**Figure B.7 Mississippi River Critical Area Boundary and Districts**



Source: Minnesota Department of Natural Resources

See “**Mississippi River Critical Area Boundary and Districts**” **Figure B.7** to view both the critical areas along the Mississippi. See “**Regionally Significant Ecological Areas**” **Figure B.8** to view significant ecological areas in Washington County.

### *Watersheds*

There are two major watersheds in Washington County: the Mississippi River and the St. Croix River. Portions of the Mississippi River Basin lie within Washington County, mostly along the south-western border of the county. The St. Croix River Watershed covers 1,470 square miles in Wisconsin and Minnesota.

Sub-watershed districts within the county are organized into and governed by seven watershed districts and one joint power water management organization. The seven watershed districts located wholly or partially within Washington County are:

1. Brown's Creek Watershed District (BCWD)
2. Carnelian – Marine – St. Croix Watershed District (CMSCWD)
3. Comfort Lake - Forest Lake Watershed District (CLFLWD)
4. Ramsey - Washington Metro Watershed District (RWMWD)
5. Rice Creek Watershed District (RCWD)
6. South Washington Watershed District (SWWD)
7. Valley Branch Watershed District (VBWD)

The joint powers water management organization (WMO) is:

1. Middle St. Croix WMO

See “**Water Management Organizations / Watershed Districts**” **Figure B.9** map to view the WMO boundaries within the county.

### *Wetlands, Lakes and Streams*

Of Washington County’s 423 square miles, over 44 square miles are covered with lakes and rivers. There are 468 lakes that are ten acres or larger, the largest being Forest Lake, Big Marine Lake, Lake Elmo, White Bear Lake, and Lake St. Croix. The County also has two major rivers – the Mississippi River and St. Croix River. Beyond major waterways, there are an estimated 300 additional small ponds, creeks, streams, and other wetlands.

In their natural state, Washington County’s wetlands control runoff and decrease soil erosion and water pollution. This also reduces potential damage from flooding and helps to recharge water supplies.

See “**National Wetland Inventory**” **Figure B.10** for a map of various classified wetlands throughout the county.

## E. Hydrogeology

### *Groundwater*

The groundwater in Washington County provides one hundred percent of the drinking water, and virtually all the water for commercial, industrial and irrigation needs in the county. Groundwater is also vital for maintaining the quality and quantity of water in many lakes, wetlands, and streams. Seasonal flooding, high ground water levels and soil erosion cause much of the non-urban drainage problems in the county. See the Washington County Groundwater Plan for further information.

There are four locations in the county that have been designated as Special Well and Boring Construction Areas. These designations are a result of having contaminated groundwater and are in place to protect public health by preventing the spread of contamination due to improper drilling of wells or bores and to provide safe water supplies. For specific information on the four Special Well and Boring Construction Areas in Washington County refer to the Minnesota Department of Health website on Well Management.

<https://www.health.state.mn.us/communities/environment/water/wells/swbca/index.html#washington>

### *Bedrock Structure*

The present topography was influenced to a major extent by the pre-glacial topography. Many of the current low areas are situated over bedrock valleys. The dissected bedrock surface has an important effect on groundwater resources.

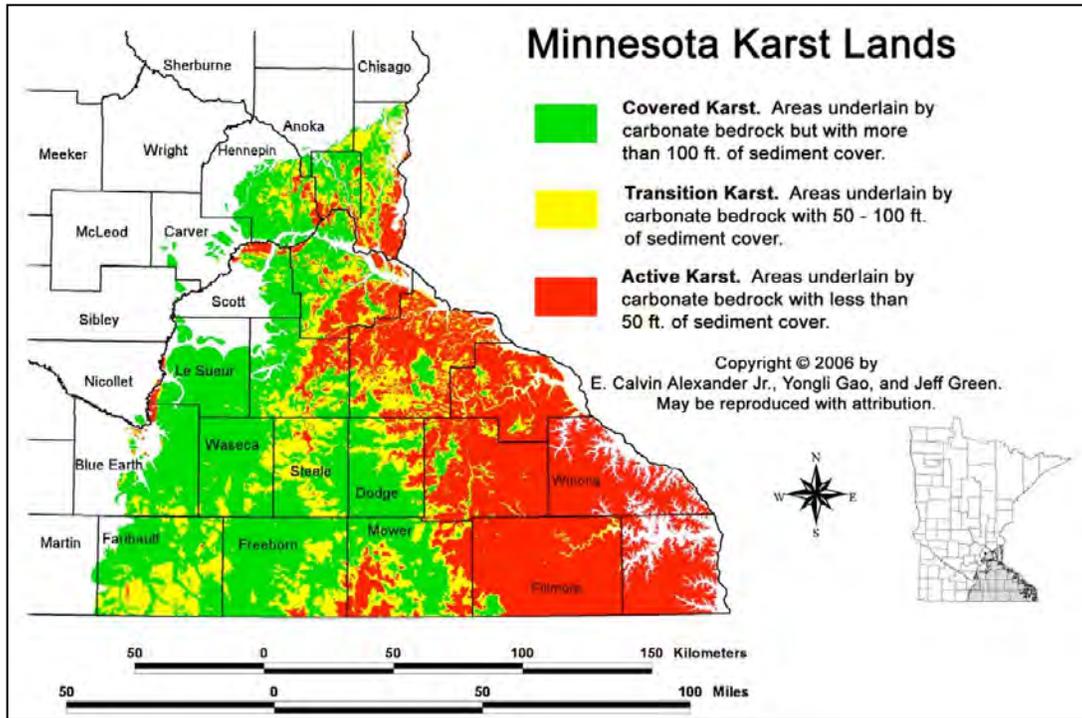
**“Bedrock Topography” Figure B.11** illustrates the present topography of the bedrock surface as it exists below the surface or glacial sediment. This map represents the extent to which the original bedrock formations were eroded.

Washington County’s bedrock geology is divided into nine groups. See **“Bedrock Geology” Figure B.12** for a map of the geological formations in the county.

### *Karst Topography*

Bedrock layers are subject to minor movements, fracturing, weathering, and erosion. Sinkholes and caves are karst features that are formed by infiltrating rainwater slowly dissolving limestone bedrock. Karst features are found mostly in the southern part of Washington County along the Mississippi River and St. Croix River Valleys. See **“Minnesota Karst Lands” Figure B.13** (page B-8) to view the type of karst located in the Twin Cities and southeastern Minnesota. Karst landscapes are most likely found where carbonate bedrock is at or near the surface. Karst formations are a direct path to aquifers, thus making groundwater vulnerable to pollution. See **“Karst Features” Figure B.14** to view the locations of springs and sinkholes in Washington County.

Figure B.13 Minnesota Karst Lands



Source: Minnesota IT Services, Geospatial Information Office

### *Geologic Faults*

Studies in Washington County discovered numerous faults in the bedrock throughout Southern Washington County, specifically in the Prairie du Chien and Jordan Aquifers. The Cottage Grove Area Nitrate Study found the fault areas allowed for greater permeability to groundwater supplies. For more information refer to the Cottage Grove Area Nitrate Study.

### *Soils*

The characteristics of the minerals and soils present in Washington County indicate the potential types of hazards that may occur. Rock hardness and soil characteristics can determine whether or not an area will be prone to geologic hazards such as earthquakes and landslides. See “**Surface Geology**” **Figure B.15** to view the types of soil in the county.

## **F. Climate**

The State of Minnesota is situated at the junction of three key biomes on the North American Continent: prairie, deciduous forest, and northern coniferous forest. The area at which they intersect is largely due to the three major air masses meeting over the region: Continental Polar brings cold air from the north, dry Maritime Polar air from the Pacific, and Maritime Tropical from the Gulf of Mexico.

**Chart B.1** displays the mean temperature by month for Washington County. The mean annual temperature from 1991 to 2020 at the Stillwater weather station was measured at 44.5 degrees Fahrenheit.

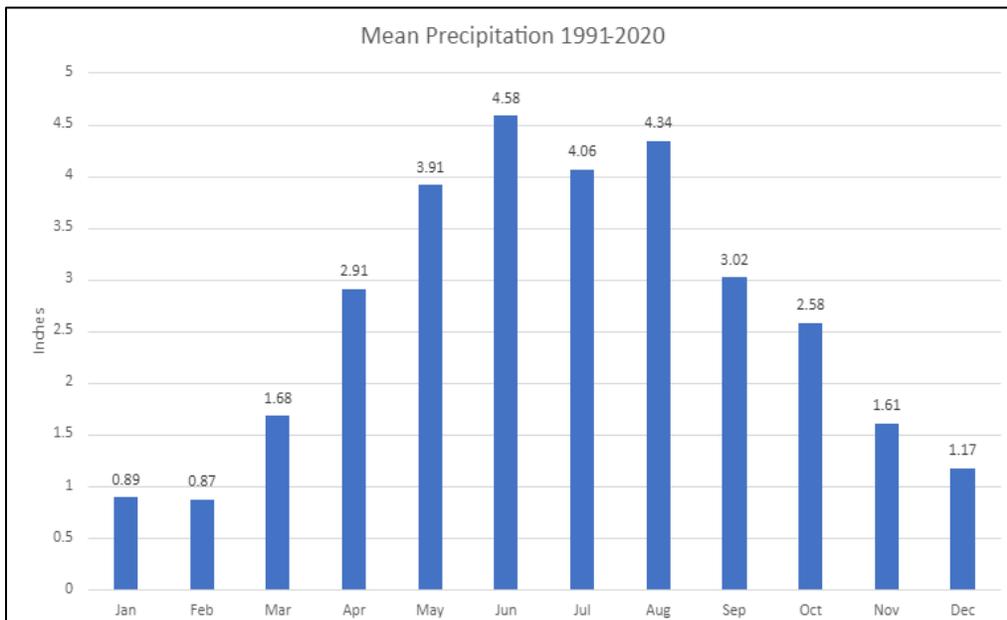
The climate in Washington County is typical of the Upper Midwest area of the United States. Minnesota temperatures have been known to vary widely from year to year and by season. Summer temperatures may reach the high 90s and into the 100s degree Fahrenheit.

The cold temperatures are also an issue of importance. Temperatures have reached lows of -40 degrees Fahrenheit. See **“Normal Mean Temperature” Figure B.16** to view mean temperatures throughout the state of Minnesota.

*Precipitation*

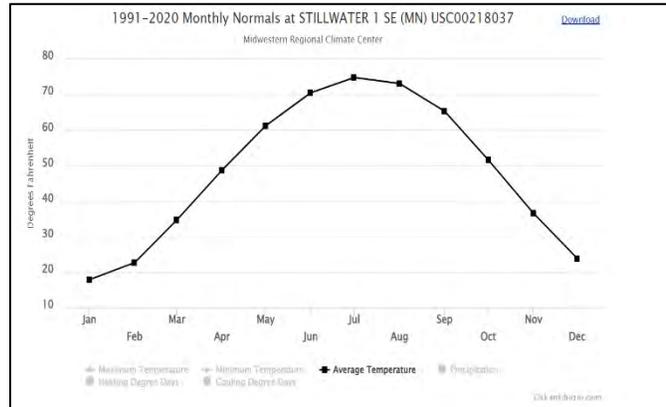
Minnesota receives many forms of precipitation throughout the year including snow, rain, sleet, and ice. The differing forms of precipitation are due to the annual variation in temperature from month to month and season to season. Most of the county receives a relatively even distribution of precipitation throughout the year. However, the impacts felt by the precipitation vary by area.

**Chart B.2 Mean Precipitation in Washington County (1991-2020)**



Source: Historical Climate Data, Midwest Regional Climate Center

**Chart B.1 Mean Temperature in Washington County (1991-2020)**



Source: Historical Climate Data, Midwest Regional Climate Center

See **“Normal Mean Precipitation” Figure B.17** to view the normal precipitation levels throughout the state of Minnesota at various times throughout the year as well as the normal annual precipitation.

*Growing Season*

Both temperature and precipitation influence the number of days in the growing season. The length of this period is the average number of days between freezing temperatures, which is usually around 157 days. With areas of Washington County continuing to be used as agricultural, the length of the growing season can mean the difference between a good year and a bad year financially for many families.

**Chart B.3 Growing Season Summary**

Length of Growing Season (Days) (1991-2020 Averages)				
Base Temp (F)	Median	Shortest	Longest	
32	172	141	219	
30	179.5	158	220	
28	195.5	162	230	
24	221	187	249	
20	231.5	193	260	
16	240	200	279	

Source: Historical Climate Data, Midwest Regional Climate Center

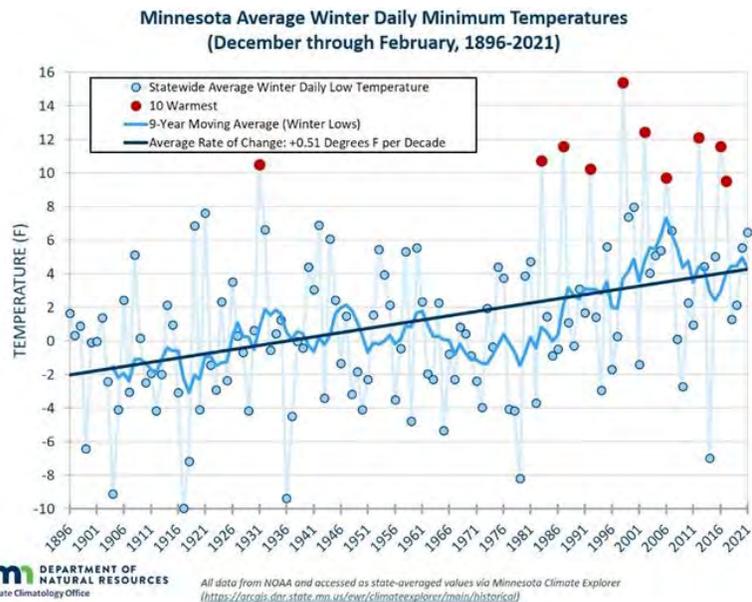
**G. Climate Change**

Climate change is causing a shift in what is considered normal weather patterns in Minnesota. In Washington County, the main effects of climate change will be seen in warmer winters and extreme precipitation events.

*Warmer Winters*

Minnesota winters have warmed 13 times faster than summers and are becoming shorter and milder (Our Minnesota Climate, <https://climate.state.mn.us>). **Chart B.4** shows the increase in winter temperatures over time. This can create negative impacts to native species, disrupt winter recreational activities and therefore, the economy. Mild winters can also increase the population of established invasive species and leave areas vulnerable to new invasive species migrating into the region.

**Chart B.4 Increasing Winter Temperatures**



DEPARTMENT OF NATURAL RESOURCES  
State Climatology Office  
All data from NOAA and accessed as state-averaged values via Minnesota Climate Explorer (<https://arscis.dnr.state.mn.us/ever/climateexplorerz/main/historical>)

Source: Minnesota Department of Natural Resources

*Extreme Precipitation*

More extreme precipitation events can cause flooding, damage to infrastructure, and threaten public safety. Spring rainfall totals, severe rainstorms, and annual precipitation are all likely to increase in coming years (Environmental Protection Agency, <https://www.epa.gov/sites/default/files/2016-09/documents/climate-change-mn.pdf>). When heavy rainstorms occur during the summer, it can create water quality issues in lakes and rivers. This could lead to algae blooms and more pollution from runoff into the water. This would greatly impact native species, recreational activities, and the economy.

## H. Demographics

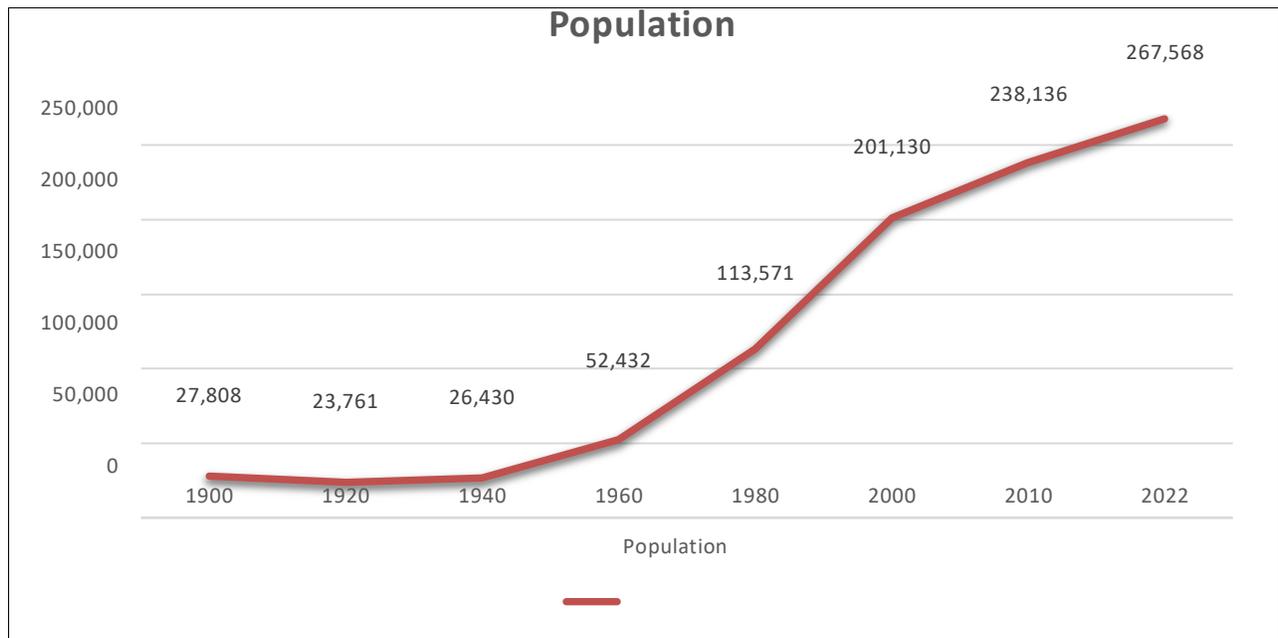
At its founding, Washington County and its population were influenced by early settlement in Stillwater and Saint Paul. These two river-based communities along with transportation improvements and other changes throughout the region helped define the limits into which population continued to expand and settle.

### Size

In 1900, the population for Washington County was 27,808. One hundred years later, the population increased to 201,130. Now in 2020, Washington County’s population has climbed to 267,568 with nearly equal numbers of males and females.

**Chart B.5** shows the change in population of Washington County over the past 110 years.

**Chart B.5 Washington County Population (1900-2022)**



Source: U.S. Census Bureau and Washington County 2022 At-A-Glance

Washington County remains the fifth most populated county in the State of Minnesota – and is expected to maintain this role through 2030 – housing four-and-half percent of the State’s population, and eight percent of the Twin Cities Metropolitan Area’s population, according to the 2020 Census.

Of the thirty-one units of government wholly within the borders of Washington County, seventy percent (22) have less than 5,000 people. Only seven places have populations of greater than 10,000: Hugo, Lake Elmo, Oakdale, Cottage Grove, Woodbury, Forest Lake and Stillwater. Lake Elmo joined the other six following the 2020 census. Woodbury is the eighth largest city in the state of Minnesota.

*Concentration of Population*

In the 1990’s, forty-two percent of the population resided in three cities on the western border of Washington County - Cottage Grove, Woodbury, and Oakdale; by 2000, it increased to fifty-two percent. In recent years, the cities of Forest Lake and Hugo have also experienced significant growth, raising the representation of these five communities in western Washington County to sixty-six percent of the total population. To the east, the City of Stillwater is the most populous.

Populations are expected to continue to concentrate in these areas through 2030, with the City of Lake Elmo joining in high levels of population concentration.

See “**2020 Census Population**” **Figure B.18**

*Rate of Growth*

Washington County experienced dramatic population growth between 1950 and 2000, growing by 58 percent between 1960 and 1970. This was followed by a sustained high growth rate until 2000, when the population was 201,130. From 1990 to 2000, the county was the third fastest growing county in Minnesota. Since 2000, growth has slowed.

In 2010, Washington County was the 7<sup>th</sup> fastest growing county in the state, with population of 238,136; an increase of approximately 37,006 people (+18.4 percent) in the last ten years. The population’s rate of growth is expected to level off with the current 2020 population of 267,568 (+ 12.4%). The Metropolitan Council estimates that the county population will be 310,260 by the year 2030 and 341,330 by 2040.

From 2010 to 2020, the population of communities within the county ranged from a loss of 8% in the City of Pine Springs to a gain of 40.6% in the City of Lake Elmo. Eight of the thirty-one communities did not grow at all or lost population:

Birchwood Village*	Grey Cloud Island*	Hastings
Lakeland	Lakeland Shores*	West Lakeland Township
Willernie*	Pine Springs*	

\*Five of these communities are the smallest in the county (less than 1,000 people).  
Only six places grew faster than the countywide rate of growth:

Hugo (18.25%)	Lake Elmo (40.6%)
Woodbury (21.2%)	Bayport (16%)
Baytown Township (29%)	Landfall (27%)*

See “**Percent of Population Change 2010 Census to 2020 Census**” **Figure B.19** to view the percentage change in population from 2000 – 2020 in Washington County by jurisdiction.

The Metropolitan Council’s preliminary 2040 Household Forecasts shows the overall county growth rate decreasing by seventeen percent in 2030 and decreasing to 11% by 2040.

However, the Metropolitan Council is forecasting extremely high rates of household growth for a few communities within the county. Based on these estimates, the number of households in the cities of Hugo and Lake Elmo nearly double by 2040, with the number Forest Lake households growing by an additional 44 percent in the same timeframe.

						2000 to 2010	2010 to 2020	2020 to 2030	2030 to 2040
<b>Lake Elmo</b>	2389	2874	4319	6620	8200	20.30	50.30	53.27	23.87
<b>Forest Lake***</b>	5594	7509	8569	10500	12300	34.23	14.12	22.53	17.14
<b>St. Paul Park*</b>	1868	2075	2110	2810	3300	11.08	1.69	33.17	17.43
<b>Hugo**</b>	2193	5189	5939	9200	11900	136.61	14.45	54.91	29.35

Source: Metropolitan Council Community Profiles and Long-Range Forecasts

See “Forecasted Household Growth from 2010 to 2030” Figure B.20 to view the projected percentage growth of households for each jurisdiction. See “2020 Households” Figure B.21 for a map of the 2010 Census figures for number of households in each municipality.

*Age of Population*

Washington County’s population is aging but is not yet considered elderly. As in other places, the aging population is largely due to the baby boomer generation. The Baby Boomer Generation is followed by a generation significantly smaller – the Baby Bust Generation. This will result in changes in housing, the workforce, and health care. **Chart B.6** shows the population of Washington County and Minnesota by age cohort.

**Chart B.6 2020 Population Age**

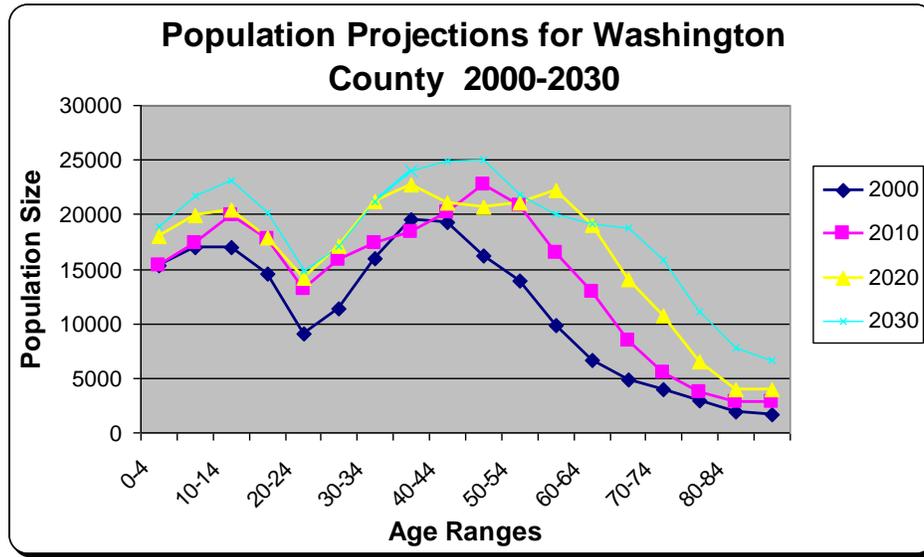
Age of Population	Washington County	Minnesota	Washington as a % of state
Total	267,568	5,706,494	4.7%
0 - 17 Years	79,735 (29.8%)	1,654,883 (29%)	4.8%
18 - 64 Years	145,290 (54.3%)	3,098,626 (54.3%)	4.7%
Over 65 Years	42,543 (15.9%)	952,984 (16.7%)	4.5%

Source: Minnesota 2020 Census

Washington County’s median age is currently 39.5, up from 38.4 in 2010. A State Demographer has projected the median age for Washington County to be 41.3 by 2025, as the baby boomers continue to move through their life cycle.

As you can see from **Chart B.7** the elderly population is expected to increase faster than any other age group in Washington County.

Chart B.7 Population Projections 2000-2030



Source: Metropolitan Council

The proportion of the population 65 and over in 2010 was 10.5% in Washington County, in comparison to 7.6% from the 2000 U.S. Census. The 2020 census shows the population of 65 and older sits at 15.3%.

In general, smaller places tend to be older and larger places tend to be younger. Two-thirds of the communities with populations over 5,000 have median ages lower than the county’s median age of 39.5. The highest and lowest concentrations of elderly (percent of total population) reside in the following communities:

Highest Concentration

- \*Oak Park Heights (26.4%)
- \*Grey Cloud Island (13.8%)
- \*Marine on St. Croix (32.5%)
- \*Birchwood Village (19.2%)
- \*May Township (25%)

Lowest Concentration

- \*\*Woodbury (14.1%)
- \*\*Cottage Grove (12.2%)
- \*West Lakeland Township (12.7%)
- \*\*Hugo (12.7%)

\* Have populations less than 5,000 people

\*\* Have populations greater than 10,000 people

Source: U.S. Census Bureau 2020

Landfall is currently the only one community that has a concentration of youth (persons under 18) that is higher than the countywide rate of 29.8% with a youth population of 30.3%.

The lowest concentrations of youth continue to be located in the communities of:

Bayport	12.6%
Oak Park Heights	17.8%
Grey Cloud Island Township	20.8%
Lake St. Croix Beach	13.5%

*Ethnic Diversity*

Although Washington County is becoming more racially diverse, it still has a predominantly white, non-Hispanic population. Driven by immigration, Washington County doubled its non-white population from 6.4% in 2000 to 12.2% in 2010. In 2020 this population is now at 16.3%. The county’s 83.7% white, non-Hispanic population compares to 83% in Minnesota as a whole and 75.8% in the United States.

In 2000, about 3.5 percent of Washington County’s total population was identified as foreign born. Nearly one-half of the foreign born were born in Asia. Over 40 percent (2,787) of the foreign-born population entered the county between 1990 and 2000. Currently 9.9% of Washington County’s population speaks a language other than English and 6.9% are foreign born. The recent non-English speaking residents present a challenge. They too must be provided with county services, notified of any emergency, and informed of what protective action to take.

See “**Non-English Speaking Populations**” **Figure B.22** to view where non-English speaking residents are located within the county.

**I. Income Distribution and Education**

In the first decade of the 2000s, Washington County experienced an 18.7% increase in household income (from \$66,305 in 2000 to \$78,700 in 2010). From 2010 to 2020 Washington County experienced a 24% increase in average household income (\$97,584). It is the third highest household income in the seven-county metro area, after Scott County (2020 median income of \$103,300) and Carver County (2020 median income of \$104,000).

Within Washington County, the City of Dellwood has the highest median household income (\$195,774) and Landfall has the lowest (\$35,536). (Source: American Community Survey 2016-2020 via Metropolitan Council)

Poverty rates in Washington County, as elsewhere, increased in the early 2000s, particularly in the latter portion of the decade. From 1999 to 2009, the overall poverty rate increased from 2.9% to 5.4%. However, in 2020 Washington County’s poverty rate has now decreased to 4.4%.

*Education*

Washington County residents are highly educated. The 2016-2020 American Community Survey report stated that only four percent of county residents reported not having completed high school and nearly seventy-six percent reported having some post high school education.

Graduate or professional degree	16.3%
Bachelor’s degree	29.3%
Associate degree	10.5%
Some college, no degree	19.5%
High school graduate	20.4%
Did Not Graduate High School	4.0%

Source: 2016-2020 American Community Survey (U.S. Census Bureau) via Metropolitan Council

**J. Industry**

Compared with many other metropolitan suburban areas, Washington County contains relatively little industrial development, with the notable exception Xcel Energy.

**Chart B.8 Major Employers in Washington County**

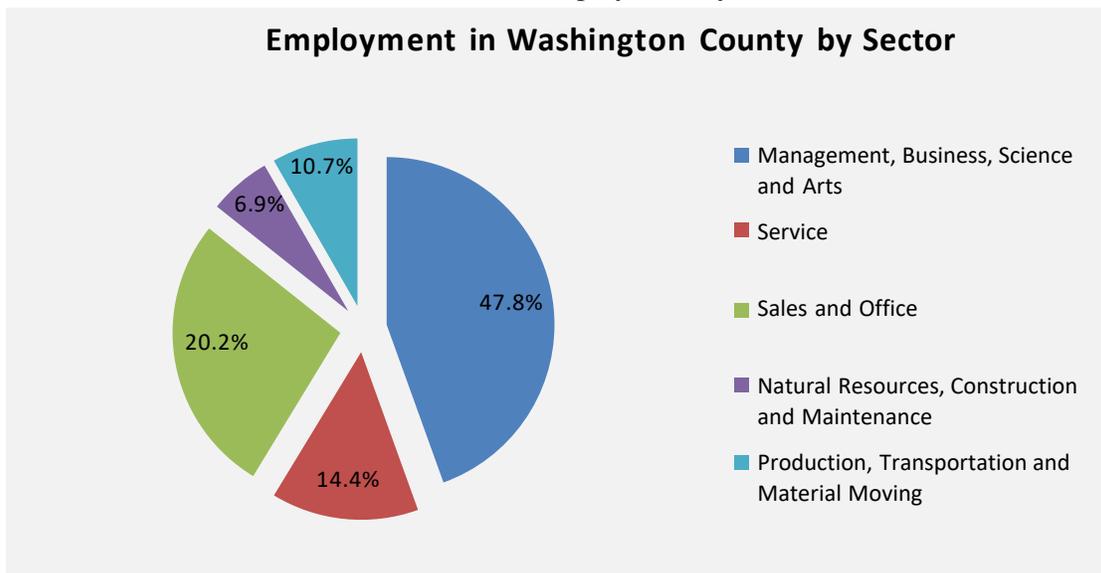
Employer	Taxable Market Value
Xcel Energy	\$525,187,100
City Walk TIC I LLC	\$104,822,000
Tamarack Village Shopping Center	\$102,909,800
10285 Grand Forest Owner LLC	\$95,513,00
Ramco-Gershenson Properties	\$76,197,300
IRPF Woodbury City Place LLC	\$62,968,300
3M Company	\$56,879,100
Woodbury Village Shopping Center LP	\$45,037,200
Wal-Mart Real Estate Business Trust	\$40,986,900
Dayton Hudson Corp	\$38,073,800

Source: Washington County 2022 At-A-Glance

The annual labor force for Washington County totals 140,592 as referenced in the 2020 Washington County At-A-Glance document. The number of county residents employed is 136,188. The number of unemployed county residents is 4,403 which is an unemployment rate of 3.1%.

Of those counted in the work force, 47% are in Management, Business, Science and Arts industries, followed by Sales/Office (20.2%), and Service (14.4%) as top employment sectors in Washington County as shown in **Chart B.9**.

**Chart B.9 Employment by Sector**



Source: Washington County 2022 At-A-Glance

*Employment Forecast*

The employment projection for the county is predicting increases of approximately 20,000 new employees every ten years as is illustrated in **Chart B.10**.

**Chart B.10 Employment Projections**

*Hazardous Materials*



Specific threats relating to Hazardous Materials or certain sites in Washington County containing hazardous materials are addressed in the Washington County Hazard Analysis Plan as required under SARA Title III – The Emergency Planning and Community Right-to-know Act (EPCRA). For the safety of the citizens of Washington County, this information will not be displayed in public areas. If you wish to view this document, please contact Washington County Emergency Management.

Year	Employment Projection
2010	71,957
2020	87,620
2030	95,890
2040	102,540

Source: Metropolitan Forecasts, 2021

**K. Land and Development**

*Zoning and Land Use*

Planning and zoning is undertaken to guide and manage development in Washington County. Washington County administers several ordinances that control land use and protect the natural resources of the county. All ordinances are enforceable only in the unincorporated areas. Cities within the county establish and enforce their own ordinances. Townships may create and enforce their own planning and zoning codes. However, they may not create policies and regulations that are less restrictive than those established at the County level.

*Land Use*

Washington County covers 423 square miles and extends west from the St. Croix River. Today, over 50 percent of the land is unplatted, and for tax purposes, is considered vacant or agricultural. See “**2020 Generalized Land Use**” **Figure B.23**” and “**Future Land Use**” **Figure B.24** to compare how the land uses are predicted to change throughout the county.

Land use ranges from the densely urban in downtown Woodbury to the open spaces of Denmark Township. Washington County is a mostly rural area on the eastern edge of the Twin Cities Metropolitan Area. As of the 2007 Census of Agriculture, there were 729 farms in Washington County. As of the 2017 Census of Agriculture, the number declined to 612 farms in Washington County (+2%). (New Census Data is scheduled for release in Spring/Summer of 2024)

Between 1940 and 1980, the County’s population changed in the following manner:

- 800 percent growth in the urban sector
- 200 percent growth in the rural non-farm sector
- 81 percent decline in the rural farm sector

**Chart B.11 Generalized Land Use in Washington County**

	2005	2016	2022
Agricultural/Undeveloped	58%	54%	55.5%
Single Family/Multi-Family Residential	18%	20% (Res. Total)	19.5%
Airport/Mixed Use	0% (87 Acres)	.2% (651 acres)	.2% (576 acres)
Commercial	1%	1%	1.4%
Industrial	2%	2%	1.7%
Parks, Recreation, Preserves & Institutional	8%	11%	11.1%
Major Vehicular Rights-of-Way	1%	1%	1.1%
Water	10%	9%	8%

Source: Washington County 2022 At-A-Glance

**L. Housing and Community Development**

*Home Construction and Ownership*

In 2020, Washington County had 95,796 occupied housing units, an 11.3% increase from 2010. Additionally, the vacancy percentage decreased from 5% to 4%, the rental percentage increased from 14.9% to 18.4% and the owner-occupied percentage increased from 80.1% in 2010 to 81.6% in 2020.

See “**Forecasted Household Growth from 2010 to 2030**” **Figure B.20** and “**2020 Households**” **Figure B.21**” for more information on household growth.

**Chart B.12 Household Forecast**

In Washington County, the total number of households increased by 42.5% percent in the 1990s, and another 23% (16,397) in the 2000s. During this same decade, the number of households in Minnesota grew by 15%. The number of Washington County households in 2020 is 99,507 and is projected to reach 120,130 in 2030.

1990	49,246
2000	71,462
2010	96,219
2020	99,507
2030	120,130
2040	133,780

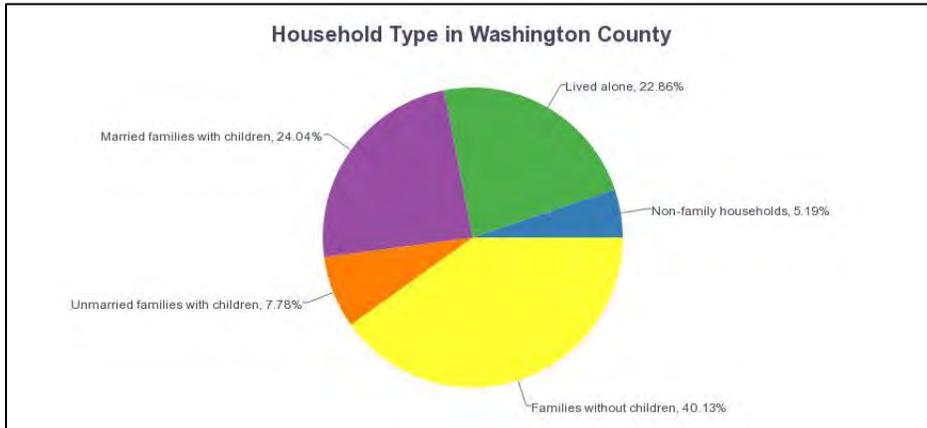
In Washington County, the mix of household types has not changed significantly. The average household size of owner-occupied units in 2010 was 2.68 persons per household.

Source: 2016-2020 American Community Survey (U.S. Census Bureau) via Metropolitan Council

*Household Composition*

In 1990, 68.5% of all households were a married couple family. This number dropped in 2000 to 64.8% and again in 2010 to 61.5%. According to the State Demographer, this is the beginning of

**Chart B.13 Household Type**



Source: U.S. Census Bureau 2020 via Metropolitan Council

a trend that will result in a significant reduction of married couples with children after 2005. All other household types are projected to grow between 2005 and 2020. Most of these changes will be attributed to baby boomers aging and becoming empty nesters. In 2010, married couple families were 48.4%

of the population in Minnesota which dropped to 37.6% in 2020. The decrease in the percent of the total population that is made up of married couple families was offset by an increase in the percent of people living alone from 20.3% in 2010 to 22.86% in 2020.

**M. Transportation and Commuting Patterns**

*Railroad Service*

The history of transportation in Washington County has its roots in its railroads and rivers. The first railroad to reach Stillwater was built in 1870. Burlington Northern owned a former branch that traveled to Stillwater, one of the first significant cities in the state. The Anderson Window factory and a coal burning power plant in Bayport were served by this branch line.

The railroads continue to play a role in the movement of freight between ports and major urban areas. Railroads also have an impact on land use, the physical and social environment and on other components of the transportation system. Four railroads operate in the county: Canadian Pacific (Soo Line), Canadian National (Wisconsin Central Line), Union Pacific, and Burlington Northern Sante Fe.

Washington County presently has six freight terminal transloading points in four locations. [REDACTED] These are intermodal facilities where bulk commodities are transferred to the waterway system. Railroads continue to be a significant contributor to the economy of the area. Projected to open in 2024, the METRO Gold Line will be a 10-mile transit line which will connect people across St. Paul, Maplewood, Landfall, Oakdale, and Woodbury to job centers, housing options, transit stations and key destinations along the I-94 corridor.

*Air Service*

Washington County has two airports. They are located in Forest Lake and Baytown Township. The Lake Elmo Regional Airport serves as a reliever to the MSP airport.

*Water Service*

There are 16 miles of commercially navigable waters open to barge and other commercial vessel traffic on the Mississippi, connecting the Port of Minneapolis/St. Paul with Lock & Dam #2 and the lower Mississippi River.

*Auto Service*

The primary means of transportation in Washington County are the roads. The main routes connecting Washington County with the surrounding areas are Interstate Highways 94, 694, 494 and numerous U. S. Highway and State Highways throughout the county.

See “2018 Official Highway Map” Figure B.26 to view the roads and railroads in Washington County.

*Increasing Commute Times*

In 2000, a large proportion of the working population (83.7%) drove alone to work which slightly decreased to 82% in 2010 and again to 80% in 2020. This is on par with most of the seven Twin Cities Metropolitan Area counties with the exception of the more urbanized Hennepin and Ramsey counties. Washington County resident commute times increased from 24.6 minutes in 2000 to 25.4 minutes in 2010 to 25.7 minutes in 2020.

**N. Community Infrastructure**

*Levees and Dams*

Washington County has five emergency levees.

[REDACTED]

[REDACTED]

[REDACTED]

### *Utilities*

Utilities are vulnerable to most hazards. Many of the utilities in the county, especially in older developments, are located above ground. This makes them vulnerable to tornadoes, wind storms, ice storms, and hail storms as well as other hazards.

Those utilities that are buried underground are vulnerable to being hit when digging nearby or by animals who may chew the cables underground. Also, those bordering rivers and streams are vulnerable to undermining and damage due to the affects of flooding on the surrounding soils.

