City of Medical Lake



Local Hazard Mitigation Plan

2025

CHLOETA

Executive Summary

The 2025 Medical Lake Local Hazard Mitigation Plan (LHMP) is designed to address and mitigate long-term risks posed by various hazards specific to the local area. This plan aims to make the city and its residents less vulnerable to future hazard events by focusing on the unique needs and circumstances within the jurisdiction.

The development of this LHMP reflects the city's commitment to mitigating risks from hazards and serves as a strategic tool to guide decision-makers in directing mitigation activities and resources effectively. The plan engages local stakeholders, including residents, businesses, and local government officials, ensuring mitigation actions reflect community priorities and capabilities.

This LHMP meets the requirements set forth by FEMA and the state, ensuring compliance with the Disaster Mitigation Act of 2000 and other relevant guidelines and regulations. By doing so, the plan ensures Medical Lake remains eligible for specific federal disaster assistance programs such as the FEMA Hazard Mitigation Grant Program (HMGP), the Pre-Disaster Mitigation Program (PDM), and the Flood Mitigation Assistance Program (FMA).

Natural disasters claim the lives of hundreds of people each year in the United States and injures thousands more. Taxpayers spend billions of dollars annually nationwide to help communities, organizations, businesses, and individuals recover from these events. These expenditures only partially reflect the true cost of disasters, as additional expenses incurred by insurance companies and nongovernmental organizations are not covered by tax dollars. Many natural disasters are predictable and much of the damage they cause can be mitigated or even prevented. The purpose of hazard mitigation is to reduce or eliminate long-term risks to people and property from such hazards.

The LHMP outlines specific mitigation strategies and actions tailored to reduce the impact of hazards in Medical Lake to improve community resilience and safety. The plan must be adopted by the local governing body (e.g., city council) and reviewed by the state emergency management agency before being submitted to FEMA for final approval. Having a FEMA-approved LHMP enables the city to be eligible for various federal and state hazard mitigation grants that can help fund the implementation of identified mitigation actions.

The 2025 City of Medical Lake Local Hazard Mitigation Plan aligns with the characteristics and requirements of a Local Hazard Mitigation Action Plan (LHMAP). It focuses on local hazards, engages the community, complies with regulatory standards, and outlines specific mitigation strategies, demonstrating the city's dedication to safeguarding its residents, properties, and resources from potential future disasters, ensuring a safer and more resilient community.

Table of Contents

Introduction **1**
Authority 1
Purpose 1
Background & Scope 2
Plan Layout 4
Plan Integration 4
Plan Adoption 4
Planning Process **6**
Hazard Mitigation Planning Overview 6
The Planning Process 7
Formation of the Planning Committee *8*
Planning Partnerships *9*
Coordination Among Agencies *9*
Review of Existing Programs, Plans & Studies *11*
Related Hazard Planning Documents *12*
Integration with Other Planning Mechanisms *13*
Public Engagement *13*
Plan Development Chronology & Milestones *16*
Community Profile **19**
History 19
Geography 19
Climate 20
Population & Demographics 21
Economy & Tax Base 22
Land Use 23
Infrastructure 25
Hazardous Materials *26*
Utility Failure *26*
Transportation *26*
Roads *28*
Future Development Trends 28
Employment & Industry 29
Disaster Declarations 30
Notable Disaster Declarations 31
Laws & Ordinances 32
Land Use Development 32
Federal Laws *32*
Washington State Laws *32*

Medical Lake Local Ordinances *33*
Assets at Risk 34
Values at Risk 34

Risk Assessment Methodology 36

Overview 36
Hazard Identification 36
City Hazard Identification *37*
Climate Change *37*
Risk Assessment Process *37*
Building Inventory *38*
Critical Facilities *38*
Estimating Potential Loss *41*
Hazards of Concern Risk Assessment Methodology *41*
Calculated Priority Risk Index Scoring Criteria *43*
Results & Methodology 45
Limitations 46

Hazard Profiles & Vulnerability Assessment 48

Hazard Profiles 48
Hazard: Severe Weather *49*
Hazard: Wildfire & Air Quality *70*
Hazard: Drought *84*
Hazard: Flooding *98*
Hazard: Earthquake *104*
Hazard: Volcano/Ashfall *117*
Hazard: Landslide *123*

Capability Assessment 129

County Capability Assessment 129
Local Capability Assessment 129
Assessment Analysis 130
Conclusion 131

Mitigation Strategy 132

Goals & Objectives 132
Mitigation Actions 135
Hazard Mitigation Alternatives 141
Selected Mitigation Initiatives & Classification 142
Changes in Priorities and Progress *143*
Analysis of Mitigation Activities 144
Cost Benefit Analysis 145

Prioritization of Initiatives 147

Mitigation Action Plan 150

Overview 150
Active Mitigation Actions 150
Completed or Cancelled Mitigation Actions 152

Funding Opportunities 152

Implementation Plan 155

Plan Maintenance 155
Maintenance Schedule 155
LHMP Maintenance Schedule Components 155
Types of Maintenance Activities 156
Importance of the LHMP Maintenance Schedule 157
Monitoring Progress of Mitigation Activities 158
Maintenance Evaluation & Enhancement 159
Evaluation Framework 159
Annual Maintenance Review 160
Post–Disaster Plan Updates. 160
Enhancing the Plan 160
Integration with Other Plans. 160
Documentation & Reporting. 161
Incorporation into Existing Planning Mechanisms 161
Continued Public Involvement 162

Appendix A: Glossary 164

Appendix B: Acronyms 166

Appendix C: Community Involvement Documentation 168

Hazard Mitigation Plan Public Survey 168
Public Feedback 169

Appendix D: Risk Survey Data 170

Survey Results (Stakeholder) 170

Appendix E: Mitigation Action Worksheets 173

Citywide Evacuation Plans 173
Mapping & Supporting Special Needs Populations 174
Shelter–in–Place Plans 175
Continuity of Operations Plan (COOP) 176
Communication Plans (Radios, Satellite Phones) 177
Firewising & Community Education Programs 178
Development of a Community Shelter 179

City Emergency Plans (Including Specific Hazards) 180
Firewising & Vegetation Management 181
Notification & Communication System Development 182
Vulnerable Population Engagement 183
Community Workshops on Hazard Preparedness 184
Emergency Kits & Preparedness Materials 185

Appendix F: Planning Meeting Documentation 186

Appendix G: Public & Stakeholder Engagement 187

Survey Results 188

Appendix H: Planning Committee Meeting Notes 202

Appendix I: FEMA Approval 230

Appendix I: HMP Adoption 231

References 232

Tables

Table 1. DMA & CRS Process for Developing the LHMP 6
Table 2. Planning Committee 8
Table 3. Agency Participation 10
Table 4. Chronological Development 16
Table 5. Select Social Statistics 21
Table 6. Economic Statistics (US Census Bureau (2020) 22
Table 7. Distribution of Value by Property Use Estimates 23
Table 8. Land Use Estimates 24
Table 9. City of Medical Lake Major Employers 30
Table 10. City of Medical Lake Disaster Declarations 30
Table 11. City Hazards 37
Table 12. Calculated Priority Risk Index (CPRI) Ratings 38
Table 13. Critical Facilities & Systems 39
Table 14. Calculated Priority Risk Index (CPRI) Scoring 46
Table 15. Enhanced Fujita Scale 51
Table 16. Medical Lake Area Severe Thunderstorm Occurrences, 2000-2024 (NOAA) 55
Table 17. Summary of Frequency 60
Table 18: Summary of Severity 61
Table 19: Summary of Warning Times 63
Table 20: Key Consequences 68
Table 21: Summary of Results 69
Table 22. Medical Lake Wildfire–related Disaster Declarations 74
Table 23: Summary of Secondary Hazards 78

Table 24. Previous Drought Occurrences in the Medical Lake area 86
Table 25. Drought Declarations Affecting Medical Lake, Washington 90
Table 26. Medical Lake Flooding Occurrences, 2000-2024 (NOAA) 100
Table 27. Earthquake Impact Assessments 107
Table 28. Washington State Historical Earthquakes 109
Table 29. Mitigation Goals & Objectives 133
Table 30. Mitigation Goal Crosswalk 138
Table 31. Mitigation Initiatives & Types 142
Table 32. Cost Benefit Analysis Priorities 145
Table 33. Mitigation Actions & Prioritization 147
Table 34. Active Mitigation Actions 150
Table 35. Completed or Cancelled Mitigation Actions 152
Table 36. Mitigation Funding 152
Table 37. Schedule for Critical Infrastructure in LHMP 156
Table 38. LHMP Maintenance Schedule 158
Table 39. Glossary Terms 164
Table 40. Acronyms 166
Table 41. Citywide Evacuation Plans 173
Table 42. Mapping & Supporting Special Needs Populations 174
Table 43. Shelter–in–Place Plans 175
Table 44. Continuity of Operations Plan (COOP) 176
Table 45. Communication Plans (Radios, Satellite Phones) 177
Table 46. Firewising & Community Education Programs 178
Table 47. Development of a Community Shelter 179
Table 48. City Emergency Plans (Including Specific Hazards) 180
Table 49. Firewising & Vegetation Management 181
Table 50. Notification & Communication System Development 182
Table 51. Vulnerable Population Engagement 183
Table 52. Community Workshops on Hazard Preparedness 184
Table 53. Emergency Kits & Preparedness Materials 185

Figures

Figure 1. Planning Process Flow 8
Figure 2. Hazard Ranking & Mitigation Workshop (Sep. 26, 2024) 9
Figure 3. Hazard Ranking & Mitigation Workshop (Sep. 26, 2024) 9
Figure 4. Flow & Recharge Area (SCWR) 20
Figure 5. Average Temperatures 21
Figure 6. City of Medical Lake Zoning Map 23
Figure 7. City of Medical Lake Zoning Map 25
Figure 8. City of Medical Lake Street Classifications 28

Figure 9. The Coriolis Effect (NOAA) 50
Figure 10. Hail Size Chart (NOAA/NWS) 52
Figure 11. City of Medical Wildfire Risk Areas 72
Figure 12. Gray Fire Boundary, 2023 (InciWeb) 73
Figure 13. Thermal Inversion (Carleton) 75
Figure 14. Wildfire Risk Areas 80
Figure 15. City of Medical Drought Monitor Map 86
Figure 16. City of Medical Lake Comprehensive Plan Flood Map (AEDA) 98
Figure 17. City of Medical Lake Wetlands Map (AEDA) 99
Figure 18. Cascadia Earthquake Sources (SAFE) 105
Figure 19. ShakeMap for M5.5 Earthquake on Latah Fault near Spokane (WA-DNR) 106
Figure 20. Cascadia Earthquake Model 107
Figure 21. 2001 Spokane Earthquake Swarm (USGS) 108
Figure 22. Soil Liquefaction (AES) 114
Figure 23. Mount St. Helens Eruption, 1980 (USGS) 117
Figure 24. Mount St. Helens Volcano Hazard Zones (USGS) 118
Figure 25. Projected Ashfall Dispersion from PNW Volcanic Eruption (Fero, et al., 2008) 118
Figure 26. Cascade Range Eruptions in the Past 4,000 Years (USGS) 119
Figure 28. Medical Lake Landslide Inventory & Susceptibility (Mirus et al., 2024) 124
Figure 29. Medical Lake Landslide Zones 127

Introduction

Natural hazards impact city residents, property, environment, and the economy. Wildfires, reduced air quality, severe thunderstorms (flooding, windstorms) severe winter storms, volcanoes, and earthquakes expose the Medical Lake residents and businesses to the financial and emotional costs of recovering from natural disasters. Other events such as terrorism, and hazardous material spills also pose dangers to city residents. Risks associated with natural hazards increase as more people move to areas affected by these hazards.