Water: See **Figure B.27 “Community Water Supplies”**

Sewer: See **Figure B.28 “Community Septic Systems”**

Gas: Private Systems

Electric: Private Systems

Electrical services, gas service, telephone service, and water services are all referenced in ESF-12 of the Washington County Emergency Operations Plan.

## **O. Public Safety and Emergency Response**

### *Medical Facilities*

There are two primary hospitals located within Washington County. Lakeview Hospital is located in Stillwater and Woodwinds Health Campus is located in Woodbury. Along with the two hospitals, numerous clinics are also located throughout the county.

The St. Croix Valley Chapter and Twin Cities Chapter of the Red Cross respond to disasters in Washington County. The Red Cross provides many services including disaster planning and preparedness as well as relief for victims of major disasters.

### *Emergency Medical Services*

See **“Fire, Police, and Hospitals” Figure B.29**. Emergency medical services are provided by the following ten agencies:

Hastings Fire Department

Lower St. Croix Valley Fire Department

Marine on St. Croix Rescue Squad

South Washington County Ambulance

Woodbury Fire Department

Lakeview Ambulance EMS

Mahtomedi Fire Department

Oakdale Fire Department

White Bear Lake Fire Department

North Medical Transportation

*Fire Services*

Fire protection is the responsibility of the fire departments serving the county. The following are the fire departments in the county:

Bayport Fire Department	Cottage Grove Fire Department
Forest Lake Fire Department	Hastings Fire Department
Hugo Fire Department	Lake Elmo Fire Department
Lower St. Croix Valley Fire Department	Mahtomedi Fire Department
Marine on St. Croix Fire Department	Newport Fire Department
Scandia Fire Department	Oakdale Fire Department
St. Paul Park Fire Department	Stillwater Fire Department
White Bear Lake Fire Department	Woodbury Fire Department

All county fire departments have mutual aid agreements with neighboring departments. In addition, Northern Tier has mutual aid agreements with most of the city fire departments in southern Washington County. For more information regarding fire services, see the Fire Protection ESF of the Washington County Emergency Operation Plan.

*Police Services*

Police protection in Washington County is the responsibility of the following agencies:

Bayport Police Department	Cottage Grove Police Department
Forest Lake Police Department	Oak Park Heights Police Department
Oakdale Police Department	Stillwater Police Department
St. Paul Park Police Department	Washington County Sheriff's Office
Woodbury Police Department	

*800MHz Radio Communications*

Washington County, as well as the individual Emergency Service groups previously identified, primarily utilizes the 800 MHz radio system for communication in emergency situations. The communication system began transferring over to the 800 MHz system in the mid-2000's.

*Code RED*

In 2012, Washington County launched a new countywide program called CodeRED. The mass notification system sends critical communications to citizens signed up via voice phone call, e-mail, or text message for a variety of reasons such as evacuation notices or missing child alerts.

*Outdoor Warning Sirens*

As of 2012, there are 96 sirens in Washington County, which have been purchased and are owned and maintained by cities and townships. Sirens are tested by the Washington 911

Communications Center at 1:00pm on the first Wednesday of the month, from March through October. See **Figure B.30 “Emergency Outdoor Warning Sirens”**

Sirens are activated by the Communications Center under the following circumstances:

- When a Tornado Warning is issued for Washington County by the National Weather Service; it is possible for a new Warning to be issued before a previous Warning expires.
- When the National Weather Service indicates sustained wind speeds of 70 miles per hour or more.
- When a City or County Public Safety Official (Police, Fire) requests activation due to imminent danger to life and/or property. In this situation, Washington County also notifies the National Weather Service Office in Chanhassen.

When a Tornado Warning is issued or activation requested, the 911 Communications Center determines which of the counties three siren zones are affected:

- Zone #1 – Countywide.
- Zone #2 – North. Sirens will sound for all municipalities North of Interstate 94 – Oakdale, Lake Elmo, Bayport, Oak Park Heights, Forest Lake, Hugo, Marine, Scandia, Mahtomedi, and Stillwater.
- Zone #3 – South. Sirens will sound for all municipalities South of County Road 12 – Stillwater, Oak Park Heights, Lakeland, Cottage Grove, St. Paul Park, Woodbury, Lake St. Croix Beach, Lake Elmo, Oakdale, Newport, Bayport, and St. Croix Bluff’s Regional Park.

#### *Emergency Supplemental Communication Services*

Among the residents of Washington County are FCC-licensed amateur radio operators who have voluntarily registered for the Amateur Radio Emergency Service (ARES®), a service of the American Radio Relay League. These communication experts have trained on the ARMER Radio System and provide their own radio equipment for voice and digital email on ICS forms. Their communications span distances from county wide to national, including to and from the State Emergency Operations Center. They train to create emergency response capabilities to supplement or replace, when requested, communication systems which may become inoperative during various types of emergencies. ARES® teams are organized to operate within the Incident Command Structure and under the direction of Emergency Management authorities. Many of these amateur radio operators also participate in Skywarn including bi-annual training and Skywarn activations as requested by the National Weather Service.

**Annex C: RISK/VULNERABILITY ASSESSMENT**

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## Annex C: RISK/VULNERABILITY ASSESSMENT

### Overview of Risk/Vulnerability Assessment

An important element of the Washington County All Hazard Mitigation Plan is an analysis of potential hazards and the risk they pose. A risk assessment is a process that identifies potential hazards, their probability of occurring, the operational vulnerabilities, and the existing warning time by hazard. This data then informs the goals, objectives, and strategies of this plan. The understanding of the risks and end goals lead to the creation of thoughtful mitigation measures that minimize hazards and the impacts on individuals, businesses, and governments.

Washington County local jurisdiction representatives and Washington County Emergency Management staff began this process by reviewing the existing risk assessment work done in prior renditions of this plan. Taking into consideration the public input, history of the hazards both since the last plan update and prior to, and other existing risk assessment documents, few updates to the Community Hazard Risk/Vulnerability & Asset Profiles were found necessary.

This section of the plan was written with cooperation from the cities and townships as well as county representatives. Hazard vulnerabilities for each jurisdiction and the county are identified within their geographic area, though many of the hazards, such as extreme temperatures and winter storms, would occur over the entire county during an event. Specific mitigation projects are included for each community (see Annex G) based, in part, on the vulnerability assessment included here for their jurisdiction. This section of the risk/vulnerability assessment specifically targets hazards that are community based with some coverage of area-wide hazards.

A history of the hazards covered in the plan is included in Annex D. The vulnerability to county-wide hazards such as blizzards, ice storms, karst topography, and extreme temperatures are examples of hazards also covered in more detail in Annex D.

### Risk Assessment Work Conducted Since 2018

Work has been done to assess risks within Washington County at various levels of government – metropolitan (multi-county), county, local jurisdiction, watershed area, etc. It is important to consider the results from various risk assessments to look comprehensively at the risks identified and the change, if any, of risks over the years.

#### *County-wide THIRA and Regional THIRA*

In 2015, Washington County completed a local level Threat Hazard Identification and Risk Assessment (THIRA). [REDACTED]

[REDACTED] The information from this analysis has assisted the county and its community emergency response leaders in addressing deficiencies in capabilities and exposing vulnerabilities where they exist.

Additionally, Washington County staff are involved in, and contribute to, the Twin Cities Urban Area (TCUA) THIRA working group. This process involves staff from across the TCUA collaborating and communicating with subject matter experts to inform and identify regional

capabilities and vulnerabilities across 32 core capabilities. This has been done at a metropolitan level and updated annually since 2012.

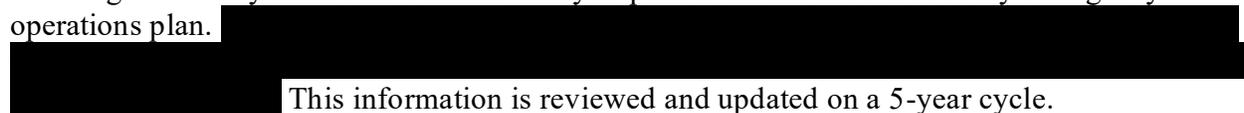
*Soft Target Threat Assessment*



Information from the analysis assists the county and its community emergency response leaders in addressing deficiencies in capabilities and exposing vulnerabilities where they exist.

*Hazard Analysis*

Washington County maintains a hazard analysis plan as an annex to the county emergency operations plan.



This information is reviewed and updated on a 5-year cycle.

**Previous Risk Assessment Process Conducted for the 2018 Plan Update - Cities and Townships**

Local jurisdiction representatives were asked to review their specific jurisdiction's risk assessment included as a part of the document. Part one of the assessment included the results of the local representatives 2012 survey results. The public survey results were also considered as a part of the risk assessment in 2012. After reviewing this, the city and township representatives all felt that the information was still applicable to the present day. No changes were made.

Informational meetings to review hazards and risks were conducted individually with each local jurisdiction. Key representatives from each local jurisdiction were requested to participate in the plan update. Each jurisdiction was asked to evaluate the probability, warning time, and operational vulnerability of a variety of hazards in their communities. Many of the hazard types would be impactful to a much larger extent than their jurisdiction's boundaries, but they were asked to review the hazards from the perspective of their jurisdiction only. The summary information for each jurisdiction was included in the chart under their individual profile in this section of the plan. The exact survey was conducted again during the 2012 plan update and the information showed very little change in the way of a jurisdictions perceived risk (probability, operational vulnerability, or warning time) to any of the hazards.

Probability

Participants rated the probability of occurrence of various hazards using the rating system shown in this chart.

5	Very High	Near 100% probability in the next year
4	High	Between 60 - 100% probability in next year, OR at least 1 chance in 10 years
3	Medium	Between 30 - 60% probability in next year, OR at least 1 chance in 20 years
2	Low	Between 1 - 30% probability in next year, OR at least 1 chance in 30 years
1	Very Low	Less than 1% probability, OR 1 chance in 100 years

Operations Vulnerability

Operations vulnerability measures the impact on services in the community caused by the destruction from the occurrence of a hazard. Participants were asked to consider how in the past five years each hazard had interrupted community (or department) services. They then rated operations continuity using the rating system as shown in this chart.

5	Very High	Unable to continue – cannot provide 75 – 100% of services
4	High	Severely weakened – cannot provide 50 – 75% of services
3	Medium	Weakened – cannot provide 25 – 50% of services
2	Low	Somewhat weakened – cannot provide 5 – 25% of services
1	Very Low	Negligible – cannot provide 0 – 5% of services

Warning Time

An assessment of warning capacity was completed. Participants were asked to describe to what extent the community (or department) would currently be able to receive advanced warning in the event of a hazard. This is important to judge how much time someone may have to prepare for a hazard. Warning time was rated using the rating system shown in this chart.

5	Very High	24+ hours warning
4	High	12 – 24 hours
3	Medium	6 – 12 hours
2	Low	Minimal warning – minutes to hours
1	Very Low	No Warning

To understand what the various categories mean, the evaluation guides that were utilized during the 2018 assessments are included here:

- Building Stock: broadly includes residential, commercial, industrial, and institutional buildings.
- Critical Facilities: emergency service facilities such as hospitals and other medical facilities, jails and juvenile detention centers, police and fire stations, emergency operations centers, public works facilities, evacuation shelters, schools, and other uses that house special needs populations.
- Transportation Systems: include airways (including airports, heliports, *etc.*), roadways (including highways, bridges, tunnels, roadbeds, overpasses, transfer centers, *etc.*), railways and public transit (including trackage, tunnels, bridges, rail yards, depots, *etc.*), and waterways (including canals, locks, seaports, ferries, harbors, dry-docks, piers, *etc.*).
- Lifeline Utility Systems: potable water, wastewater, oil, natural gas, electric power, substations, power lines, *etc.*
- Communications Systems and Networks: telephones, emergency service radio systems, repeater sites and base stations, television and radio stations, *etc.*
- High Potential Loss Facilities: facilities that would have a high loss associated with them, such as nuclear power plants or dams.
- Hazardous Material Facilities: facilities housing industrial/hazardous materials, such as corrosives, explosives, flammable materials, radioactive materials, and toxins.
- Economic Elements: major employers, financial centers, and other business or retail districts in the community that could significantly affect the local or regional economy if interrupted.
- Special Consideration Areas: areas of high density residential, commercial, institutional, and industrial development that, if damaged, could result in economic and functional losses and in high death tolls and injury rates.
- Historic, Cultural, and Natural Resource Areas: buildings, structures, objects, sites, national and local historic or significant districts, and historical archival storage facilities.
- Other: something or someplace unique that does not fall into a previous category.

#### **Previous Risk Assessment Process Conducted for the 2018 Plan Update - *General Public***

In the previous plan, Washington County Emergency Management created an online survey on February 2, 2017, to collect information from the public regarding risks and priorities surrounding hazards within Washington County. The survey was advertised through multiple avenues resulting in 278 responses. Below are some of the results of the survey. The entirety of the survey results can be found in the appendices portion of the 2018 plan. A majority (69%) of those who completed the survey identified they had not been affected by a disaster or hazard.

2017 Survey questions and answers from the public:

<b>If you do NOT have flood insurance for your home, what is the primary reason?</b>	
	# Responses
I don't need it, my property has never flooded.	11
I don't need it, my property is located on high ground.	72
It is too expensive.	4
I am not familiar with it.	11
The insurance company will not provide it.	10
My homeowners insurance covers me.	11
It is not worth it.	3
I am not in a floodplain.	90
N/A - I do have flood insurance.	10
<b>WRITE IN RESPONSES</b>	
On my to do list	
I thought that special circumstances needed to apply to be able to purchase flood ins.	
Unsure	
Just not sure if it would happen.	
When I looked into it they said they don't cover unless a natural disaster	
I rent my apartment	
I do not live in Washington County, I work here.	

<b>How concerned are you about the following hazards affecting Washington County?</b>					
	<b>Very Concerned</b>	<b>Somewhat Concerned</b>	<b>Neutral</b>	<b>Not Very Concerned</b>	<b>Not Concerned</b>
Drought	8	68	62	62	54
Flooding-Street	10	70	58	69	49
Flooding-Home	16	58	55	72	56
Land Subsidence/Sink Hole	12	42	58	75	69
Landslide	4	15	54	69	111
Wildfire	15	71	52	61	56
Windstorm	28	133	51	26	15
Tornado	61	150	29	12	7
Severe Winter Storm	47	137	45	22	6
Hail	41	147	41	20	9
Extreme Heat	13	107	67	50	19

Extreme Cold	21	102	75	41	15				
Epidemic/Pandemic	32	83	58	55	29				
Utility Failure	41	134	46	27	10				
<table border="0"> <tr> <td style="background-color: yellow; width: 200px;"></td> <td>Greatest concern by aggregate data.</td> </tr> <tr> <td style="background-color: #92d050;"></td> <td>Least concern by aggregate data.</td> </tr> </table>							Greatest concern by aggregate data.		Least concern by aggregate data.
	Greatest concern by aggregate data.								
	Least concern by aggregate data.								

The disasters identified in the survey results above show that respondents felt most vulnerable to tornadoes, windstorms, hailstorms, and severe winter storms (ice storms, blizzards). Although the greatest concerns also included utility failure, the remaining results are like those from the last mitigation plan update and the local jurisdictions reviews as well.

<b>Please rank the community assets in order of vulnerability, 1 being the most vulnerable and 6 being the least vulnerable.</b>										
	1	2	3	4	5	6				
Human (loss of life/injuries)	121	20	20	17	24	10				
Economic (Business closures &/or job losses)	14	43	47	54	40	15				
Infrastructure (Damage or loss of bridges, utilities, schools etc.)	21	64	70	38	17	6				
Cultural Historic (Damage or loss of libraries, museums, fairgrounds, etc)	4	8	22	25	54	105				
Environmental (Damage or loss of forests, waterways, landmarks etc.)	42	44	26	45	47	20				
Governance (Ability to maintain order and/or provide public amenities and services)	26	40	35	38	34	56				
<table border="0"> <tr> <td style="background-color: yellow; width: 450px;"></td> <td>Greatest vulnerability by aggregate data.</td> </tr> <tr> <td style="background-color: #92d050;"></td> <td>Least vulnerable by aggregate data.</td> </tr> </table>								Greatest vulnerability by aggregate data.		Least vulnerable by aggregate data.
	Greatest vulnerability by aggregate data.									
	Least vulnerable by aggregate data.									

2018 Washington County Fair Poll – General Public

An informal poll of the public was taken at the Washington County Fair in August of 2018. Attendees were asked the question “How concerned are you about the following hazards occurring in Washington County?” Tornado, Severe Winter Storm, and Utility Failure were in the top three results. The bottom three ranked hazards provided were sink holes, landslides, and wildfire.

How concerned are you about the following hazards occurring in Washington County?					
	Not Concerned At All	Not Very Concerned	Neutral	Somewhat Concerned	Very Concerned
Drought	2	6		2	1
Street Flooding	3	1	2	5	1
Home Flooding	3	3	2		5
Sink Holes	5	4	1		3
Landslide	6	3		2	1
Wildfire	5	1	2	2	3
Windstorm	1		4	4	4
Tornado	2	1		5	5
Severe Winter Storm		1	1	6	6
Hail		1	4	4	3
Extreme Heat	3	1	7		2
Epidemic/Pandemic	3	4		2	2
Utility Failure			3	7	3

This chart shows the results of an informal poll that was conducted at the 2018 Washington County, MN Fair. Those polled were the public who visited the Washington County Sheriff's Office - Emergency Management table and agreed to share their opinion on a provided chart.

 Greatest concern by aggregate data.

 Least concern by aggregate data.

**Previous Risk Assessment Process Conducted for the 2018 Plan Update - Schools**

As mentioned in Annex A of the Washington County All Hazard Mitigation Plan, Washington County Sheriff's Office representatives, including Emergency Management staff, have been working with local schools on risk assessment endeavors.



Although physical security assessments were completed in the Stillwater School District, the results of those assessments will not be included in this plan. It is being noted in this plan, however, as schools were invited to submit mitigation projects which could reflect results found from the assessments performed.

### **Risk Assessment Process Conducted for the 2023 Plan Update - General Public**

For the 2023 update, emergency management prepared a survey for the public that was disseminated through multiple channels. The survey focused on the public's awareness of natural disasters and their level of involvement in personal/household preparedness for emergencies and disasters. Emergency management also used this opportunity to poll residents on their self-assessed need for additional flood insurance.

The survey letter distributed in August 2022 to the public:

*Every year emergencies big and small happen in our communities. Sometimes we hear about them on the news and sometimes we see them happen in our neighborhoods or in our own homes. Washington County residents are uniquely situated to provide great insight into what you see as concerns and ideas that should be shared with your local officials. Washington County is currently working with our cities and townships to assess risks and vulnerabilities across the county, and we would like your input! We are asking residents or those who work in Washington County to complete the online survey.*

*Every five years, Washington County Sheriff's Office Emergency Management staff update the All Hazard Mitigation Plan which includes not only a risk assessment, but also identifies ideas and projects that can be implemented to lessen the impact of future disasters. By keeping this plan current, Washington County and the local communities retain eligibility for federal grants to implement mitigation projects locally. These actions create more resilient neighborhoods and communities.*

*The survey results will be aggregated by the community identified in the survey questions and shared with public safety and jurisdiction leadership. Unless you specify personal information in an open-ended question, there will be no personally identifiable information associated with your responses. The information collected from this public survey will be included in aggregate form within the 2022-2023 update to the Washington County All Hazard Mitigation Plan. In addition, the data will be sorted by which community is selected within the survey and the information will be shared with city or township staff when the survey closes at the end of December.*

Reference to the survey origin and distribution is in Annex A, A-32. More specific hazard related results are presented here, the survey questions and results in their entirety are in the appendices. Examples of survey questions are included below:

Input from the public was collected through survey via social media, county-wide newsletter (also in annex A), and information tables at libraries throughout the county.

- *Prior to the survey, were you aware of the Washington County Mitigation Plan?*

ANSWER CHOICES	RESPONSES	
Yes	13.39%	64
No	86.61%	414
TOTAL		478

- *Excluding the COVID-19 Pandemic, have you experienced a natural disaster in the last five years?*

ANSWER CHOICES	RESPONSES	
Yes	38.49%	184
No	61.51%	294
TOTAL		478

- Based on the identified hazards, how concerned are you regarding the effect it may have on your community?

	VERY CONCERNED	SOMEWHAT CONCERNED	NEUTRAL	NOT VERY CONCERNED	NOT CONCERNED AT ALL	TOTAL	WEIGHTED AVERAGE
Drought	25.16% 118	42.43% 199	14.07% 66	14.07% 66	4.26% 20	469	2.30
Flooded Streets	5.92% 27	22.81% 104	20.61% 94	33.55% 153	17.11% 78	456	3.33
Flooded Homes	8.73% 40	23.80% 109	22.71% 104	30.79% 141	13.97% 64	458	3.17
Land Subsidence/Sink Hole	5.95% 27	12.11% 55	24.89% 113	33.92% 154	23.13% 105	454	3.56
Landslide	3.04% 14	6.52% 30	18.91% 87	30.65% 141	40.87% 188	460	4.00
Windstorm	17.13% 80	53.32% 249	17.34% 81	8.78% 41	3.43% 16	467	2.28
Tornado	24.20% 113	55.25% 258	12.42% 58	7.28% 34	0.86% 4	467	2.05
Severe Winter Storm	25.59% 119	52.90% 246	11.83% 55	8.60% 40	1.08% 5	465	2.07
Hail	27.51% 129	54.80% 257	11.73% 55	5.54% 26	0.43% 2	469	1.97
Extreme Heat	18.03% 84	38.84% 181	25.32% 118	15.45% 72	2.36% 11	466	2.45
Extreme Cold	20.09% 93	41.68% 193	21.81% 101	13.17% 61	3.24% 15	463	2.38
Epidemic/Pandemic	23.44% 109	41.51% 193	19.14% 89	8.82% 41	7.10% 33	465	2.35
Utility Failure/Power Outage - more than 4 hours	35.46% 167	40.55% 191	12.74% 60	10.40% 49	0.85% 4	471	2.01

- Do you have flood insurance for your home?

ANSWER CHOICES	RESPONSES	
Yes	7.53%	36
No	82.22%	393
I don't know.	10.25%	49
<b>TOTAL</b>		<b>478</b>

Reason provided for not having personal flood insurance.

ANSWER CHOICES	RESPONSES	
I do not need flood insurance as my property has never flooded.	17.79%	82
I do not need flood insurance as my property is located on high ground.	39.26%	181
Flood insurance is too expensive for me.	3.90%	18
I am not familiar with flood insurance.	6.29%	29
The insurance company will not provide me with flood insurance.	3.90%	18
My homeowners insurance covers what I need it to.	9.54%	44
Flood insurance is not worth it.	0.65%	3
My property is not in a floodplain.	34.92%	161
Not applicable - I DO have flood insurance.	6.07%	28
Other (please specify)	3.90%	18
<b>TOTAL</b>		<b>582</b>

What is your level of concern regarding the effects of climate change?

ANSWER CHOICES	RESPONSES	
A great deal	33.75%	161
A lot	21.17%	101
A moderate amount	17.82%	85
A little	11.32%	54
None at all	14.68%	70
Other (please specify)	1.26%	6
<b>TOTAL</b>		<b>477</b>

- Based on the provided answer options, what is your standard reaction to hearing an outdoor warning siren?

ANSWER CHOICES	RESPONSES	
Check a cell phone for more information	69.47%	330
Turn on the TV or radio to find out what's going on	59.58%	283
Go outside and look at the sky	34.32%	163
Immediately take shelter if outside	17.68%	84
Do nothing	4.21%	20
Other (please specify)	6.95%	33
<b>TOTAL</b>		<b>913</b>

- Identify the following hazard preparations measures your household has taken.

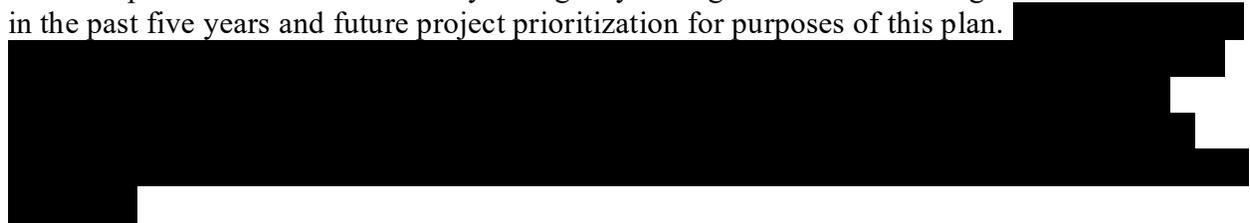
ANSWER CHOICES	RESPONSES	
Installed smoke detectors on every floor	96.84%	459
Installed carbon monoxide detectors on every floor	79.54%	377
Replace batteries in detectors annually	76.79%	364
Keep a First Aid kit in your home or vehicle	80.38%	381
You have a fire extinguisher on site	75.74%	359
Signed up for notifications through the county (Washington County uses CodeRed)	54.01%	256
Bought flood insurance	5.49%	26
Created a communications plan with your family or neighbors	12.03%	57
Have three days worth of water and food stored for each person in your household	42.62%	202
Other (please specify)	2.53%	12
<b>TOTAL</b>		<b>2493</b>

### **Risk Assessment Process Conducted for the 2023 Plan Update - *Schools and Academia***

As mentioned in Annex A of the Washington County All Hazard Mitigation Plan, Washington County Sheriff's Office representatives, including Emergency Management staff, continue to work with local schools on risk assessment endeavors.



School representatives were asked by emergency management to share mitigation actions taken in the past five years and future project prioritization for purposes of this plan.



### **Academia**

Washington County hosts quarterly School Coalition Meetings which include school districts throughout Washington County, as well as Ramsey County and postsecondary schools such as Century College. In these meetings, discussions surround current threats, vulnerabilities, and recent activities where lessons learned from incidents can be shared.

This is a great foundation for relationship building within academia for emergency management and law enforcement. Since 2017, emergency management has worked diligently to form robust recovery plans with each district. This effort was disrupted by COVID, but is now back on track. Minutes and sign-up sheet from the February 2023 meeting are in the Appendices.

### *Cities of Hastings and White Bear Lake*

It is important to note that the cities of Hastings and White Bear Lake have portions of their communities within Washington County's borders. However, the two cities are not covered in the Washington County All Hazard Mitigation Plan. Hastings should be covered in the Dakota County's plan and White Bear Lake should be covered in the Ramsey County plan.

### **Human Caused Hazards**

Also referenced in the THIRA and the CI/KR assessments of vulnerabilities, it is important to mention in this plan the increasing awareness of manmade hazards within the United States. Manmade hazards include both intentional and unintentional (accidental) acts. Domestic preparedness and terrorism as well as radiological and hazardous material incidents are covered in more detail in Annex D of this plan.

It should be noted, the potential for human caused hazards has been considered during the development and writing of the Washington County All Hazard Mitigation Plan Risk Assessment. In the past five years, civil unrest has become an emerging threat throughout the country, the Twin Cities Metropolitan Area, as well as Washington County. The risk for this type of hazard is built-in to the considerations for human caused disasters in this plan.

## HAZUS

Similar to 2017, the Hazus ‘level-2’ flood run uses the latest version of Hazus (6.0) and attached the “Flood Global Risk Report”. The depth grid used for the analysis was developed using 1 meter lidar from MN DNR: <https://resources.gisdata.mn.gov/pub/data/elevation/lidar/county/washington/> and then, following the steps in Section 2.3 Creating a Depth Grid using DFIRM Data on page 24 of this document: [https://www.fema.gov/sites/default/files/2020-09/fema\\_hazus\\_flood-sop\\_0.pdf](https://www.fema.gov/sites/default/files/2020-09/fema_hazus_flood-sop_0.pdf) This is the same process followed in 2017.

Observations and thoughts as to why the 2023 results look different than the 2017 results:

- **Census Data**
  - Hazus 6.0 uses 2020 Census data
  - Hazus 4.0 used 2010 Census data
- **Damaged Buildings**
  - Hazus 6.0 estimates 143 buildings will be moderately damaged with 2 being completely destroyed
  - Hazus 4.0 estimated 547 buildings would be moderately damaged with 23 being completely destroyed
  - Explanation:
    - Previously, Hazus would estimate building damages based on aggregated data and not site specific data. The former methodology tended to overestimate losses but was used because site-specific data was not readily available at the national level.
    - Hazus 6.0 uses site specific data from the Nationwide Structure Inventory (NSI 2022), which provides more accurate results. You can read more on that update here: [fema\\_hazus-6-data-updates-factsheet.pdf](#) (see page 2)
- **Replacement Value**
  - Hazus 6.0: Washington County building replacement value: \$53.4B
  - Hazus 4.0: Washington County building replacement value: \$31.6B
  - Explanation: Substituting the older General Building Stock with the Nationwide Structure Inventory caused this increase

- **Business Interruption Losses**
  - Hazus 6.0: \$152.9M in losses
  - Hazus 4.0: \$710K in losses
  - Explanation: This rather large difference is due to a calculation error in Hazus 4.0 that has since been fixed. This note is included in [the Hazus 4.2 release](#): “An erroneous multiplier was removed from the Business Interruption calculations that will significantly increase Business Interruption losses in future analyses”.
- **Depth Grid**
  - <https://fema.connectsolutions.com/hazusdg/>
  - after entering the room, on the left hand side, download the depth grid. User can then send that to a GIS POC and they can pull it up in ArcPro/ArcMap. This is the file used for the Hazus Run. In this case, the depth grid basically shows the extent and depth of the 1% (or 100 year flood).

*South Washington Watershed District – Climate Resiliency Plan*

“The South Washington Watershed District (SWWD), through its watershed management planning process, identified addressing climate change as a top priority, with a stated goal of facilitating ‘increased resilience of District resources and public infrastructure through development of information and strategies and implementation of accepted climate adaptation practices.’

As a step toward achieving that goal, SWWD collaborated with its member communities and stakeholders to identify its top concerns and priorities relative to climate change. Ultimately, the SWWD and the communities hope to reduce climate-related risks by increasing the resilience of infrastructure and social and natural resources.”

The plan, can found by following this link:

[FINAL\\_SWWD-Climate-Resiliency-Plan\\_3.7.pdf \(swwdmn.org\)](#)

**Risk Assessment Process Conducted for the 2023 Plan Update - *Cities and Townships***

For the 2023 update, Washington County once again elected to conduct in-person meetings with every city and township to discuss the past five years of mitigation progress, and mitigation strategies for the next five years. As part of the meeting/assessment, discussion took place regarding potential projects identified in the previous plan, and whether each jurisdiction was able to initiate those projects. An example of the agenda used for each meeting is shown here:

1. Introductions
2. Overview of Mitigation Plan Update
3. Risk Assessment
  - a. Review previous plan information
  - b. Bold Planning information previously entered
  - c. CDC Social Vulnerability Index
  - d. Other information?
4. What mitigation projects have been accomplished since the plan was updated in 2018?
5. What mitigation projects listed last time were not completed? Why? (Lack of funding, other priorities, etc.)
6. What previously listed projects or new projects would your city like to include in this plan for future mitigation?
7. Existing plans
8. Integration into existing planning mechanisms
9. Funding Options
10. Questions?

**In advance of the scheduled meetings, the cities and townships were provided an assessment table to evaluate risk and hazards for their own communities. A supporting table explaining the values to be used for the assessments accompanied the evaluation table. Both are provided here as examples of what was provided to the cities/townships:**

**Hazards of Concern**

Parameter	Rating = 1	Rating = 2	Rating = 3	Rating = 4
<b>Frequency</b>	Unlikely: <1% chance in 100 years	Occasional: 1 to 10% chance in next year	Likely: >10 to <100% chance in next year	Highly Likely: 100% chance in next year
<b>Warning Time</b>	More than 12 hours	6-12 hours	3-6 hours	None-minimal
<b>Extent</b>	Localized	Community-wide	County-wide or greater	
<b>Likely Impact</b>	Negligible	Limited	Critical	Catastrophic

Hazard	Frequency	Warning Time	Geographic Extent	Likely Impact	Total Score
Water Supply Contamination					
Terrorism / Civil Disturbance					
Cyber Threats					
Extreme Temperatures					
Public Health Emergencies / Infectious Disease					
Flooding - Inland					
Flooding – Riverine					
Karst and Land Subsidence					

Drought					
Thunderstorms, Lightning					
Hail					
Windstorms, Straight Line Winds					
Tornadoes					
Blizzards, Ice and Sleet					
Wildfires					
Dam and Levee Failures					
Hazardous Materials Incident					
Radiological Incident					
Erosion / Landslide					

**2023 Risk/Vulnerability Assessment**

*Synopsis of Risk/Vulnerability Assessment*

Washington County and its political subdivisions, businesses, schools, residents, visitors, and work force that make up this area are uniquely situated to be at risk for a wide variety of hazards, both natural and human caused. A variety of hazards were assessed for this plan update through a variety of mediums (surveys, other studies, jurisdictional reviews, etc.) and summarized in this document.

Many of the hazards the upper Midwest is known for, such as extreme temperatures and winter conditions (blizzard, ice storms, etc.), are commonly identified as higher probability risks. In addition, cascading effects such as utility outage and flooding were also identified as high probability along with the hazard of tornadoes and other springtime storm characteristics (hail, etc.) which are common in the upper Midwest region.

Due to the sensitive nature of the information in this document, the remaining information has been deleted from this public version of the Washington County All Hazard Mitigation Plan. If you have questions about the deleted information, please contact the Washington County Emergency Management Office.

**Annex D: HAZARD ANALYSIS**

A. Overview	D-2
B. Extreme Temperatures – Heat and Cold	D-7
C. Public Health Emergencies/Infectious Disease	D-13
D. Floods	D-18
E. Karst and Land Subsidence	D-27
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G. Thunderstorms, Lightning, Hail & Windstorms/Straight Line Winds	D-33
H. Tornadoes	D-40
I. Winter Storms - Blizzards, Ice and Sleet	D-46
J. Wildfires	D-48
K. Dam and Levee Failure	D-51
L. Hazardous Materials	D-54
M. Radiological	D-56
N. Water Supply Contamination	D-59
O. Civil Disturbance/Terrorism	D-63

**Annex D: HAZARD ANALYSIS**

An important element of the Washington County Mitigation Plan is an analysis of hazards and the risk they pose. Washington County looked at the risks at the municipality, county, and regional level. This section of the plan identifies hazards at a larger scale than individual communities.

Washington County is susceptible to many hazards, ranging from natural hazards, to accidents, to deliberate acts of violence. Of the multitude of hazards that could occur, twenty hazards were originally identified as possible concerns in Washington County. Washington County also referenced the Minnesota All Hazard Mitigation Plan for a list of hazards. After a further analysis of the possible hazards and their probability, two hazards – earthquakes and solar storms – were determined to be of insignificant concern and will not be addressed in detail in this plan.

This section of the All Hazard Mitigation Plan presents the risk of hazards at a county or regional level. It includes a description of each hazard, the history of occurrences, and impacts to the county. It also notes gaps and deficiencies. Finally, recommendations are suggested for further or continued action to mitigate the hazards where applicable.

**A. Overview**

Washington County has been included in eighteen Minnesota Presidential Disaster Declarations going back to 1965.

Source: MN State Hazard Mitigation Plan, 2019, pg 54

**Chart D.1 Presidential Disaster Declarations (1965-2021)**

<b>Disaster Number</b>	<b>Counties Declared</b>	<b>Declaration Date</b>	<b>Disaster Description</b>	<b>Action Assistance</b>
4666	23 Counties	08/09/2022	Severe Storms, Straight-line Winds, Tornadoes, and Flooding	PA
4659	14 Counties 5 Tribal Governments	07-13-2022	Severe Storms, Straight-line Winds, and Flooding	PA, HM
4531	Statewide	01/20/2020	COVID-19 Pandemic	PA
4442	51 Counties 4 Tribal Governments	03/12/2019	Severe Winter Storm, Straight-line Winds, & Flooding	PA, HM
1982	33 Counties 1 Tribal Government	05/10/2011	Severe Storms & Flooding	PA
3242	87 Counties	09/13/2005	Hurricane Katrina Evacuation	PA
1370	66 Counties 4 Tribal Governments	05/16/2001	Severe Winter Storms, Flooding & Tornadoes	PA, IA, HM

1225	19 Counties	07/20/1998	Severe Storms, Straight Line Winds & Tornadoes	PA, HM
1175	58 Counties	04/08/1997	Severe Flooding, High Winds & Severe Storms	PA, IA, HM
1116	26 Counties	06/01/1996	Flooding	PA, HM
993	57 Counties	06/11/1993	Severe Storms, Tornadoes, & Flooding	PA, IA, HM
797	10 Counties	08/06/1987	Severe Storms, Tornadoes, & Flooding	PA, IA
PA = Public Assistance Program (formerly Infrastructure Support Program) IA = Individual Assistance HM = Hazard Mitigation Grant Program				

In the spring of 2023, Washington County experienced two State Declared Disasters. One included tree debris damage from an ice/snowstorm on March 31, 2023, and the other was rapid snow melt occurring on April 11-30, 2023

On March 31<sup>st</sup> through April 1<sup>st</sup> Washington County experienced a severe winter storm with massive tree damage caused by rain/ice followed by heavy snow and high winds. Nineteen cities made application to the state in a state-run Damage Assessment. The severe storm was soon followed by a warm weather rapid snow melt which required another disaster declaration where six river communities experiencing river flooding again made application to the State for disaster funding reimbursement consideration.





2023 Temporary Storm Debris Management Site from April 1, 2023 Ice/Snow Storm.



In May of 2019, eleven cities, one watershed district, and the county made application to the State for a Disaster Declaration because of flooding. The PDA identified nearly \$1M of uninsured loss.



Washington County Emergency Operations Center  
PDA Mtg FEMA, City, County and Watershed District representatives  
May 16, 2019

In July 2019, an EF1 tornado touched down in the Washington County cities of Scandia and Forest Lake.



2019 Scandia Tornado Damage

During the months of May and June 2020, the Washington County Sheriff's Office opened its Emergency Operations Center to support the efforts of law enforcement responding to civil protests and rioting taking place in St. Paul, Minneapolis, and Washington County.



2020 EOC activation for Civil Unrest

The Minnesota All Hazard Mitigation Plan has the following hazards listed and ranked. See the state All Hazard Mitigation Plan, Section 4: Natural Hazards Risk Assessment for the criteria used for probability ranking and the mitigation potential ranking criteria. According to the 2019 update, this information did not change. *MN All Hazard Plan, 2019, pg 57*

**Chart D.2 Hazard Probability and Occurrence 1975 - 2018**

HAZARD	Plan Section	Probability	Mitigation Potential
Flooding	4.7.1	High	High
Wildfire	4.7.2	High	High
Windstorm	4.7.3	High	High
Tornado	4.7.4	High	High
Hail	4.7.5	High	Medium
Dam Failure	4.7.6	Medium	Medium
Extreme Heat	4.7.7	High	Low
Drought	4.7.8	High	Low
Lightning	4.7.9	High	Low
Coastal Erosion and Flooding	4.7.11	Medium	Medium
Erosion, Landslides, and Mudslides	4.7.12	Medium	Low
Land Subsidence	4.7.13	Medium	Low
Extreme Cold	4.7.14	High	Low
Earthquake	4.7.15	Low	Low
Fire (Structure and Vehicle)	4.8.1	Medium	Low
Ground and Surface Water Supply	4.8.2	Medium	Medium
Hazardous Materials	4.8.3	Medium	Low
Nuclear Incidents	4.8.4	Low	Low
Infectious Disease Outbreak	4.8.5	Low	Low
Transportation	4.8.6	Low	Low
Terrorism	4.8.7	Low	Low
Source: 2018 State of Minnesota All Hazard Mitigation Plan; State Fire Marshal “Fire in Minnesota” Annual Reports			

After reviewing the probability ranking for the hazards identified in the 2014 Minnesota All Hazard Mitigation Plan, the risks identified by the county, cities, and townships were reviewed again by Washington County Emergency Management staff. It was found that there is a strong correlation between the results of the two independent assessments. No changes were made to the risk assessment in Annex C based on the statewide risk analysis given the similarities.