The inevitability of natural hazards, the growing population, and activity within the community creates urgent needs to develop strategies, coordinate resources, and increase public awareness to reduce risks while preventing losses from future hazard events. Identifying risks posed by hazards and developing strategies to reduce the impact of hazard events can assist in protecting lives and property of residents within the community.

Local residents and businesses can work together with the city to create a local hazard mitigation plan addressing potential impacts of hazard events. This collaborative approach is essential for building a safer and more resilient community capable of withstanding and recovering from natural and man–made disasters.

Authority

The federal Disaster Mitigation Act (DMA) of 2000 (Public Law 106–390) requires state and local governments to develop hazard mitigation plans as a condition for federal disaster grant assistance. Prior to the year 2000, federal disaster funding focused on disaster relief and recovery, with limited funding for hazard mitigation planning. The DMA increased the emphasis on planning for disasters before they occur. It also encourages state and local authorities to work together on pre–disaster planning, promoting sustainability for disaster resistance. Sustainable hazard mitigation planning includes sound management of natural resources and the recognition that hazards, and mitigation must be understood in the largest possible social and economic context. The enhanced planning network called for by the DMA helps local governments articulate accurate needs for hazard mitigation, resulting in faster funding allocations and more cost–effective risk reduction projects.

Purpose

The purpose of this Local Hazard Mitigation Plan (LHMP) is to reduce or eliminate long–term risk to human life and property from hazards. This plan identifies and assesses risks and implements strategies to protect people and property from future hazard events. It addresses a variety of hazards including natural, technological, and man–made incidents potentially impacting the City of Medical Lake, Washington. Along with enhancing community resilience, this LHMP ensures the city is eligible for federal disaster assistance programs including the FEMA Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure and Communities (BRIC), and the Flood Mitigation Assistance Program (FMA). By aligning with federal requirements while leveraging available resources, the city strives to create a safer, more prepared, and resilient community capable of withstanding and recovering from future hazard events.

This LHMP identifies resources, information, and strategies for reducing risks from natural hazards. Elements and strategies in the plan were selected because they meet program requirements

and best meet the needs of the city and its residents. This plan will help guide and coordinate mitigation activities throughout the city and was developed to:

- meet or exceed the requirements of the DMA.
- enable the city to use federal grant funding to reduce risk through mitigation.
- meet the needs of the City of Medical Lake as well as state and federal requirements.
- create a risk assessment that focuses on hazards of concern specific to the city.
- create a single planning document integrating all city planning efforts, supporting local partnerships and future updates.
- meet the planning requirements of the FEMA Community Rating System (CRS), enabling city participation in the CRS program while enhancing its CRS classifications.
- coordinate existing plans and programs so that high–priority initiatives and projects to mitigate possible disaster impacts are funded and implemented.

Medical Lake residents and businesses are the ultimate beneficiaries of this hazard mitigation plan. The plan reduces risk for those who live in, work in, and visit the city. It provides a viable planning framework for all foreseeable natural hazards that may impact the city. Participation in the plan development by key stakeholders helped ensure outcomes that are mutually beneficial. Resources and background information in the plan are applicable citywide and plan goals and recommendations can lay the groundwork for the development and implementation of local mitigation activities and partnerships.

Background & Scope

Natural disasters claim the lives of hundreds of people and injure thousands more each year in the United States. Taxpayers pay billions of dollars annually nationwide to help communities, organizations, businesses, and individuals recover from disasters. These funds only partially reflect the true cost of disasters, as additional expenses incurred by insurance companies and nongovernmental organizations are not reimbursed by tax dollars. Many natural disasters are predictable, and much of the damage caused by these events can be reduced or even eliminated.

Hazard mitigation is defined by FEMA as “any sustained action taken to reduce or eliminate long–term risk to human life and property from a hazard event.” The results of a three–year, congressionally mandated independent study to assess future savings from mitigation activities provide evidence that mitigation activities are highly cost–effective. On average, each dollar spent on mitigation saves society an average of six dollars in avoided future losses, in addition to saving lives and preventing injuries (National Institute of Building Science Multi–Hazard Mitigation Council 2019 Report).

Hazard mitigation planning is the process through which hazards are identified, likely impacts determined, mitigation goals set, and appropriate mitigation strategies determined, prioritized, and implemented. This plan documents the city’s hazard mitigation planning process, identifying relevant hazards and vulnerabilities, and outlining strategies the city will use to decrease vulnerability and increase resiliency and sustainability throughout the community.

This Local Hazard Mitigation Plan (LHMP) was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106–390) and implementing regulations set forth by

the Interim Final Rule published in the Federal Register on February 26, 2002 (44 CFR §201.6) and finalized on October 31, 2007. Hereafter, these requirements and regulations will be collectively referred to as the Disaster Mitigation Act (DMA) or DMA 2000. While the act emphasized the need for mitigation plans and more coordinated mitigation planning and implementation efforts, the regulations established the requirements that local hazard mitigation plans must meet for a local jurisdiction to be eligible for certain federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93–288). This planning effort also follows the most recent planning guidance from FEMA.

This plan includes the integration of other comprehensive planning documents in effect within the city. These plans include the:

- Spokane County Hazard Mitigation Plan (Volume 1 & 2).
- Spokane County Community Wildfire Protection Plan (CWPP).
- Comprehensive Plans for Spokane County and all incorporated cities within the County.
- City of Medical Lake Comprehensive Plan.
- City of Medical Lake 2021 Periodic Update Shoreline Master Program.
- Washington State Enhanced Hazard Mitigation Plan.
- Washington State Emergency Management Plan.
- Washington State Climate Response Strategy.
- State of Washington Department of Social and Health Services 2023–2033 Capital Plan.

Comprehensive Plans are mandated by Washington statute (Revised Code of Washington (RCW) 36.70A.070) adopted under its Growth Management Act. The comprehensive plan of a county or city that is required or chooses to plan under RCW 36.70A.040 shall consist of a map or maps, and descriptive text covering objectives, principles, and standards used to develop the comprehensive plan. The plan shall be an internally consistent document, and all elements shall be consistent with the future land use map.

Recognizing the value of information contained in the Local Hazard Mitigation Plan in making wise land use decisions, Medical Lake adopted actions that promote the integration of the LHMP and comprehensive plans in effect within the planning area. This integration ensures high–priority initiatives and projects to mitigate possible disaster impacts are funded and implemented, creating a safer and more resilient community.

The city is subject to various hazards, making access to FEMA grant programs vital. The information in this LHMP guide and coordinate future mitigation activities and decisions for local land use policy. Proactive mitigation planning helps to reduce the cost of disaster response and recovery for communities and residents by protecting critical community facilities, reducing liability exposure, and minimizing community impacts and disruptions. The LHMP aims to create a safer, more resilient city by systematically identifying hazards, assessing vulnerabilities, and developing strategies to reduce risks and enhance community preparedness.

Plan Layout

The City of Medical Lake Local Hazard Mitigation Plan (LHMP) plan layout follows a comprehensive structure designed to address multiple aspects of hazard mitigation. It begins with an introduction outlining the purpose, authority, and background of the plan. The layout integrates relevant sections such as the identification of hazards, risk assessments, and mitigation strategies, including specific goals and objectives tailored to minimize risks and protect the community. The layout also includes sections on public involvement, coordination among local agencies, and plan adoption procedures. This structured approach ensures all aspects of mitigation are systematically covered, providing a clear roadmap to enhance city preparedness, resilience, and response to hazards.

Plan Integration

Plan integration is a critical component of Medical Lake's Local Hazard Mitigation Plan (LHMP). It ensures mitigation efforts seamlessly align with existing comprehensive planning documents such as the Spokane County Community Wildfire Protection Plan, the City of Medical Lake Comprehensive Plan, and state–level strategies like the Washington State Enhanced Hazard Mitigation Plan. This integration promotes consistency across various initiatives, ensuring the highest–priority mitigation projects are funded and implemented effectively. By embedding hazard mitigation strategies into other local and regional planning frameworks, the city can create a more resilient community that is better prepared to reduce the impacts of disasters on people, property, and infrastructure.

The City of Medical Lake Local Hazard Mitigation Plan (LHMP) aligns with existing city, county, and state planning efforts to ensure a coordinated and effective approach to risk reduction. The plan integrates key elements from the Spokane County Hazard Mitigation Plan, which provides a regional framework for disaster resilience, ensuring that mitigation strategies address shared risks such as wildfires, severe weather, and flooding. Additionally, the Washington State Enhanced Hazard Mitigation Plan informs the LHMP by incorporating statewide hazard assessment methodologies and best practices, reinforcing Medical Lake's ability to access state-level resources and funding. At the city level, the Medical Lake Comprehensive Plan is closely linked to the LHMP by guiding land use decisions that minimize development in high-risk areas, such as floodplains and wildfire-prone zones. The Spokane County Community Wildfire Protection Plan (CWPP) further supports the LHMP's wildfire mitigation strategies, ensuring alignment with defensible space guidelines and emergency response planning. By integrating these planning efforts, the LHMP strengthens regional cooperation, enhances resource sharing, and ensures that mitigation actions support broader sustainability and resilience goals for Medical Lake and its surrounding communities.

Plan Adoption

44 CFR Section 201.6(c)(5) requires documentation that a hazard mitigation plan has been formally adopted by the governing body of the jurisdiction requesting federal approval of the plan. This plan will be submitted for a pre–adoption review to the Washington State Emergency Management Division and FEMA. Once pre–adoption approval has been provided, all Planning Partners will formally adopt the plan. All partners understand that DMA compliance and its benefits cannot be achieved until the plan is adopted. FEMA Region X granted final approval of the City

of Medical Lake 2025 Local Hazard Mitigation Plan and its eligible Planning Partners in March of 2025. Copies of the FEMA approval letter can be found in Appendix I.

Planning Process

The City of Medical Lake LHMP planning process involved coordination with local government departments, neighboring jurisdictions, Spokane County, Washington State Emergency Management, and FEMA. Public involvement was solicited through public meetings, surveys, and community workshops, with feedback integral to shaping the plan. The Planning Team consisted of representatives from city government, emergency services, public health, education, local businesses, and community organizations including the City Mayor, City Administrator, Fire Chief, Public Works Director, School District Superintendent, and local business and community organization representatives.

The process began with an initial planning meeting to introduce the LHMP process and identify key stakeholders. This was followed by a hazard identification workshop where community members and stakeholders participated in identifying local hazards and associated impacts. Mitigation strategy development involved collaborative sessions to establish goals, objectives, and actions. Throughout the planning process, public participation was encouraged through community meetings, surveys, and public comment periods. Information was disseminated via the city website, local newspapers, and social media platforms to reach the broadest possible audience. Special efforts were made to include vulnerable populations in the planning process.

Hazard Mitigation Planning Overview

This Local Hazard Mitigation Plan (LHMP) was developed pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106–390), implementing regulations set forth by the Interim Final Rule published in the Federal Register on February 26, 2002 (44 CFR §201.6) and finalized on October 31, 2007. The city followed a planning process prescribed by FEMA as detailed in the table below:

Table 1. DMA & CRS Process for Developing the LHMP

Step	DMA Process	CRS Process	Description
1	201.6(c)(1)	Organize the Planning Effort– 201.6(b)(1)	Gathering and organizing the necessary resources for the planning effort, including assembling a Planning Team, securing funding, and defining the scope and objectives of the plan.
2	201.6(b)(1) and (3)	Involve the Public	Ensuring the community has opportunities to participate in the planning process through public meetings, surveys, and workshops, and educating the public about hazard risks.
3	201.6(b)(2) and (3)	Coordinate with other departments and agencies	Engaging various departments and agencies to integrate all available expertise and resources into the planning process, ensuring alignment with existing plans and policies.
4	201.6(c)(2)(i)	Identify the Hazards	Identifying hazards that pose a risk to the community, assessing potential impacts using historical data, hazard maps, and risk assessments.

Step	DMA Process	CRS Process	Description
5	201.6(c)(2)(ii)	Assess Risks	Detailed assessment of the risks associated with each identified hazard, examining the likelihood of hazard events and potential impact on people, property, infrastructure, and the economy.
6	201.6(c)(3)(i)	Set Goals	Setting goals and objectives for reducing risks and hazard vulnerabilities, identifying possible mitigation activities and strategies.
7	201.6(c)(3)(ii)	Review Possible Activities	Reviewing the range of possible mitigation activities, evaluating feasibility and effectiveness to select the most appropriate actions.
8	201.6(c)(3)(iii)	Draft an Action Plan	Outlining specific mitigation actions, responsible parties, timelines, and funding sources to serve as a roadmap for implementing chosen mitigation activities.
9	201.6(c)(5)	Adopt the Plan	Formally adopting the mitigation plan, gaining approval from the city council or other governing body, and integrating the plan into community policies and procedures.
10	201.6(c)(4)	Implement, Evaluate, and Revise the Plan	Implementing the plan, regularly evaluating its effectiveness, monitoring progress, updating the plan as needed, and revising it based on new information, changing conditions, and lessons learned from recent disasters.

The Planning Process

To develop this Local Hazard Mitigation Plan, the city followed a planning process with the following primary objectives:

- Secure funding.
- Select vendor (Chloeta).
- Form a core planning work group within the city to lead the planning effort.
- Establish a Planning Partnership of stakeholders in the planning area.
- Define the planning area.
- Coordinate with other agencies to gain information and stakeholder involvement.
- Review existing programs, plans and studies currently in place.
- Engage the public.



Figure 1. Planning Process Flow

Formation of the Planning Committee

The city established a Hazard Mitigation Planning Committee hereafter referred to as the HMPC. The HMPC is comprised of representatives from key city departments and stakeholders from local and regional agencies and companies key to hazard mitigation activities. Table 2 identifies members invited and/or who attended HMPC meetings.

Table 2. Planning Committee

Name	Title	Department
Terri Cooper	City Mayor	City Officer
Sonny Weathers	City Administrator	City Officer
Chandra Fox	Deputy Director	Spokane County EMD
Greg Hafer	Facilities Manager	Consolidated Support Services
Kim Headrick	Superintendent	Medical Lake School District
Mike Kittilstved	Undersheriff	Spokane County Sheriff's Office
Cody Rohrbach	Fire Chief	Spokane County Fire District #3
Michele McCollum	Regional Business Manager	Avista Utilities
Eric Carpenter	Superintendent	Eastern State Hospital
Tim Gerlitz	Superintendent	Lakeland Village
Jeff Johnson	Deputy Director for Installation Support	Fairchild Air Force Base
Larry Krauter	CEO	Spokane International Airport
Alicia Thompson	Administrative Officer	Spokane Regional Health District

Name	Title	Department
Kaye Peterson	Guest Services Director	Silver Lake Bible Camp

Planning Partnerships

The success of Medical Lake's Local Hazard Mitigation Plan (LHMP) is greatly enhanced through strong partnerships with key stakeholders, including Spokane County, Spokane International Airport, and Fairchild Air Force Base. Working collaboratively within the county ensures that hazard mitigation efforts are regionally aligned, enabling a unified approach to shared risks such as wildfires, flooding, and other infrastructure vulnerabilities. The close proximity of the airport and Fairchild Air Force Base introduces unique challenges such as aviation–related incidents, hazardous materials transport, and potential military–related emergencies. By partnering with the military base, the city gains access to additional resources, emergency response capabilities, and expertise in handling large–scale incidents. This collaboration, along with support from the airport and county ensures the city is better equipped to address potential hazards, improve public safety, and create a more resilient community through comprehensive, coordinated mitigation strategies.



Figure 2. Hazard Ranking & Mitigation Workshop (Sep. 26, 2024)

Coordination Among Agencies

Title 44 of the Code of Federal Regulations (44 CFR) requires opportunities for involvement in the planning process be provided to neighboring communities, local and regional agencies involved in hazard mitigation, agencies with authority to regulate development, businesses, academia, and other private and nonprofit interests (Section 201.6.b.2). Agency and stakeholder involvement is identified in the table below to include hazard input information, invitation to serve on the Planning Team, data review information, and the draft and pre–adopted plans. Identified stakeholders were provided the opportunity to provide input and review and/or comment on this plan throughout the effort as they elected to do so with information provided via the hazard mitigation plan website (https://medical-lake.org/city-government/hazard-mitigation-plan), at various public outreach effort events, or via email. It should be noted that this is an overview and is not all–encompassing.



Figure 3. Hazard Ranking & Mitigation Workshop (Sep. 26, 2024)

Table 3. Agency Participation

Agency or Organization	Primary POC	Kick Off Meeting	Initial Stakeholder Meeting	Completed Risk Ranking	Attended Hazard Workshop Meeting	Draft Plan Review	Final Plan Review	Adoption Month
Date		7/24/2024	9/6/2024	9/26/2024	9/26/2024	12/18/2025	3/3/2025	
City Mayor	Terri Cooper		●	●	●	●	●	
City Administrator	Sonny Weathers	●	●	●	●	●	●	
Spokane County Fire District #3	Chief Cody Rohrbach crohrbach@scfd3.org		●	●	●	●	●	
Spokane County Sheriff's Office	Undersheriff Mike Kittilstved mkittilstved@spokanesheriff.org		●	●	●	●	●	
Medical Lake School District	Superintendent Kim Headrick kheadrick@mlsd.org		●	●	●	●	●	
Eastern State Hospital	Superintendent Eric Carpenter eric.carpenter@dshs.wa.gov		●	●	●	●	●	
Lakeland Village	Superintendent Tim Gerlitz timothy.gerlitz@dshs.wa.gov		●				●	
Consolidated Support Services	Facilities Manager Greg Hafer greg.hafer@dshs.wa.gov		●	●	●	●	●	
Fairchild Air Force Base	Deputy Director for Installation Support Jeff Johnson Jeffrey.johnson.64@us.af.mil						●	
Spokane County	Deputy Director Chandra Fox cefox@spokanecounty.org		●	●	●	●	●	
Spokane International Airport	CEO Larry Krauter lkrauter@spokaneairports.net						●	

Agency or Organization	Primary POC	Kick Off Meeting	Initial Stakeholder Meeting	Completed Risk Ranking	Attended Hazard Workshop Meeting	Draft Plan Review	Final Plan Review	Adoption Month
Spokane Regional Health District	Administrative Officer Alicia Thompson athompson@srhd.org		•	•	•	•	•	
Avista Utilities	Regional Business Mgr Michele McCollum michele.mccollum@avistacorp.com		•				•	
Silver Lake Bible Camp	Guest Services Director Kaye Peterson kaye@silverlakecamp.org		•	•	•	•	•	

Review of Existing Programs, Plans & Studies

44 CFR states that hazard mitigation planning must include the review and incorporation (if appropriate) of existing plans, studies, reports, and technical information [Section 201.6.b(3)]. Below is a review of the laws and ordinances in effect within the planning area that can affect hazard mitigation initiatives:

- *City Comprehensive Plan*. This plan is a decision–making tool. The plan reflects the city's chosen path into the future by anticipating changes in the community, providing the policy and program framework to guide the city in managing change.
- *Shoreline Master Program.* This program indicates how shorelines will be used and developed, including regulations to ensure compliance. Shoreline Master Programs include policies and regulations designed to achieve a no–net–loss of shoreline ecological functions, providing for restoration mitigation for shorelines in which ecological functions have been impaired.
- *Medical Lake Municipal Code.* This is an official amendment or update to the city's municipal code. This ordinance includes new regulations, policy updates, or clarifications related to local governance, infrastructure, zoning, or public safety measures. Its details would align with the ongoing needs or objectives of the city as of the date specified. For exact provisions, the ordinance text should be reviewed in full.
  - Chapter 14 of the Medical Lake Municipal Code focuses on building codes, establishing regulations to ensure safe, sustainable, and compliant construction within the city. These codes outline standards for building design, construction, and maintenance to protect public health, safety, and welfare. The city Building Department oversees code enforcement, managing permit issuance for projects such as new constructions, additions, remodels, and installations of systems like water heaters and HVAC units. By enforcing these regulations and requiring permits for construction activities, the city ensures all development adheres to safety and structural standards, fostering a safely built environment for the community. Electrical permits are issued by the Washington State Department of Labor and Industries.
  - *Chapter 17 of the Medical Lake Municipal* Code addresses zoning, providing a framework to regulate land use and promote orderly city development. Zoning regulations help ensure

compatibility of land uses, protect public welfare, and support sustainable growth. The chapter establishes specific zoning districts, each with defined permitted uses and development standards, to guide residential, commercial, industrial, and mixed–use development. The city Planning and Zoning Department administers these regulations, overseeing land use reviews, permit processing, and zoning plan updates. These measures are designed to balance growth with community needs while preserving the character and functionality of the city.