Hazards Not Addressed in Washington County’s Plan

An earthquake is a hazard that is addressed in the 2014 State of Minnesota’s Hazard Mitigation Plan that will not be addressed in this plan. This hazard does not warrant further analysis in this plan because the probability of this hazard occurring in Washington County is extremely low and mitigation efforts are either unnecessary or cannot be addressed at the county level.

**B. Extreme Temperatures – Heat and Cold**

Minnesota is home to a wide variety of weather conditions. Washington County, being located in the upper Midwest region of the country can go from record highs to record lows in a matter of days. Record temperatures range from as hot as 105 degrees in 1988, to freezing cold weather of -32 degrees in 1996.

On May 28, 2018, the official temperature in Minneapolis, MN reached 100 degrees. This was a new record for the earliest recorded 100-degree day in the Twin Cities history.

Chart D.3 illustrates the Temperature Extremes by month and season at the Stillwater station.

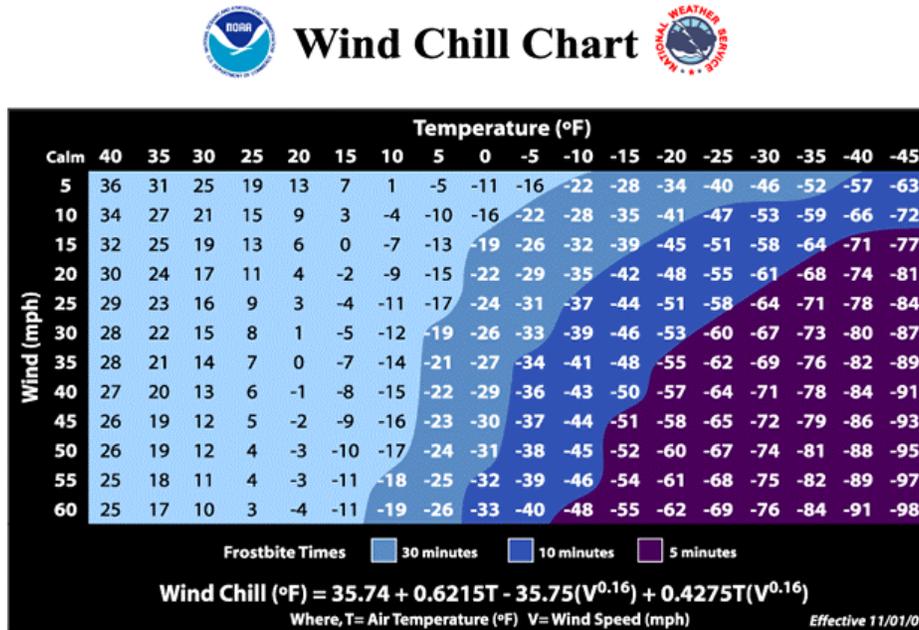
**Chart D.3: Temperature Extremes (1958-2022)**

Month	Average High °F	Average Low °F	Record High °F	Record Low °F
JAN	26.2	-0.2	57	-40
FEB	33.1	9.5	62	-36
MAR	42.6	19.7	83	-37
APR	54.8	39.0	94	4
MAY	68.2	53.7	96	20
JUN	73.0	62.0	101	34
JUL	78.6	68.0	106	45
AUG	75.8	66.7	104	37
SEP	68.6	54.2	98	26
OCT	60.2	43.0	90	15
NOV	48.8	25.2	78	-16
DEC	30.5	4.3	67	-39
<b>Annual</b>	50.8	38.9	106	-40
<b>Winter</b>	27.4	8.8	67	-40
<b>Spring</b>	53.1	41.2	96	-37
<b>Summer</b>	74.1	67.7	106	34
<b>Fall</b>	54.9	44.0	98	-16
Source: Historical Climate Data, Midwestern Regional Climatic Data Center				

*Extreme Cold*

- The National Weather Service (NWS) issues a Wind Chill Advisory when widespread wind chill readings of -25° to -35°, are expected, accompanied wind speeds of 5 to 10 mph or greater.
- A Wind Chill Warning is issued when wind chills of -35 degrees with wind speeds of 5 to 10 mph or greater are expected.

Chart D.4 Wind Chill Chart

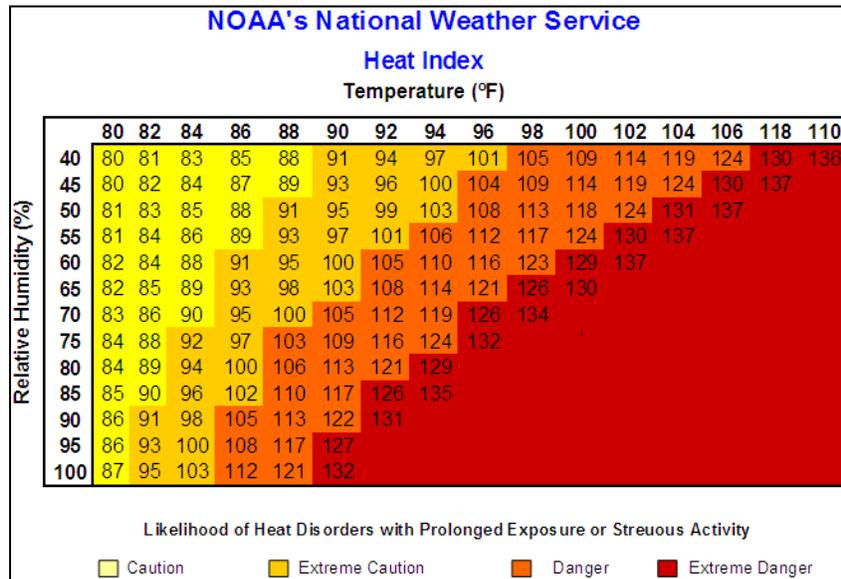


Source: National Oceanic and Atmospheric Administration – National Weather Service

*Extreme Heat*

- The NWS issues a Heat Advisory for Minnesota when the maximum heat index reaches 100° and/or the maximum temperature reaches 95° or higher.
- An Excessive Heat Warning is issued when the maximum heat index reaches 105° or greater and a minimum heat index of 75° or greater for at least 48 hours.

Chart D.5 Heat Index Chart



Source: National Weather Service, Office of Climate, Water, and Weather Services

*History*

From January 1, 2010, through December 31, 2022, the National Weather Service recorded fifteen temperature extremes for Washington County. The following chart illustrates these events.

**Chart D.6: Temperature Extreme Events (2010-2022)**

Date	Time	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
07/18/2011	12:00	Excessive Heat	N/A	0	0	0.00K	0.00K
08/25/2013	13:00	Excessive Heat	N/A	0	0	0.00K	0.00K
01/05/2014	18:00	Extreme Cold/wind Chill	N/A	0	0	0.00K	0.00K
01/23/2014	04:00	Extreme Cold/wind Chill	N/A	0	0	0.00K	0.00K
01/27/2014	04:00	Extreme Cold/wind Chill	N/A	0	0	0.00K	0.00K
01/17/2016	05:00	Extreme Cold/wind Chill	N/A	0	0	0.00K	0.00K
07/20/2016	13:00	Excessive Heat	N/A	0	0	0.00K	0.00K
12/18/2016	00:00	Extreme Cold/wind Chill	N/A	0	0	0.00K	0.00K
12/18/2016	21:00	Extreme Cold/wind Chill	N/A	0	0	0.00K	0.00K
01/29/2019	15:00	Extreme Cold/wind Chill	N/A	0	0	0.00K	0.00K
02/14/2021	01:00	Extreme Cold/wind Chill	N/A	1	1	0.00K	0.00K
06/19/2022	15:00	Excessive Heat	N/A	0	0	0.00K	0.00K
06/20/2022	12:00	Excessive Heat	N/A	0	0	0.00K	0.00K
08/02/2022	12:00	Excessive Heat	N/A	0	0	0.00K	0.00K
12/23/2022	00:00	Extreme Cold/wind Chill	N/A	1	0	0.00K	0.00K
<b>Totals:</b>				<b>2</b>	<b>1</b>	<b>0.00K</b>	<b>0.00K</b>
<b>Mag:</b> Magnitude		<b>Dth:</b> Deaths		<b>Inj:</b> Injuries			
<b>PrD:</b> Property Damage		<b>CrD:</b> Crop Damage					
Source: National Centers for Environmental Information Storm Events Database							

*Risk Assessment*

Damages from extreme temperatures can range from human deaths to significant energy costs and infrastructure problems. All areas of Washington County are vulnerable to extreme temperatures of cold or heat.

Overall Vulnerability of Extreme Temperatures	
Frequency	Moderate
Intensity	High
Location	Countywide
Extent	Risk to health of population is greatest
Duration	Days to weeks
Seasonal Pattern	Mid-winter and mid/late summer
Speed of Onset	Gradual
Warning Time	12 - 72 hours
Probability of Future Occurrences	High

*Effects on People and Housing*

Extreme heat poses the greatest danger to outdoor laborers, the elderly, children, people in poor health, and people residing in homes without air-conditioning. People can suffer from hyperthermia resulting in heat stroke or heat exhaustion on extremely warm days if precautions are not taken.

Though residents may be prepared, excessive cold can still cause problems for residents if proper precautions are not taken. Excessive cold can cause hypothermia and frostbite. Similar to extreme heat, children and the elderly are more susceptible to these concerns, as well as those who are already ill.

Washington County homes are at risk primarily in the case of excessive cold. Space heaters and/or fireplaces are popular, inexpensive items used to heat homes in Minnesota; they can be a fire hazard if not used and monitored properly. Also, water pipes can freeze and burst in excessive cold temperatures. Power outages may also occur with excessive energy use to help heat or cool the home.

*Effects on Commercial and Industrial Structures*

Excessive cold or heat will affect commercial and industrial structures in the form of possible power outages due to an increase in energy uses related to using heaters or air-conditioners excessively due to the temperatures. Power outages could induce phone outages as well. This in turn will affect business productivity. The probability of a structure fire increases with the possible use of space heaters to heat work areas. Excessive cold could also lead to burst pipes causing damage.

*Effects on Critical Infrastructure*





*Relationship with Other Hazards – Cascading Effects*

- Power Outages - Due to the increased use of heaters/air-conditioners and down power lines.
- Fires - Due to the use of space heaters or fireplaces not properly used or monitored.

*Plans and Programs Currently in Place*

- MN Homeland Security and Emergency Management publishes seasonal information on Winter Hazard Awareness Week and Severe Weather Awareness Week (SWAW). Washington County links to this information to the county’s website and utilizes social media for messaging as well.
- Washington County also participates in SWAW by providing educational materials to the public.
- The American Red Cross publishes information on family emergency plans, kits, and hazard specific information.
- In 2022, Washington County opened a “Cooling Center” for residents when the forecasted heat index was over 100 degrees for an extended period.
- Public education presentations and displays provide need-to-know emergency preparedness information to residents.
- Seasonal information is also distributed via broadcast, print, social media, news media and internet.
- The Energy Assistance Program (EAP) through the Department of Commerce, provides financial support for heating programs.
- Heating and cooling shelters can be stood up in Washington County should the need arise.

*Gaps and Deficiencies*



*Recommendations*

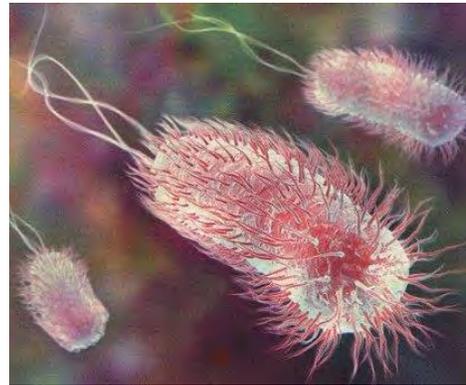
- Encourage critical and emergency support facilities to have emergency generators.
- Encourage all communities, organizations, schools, and businesses to have a Continuity of Operations Plan.
- Work with government departments/agencies, ECHO, and other similar organizations to format emergency messages in alternative languages.

- Conduct public education campaigns on extreme temperature precautions, to include general safety procedures for the home and workplace.
- Ensure that emergency shelters have sufficient heating/cooling equipment, emergency generators, and back up communications capability.

### C. Public Health Emergencies / Infectious Diseases

An infectious disease is defined as an illness that is caused by bacteria, virus or other microorganisms that invade the body. A communicable disease is one that can be passed on or spread to others. These diseases have the potential to affect any form of life at any time based on living conditions, living standards, basic hygiene, water treatment, and immunization status of the population.

Despite medical breakthroughs and technology, infectious and communicable diseases continue to pose a significant public health threat. Today the issue of newly emerging and re-emerging infectious disease is at the forefront of public health concern. Changes in demographics, lifestyles, technology, land use practices, food production and distribution methods, childcare practices as well as increasing world poverty have a role in emerging infections.



Many infectious/communicable diseases are preventable and controllable. Prevention and control of infectious diseases involve collection of accurate assessment data (such as surveillance data for specific conditions), outbreak detection and investigation, and development of appropriate control strategies (both short and long term) based on specific epidemiological data. These activities require close collaboration between clinical providers, clinical laboratories, state and local health departments, and federal agencies. Furthermore, a need exists for continued education of industry (particularly food producers and food service industries), health care students and providers, along with research to improve immunization, diagnostic capabilities and therapeutic modalities. Thus, prevention of infectious/communicable diseases requires multidisciplinary interventions involving public health professionals, medical practitioners, researchers, community-based organizations, volunteer and private groups, industry and educational systems.

#### *History*

The Minnesota Department of Health maintains a statewide registry of cases of over 93 different types of “reportable diseases.”

The chart below illustrates the number of reportable diseases occurring over an eight-year time span. The number of “reportable disease” cases in Washington County has been on a steady increase over the last eight years as shown in the chart.

Year to year fluctuation in reportable diseases may be attributable to many factors: number of identified reportable diseases, changes in disease definitions, new tests and reporting systems, population changes, seasonal weather patterns, and other factors.

Chart D.7 Reportable Cases of Infectious Disease

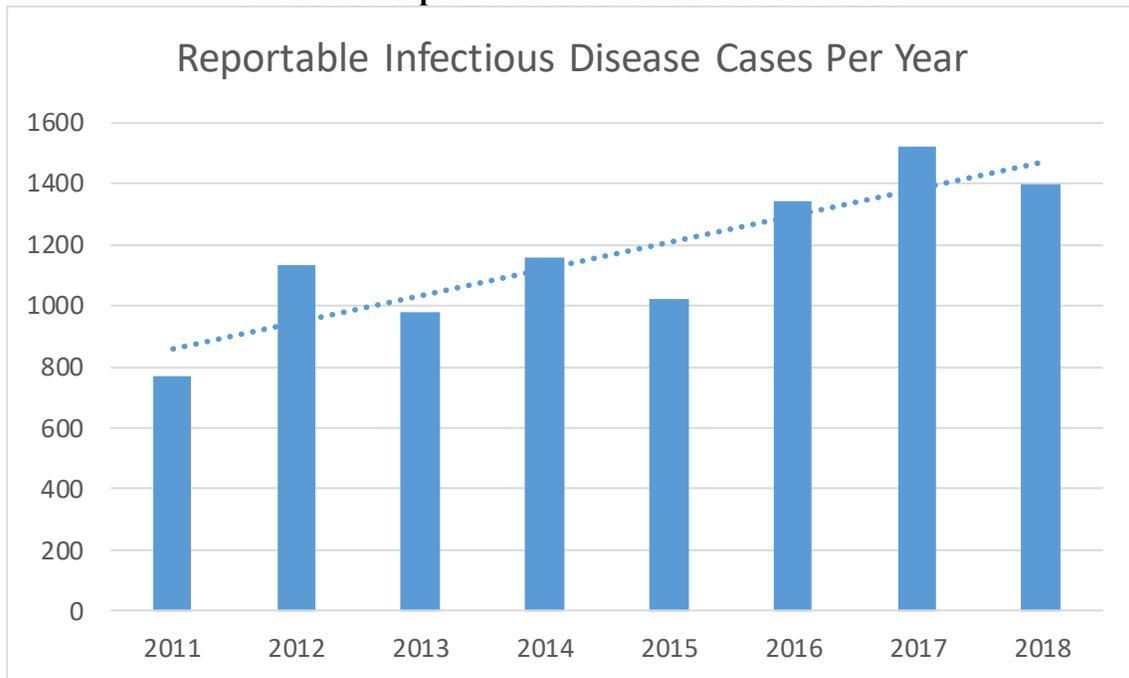


Chart provided by Washington County | Epidemiologist  
Source: Washington County Infectious Disease Reports

The primary diseases of concern, and currently present, in Washington County include Sexually Transmitted Infections (STI), vector borne diseases, Influenza, Tuberculosis, food and waterborne diseases, and vaccine preventable diseases.



In March 2020, Washington County saw its first documented case of COVID-19, an infectious disease caused by the SARS-CoV-2 virus. Washington County was involved in many aspects of pandemic response including case investigation, contact tracing, testing, essential services, vaccination, and provided support in multiple additional roles across the county and region.

Vaccine distribution and administration began December 2020. Between December 2020 and June 2022, Public Health and Environment conducted more than 425 distinct clinics throughout the county.

- 342 clinics at Washington County Service Centers/buildings
- 61 clinics at community sites, including area high schools, community service providers (i.e., food shelves, community recreation centers)
- 23 clinics utilizing our mobile health trailer to targeted communities who may have transportation or other barriers

Through our efforts, we were able to support vaccinations with incarcerated individuals, people who are home bound, and other communities where access to vaccines may be challenging. Overall, we administered over 29,700 vaccines as of June 30, 2022.

Statewide as of September 2022, over 1.6 million cases were identified and there were over



13,000 deaths associated with COVID-19. Of those, over 77,000 cases and over 500 deaths were residents from Washington County.

#### *Risk Assessment*

Washington County has a unique combination of urbanized and agricultural areas. Population density is correlated to the spread of communicable diseases, thus placing the urbanized populations of Washington County at higher risk.

COVID-19 Pandemic

Washington County has numerous sites seen as potential

high-risk sites to terrorist acts such as the release of a deadly biologic agent in an attempt to disrupt activities. However, good prevention programs and quality health care temper this risk. Both the State and local Public Health Department are actively involved in the prevention and control of communicable diseases.

A report done by the Washington County Department of Public Health and Environment in 1999 assessed the risk to the county's population for infectious diseases. The report determined the persons at risk totaled 100 percent of the population (191,548 in 1999). Of the population, 43.8 percent of the population was affected by the problem (infectious diseases excluding STI and HIV/AIDS). Almost two decades later, with a population greater than 250,000, it is estimated that at least 75% of the population is directly or indirectly affected by infectious diseases. The vulnerable populations vary by disease. The elderly are at a higher risk for influenza and pneumococcal disease. For more recent age specific populations by community, see **"Demographics" in Annex B.**

Many infectious diseases are preventable, controllable and/or treatable health events provided they are recognized early, and appropriate intervention methods are utilized.

Overall Vulnerability of Infectious Diseases	
Frequency	Moderate
Intensity	Moderate to high
Location	Countywide; dependent on disease and how quickly it spreads
Extent	Sickness in humans and/or animals, quarantine and possible death; may result in lost time for employees; lost productivity - lost contributions to society & economy
Duration	Unknown. Several days to several months
Seasonal Pattern	Disease dependent seasonal patterns; no overall predictable seasonal patterns
Speed of Onset	Slow to rapid
Warning Time	Variable
Probability of Future Occurrences	High

*Effects on People and Housing*

The physical and psychological effect on people affected by infectious diseases varies by disease.

In the event of a widespread and life-threatening infectious disease, a person, family, or large number of people may be quarantined within their homes. This situation creates strain on not only those in quarantine, but also on health care workers who must care for their needs while being isolated. In addition, if a disease outbreak were to emerge among health care workers, emergency response personnel, public safety personnel, utility workers or others vital to public infrastructure the impact would be significant.



Economic losses would have an indirect effect on people. This may be due to lost wages of sick individuals; it may also be a result of lost wages of family members who stay home to care for sick family. The economic losses may bring on other negative effects, thereby creating a domino effect.

*Effects on Commercial and Industrial Structures*

In the event of an infectious disease outbreak, many people may either be too sick to work or unable to attend work. As a result, the necessary workforce to continue operations may not be available. The resource would then need to be closed, possibly for an extended period of time. An indirect effect would be economic losses for the workers as well as for the business.

### *Effects on Critical Infrastructure*

There would be no direct effect on physical infrastructure, but a direct impact on the human infrastructure required to maintain and operate physical infrastructure. An infectious disease outbreak may cause widespread absenteeism, indirectly affecting infrastructure, public services, and employees. An infectious disease outbreak might affect systems in health care, police, fire, public works, emergency response, utility, transportation and schools.

In the event of high absenteeism, careful consideration would need to be given to which services and personnel are essential. It would be critical to identify areas where absenteeism would pose a serious threat to public safety or would significantly interfere with the ongoing response to an outbreak.

### *Relationship with Other Hazards – Cascading Effects*

- Infectious disease outbreaks may occur as an isolated or single event or may be secondary to a previous disaster such as a terrorist attack, biological accident or natural hazard.
- Infectious diseases have the potential to be local, regional, statewide or national in scope and magnitude.
- Severe weather events such as floods, lightning, blizzards, and hailstorms can create power outages. Safe food temperatures may not be maintained as a result of power outage and cause various gastrointestinal illnesses. Additionally, health care services may be compromised if power were not available.
- Infectious diseases take a toll not only physically on a person, but also financially upon the person, their dependents, the community, and possibly the region, state, or national level. Inaccurate risk perception may also create indirect effects. People may feel as though they may be at risk if, for example, they go to work. The risk may not be real, but the perceived risk is strong enough to prevent them from attending.

### *Plans and Programs Currently in Place*

- Health and Medical Emergency Support Function of the Washington County All Hazard Emergency Operations Plan.
- Public Health & Environment All Hazard Response and Recovery Plan
- Washington County Public Health Immunization Program
- Disease Outbreak Investigation Team.
- Washington County ordinances and policies regulating inspection of food, beverage and lodging facilities, and small and large quantity hazardous waste generators and solid waste haulers.
- The Health Alert Network (HAN) - to send out a fax or email to health care providers, hospitals, schools, pharmacists, veterinarians, long-term care facilities and others.
- Emergency and Community Health Outreach (ECHO) - used to reach the non-English speaking population. ECHO is conducted in coordination with the Metro Region partners in the public health departments.

- Educational activities are conducted through Washington County to better inform the public of infectious disease information.
- Isolation and Quarantine Annex, including essential services, of the Public Health & Environment All Hazard Response and Recovery Plan.

#### *Gaps and Deficiencies*

- The Minnesota Department of Health does not provide local health departments real-time data access for all diseases.
- Access to healthcare provider electronic medical records (EMR) for non-reportable infectious disease conditions (not under development at this time).



#### *Recommendations*

- Promote individual responsibility for health and provide information on actions individuals can take to reduce their risk
- Continue to monitor the risk and actual cases for infectious diseases at the county level
- Continue to monitor Immunization Rates in Washington County
- Continue to develop plans to prepare for infectious disease outbreaks at a local, county, and regional levels
- Continue to provide preventative medicines to those at highest risk
- Strengthen the ability of the Washington County Department of Public Health and Environment (PHE) to protect the public health from exposures to environmental hazards
- Review the vulnerability of domestic water supplies and other critical infrastructure to contamination or disruption from hazardous materials releases and develop proposals to improve protection where appropriate
- Further foster response and recovery collaborative relations between PHE and first responders
- Further enhance existing collaborative relations between PHE and allied health providers.



#### **D. Floods**

Floods are defined as the overflowing of rivers, streams, and lakes due to excessive rainfall or rapid snowmelt. There are several forms of flooding including flash floods (quickly rising streams after heavy rain or rapid snowmelt); ice jam (ice that accumulates at a natural or human-made obstruction and slows the flow of water); riverine (periodic overflow of rivers and streams); and urban (overflow of storm sewers systems following heavy rain or rapid snowmelt exceeding the system capacity). For floodplain management purposes, the Federal Emergency Management Agency (FEMA) uses the following definition of “100-year flood.”

The term "100-year flood" is misleading. It is not a flood that will occur once every 100 years. Rather, it is the flood elevation that has a 1 percent chance of being equaled or exceeded each



year. Thus, the 100-year flood could occur more than once in a relatively short period of time. The 100-year flood, which is the standard used by most federal and state agencies, is used by the National Flood Insurance Program (NFIP) as the standard for floodplain management and to determine the need for flood insurance. A structure located within a special flood hazard area shown on a map has a 26 percent chance of suffering flood damage during the term of a 30-year mortgage. The Washington County Department of Land Management and Zoning

uses the FEMA flood maps to determine 100-year floodplains and 500-year floodplains. FEMA updated these maps in 2009/2010. See **Figure D.1 “FEMA Floodplain.”**

Floods generally occur from natural causes, usually weather-related, such as a sudden snowmelt, often in conjunction with a wet or rainy spring or with sudden and very heavy rainfall. Floods can, however, result from human causes, such as a dam impoundment bursting.

Another type of flooding is urban flooding. Urban flooding occurs when there is a torrential rainstorm that is beyond the capability of the existing infrastructure. Increasing development and aging storm sewer and drainage systems are two frequent contributors to urban flooding. This kind of flooding does not necessarily occur in the floodplain.

### *History*

There have been ten major floods in Washington County, according to data from the National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service (NWS). The most devastating flood occurred on April 1, 2001. Washington County was one of forty-two counties affected. Statewide, the flood claimed the lives of three people (Renville and Scott County) and caused over \$200 million in property damage. The crest at Stillwater on the St. Croix River was the second highest crest ever. The Mississippi River at St. Paul, Hastings, and Red Wing crested at its third highest level ever.

As stated earlier in this document, Washington County sustained a significant amount of flood damage in June of 2014, which resulted in a Resolution Declaring a State of Emergency. Washington County did not reach the threshold to be included in a presidentially declared disaster. Instead, the amount of uninsured public damage met the threshold to receive state assistance.

	<u>St. Croix River</u>		<u>Mississippi River</u>		
<u>at Stillwater</u>		<u>at Hastings</u>		<u>at St. Paul</u>	
April 1965	94.10 ft	April 1965	25.90 ft	April 1965	26.40 ft
April 2001	92.30 ft	April 1969	24.30 ft	April 1969	25.00 ft
April 1969	92.20 ft	April 2001	22.00 ft	April 2001	23.76 ft
April 2001	91.10 ft	April 2001	21.60 ft	April 2001	23.60 ft
April 1997	90.45 ft	April 1997	21.30 ft	April 1997	22.90 ft
April 1952	89.70 ft	April 1952	20.90 ft	April 1952	21.90 ft
May 2023	89.21 ft	March 2019	19.49 ft	March 2019	20.19 ft
March 2019	88.48 ft	April 2023	18.98 ft	June 2014	20.13 ft
June 1993	87.90 ft	June 2014	18.95 ft	June 1993	19.15 ft
June 2014	87.63 ft	June 1993	18.90 ft	March 2011	19.02 ft
Flood Stage:	87.00ft		15.00ft		14.00ft
Source: Twin Cities National Weather Service - Rivers and Lakes (2023)					



1965 Flood “Teenagers Dike,” Stillwater  
Source: Washington County Historical Society

The **HAZUS-MH: Flood Global Risk Report** from January 09, 2019, and a Washington County Risk Report pulled from the National Risk Index can also be found in the appendices. This HAZUS report provides a general description of the region as well as information on a building inventory, building related losses, debris generation, social impact, and other flood related information for Washington County.

Overall, the total building related losses for the 2019 run are \$230.10 million (page 14 of 16 in the summary reported located in the appendices), which is higher than the 2017 report of \$205.63 million (page 13 of 16). This could be due to the data set Building Exposure by Occupancy increased by 12.5%.



Source: National Risk Index, [Community Report – Washington County, Minnesota](https://hazards.fema.gov/nri/report/viewer?dataLOD=Counties&dataIDs=C27163) (<https://hazards.fema.gov/nri/report/viewer?dataLOD=Counties&dataIDs=C27163>)

National Flood Insurance Program (NFIP)

Twenty-one of the cities along with the county and townships in Washington County currently participate in the National Flood Program. In addition, the City of Lake St. Croix Beach is one of only a few communities in the state of Minnesota that participates in the Community Rating System.

**Chart D.8 Jurisdictions Participating in NFIP**

<b>Jurisdiction</b>	<b>CID #</b>	<b>Initial FIRM</b>	<b>Current Map</b>	<b>Total Payments (since 1978)</b>	<b># Non-Mitigated Repetitive Loss Structures as of 2023</b>
Afton	275226	04/21/72	02/03/10	\$308,897	7
Bayport	275229	07/01/74	02/03/10	\$1,950,884	20
Birchwood Village	270720	01/20/10	02/03/10 (M)	\$0	0
Cottage Grove	270502	04/30/76	02/03/10	\$11,520	0
Dellwood	270694	1/20/10	02/03/10 (M)	\$0	0
Forest Lake	270693	02/03/10	02/03/10	\$0	0
Grant	270780	02/03/10	02/03/10	\$0	0
Hugo	270504	09/29/78	02/03/10	\$4,269	0
Lake Elmo	270505	07/02/79	02/03/10	\$241,072	0
Lake St. Croix Beach*	275240	02/19/72	02/03/10	\$159,859	3
Lakeland Shores	275239	04/28/72	02/03/10	\$5,469	1
Lakeland	275238	02/09/72	02/03/10	\$578,111	10
Mahtomedi	270698	02/03/10	02/03/10 (M)	\$0	0
Marine on St. Croix	270509	09/27/85	02/03/10	\$63,483	1
Newport	270510	07/02/80	02/03/10	\$138,770	2
Oak Park Heights	270512	04/01/82	02/03/10	\$0	0
Oakdale	270511	02/03/10	02/03/10	\$10,160	0
Scandia	270582	05/17/82	02/03/10	\$3,146	0
St. Mary's Point	275247	02/26/72	02/03/10	\$408,585	8

St. Paul Park	270514	06/18/80	02/03/10	\$117,392	1
Stillwater	275249	03/16/73	02/03/10	\$195,327	1
Washington County**	270499	05/17/82	02/03/10	\$659,998	9
Woodbury	270699	02/03/10	02/03/10	\$0	0
<b>Total</b>				<b>\$4,794,859</b>	<b>63</b>
* The City of Lake St. Croix Beach joined the Community Rating System in 1995 and is rated as a Class 8 jurisdiction (CRS #275240).					
** Includes all townships					

Flood Insurance Rate Map (FIRM) - A flood map issued in conjunction with a community's efforts to join the NFIP. If a detailed assessment, termed a Flood Insurance Study (FIS), has been performed, the FIRM will show Base Flood Elevations (BFEs) and insurance risk zones in addition to floodplain boundaries. The FIRM may also show a delineation of the regulatory floodway and other useful mapping elements. (M) means no elevation was determined and are all zone A, C, and X.

Sources: Community Status Book Report, Federal Emergency Management Agency. 01/23/2023; NFIP Insurance Report, Federal Emergency Management Agency. 06/30/2018; State Floodplain (NFIP) Manager, Ecological and Water Resources Division received 01/26/2018

Non-Participating Jurisdictions

The following jurisdictions do not currently participate in the National Flood Insurance Program

City of Landfall (Sanction Date: 01/20/11)

Pine Springs (Sanction Date: 07/22/78)

Source: Community Status Book Report, Federal Emergency Management Agency. 01/23/2023.

The City of Pine Springs is listed as not participating in the NFIP but does have a FIRM (flood map 27163C0240E effective 02/03/2010). The City of Landfall is listed as not participating in the NFIP but does have a FIRM (flood map 27163C0330E) effective 02/03/2010). Although information was requested as to why both communities do not participate, it was unclear as to the reasoning behind the decision.

*Risk Assessment*

Whether it is river flooding, flash flooding or land-locked lakes, Washington County is prone to flooding. The county’s southern border is completely comprised of the Mississippi River and the eastern border is completely comprised of the St. Croix River. Flooding of any type impacts a number of assets including housing, commercial and industrial structures, critical infrastructure and can lead to other hazards such as water contamination.

Overall Vulnerability of Floods	
Frequency	Often
Intensity	High
Location	Countywide; but most often along the Mississippi River and St. Croix River in the floodplain
Extent	Damage to property, infrastructure
Duration	Several weeks
Seasonal Pattern	Spring and summer
Speed of Onset	Gradual
Warning Time	Several days, possibly a week
Probability of Future Occurrences	High

*Effects on People and Housing*

- Most of the county’s population is safe from flooding, although some housing units are within the 100-year floodplain.
- Flash flooding poses the greatest risk to human lives because it generally comes on quick with little or no warning time.
- People do not always heed the advice of avoiding flooded street ways and end up getting caught in the swift current of the flooding, often while in a vehicle attempting to drive through an inundated roadway.
- Taxpayers are burdened with a significant portion of the cost of responding to unwise floodplain development. Aside from floodwater damage, structures are prone to fires due to damaged electrical systems.

*Effects on Commercial and Industrial Structures*

- High Absenteeism – employees may not be able to get in to work due flooding at home, in their neighborhoods, or at their work site.
- Economic Loss – commercial/industrial facilities may be unable to continue operations due to damaged products, facilities, or impacted transportation routes.
- Power Outage and/or Fire due to faulty/impacted electrical equipment.



### *Effects on Critical Infrastructure*

- Flood damage may be minimal or vast and have severe consequences on the critical infrastructure.
- Businesses in Washington County located along the St. Croix or Mississippi River often experience lost revenue in flood events.
- Sewer systems are a major concern in a flood event; some cities within the county have pump lift stations so homes and businesses often don't have sewer back-ups.
- Street flooding will be cause for concern for emergency responders; if streets are flooded, emergency vehicles will have a difficult time responding to emergencies.
- Flash flooding can catch people off guard, causing them to become victims needing rescuing.
- If employees are not able to get into work, there will be a shortage of responders.

### Repetitive Loss Structures

A *severe repetitive loss property* is a structure that:

- (a) Is covered under a contract for flood insurance made available under the NFIP; and
- (b) Has incurred flood related damage –
  - (i) For which 4 or more separate claims payments have been made under flood insurance coverage with the amount of each such claim exceeding \$5,000, and with the cumulative amount of such claims payments exceeding \$20,000; or
  - (ii) For which at least 2 separate claims payments have been made under such coverage, with the cumulative amount of such claims exceeding the market value of the insured structure.

A *repetitive loss property* is a structure covered by a contract for flood insurance made available under the NFIP that:

- (a) Has incurred flood-related damage on 2 occasions, in which the cost of the repair, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event; and
- (b) At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

Washington County had sixty-three repetitive loss structures as of 2023, in at least ten different communities. The Department of Natural Resources (DNR), Water Division, maintains the information on repetitive loss structures. Due to privacy data requirements, the detailed list is not provided in this plan. Severe repetitive loss structures within Washington County total five properties and are shown by a general area location map.

### *Relationship to Other Hazards – Cascading Effects*

- Fire – fires may break out as a result of dysfunctional electrical services or damage.
- Hazardous Materials Spill - Hazardous materials may get into floodways, causing health concerns and polluted water supplies or residual contamination after flood waters recede.
- Power Outages - Power outages can be caused by floodwaters. Power may also be intentionally cut to allow for repairs or prevention of electrical hazards.
- Water Supply Contamination - Public health may also be affected by public water becoming contaminated due to pollutants entering floodwaters.

- Tornado and Severe Thunderstorms - These hazards often have torrential rains and flash flooding associated with them.

*Plans and Programs Currently in Place*

- Washington County Comprehensive Plan
- Building Codes and Zoning Ordinances – Shoreland Ordinances, Floodplain Ordinance
- Twenty-one (21) cities and the County (including the townships) currently participate in the National Flood Insurance Program (NFIP). See Chart D.10
- The county has two-foot contour mapping available to update and increase the accuracy of the floodplain elevations.
- Many communities located in the floodplains have flood manuals detailing actions to take in the event of a flood.
- HSEM publishes seasonal information on Severe Weather Awareness Week, which has a day dedicated to flooding concerns. Washington County Emergency Management links to this information on their website and posts information on social media sites.
- Washington County Emergency Operations Plan
- Washington County Floodplain Management Ordinance was recodified in 2018.
- Cities within Washington County all have floodplain management ordinances.
- Watershed districts within Washington County have rules regarding flood levels and floodplain management.



*Gaps and Deficiencies*

- At-risk uses and structures remain in identified 100-year floodplains, including nonconforming structures and uses currently “grandfathered in.”

*Recommendations*

- Continue participation in the National Flood Insurance Program (NFIP) program.
- Increase public awareness about the National Flood Insurance Program (NFIP).
- Assure coordination with the local and county governments in regard to mitigation efforts, to lessen the possibilities of cascading effects from the mitigation projects they choose to undertake.
- Ensure building ordinances, codes and permits follow floodplain management standards.
- Conduct a public education campaign on flooding hazards, emphasizing flash floods, precautions, and protective measures that can be taken.
- Continue to support initiatives to improve the mapping used for floodplain zoning through the Flood Hazard Mitigation Grant Program, FEMA’s Map Modernization Program, the Department of Natural Resources Flood Damage Reduction Grant Program, and the U.S. Army’s Section 22 (Assistance to States) Program.

- Continue to support Watershed Districts in updating flood levels and mapping efforts.
- Maintain an adequate and up-to-date inventory of flood response equipment.
- Continue to consider buyout, elevation and relocation projects for protecting structures from flood damage.
- Work with the DNR, Division of Waters on floodplain management.
- Encourage the adoption of and adequate enforcement of floodplain-zoning regulations to reduce rate of growth in flood hazard areas.
- Improve old and inadequate urban and rural storm sewer/drainage systems, which often cause flood damages to the community they serve and to communities downstream.

### **E. Karst and Land Subsidence**

Karst is an efficiently drained landscape that forms on soluble rock, typified by caves, sinkholes and a lack of surface drainage. In Minnesota, it is mainly formed on limestone, especially in the southeast. Limestone is slowly dissolved by infiltrating rainwater, sometimes forming hidden, rapid pathways from pollution release points to drinking water wells or surface water. These pathways can be widened, interconnected fractures or caves in the subsurface resulting in a hydro-geologic setting sensitive to land use. According to the U of M, “Caves at a Glance” article, caves are only one part of a group of landscape features known as karst. Karst landscapes are broad and regional in nature. In addition to caves, karst landscapes include, but are not limited to, underground streams, sinkholes, blind valleys, and springs.

Southeastern Minnesota has the most active karst features, and Washington County is on the northern border of the karst formations.

Land subsidence is defined as the lowering of the land surface. Many different factors can cause the land surface to subside. Subsidence can occur rapidly due to a sinkhole or underground mine collapse, or during a major earthquake.

See **Figure B.13** “Minnesota Karst Lands.”

#### *History*

In 1989, a large collapse due to karst topography occurred in Mahtomedi. This event was referred to as the “Cedarleaf Collapse.” The Platteville formation collapsed into a large hole in the St. Peter sandstone below. The hole was 42 feet across and about 40 feet deep. No property damage resulted from the collapse. The hole was subsequently filled in and is currently a portion of a housing development.

The neighboring community of Hudson, Wisconsin had an encounter with karst topography as well. A sinkhole caved in and destroyed the barn which was located above it.



Events within Washington County

May 13, 1852, Stillwater landslide  
October 5, 2005, Woodbury Sinkhole

*Risk Assessment*

Most karst problems in Minnesota are associated with pollution of groundwater and surface water, although the occasional collapsing sinkhole is cause for local concern. The easy and rapid movement of water between the surface and subsurface through sinkholes, joints, streams, and springs increases the potential for both groundwater and surface water contamination. Karst topography in the form of springs and sinkholes exist throughout Washington County, largely along the Mississippi and St. Croix Rivers. The sinkholes are concentrated largely in the southern portion of the County. The Minnesota Pollution Control Agency prohibits infiltrating stormwater in karst. Therefore,

as land develops more stormwater runoff will occur, unless it is captured and used (e.g., irrigation). Additional stormwater runoff could lead to additional flooding.