  - *Section 17.35.030* outlines stormwater drainage and other requirements for managing *stormwater* runoff in alignment with zoning regulations. The city Planning and Zoning Department oversees the development and implementation of comprehensive plans and development regulations which include stormwater management strategies to ensure sustainable growth and environmental protection.
  - *Chapter 16.20 of Title 16* in the Medical Lake Municipal Code focuses on flood damage prevention, outlining strategies to reduce flood hazards and regulate development in flood–prone areas. The chapter prioritizes protecting life and property by enforcing measures to minimize flood–related risks and establishing guidelines for safe construction and land use within designated flood zones. A designated Floodplain Administrator oversees the regulation enforcement to ensure compliance. All proposed development in flood–prone areas requires permitting to verify adherence to flood management standards, further safeguarding community resilience and safety.

- *Medical Lake Critical Area Ordinance* designates and protects critical areas and their functions. Critical areas include wetlands, fish and wildlife habitat.

Related Hazard Planning Documents

Medical Lake incorporates the following resources and plans to strengthen its Local Hazard Mitigation Plan (LHMP):

- Spokane County Community Wildfire Protection Plan (CWPP)
- Threat Hazard Identification and Risk Assessment (THIRA)
- FEMA–approved Debris Management Plan

These resources are leveraged during the planning and update process to ensure alignment with county–wide hazard mitigation strategies. By incorporating these technical resources, the City aims to enhance its preparedness, resilience, and coordination with Spokane County's comprehensive hazard mitigation efforts.

Community Wildfire Protection Plan (CWPP). The city follows the CWPP developed by Spokane County, which is the result of collaboration between state, county, and local agencies. The CWPP assesses regional wildfire risks, establishing strategies to reduce the potential for wildfires that threaten people, structures, infrastructure, and ecosystems. By adhering to the county CWPP, the city benefits from comprehensive wildfire mitigation strategies including defensible space, fire–resistant construction practices and coordinated response planning. The CWPP also serves as supplemental information for the wildfire chapter of the Spokane County Hazard Mitigation Plan with which the community aligns its own planning efforts.

Threat and Hazard Identification and Risk Assessment (THIRA). Medical Lake aligns with the Spokane County THIRA, identifying regional threats and hazards while assessing how impacts vary by season, location, and other factors. The THIRA provides a secure, fact–based, evaluation

of risks and county capabilities to address them. While the Spokane County Hazard Mitigation Plan involves an open public process, the THIRA focuses on confidential data derived from previous incidents, maintaining separate and secure documentation. The city utilizes relevant THIRA data to enhance local hazard mitigation efforts, particularly for natural hazards addressed within Spokane County's broader framework.

Debris Management Plan. The city follows the Spokane County FEMA–approved Debris Management Plan, outlining best practices for debris removal operations and post–disaster recovery. The city ensures readiness to restore public services and protect public health and safety in the aftermath of a disaster by adhering to this plan. The county plan uses risk assessment data (including Hazus modeling for floods and earthquakes) to estimate debris amounts and develop effective debris management strategies. Compliance with the Spokane County plan ensures city planning aligns with FEMA eligibility criteria, benefitting from a coordinated county–wide approach.

Medical Lake ensures all hazard mitigation, response, and recovery efforts are well integrated into a regional framework, enhancing city resilience to disasters and access to resources by adhering to Spokane County established plans.

Integration with Other Planning Mechanisms

The City of Medical Lake has incorporated mitigation goals and actions from this LHMP into its existing planning frameworks where appropriate, including the City's Comprehensive Plan, Shoreline Master Program, Zoning Code, and Capital Improvement Plans. Updates to stormwater management standards, emergency preparedness protocols, and land use planning now consider hazard exposure as outlined in this plan. In addition, this LHMP aligns with regional documents such as the Spokane County CWPP and Debris Management Plan, enabling coordinated implementation of wildfire mitigation, post-disaster recovery, and climate adaptation actions. This integration ensures mitigation priorities are considered during local project development, permitting, and infrastructure investment decisions.

Public Engagement

Broad public participation in the planning process helps ensure diverse points of view about planning area needs are considered and addressed. 44 CFR requires that the public have opportunities to comment on disaster mitigation plans during the drafting stages and prior to plan approval (Section 201.6.b.1).

Strategy

Public engagement was a vital component of the city hazard mitigation planning process, ensuring community input was considered in shaping safety and resilience efforts. Survey questionnaires allowed residents to share thoughts, concerns, and priorities regarding local hazards, with survey results helping to identify key focus areas. Participation in the public survey exceeded expectations with a significant number of insightful responses. Medical Lake leverages the city website to provide updates, resources, and detailed information regarding ongoing mitigation efforts, further ensuring transparency and accessibility.

Social media platforms heightened public outreach, enabling real–time communication and interaction with the community. Public meetings offered a face–to–face forum where residents, business owners, and local officials were able to collaborate, asked questions, and contributed to the planning process., which supports that public input has been utilized. The City utilized community

partners (MLSD and SCFD#3) to help inform the public of the survey. It was advertised in the city newsletter to keep the public informed of milestones, upcoming events, and opportunities to engage, ensuring continuous and inclusive public participation throughout the process.

Hazard Questionnaire

The Planning Team developed a web–based hazard mitigation plan questionnaire tailored to the specific needs and concerns of city residents. The questionnaire assessed household preparedness for natural and man–made hazards, gauged awareness of local risks, and identified vulnerabilities within the community. It collected insights on residents' familiarity with tools and techniques for reducing risk and loss from hazards such as wildfires, flooding, and earthquakes, as well as man–made threats like hazardous materials incidents and infrastructure failures. The survey was advertised through press releases, local media outlets, social media, and community forums. Residents were invited to provide comments throughout the process, from survey launch to the review of the draft plan. Comments focused on areas of vulnerability, evacuation plans, and preparedness actions already taken by residents, fostering an exchange of ideas and experiences. Relevant and applicable feedback was incorporated into this plan to ensure a community–driven, well–rounded approach to hazard mitigation planning in the city.

Survey Results

The Planning Team developed a customized, web–based hazard mitigation plan questionnaire to assess preparedness, awareness, and vulnerabilities to natural and man–made hazards. The survey revealed that 85.42 percent of respondents experienced severe weather events, making this event type the most frequently encountered hazard followed by 31.25 percent experiencing earthquakes and 8.33 percent experiencing effects of volcanic eruptions. Severe weather and wildfires were identified as the hazards of greatest concern, aligning with the priorities of residents and the Planning Team. 32 percent of respondents ranked drought as a higher concern than earthquakes in the planning area.

The questionnaire was distributed online and in hardcopy form with discussions at public meetings to ensure comprehensive community engagement. It was promoted using press releases and local media, enabling ongoing public input throughout the planning process. Most of the comments received were "response" focused, emphasizing the need for clear evacuation plans detailing personal preparedness measures already taken by residents. These comments provided valuable insights and were incorporated into the plan where relevant, ensuring a well–rounded, community–driven hazard mitigation strategy.

Internet

The city established a dedicated webpage to inform the public about plan progress and to gather community input at beginning of city local hazard mitigation plan development. This platform provided access to plan documents using a file–transfer system, enabling residents to conveniently download and review plan materials. The city plans to maintain this webpage post–completion to provide updates on successful mitigation projects and future plan revisions.

A link to the public survey was prominently displayed on the website, encouraging residents to share insights on hazard mitigation planning. The survey was available online from August 30-September 30, 2024, with paper copies accessible at City Hall for residents preferring a physical format. The city further ensured broad community participation and accessibility by offering to mail surveys upon request. The city widely publicized the website address through press releases, email communications, public meetings, and surveys. Plan development process information,

Planning Team involvement, survey results, and phased plan drafts were shared on the website throughout the planning process. This comprehensive approach helped ensure the plan reflected priorities and insights of city residents and stakeholders.

Social Media

The city used the official Medical Lake Facebook page to disseminate information regarding the Local Hazard Mitigation Plan (LHMP) in addition to the dedicated city website. The Facebook page served as a primary platform for community engagement and was used to:

- distribute information about the plan. Regular posts informed residents about LHMP progress, ensuring transparency and keeping the community informed.
- announce public outreach events. Notifications about upcoming LHMP meetings, workshops, and forums were shared to encourage attendance and participation.
- solicit feedback on the draft plan. Once the draft LHMP was completed, posts alerted residents to its availability, requesting reviews and comments during the public comment period.

The city publicized its social media presence through press releases, email communications, public meetings, and surveys. This comprehensive outreach strategy ensured information regarding the LHMP development process, Planning Team activities, survey opportunities, and draft plans were accessible to the public throughout the planning process. Medical Lake enhanced community engagement, ensuring the LHMP reflected resident and stakeholder insights and priorities using the most effective and relevant social media platforms available.

Public Meetings

Public meetings and events were held and open to the community throughout the development of the city's Local Hazard Mitigation Plan (LHMP). All planning meetings were accessible to the public, with attendees actively providing valuable information and input. Some public meetings held in conjunction with Planning Commission meetings were recorded, allowing residents and stakeholders to view them later. The Planning Commission played an integral role in the process, with a Project Manager providing regular updates during meetings. These updates included presentations on hazard risks, planning posters, and solicitation of member input. The meeting format encouraged interaction, allowing attendees to review maps, handouts, and other materials while engaging directly with project staff. Planning partners and team members were on hand to answer questions, explain the purpose of the LHMP, and share insights from the risk assessment process. The Planning Team encouraged residents to complete a questionnaire to provide written feedback, later reviewed by the team.