Overall Vulnerability of Karst and Land Subsidence	
Frequency	Low
Intensity	Moderate to high
Location	Active karst is found primarily in the southern portion of county but can be found throughout the county.
Extent	May cause minimal to severe property damage or risk to humans if located above karst topography.
Duration	Unknown.
Seasonal Pattern	No apparent pattern
Speed of Onset	Slow to rapid
Warning Time	Variable
Probability of Future Occurrences	Low to moderate

*Effects on People and Housing*

- Effects are dependent on the location of the event. Should a sinkhole occur under or near infrastructure – public or private – this could be expensive and timely to repair.
- There is potential for drinking water contamination for residents.
- Because of a prohibition of stormwater information in karst areas, there is potential for increased downstream flooding as development occurs if the added stormwater runoff volumes cannot be controlled.

*Effects on Commercial and Industrial Structures*

- Most of the county’s commercial and industrial structures and activity are located within municipalities served by public water supply systems.
- Any spills from these structures could leak into the groundwater supplies.
- Commercial and industrial structures located on karst topography may be vulnerable to a collapse and destruction of structures.

*Effects on Critical Infrastructure*

- Southern Washington County has numerous faults in the bedrock, specifically in the Prairie du Chien and Jordan Aquifers; these fault areas allow for greater permeability to groundwater supplies, creating a greater potential for groundwater contamination at these sites.
- Agricultural and industrial chemicals, home and urban wastes, and sewage can easily move into the underground water system and be rapidly transported to other locations.
- This can contaminate a large area of the ground-water system within the limestone and the adjacent aquifers and streams where the water returns to the surface.

*Relationship to Other Hazards – Cascading Effects*

- Hazardous Material Incident - Railroads carrying hazardous materials travel through southern Washington County. If a derailment were to occur, this could be complicated by the presence of karst topography.

*Plans and Programs Currently in Place*

Please see the plans and programs section for water supply contamination.  
Please see the plan and programs section for floods.

*Gaps and Deficiencies*

Please see the gaps and deficiencies section for water supply contamination.  
Please see the gaps and deficiencies section for floods.

*Recommendations*

- Create codes for reducing or eliminating the development in areas with karst topography.
- Please see the recommendations section for water supply contamination.

**F. Drought**

Drought is quite different from a dry environment, which is seasonally dry. It is a condition of abnormally dry weather within a geographic region where rain is usually expected. Drought is thought to be one of the most complex, and least understood, of all natural hazards. Unlike earthquakes, hurricanes and tornadoes, drought unfolds at an almost imperceptible pace with beginning and ending times that are difficult to determine, and with effects that often are spread over vast regions. The term drought is applied to a period in which an unusual scarcity of rain causes a serious hydrological imbalance (Water-supply reservoirs empty, wells dry up, and crop damage ensues). Droughts can affect a large area and range in size from a couple of counties to several states.

Dry conditions produce:

- Low stream flows and lake levels, with abundant algae blooms
- Increased fire danger especially in forested areas
- Extensive watering of landscapes and gardens to keep them alive
- Increased water usage and consumption of irrigation

The severity of the drought is gauged by the degree of moisture deficiency, its duration, and the size of the area affected. Droughts can kill crops, grazing land, edible plants and even in severe cases, trees. If the drought is brief, it is known as a dry spell, or partial drought. A partial drought is usually defined as more than 14 days without appreciable precipitation, whereas a drought may last for years.

**Chart D.9 Types of Droughts**

<b>Meteorological</b>	A measure of departure of precipitation from normal. Due to climatic differences what is considered a drought in one location may not be a drought in another
<b>Agricultural</b>	Refers to a situation when the amount of moisture in the soil no longer meets the needs of a particular crop.
<b>Hydrological</b>	Occurs when surface and subsurface water supplies are below normal
<b>Socioeconomic</b>	Refers to the situation that occurs when physical water shortage begins to affect people

Source: National Drought Mitigation Center

*History*

The U.S. Secretary of Agriculture has included Washington County as a contiguous county in two disaster area declarations due to drought conditions.

**Chart D.10 Agricultural Disaster Declarations**

Date	Primary Disaster Area	Contiguous Counties	Disaster Description
10/12/2004	29 Minnesota Counties	18 Minnesota Counties	Frost Conditions (August 20, 2004)
09/25/2009	31 Wisconsin Counties	16 Wisconsin Counties 4 Michigan Counties 8 Minnesota Counties	Drought Conditions (March 01, 2009)
04/11/2022	12 Minnesota Counties	42 Minnesota Counties 4 Iowa Counties	Drought Conditions
05/09/2023	7 Minnesota Counties	11 Minnesota Counties 1 Wisconsin County	Drought Conditions

Source: U.S. Department of Agriculture

*Risk Assessment*

Because drought is such a slow moving, insidious disaster, the public will not be aware of it until it is happening. Public awareness would take place after the fact, with messages crafted to deal with the event that is already here. Normal emergency communications channels would most likely not be used unless there was a water emergency.

Overall Vulnerability of Drought	
Frequency	Rarely
Intensity	Moderate to high
Location	Countywide
Extent	Damage to property
Duration	Several weeks to months
Seasonal Pattern	Mid to late summer
Speed of Onset	Gradual
Warning Time	Minimal
Probability of Future Occurrences	Very low

*Effects on People and Housing*

- Due to its slow onset, drought is not viewed as a primary risk for life. Water supply levels may be affected depending on the severity.
- Droughts do not pose any direct threats to housing, though landscaping may experience dry conditions due to the lack of precipitation, and possible constrictions of water usage.

*Effects on Commercial and Industrial Structures*

- Prices for food, energy, and other products may increase as supplies are reduced.
- In some cases, local shortages of certain goods result in importing these goods from outside the stricken region.
- Reduced water supply impairs the navigability of rivers, potentially resulting in increased transportation costs due to the need to rely on rail or truck for alternate transportation.

*Effects on Critical Infrastructure*

- Extensive, prolonged drought may pose risk to municipal water supplies, due to the depletion of aquifer surface water.
- Low water supplies and water pressure may be an issue for fire response in drought conditions.

*Relationship with Other Hazards – Cascading Effects*

- Fire - the incidence of fires increases substantially during extended droughts, which in turn places both humans and wildlife populations at higher levels of risk.
- Fire - fighting fires may be difficult also due to low water levels.
- Wildfire - drought stressing woods, brush land and non-cultivated fields significantly increases the risks of wildfire.
- Lightning - Lightning during the dry conditions may create a spark, causing a fire.

*Plans and Programs Currently in Place*

- The Metropolitan Council of the Twin Cities Area requires each community that operates a municipal water system to have a water conservation program (MN Statute 473.175).
- Water conservation programs used by the suppliers include water conservation pricing, metering, public education, and lead detection and repair. The Met Council works with cities to implement conservation programs with industries and residents.

*Gaps and Deficiencies*

- Few communities have established water conservation programs/ordinances.

*Recommendations*

- Work with state and local water planners on conservation efforts in dry periods.
- Publicize information on drought-resistant landscaping and plantings for residential areas.
- Work with watershed planners on water issues.
- Expand mutual aid agreements to include water haulers during prolonged drought conditions.
- Keep the public well informed during a drought, about the current status of water supplies, whether conditions are approaching "trigger points" that will lead to requests for voluntary use restrictions, and how victims of drought can access assistance.
- Work with industries that are heavy water users so that impact on the business is lessened.

**G. Thunderstorms, Lightning, Hail, & Windstorms/Straight Line Winds**

*Previously profiled individually, these hazards have been combined due to their similarities and efforts to better align with the State of Minnesota Hazard Mitigation Plan.*

Thunderstorms are the most common summer storm in Washington County, occurring primarily during the months of May through August with the most severe storms most likely to occur from mid-May through mid-July. Thunderstorms are usually localized, produced by cumulonimbus clouds, always accompanied by lightning, and often having strong wind gusts, heavy rain and sometimes hail or tornadoes.

Windstorms can and do occur in all months of the year; however, the most severe windstorms usually occur during severe thunderstorms in the warm months. These include tornadoes and downburst or straight line winds. Winds of greater than 60 mph are also associated with intense winter, spring and fall low-pressure systems. These can also inflict damage to buildings and in some cases overturn high profile vehicles.

A downburst is a severe localized downdraft from a thunderstorm or a rain shower. This outflow of cool or colder air can create damaging winds at or near the surface. Winds up to 130 mph have been reported in the strongest thunderstorms. Downburst winds can cause as much damage as a small tornado and are frequently confused with tornadoes because of the extensive damage they cause. As these downburst winds spread out they are often referred to as straight-line winds. They can cause major structural and tree damage over a relatively large area.

**Chart D.11 Effects of Wind Speed**

Wind Speed	Effects
22 – 27 knots	Large branches in motion, whistling in telephone wires
28 – 33 knots	Whole trees in motion
34 – 46 knots	Twigs break off of trees, wind impedes walking
47 – 62 knots	Damage to chimneys and TV antennas, pushes over shallow rooted trees
63 – 96 knots	Peels surface off roofs, windows broken, trailer houses overturned
96+ knots	Roofs torn off houses, weak buildings and trailer houses destroyed; large trees uprooted

**Source:** Beaufort Wind Force Scale

While windstorms and tornadoes are a significant hazard associated with severe thunderstorms, lightning is probably the most frequent hazard associated with thunderstorms and the hazard that causes the most loss of life. Lightning occurs to balance the difference between positive and negative discharges within a cloud, between two clouds and between the cloud and the ground. For example, a negative charge at the base of the cloud is attracted to a positive charge on the ground. When the difference between the two charges becomes great enough a lightning bolt strikes. The charge is usually strongest on tall buildings, trees and other objects protruding from the surface and consequently such objects are more likely to be struck than lower objects.

While cloud-to-ground lightning poses the greatest threat to people and objects on the ground it actually accounts for only 20 percent of all lightning strikes. The remaining lightning occurs within the cloud, from cloud to cloud or from the ground to the cloud with in-cloud lightning being the most common.



Hail is ice and a product of a severe thunderstorm. It is formed when strong updrafts within the cumulonimbus cloud carry water droplets above the freezing level or when ice pellets in the cloud collide with water droplets. The water droplets freeze or attach themselves to the ice pellets and begin to freeze as strong updraft winds toss the pellets and droplets back up into colder regions of the cloud. Both gravity and downdrafts in the cloud pull the pellets down, where they encounter more droplets that attach and freeze as the pellets are tossed once again to higher levels in the cloud. This process continues until the hailstones become too heavy to be supported by the updrafts and fall to the ground as hail.



Most hail in Minnesota ranges in size from pea-size to golf-ball size. Larger hailstones have been reported but occur much less frequently. While, almost all areas of southern Minnesota can expect some hail during the summer months most hail is not large enough to cause significant crop or property damage.

**Chart D.12 Hail Size Estimates**

Estimated Size	Average Diameter	Estimated Size	Average Diameter
Pea	¼ inch	Golf Ball	1 ¾ inch
Marble/mothball	½ inch	Tennis Ball	2 ½ inch
Dime/Penny	¾ inch	Baseball	2 ¾ inch
Nickel	7/8 inch	Tea Cup	3 inch
Quarter	1 inch	Grapefruit	4 inch
Ping-Pong	1 ½ inch	Softball	4 ½ inch

Source: National Weather Service

### History

Thunderstorms, lightning, hail, and windstorms occur frequently in Washington County and in Minnesota in general. 115 thunderstorm and high wind events were reported in sixty years (1950-2010). Accompanying these storms, lightning kills and injures more people than any other summer weather threat. Sixty-two Minnesotans have been killed by lightning between 1959 and 2012, including two in Washington County.

- In 2009, a 14-year-old Stillwater resident was struck and killed by lightning as she played under a tree during a lightning storm.

Lightning can also have a significant impact upon residential and commercial buildings. In 2004, 90 Minnesotans lost building and belongings because of lightning fires; sixty-two lightning fires took place in homes and business structures, resulting in damages of \$2.7 million. In Washington County, ten lightning events were reported between 1950 and 2010.

- On July 11, 2004, a lightning strike was found responsible for a major fire at the Northern Tier Oil Refinery (St. Paul Park). An oil tank was struck, igniting the fire which burned as much as 630,000 gallons of slurry oil. The fire resulted in the evacuation of nearby neighborhoods. No injuries were reported.

Ninety-two hail events have been recorded in the history of Washington County (1950-2010), with hail diameters ranging from 0.75 to 2.00 inches in diameter. The most devastating hail occurred on May 15, 1998. The wind driven hail damage was approximately \$10 million in property damage.

**Chart D.13 Significant Thunderstorms/Thunderstorm Winds (2010-2022)**

Location	Date	Time	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
COTTAGE GROVE	6/25/2010	1825	52	0	0	20000	0
WITHROW	7/17/2010	1948	52	0	0	0	0
STILLWATER	7/17/2010	1952	52	0	0	0	0
COPAS	7/17/2010	1952	56	0	0	50000	0
SCANDIA	7/17/2010	1955	52	0	0	0	0
FOREST LAKE	8/8/2010	28	52	0	0	0	0
BAYPORT	8/8/2010	1805	52	0	0	0	0
AFTON	8/8/2010	1808	54	0	0	0	0
FOREST LAKE	7/1/2011	1755	52	0	0	5000	0
FOREST LAKE	7/10/2011	2154	61	0	0	250000	0
COTTAGE GROVE	8/1/2011	1255	50	0	0	0	0
MAHTOMEDI	6/10/2012	2013	56	0	0	0	0
STILLWATER	6/10/2012	2027	56	0	0	5000	0
COTTAGE GROVE	6/19/2012	330	56	0	0	25000	0
NEWPORT	8/3/2012	2235	50	0	0	0	0
NEWPORT	8/3/2012	2240	56	0	0	0	0
BAYPORT	8/3/2012	2245	56	0	0	0	0
MAHTOMEDI	11/10/2012	2320	52	0	0	0	0
GRANT	11/10/2012	2327	52	0	0	5000	0
COTTAGE GROVE	5/19/2013	1610	50	0	0	0	0
FOREST LAKE	6/21/2013	250	52	0	0	0	0
PINE SPGS	6/21/2013	1910	60	0	0	50000	0
PINE SPGS	6/21/2013	1915	56	0	0	0	0
STILLWATER	6/21/2013	1925	52	0	0	0	0
MAHTOMEDI	5/3/2015	1635	52	0	0	0	0
HUGO	7/18/2015	15	56	0	0	0	0
NEWPORT	7/5/2016	1712	56	0	0	0	0
WOODBURY	7/5/2016	1715	56	0	0	0	0
OAKDALE	7/5/2016	1720	52	0	0	2000	0
COTTAGE GROVE	7/23/2016	1011	56	0	0	0	0
FOREST LAKE	7/12/2017	134	65	0	0	0	0
SCANDIA	7/12/2017	140	56	0	0	0	0
MARINE ON ST CRC	7/12/2017	146	65	0	0	0	0
ST PAUL PARK	7/26/2017	331	52	0	0	0	0
MAHTOMEDI	5/24/2018	1900	56	0	0	0	0
WOODBURY	8/27/2018	1650	50	0	0	0	0
PINE SPGS	8/27/2018	1656	56	0	0	0	0
WOODBURY	10/3/2018	1648	56	0	0	0	0
DELLWOOD	7/15/2019	1750	52	0	0	0	0
WOODBURY	7/20/2019	849	56	0	0	0	0
MAHTOMEDI	8/24/2021	557	56	0	0	3000	0
<b>TOTAL:</b>				0	0	415,000	0

**Mag:** Magnitude

**Dth:** Deaths

**Inj:** Injuries

**PrD:** Property Damage

**CrD:** Crop Damage

Source: National Centers for Environmental Information Storm Events Database

**Chart D.14 Significant Lightning Strikes (2010-2022)**

Location	Date	Time	Deaths	Injuries	Property Damage	Crop Damage
OAKDALE	5/5/2012	1430	0	0	25,000	0
WITHROW	6/10/2012	2045	0	0	350,000	0
WOODBURY	5/16/2017	330	0	0	450,000	0
LAKE ELMO	8/5/2021	2150	0	1	0	0
<b>TOTAL</b>			0	1	825,000	0

**Mag:** Magnitude      **Dth:** Deaths      **Inj:** Injuries  
**PrD:** Property Damage      **CrD:** Crop Damage  
 Source: National Climactic Data Center, U.S. Department of Commerce

**Chart D.15 Significant Hailstorms (2010 - 2022)**

Location	Date	Time	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
MAHTOMEDI	9/21/2010	50	1.5 in	0	0	0	0
FOREST LAKE	5/10/2011	1935	2 in	0	0	0	0
WOODBURY	5/26/2012	1440	1.75 in	0	0	0	0
WOODBURY	5/26/2012	1447	1.75 in	0	0	100,000	0
OAK PARK HEIGHTS	6/19/2012	530	1.5 in	0	0	0	0
HUGO	7/7/2013	1822	1.75 in	0	0	0	0
OAK PARK HEIGHTS	5/3/2015	1645	1.75 in	0	0	0	0
NEWPORT	5/16/2017	1525	1.75 in	0	0	250,000	0
FOREST LAKE	8/5/2019	1240	2 in	0	0	0	0
FOREST LAKE	8/5/2019	1241	1.5 in	0	0	0	0
FOREST LAKE	7/18/2020	1723	2 in	0	0	0	0
SCANDIA	7/18/2020	1735	1.5 in	0	0	0	0
SCANDIA	7/18/2020	1735	2 in	0	0	0	0
OAKDALE	5/9/2022	1635	1.5 in	0	0	0	0
OAKDALE	5/19/2022	1455	1.75 in	0	0	0	0
OAKDALE	5/19/2022	1456	1.5 in	0	0	0	0
OAKDALE	5/19/2022	1456	2 in	0	0	0	0
LANDFALL	5/19/2022	1457	1.5 in	0	0	0	0
PINE SPGS	5/19/2022	1459	1.5 in	0	0	0	0
STILLWATER	5/19/2022	1501	1.5 in	0	0	0	0
LAKE ELMO	5/19/2022	1502	1.75 in	0	0	0	0
OAKDALE	5/19/2022	1504	1.75 in	0	0	0	0
(21D)LAKE ELMO AIRPORT	5/19/2022	1505	1.75 in	0	0	0	0
WOODBURY	5/19/2022	1505	1.5 in	0	0	0	0
LAKE ELMO	5/19/2022	1505	1.5 in	0	0	0	0
WOODBURY	5/19/2022	1505	1.75 in	0	0	0	0
(21D)LAKE ELMO AIRPORT	5/19/2022	1505	1.75 in	0	0	0	0
LANDFALL	5/19/2022	1505	1.5 in	0	0	0	0
LAKE ELMO	5/19/2022	1505	1.5 in	0	0	0	0
BAYPORT	5/19/2022	1508	1.75 in	0	0	0	0
BAYPORT	5/19/2022	1508	2 in	0	0	0	0
OAKDALE	9/20/2022	1918	1.75 in	0	0	0	0
OAKDALE	9/20/2022	1918	2 in	0	0	0	0
OAKDALE	9/20/2022	1925	2 in	0	0	0	0
WOODBURY	9/20/2022	1925	1.5 in	0	0	0	0
LAKELAND SHRS	9/20/2022	1925	1.5 in	0	0	0	0
WOODBURY	9/20/2022	1926	1.75 in	0	0	0	0
<b>Total</b>				0	0	350,000	0

**Mag:** Magnitude      **Dth:** Deaths      **Inj:** Injuries  
**PrD:** Property Damage      **CrD:** Crop Damage  
 Source: National Climactic Data Center, U.S. Department of Commerce

*Risk Assessment*

No community is without risk; any place in the county is considered to have an equal chance of experiencing severe storms, with accompanying lightning, hail, and wind. Violent storms of all types can cause property damage, loss of life, personal injury, and disrupt transportation, communications, and emergency services, threaten public health and safety, and be significant threats to essential public infrastructure and services such as power, water supply systems and sanitary sewer.

Overall Vulnerability for Thunderstorms, Lightning, Hail & Windstorms	
Frequency	Moderate
Intensity	High
Location	Countywide
Extent	Damage to property, infrastructure, and a risk to life
Duration	Quick event/long clean-up
Seasonal Pattern	Thunderstorms: Spring and Summer Windstorms: Year-round Hail: Spring and Summer Lightning: Spring and Summer
Speed of Onset	Rapid
Warning Time	A few minutes to hours: dependent on National Weather Service
Probability of Future Occurrences	High

*Effects on People and Housing*

- Hail - like straight line winds, has the ability to cause serious property damage to homes and other structures.
- Property damage is abundant with any severe summer storm. In past events, lightning was attributed to property damage totaling 20 thousand dollars, five injuries, and one death.
- Lightning is a major concern for golf courses, park and recreation programs, watercrafts, and those fishing in the summer months. The employees and recreational users associated with these activities are prevalent in Washington County and are at a higher risk to lightning due to increased exposure outdoors.
- Thunderstorms - Larger impacts on people would be in the larger municipalities because of higher population densities. Because summer storms are not confined to any particular area of Washington County, assessing risk and damages is more difficult. Property damage is abundant with any severe summer storm.
- Thunderstorms - Mobile or manufactured homes are at the highest risk to receive damage from tornadoes and windstorms. These homes as well as site-built structures are not structured to withstand the high speeds.

*Effects on Commercial and Industrial Structures*

- Hail can cause property damage to commercial and industrial structures. This may create financial hardship among smaller businesses. Hail has the ability to flatten crops which creates hardships for farmers. Other businesses such as insurance companies and car dealerships are also significantly impacted during a severe hailstorm.
- Lightning - Lightning strikes can cause physical damage to structures and electrical systems.
- Thunderstorms - Impacts on businesses and other commercial structures would have a significant impact on the community.
- Straight line winds have many of the same damaging effects as that of tornadoes.
- Costs to rebuild can be high.

*Effects on Critical Infrastructure*

- Power lines and other utilities may be knocked down by a hailstorm. Significant damage may be caused.
- Lightning – Private and public infrastructure could be directly impacted throughout the entire county by summer storms. Electricity is very important to the continuity of community operations. It operates businesses, homes and other industrial buildings throughout the county, along with critical facilities including hospitals, nursing homes, and public safety facilities.
- Private and other public infrastructure could be directly impacted throughout the entire county by tornadoes or any other summer storm. Specifically, power lines could be knocked down, resulting in loss of electricity for entire areas of the county. Electricity is very important to the continuity of community operations. It operates businesses, homes and other industrial buildings throughout the county, along with critical facilities including hospitals, nursing homes, and public safety facilities.
- Other major infrastructure facilities such as the waste treatment plant, water plant, roads and bridges could also be damaged by summer storms.
- Tornadoes and windstorms can often scatter knocked down trees and other debris over main roads, limiting travel of emergency vehicles.

*Relationship with Other Hazards – Cascading Effects*

- Power Outages - Power outages that result from downed utility lines create safety concerns for residents where heat is not available for an extended period of time and may cause serious internal damage to the home because of burst water pipes.
- Tornadoes - Severe thunderstorms, hail, and straight-line winds are often a precursor to tornado activity.
- Flooding - Heavy thunderstorms in a short period of time can cause flooding.

*Plans and Programs Currently in Place*

- Skywarn - this program, sponsored by the National Weather Service (NWS), enlists the help of trained volunteers to spot severe storm conditions and report this information to the NWS.
- HSEM publishes seasonal information on Severe Weather Awareness Week, which has a day dedicated to thunderstorms, hail, straight-line winds and lightning. Washington County

Emergency Management also links to this information on their website and on social media sites.

- Many mobile or manufactured home communities have community storm shelters and provide additional information on sheltering alternatives to their residents.
- Many cities have emergency sirens to warn residents in the event of severe summer weather. See **Figure B.30** “Emergency Outdoor Warning Sirens” for the locations of the sirens.
- The state, National Weather Services, and many television and radio stations provide Emergency Alert System messages to communities.

#### *Gaps and Deficiencies*

- No programs currently exist that directly attempt to mitigate results from hail damage.
- Public Awareness messages are not in alternative languages.
- Public Awareness rarely focuses on dangers associated with lightning events.
- Not all critical facilities have emergency generators for use in a power outage.
- Not all businesses or organizations have Continuity of Operations Plans.
- Most of the power lines in the county are above ground and subject to damage from wind and falling tree limbs.
- There are few community requirements that discourage the planting of large trees near power lines.

#### *Recommendations*

- Develop a system and location for the collection of data related to hail property losses.
- Encourage individual public awareness and action through hazard mitigation materials.
- Continuity of Operations Plans at the local levels
- Public education on spotting storms and appropriate actions to take when they are spotted.
- Include response actions to lightning strikes in Emergency Operations Plan for businesses.
- Consider obtaining specialized lightning detection/warning equipment for mitigation notification, display, and analysis.
- Familiarize critical facility managers with the National Lightning Safety Institute’s data/signal protection devices.
- Obtain and utilize National Oceanic Atmospheric Administration (NOAA) Weather Radios.
- Encourage communities to bury power lines and other above-ground utilities.
- Discourage the planting of large trees near power lines.
- Integrate manufactured home “tie down” and “anchoring” standards in all community ordinances.

## **H. Tornadoes**

Tornadoes are the most violent of all storms that occur in Minnesota. A tornado is a rapidly rotating column of air spawned by a cumulonimbus cloud. When it drops to the ground it can create significant damage and loss of life. Tornadoes always occur in association with thunderstorms. While somewhat more common in southern Minnesota, they have occurred in all counties in the state.

Tornadoes are most likely to occur during warm humid spells during the months of May, June, July and August but have occurred as early as March and as late as November in Minnesota. On occasion, tornadoes called cold air funnels occur after the passage of a cold front when the air is much less humid, but the air aloft is very cold creating enough instability to make funnel clouds. Most tornadoes occur during the warm part of the day – late afternoon or early evening; over 80 percent of tornadoes occur between noon and midnight.

The tornado's path typically ranges from 250 feet to a quarter of a mile in width. The speed of a tornado varies but commonly is between 20 and 30 mph. Larger tornadoes and faster tornadoes have occurred in Minnesota. Most tornadoes stay on the ground for less than five minutes. Tornadoes frequently move from the southwest to the northeast but this, too, is variable and consequently cannot be counted on in all instances.



### The Enhanced Fujita Scale

In February 2007, the National Weather Service implemented the Enhanced-Fujita Scale to measure tornado-damage severity, taking the place of the basic Fujita Scale, developed in 1971. The Enhanced Fujita Scale improves upon the original F-scale by incorporating more damage indicators and degrees of damage to assign a F0-F5 tornado rating. The table below shows the Enhanced Fujita Scale values and the damage indicators used to assign the value.

**Chart D.16 Enhanced Fujita Scale Values and Damage Indicators**

EF-Scale	Winds	Intensity Phrase	Type of Damage
EF-0	65-85 mph	Gale Tornado	Minor damage: some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF-1	86-110 mph	Moderate Tornado	Moderate damage; roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF-2	111-135 mph	Significant Tornado	Considerable damage; roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF-3	136-165	Severe Tornado	Severe damage: entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF-4	166-200 mph	Devastating Tornado	Devastating damage: well-constructed houses and whole frame houses completely leveled; cars thrown, and small missiles generated.
EF-5	Over 200	Incredible Tornado	Extreme damage: strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (300 ft); steel reinforced concrete structure badly damaged; high-rise buildings have significant structural deformation.

Source: National Weather Service, Storm Prediction Center

### *History*

- On November 10, 2012, an EF0 tornado was responsible for storm damage in Mahtomedi. No fatalities or injuries were associated with the tornado.
- An EF-1 tornado, as classified by the National Weather Service, occurred on July 12, 2017 within the cities of Forest Lake and Hugo. The tornado had an estimated peak wind speed of 90 mph with a path length of 8.8 miles. There were no fatalities or injuries associated with the tornado. However, it did cause damage to a few buildings and trees.
- On July 14, 1893, a “cyclone” crossed over the shores of Stillwater’s Lily Lake and passed through town before doing major damage to the Atwood Mill. Two barns and numerous sheds were reported as being destroyed. Two people were killed as result of this tornado.



- In April 1929, a tornado touched down south of Forest Lake. Newspaper accounts reported hailstones “the size of hen’s eggs” fell, breaking windows throughout town, including the schoolhouse. Several farmhouses and outbuildings were destroyed; hundreds of farm animals and one person were killed.
- A tornado on Jun 13, 1930, struck the community of St. Paul Park, damaging homes and uprooting trees throughout the city. Injuries resulting from the tornado were minor.
- Around 3pm on May 24, 1958, several funnel clouds were seen in the sky, with the first tornado touchdown near White Bear Lake and moved into the Dellwood area, destroying one farmstead and tearing up power lines, trees, farm buildings and other structures in its path. As it moved southwest, into Lake Elmo it took out the well-known Cloverdale Farm barn, built in 1924 and one of the largest farm buildings in the state at the time.

Source: Washington County Historical Society, [www.wchsmn.org](http://www.wchsmn.org)

Twenty tornadoes have touched down in Washington County since 1950. Of those, the most significant was the May 25, 2008, EF-3 tornado in Hugo, which resulted in one death, 17 injuries, and over \$25 million in damages.

The following chart provides information on 11 of the most significant tornadoes, which resulted in injuries, death, and/or property damage.

**Chart D.17 Significant Tornado Events (2010 - 2022)**

Location	Date	Time	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
FOREST LAKE	7/17/2010	1944	EF0	0	0	50,000	0
FOREST LAKE	5/22/2011	1416	EF0	0	0	50,000	0
MAHTOMEDI	11/10/2012	2321	EF0	0	0	200,000	0
POINT DOUGLAS	7/7/2014	1743	EF0	0	0	1,000	0
FOREST LAKE	7/12/2017	133	EF1	0	0	0	0
MARINE ON ST CROIX	7/12/2017	141	EF0	0	0	0	0
SCANDIA	7/28/2019	1528	EF1	0	0	1,500,000	10,000
WOODBURY	7/18/2020	2042	EF0	0	0	0	0
COTTAGE GROVE	7/18/2020	2054	EF1	0	0	100,000	0
<b>TOTAL</b>				0	0	1,901,000	10,000

**Mag:** Magnitude      **Dth:** Deaths      **Inj:** Injuries

**PrD:** Property Damage      **CrD:** Crop Damage

Source: National Climactic Data Center, U.S. Department of Commerce

*Risk Assessment*

Tornadoes are often viewed as the most damaging summer storm. No community in Minnesota is without risk; the county is considered to have an equal chance of experiencing a tornado or any other of these severe weather elements at any location.

The path of Minnesota tornadoes is typically quite narrow, most less than a quarter of a mile and not very long. Consequently, the total area affected by a tornado is not large. However, should a tornado of moderate strength strike a city, damage could be extensive and risk to human life and property high. The greatest risk for most people and property is usually confined to urban areas due to the higher density of people and buildings there. However, there are also crops that could receive considerable damage.

Violent storms of all types can cause property damage, loss of life and personal injury, disrupt transportation, communication and emergency services, threaten public health and safety, and be significant threats to essential public infrastructure and services such as power, water supply systems and sanitary systems.

Overall Vulnerability of Tornadoes	
Frequency	Moderate
Intensity	High
Location	Countywide
Extent	Damage to property, infrastructure and a risk to life
Duration	Quick event/long clean-up
Seasonal Pattern	Spring and Summer
Speed of Onset	Rapid
Warning Time	A few minutes to hours: dependent on National Weather Service
Probability of Future Occurrences	High

*Effects on People and Housing*

- Because tornadoes and other summer storms are not confined to any particular area of Washington County, assessing risk and damages is more difficult.
- Property damage is abundant with any severe summer storm.
- Many people are injured or killed by flying debris from homes and other structures.
- Mobile or manufactured homes are at the highest risk to receive damage from tornadoes and windstorms. These homes as well as site-built structures are not structured to withstand the high speeds.
- Larger communities may see increased damage and injury due to higher population density.

*Effects on Commercial and Industrial Structures*

- Impacts on businesses and other commercial structures would have a significant impact on the community.
- Tornadoes have the ability to completely destroy many buildings within a short period of time while leaving buildings across the street largely untouched.
- Costs to rebuild can be high.

*Effects on Critical Infrastructure*

- Electric and other public infrastructure could be directly impacted throughout the entire county by tornadoes or any other summer storm.
- Specifically, power lines could be knocked down, resulting in loss of electricity for entire areas of the county.
- Electricity is very important to the community. It operates businesses, homes and other industrial buildings throughout the county, along with critical facilities including hospitals, nursing homes, and public safety facilities.

- Other major infrastructure facilities such as the waste treatment plan, water plant, roads and bridges could also be damaged by summer storms. Tornadoes and windstorms can often scatter knocked down trees and other debris over main roads, limiting travel of emergency vehicles.

#### *Relationship with Other Hazards – Cascading Effects*

- Power Outage - Power outages that result from downed utility lines create safety concerns for residents where heat is not available for an extended period of time and may cause serious internal damage to the home because of burst water pipes.

#### *Plans and Programs Currently in Place*

- Skywarn - this program, sponsored by the National Weather Service (NWS), enlists the help of trained volunteers to spot severe storm conditions and report this information to the NWS.
- HSEM publishes seasonal information on Severe Weather Awareness Week, includes information on tornadoes; Washington County Emergency Management links to this information on their website and shares the information on social media.
- HSEM and the National Weather Service also sponsor statewide tornado drills during this week; all Washington County government facilities and communities participate in these drills
- Public Awareness messages are readily available in languages other than English.
- Many cities/townships have emergency sirens to warn residents in the event of severe summer weather. **See Figure B.30** “Emergency Outdoor Warning Sirens” for the locations of the sirens.
- The state, National Weather Services, and many television and radio stations provide Emergency Alert System messages to communities.
- The City of Hugo has added a regulation requiring builders to offer a home layout with a safe room as an option for those looking to build within subdivisions that meet a certain lot requirement.

#### *Gaps and Deficiencies*

- Above ground utilities are subject to damage from wind and falling tree limbs.
- Few community requirements discourage the planting of large trees near power lines.
- Not all critical facilities have emergency generators for use in a power outage.
- Not all businesses or organizations have Continuity of Operations Plans.

#### *Recommendations*

- Increase the number and quality of available shelters for businesses, schools, and homes.
- Provide further public education identifying severe storms and tornadoes and taking appropriate actions.
- Place power lines underground to reduce the occurrence of downed lines.
- Discourage the planting of large trees near power lines.

- Encourage communities/businesses/schools to create Continuity of Operations Plans (COOP).
- Place National Oceanic and Atmospheric Administration (NOAA) Weather Alert Radios in schools, day care centers, shopping malls, sports stadiums, and other buildings/facilities where people congregate.

### I. Winter Storms - Blizzards, Ice and Sleet

Blizzards are defined as an occurrence when the following conditions last for three hours or longer:

- a. Wind speeds of 35 miles per hour or more
- b. Considerable falling and/or blowing snow (reducing visibility to less than ¼ mile)
- c. Generally, temperatures of 20 degrees Fahrenheit (F) or lower

A severe blizzard has:

- Wind speeds of 45 miles per hour or more
- A great density of falling and/or blowing snow (reducing visibility to near zero)
- Temperatures of 10 degrees Fahrenheit (F) or lower

Blizzards are the most dramatic and destructive of all winter storms. They are characterized by strong winds bearing large amounts of snow. They have the ability to completely immobilize large areas and to isolate and kill humans (and animals) in their path. According to the National Weather Service (NWS), although there is no fixed temperature requirement for blizzard conditions, the life-threatening nature of low temperatures in combination with blowing snow and poor visibility increases dramatically when the temperature falls below 20 degrees Fahrenheit (F). Blizzards can occur from the first of October to the end of April, but most frequently occur from early November to the end of March.



#### *History*

According to the National Climactic Data Center, Washington County has not experienced a blizzard. However, the county has seen over 30 significant winter storms and heavy snows have had similar effects.

#### *Risk Assessment*

Blizzards are among the most common of Minnesota’s natural hazards and create significant hazardous life, travel, and employment conditions. Often accompanied by very cold temperatures, blizzards possess the ability to immobilize large segments of the county’s population and economy for a significant period of time. Blizzards affect snow removal efforts and utility resources. They can also drain state and local government budgets.

Ice and sleet also create challenges for residents and are often found in conjunction with blizzards and cold temperatures. Emergency response time may be lengthened due to difficult travel conditions during a blizzard.

Overall Vulnerability for Snow and Ice	
Frequency	Moderate
Intensity	Moderate
Location	Countywide
Extent	Damage to property, infrastructure and risk to life
Duration	A few days
Seasonal Pattern	Winter
Speed of Onset	Rapid
Warning Time	12 - 36 hours
Probability of Future Occurrences	High

*Effects on People and Housing*

- Blizzards, ice, and sleet has the ability to immobilize residents whether in their homes, workplace, vehicles, or outdoors.
- Uninformed drivers may choose to leave their stranded vehicle in a blizzard, which puts them at risk for hypothermia and death.
- Because of low visibility, snowplows also create a risk for drivers who are unable to see them.
- Drivers and homeowners without emergency plans and kits are vulnerable to the life-threatening effects of blizzards.
- The elderly and isolated individuals are also at risk.
- Vulnerabilities exist in the event of power outages, cold weather, and in ability to travel, communicate or obtain goods.

*Effects on Commercial and Industrial Structures*

- In the event of a blizzard, the inability for travel may shut down commercial and industrial buildings due to a lack of employee’s ability to travel to work.
- Impacts on businesses and other commercial structures would have a significant impact on the community.

*Effects on Critical Infrastructure*

- Because blizzards often occur with a wide variety of other weather-related hazards, many effects may occur because of a combination of hazards.
- Pipes may freeze and burst due to the cold temperatures.
- Large amounts of snow can collapse buildings and knock down trees and power lines.
- Ice associated with blizzards can bring down trees, electrical wires, and telephone poles.
- Heavy snow can immobilize a community, stranding commuters, stopping the flow of supplies and disrupting emergency and medical services.

*Relationship with Other Hazards – Cascading Effects*

- As previously mentioned, blizzards often occur with cold temperatures, ice, and sleet.
- Along with blizzards, strong winds may occur to reduce the perceived temperature even further due to a wind chill factor. For more information see “B. Extreme Temperatures” on page D-4.
- Floods – Blizzards and heavy snowstorms that occur in the spring months may result in flooding problems when the large snowfall melts and flows into streams and rivers.

*Plans and Programs Currently in Place*

- HSEM publishes seasonal information on Winter Hazard Awareness Week. Washington County Emergency Management links to this information on their website.

*Recommendations*

- Encourage emergency managers and responders to assess budgets and resources in preparation for continuing severe winter weather and cold-air outbreaks.
- Encourage the inclusion of “living snow fences” (farmers leave cornstalks up during the winter and others plant trees to minimize snow drifts) and community shelter belts in communities’ comprehensive plans.

**J. Wildfires**

*The Minnesota Department of Natural Resources prepared a “Wildfire Mitigation Plan” for Washington County in 2004 and was included in the 2004 mitigation plan. What follows is a Washington County mitigation staff update to this plan.*

Wildfire is any uncontrolled fire in the forest, swamps or grasslands started either by human-caused activities or by natural sources such as lightning.

*History of Wildfire in Minnesota*

Today, Minnesota averages about 1500 wildfires each year burning about 40,000 acres.

The Landscape of Washington County according to Marshner’s Original Vegetation Map created from original public land survey notes from the late 1800’s, Washington County was vegetated primarily with Oak Savanna (Oak Openings & Barrens – 49 percent). It also had a significant amount of Aspen-Oak Forest and native prairie. These are all fire dependent species that thrive and renew themselves in the presence of periodic fires.



Since the original vegetation of Washington County was primarily fire dependent, it follows that the existing landscape is predisposed to fire. Without periodic small, controlled fires, vegetative fuels will build up and result in large wildfires in the undeveloped portions of the county. An

example of this is the Carlos Edge Fire in October 2000 that burned 8,500 acres in Anoka and Washington Counties.

According to DNR Forestry data, the greatest cause of wildfires in Washington County is from debris burning (43 percent). Of fires responded to by DNR Forestry, the majority were in the northern one third of the county.