During the public comment period, meetings were held to inform the community about the draft LHMP and to invite public input. Planning Team members announced the impending release during public forums and meetings approximately 3 weeks before the draft plan was made available online. Once online, the plan was downloadable for review from the city website. Local media assisted in publicizing public workshops and comment opportunities, ensuring wide community engagement in shaping the final plan.

Press Releases

This plan was developed through a collaborative process involving local stakeholders, emergency management professionals, and state agency representatives to identify and address potential hazards posing community risks. Public participation was a cornerstone of this process, ensuring the

plan reflects the priorities and needs of community residents and businesses. A draft version of the plan was made available for public review and comment for a 10–day period to finalize the plan. This review period allowed community members to provide feedback and suggest improvements to further ensure the plan aligns with local values and concerns. The draft plan was accessible on the city website. Comments submitted during this period were carefully considered and incorporated as appropriate before the final version was adopted.

Plan Development Chronology & Milestones

Notes from stakeholder meetings and presentations are included in Appendix G to provide a comprehensive record of the planning process. These notes document discussions on hazard identification, vulnerability assessments, mitigation strategies, and public engagement efforts. They capture input from key stakeholders including city officials, external partners, and community members, reflecting the collaborative approach taken to address the city's unique risks and priorities. The appendix ensures transparency and provides a valuable reference for reviewing decision–making processes, tracking progress, and informing future updates to the plan by incorporating these details.

Table 4. Chronological Development

Date	Event	Description	Attendance
7/1/2024	Contractor Selection	City selects Chloeta to facilitate development of the local hazard mitigation plan.	N/A
7/24/2024	Kickoff Meeting	1. Kick–off meeting held to organize Planning Partnership. 2. Confirmed goals and objectives. 3. Confirmed hazard assessment process. 4. Provided overview of LHMP development process. 5. Identified public outreach strategy.	Medical Lake Chloeta Planning Team
7/2024-1/2025	Public Outreach Strategy	LHMP surveys published to city website, Facebook, sent out in city newsletter, and posted to public boards.	N/A
8/19/2024	Planning Team Meeting	1. Facilitated initial hazard mitigation meeting identifying planning team, key stakeholders, and external partners. 2. Reviewed city planning documents. 3. Discussed Critical Infrastructure Worksheet to include Emergency Services, Public and partner communications, transportation and evacuation plans, public health, & utilities.	Medical Lake Planning Team Chloeta Planning Team
8/30/2024	Public Outreach	Public Survey released for hazard assessment, public awareness and needs.	N/A
9/5/2024	Stakeholder Meeting	1. Stakeholder engagement 2. LHMP timeline 3. Initial hazard overview 4. LHMP development process 5. Meeting served as the foundation for developing Medical Lake's Local Hazard Mitigation Plan, setting clear objectives, engaging stakeholders, and outlining a structured process to address identified risks effectively.	See Roster in Appendix G

Date	Event	Description	Attendance
9/16/2024	Planning Team Meeting	This meeting focused on refining the hazard mitigation plan, updating historical data, and addressing infrastructure and risk vulnerabilities. The team is progressing toward finalizing input and conducting the upcoming workshop. 1. Hazard event history 2. Wildfire exposure 3. Water supply 4. Capability assessment 5. Initial mitigation goals & objectives 6. Infrastructure assessment 7. Zoning plans 8. Evacuation and transportation plans 9. Man–made hazards	Medical Lake Chloeta Planning Team
9/26/2024	Hazard Mitigation Workshop	1. City risk assessment was provided by consultant, with the majority of all Planning Team members present. 2. Information was exchanged concerning the hazard, areas of greatest concern, and the results of the hazard ranking. 3. Consultant provided local hazard mitigation planning process overview; risk ranking was confirmed, & mitigation strategies were discussed. 4. Citizen results from the survey were presented, with additional surveys available for response during the meeting.	See Roster in Appendix G
10/21/2024	Planning Team Meeting	Planning Team reviewed mitigation strategies and priorities.	Medical Lake Chloeta Planning Team
11/6/2024	Planning Team Meeting	Meeting focused on finalizing key inputs for the LHMP, ensuring alignment with grant requirements to advance ongoing plan components for completion.	Medical Lake Chloeta Planning Team
11/20/2024	Planning Team Meeting	Meeting addressed ongoing progress, upcoming public engagement, and updates to hazard assessments ensuring alignment with project timelines and stakeholder expectations.	Medical Lake Chloeta Planning Team
12/2/2024	Planning Meeting	Focused on final LHMP components.	Medical Lake Chloeta Planning Team
12/18/2024	Planning Meeting	City received the draft version of the LHMP for review and provide consultant updates with a two–week period to provide comments.	–
1/18/2025	Public Outreach Strategy	1. Initiation of final public comment period. 2. City announced plan availability during open meetings. 3. Published Draft Local Hazard Mitigation Plan to city website with links on Facebook and Twitter.	–

Date	Event	Description	Attendance
1/23/2025	Planning Commission	Presentation of Draft Local Hazard Mitigation Plan for input and updates.	–
2/18/2025	Public Outreach	End of final public comment period.	–
2/4/2025	Planning Commission	Presentation of Draft Local Hazard Mitigation Plan for input and updates.	–
3/3/2025	Plan submittal	Draft plan submitted to the Washington Emergency Management Division for pre–adoption review and approval.	–
–	Plan submittal	Draft plan submitted to FEMA	–

Community Profile

History

Located in Spokane County, Washington, Medical Lake boasts a rich history rooted in indigenous heritage and early settler activity. The area was originally inhabited by the Spokane Tribe, who used the local lakes for their reputed healing properties. The mineral–rich waters in the city were believed to have therapeutic benefits, a belief that significantly influenced area development.

The town of Medical Lake was officially established in the late 19th century. It was incorporated on June 21, 1890, during a period of rapid growth and development in the Inland Northwest. Early settlers were drawn to the area for its reputed healing waters and fertile land, which was ideal for agriculture and livestock.

In the late 1800s, the city gained prominence as a health resort, attracting visitors seeking relief from various ailments. This led to the establishment of several sanitariums and health spas around the lake, which were a major part of the local economy. The town's reputation as a health destination was further solidified with the establishment of the Eastern State Hospital in 1891, a large psychiatric hospital that remains a significant institution in the area.

Throughout the 20th century, the city evolved from a health resort to a more diversified community. The growth of nearby Fairchild Air Force Base during World War II and the post–war period brought economic stability and development to the region. Base proximity continues to play a vital role in the community economy and demographic changes.

Today, the city is known for a blend of historical charm and modern amenities. The natural beauty of city lakes, parks, and recreational opportunities continues to attract residents and visitors alike. The community maintains a strong connection to historical roots while embracing growth and development in various sectors including healthcare, education, and small business.

Geography

The city sits at an elevation of approximately 2,420 feet within the larger Columbia Plateau region, 14 miles southwest of Spokane, Washington. It is positioned between Interstate–90 and Highway 2 with access from State Route 902, Brooks Road, Lake Street, and Espanola Road. It is 3.9 miles from Fairchild Air Force Base, 8.3 miles from Airway Heights, 9.2 miles from Cheney, and 15 miles from Reardan.

The city is surrounded by a blend of rolling hills, open plains, and several natural lakes, including its namesake—Medical Lake. Regional terrain is shaped by volcanic activity and glacial floods which contribute to basalt rock formations and fertile soils in specific areas. The foundation of the lakebed and surrounding community is basalt bedrock with unconsolidated silty–clay alluvium to the north and south of the lake. This geological composition is part of the expansive rain shadow of the Cascade Mountain Range and the climb to the Great Divide.

The city is embedded in a hydrological framework shaped by glacial and basaltic geological history. The city is centered around Medical Lake, a saline waterbody, and adjacent lakes such as West Medical Lake and Silver Lake, which together form a significant part of the local watershed. Regional hydrology is deeply influenced by the Columbia River Basalt Group, where basalt flows, and glacial outburst mega flood deposits create a complex aquifer system. This system is integral to groundwater recharge and storage, supporting ecological balance and human water needs.

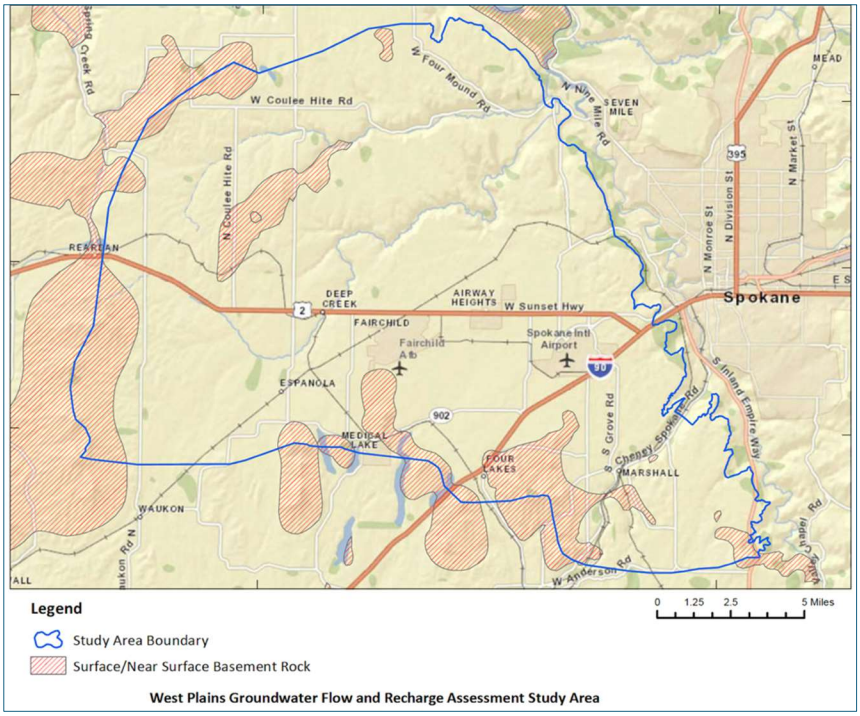


Figure 4. Flow & Recharge Area (SCWR)

Groundwater dynamics in the city are further shaped by the area's semi–arid climate with annual precipitation contributing to recharge through deep percolation processes in addition to extensive regional paleochannel networks. These paleochannels, filled with sand and gravel deposits from historical mega flood events, offer high hydraulic conductivity but also pose contamination risks due to their permeability.