**Chart D.18 Causes of Wildfire in Washington County**

Debris Burning – 42.9%	Children – 6.3%	Railroad – 2.5%
Misc. – 26.2%	Arson – 5.7%	Lightning – 1.3%
Equipment – 10.1%	Smoking – 3.8%	Campfire – 1.3%

*Recent Fire History in Washington County*

According to the “2016 Fire in Minnesota” report from the State Fire Marshal, Washington County had a total of 395 fire runs and 15,525 runs classified as “other.” The total county dollar loss reported for that year is \$10,0144,724. The average dollar loss per fire was calculated at \$35,471. There were zero deaths reported that year. Although Washington County had the fifth highest total county dollar loss (behind Hennepin, Dakota, Ramsey, and St. Louis), it was the only one in the top five to not have a death identified as well.

Between 2000 and 2010, Washington County saw an average of 4 wildfires per year, averaging 3 acres in size, resulting in a total financial cost of \$23,201 per fire. In April 2009, arson was found to be the cause of a fire in the Carlos Avery Wildlife Management Area that burned nearly 1,500 acres.

*Risk Assessment*

Overall Vulnerability for Wildfires	
Frequency	Moderate
Intensity	Moderate
Location	Countywide
Extent	Damage to property, infrastructure, and life
Duration	Several hours to a couple of days
Seasonal Pattern	Primarily spring/summer
Speed of Onset	Immediate
Warning Time	Minimal
Probability of Future Occurrences	Medium

*Effects on People and Housing*

- Wildfire can have a devastating effect on people and property. As people move from urban settings to more rural areas, their risk from wildfire loss increases.
- Smoke from wildfires in other states (or Canada) can affect the air quality, which may impact those who are more vulnerable such as those with asthma.

*Relationship with Other Hazards – Cascading Effects*

- Major fires can completely destroy ground cover, which can then cause erosion.
- If heavy rains follow a major fire, flash floods, landslides, and mudflow can occur.

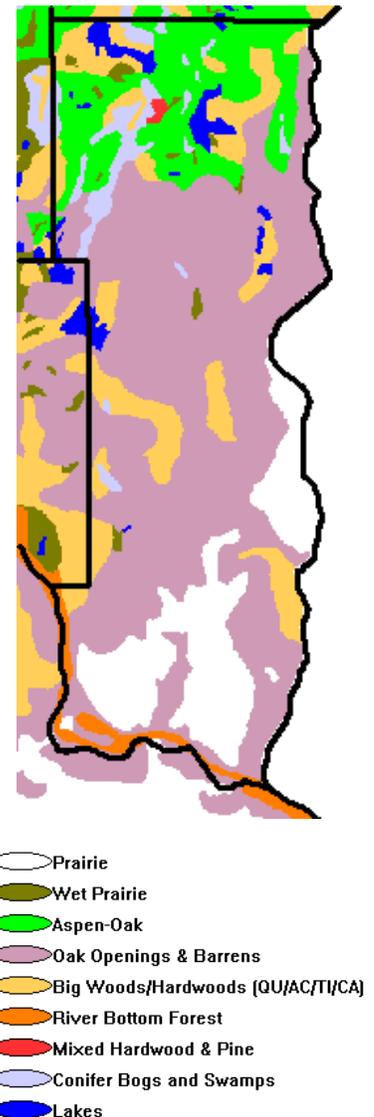
*Plans and Programs in Place*

- The Minnesota Department of Natural Resources has mutual-aid agreements with several fire departments in Washington County:
- National Fire Plan – promotes the effective use of national resources to combat wildfires throughout the United States.
- Minnesota Interagency Fire Center (MIFC) – facilitates an efficient flow of information between agencies and the exchanging of resources to fight wildfires.
- National Fire Danger Rating System – system used to determine daily and forecasted fire danger indices.
- Burning Permits & Restrictions – Burning permits are issued through the statewide DNR Fire Warden System. In Washington County, some of these Fire Wardens are local volunteers, while others are city officials or fire department personnel.
- Prescribed Burns – provide some level of fuels mitigation on a regular basis; reduce fuels buildup, resulting in fires that are less intense and easier to control.

*Gaps and Deficiencies*

- Significant portions of the county have not had any wildfire assessment done.
- Various developments throughout Washington County are built as relatively closed neighborhoods with a single access road and many cul-de-sacs and dead-end roads. This limits the access for emergency services, especially in cases where a wildfire may block a road.
- Very few of the nearly 2000 acres of pine plantations in the county undergo regular maintenance, thinning and pruning. This is causing a significant fuel load near residential areas, putting them at risk to wildfire loss.
- Local fire departments need to develop wildfire suppression strategies for high-risk areas that allow for more efficient fire suppression.

Figure D.2 Marshner’s Original Vegetation Map of Washington County



*Recommendations*

- Existing developments should be looked at for site and construction of emergency egress roads where they currently have only one access road.
- Homeowners should be encouraged to mitigate driveway access where it is not adequate for fire apparatus and other emergency vehicles.
- New developments should be designed so that they can be accessed in at least two directions.
- Contact homeowners through the local fire department and city officials to promote pine thinning and pruning.
- Continue the prescribed burning program currently in place for prairie maintenance.
- Develop a countywide Fire Prevention and Firewise Education Program to reach homeowners through fire department open houses, special events and classrooms.
- Identify areas of fire risk and decide how a fire in those areas will be attacked and how evacuations should be carried out.
- Work with local planning and zoning officials to develop zoning and building ordinances that will mitigate hazardous building materials, landscaping and access concerns in the future.
- Identify wildfire suppression resources.
- Strengthen building regulations, development ordinances and development plans prior to development to create adequate access and egress for more fire-resistant homes and defensible spaces around homes.



**K. Dam and Levee Failure**

Dams and Levees are constructed to manage the flow of water. This provides a service of preventing or reducing floods, thereby saving lives. Dams are also able to provide water for drinking, navigation, and agricultural irrigation. They also provide hydroelectric power and create lakes for fishing and recreation.

Dams and levees are man-made structures that can, if not properly maintained, result in increased flooding due to a failure. Dams can also cause flooding either upstream, or downstream, if improperly operated. Although dams have many benefits, they also create risks. If a dam were to fail, the water stored behind even a small dam can cause property damage and loss of life if people are downstream of the dam.

Washington County has 5 dams and 5 levees:

Dams

- Bald Eagle Lake Dam
- Couwette Group Pond Dam
- Kelly Farms Dam
- Lake Elmo Regional Park Dam
- Schuester Pond Dam

Levees

- Stillwater
- Lake St. Croix Beach
- St. Mary’s Point
- Afton
- Newport

*History*

In 1982, a five-foot high beaver dam, not considered to be an official “dam”, washed out in O’Brien State Park resulting in two injuries and approximately two million dollars in damage.

No dam or levee failures have occurred.



*Risk Assessment*

Overall Vulnerability for Dam and Levee Failure	
Frequency	Rarely
Intensity	High
Location	Countywide; but most affected is the Mississippi River floodplain area
Extent	Damage to property; infrastructure
Duration	Several weeks
Seasonal Pattern	Spring and summer
Speed of Onset	Rapid
Warning Time	Minimal, if any warning
Probability of Future Occurrences	Very low

The economic impact of a dam or levee failure includes the cost of repair of the dam or levee, the flood damage resulting from the failure, and loss of income due to displaced businesses or workers. Dams can cause problems when they fail or are not operated properly.

*Effects on People and Housing*

- A problem at a dam would affect those residents living downstream and upstream in a flood event.
- Dams and levees, which are not properly constructed or maintained, create a false sense of security. People have more confidence building in a floodplain, thereby putting themselves at greater risk.

*Effects on Commercial and Industrial Structures*

- In the event of a flood, commercial and industrial structures located within the floodplain are at risk of flooding. For more information, see “D. Floods” on page D-22 for further effects on structures.

*Effects on Critical Infrastructure*

See “D. Floods” on page D-22.

*Relationship with Other Hazards – Cascading Effects*

- Dam and levee failure directly results in flooding. This does not always result in flooded structures but is often the case due to development in the floodplain.
- The economic impact of a dam or levee failure includes the cost of repair of the dam or levee, the flood damage resulting from the failure, and loss of income due to displaced businesses or workers.

*Plans and Programs Currently in Place*

- Federal Emergency Management Agency (FEMA), National Dam Safety Program: This program is intended to help states bring the necessary resources to bear on inspection, classification, and emergency planning for dam safety.
- U.S. Army Corps of Engineers (USACE): USACE owns, operates, and maintains the Lock and Dams on the Mississippi River that are exempt from state rules and inspections.
- Minnesota Department of Natural Resources (DNR), Division of Waters: An existing dam safety program and current dam safety regulations require the safe design, construction, operation, and maintenance of dams in Minnesota. The state program includes review of designs and plans for proposed dams, safety inspections of existing dams, and repair of dams.

*Gaps and Deficiencies*

- See “D. Floods” on page D-16.

*Recommendations*

- Dams and levees should be inspected annually and repaired as needed.
- Individuals buying homes in floodplains should be well informed of the risk.
- Flood insurance should be required for all homes within the floodplain area.
- Encourage all dam and levee owners to prepare an Operation and Maintenance Manual to assure proper operation and maintenance of levees.
- Continue the Flood Damage Reduction (FDR) program to improve levees and other flood mitigation activities.
- See recommendations for “D. Floods”

## L. Hazardous Materials

Hazardous materials are comprised of substances that are either flammable or combustible, explosive, toxic, noxious, corrosive, oxidizers, irritants or radioactive. A hazardous materials incident is the unintentional release of a hazardous material.

From a hazard mitigation perspective, the existence of hazardous materials presents two distinct arenas that must be addressed: those associated with hazardous materials use at fixed facilities and those associated with the transport of hazardous materials. In either case, a hazardous material spill or release can pose a risk to life, health, or property. Transportation incidents can occur during the loading, unloading, transportation or temporary storage of hazardous materials.

### *History*

Washington County Emergency Management received 247 Duty Officer Reports in 2017. One hundred seventy-seven hazardous material spill incidents occurred in Washington County from January 2002 to October 2004. This includes both transportation and fixed site location incidents. Twenty-four of the incidents with known amounts resulted in spills over 100 gallons. Sixty-seven hazardous material spill incidents occurred in Washington County in 2010.

See **Figure D.3** “MN PCA Active Sites.”

### *Risk Assessment*

Fixed facility hazardous material locations are referenced in **Annex C: Hazard Vulnerability** by community. Though there are several fixed locations for hazardous material sites, safety precautions are taken to minimize risk at these locations.

The transportation of hazardous materials in the county is a concern. The materials are transferred by a variety of modes: road, rail, water, aircraft, and pipeline. Each mode presents variations on the type, quantity, configuration, and frequency of risk in the county.



Overall Vulnerability for Hazardous Material Incidents	
Frequency	Low
Intensity	Moderate to High
Location	Countywide
Extent	Damage to property, infrastructure and life
Duration	Several hours to a couple of days
Seasonal Pattern	No pattern
Speed of Onset	Immediate
Warning Time	Minimal
Probability of Future Occurrences	Low

*Effects on People and Housing*

- Communities/residents impacted by a hazardous materials spill may need to shelter-in-place, be evacuated, or rescued if trapped or injured.
- Groundwater may be contaminated; this could affect large numbers of residents and businesses for an unknown period of time.
- The effects on people may be both physical and psychological.

*Effects on Commercial and Industrial Structures*

- Commercial and industrial businesses use hazardous materials in the county at fixed facilities. The locations are specified in Annex C: Hazard Vulnerability by community.
- If a hazardous material spill or leak were to occur at or near commercial or industrial structures, the businesses may be evacuated.

*Effects on Critical Infrastructure*

- In the event of a hazardous material spill during highway transportation, the road and surrounding areas may be closed down.

*Relationship with Other Hazards – Cascading Effects*

- Traffic Accidents
- Direct and indirect health related effects at various stages after the incident

*Plans and Programs Currently in Place*

- Washington County Hazard Analysis Plan (Emergency Operations Plan).
- Each facility that stores or uses hazardous materials above a threshold amount must develop a Risk Management Plan and file it with both Washington County Emergency Management and MN Homeland Security and Emergency Management.
- Wakota CAER (Community Awareness and Emergency Response): Wakota CAER is a coalition of industry and public agency partners that provides planning, training, and community awareness activities for natural disasters, potential fires and explosions, chemical

release emergencies, and mitigation of other major hazards. Wakota CAER serves communities in southern Washington and northern Dakota counties.

### *Gaps and Deficiencies*

- Washington County does not have a hazardous materials response team. Currently, the area is dependent on local capabilities, and the State Hazardous Materials Regional Response Team out of St. Paul.
- Major transportation corridors within the county are used to transport hazardous materials. Further risk assessments and response plans should be created to further prepare for an event.
- Communication efforts between agencies, neighborhood communities, and Wisconsin should be further developed.

### *Recommendations*

- Training for response to hazardous material spills should be continued and further emphasized.
- Public awareness is important to reduce the anxiety created in a hazardous materials spill.
- Public awareness of what to do in a shelter-in-place situation as well as an evacuation event.

## **M. Radiological**



The primary radiological hazard is the health effects resulting from unintentional exposure to ionizing radiation. When radiation interacts with atoms, energy is deposited, resulting ionization (electron excitation). This ionization may damage certain critical molecules or structures in a cell.

The nature and extent of damage caused by ionizing radiation depend on a number of factors including the amount of exposure (energy strength), the frequency and/or duration of exposure, and the penetrating power of the radiation to which an individual is exposed. Acute exposure to very high doses of ionizing radiation is rare but can cause death within a few days or months.

Nuclear power plants are a significant potential source of ionizing radiation. Other sources of ionizing radiation include medical and diagnostic X-ray machines, certain surveying instruments, some imaging systems used to check pipelines, radioactive sources used to calibrate radiation detection instruments, and even some household fire detectors.

### *History*

According to available information, no radiological events have occurred within Washington County as of the date of this plan. In 2023 Excel Energy powered down its Monticello Nuclear Plant to make repairs needed to resolve a water contaminating tritium leak. It was publicly stated that there was no risk posed to the public or the environment. *Reported by MPR news 3/23/23*

### *Risk Assessment*

Potential sources of exposure to radiological materials include fixed facilities and road/rail transportation routes. Currently there are no radioactively contaminated Superfund National Priority List sites identified in Minnesota. There are no nuclear power plants within Washington County's borders.

There are two nuclear power plants in Minnesota licensed by the NRC. Prairie Island Nuclear Generating Plant is located near Red Wing, Minnesota. The proximity of the power plant to Washington County creates a vulnerability to the emitted radiological contaminants. This distance includes Washington County in the ingestion pathway zone. Washington County also maintains the reception center for the Prairie Island Nuclear Generating Plant in Cottage Grove, MN in the event a release would occur.

The other licensed nuclear power plant in Minnesota is the Monticello Nuclear Plant. This site is located within a fifty-mile radius of Washington County, which leaves Washington County within the ingestion pathway zone.

In 2022/23 the Monticello plant leaked about 400,000 gallons of water containing tritium from a pipe at the facility. Regulators concluded the spill had not reached the Mississippi River or contaminated drinking water sources. (The Guardian)

The U.S. Department of Energy (DOE) occasionally transports radioactive material through Minnesota via road and rail. The risk due to transportation is relatively low. For further information regarding transportation of radioactive materials see:

<https://www.energy.gov/em/articles/fact-sheet-packaging-and-transportation>

For further information, see Washington County Emergency Operations Plan (EOP) regarding radiological hazards.

Overall Vulnerability for Radiological Incidents	
Frequency	Rare
Intensity	High
Location	Countywide
Extent	Risk to life
Duration	Unknown
Seasonal Pattern	No apparent pattern
Speed of Onset	Immediate
Warning Time	Minimal to none
Probability of Future Occurrences	Very low

*Effects on People and Housing*

- All living matter is vulnerable to the direct and indirect effects of ionizing radiation.
- The severity of potential impacts from ionizing radiation varies depending on the strength of the radioactive source, the type of radiation emitted, distance from the radioactive source, the duration of exposure and any potential shielding from the radioactive source.

*Effects on Commercial and Industrial Structures*

- The primary threat of ionizing radiation to property is contamination by radioactive particles. The property itself is not damaged; however, it may be unusable due to this contamination and the radiation emitted from the contamination can affect wildlife, fish, people, and water supplies.
- The hazard presented by contaminated property may last several years, depending upon the type of radioactive material and the effectiveness of clean-up efforts.

*Effects on Critical Infrastructure*

- Facilities such as hospitals and roads may be strained if a radiological event were to occur. If a transportation incident were to occur, the mode of transportation used would be temporarily closed to further use.

*Relationship with Other Hazards – Cascading Effects*

- Radiological events may have long-term health effects on all living creatures as well as structures.

*Plans and Programs Currently in Place*

- Washington County Emergency Operations Plan (EOP): Radiological / Hazardous Materials
- Washington County Radiological Emergency Preparedness (REP) Program - coordinates planning, preparedness, and response for all types of peacetime radiological emergencies with Federal, State, and local governments and the private sector, with emphasis on decontamination at the Cottage Grove Reception Center.

- NRC / FEMA Radiological Emergency Preparedness (REP) Program ensures the public health and safety of citizens living around commercial nuclear power plants and informs/educates the public about radiological emergency preparedness.
- State of Minnesota High-Level Radioactive Waste shipment plans.
- National Environmental Policy Act requirements for the transportation of radiological material.

#### *Gaps and Deficiencies*

- The public is largely unaware of the precautions currently taken to prevent a radiological event as well as the steps that should be taken if an incident were to take place. Increasing public awareness would better prepare individuals if a radiological event were ever to occur.

#### *Recommendations*

- Expand upon existing radiological emergency preparedness training.
- Ensure off-site emergency plans and preparedness initiatives are in place and can be implemented.
- Explore option to educate and train first responders and the public in radiological emergencies.

## **N. Water Supply Contamination**

Water supply contamination is the introduction of pollutants into groundwater and/or surface water drinking supplies. Pollutants of concern include urban runoff, sewage effluent, agricultural products, hazardous waste, consumer products and pharmaceuticals.

As Washington County's population increases and becomes more concentrated, threats to our drinking water systems are also increased. As development occurs the landscape transforms from woods and prairies into turf grass. Most home and business owners care for their lawns with fertilizers and pesticides. When used in excess both fertilizers and pesticides will leach into the groundwater table and runoff into lakes and streams with stormwater.

As development occurs in areas of the county that don't have city sewer, septic systems are built for each home to handle human waste. To help ensure the proper construction and maintenance of these systems Washington County adopted "Subsurface Sewage Treatment System Regulations" (refer to Washington County Development Code Chapter 4 Subsurface Sewage Treatment System Regulations Ordinance No. 196). If a septic system does not comply with the county ordinance there is the possibility for septic tank effluent to seep into the groundwater or discharge to surface water bodies.

Portions of the county still used for agricultural purposes are also at risk for polluting water supplies. Excessive chemicals such as pesticides and herbicides along with animal waste will mix with rainwater and infiltrate to the water table or runoff into lakes and streams.

Proper use and disposal of hazardous waste is also important to protect water supplies from being contaminated. For more information see Section L. Hazardous Materials of Annex D in this plan.

Contaminants of Emerging Concern (CEC), such as pharmaceuticals and consumer products, also contaminate drinking water supplies. These contaminants have gotten into the water supply system through human excretions as well as improper disposal of products down the sink or toilet.

The U.S. Environmental Protection Agency (EPA), as required by the Safe Drinking Water Act, 1974, as amended, sets uniform nationwide minimum standards for drinking water. State public health and environmental agencies have the primary responsibility for ensuring that each public water supplier meets these federal drinking water standards, or more stringent ones as established by the state.

An ongoing water quality monitoring program is also required. One primary test is to measure the level of coliform bacteria. Coliform bacteria refer to a group of bacteria that are both fecal and non-fecal in origin. Most coliform bacteria themselves are harmless; however their presence in water may indicate that pollution has occurred. In the event of a positive coliform bacteria result the water is then tested for E. coli to determine if the source of contamination is fecal bacteria. Once coliform bacteria are present in drinking water the supply system needs to be disinfected and retested until the bacteria is no longer in the water. All violations must be reported, and corrective actions must be implemented in accordance with the Safe Drinking Water Act.

Water suppliers must promptly inform the public if their supply becomes contaminated by something that can cause immediate illness. A public service announcement must be provided explaining the potential adverse effects on human health, the steps they are taking to correct the violation, and the need to use bottled water or other alternative water supplies until the problem is corrected.

For households on private wells, state and local health departments strongly encourage the homeowner to test their drinking water yearly for coliform bacteria and every other year for nitrates. However, there is no legal requirement for a private well owner to test their water. Some local health departments have a program for well owners to bring in their own water sample to be tested. The EPA has a website with additional guidance on the maintenance of private wells.

### *History*

See “Washington County Groundwater Plan”

*Risk Assessment*

All groundwater and surface water sources are vulnerable to contamination.

See Figure D.4 “Sensitivity of Water Table to Pollution” and Figure D.5 “County Well Index.”

Overall Vulnerability for Water Supply Contamination	
Frequency	Rare
Intensity	High
Location	Countywide
Extent	Risk to life
Duration	Permanent
Seasonal Pattern	No apparent pattern
Speed of Onset	Immediate
Warning Time	Minimal to none
Probability of Future Occurrences	Low

*Effects on People and Housing*

Effects on life are dependent on the specific contaminant in the water supply. In most cases, water treatment facilities can mitigate this potential impact for human consumption of the water. This could be a major public health concern or a minor one, depending on the cause of the contamination and the quickness in which it can be treated.

Depending on the extent (location) of the contamination, local beaches may not be suitable for the public to swim in. Signs would need to be posted and public service announcements should be made to alert residents to this.

*Effects on Commercial and Industrial Structures*

The effects on commercial and industrial structures would depend on the type of business being conducted as well as how the water supply became contaminated. If the water supply was contaminated as the result of another hazard, then they may also be affected by the original hazard. However, if water supply contamination were the only hazard at hand, it would be affected by how much water affected the business they conducted.

The restaurant and food supply businesses and organizations would see the greatest impact. Alternative water sources would need to be brought in and used if boiling the water was not sufficient. These businesses would need to heed the advice of the public health officials.

*Effects on Critical Infrastructure*

Again, businesses and organizations that rely on water to operate may have decreased productivity. Depending on the contaminant in the water, it may not be suitable for fire suppression as well. This would mean that an alternative water source and delivery of that water would need to be determined, and hopefully worked out well in advance.

Health care facilities needing to use water will need to find alternative sources of water and methods of which to transport that water to their facilities as well.

*Relationship with Other Hazards – Cascading Effects*

- Public Health Concern - Polluted human water sources can cause illness and epidemics in both humans and animals. The water may not be suitable for human or animal consumption, and it may or may not be suitable for use outdoor, such as watering landscape.
- Lack of water. - The general public will need to find alternative sources of water, as will businesses and organizations that use water. This could cause mass panic and cause surrounding areas to be overtaxed on their water supply as their own residents worry about a shortage or as residents of Washington County begin to seek water in their communities.
- Fire Suppression - This may be an issue if the water is not suitable for fire suppression due to the contaminants in it.

*Plans and Programs Currently in Place*

- Washington County Groundwater Plan 2014 - 2024 to address the importance of preserving the water quality in the county.
- The U.S. Army Corps of Engineers administers the Planning Assistance to the State program. This cost shared program allows for the development of plans for the use and conservation of water and related land resources, which can include water quality and water supply.
- Safe Drinking Water Act of 1974. The U.S. EPA sets uniform nationwide minimum standards for drinking water. State public health and environmental agencies have the primary responsibility for ensuring that each public water supplier meets these federal drinking water standards, or more stringent ones established by the state.
- The EPA requires an ongoing water quality monitoring program to ensure public water systems are working properly. Local officials work together with the MDH and the EPA to ensure that all public water supplies are safe. Also, the EPA requires all local suppliers to promptly inform the public if their supply becomes contaminated.
- Minnesota Well Code. Since 1974, all water wells constructed in Minnesota must meet the location and construction requirements of the Minnesota Well Code. These requirements pertain to private wells, also. The MDH recommends that private wells be tested annually for contamination. However, private wells are maintained by the owner, and inspections are not required.

- Regulations exist governing chemical handling and storage, operation of pipelines, underground storage tanks, aboveground storage tanks, wastewater discharge, waste disposal, and other various risk activities. The regulations reduce the potential risk for groundwater contamination.
- The MDH has a CEC program to address water supply contamination issues.
- Washington County has organized prescription drug drop off events to allow for safe disposal of pharmaceuticals, that keeps water supplies free of this contamination.
- The MDH has a well sealing program that enforces proper sealing of unused wells. Washington County Department of Public Health and Environment has a well sealing cost share program to promote proper sealing of abandoned wells.

#### *Gaps and Deficiencies*

- Local Government Units have incorporated groundwater planning into their land use plans but there needs to be an effort to ensure groundwater is protected as the county continues to develop.
- The state and local governments collect a lot of information regarding drinking water quality, but we need to have a central database to make the most use of this information.

#### *Recommendations*

- Monitoring equipment at flood gauging stations upstream should alert the water plant to close intake valves if the water source became contaminated.
- Replacing combined storm and sewer outflow systems may have short-term disaster mitigation benefits as well as longer-term environmental ones.
- Assure that inspections of private wells are being conducted on a timely, routine basis.
- Assure compliance is being followed as to the violations noted and corrective actions that need to be taken.
- Identify alternate water sources and methods of transporting this water to its destination.

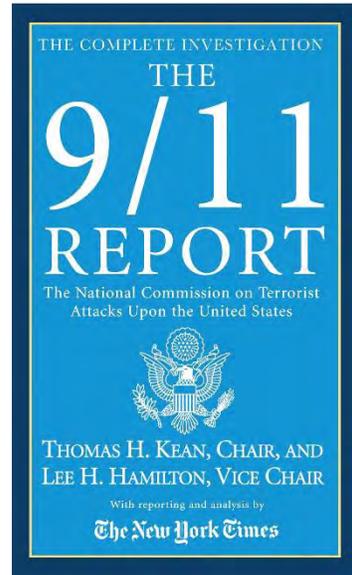
### **O. Civil Disturbance / Terrorism**

“Terrorism is the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.”

- FBI Definition

Contemporary terrorist actions include the traditional assassinations, bombings, arson, hostage taking, hijacking, kidnapping, seizure and occupation of a building, attacks on a facility, sabotage and perpetration of hoaxes.





*History*

According to available information, no terroristic events have occurred within Washington County as of the date of this plan.

As recently as February 5, 2018, local newspapers were continuing to report about continued recruitment in Minnesota, and more specifically in the Twin Cities area, for overseas terrorism groups.



*Risk Assessment*



[Redacted]

Overall Vulnerability for Terrorism	
Frequency	Minimal
Intensity	High
Location	Variable.
Extent	Damage to property, infrastructure and life
Duration	Unknown
Seasonal Pattern	No pattern
Speed of Onset	Rapid
Warning Time	Minimal, if any
Probability of Future Occurrences	Minimal to moderate

*Impact on People and Infrastructure*

[Redacted]

*Impact on Commercial and Industrial Structures*

[Redacted]

[REDACTED]

*Relationship with Other Hazards – Cascading Effects*

[REDACTED]

*Plans and Programs Currently in Place*

[REDACTED]

*Gaps and Deficiencies*

[Redacted text block]

*Recommendations*

[Redacted text block]

## Annex E: GOALS, OBJECTIVES, STRATEGIES

The inevitability of natural hazards, and the growing population and activity within the county create an urgent need to develop strategies, coordinate resources, and increase public awareness to reduce risk and prevent loss from future hazards.

- Goal: The overall desired effect, including both long-term and ongoing effects. For the purposes of this plan, each goal is identified in bold typeface.
- Objective: Steps to be taken to achieve the goal or desired effect. For the purposes of this plan, each objective is identified with a number.
- Strategy: Actions or methods used to attain the objective. For the purposes of this plan, each strategy is identified with a lower-case letter.

In addition to the goals, objectives and strategies created specifically for Washington County, this plan recognizes and supports those goals, objectives and strategies identified in the 2019 Minnesota All Hazard Mitigation Plan: [2019-state-hmp-and-appendices.pdf \(mn.gov\)](https://www.mn.gov/2019-state-hmp-and-appendices.pdf). Many of the goals, objectives and strategies listed in the Minnesota All Hazard Mitigation Plan Strategy address hazards identified in the Washington County All Hazard Mitigation Plan and are applicable.

Recommendations are identified for specific hazards in Annex D and should be considered a part of the strategies identified below, even if not explicitly written.

The responsible or participating agencies are labeled as follows:

- |   |                                    |
|---|------------------------------------|
| A. Washington County Emergency Management | H. Schools                         |
| B. Washington County                      | I. Medical                         |
| C. Local Government                       | J. Land Owners                     |
| D. Local Fire Department                  | K. State                           |
| E. Law Enforcement                        | L. Federal                         |
| F. Utility Company                        | M. Department of Natural Resources |
| G. Local Business                         | N. Watershed District              |

The goals, objectives, and strategies identified for Washington County were reviewed and revised by the Emergency Management Council along with representatives from each of the thirty-one participating jurisdictions and select county staff representatives.

**Goal #1: Minimize Flood Damage and Impacts**

OBJECTIVE	STRATEGY	RESP. AGENCY
1. Minimize spring runoff flood damage to property	a. prioritize possible projects within communities and make initial contact with elected officials	A. C. J.
	b. educate citizens about how to avoid this type of damage	A. C.
	c. map areas of flooding	A. C. N.
	d. promote installation of backflow valves in residences	C.
	e. promote the value of elevating furnace, water heater and other basement machinery or appliances	B. C. L.
	f. mitigate shoreline erosion and address shoreline protection	B. C. K. L. M. N.
	g. purchase and install electronic monitoring equipment and software for storm water ponds or other infrastructure	B. C. K. L. M. N.
	h. <i>require new septic system drain fields to be higher than projected flood levels</i>	B.
2. Minimize damage to property from flooding due to heavy rain <i>and prolonged wet cycles</i>	a. identify and/or map areas that flood during heavy rain	A. C. N.
	b. identify and implement means of preventing sewer back-up	B. C. J.
	c. educate citizens about how to avoid this type of damage	A. C.
	d. promote installation of backflow valves in residences	C.
	e. promote the value of elevating furnace, water heater and other basement machinery or appliances	B. C. L.

	f. calculate flood levels of wetlands, ponds, lakes, streams, ravines, and rivers	B. C. M.
	g. replace or relocate failing septic systems with improved safe guards or an improved design to reduce or eliminate impacts caused by water (groundwater, flash flooding, riverine flooding, or other types of flooding)	B. C. J. N.
	h. seal up sanitary systems to reduce or eliminate infiltration	B. C. K. L. M. <u>N.</u>
	i. research and implement backfill prevention methods for storm sewer systems	B. C. K. L. M. N.
	j. install water guards for man holes	B. C. K. L. M.
	k. mitigate shoreline erosion and address shoreline protection	B. C. K. L. M. N.
3. Minimize damage to property from flooding due to inadequate, neglected, or failed infrastructure	a. map areas of flooding due to inadequate infrastructure	B. C. N.
	b. map areas of flooding due to neglected or failed infrastructure	B.
	c. educate citizens about how to avoid this type of damage	A. C.
	d. promote installation of backflow valves in residences	C.
	e. promote the value of elevating furnace, water heater and other basement machinery or appliances	B. C. L.
	f. mitigate roads, bridges or other infrastructure that are prone to regular flooding or provide access during a flooding event	B. C.
	g. identify means of preventing sewer back-up and implement when possible	B. C.

	h. replace or relocate failing septic systems and wells with improved safe guards or an improved design to reduce or eliminate impacts caused by water (groundwater, flash flooding, riverine flooding, or other types of flooding)	B. C. J. N.
	i. purchase equipment such as barricades, trailers, and/or signage necessary for flood protection or rerouting traffic	B. A. C. D. E. K.
	j. upgrade lift stations and other infrastructure	B. C. K. L. M. N.
4. Minimize damage caused by dam or levee failure	a. ensure dams and levees are <i>inspected annually</i>	B. C. L.
	b. ensure that those living in proximity to dams and levees have an emergency plan	A. C.
	c. identify places for additional small dams and wetland restoration in watersheds by using the Natural Resources Inventory as a guide	K.
	d. recommend revisions to requirements for development within the floodplain, where appropriate	K.
	e. educate citizens and/or jurisdictional leaders about how to avoid this type of damage	A. C. K.
	f. provide additional information and/or advance warning to jurisdictions when rivers begin to flood by adding more river monitor gauges to the rivers throughout Washington County	A. C.
	g. ensure municipalities have current floodplain maps	A. B. C.
	h. remove levee	C. K. L. M.
5. Minimize damage to property from flooding due to land use	a. ensure municipalities have current floodplain maps	A.
	b. ensure municipalities have current zoning maps	B. C.

	c. recommend revisions to requirements for development within the floodplain, where appropriate	B. C. L.
	d. ensure proper drainage with new construction	B. C.
	e. encourage development of acquisition and management strategies to preserve open space for flood mitigation, fish habitat, and/or water quality in the floodplain	B. C. K. L.
	f. encourage construction and/or subdivision design that can be applied to potential flood areas to reduce the potential adverse impacts from development	B. C.
	g. limit activities in identified potential and historical flood areas through regulation and public outreach	B. C. K. L.
	h. replace or relocate failing septic systems with improved safe guards or an improved design to reduce or eliminate impacts caused by water (groundwater, flash flooding, riverine flooding, or other types of flooding)	B. C. J. N.
	i. purchase and install pumps and ancillary equipment	B. C. D. E. G. J. K. L. M. N.
	j. research and implement storm water mitigation, prevention and control programs	B. C. K. L. M. N.
	k. convert public building rooftops to a green roof	B. C. K. L.
	l. improve pump houses and other infrastructure equipment	C.
6. Identify flood prone areas	a. identify ravines, land locked basins, major rivers, direct drainage to rivers, seepage from river due to flooding tendencies	B. C.
	b. enhance data and mapping for floodplain information within the County; identify and map flood-prone areas outside of designated floodplains	A. B. L.
	c. establish a framework to compile and coordinate surface water management plans and data throughout the county	B. C.

	d. catalog existing easements	B. C. K. L. M. N.
	e. monitor water levels	B. C. K. L. M. N.
7. Identify hazards and ensure public safety	a. identify, establish, promote and activate an early warning system	A. C. D. E.
	b. improve knowledge of flooding hazard areas and understanding of vulnerability and risk to life and property in hazard-prone areas	A. C. K. L.
	c. develop better flood warning systems	A. C.
	d. identify safe evacuation routes in the occurrence of flash floods	A. C. D. E.
	e. evaluate current flood warning systems to ensure effectiveness and efficiency and increase coordination between local jurisdictions and Washington County for flooding warning systems	A. C.
	f. provide additional information and/or advance warning to jurisdictions when rivers begin to flood by adding more river monitor gauges to the rivers throughout Washington County	B. C. K. L.
	g. encourage the purchase of flood insurance	A. B. C. J. L.
	h. educate citizens about how to avoid damage due to flooding	A. C.
	i. <i>Inventory possible locations where beaver dams or downfall within a drainage channel may cause detrimental flooding of property or infrastructure</i>	N.

8. Identify potential damage areas and/or reduce repetitive structure loss or mitigate properties located within the floodplain	a. to identify and analyze each repetitive loss property within Washington County	A. B. C. K. L.
	b. mitigation of repetitive loss structures	A. C. K. L.
	c. mitigation of structures located within or partially within the identified floodplain	A. C. K. L.
	d. identify funding sources for structural and nonstructural retrofitting of structures that are identified as vulnerable to floods	A. C. K. L.
	e. replace or relocate failing septic systems with improved safe guards or an improved design to reduce or eliminate impacts caused by water (groundwater, flash flooding, riverine flooding, or other types of flooding)	B. C. J. N.
	f. purchase and removal of existing structures located within a floodplain	B. C. D. E. J. K. L. M. N.
	g. purchase an unmanned aerial vehicle for surveillance of damage areas	A. B. C. D. E. K. L. M. N.
9. Improve inadequate infrastructure for key elements	a. implement design guidelines for infrastructure regarding flood damage	B. C. L.
	b. identify funding sources for improving inadequate infrastructure	B. C. K.
	c. set regulations on inspection requirements for infrastructure regarding floods	B. C.
	d. identify and/or map surface water drainage obstructions for all of Washington County. <i>Inventory, and prioritize infrastructure for repairs and/or replacement</i>	B. C.
	e. replace or relocate failing septic systems with improved safe guards or an improved design to reduce or eliminate impacts caused by water (groundwater, flash flooding, riverine flooding, or other types of flooding)	B. C. J. N.
	f. replace or add culverts	B. C. K. L. M. N.

	g. add pump pits or other infrastructure to address flooding concerns	B. C. J. K. L. M. N.
	h. identification, purchase, and installation of equipment for emergency operation centers	A. B. C. D. E.
10. Reduce erosion caused by flooding	a. identify and/or map areas that may be more prone to erosion	B. C.
	b. educate citizens about how to avoid damage due to erosion	C.
	c. establish a framework to compile and coordinate surface water management plans and data throughout the county	B.
	d. replace or add culverts	B. C. K. L. M. N.
	e. mitigate shoreline erosion and address shoreline protection	B. C. K. L. M. N.
11. Minimize impacts to residents, first responders, and other citizens living in or visiting areas by maintaining accesses	a. raise, improve, and/or relocate accesses such as roads, bridges, trails, or other access infrastructure out of floodplains or locations that could be impeded by water therefore maintaining access to homes, businesses, or locations where people congregate such as parks or schools	B. C. H. K.
	b. add boat launches to increase emergency access	B. C. D. E. K. L. M. N.
12. Protect land, structures, and natural communities from flooding that exceeds natural water level fluctuations. (pg. 6-43 of Washington County Comprehensive Plan)	a. see the Washington County Comprehensive Plan policies and strategies: <a href="https://www.co.washington.mn.us/404/Comprehensive-Plan">https://www.co.washington.mn.us/404/Comprehensive-Plan</a>	B. C. K. L. M. N.

Related Information:

- During the spring of 2011, Washington County’s Emergency Management division relocated the county’s Emergency Operations Center (EOC) to a fire station closer to an area with a high flooding potential. This was found to increase communication and interaction between Washington County staff and the small, local jurisdictions that were identified as susceptible to flooding. From that experience, it was identified that improved communication technologies should be added to the fire station to further enhance communication during hazard events in which the fire station would again be used as a temporary EOC.
- In early 2012, Washington County implemented a county-wide mass notification system called Code Red which sends critical communications and alerts to citizens signed up via phone call, e-mail or text message.
- Between 2000 and 2010, Washington County partnered with FEMA and the MnDNR to update the outdated Flood Insurance Rate Maps (FIRM), resulting in increased accuracy of floodplain locations and elevations. The FIRMs became effective on February 3, 2010 for those communities who participate in the National Flood Insurance Program, including Washington County on behalf of the local townships.
- Washington County has continued to participate in Severe Weather Awareness Week by providing information to the public regarding flooding and flash flooding, as well as other hazards through a variety of media including Facebook, the county website, and press releases.
- *Following the 2018 update, Washington County Emergency Management became Storm Ready certified through the National Weather System certification program.*
- *2019 capped a five-year consecutive period as the wettest consecutive five years on record. As a result, the county witnessed inland flooding in some cities to the degree never seen before. One outcome of this reality, the Valley Branch Watershed District purchased five properties near Jocelyn Lake in Grant.*
- *The new MS4 permitting includes substantial new prohibitions on infiltration of stormwater in certain locations.*

**Goal #2: Prevent wind damage to persons and property from tornadoes, windstorms, straight line winds, hailstorms, lightning and thunderstorms**

OBJECTIVE	STRATEGY	RESP. AGENCY
1. Prevent damage to persons and property from tornadic activity	a. help citizens realize the strength and danger of tornadoes	A. C. D. E. H. K. L.
	b. use Severe Storms Awareness Week to emphasize the power of tornadoes	A. H. J. K.
	c. promote and educate regarding safe rooms	A. C. K.
	d. discourage the use of video cameras to film dangerous storms	A. C.
	e. get testimonials from those who have benefited from a safe room	A. K. L.
	f. urge local builders to put safe rooms in structures with no basements, especially slab on grade townhouses	B. C. G. K.
	g. pass ordinances that require community shelters in developments that have slab on grade housing	B. C.
	h. identify funding sources for structural and nonstructural retrofitting of structures that are identified as vulnerable	A. C. K.
	i. purchase and install outdoor warning sirens and associated technology	B. C.
	j. encourage the purchase of weather radios	A. B. C. D. E. K. L.
	k. educate citizens on severe weather safety information and emergency preparedness	A. B. C. D. E. K. L.
	l. support/encourage all manufactured homes to be anchored	A. B. C.

	m. support/encourage all utilities to use underground construction methods where possible to reduce power outages from tornadoes, high winds, or ice storms	A. B. C. F. K. L.
	n. build, expand, or maintain storm shelters (or retrofit existing structures) for residents and visitors who are vulnerable because such shelter is not available; specific populations that are vulnerable include mobile home parks, city or county or private parks, county/city fairgrounds, schools and other areas that do not have safe areas	B. C. G. H. I. J.
	o. create redundancies for power sources such as through generators, redundant power lines, or other means	B. C. F.
2. Prevent damage to persons and property from windstorms and straight-line winds	a. support/encourage communication utilities to use underground construction methods where possible to reduce communication outages from windstorms and/or straight-line winds	A. B. C. F. J.
	b. support/encourage electrical utilities to use underground construction methods where possible to reduce power outages from windstorms and/or straight-line winds	A. B. C. F. J.
	c. educate the public on the dangers of wind	A. C. H. K.
	d. promote safe rooms	A. C. K.
	e. encourage security of personal property prior to event	B. E. G. H.
	f. provide information on wind resistant structures	A. K. L.
	g. provide public awareness on safe sheltering	A. K.
	h. advance planning for large scale events	A. C. J. K.
	i. develop and implement programs to keep trees or other flying debris from threatening lives, property, and public infrastructure during windstorm events	B. C. K.

	j. encourage development and enforcement of wind-resistant building siting and construction codes	B. C. K.
	k. use Severe Storms Awareness Week to emphasize the power of windstorms and straight-line winds	A. B. C. K. L.
	l. pass ordinances that require community shelters in developments that have slab on grade housing	B. C. D. L.
	m. install and maintain and/or upgrade outdoor warning sirens and associated technology	B. C.
	n. encourage the purchase of weather radios	A. B. C. D. E. K. L.
	o. educate citizens on severe weather safety information and emergency preparedness	A. B. C. D. E. K. L.
	p. support/encourage all manufactured homes to be anchored	A. B. C. K. L.
	q. build or maintain storm shelters (or retrofit existing structures) for residents and visitors who are vulnerable because such shelter is not available; specific populations that are vulnerable include mobile home parks, city or county or private parks, county/city fairgrounds, schools and other areas that do not have safe areas	B. C. G. H. I. J.
	r. add fencing to reduce impacts	B. C. J. K. L.
3. Provide early warning	a. further educate public on warning signals	A. C. D. E.
	b. map and publicize locations around the county that have the highest incidence of extreme windstorms	A. B. K.
	c. promote weather radios	A. C.
	d. extend and improve warning siren coverage in the county	B. C.

	e. increase public awareness of windstorm mitigation activities	A. C. K.
	f. purchase and install weather monitor/detection system equipment	A. B. C. D. E. H. K. L. M. N.
	g. leverage and utilize existing neighboring community outdoor warning siren monitor system	B. C. M.
	h. update, improve upon, and/or expand mass notification system at parks, government buildings or properties, or other gathering places	A. B. C. D. E. K. L. M
4. Provide for recovery activity	a. ensure municipalities have current emergency plans	A. C.
	b. restore traffic ability in a timely manner	B. C. E.
	c. provide for debris removal and disposal activities	B. C. D. G. J.
	d. restore essential utilities	B. C. F.
	e. enhance strategies for debris management for windstorm events	A. C. J.
	f. purchase and install generators and ancillary equipment for critical facilities	A. B. C. D. E. G. H. I. J. K.
	g. purchase and install equipment to enhance alternate transportation responses such as ATVs or, for example, landing lights at helipads	A. B. C. D. E.
	h. implement technology back up and/or redundancy system testing and equipment	B. C. D. E. F. G. H. I. K. L. M. N.
	i. purchase and implement a software system or utilized increased staff to create a tracking system for publicly owned assets	B. C. D. E. K. L. M.
	j. construction of a highway shop	B.

Related Information:

- Washington County Staff has utilized public education opportunities such as attendance at local jurisdiction’s community events to provide information on mitigation activities and, in some cases, specific actions that should be taken in the event of a tornado or straight line winds.
- Washington County has continued to participate in Severe Weather Awareness Week by participating in Tornado Drill Day and providing information to the public through a variety of media including Facebook, the county website, and press releases.
- The City of Hugo, which is located in Washington County, sought and received mitigation grant dollars to purchase and install outdoor warning sirens following the May 25, 2008 EF-3 tornado in Hugo.
- The City of Hugo added an ordinance which requires builders within developments of a certain number of lots to offer an option with a safe room within a residential home.

**Goal #3: Mitigate losses to people and property during severe winter weather (blizzards, extremely cold temperatures, ice, and sleet)**

OBJECTIVE	STRATEGY	RESP. AGENCY
1. Ensure public safety	a. urge public to heed winter weather warnings and advisories	A. C. K. H.
	b. increase public awareness of severe winter storm mitigation activities	A. C. K.
	c. promote winter survival kits during Winter Weather Awareness Week and beyond	A. C. K.
	d. identify a public location to gather in event of extreme weather where there is heat and air conditioning	A. C. J.
	e. purchase and install generators and ancillary equipment for critical facilities	A. B. C. D. E. G. H. I. J. K. L.
	f. purchase pumps and/or fans	A. B. C. D. E. G. H. I. J. K. L.
	g. purchase and train on evacuation equipment	B. C. D. E. K.
	h. purchase and install equipment such as first aid kits, AEDs, “Stop the Bleed” cabinets/kits, or other cache items in gathering locations such as parks or nearby locations	B. C. D. E. K. L.
2. Encourage cost sharing plan between residents and community to provide emergency equipment when appropriate	a. purchase generators and/or adaptive equipment to share between communities that may share a common hazard	B. C. D.
	b. purchase fans and/or adaptive equipment to share between neighboring communities	C.
	c. purchase pumps and/or adaptive equipment to share between communities needing the equipment	B. C.

3. Encourage self-sufficiency	a. encourage wood burning fireplaces to help heat the households if blizzard conditions / power outages arise	A. C. F.
	b. encourage the purchase of generators, pumps and/or fans	A. C. D.
4. Keep roads clear	a. enhance strategies for debris management for severe winter storm events	A. B. C. G. K.
	b. purchase equipment necessary to maintain emergency access	A. B. C. D. E.
5. Increase warning time	a. develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms	A. B. F.
	b. enhance weather monitoring to attain earlier severe winter storm warnings	B. C. J. K. L.
	c. purchase and install fiber optic and/or other related equipment between critical infrastructure sites	B. C. D. E. K. L.
	d. purchase and install weather monitor/detection system equipment	A. B. C. D. E. H. K. L. M. N.

Related Information:

- Washington County has continued to participate in Severe Weather Awareness Week by providing information to the public regarding flooding and flash flooding, as well as other hazards through a variety of media including Facebook, the county website, and press releases.

**Goal #4: Mitigate losses to people and property during drought or extreme heat**

OBJECTIVE	STRATEGY	RESP. AGENCY
1. Review community water plans and update as needed	a. identify a community source of water in event of drought	B. C.
	b. see strategies for "Water Supply Contamination"	
	c. see strategies for "Wildfire"	
	d. monitor water levels	B. C. K. L. M. N.
2. Educate the public on water conservation during droughts	a. provide the public educational materials with their water bills	F.
	b. encourage water conservation efforts at the local level through ordinances, incentives or through other means	B. C.
3. Check with local social services organizations to identify those who are susceptible to heat-related illness	a. encourage communities to prepare plans for monitoring vulnerable populations such as the elderly and very young	B. C. J.
	b. purchase generators to allow consistent environments for vulnerable populations	A. B. C.
4. Educate the public on steps to take in extreme heat	a. map possible shelters to open	A. C.
	b. identify sources of fans and air conditioners	A. C. J.
	c. conduct studies regarding extreme temperatures	B. C. K. L. M.

Related Information:

- Congregate care/assistance shelter locations have been identified in coordination with the American Red Cross and Washington County Community Services, and plans are in place to provide services for all hazard emergencies that may require congregate care.
- When opened, public information on these centers will be distributed to residents/special needs populations through media and local community partners.
- Washington County has continued to participate in Severe Weather Awareness Week by providing information to the public regarding heat waves, as well as other hazards through a variety of media including Facebook, the county website, and press releases.

**Goal #5: Mitigate the effects of an earthquake or incident caused by karst topography**

OBJECTIVE	STRATEGY	RESP. AGENCY
1. Be aware of geology in each community and know if hazards exist	a. provide public documents of geologic characteristics including karst	A. B.
2. Avoid placing sensitive structures in areas where earthquakes or karst features could cause structure damage or collapse, i.e. sinkholes	a. integrate new earthquake hazard mapping data for Washington County and improve technical analysis of earthquake hazards	A. B. K. L.
3. <i>Mitigate for stormwater runoff from new developments that are prohibited from infiltrating stormwater</i>	a. <i>prohibit development unless stormwater volumes are controlled</i>	B. C.

Related Information:

- Washington County has included maps within the All Hazard Mitigation Plan identifying covered, transition and active karst as well as the locations of springs, stream sinks and sinkholes in Washington County.

**Goal #6: Mitigate losses to people and property in the event of an infectious disease outbreak or a terrorist incident**

OBJECTIVE	STRATEGY	RESP. AGENCY
1. Help citizens survive an infectious disease outbreak	a. provide information to the public on infectious diseases and precautions to take	B. K. L.
	b. coordinate with public health officials	A. B. C.
	c. deal with quarantine issues ahead of time	A. B. K. L.
	d. identify sites for mass clinics and what will be needed to equip and staff them	A. B. K.
2. Help the community survive a terrorist incident whether domestic or foreign in origin	a. make sure first responders are properly equipped and trained	A. B. C. D. E. K. L.
	b. ensure grant money is spent wisely	A. B. C. D. E. K. L.
	c. appropriate training is given and refreshed	A. B. C. D. E. K. L.
	d. give the public information on basic measures that can be taken to protect themselves that is simple, easy to follow, and designed not to cause either panic or ridicule	A. B. K. L.
	e. increase, enhance, or establish security infrastructure for critical facilities, high potential loss facilities, hazardous material facilities, major transportation infrastructure and/or communication systems/networks	A. B. C. D. E. G. H. I. K. L.
	f. encourage multidisciplinary training and exercise at various levels of government while also including non-government agencies	A. B. C. D. E. F. G. H. I. K. L. M. N.
	g. harden critical facilities such as fire stations and city halls	A. B. C. D. E. K. L.

3. Practice utilizing early notification	a. utilize the county-wide calling system	A. B. C. D. E.
	b. encourage citizens to remain informed during an event by watching informational television	A. B. C. H. K.
	c. encourage citizens to remain informed by listening to the radio for updates and instructions	A. B. C. H. K.
	d. update, improve upon, and/or expand mass notification system at parks, government buildings or properties, or other gathering places	A. B. C. D. E. K. L. M.
4. Identify possible threats / early detection	a. work at all levels of government to educate residents and officials on how to identify potential threats early on	A. B. C. K. L.
	b. increase, enhance, or establish security infrastructure for critical facilities, high potential loss facilities, hazardous material facilities, major transportation infrastructure and/or communication systems/networks	A. B. C. D. E. G. H. I. K. L.
	c. plan, train, and exercise for cyber security threats	A. B. C. D. E. F. G. H. I. K. L. M. N.
	d. implement cyber security improvements whether through infrastructure improvements/additions or other means	A. B. C. D. E. F. G. H. I. K. L. M. N.
5. Reduce the area of impact of a hazardous materials disaster	a. encourage municipalities to have an Emergency Operation Plan and/or a copy of the County EOP	A. B. C.
	b. encourage the creation of and implement an emergency funding account	A. B. C. K. L.
6. Improve safety at busy road crossings	a. implement safety measures at busy road crossings such as by adding stop lights, crosswalks, overpasses, bridges, or a tunnel	B. C. G. H. K. L.
	b. replace existing infrastructure that may be failing	B. C. K. L.

7. Increase security at government buildings, government owned locations, privately owned properties, and other critical infrastructure sites	a. improve upon or add security infrastructure such as badging systems, cameras, surveillance equipment, or other infrastructure to improve upon security either outdoors or indoors	B. C. D. E. F. G. H. I. K. L.
8. Improve upon communication	a. encourage multidisciplinary training and exercise at various levels of government while also including non-government agencies	A. B. C. D. E. F. G. H. I. K. L. M. N.
	b. add new or improve upon existing communication infrastructure to enhance notification times or capabilities by adding physical components such as communication towers, radios, or other equipment	A. B. C. D. E. K. L.
	c. identification, purchase, and installation of equipment for emergency operation centers	A. B. C. D. E.
	d. improve communication through an interoperable communication system	A. B. C. D. E. K. L.
	e. implement technology back up and/or redundancy system testing and equipment	B. C. D. E. F. G. H. I. K. L. M. N.

Related Information:

- In early 2012, Washington County implemented a county-wide mass notification system called Code Red which sends critical communications and alerts to citizens signed up via phone call, e-mail or text message.
- Public health and associated health care organizations in Washington County and throughout the state participate in the Health Alert Network (HAN), which is capable of sending out fax or email notices to health care providers, hospitals, schools, pharmacists, veterinarians, long-term care facilities, and others.
- County public health/environment developed the Be Prepared public education/awareness campaign, which aims to educate residents on infectious disease and health related emergencies/disasters.

- In FFY 2008, Washington County became associated with the Urban Area Security Initiative (UASI), and has utilized this program to assist local responders with identified equipment and training needs.
- Many responders, government officials, and industry leaders are closely aligned with the Minnesota Joint Analysis Center (MnJAC), and receive daily security and intelligence briefings through ICEFISHX.

**Goal #7: Lessen the effects of a radiological incident or release on people and property**

OBJECTIVE	STRATEGY	RESP. AGENCY
1. Eliminate exposure to radiological sources	a. train first responders on principles of time, distance, and shielding	A. B. C. D. E. K. L.
	b. enhance ability to detect radiological sources	A. B. D. K. L.
2. Have a trained cadre to monitor exposure to radiation		A. K.
3. Have a plan in place and people to notify if a radiological incident occurs		A. K.
4. Ensure old structures are not releasing radiological elements		A. K.
5. Identify hazardous areas	a. continue county efforts to map hazardous material sites throughout the county	A. B. D. G. K.

Related Information:

- All first responders receive basic training on response to hazardous material incidents, including radiological emergencies; the basics of time, distance, and shielding are included in the training curriculum.

- Washington County continues to provide local administration of the state Radiological Emergency Preparedness (REP) program, and annually trains county public health and law enforcement, and local public safety personnel in the basics of radiation, health effects of radiation, and how to properly respond to a radiological emergency. The county also hosts a Reception Center for the off-site response to an incident at the Prairie Island Nuclear Generating Plant; annual drills are held, with FEMA evaluated exercises occurring every four years.
- County Emergency Management and Geographic Information Systems staff collectively collaborates on efforts to map hazardous material sites throughout the county, in addition to facilities that may pose additional risk or be subject to the risk posed by hazardous material facilities.
- In early 2012, Washington County implemented a county-wide mass notification system called Code Red which sends critical communications and alerts to citizens signed up via phone call, e-mail or text message.

**Goal #8: Lessen the effects of a hazardous materials release on people and property**

OBJECTIVE	STRATEGY	RESP. AGENCY
1. Know locations of fixed facilities	a. get a 302 list from HSEM every year	A. C. D. G.
	b. have copies of 302 facility plans in the emergency management office and/or the fire department	A. C. D.
	c. make site visits to those facilities that pose the most threat	A. B. D.
2. Identify possible threats	a. Maintain open communication with residents and officials	A. B. C. G.
3. Work with facility coordinators so that they are aware of local capabilities and vice versa	a. coordinate training sessions together	A. C. D. G. K.
	b. exercise together, with site-specific scenario	A. C. D. E. G. K.
4. Practice utilizing early notification	a. utilize the county-wide calling system	A. B. C. D. E.
	b. utilize television in remaining informed	A. G. J. H.
	c. to have a plan in place and people to notify if a hazardous material spill occurs	A. B. C. D. E. G.
	d. utilize radio systems to remain informed	A. B. C. D. E. G. K.

5. Educate first responders to the hazards the county potentially faces	a. conduct exercises with specialized teams to evaluate first responders capabilities	A. B. C. D. E. G. K.
6. Increase security	a. purchase monitoring devices for the fuel tanks at the schools	H. C.
	b. purchase security for storage sites of hazardous materials (ie. Fencing, monitoring devices, locks)	G.
	c. increase, enhance, or establish security infrastructure for 302 facilities	A. B. C. G. I.

Related Information:

- Emergency Management staff request the full list of facilities that use and/or manufacture hazardous materials from the Division of Homeland Security and Emergency Management; this data is used for the county’s Hazard Analysis Plan and in general planning, training, and exercises involving hazardous materials.
- Several facilities within Washington County share their emergency response/contingency plans with local and county public safety personnel, Facility plans are on file with the county Emergency Management office and local fire departments.
- Public safety and emergency management staff regularly meet with officials and other facility personnel at those facilities that post the greatest threats.
- Facilities are responsible for the purchase and maintenance of their own safety/security measures. Several facilities have made recent improvements to their safety/security systems.
- In early 2012, Washington County implemented a county-wide mass notification system called Code Red which sends critical communications and alerts to citizens signed up via phone call, e-mail or text message.

**Goal #9: Lessen or eliminate negative effects of water supply contamination to ensure an ample and safe water supply**

OBJECTIVE	STRATEGY	RESP. AGENCY
1. Keep all water supplies safe by preventing water supply contamination	a. test water supply often	B. C. F.
	b. lock doors on water facilities	B. C. F.
	c. require proper identification or code for access to water facilities	B. C. F.
	d. during orange (or higher) alerts, put on extra patrols	A. B. C. E. F.
	e. work with MN Department of Health	B. F.
	f. add banking around all Water Treatment Sites within Washington County	B. C. F.
	g. investigate the status of old abandoned wells	B. C.
	h. seal all unused wells within the county	B. C.
	i. safeguard aquifers by maintaining a strong wellhead protection program	B. C.
	j. have county assist with funding in private well testing	B.
	k. replace or relocate failing septic systems with improved safe guards or an improved design to reduce or eliminate impacts	B. C. G. H. J.
2. Have an alternate water supply identified and available	a. mutual aid agreement between communities for an emergency response plan including back up water supply	A. B. C.
	b. promote neighborhood cooperation/sharing	C. J.

	c. identify sources of potable water	B. C.
3. Conserve water	a. update community water plan as needed	B. C.
	b. identify triggers for implementation of water conservation measures	B. C.
	c. <i>limit or prohibit groundwater use for irrigation of non-agricultural production lands</i>	C.
	d. <i>encourage stormwater capture and use for irrigation</i>	C.
4. Further educate the public	a. identify vulnerabilities of private versus municipal systems	B. C. E. F.
	b. limit the number of private wells / encourage centralized community water systems	B. C.
	c. provide education and financial incentives for farmers to manage chemicals and pesticides in an environmentally safe manner	B. C. K. L.
5. Coordinate with other relevant plans and agencies at the county and municipal level	a. Washington County Groundwater Plan	B. C. K.
	b. local organizations	B. C. K.
	c. WMO's	B. C. K.
	d. DNR	B. C. K.
	e. NPDES permits	B. C. K.
	f. Wellhead Protection Plans	B. C. K.

	g. ensure all communities over 3,300 in population are completing their Vulnerability Assessment	B. C. K.
	h. ensure communities are meeting other regulations	B. C. K.
6. Implement water quality improvements for all water types	a. loop the water system	C. G. J. K. L. M. N.
	b. add or replace a water tower	B. C. D. M.

Related Information:

- In 2009, the cities of Woodbury, Forest Lake and Cottage Grove conducted a water contamination tabletop exercise sponsored by the MN Department of Health.

**Goal #10: Prevent or reduce impacts at schools in the event of a hazard/disaster that is natural or man made**

OBJECTIVE	STRATEGY	RESP. AGENCY
1. [REDACTED]	a. [REDACTED]	H.
	b. [REDACTED]	H.
	c. [REDACTED]	H.
2. [REDACTED]	a. [REDACTED]	A. C. D. E. H.
3. [REDACTED]	a. [REDACTED]	C. H.
	b. [REDACTED]	B. H.
	c. [REDACTED]	A. C. D. E. H.
4. Prevent or reduce impacts to persons and property from windstorms, straight line winds or tornadoes or other natural hazards	a. build or maintain storm shelters (or retrofit existing structures) for students, staff, and visitors who are vulnerable because such shelter is not available	B. C. G. H. I. J.

5.	a.	A. C. E. H. K.
	b.	A. C. E. H. K.
	c.	A. C. E. H. K.

Related Information:

- In early 2012, Washington County implemented a county-wide mass notification system called Code Red which sends critical communications and alerts to citizens signed up via phone call, e-mail or text message.
- Several school districts have implemented notification systems for emergency notices to students and parents.

**Goal #11: Reduce the risk of wildfire damaging property and causing injury or death**

OBJECTIVE	STRATEGY	RESP. AGENCY
1. Create an informational system so that communities can decrease their risk	a. hire a forester to inventory trees that may increase the risk of spreading wildfires	B. C. K.
	b. continue to provide risk assessments for communities within the county	D. K.
	c. utilize resources to assess the risk of wildfire potential whether through assessments, mapping and/or other means	A. B. C. D. K.
2. Provide alternate methods of fire suppression or enhance existing methods	a. add dry hydrants	B. C. D.
	b. remove trees identified as a hazard	C. C. D. K. L. M.
	c. replace and/or repair old fire hydrants	C. D.
3. Improve upon infrastructure to address gaps or deficiencies	a. add a fire station	C. D.

**Goal #12: Reduce the risk of dam and levee failure**

OBJECTIVE	STRATEGY	RESP. AGENCY
1. Create a more efficient system for inspections	a. inspect dams and levees annually and repair as needed	B. C. K.
	b. ensure dams and levees are properly maintained, implement improvements as needed	C. K.
	c. build or rebuild levees and/or dams to meet FEMA accreditation and/or certification standards	C. K.
	d. identify places for additional small dams and wetland restoration in watersheds by using the Natural Resources Inventory as a guide	K.
	e. provide additional information and/or advance warning to jurisdictions when rivers begin to flood by adding more river monitor gauges to the waterways throughout and adjacent to Washington County	A. C.
	f. see applicable objectives and strategies identified with Goal #1	

Related Information:

- In 2010, the City of Afton established an Old Village Task Force to assess the needs of the area and provide recommendations for improvement to the City Council. Included in the study was an assessment of the city’s existing levee, which is not FEMA accredited and does not protect the Old Village area of Afton from the 100-year flood event. The Task Force recommended reconstruction of the levee and to seek FEMA accreditation. Part of the levee is accredited by the Corps of Engineers but is not certified.



- The City of Stillwater has pursued efforts to construct a new levee wall. Phases 1 (a double retaining wall from Nelson Street to the gazebo) and 2 (a double retaining wall around Mulberry Point) are complete. Phase 3 – a 2,000ft floodwall along a roadway near the river – has been on hold for several years, pending environmental studies and due to financial constraints.
- The MN Dam Safety Program oversees the maintenance and structural integrity of dams.

**National Flood Insurance Program Compliance**

**Goal #1A: Identify actions related to participation in and continued compliance with the National Flood Insurance Program (NFIP)**

OBJECTIVE	STRATEGY	RESP. AGENCY
<p>1. Evaluate improvements to administration of the NFIP</p>	<p>a. evaluate permit application forms to determine whether modifications should be made to require identification of FIRM, date, zone and BFE; develop a checklist for review of building/development permit plans and for inspection of development in floodplains (a model is available)</p>	<p>B. C.</p>
	<p>b. set a goal to have each plan reviewer and inspector attend a related training periodically (e.g., every three years)</p>	<p>B. C.</p>
	<p>c. sponsor a periodic workshop for surveyors and builders</p>	<p>B. C.</p>
	<p>d. encourage certain staff positions to obtain and maintain Certified Floodplain Manager certification</p>	<p>B. C.</p>
	<p>e. maintain a map of areas that flood frequently (e.g., areas where repetitive loss properties are located) and prioritize those areas for inspection immediately after the next flood</p>	<p>B. C. K.</p>
	<p>f. hold work session for newly elected officials and new appointees to planning commissions and appeals/variance boards, to provide an overview of floodplain management, the importance of participating in the NFIP, and the implications of failing to enforce the requirements or failing to properly handle variance requests</p>	<p>B. C. K.</p>
	<p>g. communities that have experienced multiple flood disasters can evaluate FEMA’s new Substantial Improvement/Substantial Damage Desk Reference (FEMA P-758, due out early Fall) for suggestions related to being prepared to handle post-disaster damage inspections</p>	<p>B. C.</p>

	h. obtain FEMA’s Substantial Damage Estimator and attend training to be prepared to use it when damage occurs; develop agreements to augment local inspection personnel after major disasters	B. C. K.
	i. review other local regulatory programs and planning tools, such as the comprehensive plan and zoning ordinance, and report on opportunities to improve consistency with the objectives of floodplain management	B. C.
2. Improve public information related to floodplain regulations and reducing future damages.	a. maintain supplies of FEMA/NFIP materials to help homeowners evaluate measures to reduce damage	A. C. D. E. H.
	b. develop handouts for permit applicants on specific issues (which may vary by community), such as installation of manufactured homes in FHAs according to HUD’s installation standards (examples available), or guidance on improving/repairing existing buildings	B. C. K. L.
3. Evaluate possible program changes	a. evaluate ‘higher standards’ that are proven to reduce flood damage, especially freeboard, setbacks, limitations on enclosure size, and prohibition on use of fill	B. C. K. L.
	b. CRS communities should, at least every 5 years, examine CRS-eligible activities to determine if it is feasible to augment an existing activity or undertake a new activity	B. C.
	c. communities not in the CRS can request assistance to determine current activities that yield points and whether to apply (some states may provide summaries of the dollar savings that would accrue to policyholders as a function of possible CRS class)	C.

Related Information:

- Between 2000 and 2010, Washington County partnered with FEMA and the MnDNR to update the outdated Flood Insurance Rate Maps (FIRM), resulting in increased accuracy of floodplain locations and elevations. The FIRMs became effective on February 3, 2010 for those communities who participate in the National Flood Insurance Program, including Washington County on behalf of the local townships.

### Changing Priorities

Priorities at the neighborhood, township, city, watershed, county, and other levels of government were reevaluated through the goals, objectives, and strategies as well as through the specific mitigation projects listed within this plan. *The changes to the plan since the 2018 plan amendment are in italics.*

**Annex F: CURRENT/COMPLETED MITIGATION PROJECTS**

Mitigation projects have been carried out at multiple levels: the federal, state, county, city, township, and individual level. Washington County residents, businesses, and local governments have been pro-active in preparing themselves for a variety of disasters.

The following are some examples of mitigation projects that have been or are currently implemented in Washington County.

**City and Township Current and Completed Mitigation Projects**

<b>CITY OF AFTON</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"> <li>• Emergency Operation Plan (EOP)</li> <li>• Contracts with Washington County for Public Works and Law Enforcement services</li> <li>• Lower St. Croix Valley Fire Department is contracted for Fire services</li> <li>• Previously elevated five homes and two commercial properties</li> </ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"> <li>• EOP was last updated in March 2011</li> <li>• Continues to provide hazard mitigation information to citizens periodically</li> <li>• Accepted DNR grant in 2012 for Flood Hazard Mitigation to replace the levee and to manage surface water in the downtown</li> <li>• A county tower was added to enhance the 800 mhz radio system</li> <li>• A portable Flood Shelter was added for flooding events as pumps need to be monitored 24 hours a day</li> <li>• Flood Prevention equipment such as sand bags and jersey barriers were saved for reuse</li> <li>• A consulting company completed a Storm Water Management Plan for Afton’s Old Village</li> <li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li> </ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Three residential homes in the floodplain were purchased and removed</li> <li>• A floodwall was created and work was done on the levee to reconfigure the flow of water</li> <li>• Work is being done to upgrade the existing levee to have it be certified by FEMA</li> <li>• After work is done to levee, land behind the levee will no longer be in the floodplain</li> <li>• New stormwater system</li> <li>• Sanitary sewer system is in place downtown to replace private septic systems</li> <li>• New restroom was created at city park</li> <li>• Have three flood pumps</li> <li>• Putting in a storm water lift station which will have a generator</li> </ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Expanded the sanitary sewer system</li> <li>• No longer have a 201 community septic system; now have city sewer in downtown area</li> <li>• Watershed district had a program where they offered to do compliance checks and would pay up to \$5,000 to pay for fixes to septic systems</li> </ul>

- City added triggers requiring septic upgrades
- County has a program for low interest loans to fix septic systems
- One of the three lift stations (critical facilities) has an emergency generator
- Have a wastewater treatment system (critical facility), which has an emergency generator
- Have a back up electrical system for City Hall

<b>CITY OF BAYPORT</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"><li>• Emergency Operation Plan (EOP)</li><li>• Community newsletter includes mitigation articles for the purpose of educating the citizens on how to better prepare for disasters.</li><li>• Generators are available at the fire station and pump stations for power outages</li><li>• Plan, train, exercise and share information with the Minnesota Correctional Facility and Anderson Corporation</li><li>• Works with facility managers on security measures at large venues</li><li>• Raised Point Road and 2<sup>nd</sup> Ave. S. six feet to reduce the risk of future flooding</li><li>• At least ten houses were raised ten feet and built new basements to reduce the risk of future flooding</li><li>• All new homes built in floodplain must be built above flood elevations</li></ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"><li>• Emergency Operation Plan was combined with the City Safety Manual</li><li>• Raised Lake Street and Lakeside Drive out of the floodplain</li><li>• Continues to provide information to citizens regarding hazard preparedness</li><li>• Continues to plan, train, exercise and share information with the Minnesota Correctional Facility, Anderson Corporation and the King Allen Plant</li><li>• Bayport has amended the zoning ordinance to update the floodplain ordinance which is actively enforced</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"><li>• Enhanced Comprehensive Flood Plans including identification of locations and action items</li><li>• Hosted local trainings on pipelines and rail</li><li>• Drill annually with private companies Anderson Windows Corp and King Plant</li><li>• Respond and drill with local correctional facility</li><li>• Built new fire station with a generator</li></ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"><li>• State Highway 95 was redone in 2019/2020 with traffic calming techniques and more pedestrian crossings</li><li>• Jersey barriers were put in and culverts were plugged to address flooding, roads were closed</li><li>• Land and Water Legacy funds (Washington County program) were utilized to purchase homes that flooded</li><li>• Public schools recently upgraded to 800 mhz and added boosters to increase communication capabilities</li><li>• New Fire Station built</li><li>• Perform annual drills with quarry, schools, etc.</li></ul>

<b>BAYTOWN TOWNSHIP</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"><li>• Meets with Minnesota Correctional Facility and Stillwater quarterly to share information</li><li>• Works with facility managers on security measures at large venues</li><li>• Trees are evaluated for withstanding storm events</li><li>• Developments are encouraged to put utilities underground</li><li>• Generators are leased; the community does not own any</li><li>• Adopted County ordinances</li></ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"><li>• County ordinances were last adopted in 2007</li><li>• Continues to meet with Oak Park Heights Correctional Facility and Stillwater to share information</li><li>• Continues to meet with facility managers on security measures at large venues</li><li>• Generators continue to be leased</li><li>• Continues to inform citizens of hazard mitigation information</li><li>• Notification required upon sale of property in ground water contamination areas</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"><li>• Continues to utilize Code Red</li><li>• Utilized local newsletter to include articles regarding emergency management, preparedness, and mitigation</li></ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"><li>• Joined Bold Planning</li><li>• Adopted EM position</li></ul>

<b>CITY OF BIRCHWOOD VILLAGE</b>
<i>Activities Identified Occurring Prior to 2004</i> <ul style="list-style-type: none"><li>• Emergency Operation Plan (EOP)</li><li>• Working on developing rain gardens to reduce runoff into the lake</li><li>• Parks and Open Space Committee</li></ul>
<i>Completed Since 2004 Plan Approval</i> <ul style="list-style-type: none"><li>• EOP last updated in 2009 with the last major update completed in 1994</li><li>• Some rain gardens were built to reduce water runoff</li><li>• Continues to provide information to citizens about hazard mitigation and preparedness</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<i>Completed Since 2012 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Added a generator</li><li>• As part of the Municipal Separate Storm Sewer System (MS4), educational information is distributed to residents</li><li>• In the process of updating a rain garden</li><li>• Continue to participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<i>Completed Since 2018 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Have an AED currently in City Hall</li><li>• Updated Comprehensive Plan</li></ul>

<b>CITY OF COTTAGE GROVE</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"> <li>• Cottage Grove All Hazard Plan has been approved</li> <li>• Emergency Operation Plan (EOP)</li> <li>• Emergency Operation Center (EOC) – working on upgrading</li> <li>• Replacing/upgrading warning sirens</li> </ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"> <li>• Cottage Grove All Hazard Plan was last updated in 2011-2012</li> <li>• In 2009, the cities of Forest Lake and Cottage Grove conducted a water contamination tabletop exercise sponsored by the MN Department of Health</li> <li>• Tabletop exercise performed with a train derailment and vulnerable populations</li> <li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li> <li>• EOC was upgraded with new phone system</li> <li>• EOC will be moving to a new building in 2012; current site will be back-up EOC</li> <li>• Upgraded to 800 mhz system</li> <li>• In process of narrowbanding appropriate sirens</li> <li>• EOPs in place for the Strawberry Festival and Holiday Train events</li> </ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Updated 8 of 11 sirens, the remaining sirens are unable to be updated</li> <li>• Host a Radiological Emergency Preparedness (REP) reception center at local high school – exercise plan annually</li> <li>• Completed a Feasibility Report for fire water flows</li> <li>• Elevation gauge located on road into Grey Cloud Island Township</li> <li>• Red Cross identified congregate care location</li> <li>• Completed a Spill Response Plan with Minnesota Department of Health</li> </ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Completed construction of the Hero Center (Training Center for regional law enforcement and schedule availability for public)</li> <li>• Culvert on Jamaica – West Draw Box Culvert – the Flume (after 2019 flooding industrial park)</li> <li>• Permanent generator for Well 12</li> <li>• Well 9 generator connection</li> <li>• Lightning Detection – Kingston</li> <li>• Water Treatment Plants, interim three of them</li> <li>• Updates to outdated sirens</li> </ul>

<b>CITY OF DELLWOOD</b>
<i>Activities Identified Occurring Prior to 2004</i> <ul style="list-style-type: none"><li>• Reconstruction of the Apple Orchard to better prepare for straight line winds</li><li>• Railroad crossings updated with lights</li></ul>
<i>Completed Since 2004 Plan Approval</i> <ul style="list-style-type: none"><li>• Road was reconstructed in 2004/2005 at Apple Orchard to better prepare for straight line winds</li><li>• Continued to provide periodic information to citizens regarding hazard mitigation</li><li>• Continues to monitor through Septic System Inspection Program</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<i>Completed Since 2012 Plan Update Approval</i> <ul style="list-style-type: none"><li>• June 2015 – City Council approved restricting use of existing easement from Doral Road to Apple Orchard Court so that no motorized vehicles are allowed with emergency vehicles as an exception</li><li>• Updated Stormwater Plan</li></ul>
<i>Completed Since 2018 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Enhanced subsurface waste management – ongoing</li></ul>

<b>DENMARK TOWNSHIP</b>
<i>Activities Identified Occurring Prior to 2004</i> <ul style="list-style-type: none"><li>• Water Management Plan</li></ul>
<i>Completed Since 2004 Plan Approval</i> <ul style="list-style-type: none"><li>• Surface Water Management Plan was approved by the Lower St. Croix WMO</li><li>• Comprehensive Plan was updated in 2011</li><li>• Adopted Shoreland and Floodplain ordinances</li><li>• Land and Legacy Act funding purchased land in floodplain</li><li>• Phosphorus Loading Study done at the St. Croix River through South Washington Watershed District and Washington Conservation District</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li><li>• Stream Bank Stabilization Program identified Trout Brook for work in 2012</li></ul>
<i>Completed Since 2012 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Included mitigation information for residents through mediums such as the town website</li></ul>
<i>Completed Since 2018 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Technology upgrade to Townhall</li></ul>

<b>CITY OF FOREST LAKE</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"><li>• Emergency Operation Plan (EOP)</li><li>• Educational information for public through mitigation articles in the city newsletter</li></ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"><li>• In 2009, the cities of Forest Lake and Cottage Grove conducted a water contamination tabletop exercise sponsored by the MN Department of Health</li><li>• EOP was last updated in 2010</li><li>• Added seven outdoor warning sirens since 2004</li><li>• Continues to provide educational information for citizens regarding hazard mitigation</li><li>• Applied for a grant to install seven additional outdoor warning sirens; grant pending</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"><li>• Updated Emergency Operations Plan (EOP)</li><li>• Utilize Siren Report Back software</li><li>• Fire and Police collaborate on preplanning for special events</li><li>• Tornado shelter room was added near slab on grade senior housing</li><li>• Regional storm water feature was added to address water quality</li><li>• City Hall project completed which reduced water runoff and included rain water features; a large chamber was added on Forest Road</li><li>• New City Hall has a structured EOC location and backup generators for the building</li><li>• Fixed the generator and backups for lift stations</li><li>• Four generators were added for critical facilities</li><li>• Water pipes were lined</li><li>• Changed the standards for man hole covers to require them to be water tight</li><li>• Catch basins are being redone to prevent ponding on roadways</li><li>• Fourteen lift stations are getting backup power (portable generators are being added) or a bypass</li></ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"><li>• Partially updated the Emergency Operations Plan</li><li>• Added Emergency Medical Services to local special event plans</li><li>• Procured new Command Vehicle</li><li>• Updated ARMER communications to include every Fire and Public Works employee</li><li>• 2 stormwater studies - downtown &amp; SE of city</li><li>• In process, reunification plans for school district</li><li>• Fire department purchased new equipment</li></ul>

<b>CITY OF GRANT</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"> <li>• Emergency Operations Plan (EOP)</li> <li>• Disaster plan in place</li> </ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"> <li>• EOP was last updated in the early 2000's</li> <li>• Disaster Plan last updated in 2003/2004</li> <li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li> <li>• Emergency Response lines were revised in 2005 to reduce response times</li> <li>• One dry hydrant exists; pipeline extension is planned for spring 2012</li> </ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• All services are contracted</li> <li>• Increased the percentage of financial reserve for emergencies</li> <li>• Inventoried a volunteer list for private resources</li> <li>• Formalized plan for culverts</li> <li>• Continue to utilize Code Red</li> <li>• Installed three emergency sirens</li> <li>• Updated dry hydrants</li> <li>• Inventoried roads and categorized by repair needs</li> <li>• Raised two roads in 2017 due to flooding</li> </ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• City now owns a pole barn for storage</li> <li>• Completed two guard rails to reduce impacts</li> <li>• Maintain outdoor warning sirens annually</li> <li>• Valley Branch Watershed District purchased nine residential homes that were repetitive loss structures. The homes were removed and conservation easements were placed on the properties.</li> <li>• Road signs were purchased in 2021</li> <li>• Raised a road that flooded</li> <li>• Added a new system at city pumphouse on Pine Tree Lake</li> <li>• Have utilized floats to manage water levels to reduce flooding – permitted by MN DNR</li> <li>• Float management system will be getting a new computerized system in 2022</li> </ul>