The area is ecologically diverse. This blending of high desert plants and Ponderosa pines supports a wide array of wildlife including whitetail deer, birds, and fish. The proximity to the Spokane River Valley and regional natural barriers influence weather patterns, wind flow, and potential for hazards such as wildfires and flooding. The city's environment—shaped by natural geological forces and human activity—requires ongoing conservation efforts to safeguard its aquifers, maintain ecological balance, and mitigate potential natural hazards.

Climate

The local climate exhibits distinct seasonal variations as reflected in the average high and low temperatures throughout the year (Figure 5 below). Winter months (December-February) are marked by cold conditions with average highs ranging from 32°F (0°C) to 37°F (3°C) and lows from 23°F (-5°C) to 25°F (-4°C). Spring sees a gradual warming with average highs increasing from 46°F (8°C) in March to 66°F (19°C) in May, and lows rising from 30°F (-1°C) to 45°F (7°C), signaling the transition to warmer weather. Summer months, particularly June through August, are the warmest with average high temperatures peaking at 86°F (30°C) in July and lows stabilizing at 61°F (16°C), reflecting comfortably warm nights. In the fall, from September to November, temperatures decline steadily with highs dropping from 73°F (23°C) to 43°F (6°C) and lows decreasing from 52°F (11°C) to 30°F (-1°C), heralding the return of winter.

This climate, characteristic of a continental system, features warm summers and cold winters, with a significant temperature range from the summer peak of 86°F (30°C) to the winter low of 23° F (-5°C). These variations play a critical role in the hydrology of the region. Snow accumulation during the winter and early spring contributes to water systems through meltwater runoff, while high summer temperatures increase evaporation from lakes and reservoirs, potentially reducing water availability. These seasonal dynamics have important implications for water resource management and the local ecological balance.

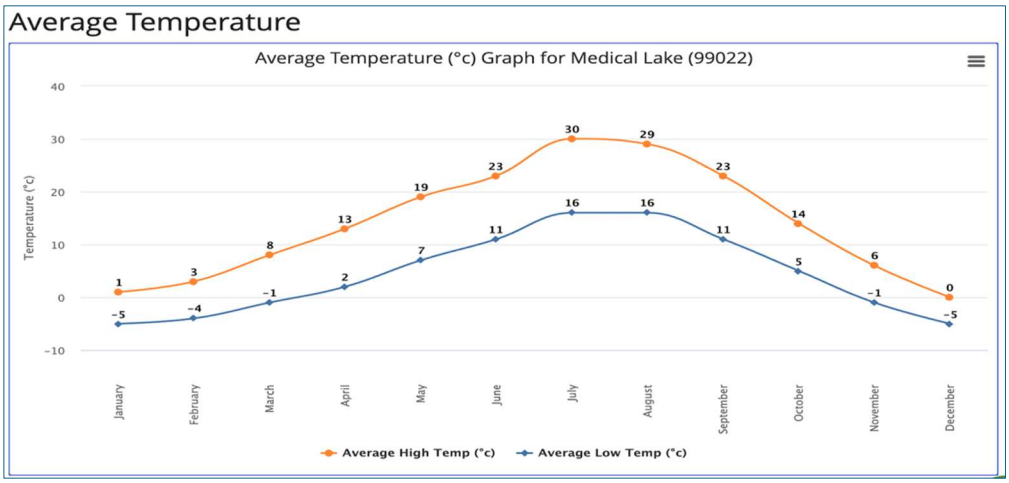


Figure 5. Average Temperatures

Population & Demographics

Medical Lake has a population of approximately 5,000 residents as of the latest estimates, experiencing a static growth rate. The racial composition of the city is predominantly White (89.8 percent of the population) with other racial groups including Hispanic or Latino (3 percent), Asian (2.2 percent), Black or African American (0.4 percent), American Indian (0.1 percent), Native Hawaiian and Other Pacific Islander (0.1 percent), and 3 percent identifying as two or more races.

The median age of city residents is 36.1 years, suggesting a relatively younger population compared to other areas in Washington. A significant majority (92.1 percent of residents) speak only English at home with other languages including Spanish (2.8 percent) and various Indo–European languages (5.08 percent). About 5.9 percent of the population is foreign born.

Educational levels among residents aged 25 and older show 26.95 percent have a bachelor's degree, 25.77 percent are high school graduates (only), 21.77 percent have some college education, 15.1 percent hold an associate's degree, and 5.2 percent have a graduate or professional degree. This distribution highlights a community with a strong emphasis on education, with a significant portion of the population having pursued higher education.

Table 5. Select Social Statistics

Statistic	Number
Populations	
Under 5	5.3%
Over 65	15.9%
Median Age	36.1
Racial Makeup	
White	89.8%
Black or African American	0.4%
American Indian or Alaska Native	0.1%
Asian	2.2%
Native Hawaiian or Pacific Islander	0.1%
Some Other Race	2.4%
Two or More Races	5.0%

Source: U.S. Census Bureau & World Population Review

Economy & Tax Base

The city's local economy is diverse, with key sectors including healthcare, education, and small businesses. Major employers include Eastern State Hospital (a psychiatric hospital) and Lakeland Village, a residential facility for individuals with developmental disabilities. The median household income is $73,456, and the poverty rate is 6.85 percent.

Table 6. Economic Statistics (US Census Bureau (2020)

Statistic	Number
Income	
Median Income	$73,456
Mean Income	$82,400
Poverty Rate	
All Families	6.2%
All People	8.5%

Land Use

Medical Lake's official zoning plays a crucial role in guiding land use and development within the city, delineating various zoning districts, such as residential, commercial, industrial, and public spaces, while ensuring land is used in ways that promote balanced growth, sustainability, and safety. Each zoning classification regulates the activity types permitted within a specific area, ensuring land use aligns with city development goals. Zoning helps preserve the character of residential neighborhoods, supports local businesses in commercial zones, and ensures industrial areas are appropriately located to minimize impacts on the community. Zoning plays a vital role in hazard mitigation by restricting development in high–risk areas like floodplains or wildfire–prone zones, contributing to long–term city resilience and safety.

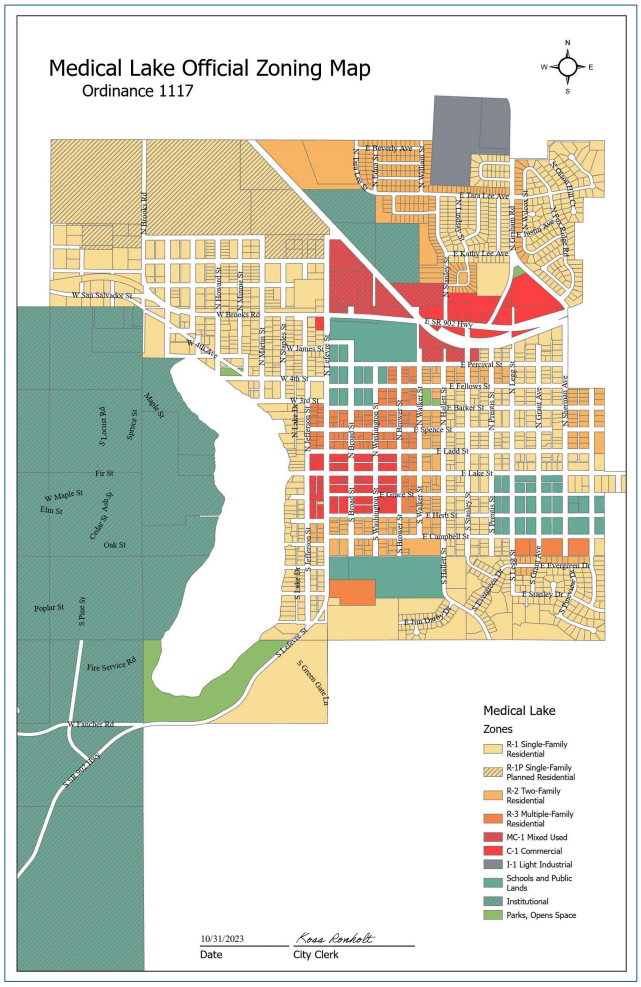


Figure 6. City of Medical Lake Zoning Map

The city is accessible via major highways including Interstate 90 and served by several county roads. Proximity to Spokane International Airport provides residents with access to air travel. Local government and community organizations actively work to preserve the natural environment, maintain water quality in the lakes, protect wildlife habitats, and promote sustainable agricultural practices.

Medical Lake is fed by the Grand Ronde aquifer. Terrain around the city is generally flat with some rolling hills and is conducive to agriculture, which remains an important part of the local economy. The climate is semi–arid, characterized by warm summers and cold winters with average annual precipitation of about 17 inches and snowfall in the winter months of about 40 inches. The area supports various vegetation and wildlife including grasses, shrubs, forested areas, deer, birds, and small mammals.

Table 7. Distribution of Value by Property Use Estimates

Property Use	$2023 Value (in millions)	% of Current Role
Residential	200	40
Commercial	75	15
Industrial	50	10
Public Facilities	50	10
Parks & Open Space	75	15
Agriculture	25	5

The city's corporate boundary encompasses approximately 3.6 square miles (2,303.5 acres). The community's top three biggest uses of land are: community institutional (state land) at 1,184.4 acres (51 percent), residential at 372.4 acres (16 percent), and vacant land at 305.9 acres (13 percent). These three uses consume approximately 80 percent of the available land. Little acreage is used for commercial, industrial, or open space.

Table 8. Land Use Estimates

Land Use	Acres	% Total Land Use
Residential	372.4	16.3
Commercial	11.3	0.5
Community Institutional	1184.4	51.4
Vacant	305.9	13.3
Lakes	130.7	5.7

The Medical Lake Zoning Map in Figure 7 highlights critical areas, shoreline designations, aquifer recharge zones, and land–use considerations essential for sustainable development and ecological preservation. Shoreline areas are categorized: Natural, Shoreline Residential, Rural Conservancy, and Urban Conservancy. Natural zones prioritize environmental preservation, while Shoreline Residential areas allow limited development under strict environmental standards. Rural and Urban Conservancy Zones serve as transitional areas balancing conservation with controlled development. Critical aquifer recharge zones, marked as Low, Moderate, and High recharge areas, are integral for maintaining regional groundwater supply—emphasizing the need for protection against contamination and overuse. Wetlands are identified as vital ecological regions contributing to biodiversity, flood control, wildfire spread prevention, and water purification. The map includes an Airfield Influence Area for nearby Fairchild Air Force Base where land use must align with aviation safety and noise mitigation measures. Surrounding these zones are arterial road plans and mixed–use landscapes reflecting regional hydrogeological importance and its role in water resource management.

Together, these designations guide conservation efforts, resource management, and development planning.

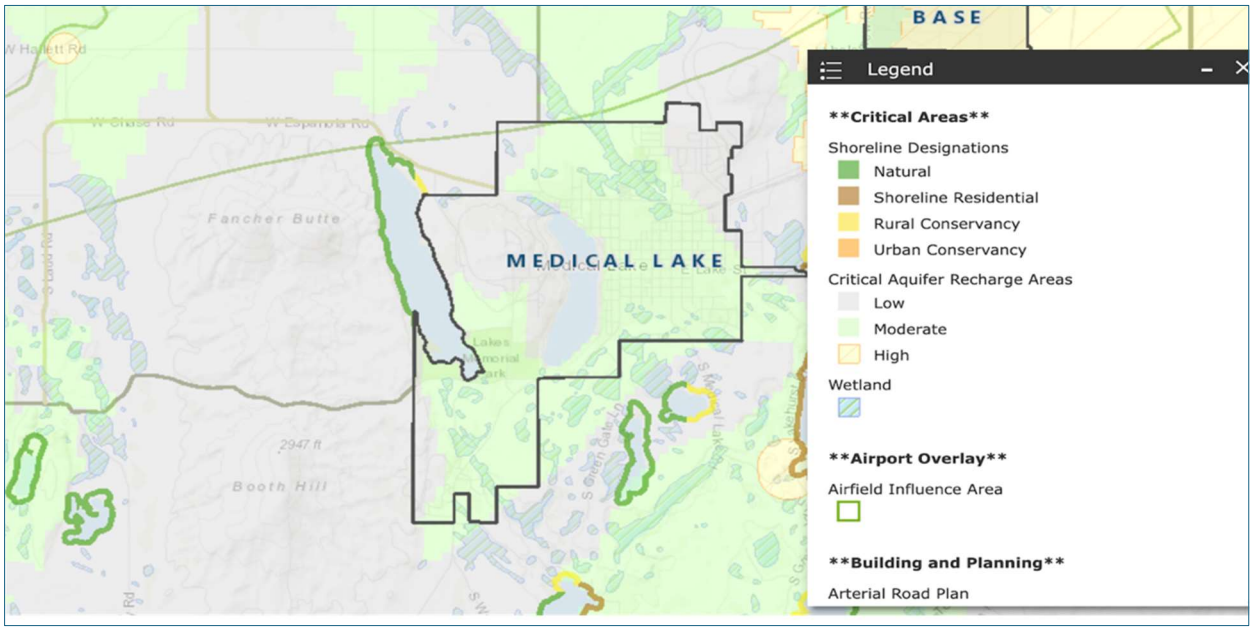


Figure 7. City of Medical Lake Zoning Map

Infrastructure

Medical Lake offers a comprehensive infrastructure that supports its residents' quality of life and fosters community engagement. The city Public Works Department is dedicated to maintaining essential services including streets, water lines, and various public projects, ensuring efficient and responsive service to the community.

Recreational opportunities abound with several parks and trails. Waterfront Park, the largest at approximately 45 acres, is situated on the southern shore of the city. It features picnic areas, a swimming beach, playground, boat launch, and a sports complex with lit softball fields and additional playfields. The park also integrates over a mile of shoreline with the Medical Lake Trail, a three–mile multi–use path encircling the lake, connecting four city parks, the central business district, and residential neighborhoods.

Other notable parks include Coney Island Park, adjacent to the central business district, offering picnic areas and access to lake–based recreation; Shepard Field, utilized for local soccer programs; Peper Park, ideal for wildlife observation along the north shore; Wilcox Park, featuring a playground and picnic tables; and Pioneer Park, popular among school–age children for its play equipment and facilities.

The city's commitment to enhancing digital infrastructure is evident through a partnership with Comcast which began construction in October 2024 to connect approximately 1,600 homes and businesses to high–speed, symmetrical internet services. This initiative promotes economic growth and positions residents and local businesses for success in an increasingly digital world.

Utilities in are managed efficiently with services including water, sewer, and garbage. Residents have access to online bill payment options and resources for assistance. Garbage and recycling

services are provided by Sunshine Disposal & Recycling with scheduled pickups and a lawn waste trailer available seasonally.

The wetlands serve as a vital ecological and community resource, providing numerous environmental, social, and hazard–reduction benefits. Acting as a natural filtration system, they improve water quality by trapping pollutants and sediments before they reach larger bodies of water. Wetlands help regulate local water levels by absorbing excess rainwater and runoff, reducing the risk of flooding in surrounding areas. They also retain moisture in the landscape, creating natural firebreaks that can slow the spread of wildfires. Beyond their role in hazard reduction, these wetlands support diverse wildlife by offering a habitat for birds, fish, and other native species, enhancing local biodiversity. For the community, they provide recreational opportunities such as birdwatching, hiking, and educational programs that promote environmental awareness. By capturing and storing carbon, wetlands contribute to climate resilience, helping to reduce greenhouse gas levels. Maintaining a healthy ecosystem protects the environment and enhances resident well–being and safety, offering a peaceful natural space while mitigating environmental risks.

City infrastructure reflects a balanced integration of natural beauty, recreational amenities, essential public services, and modern technology contributing to a vibrant and connected community.

Hazardous Materials

Medical Lake is located near major infrastructure including the Fairchild Air Force Base and highways such as Interstate 90, which can pose risks due to hazardous materials being transported or stored nearby. An accident or spill involving hazardous materials could result in air and water contamination, threatening human health and the environment. Identifying transportation routes and industrial facilities that handle hazardous materials is crucial for risk mitigation.

Utility Failure

Utility failures present significant risks, as the city relies on regional electricity, water, and telecommunications systems, which could be disrupted by severe weather events, accidents, or intentional attacks. Failure of these systems can hinder emergency response, impact public health, and disrupt daily life, emphasizing the need for resilient utility networks and backup systems.

Transportation

Transportation plays a critical role in connectivity to Spokane and the surrounding region. While supporting economic activity, transportation routes introduce risks of accidents or road closures affecting evacuation routes during emergencies. The proximity of Spokane International Airport and Fairchild Air Force Base increases the potential for aviation–related incidents, particularly in the event of a crash or hazardous materials release.

Public Transit

Medical Lake receives bus service from the Spokane Transit Authority (STA), a public transit service provider for the Spokane metropolitan region. Currently, direct bus service is provided from the city to the West Plains Transit Center via STA Route 62. Major stops include Downtown Medical Lake at the Medical Lake Center, the Eastern State Hospital Campus, Lakeland Village, and along SR–902. Route 62 connects to the West Plains Transit Center located just off Interstate 90 Exit 272. The West Plains Transit Center provides connections to STA Route 64, which provides service to downtown Spokane's STA Plaza and to Cheney. This new transit center is also

expected to provide service in the near future to Airway Heights and other destinations on the West Plains, without needing to transfer in downtown Spokane. STA also provides the community paratransit service for intra–city and inter–city travel. Paratransit service is available to those who qualify under the Americans with Disabilities Act (ADA), where physical and/or mental disabilities prevent regular service provisions. Qualified riders of the paratransit service make arrangements by telephone with STA for trips within the service area. The van service can be provided as needed or on regularly scheduled times and days.

Rail

A rail freight line enters the city at its eastern boundary along the south side of SR–902, then crosses over SR–902 in north–central Medical Lake before exiting the northern boundary of the city. This rail line is operated by the Palouse River Coulee City Railroad, with minimal trains traveling through the city. A lighted crossing is provided at the SR–902 crossing as well at the Stanley Street crossing, although no light bars are included.

Freight

Freight routes pass through the city along State Route 902 and Brooks Road. Spokane Regional Transportation Council reports these are all T–3 routes, a WSDOT classification meaning they carry 300,000 to 4 million tons of freight per year.

Air

The city is located approximately 10 miles west of Spokane International Airport, a full–service international airport (including air cargo) with commercial flights to major cities in the United States, Canada, and Mexico. Ground service via taxi or airport shuttle is provided to and from the airport. Bus service is provided via STA but requires a changeover in downtown Spokane making this an unlikely alternative until the planned STA bus service expansions are implemented.

Roads

Road connections are shown in Figure 8. The city's primary access options are by State Route 902 (SR–902), Brooks Road, and Lake Street. Brooks Road connects to SR–902 from the north boundary of the city. SR–902 connects to Interstate 90 (I–90) at the Medical Lake Exit (Exit 272), approximately four miles to the east. SR–902 functions within the city as a principal arterial, traversing the city from northeast to southwest, and has the greatest impact on the city's vehicular traffic volume and circulation patterns. Lake Street provides east–west access through the city and connects to I–90 at Exit 270.