<b>GREY CLOUD ISLAND TOWNSHIP</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"> <li>• Test wells are monitored every two weeks in the summer and every month in the winter</li> <li>• Three member Public Safety Commission formed</li> <li>• Contract Law Enforcement Services with St. Paul Park</li> <li>• Grey Cloud Island Township Emergency Roster in place and updated every six months, this is then given to Cottage Grove and St. Paul Park officials</li> <li>• Meets quarterly with St. Paul Park police and fire</li> <li>• Neighborhood Watch program in place</li> <li>• Blast Committee and a Reclamation Committee were formed with Aggregate Industries and Grey Cloud Island citizens</li> <li>• Works with Aggregate Industries on safety issues and sharing information</li> <li>• Upper causeway has been raised</li> <li>• Individual generators are owned</li> <li>• Individual citizen equipment such as a helicopter can be used in a disaster</li> <li>• New pipelines put under the water due to crude oil slicks from leaky pipes, now require notification of maintenance</li> </ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"> <li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li> <li>• Community Contact Roster continues to be updated</li> <li>• Test wells continue to be periodically monitored</li> <li>• Worked with St. Paul Park in preparation for potential flooding in winter/spring of 2011</li> <li>• Periodic education of citizens regarding mitigation activities</li> <li>• Access restriction on the fill/causeway is in progress as the Master Plan was emphasized during potential flooding in winter/spring of 2011</li> <li>• St. Paul Park continues to provide police and fire services</li> <li>• Ambulance services are provided out of Cottage Grove</li> </ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Most individual wells were tested for PFCs</li> <li>• Roadway was raised out of floodplain</li> </ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Looking into replacing town hall</li> </ul>

<b>CITY OF HUGO</b>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"><li>• EOP last updated in 2005</li><li>• Floodplain Ordinance last updated in 2009/2010</li><li>• 8 outdoor warning sirens were added and one was moved for a total of 13</li><li>• Continues to educate citizens on hazard mitigation/preparedness</li><li>• Fall and Spring Clean Up days – removal of household hazardous waste</li><li>• Pre Plan Program – Fire Department meets with business owners to determine hazard locations in buildings</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"><li>• Updated Emergency Operations Plan in 2015</li><li>• Continued Preplan Program with the Fire Department</li><li>• City Ordinance Update</li><li>• An ordinance revision included the requirement that a safe room alternative be added by a builder if a development is proposed that exceeds a certain number of buildable lots</li></ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"><li>• Buried electrical power lines in downtown area</li><li>• Stormwater reuse projects</li><li>• New Public Works building</li><li>• New fire hydrant next to Public Works building</li><li>• Resiliency plan</li><li>• Maintenance of JD #@ and JD #3</li><li>• Xcel Energy gas pipeline along Highway 61 upgrade</li><li>• Washington County compost site on 170th Street</li><li>• Purchased 3 properties</li></ul>

<b>CITY OF LAKE ELMO</b>
<i>Activities Identified Occurring Prior to 2004</i> <ul style="list-style-type: none"><li>• City works with Valley Branch Watershed District</li><li>• Minnesota Disaster Management Handbook</li><li>• In the process of upgrading and adding outdoor warning sirens</li><li>• Generators are available to cover critical facilities in the event of a power outage</li></ul>
<i>Completed Since 2004 Plan Approval</i> <ul style="list-style-type: none"><li>• City continues to work with Valley Branch Watershed District as well as Browns Creek and South Washington Watershed Districts</li><li>• The Minnesota Disaster Management Handbook has not been recently updated</li><li>• Added six outdoor warning sirens</li><li>• Public Works Building has portable generator</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<i>Completed Since 2012 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Adopted more restrictive watershed rules</li><li>• Added generators to critical facilities (6)</li><li>• Continue to utilize Code Red</li></ul>
<i>Completed Since 2018 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Added generator to lift stations</li><li>• Valley Branch Watershed District - sub watershed analysis, hydraulic flood analysis</li><li>• Flood monitor downtown with regional ponding</li></ul>

<b>CITY OF LAKE ST. CROIX BEACH</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"><li>• Working on completing a Flood Operations Management Manual</li><li>• Working on Hazard Mitigation Grant to buy or elevate homes in one hundred year floodplain (only where homeowners agree to participate)</li><li>• Levees are monitored and inspected</li><li>• Feasibility study for pump station</li><li>• Acquisition of seven homes and elevation of ten homes</li></ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"><li>• Flood Management Manual was updated in April 2009</li><li>• Continues to monitor and inspect levees</li><li>• Feasibility Study was conducted regarding a pump station</li><li>• Continues to provide information to citizens regarding hazard mitigation</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"><li>• Raised one home out of the flood zone</li><li>• Continue to utilize Code Red notification system</li></ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"><li>• Added one pump pit for flooding</li><li>• Purchased large pump which also has a generator</li><li>• Removed trees from the levee</li><li>• Relocated utility poles</li><li>• Flood Advisory Committee meets annually</li><li>• Meet annually to discuss and update the Emergency Operations Plan</li><li>• Hazard Mitigation Assistance Guidance Addendum</li></ul>

<b>CITY OF LAKELAND</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"> <li>• Emergency Operation Plan (EOP) in place</li> <li>• Community siren system</li> <li>• Three generators available for electrical back up</li> <li>• Mitigation information is integrated into the city newsletters</li> <li>• Drainage plan for storm water runoff</li> <li>• One siren being evaluated</li> <li>• Other siren upgraded electronic control unit</li> <li>• Wellhead Protection Plan is finished</li> <li>• River District Overlay in place</li> </ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"> <li>• EOP last updated in 2006</li> <li>• Wellhead Protection Plan last updated in 2011</li> <li>• Continues to provide education to citizens regarding hazard mitigation</li> <li>• Planning to raise a road out of the floodplain in 2012</li> <li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li> </ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Four out of seven repetitive loss homes were raised/retrofitted</li> <li>• Historical resources – add City Hall</li> <li>• Removed some chemicals from the pump house</li> <li>• Purchased backup generator for pump house in the fall of 2017</li> </ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Holding tanks were added to address septic system issues</li> <li>• Updating Wellhead Protection Plan in 2022/2023</li> <li>• Purchased repetitive loss structures with FEMA grants</li> <li>• Transitioned from utilizing gas to liquid chemicals for water which is more stable and has less risk</li> <li>• Have three generators, one of which is mobile/portable but will be decommissioned</li> <li>• Adding a new generator at Wellhouse 1 which will be fixed and use natural gas</li> <li>• Currently have two outdoor warning sirens</li> <li>• Updated the Comprehensive Plan</li> <li>• Utilize a City Emergency Handbook / Emergency Response Plan – MPCA Certified</li> </ul>

<b>CITY OF LAKELAND SHORES</b>
<i>Activities Identified Occurring Prior to 2004</i> <ul style="list-style-type: none"><li>• Plans to mitigate repetitive loss structure</li></ul>
<i>Completed Since 2004 Plan Approval</i> <ul style="list-style-type: none"><li>• Two residential homes were removed from the floodplain; individual wells were capped</li><li>• One structure was floodproofed</li><li>• Continues to provide citizens with periodic information regarding hazard mitigation</li><li>• Rain gardens were installed to reduce run-off</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<i>Completed Since 2012 Plan Update Approval</i> <ul style="list-style-type: none"><li>• County has taken over septic permitting</li><li>• Continue to utilize Code Red mass notification system</li></ul>
<i>Completed Since 2018 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Comprehensive Plan Update in 2020</li><li>• Storm Water Management Plan, which was part of the Comprehensive Plan update</li></ul>

<b>CITY OF LANDFALL</b>
<i>Activities Identified Occurring Prior to 2004</i> <ul style="list-style-type: none"><li>• Emergency Operation Plan (EOP)</li></ul>
<i>Completed Since 2004 Plan Approval</i> <ul style="list-style-type: none"><li>• EOP last updated in 2010 as part of an updated Emergency Operations Section of the Resident Handbook</li><li>• Adopted new building codes which require new manufactured homes to be anchored</li><li>• Continues to have a designated storm shelter</li><li>• Continues to provide citizens with periodic information about hazard mitigation</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<i>Completed Since 2012 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Improvement to storm water drainage system</li><li>• Pre-assigned personnel to open storm shelter during an event</li><li>• Continue to utilized Code Red mass notification system</li><li>• Included information, such as regarding the use of Code Red, in local newsletter</li></ul>
<i>Completed Since 2018 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Street updates</li><li>• Spring drain - ran a new line</li><li>• Installed retaining walls</li><li>• New homes have hurricane straps, footings on new homes, not on existing homes</li><li>• Open shelter for tornado threat</li><li>• Send email to residents through new internal software</li></ul>

<b>CITY OF MAHTOMEDI</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"> <li>• Revising Emergency Operation Plan</li> <li>• Storm Water Management Plan in place</li> <li>• Encourage public awareness at public functions of mitigation activities</li> <li>• Will be adding a water tower</li> </ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"> <li>• EOP last updated in 2006</li> <li>• Water tower was added</li> <li>• Continues to work with Washington County Emergency Management to provide citizens with education on hazard mitigation and preparation</li> <li>• Fencing was installed around two of the ten critical facility sites</li> <li>• Alarm systems were added to two of the three city buildings</li> <li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li> </ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Continue to utilize Code Red</li> <li>• Standard Operation Procedures were reviewed, enhanced</li> <li>• Additional security measures were added to two city hall facilities</li> <li>• Storm water management (rain gardens) were installed in three historic locations</li> <li>• New well house installed</li> <li>• Second water tower completed</li> <li>• Mobile generators purchased and staged</li> <li>• Outdoor warning siren was purchased and installed</li> <li>• Inflow covers are added to new sanitary manholes</li> </ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Glenmar Diversion for stormwater management</li> <li>• Added a pumping station for stormwater management</li> <li>• Looped watermains in older areas of the community</li> <li>• Creation of datafi (data management solution) for their GIS mapping system</li> <li>• Pond dredging</li> <li>• Inflow covers are added to sanitary manholes on all streets</li> <li>• Updated the last outdoor warning siren</li> <li>• Sanitary sewer lining</li> <li>• Install rain gardens with new road projects</li> <li>• Upgraded infrastructure by replacing old water lines to increase fire flow and upsized to meet current standards</li> </ul>

<b>CITY OF MARINE ON ST. CROIX</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"> <li>• Emergency Operation Plan (EOP)</li> <li>• Storm Water Management Plan</li> <li>• In process of upgrading city wide sewer system</li> </ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"> <li>• EOP last updated in 1996</li> <li>• Storm Water Management Plan was updated in 2012</li> <li>• City-wide sewer system continues to be upgraded and expanded</li> <li>• Outdoor warning sirens are in progress of being updated currently</li> <li>• An outdoor warning siren was added</li> <li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li> </ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Continue to upgrade sewer system</li> <li>• Continue to utilize CodeRed</li> <li>• Added a backup generator for the Fire Station</li> <li>• Completed a Well Head Protection Plan for Jackson Meadows development</li> <li>• In process of updating ordinances and the city’s Comprehensive Plan</li> <li>• Utilizing GIS to map critical areas</li> <li>• Stormwater Management Plan was updated as part of the 2018 Comprehensive Plan update</li> </ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Procured a new portable generator</li> <li>• Self-Contained Breathing Apparatus for all fire members (2022)</li> <li>• Hazardous Material washer and dryer installed to process contaminated fire gear</li> <li>• Storm Water Management Plan - 2018</li> <li>• Septic study in 2020</li> <li>• Sewer system updating</li> <li>• 4G &amp; 5G update 2022 - this will have a public safety impact</li> </ul>

<b>MAY TOWNSHIP</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"> <li>• Forester hired to look into Oak Wilt problems</li> <li>• Backup generator for 201 System</li> </ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"> <li>• Township no longer contracts a forester due the end of a DNR grant</li> <li>• One backup generator is still available</li> <li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li> </ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Lynch Road culvert failed due to corrosion. After a sinkhole occurred, the road was closed. The road was rebuilt and the culvert was replaced in a way to mitigate future issues.</li> <li>• Educated the Town Board members regarding mitigation</li> </ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Annual street sweeping and storm sewer cleaning</li> <li>• Removal/replacement of existing storm sewer outlet off of 130th St.</li> <li>• Removal/replacement of deficient curb on 130th Street to address erosion and redirect drainage to existing catch basin</li> <li>• Installation of new curb along 124th Street to address drainage erosion</li> <li>• Repairing catch basins on Ozark Ave to address sink hole near catch basin south of Ozark Ave Ct. and prevent future infiltration of road soils into catch basins near Ozark Ave.</li> </ul>

<b>CITY OF NEWPORT</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"> <li>• Emergency Operation Plan (EOP)</li> <li>• Flood Policy: adopted March 4, 2004</li> <li>• Disaster Control Plans</li> <li>• Feasibility study on possible Mississippi floodwater mitigation efforts</li> <li>• Potential purchase and removal of six to ten homes from the floodplain</li> </ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"> <li>• Emergency Operation Plan was last updated in 2010</li> <li>• Flood Policy was reapproved in 2010</li> <li>• Disaster Control Plan was integrated into the Emergency Operation Plan</li> <li>• One home in the floodplain was purchased and removed</li> <li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li> </ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Finishing purchase of a repetitive loss structure</li> <li>• Purchased an additional three homes and removed them from the floodplain</li> <li>• Raised intersection elevation to reduce/eliminate flooding</li> <li>• Raised lift station elevation to reduce/eliminate flooding</li> <li>• Added alarms and controls at critical facilities</li> <li>• Added generators for critical facilities (lift station and well)</li> </ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• New City Hall will have generator, storm shelter, teleconferencing capability for remote meetings</li> <li>• Received grant in March 2022 to remove the last repetitive loss structure located behind the levee; the grant also includes breaching the levee</li> <li>• Comprehensive Plan was adopted in 2019</li> <li>• Sewer and Water Risk and Resiliency Plan was completed</li> </ul>

<b>CITY OF OAK PARK HEIGHTS</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"> <li>• Emergency Operation Plan (EOP)</li> <li>• Participation in National Tornado Week Drills</li> <li>• Ample Warning Siren Program</li> <li>• Monthly Siren warning test in coordination with Stillwater Area High School</li> <li>• Plans to put in new outdoor warning sirens</li> </ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"> <li>• EOP is reviewed and updated annually with the last update in Spring of 2011</li> <li>• Continues to have Ample Warning Siren Program</li> <li>• Continues to have monthly siren warning test in coordination with Stillwater Area High School</li> <li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li> </ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Interstate bridge was built out of the floodplain</li> <li>• Portable generator was purchased, including a plug in at lift stations</li> <li>• Future Land Use Map</li> <li>• A fixed generator for City Hall and well 1 was installed</li> <li>• Senior housing has safe areas for severe weather</li> </ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• School radio towers boosted completed</li> <li>• Outdoor warning sirens were evaluated in 2021</li> <li>• SCADA system (operational system for utilities) was updated</li> <li>• New Police Chief was hired</li> <li>• Chlorinated city water</li> <li>• Well houses have security infrastructure</li> <li>• City hall has replaced and/or fixed security systems</li> <li>• Temporary flood walls are installed at the King Plant Site on the St. Croix River</li> </ul>

<b>CITY OF OAKDALE</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"><li>• Emergency Operation Plan (EOP)</li><li>• Improving storm sewer system to prevent flooding in low areas</li><li>• Bought generator in 2003 for critical facilities during power outages</li><li>• Hired a forester for a city forester program</li><li>• Works with facility managers on security measures at large venues</li><li>• In 2004, the city is replacing two outdoor warning sirens for a total of six.</li></ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"><li>• Emergency Operation Plan is updated periodically with a major review last completed in 2005</li><li>• Street reconstruction projects are ongoing to improve the storm sewer system</li><li>• In 2009, built in back-up generators were included at all 13 sanitary lift stations</li><li>• Continue to have a city forester full time with an additional part time person during the summer months</li><li>• The city completed replacing two outdoor warning sirens and all six sirens have battery back-ups</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li><li>• Works closely with large employer annually on security measures</li><li>• Fire Department personnel pre-plan with commercial buildings on critical building locations annually</li><li>• Lake Level Gauge Notification System was added to Tanners Lake</li></ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"><li>• Installed generators at fire stations and at Discovery Center in 2015</li><li>• Storm shelter build at mobile home park</li><li>• Surface Water Management Plan was updated</li><li>• Road reconstructions included storm water management</li><li>• Infiltration Plan was created</li><li>• Outdoor warning sirens were upgraded</li><li>• Added firefighter/paramedics</li><li>• Purchased a firetruck (ladder)</li><li>• Updated the floodplain map</li></ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"><li>• Plans for future City Hall remodel, new Police Station with a shelter area, and a new Public Works building with a generator</li><li>• Emergency Operations Plan updates</li><li>• Outdoor warnings sirens continue to be updated</li><li>• Still utilize CodeRed communication system</li><li>• Preplan with commercial businesses annually</li><li>• Continue to work closely with large employer annually on security measures</li><li>• Added full time Firefighters and will be moving away from paid-on-call staff</li><li>• Public Works does annual training for illicit discharge detection</li></ul>

<b>CITY OF PINE SPRINGS</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"> <li>• Designated Emergency Manager – Mayor</li> <li>• Comprehensive Plan</li> </ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"> <li>• Comprehensive Plan was adopted in 2009</li> <li>• Working with MnDOT on Hilton Trail reconfiguration</li> <li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li> </ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Repaired culverts</li> <li>• Created an Emergency Plan</li> <li>• Contracted for services</li> <li>• Distributed newsletters on environmental safety issues to residents</li> </ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Will clean out culvert in 2022</li> <li>• In compliance with MS4 permit</li> <li>• Comprehensive Plan Update in 2020</li> <li>• Update building codes annually</li> <li>• Two major resurfacing road repairs were completed</li> </ul>

<b>CITY OF ST. MARY’S POINT</b>
<i>Activities Identified Occurring Prior to 2004</i> <ul style="list-style-type: none"><li>• City has an appointed Emergency Manager</li><li>• Sand-bagged individual homes, sand-bag dikes along two roads</li><li>• Approximately ten homes have been rebuilt on higher ground to prevent flooding</li><li>• Some pumping, closed streets and controlled access</li><li>• Cost estimates have been prepared for raising roads to provide access during flood events.</li></ul>
<i>Completed Since 2004 Plan Approval</i> <ul style="list-style-type: none"><li>• Continues to have an appointed Emergency Manager</li><li>• Approximately three homes have been flood proofed or bought out and removed</li><li>• Built 300 foot dyke in times of flooding</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<i>Completed Since 2012 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Continue to utilize Code Red notification system</li></ul>
<i>Completed Since 2018 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Contracted for security cameras</li><li>• Local Surface Water Management Plan was approved in 2019</li><li>• Comprehensive Plan was updated in 2019</li></ul>

<b>CITY OF ST. PAUL PARK</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"> <li>• Emergency Operation Plan (EOP)</li> <li>• Plan, train, exercise and share information with Marathon Ashland Petroleum Refinery and Grey Cloud Island Township</li> <li>• Generators are available for critical facilities during power outages</li> <li>• Works with federal and state Buffer Zone Protection Plan</li> </ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"> <li>• Emergency Operation Plan was last updated on January 7, 2011</li> <li>• Marathon Ashland Petroleum Refinery became Northern Tier Energy Refinery; they continue to plan, train, exercise and share information as well as with Grey Cloud Island Township</li> <li>• Public Works Department has one portable generator</li> <li>• Continues to work with federal and state Buffer Zone Protection Plan</li> <li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li> <li>• City Staff works with Northern Tier Energy Refinery on emergency situations</li> <li>• They provide Fire and Police services to Grey Cloud Island Township</li> <li>• Worked with Washington County and Grey Cloud Island Township on flood preparations in 2010</li> </ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Members of, and train with, Wakota Community Awareness and Emergency Response (CAER)</li> <li>• Updated generators</li> <li>• Refinery within the city has made improvements to improve safety</li> </ul>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"> <li>• Completed Grey Cloud Island Drive culvert project</li> <li>• Updated GIS and asset information for storm water management</li> <li>• Completed security system for city hall</li> <li>• Purchased an identification badging system for City Hall</li> <li>• Utilized BoldPlanning software for Emergency Operations Plan updates</li> <li>• Approved Comprehensive Plan Update in 2020</li> </ul>

<b>CITY OF SCANDIA</b>
<i>Activities Identified Occurring Prior to 2004</i> <ul style="list-style-type: none"><li>• Fire prevention program at Fire Station and at school</li><li>• Enlarging culverts</li></ul>
<i>Completed Since 2004 Plan Approval</i> <ul style="list-style-type: none"><li>• Provide fire prevention program at schools (including preschool)</li><li>• Hosts open house event at Fire Station</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<i>Completed Since 2012 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Continue participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li><li>• Worked with Washington County Housing and Redevelopment Authority (HRA) to receive FEMA funding and construct a storm shelter at the Oakhill Cottages</li><li>• Working on backup generator for fire station</li><li>• Creating/updating city Emergency Operations Plan and Continuity of Operations Plan</li></ul>
<i>Completed Since 2018 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Purchased a generator with FEMA grant for the Fire Station and Public Works</li><li>• A Water and Sewer Supply City Feasibility Study was completed in 2019</li><li>• Local watershed district is working on a Storm Water Management Project to pre-treat water before it goes into the lake</li></ul>

<b>CITY OF STILLWATER</b>
<p><i>Activities Identified Occurring Prior to 2004</i></p> <ul style="list-style-type: none"><li>• Emergency Operation Plan (EOP)</li><li>• Building and fire codes enforced</li><li>• Land use planning is in effect</li><li>• Flood mitigation measures are being developed</li><li>• Emergency Management Program in place</li><li>• Brochures for prevention and educational information is available</li><li>• Flood levee will be constructed to protect the downtown area from flooding</li><li>• Stillwater Bridge will be upgraded in 2005</li></ul>
<p><i>Completed Since 2004 Plan Approval</i></p> <ul style="list-style-type: none"><li>• EOP was last updated in 2010/2011</li><li>• Stillwater Fire Department Community Wildfire Protection Plan identifies zones classified as high risk of wildfire</li><li>• A double flood retaining wall from Nelson Street to the gazebo has been completed</li><li>• A double flood retaining wall around Mulberry Point has also been completed</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li><li>• Continues to enforce building codes, fire codes and land use plans</li><li>• Flooding Plan in place as well as an Emergency Management Program</li></ul>
<p><i>Completed Since 2012 Plan Update Approval</i></p> <ul style="list-style-type: none"><li>• Added a knee wall up to elevation 688 along St. Croix River</li><li>• Added permanent flood improvement projects</li><li>• Added an outdoor warning siren at a parking ramp</li><li>• Added a backup generator for the fire station</li><li>• Police station was remodeled and including wiring for backup power</li><li>• Security improvements were added for city hall</li><li>• Replaced the generator at the downtown lift station</li><li>• Sewer manholes were being replaced</li><li>• Requirement for when existing buildings change uses, they must meet sprinkling requirements</li><li>• Purchased new ups for server rooms</li><li>• Identified and mapped potential wildfire areas</li><li>• Created stormwater ponding upstream for water management</li><li>• Reevaluation done with ISO</li><li>• Built a new fire station</li><li>• Partnered with Red Cross for the residential smoke detector program</li><li>• Acquired properties along the river to be utilized for passive uses – will be removing structure</li><li>• New interstate bridge was constructed</li><li>• Revamped the existing lift bridge – emergency access in the future</li><li>• Department heads have laptops for emergency response; mobile communication</li><li>• In process of developing and updating an Emergency Operations Plan</li></ul>

- Weather Ready ambassadors
- Many basements are designed to flood

*Completed Since 2018 Plan Update Approval*

- Infiltration basins added to Lily Lake, Long Lake and Lake McCusick
- Rain gardens were installed
- Ongoing review and update of Emergency Operations Plan
- Some work was done to improve the city’s Emergency Operations Center
- Ongoing review and update of the Continuity of Operations Plan
- An emergency funding account is in place
- Replaced a sewer lining
- Buried a sewer line along the St. Croix River
- Purchased generators for lift stations
- Completed 2,000 feet of shoreline protection work in 2022
- Added some security equipment to city buildings
- Window protection was added to new Fire Station
- Finished new downtown plan
- Completed 2040 Comprehensive Plan – approved in 2019
- Completed a Public Works Study

<b>STILLWATER TOWNSHIP</b>
<i>Activities Identified Occurring Prior to 2004</i> <ul style="list-style-type: none"><li>• Peace Officer available in community</li><li>• Utilizes County Police and the City of Stillwater’s Fire Department</li><li>• A device has been added to Little Carnelian Lake in order to maintain water levels</li></ul>
<i>Completed Since 2004 Plan Approval</i> <ul style="list-style-type: none"><li>• A Peace Officer continues to be employed by the township</li><li>• Community has and will continue to educate citizens on ways they can take an active approach to mitigate for possible hazards</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<i>Completed Since 2012 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Updated, robust website</li><li>• Continued utilization of Code Red</li></ul>
<i>Completed Since 2018 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Change law enforcement representative title from Police Chief to Community Services Officer</li><li>• Continue to educate citizens through social media and local newsletter</li></ul>

<b>WEST LAKELAND TOWNSHIP</b>
<i>Activities Identified Occurring Prior to 2004</i> <ul style="list-style-type: none"><li>• Adopted a portion of Washington County’s ordinances</li></ul>
<i>Completed Since 2004 Plan Approval</i> <ul style="list-style-type: none"><li>• Recodified ordinances in 2001; more restrictive than Washington County in many areas</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<i>Completed Since 2012 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Recodified ordinances in 2017; the county took over land use authority from Washington County except Shoreland Management areas, mining, floodplain, subsurface sewage treatment systems, the Lower St. Croix River Bluffland and Shoreland Management areas</li><li>• New construction requires carbon filters to address groundwater contamination (PFCs and TCEs)</li><li>• Changed the design of a culvert on Quant Avenue that was repeatedly washing out</li><li>• New catch basins and a new diversion system to address water issues</li><li>• Provided public education on hazard mitigation</li></ul>
<i>Completed Since 2018 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Purchased new Town Hall / Emergency Operations Center</li><li>• An Inland Flooding Study is in progress by the Valley Branch Watershed District and Corps of Engineers</li><li>• Water Contamination Study of runoff from Lake Elmo Airport completed – privately funded</li><li>• Updated ordinances</li></ul>

<b>CITY OF WILLERNIE</b>
<i>Activities Identified Occurring Prior to 2004</i> <ul style="list-style-type: none"><li>• Storm Water Management Plan</li><li>• Mitigation information is provided in the city newsletters</li><li>• Drainage of local creek has been a problem, but was fixed with grants</li><li>• Working on upgrading ordinances</li><li>• A generator is available for the lift station in the case of a power outage</li></ul>
<i>Completed Since 2004 Plan Approval</i> <ul style="list-style-type: none"><li>• Storm Water Management Plan last updated in 2011</li><li>• Continues to provide occasional information to citizens regarding hazard mitigation</li><li>• All City Ordinances were reviewed and revised when necessary since 2004</li><li>• All electrical connections to the power lift station were redone in 2010</li><li>• Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services</li></ul>
<i>Completed Since 2012 Plan Update Approval</i> <ul style="list-style-type: none"><li>• Updated Stormwater Plan in 2017</li><li>• Discussed mitigation at City Council meetings</li><li>• Large ordinance revision completed in 2008.</li><li>• Two culverts and two fire hydrants were repaired</li></ul>
<i>Completed Since 2018 Plan Update Approval</i> <ul style="list-style-type: none"><li>• New wiring was added</li></ul>

**CITY OF WOODBURY**

*Activities Identified Occurring Prior to 2004*

- Emergency Operation Plan (EOP)
- Adding two outdoor warning sirens
- Planning, training, exercising and sharing information with Fire, Police, and Supervising Officers
- Quarterly training targeting situational events
- Improve storm sewer system to prevent flooding in low areas
- Encouragement of use of NOAA weather radios for residents
- Installing backup power battery on all sirens
- Installing a monitoring system for sirens in 2005
- Knoxbox – keybox/lockbox system

*Completed Since 2004 Plan Approval*

- Emergency Operation Plan is updated quarterly with a major review last completed in 2010
- Two outdoor warning sirens were added and an additional one is anticipated
- EOC was reconfigured; Fire Station identified as a back-up EOC
- Added two additional fire stations
- Fire, Police and Supervising Officers met regularly
- Table Top Exercise was performed in 2009
- In the process of identifying structures to improve the storm sewer system and prevent flooding in low areas
- Added berming for homes susceptible to flooding
- Provided public information to residents regarding outdoor warning sirens
- In the process of installing backup power batteries on all sirens
- In the process of narrowbanding all sirens to be in compliance with the county system
- 2012-2013 Capital Improvement Plan includes installation of a monitoring system for outdoor warning sirens
- All City employees went through NIMS training
- Meet with schools and businesses to review their building plans
- Redundancy in SCADA system added
- Added automatic shut-off on chlorine tanks at 16 well sites
- Participating in Code Red – a countywide Emergency Communication Network that provides high-speed outbound notification services
- Participated in a water contamination tabletop exercise, which was put on by the MN Health Department in 2008
- In 2010, conducted an all department supervisor tabletop exercise which focused on a simulated ice storm; the City Council was brought in and provided training on their role during disasters

*Completed Since 2012 Plan Update Approval*

- In 2013, conducted a Public Works – Utilities tabletop exercise with a focus on sustained power outage
- In 2015, a SCADA System Failure lead to a SCADA System upgrade in 2017
- Remote monitoring of outdoor warning sirens

- Lightning protection system in place
- Vulnerability assessment of council chambers completed
- Redundant wireless communications
- Multiple cell providers
- IT security systems in place
- Video surveillance cameras installed at critical facilities
- Security access equipment in place at critical facilities
- Working to ensure all lift stations are set up with generator connections so mobile generators can be connected

*Completed Since 2018 Plan Update Approval*

- A Climate Resiliency and Adaptation Plan was completed in March 2018 for the South Washington Watershed District.

**Watershed District Current and Completed Mitigation Projects**

<b>VALLEY BRANCH WATERSHED DISTRICT</b>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"><li>• Annually inspected Eagle Point Lake and Rest Ara Pond dams and performed general maintenance</li><li>• Annually inspected infrastructure and performed maintenance</li><li>• Purchased and removed nine homes from the Sunny brook Lake floodplain</li><li>• Purchased and removed one home from the Friedrich's Pond floodplain</li><li>• Updated flood levels for several water bodies</li></ul>

<b>SOUTH WASHINGTON WATERSHED DISTRICT</b>
<p><i>Completed Since 2018 Plan Update Approval</i></p> <ul style="list-style-type: none"><li>• Completed 2018 Climate Resiliency Plan</li><li>• SWWD and Washington County Parks completed a cleanout of the Ravine Lake outlet and channel to reduce flooding potential</li><li>• Completion of the Central Draw Overflow, which provides an outlet for Woodbury stormwater to the Mississippi River during extreme events</li><li>• Stabilization of the primary ravine through Ravine Regional Park to protect against erosion during extreme events</li><li>• Completed 2019 Flood Response Plan</li><li>• 2021 Operational Analysis and Recommendations for the Bailey Lake Pump Station, Central Draw Storage Facility, and Central Draw Overflow</li><li>• Ravine Inventory identifying priority, active ravines draining to Lake St. Croix and the Mississippi River within SWWD</li><li>• McQuade Ravine Stabilization project to prevent ongoing erosion to Lake St. Croix</li><li>• Trout Brook stream restoration to prevent ongoing erosion to Lake St. Croix</li><li>• Funded de-icing improvements by several Cities within the SWWD to help prevent pollution of resources and groundwater</li><li>• Provided funding for an additional round of floodproofing grants for Woodbury residents at risk of flooding. At risk properties were identified and grants were administered by the City.</li><li>• Developed and funded enhanced street sweeping program in Woodbury to reduce pollution of SWWD resources</li></ul>

**Washington County Area Current and Completed Mitigation Projects**

Washington County has taken steps at a county level to be better prepared for a variety of hazards. The following are some examples of steps taken at the county and regional levels to better prepare for a variety of hazards.

<b>WASHINGTON COUNTY</b>
<p><i>Completed prior to 2012</i></p> <ul style="list-style-type: none"> <li>• Internal Emergency Management Plan – Emergency Response Procedures, County Continuity of Operations, Incident Response Team (Updated in 2010)</li> <li>• Comprehensive Plan (Last Updated: September 7, 2010)</li> <li>• All Hazard Emergency Operations Plan (Update In Process 2012)</li> <li>• Floodplain Maps (Last Updated: February 2010)</li> <li>• Watershed Storm Water Management Plans (see individual watershed plans)</li> <li>• Watershed Flood Mitigation Plan (see individual watershed plans)</li> <li>• Wakota Community Awareness and Emergency Response (Wakota CAER) member</li> </ul>
<p><i>Completed after 2012</i></p> <ul style="list-style-type: none"> <li>• Continue to utilize Code Red mass notification system for residents and county employees</li> <li>• Significant update to the Washington County Continuity of Operations Plan (COOP) <ul style="list-style-type: none"> <li>○ Eleven COOP workshops were held with county departments</li> <li>○ Washington County COOP tabletop exercise was held in May of 2018, which included all 12 county departments</li> </ul> </li> <li>• Purchase and utilization of software for use with COOP and EOP planning at the County and City/Township level</li> <li>• Annual update to the Washington County Emergency Operations Plan in compliance with requirements such as the statewide MNWALK</li> <li>• Resilience chapter in the Washington County Comprehensive Plan, which was updated in 2017</li> <li>• Washington County’s Floodplain Management Ordinance was recodified in 2018</li> <li>• Trainings and exercises are conducted across jurisdiction boundaries that incorporate multiple disciplines</li> <li>• In 2017, Washington County held a three-day Integrated Emergency Management Course (IEMC) in which almost 100 attendees learned and exercised Emergency Operations Center</li> <li>• County roads prone to flooding were raised out of the floodplain</li> <li>• As a part of the Washington County Comprehensive Plan update, a chapter on Resilience was added for the first time.</li> </ul>
<p><i>Completed after 2018</i></p> <ul style="list-style-type: none"> <li>• Washington County trained and exercised COOP. The county has adopted a web-based platform to track and house COOP related plans, exercises, and trainings. The county has identified COOP leads in every department and strives to update the information by department quarterly within the system.</li> <li>• Real world EOC response to COVID-19 pandemic</li> </ul>

- May 15<sup>th</sup> and 19<sup>th</sup> in 2019 – Washington County Emergency Management, WCCO-TV, and local police and fire did public outreach on severe weather safety; sold severe weather radios outside the Hy-Vee grocery stores
- Tested CodeRED with all county employees on April 28, 2019 and again in 2022 as part of Continuity of Operations Planning
- County EM rolled out a template for reunification planning to all school districts should districts need to relocate students to due to disaster
- Purchased portable radio/cellphone towers in case antenna infrastructure is damaged by storms
- Purchased and installed public warning speakers and message boards to assist with early severe weather warnings at the Lake Elmo Park Reserve.
- Added an outdoor warning siren in the Big Marine Park Reserve Play Area in May of 2022

Washington County continues to be a proactive community that strives to be more resilient in the face of all hazards. This is demonstrated, in part, by the list above of mitigation action items taken at the city, township, and county level.

**Annex G: MITIGATION PROJECTS**

Before identifying and prioritizing new mitigation projects, it was important to first assess the status of mitigation activities within Washington County that were identified for the 2018 All Hazard Mitigation Plan. To do this, mitigation staff worked with representatives from each community to review and provide an update on previously identified projects. A summary of the status of these projects is listed below.

**Mitigation Plan Project Updates**

Below is an update on the progress of mitigation projects listed in the 2018 Washington County All Hazard Mitigation Plan. This includes whether it was completed and if not, why it was not completed. The majority of the projects listed are either in progress or were completed, many times without outside funding sources such as grants.

Jurisdiction / Agency	Previously Listed Mitigation Project	Completed, Not Completed, or Ongoing	Reason for Not Completing Project
Afton	[REDACTED]	[REDACTED]	
Afton	[REDACTED]	[REDACTED]	
Afton	[REDACTED]	[REDACTED]	[REDACTED]
Afton	[REDACTED]	[REDACTED]	
Afton	[REDACTED]	[REDACTED]	
Afton	[REDACTED]	[REDACTED]	
Baytown Township	[REDACTED]	[REDACTED]	
Baytown Township	[REDACTED]	[REDACTED]	[REDACTED]

Bayport	[REDACTED]	[REDACTED]	[REDACTED]
Bayport	[REDACTED]	[REDACTED]	[REDACTED]
Birchwood Village	[REDACTED]	[REDACTED]	[REDACTED]
Birchwood Village	[REDACTED]	[REDACTED]	[REDACTED]
Birchwood Village	[REDACTED]	[REDACTED]	[REDACTED]
Birchwood Village	[REDACTED]	[REDACTED]	[REDACTED]
Birchwood Village	[REDACTED]	[REDACTED]	[REDACTED]
Birchwood Village	[REDACTED]	[REDACTED]	[REDACTED]
Birchwood Village	[REDACTED]	[REDACTED]	[REDACTED]
Birchwood Village	[REDACTED]	[REDACTED]	[REDACTED]
Birchwood Village	[REDACTED]	[REDACTED]	[REDACTED]

Cottage Grove	[REDACTED]	[REDACTED]	[REDACTED]
Cottage Grove	[REDACTED]	[REDACTED]	[REDACTED]
Cottage Grove	[REDACTED]	[REDACTED]	[REDACTED]
Cottage Grove	[REDACTED]	[REDACTED]	[REDACTED]
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Dellwood	[REDACTED]	[REDACTED]	[REDACTED]
Dellwood	[REDACTED]	[REDACTED]	[REDACTED]
Dellwood	[REDACTED]	[REDACTED]	[REDACTED]
Denmark Township	[REDACTED]	[REDACTED]	[REDACTED]
Denmark Township	[REDACTED]	[REDACTED]	[REDACTED]

Forest Lake	[REDACTED]	[REDACTED]	[REDACTED]
Forest Lake	[REDACTED]	[REDACTED]	[REDACTED]
Forest Lake	[REDACTED]	[REDACTED]	[REDACTED]
Grant	[REDACTED]	[REDACTED]	[REDACTED]
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Grant	[REDACTED]	[REDACTED]	[REDACTED]
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Grant	[REDACTED]	[REDACTED]	[REDACTED]
Grant	[REDACTED]	[REDACTED]	[REDACTED]
Grey Cloud Island Twp	[REDACTED]	[REDACTED]	[REDACTED]
Grey Cloud Island Twp	[REDACTED]	[REDACTED]	[REDACTED]
Grey Cloud Island Twp	[REDACTED]	[REDACTED]	[REDACTED]

Hugo	[REDACTED]	[REDACTED]	[REDACTED]
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Lake St. Croix Beach	[REDACTED]	[REDACTED]	[REDACTED]
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Lakeland	[REDACTED]	[REDACTED]	[REDACTED]
Lakeland	[REDACTED]	[REDACTED]	[REDACTED]
Lakeland	[REDACTED]	[REDACTED]	[REDACTED]
Lakeland Shores	[REDACTED]	[REDACTED]	[REDACTED]
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Marine on St. Croix	[REDACTED]	[REDACTED]	[REDACTED]
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Marine on St. Croix	[REDACTED]	[REDACTED]	[REDACTED]
May Township	[REDACTED]	[REDACTED]	[REDACTED]
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Newport	[REDACTED]	[REDACTED]	
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Oak Park Heights	[REDACTED]	[REDACTED]	[REDACTED]
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St. Mary's Point	[REDACTED]	[REDACTED]	[REDACTED]
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St. Paul Park	[REDACTED]	[REDACTED]	[REDACTED]
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Stillwater	[REDACTED]	[REDACTED]	[REDACTED]
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Stillwater Township	[REDACTED]	[REDACTED]	[REDACTED]
West Lakeland Township	[REDACTED]	[REDACTED]	
West Lakeland Township	[REDACTED]	[REDACTED]	
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<b>Other Agencies</b>			
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**Future Mitigation Projects**

In addition to assessing the status of previous projects, staff worked with representatives from each community in formulating at least one continuing and/or new mitigation project to be covered under this updated multi-jurisdictional plan. These projects were identified based upon vulnerabilities identified in Annex C: Risk Assessment within this plan, individual jurisdiction meetings, and online public survey results. Washington County Emergency Management staff met with county employees from a variety of departments, such as Information Technology, Human Resources, Sheriff’s Office, and Public Works to discuss county risks and mitigation projects. Other agencies such as the Washington County Agricultural Society (Fairgrounds), schools, and watershed districts were able to submit mitigation projects as well.

Some of the hazards that produced a higher total score in Annex C: Risk Assessment, were not included in the mitigation projects table below. This was due to the city or township determining that the need to address such hazards was not necessary during this plan update. Those hazards do meet the awareness threshold and may be addressed in future plan updates.

*Types of Mitigation*

Mitigation projects were categorized into at least one of six different categories:

- Prevention: projects intended to keep hazards from getting worse
- Property Protection: modification of existing structures to help them better withstand the forces of a hazard, or removal of the structures from hazardous locations
- Public Education and Awareness: advise residents, elected officials, business owners, potential property buyers, and visitors about hazards, hazardous areas, and mitigation techniques they can use to protect themselves and their property.
- Natural Resource Protection: reduce the impact of natural hazards by preserving or restoring natural areas and their protective functions.
- Emergency Services: minimize the impact of a hazard event on people and property. These commonly are actions taken immediately prior to, during, or in response to a hazard event.
- Structural Projects: lessen the impact of a hazard by modifying the environmental natural progression of the hazard event through construction.

*Priority*

Although all projects are beneficial and considered important to the respective coordinating agencies, a prioritization must also be applied to rank the projects. Each project has been prioritized by both importance/impact and by timeframe for completion, based upon the following matrix.

	High	Medium	Low
Short Term	High Priority 1-5 Years to Complete	Medium Priority 1-5 Years to Complete	Low Priority 1-5 Years to Complete
Mid-Term	High Priority 6-10 Years to Complete	Medium Priority 6-10 Years to Complete	Low Priority 6-10 Years to Complete
Long Term	High Priority 11+ Years to Complete	Medium Priority 11+ Years to Complete	Low Priority 11+ Years to Complete

High Priority

Considered being of top priority within the county. A high priority project will affect a high number of residents, structures, or property values. The potential for significant damage reduction was also a strong consideration. High priority projects are those that should be implemented as soon as it is feasible to do so. A project of high priority may reduce the damage from a number of hazards and could have a benefit cost ratio of greater than one.

Medium Priority

Medium priority projects, although important, may be able to wait until more pertinent projects are undertaken.

Low Priority

A project of low priority does not mean that it is not an important project. Low priority projects are those able to wait for implementation until after higher priority projects are complete. For example, the projects may be intended to reduce risk due to future expansion or developments of communities and therefore may be able to wait.

*Change in Projects and Priorities*

The mitigation projects listed below are primarily new projects. The new projects show a shift in priorities at the city, township, and county level. This is reflective of new or worsening hazards, an increased awareness of hazard impacts and history, as well as the presence of additional representatives who were involved in the meetings and brought different perspectives, experiences, and knowledge to the mitigation conversations that were had at the city, township, and county level. Projects being continued (identified with an \*) were also reevaluated for priority levels, which may have been altered from the previous plan. Projects identified with two \*\* indicates appearing in multiple plan cycles.

*Mitigation Projects Identified in 2022 – 2023*

Washington County Emergency Management staff worked with local communities, county department representatives, watershed districts, schools, and other agencies to identify mitigation projects that would benefit their community. While creating this list, an all hazard approach was taken in an understanding that this plan, by title, is all hazard in nature.

Prioritization of the projects may change as new issues and vulnerabilities arise. The prioritization may be altered to reflect those changes.



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\*Continuing project from 2018 Mitigation Plan update.

\*\*Project appears in multiple plan updates.

**Assessing the Feasibility to Implement Mitigation Projects**

Proposed mitigation projects will be assessed for implementation based on the following standards:

1. Mitigation Goals, Objectives & Strategies: Projects must be consistent with countywide mitigation goals, objectives and strategies (See Annex E)
2. STAPLEE Criteria: The social, technical, administrative, political, economic, and environmental opportunities and constraints of implementing the project must be evaluated. (See Figure G.1 The STAPLEE Criteria)
3. Cost-Benefit Analysis: If and when required, mitigation projects will only be implemented if the benefits are maximized and outweigh the associated costs of the proposed projects.

<p><b>Social</b></p> <ul style="list-style-type: none"> <li>○ Is the mitigation action socially acceptable?</li> <li>○ Will the action adversely affect any one segment of the population?</li> <li>○ What effects will the action have on the social, historic, and cultural environment of the community?</li> </ul>
<p><b>Technical</b></p> <ul style="list-style-type: none"> <li>○ Is the proposed action technically feasible and does it provide the appropriate level of protection?</li> <li>○ What types of technical/professional expertise will be required to plan and implement the project?</li> <li>○ Will the action create more problems than it solves?</li> <li>○ How long will it take to complete the project? Is this a reasonable timeframe?</li> </ul>
<p><b>Administrative</b></p> <ul style="list-style-type: none"> <li>○ Does the community have the capability (staff, expertise, time, funding) to implement the action?</li> <li>○ Can the community provide the necessary maintenance of the project?</li> </ul>
<p><b>Political</b></p> <ul style="list-style-type: none"> <li>○ Is the mitigation action politically acceptable?</li> <li>○ Will the general public support or oppose this project?</li> </ul>
<p><b>Legal</b></p> <ul style="list-style-type: none"> <li>○ Does the community have the authority to implement the proposed action?</li> <li>○ Will the action comply with local, State, and Federal environmental regulations?</li> <li>○ Do homeowner association bylaws apply to the project site?</li> <li>○ Is the action likely to be challenged by stakeholders whose interests may be adversely affected?</li> </ul>

**Economic**

- Do the costs of the action seem reasonable for the size of the problem and the likely benefits?
- What burden will be placed on the local economy to implement and maintain the action?
- Will the action generate additional jobs locally?

**Environmental**

- Is the proposed action in a floodplain or wetland or will it indirectly impact the natural and beneficial functions of a floodplain or wetland?
- How will the action affect the natural environment?
- How will the action affect utility and transportation systems?

**Funding Opportunities**

The ability to fund a mitigation project or action item is heavily dependent on funding opportunities. Funding sources may be provided at the local level through levy or other local funds. Washington County has a limited number of funding opportunities to assist communities with projects, such as the Land Water Legacy Program.

Local watershed districts, such as the South Washington County Watershed District have identified funds available for mitigation implementation within their boundary areas.

More information on other funding sources to implement projects identified within this plan is available in Annex H.

## Annex H: Funding Options

Many communities believe they are unable to take steps in preventing damage from hazards due to lack of funding. This section is intended to provide some examples of funding options. This list is not comprehensive and should be added to when new funding programs are created and recognized.

FEMA currently has three mitigation grant programs that are administered by the State: Hazard Mitigation Grant Program (HMGP), the Pre-Disaster Mitigation program (PDM), and the Flood Mitigation Assistance (FMA) program. Both HMGP and PDM are administered through the Department of Public Safety, Division of Homeland Security and Emergency Management; FMA is administered by the Minnesota Department of Natural Resources.

Other funding sources have been identified that are hazard specific. As mentioned previously, this list is not exhaustive, but should provide a good start to finding alternate ways of funding projects.

### General Funding Options

#### *A. Hazard Mitigation Grant Program (HMGP) –* <https://www.fema.gov/hazard-mitigation-grant-program>

Authorized under Section 404 of the Stafford Act, the Hazard Mitigation Grant Program (HMGP) provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

Hazard Mitigation Grant Program funding is only available to States following a Presidential disaster declaration. Eligible applicants are:

- State and local governments
- Indian tribes or other tribal organizations
- Certain private non-profit organizations

HMGP funds may be used to fund projects that will reduce or eliminate the losses from future disasters. Projects must provide a long-term solution to a problem, for example, elevation of a home to reduce the risk of flood damages as opposed to buying sandbags and pumps to fight the flood. Funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage.

HMGP funding may be used to acquire disaster prone property to create a buffer against future disasters, construct new facilities, or even nonstructural measures such as development of floodplain management regulations.

*B. Pre-Disaster Mitigation (PDM) Program*

(<https://www.fema.gov/pre-disaster-mitigation-grant-program>)

The Pre-Disaster Mitigation (PDM) program provides technical and financial assistance to States and local governments for cost-effective pre-disaster hazard mitigation activities that complement a comprehensive mitigation program, and reduce injuries, loss of life and damage and destruction of property. FEMA provides grants to States and Federally recognized Indian tribal governments that, in turn, provide sub-grants to local governments (to include Indian Tribal governments) for mitigation activities such as planning and the implementation of projects identified through the evaluation of natural hazards. The Pre-Disaster Mitigation (PDM) Program was authorized by §203 of the Robert T. Stafford Disaster Assistance and Emergency Relief Act (Stafford Act), 42 USC, as amended by §102 of the Disaster Mitigation Act of 2000.

Funding for the program is provided through the National Pre-Disaster Mitigation Fund to assist States and local governments (to include Indian Tribal governments) in implementing cost-effective hazard mitigation activities that complement a comprehensive mitigation program. All applicants must be participating in the National Flood Insurance Program (NFIP) if they have been identified through the NFIP as having a Special Flood Hazard Area (a Flood Hazard Boundary Map (FHBM) or Flood Insurance Rate Map (FIRM) has been issued). In addition, the community must not be suspended or on probation from the NFIP.

44 CFR Part 201, Hazard Mitigation Planning establishes criteria for State and local hazard mitigation planning authorized by §322 of the Stafford Act, as amended by §104 of the DMA. After November 1, 2003, local governments and Indian Tribal governments applying for PDM funds through the States will have to have an approved local mitigation plan prior to the approval of local mitigation project grants. States will also be required to have an approved Standard State mitigation plan in order to receive PDM funds for State or local mitigation projects. **Therefore, the development of state and local multi-hazard mitigation plans is key to maintaining eligibility for future PDM funding.**

*C. U.S. Department of Commerce, Small Business Administration (SBA)*

(<http://www.sba.gov/services/disasterassistance/index.html>)

The purpose of the SBA's Disaster Loan Program is to offer financial assistance to those who are trying to rebuild their homes and businesses in the aftermath of a disaster. By offering low-interest loans, the SBA is committed to long-term recovery efforts. The agency will do everything possible to meet the needs of those otherwise unable to put their lives back together.

*D. Public Assistance (PA)*

(<https://www.fema.gov/media-library/assets/documents/90743>)

The Public Assistance Program provides financial assistance to public entities such as state and local governments, school districts, Indian tribes, and certain private non-profit facilities such as electric power cooperatives.

Costs, facilities, and work are eligible for Public Assistance Program reimbursement when damages are: (1) the result of the declared event; (2) within the disaster area; (3) in use at the time of the disaster; (4) the responsibility of the applicant; (5) not eligible for reimbursement by another federal agency or through insurance.

### **Hazard Specific Funding Options**

#### ***Flood Funding***

*E. Flood Mitigation Assistance (FMA) Program –*

(<https://www.fema.gov/flood-mitigation-assistance-grant-program>)

FMA provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP). There are three types of grants available under FMA: Planning, Project, and Technical Assistance Grants.

FMA Planning Grants are available to States and communities to prepare Flood Mitigation Plans. NFIP-participating communities with approved Flood Mitigation Plans can apply for FMA Project Grants. FMA Project Grants are available to states and NFIP participating communities to implement measures to reduce flood losses. Ten percent of Project Grant is made available to states as a Technical Assistance Grant. These funds may be used by the state to help administer the program.

Communities receiving FMA Planning and Project Grants must be participating in the NFIP. A few examples of eligible FMA projects include: the elevation, acquisition, and relocation of NFIP-insured structures. Funding for the program is provided through the National Flood Insurance Fund, and FMA is funded at \$20 million nationally.

*F. U.S. Army Corps of Engineers (USACE):*

(<http://www.mvp.usace.army.mil/>)

USACE has the authority, provided by Section 205 of the 1948 Flood Control Act, amended, to plan, design and construct certain small flood control projects that have not already been specifically authorized by Congress. There is no limitation as to the type of improvement, which may be used. Both structural (levees, channels, or dams, for instance) and nonstructural (floodproofing or evacuation, for example) solutions are considered. A project may also include features for other purposes such as water supply, provided local interests indicate a need and are willing to contribute the amount representing the added costs incurred as a result of the addition.

*G. Flood Damage Reduction Grant Assistance Program (FDR)*

([http://www.dnr.state.mn.us/waters/watermgmt\\_section/flood\\_damage/index.html](http://www.dnr.state.mn.us/waters/watermgmt_section/flood_damage/index.html))

The Flood Damage Reduction Grant Assistance Program (FDR) was established by the 1987 Legislature to provide technical and financial assistance to local government units for reducing the extent of flood damages. Under this program the state makes cost-share grants for up to 50% of the total local cost of flood mitigation projects. Since the inception of the program, almost \$61 million in state grant monies have been distributed to local units of government across Minnesota for flood damage reduction projects. Flood damage mitigation projects in Minnesota have averted over one-half billion dollars in damages.

***Tornadoes***

*H. Pre-Disaster Mitigation Loan Program*

(<http://www.sba.gov/services/disasterassistance/index.html>)

The United States Small Business Administration makes low-interest, fixed-rate loans to eligible small businesses for the purpose of implementing mitigation measures to protect business property from damage that may be caused by future disasters. The program is a pilot program, which supports the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Program. SBA's Pre-Disaster Mitigation Program is available to businesses whose proposed mitigation measure conforms to the priorities and goals of the mitigation plan for the community

Homeowners who receive a disaster assistance loan from the U.S. SBA to repair or rebuild a damaged or destroyed home may use some of the loan proceeds to construct a safe room. The SBA can also increase the approved disaster loan by up to 20 percent to cover the cost of adding a safe room.

*I. U.S. Department of Housing and Urban Development (HUD)*

(<http://portal.hud.gov/portal/page/portal/HUD>)

In coordination with FEMA's "safe room" initiative, HUD is providing mortgage insurance to enable homeowners to borrow up to \$5,000 to build an in-home shelter.

***Lightning***

*J. Hazard Mitigation Grant Program (HMGP) –*

(<https://www.fema.gov/hazard-mitigation-grant-program>)

HMGP funds have been used previously in Washington County to mitigate lightning effects at large, heavily used outdoor field locations.

***Dam and Levee Failure***

*K. FEMA: The National Dam Safety Program State Assistance Program*  
(<https://www.fema.gov/national-dam-safety-program>)

This program is intended to help states bring the necessary resources to bear on inspection, classification, and emergency planning for dam safety.

Public Law 104-303 provides financial assistance to states.

*L. USDA, NRCS: H.R. 728*  
(<http://www.nrcs.usda.gov>)

This program authorizes over \$100 million over five years for rehabilitating aging dams constructed under NRCS watershed programs.

*M. U.S. Army Corps of Engineers (USACE)*  
(<http://www.usace.army.mil/>)

The USACE has the authority, provided by Section 205 of the 1948 Flood Control Act (amended) to plan, design and construct certain small flood control projects that have not already been specifically authorized by Congress. The Corps also administers the Planning Assistance to States program, known as Section 22.

*N. DNR, Division of Waters: The Flood Damage Reduction (FDR)*  
(<http://www.dnr.state.mn.us/waters/>)

The Minnesota Statutes Section 103F.161 provides authority to help pay the cost of improvements to levees.

***Fire Funding***

*O. Federal Emergency Management Agency*  
(<https://www.fema.gov/welcome-assistance-firefighters-grant-program>)

This website contains a list of fire fighting funding sources.

***Terrorism***

*P. Domestic Preparedness program grants*  
(<https://www.fema.gov/preparedness-non-disaster-grants>)

The grant program is intended to provide funding to improve the capacity of state and local jurisdictions to prevent, respond to, and recover from incidents of terrorism involving chemical, biological, radiological, nuclear, or explosive (CBRNE) weapons and cyber attacks.

*Q. Homeland Security Grant Programs*  
<https://www.fema.gov/homeland-security-grant-program>

- State Homeland Security Program (SHSP)
- Urban Areas Security Initiative (UASI)
- Operation Stonegarden (OPSG)
- Metropolitan Medical Response System (MMRS)
- Citizen Corps Program (CCP)

The HSGP is a primary funding mechanism for building and sustaining national preparedness capabilities and is comprised of five interconnected grant programs: the State Homeland Security Program (SHSP), the Urban Areas Security Initiative (UASI), Operation Stonegarden (OPSG), the Metropolitan Medical Response System (MMRS) and the Citizen Corps Program (CCP). Together, these grant programs fund a range of preparedness activities, including planning, organization, equipment purchase, training, exercises and management and administration.

*R. Emergency Management Performance Grant (EMPG)*  
(<https://www.fema.gov/emergency-management-performance-grant-program>)

EMPG is one of many grant programs that HSEM administers. The purpose is to maintain local emergency management programs.

***Hazardous Materials***

*S. Hazardous Materials Grant Program*  
(<https://www.fema.gov/hazard-mitigation-grant-program>)

The Minnesota Division of Homeland Security and Emergency Management (HSEM) distribute U.S. Department of Transportation HMEP Grant Program monies to political subdivisions and other entities to help local responders prepare for hazardous materials incidents.

***Public Health Emergencies***

*T. Hazardous Materials Grant Program*

(<https://www.cdc.gov/phpr/readiness/phep.htm>)

The Public Health Emergency Preparedness (PHEP) cooperative agreement is a critical source of funding for state, local, and territorial public health departments. Since 2002, the PHEP cooperative agreement has provided assistance to public health departments across the nation. This helps health departments build and strengthen their abilities to effectively respond to a range of public health threats, including infectious diseases, natural disasters, and biological, chemical, nuclear, and radiological events. Preparedness activities funded by the PHEP cooperative agreement specifically targeted the development of emergency-ready public health departments that are flexible and adaptable.

## **Annex I: Monitoring, Evaluating, and Updating the Plan**

### **Monitoring the Plan**

The Washington County Emergency Management Director will be responsible for monitoring the All Hazard Mitigation Plan implementation. Tracking the implementation of the plan will be spearheaded at the county level but will utilize the existing Washington County Emergency Management Council in the collection of the information. Washington County Emergency Management staff is often in conversation with local jurisdiction representatives regarding available grants, open grant applications, and as actual emergencies arise. This ongoing knowledge of work being done around the county through formal and informal conversations allows the Washington County Emergency Management department to be knowledgeable about work being done and to track implementation activities.

### **Evaluating the Plan**

Washington County Emergency Management Director and Deputy Director will be responsible for ensuring that the Washington County All Hazard Mitigation Plan is evaluated as required. The evaluation will be done in coordination with the Washington County Emergency Management Council and other local jurisdiction representatives as needed. The evaluation will assess the effectiveness of the plan at achieving its stated purpose and goals. This will be done by the Emergency Management Council annually by reviewing the goals and objectives within the plan along with the mitigation projects and other related plan areas and discuss the effectiveness of the plan.

In addition, the county may seek assistance from the State Hazard Mitigation Officer, or the Local Mitigation Planning Handbook developed by FEMA, for additional evaluation assistance, if necessary.

### **Updating the Plan**

The Washington County Emergency Management Director or Deputy Director will coordinate the update of this plan every five years. In addition, staff will review and report the progress made on the mitigation actions listed in the plan.

The Washington County Information Technology Department will assist in converting geographical updates into GIS format.

The five year update will be done in accordance with FEMA guidelines. The process will be inclusive of a variety of local stakeholders, will continue to make use of the existing Washington County Emergency Management Council, and will include the general public as well. The plan will be reviewed, updated, and submitted to the Minnesota Division of Homeland Security and Emergency Management and FEMA along with the Washington County Board of Commissioners every five years for approval.

### **Continued Public Involvement**

Public outreach and engagement efforts will continue during the five year period of this plan. Public involvement activities could include:

- Information regarding the Washington County All Hazard Mitigation Plan and local staff contact information will continue to be made available on the Washington County Emergency Management website.
- Washington County Emergency Management, as part of the Sheriff’s Office, is able to utilize the social media accounts for the department. Mitigation Plan related information could be communicated on the social media accounts, which allows the public a chance to provide feedback.
- Many of the mitigation projects listed would include a formal adoption process, which would include the opportunity for public participation. For the implementation at the local level, it is up to the jurisdictions to implement the public comment process where required or deemed appropriate.

### **Existing Resources Available to Implement Hazard Mitigation**

- As stated in Annex H, there are many funding opportunities for local jurisdictions to research and apply for grants or low interest loans to implement mitigation projects. This becomes a challenge for smaller communities such as Pine Springs, Willernie, and the local townships due to time constraints caused by a lack of any full time employed staff.
- Each local jurisdiction, including Washington County, creates an annual budget and has some level of taxing authority. In the past, there has been funding set aside in some communities to implement mitigation projects. The completed mitigation projects are identified in Annex F of this plan, many of which utilized local funding sources.
- Multiple jurisdictions within Washington County have applied for, received, and implemented hazard mitigation grants at the local level since the county mitigation plan was originally approved back in 2006. The local staff are an excellent resource and have the support of elected officials to seek and obtain funding for proactive mitigation implementation. Some examples of grants received in Washington County since the 2018 Washington County All Hazard Mitigation Plan update include:
  - FEMA awarded \$28,980 in PDM funding to the City of Newport in 2018.
  - FEMA awarded \$384,090 in FMA funding to the City of Lakeland for the elevation of private structures in 2019.
  - FEMA awarded \$19,539 in HMGP funding to the City of Cottage Grove for lightning warning systems in 2019.
  - FEMA awarded \$63,902 in HMGP funding to the City of Scandia for generators in 2019.
  - FEMA awarded \$18,062 in HMGP funding to Washington County for warning systems in 2019.
  - FEMA awarded \$410,220 in HMGP funding to the City of Newport for the acquisition of private property in 2020.

- Every city and township within Washington County has a locally identified Emergency Manager that is independent of the Washington County Emergency Management staff. This local person is often times a City Clerk, Fire Chief, Police Chief, or elected official. Twenty-four hour contact information is kept up-to-date at the county’s Emergency Operations Center for this representative.
- Each city has at least one person designated to ensure city code and building codes regulations are enforced, including floodplain and shoreland ordinances and related regulations as applicable. This person is typically a city employee such as a City Planner or City Administrator. For smaller jurisdictions, this person is a consultant such as a local engineering company or private planning agency. The townships have recently taken on the authority to manage land use within their boundaries, but work closely with the Washington County Land Surveyor’s Department on questions and implementation.
- Each city and township within Washington County has created a local Comprehensive Plan. Local plans are submitted to Washington County departments for review and comment. They are then submitted to the Minnesota Metropolitan Council for review and approval. Local plans are adopted by their City Council or Town Board.

### **Incorporation into Existing Planning Mechanisms**

It will be the responsibility of each participating jurisdiction to determine additional implementation procedures when appropriate. This includes integrating the requirements of the Washington County All Hazard Mitigation Plan into other local planning documents, processes, or mechanisms such as the following:

- Comprehensive Plans
- Strategic Plans
- Capital Improvement Plans
- Growth Management Plans
- Ordinances, Resolutions and Regulations
- Continuity of Operations Plans

Washington County Emergency Management staff will continue to work with local (city, township, etc.) and county departments to encourage the integration of mitigation goals and actions into the various types of regulatory plans and regulations.

#### *Washington County Comprehensive Plan*

Washington County’s most recent update to the Washington County Comprehensive Plan included a representative from the county’s emergency management office that was involved in the conversations, drafting, and reviewing of the new chapter of the plan titled, “Chapter 9 – Resilience and Sustainability.”

Below is an excerpt from the Washington County 2040 Comprehensive Plan that identifies the connection between “resilience” and “mitigation.”

“The following statement provides further clarification on what resiliency, sustainability and social equity means to the County.

Washington County will strive to maintain its identity, high quality of life, and access to a healthy lifestyle for current and future residents, by embracing resiliency and sustainability in future decision making. Efforts will be made to ensure resiliency through the county’s ability to react, adapt and thrive in the face of environmental, social, and economic changes. Healthy and vibrant communities are those that are prepared and have the capacity to evolve. Washington County will support the development of a community that is equipped to respond to change with diverse solutions and redundant systems by enhancing social capital and equity through the sharing of risks and opportunities. The ability to mitigate the effects of these changes and disruptions over a long period of time will protect Washington County’s regional vitality for future generations by preserving the capacity to maintain a sustainable future.”

Within the Comprehensive Plan, there is a direct reference to the Washington County All Hazard Mitigation Plan and mitigation activities. Excerpt from page 9-2 of the Washington County Comprehensive Plan:

“The Resilience and Sustainability chapter is dedicated to specifically recognizing four key areas that are linked in some form to a resilient, sustainable and equitable future and are not included in other plan elements:

- Hazard Mitigation/Community Vulnerability
- Healthy Communities
- Energy
- Solid Waste Management”

“These four key areas are also new to the comprehensive plan; however, they have been a core part of the Washington County’s planning activities. Past planning initiatives have included programs and strategies that address themes such as emergency preparedness and community health. The following are examples of these initiatives:

- The adoption and implementation of an All Hazard Mitigation Plan and an Emergency Operations Plan, based on best practices set by the Federal Emergency Management Agency (FEMA).”

A longer excerpt of the Washington County Comprehensive Plan Resilience and Sustainability Chapter can be found at <https://www.co.washington.mn.us/404/Comprehensive-Plan>, and highlights a discussion of mitigation and references this plan.

An additional excerpt from the Washington County 2040 Comprehensive Plan – Land Use Chapter:

Washington County regulates flood hazard areas within those unincorporated areas that are subject to periodic inundation. The floodplain ordinance regulates new development as well as the extension, conversion, or structural alteration of buildings in the floodway,

flood fringe, or general floodplain districts (see Figure 5). These regulations prevent or limit building or expanding structures in floodplains in order to protect public health, safety, and general welfare, and to conserve and enhance natural resources by preserving the capacity of floodplains to carry and discharge regional floods. Washington County participates in the Flood Insurance Program. The Federal Emergency Management Agency Flood Insurance Rate Maps were updated in 2016. These maps are used by insurance companies and mortgage companies to determine the need for flood insurance on properties. The county uses its Floodplain Ordinance to reduce the severity and extent of flooding by controlling new development as well as the extension, conversion, or structural alteration of existing structures in the Floodway, Flood Fringe, or General Floodplain Districts. Two major regulations pertain to all new development in the floodplain. 1. The minimum lowest floor elevation must be two feet above the 100-year storm event or natural outlet elevation, whichever is greater. Where this is not feasible, the landowner may provide an outlet or mitigate with other acceptable methods. 2. Prior to subdivision approval, the county requires a 100-year flood elevation to be established around all wetlands, lakes, and rivers.

#### *City and Township Comprehensive Plans*

Communities throughout the Twin Cities area have been working on updates to their Comprehensive Plans over the past few years. The Metropolitan Council is a regional policy-making body, planning agency, and provider of essential services for the Twin Cities metropolitan area. In that capacity, they are a regulating authority for local jurisdictional comprehensive plans. Although not required, the Metropolitan Council has encouraged local jurisdictions to incorporate resilience into their plans with this newest plan update timeframe.

Below is an excerpt from the Metropolitan Council’s website regarding Resilience Planning and its incorporation into local comprehensive plans:

“This section provides resources for communities working to integrate strategies into local comprehensive plans to be more resilient in the face of a changing climate. As communities adjust to increasingly extreme weather events, stress on public facilities, and higher costs of services, there is growing need to not only plan for these events, but to also reduce the impacts through conscious climate adaptation and resilience planning.....

Climate mitigation strategies such as promoting land use and development patterns will contribute toward achieving Minnesota’s adopted greenhouse gas emissions goals.

Climate adaptation strategies such as recognizing changing rainfall patterns that require additional storm water management capacity acknowledge the new and growing risks associated with climate change....

Consideration of vulnerabilities - and responses to those vulnerabilities - will strengthen your community’s ability to prepare for and respond to climate impacts. Resiliency includes planning for more severe weather and prolonged heatwaves, for improved health of your residents, and planning for economic strength and diversity.”

<https://metro council.org/Handbook/Plan-Elements/Resilience.aspx>

Many local jurisdictions chose to integrate resilience and mitigation components into their local comprehensive plan updates. Examples are included below:

Afton

The City of Afton includes floodplain information in their Comprehensive Plan. The plan discusses areas with periodic flooding and the protection measures used to mitigate future flooding.

Bayport

The City of Bayport discusses the Floodplain Management Ordinance, National Flood Insurance Program, localized flooding, river flooding, and stormwater runoff in their Comprehensive Plan. The plan encourages elevating and floodproofing structures in the floodplain and regulates all new and reconstruction projects within the floodplain to mitigate future issues.

Baytown

The Comprehensive Plan for the Township of Baytown highlights how they protect and regulate potential impacts to lakes, wetlands and streams, areas with potential flooding, and bedrock through their Stormwater Ordinance, and their collaboration with Water Management Organizations.

Birchwood Village

The City of Birchwood Village incorporates the Local Water Resources Management Plan into their Comprehensive Plan. The plan outlines methods used to address stormwater management, erosion and sediment control, wetland alteration, and floodplain alteration. Mitigation and resilience measures are not specifically listed in the Comprehensive Plan.

Cottage Grove

The City of Cottage Grove references the Washington County All Hazard Mitigation Plan in the resilience chapter of their Comprehensive Plan. The plan addresses the need to continue working with Washington County on future updates to best prepare for future hazardous events. Additionally, the plan addresses the need to provide adequate flood protection for residents and structures, as well as protecting channels and stormwater retention areas.

Dellwood

The City of Dellwood discusses the Floodplain Management Ordinance in their Comprehensive Plan. The purpose of the ordinance, highlighted in the plan, is maintaining eligibility in the National Flood Insurance Program and minimizing potential losses due to periodic flooding, including loss of life, loss of property, health and safety hazards, disruption of governmental services, and extraordinary public expenditures for flood protection and relief.

#### Denmark

The Township of Denmark doesn't specifically reference mitigation or resilience, but does discuss floodplains, wetlands, and stormwater impacts in their Comprehensive Plan. The plan also references the Mississippi River Critical Area and the restriction of development in this area, which includes a large amount of the floodplain, wetlands, and other natural features.

#### Forest Lake

The City of Forest Lake includes information about the Watershed Districts they are a part of in their Comprehensive Plan. One of the goals mentioned in the plan for the Rice Creek Watershed District was to minimize damage to infrastructure and property caused by flooding and excessive runoff.

#### Grant

The City of Grant includes a Floodplain and Shoreland Management section in their Comprehensive Plan. This section discusses floodplain maps and mentions houses located in the floodplain and current ordinances prohibiting further building in those areas.

#### Grey Cloud Island

The Comprehensive Plan for the Township of Grey Cloud Island states that they will work with the South Washington Watershed District, neighboring communities, and other agencies to address the impacts of climate change and build resiliency into plans, projects, and ordinance standards. Additionally, the plan discusses stormwater management policies, one being the incorporation of Emergency Response Planning into the stormwater management program for flood-prone areas.

#### Hugo

The City of Hugo has a chapter on resiliency in their Comprehensive Plan. Topics addressed in this chapter include Disaster Preparedness, Protecting Critical Infrastructure, Diversifying the Energy Supply, Cyber Security, and Water Resources, including flood control.

#### Lake Elmo

The City of Lake Elmo discusses wetlands and floodplains in their Comprehensive Plan. The plan provides information about reoccurring flooding issues and mitigation measures and goals established to reduce the impact.

#### Lake St. Croix Beach

The City of Lake St. Croix Beach does not have an updated Comprehensive Plan we could review for resilience or mitigation components.

### Lakeland

The City of Lakeland discusses flood protection measures in their Draft Comprehensive Plan. The plan states that the floodplain ordinance was established to limit development in areas vulnerable to floodwaters. The plan also discusses past river flooding, localized flooding, and mitigation measures established for problem areas.

### Lakeland Shores

The City of Lakeland Shores incorporated a Stormwater Management section into their Comprehensive Plan. This section highlights goals to improve stormwater system management and treatment. The plan also mentions one residence located in the floodplain, and states that no other homes are to be constructed in the floodplain. The plan discusses a Floodplain Management Ordinance that requires a conditional use permit for all additions and alterations to homes along the bluff and/or river area.

### Landfall

The City of Landfall references the Local Water Management Plan developed by the Watershed District in their Comprehensive Plan, which is adopted by the City. The plan also mentions providing flood control methods to protect the public.

### Mahtomedi

The City of Mahtomedi discusses emergency preparedness procedures in their Comprehensive Plan. This includes a discussion on emergency planning and developing procedures to identify actions needed to improve emergency preparedness, and to support an All Hazard Emergency Operations Plan. Additionally, the plan includes a section on Flood Insurance Studies and FEMA maps. Lastly, several known flooding issues are highlighted in the plan along with mitigation measures to address the issues.

### Marine on St. Croix

Marine on St. Croix City dedicates a section to resilience in their Comprehensive Plan. The section discusses ways the City values and strives to support resilience methods, mentioning the adoption of the Washington County All Hazard Mitigation Plan and the Washington County Emergency Operations Plan.

### May Township

The Comprehensive Plan for the Township of May includes information about the floodplain, stating that floodplains account for 12.1% of the total land area in the Township. All lots in the designated floodplain are subject to Washington County's Floodplain Ordinance as well as regulations in May Township's Code. Surface Water Management Goals and Policies are also included in the Comprehensive Plan.

#### Newport

The City of Newport has a Comprehensive Plan that discusses successful mitigation measures, such as buyouts, for the removal of structures located in the floodplain. The plan also includes a section that discusses significant climate hazards and strategies to address them. Also included in the Comprehensive Plan is the Local Water Management Plan, which highlights the action of incorporating Emergency Response Planning into city planning. The Stormwater Ordinance and the South Washington Watershed District protect wetlands, require wetland buffers, and encourage mitigation for impacts or restoration of wetlands and adjacent habitat areas.

#### Oak Park Heights

The City of Oak Park Heights includes a section on the floodplain and identifies areas prone to flooding in their Comprehensive Plan. A policy listed in the plan states that the City restricts or prohibits development/redevelopment within drainageways, floodplains, wetlands, and other natural features.

#### Oakdale

The City of Oakdale specifically refers to hazard mitigation planning in their Comprehensive Plan. The plan states that they will continue to coordinate with Washington County and other relevant emergency service agencies in the area of hazard mitigation planning.

#### Pine Springs

The City of Pine Springs includes a Water Resources Management chapter in their Comprehensive Plan. This chapter addresses water sustainability and resilience. Another section discusses flood elevation and flood risks to structures located within the floodplain. Additionally, this chapter highlights invasive species and erosion issues of lakes within the city.

#### St. Mary's Point

The City of St. Mary's Point discusses floodplain regulations, zoning regulations, and Bluffland Management District restrictions in their Comprehensive Plan. Much of the City is in the floodplain or Bluffland Management Area. Methods for mitigating flood risk to new structures or additions to current structures are mentioned. The plan also states that floodplain regulations are maintained to provide protection to the community and to preserve natural resources.

#### St. Paul Park

The City of St. Paul Park includes a floodplain section in their Comprehensive Plan. This section highlights areas vulnerable to flooding. The Surface Water Management Plan, included in the Comprehensive Plan, discusses goals and policies, one of which is to reduce the expenses related to correcting flooding and water quality problems. The Comprehensive Water Supply Plan, also part of the Comprehensive Plan, includes a section that discusses response methods in the event of a drinking water emergency. Additionally, the City established a Floodplain District within the Zoning Ordinance that

highlights the need to protect and preserve water channels and portions of adjoining floodplains that carry floodwaters and are subject to inundation flooding.

Scandia

The City of Scandia does not address mitigation or resilience in relation to hazards in the community.

Stillwater

The City of Stillwater discusses the Floodplain Overlay District in their Comprehensive Plan. This district controls development in flood prone areas and minimizes losses. FEMA and floodplain maps are also discussed, as well as flood boundaries. Additionally, the plan explains how wetlands provide valuable services, one being natural flood control.

Stillwater Township

The Comprehensive Plan for the Township of Stillwater references the Watershed District Management Plan and the potential problems affecting land and water resources within the districts, and therefore within the Township.

West Lakeland Township

The Township of West Lakeland includes floodplain information in their Comprehensive Plan. The plan discusses the Floodplain Ordinance, the National Flood Insurance Program (NFIP), areas of periodic flooding, and mitigation measures used to reduce issues in problem areas.

Willernie

The City of Willernie has a Surface Water Management section in their Comprehensive Plan. This section discusses how the city is part of the Rice Creek Watershed District and the statutory purpose of the district, which is to conserve resources through development planning, flood control, and other conservation projects. The city relies on the district to enforce rules and maintain the local water plan.

Woodbury

The City of Woodbury recognizes the need for resilience planning in the Comprehensive Plan and identifies how the City has been working towards resiliency. The plan states the need to prepare for increasingly extreme weather events, as well as reduce impacts through mitigation, adaptation, and resilience planning. Proper floodplain management and shoreland overlay zones also provide flooding resilience and promote the health and safety of residents. The plan identifies ways the City is working towards resilience against other potential climate related hazards including extreme heat, diminished air quality, drought, and the spread of invasive species. The Water Supply Plan is discussed, which includes an emergency response plan, operational contingency plan, and emergency response procedures.

Of the city and township comprehensive plans reviewed by Washington County, the majority of local plans have integrated some aspects of resiliency and mitigation into their plan updates.

When integrated into comprehensive plans, they most often occur within the Land Use; Parks, Trails and Open Space; or Water Resources sections. Some communities, as noted above, have chosen to create an entire standalone chapter devoted to the topic of resilience in an effort to lessen the impacts of disasters.

### *Local Regulations and Efforts*

#### Emergency Operations Plans (EOPs)

Each local jurisdiction in Washington County is required to update their EOP annually. These plans are added to Bold Planning by cities and townships and are reviewed by Washington County Emergency Management staff upon request.

#### Building Codes

Most of the jurisdictions in Washington County have adopted the State Building Codes. These codes establish minimum requirements to maintain public safety. The codes support mitigation efforts through establishing standards for structural strength, means of egress facilities, stability, energy conservation, ventilation, fire safety, and other hazards.

#### Ordinances – Tornado Shelter Rooms

While many local jurisdictions incorporate mitigation activities into their ordinances through shoreland ordinances, floodplain management ordinances, buffer setbacks, and other related regulations, some additional proactive mitigation activities do take place as well. For example, the City of Hugo has implemented an ordinance requiring builders associated with subdivisions of a certain size to provide a building option that includes a safe/tornado shelter room within the home.

#### Ordinances – Floodplain Management

As required by State Statute, all cities within Washington County who have floodplains within their boundaries, have adopted the latest FEMA floodplain maps and the Floodplain Management Ordinance. They also enforce the requirements as they apply to construction within the applicable areas.

#### South Washington Watershed District (SWWD)

In 2018, the South Washington Watershed District Climate Resiliency Plan was created through a process that brought subject matter experts together in brainstorming workshops. The resulting plan identifies strengths, vulnerabilities and mitigation strategies.

Additionally, the Climate Resiliency Plan includes an assessment of storm sewer infrastructure throughout the SWWD. The assessment considers the likelihood of failure and the consequence of failure in the region.

#### Ramsey-Washington Metro Watershed District (RWMWD)

A section on Climate Change and Watershed Management is available on their website and they have a Draft Beltline Resiliency Study that evaluates system-level flood risk reduction options.

Valley Branch Watershed District (VBWD)

They are developing a Landlocked Basin Flood Mitigation Comprehensive Planning Study. The goals of the project are to: study high water/flooding conditions, develop and evaluate water level management alternatives, determine water quality impacts of proposed alternatives on downstream receiving waters, and to recommend a water management approach for each basin.

*Continuity of Operations Plans (COOP) and Emergency Operations Plans*

In 2018, Washington County rewrote the county COOP and conducted a county-wide tabletop exercise. From that process, all twelve departments now have COOP Coordinators that are responsible for updating their department specific information quarterly. In August of 2022, the county planners began planning a new tabletop exercise to help with the review and update process.

*Overall Summary*

The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update, and implementation of each jurisdiction's individual plans that require specific planning and administrative tasks (for example, plan amendments, ordinance revisions, capital improvement planning, annual budgeting, etc.).

During the planning process for new and updated local planning documents, such as a comprehensive plan, capital improvements plan, or emergency management plan, Washington County will provide a copy of the Washington County All Hazard Mitigation Plan to the appropriate parties and recommend that all goals and strategies of new and updated local planning documents are consistent with and support the goals of the Washington County All Hazard Mitigation Plan and will not contribute to increased hazards in the affected jurisdiction(s).