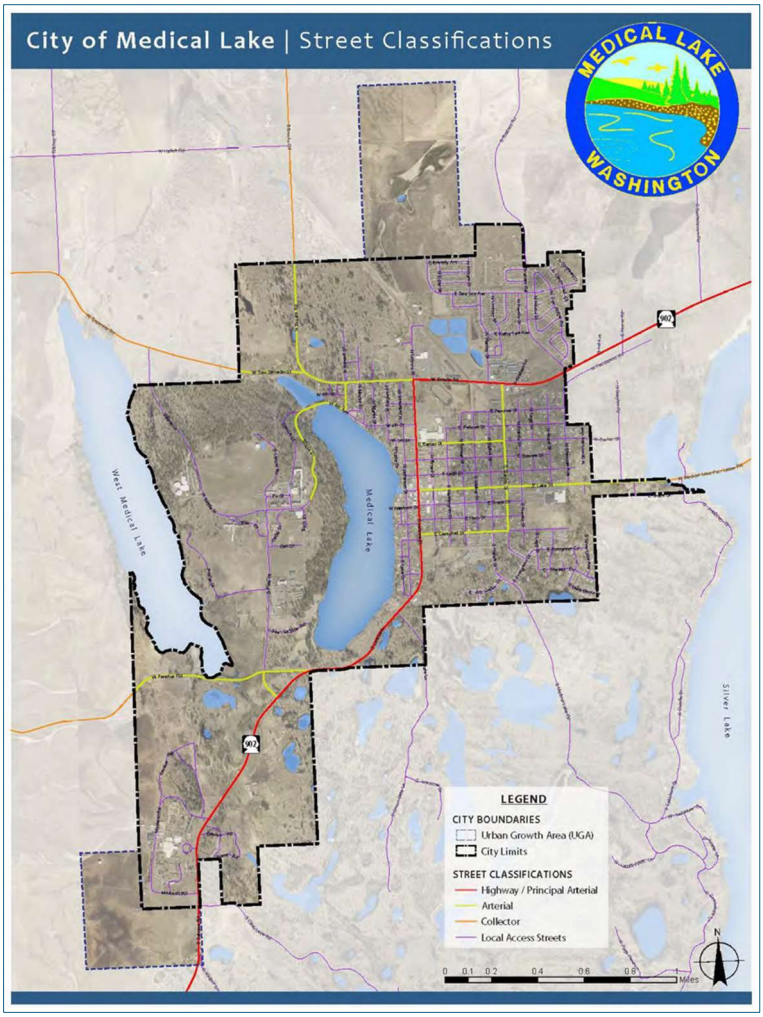


Figure 8. City of Medical Lake Street Classifications

Brooks Road connects Medical Lake to US Highway 2 about six miles north of the city. Craig Road, located north of the city along SR–902 provides a direct route to Airway Heights and Fairchild AFB. San Salvador/Espanola Road, which branches off Brooks Road to the west, connects the city to the community of Espanola and provides access to West Medical Lake and Eastern State Hospital Complex. Lake Street and Hallett Street/South Medical Lake Road provide access to the Silver Lake community, located just outside the city's eastern/southeastern boundaries.

Future Development Trends

Future development trends focus on revitalization while maintaining historical and natural significance. The city is part of the rapidly growing West Plains region and is working to balance growth with preservation. Under the current leadership (Mayor Terri Cooper), initiatives such as improving broadband access, upgrading infrastructure, and enhancing recreational spaces are underway. These efforts are part of a broader vision to restore the city as an outdoor recreation hub while accommodating an increasing population and economic demands of the region. The city has secured federal and state funding for key infrastructure projects including protecting the lakes and maintaining public safety. These developments support long–term growth, attract new businesses, and improve the quality of life for residents, ensuring the city can thrive while preserving its unique charm and natural resources.

There are ongoing investments in expanding affordable housing and enhancing public services, as part of the city's capital improvement planning efforts. These projects, supported by the local community and initiatives like Re*Imagine Medical Lake, position the city for sustainable growth while preserving its history and scenic environment.

Medical Lake received significant state and federal grants to fund critical infrastructure projects. These include approximately $3 million in federal and state funding to support various capital improvements across the city. The grants are being used to enhance transportation, public facilities, and public works infrastructure. Key projects include a $1,300,000 investment in street resurfacing, nearly all of which is grant–funded, and $970,000 allocated for stormwater mitigation to address infrastructure concerns related to aging systems and environmental impacts.

Other projects, like upgrading park facilities and public works systems, are part of a broader effort to improve energy efficiency and support long–term growth. A grant was secured to remodel a commercial kitchen, supporting senior meal programs and local businesses. These investments, alongside funding from initiatives such as the federal Bipartisan Infrastructure Law and disaster recovery funds following the 2023 Gray Fire, reflect the city's commitment to enhancing its infrastructure while promoting resilience against future hazards.

Employment & Industry

Medical Lake maintains a diverse employment industry reflecting the city's historical roots and contemporary development. The largest employment sectors are healthcare, education, and small businesses, with significant contributions from the public sector due to its proximity to key institutions and military installations.

Healthcare. Healthcare remains a dominant sector, largely driven by the presence of Eastern State Hospital and Lakeland Village. Eastern State Hospital, established in 1891, is one of the largest psychiatric hospitals in the state and provides a wide range of mental health services. It is a major employer in the region, offering jobs in various fields such as healthcare, administration, and support services. Lakeland Village, a residential habilitation center for individuals with developmental disabilities, also plays a crucial role in the local economy, providing employment for healthcare professionals, support staff, and specialists.

Education. The Medical Lake School District supports the city as a significant area employer. The district includes elementary, middle, and high schools and is recognized for its commitment to educational excellence and active community involvement. It provides numerous job opportunities for teachers, administrative staff, and support personnel, contributing to the local economy while fostering the development of a skilled and educated workforce. In addition to a strong primary and secondary education system, higher education opportunities are available nearby. Eastern Washington University (EWU) in Cheney offers a range of undergraduate and graduate programs. Spokane Falls Community College (SFCC), and Washington State University Spokane (WSU Spokane) are also accessible, providing a variety of academic and professional pathways. Other notable educational institutions in the area include Gonzaga University and Whitworth University, both offering comprehensive educational opportunities that cater to diverse interests and career goals. These institutions ensure students have access to high–quality educational resources, contributing to their academic success and future career opportunities.

Small Businesses. The local economy is bolstered by a variety of small businesses, including retail shops, restaurants, and service providers. These businesses contribute to the city's charm and offer

employment opportunities in diverse areas such as retail, hospitality, and personal services. Small businesses are integral to the community, promoting economic diversity and resilience.

Public Sector. The proximity to Fairchild Air Force Base significantly impacts the city's employment landscape. With the base being located nearby, many city residents are employed there, contributing to the local economy. The base provides numerous jobs in defense, administration, and support roles, influencing the demographic and economic profile of the city.

Agriculture. Historically, agriculture has been a foundational industry for the community. While it is less dominant today compared to the past, agricultural activities still contribute to the local economy, particularly in the surrounding rural areas. Employment in this sector includes farming, livestock rearing, and related agribusiness services.

The employment industry is characterized by stability and diversity, reflecting the city's ability to adapt and grow while maintaining its historical significance. This balanced economic base supports a robust local economy, contributing to the quality of life for its residents.

Table 9. City of Medical Lake Major Employers

Industry	Estimated Employment	%
Fairchild Air Force Base	7,404	73
Eastern State Hospital	919	9
Lakeland Village	800	8
Local Small Businesses	400	4
City and County Services	250	3
Medical Lake School District	245	2

Disaster Declarations

Medical Lake has faced various natural and man–made hazards over the years, prompting multiple disaster declarations at the city, state, and federal levels. These declarations provide critical support for recovery and mitigation efforts, ensuring the community can rebound and enhance its resilience against future incidents.

Table 10. City of Medical Lake Disaster Declarations

Disaster Number	Date	Disaster/Event	Type	$Cost (in Millions)
FM–5479–WA	August 2023	Gray Wildfire	Fire	2.40
DR–4487–WA	Winter 2020	Severe Winter Storm	Snowstorm	1.50
DR–4539–WA	Spring 2020	COVID–19 Pandemic	Pandemic	Ongoing
DR–4242–WA	October 2015	Severe Windstorm	Windstorm	12

Disaster Number	Date	Disaster/Event	Type	$Cost (in Millions)
DR–4243–WA	Summer 2015	Fires & Mudslides	Fire	15
DR–1817–WA	November 2008	Windstorm	Windstorm	0.90
DR–1499–WA	Winter 2004	Severe Winter Storm	Snowstorm	0.75

City–Level Declarations. At the city level, Medical Lake experienced several emergency declarations, particularly related to severe weather events such as snowstorms and windstorms. These declarations enable the city to mobilize local resources, coordinate with neighboring jurisdictions, and implement emergency response measures. For instance, severe winter storms have occasionally led to local declarations, allowing for rapid snow removal and infrastructure repairs to ensure public safety and continuity of services. The 2023 Gray Wildfire was declared a disaster, marking one of the most significant recent emergency events. This wildfire prompted swift action from local and state agencies to mitigate the damage, protect residents, and restore essential services.

State–Level Declarations. Washington State has issued several disaster declarations that included the, primarily in response to widespread wildfires, floods, and severe storms. State declarations trigger the activation of state emergency operations and the deployment of additional resources to support local efforts. Notable state–level declarations include those during the 2015, 2020, and 2023 wildfire seasons which saw extensive fires in Eastern Washington, affecting numerous communities including Medical Lake. These declarations facilitate the provision of state assistance for firefighting efforts, evacuation operations, and recovery assistance.

Federal–Level Declarations. Federal disaster declarations provide the highest level of support and are issued when the scale of an event surpasses local and state capabilities. The city has been included in several federal disaster declarations due to significant wildfire outbreaks and the COVID–19 pandemic.

These declarations allow the community to access FEMA disaster relief funds, including the Hazard Mitigation Grant Program (HMGP), Public Assistance (PA), and Individual Assistance (IA) programs. These funds are crucial for rebuilding infrastructure, providing temporary housing, and implementing mitigation measures to reduce future risks.

Notable Disaster Declarations

- *2023 Wildfire Declaration.* The Gray Wildfire was particularly severe in Eastern Washington. Medical Lake faced significant fire threats and widespread smoke, prompting federal disaster declarations (FM–5479–WA). These declarations mobilized resources for firefighting, evacuations, and recovery efforts. Federal support helped the city manage the crisis, assisting with the coordination of emergency response and post–disaster recovery for the affected community.
- *2020 Wildfire Declaration.* The 2020 wildfire season was particularly severe with several large fires impacting Eastern Washington. The city was affected by smoke and fire threats, prompting federal disaster declarations. These declarations provided resources for firefighting, evacuations, and recovery efforts.
- *COVID–19 Pandemic.* In 2020, the COVID–19 pandemic led to a federal disaster declaration for Washington State, including Medical Lake. This unprecedented public health crisis required

extensive coordination and support across all levels of government. The declaration enabled the city to receive critical resources for healthcare, testing, vaccination, and economic relief. Federal and state funds were essential in supporting local businesses, schools, and healthcare facilities to manage the impact of the pandemic and facilitate recovery.

- *2015 Severe Storms and Flooding.* A severe November 2015 windstorm caused widespread power outages and property damage leading to state and federal disaster declarations. This allowed the city to receive emergency funds for restoring power, clearing debris, and repairing damaged infrastructure.

Laws & Ordinances

Effective laws and ordinances are essential components of hazard mitigation planning, assisting in the reduction of vulnerabilities and the community resilience enhancement. Integrating robust legal frameworks into the Local Hazard Mitigation Plan (LHMP) is vital to ensure mitigation strategies align with local, state, and federal regulations. These laws and ordinances serve to guide land use, zoning, building codes, and environmental protection–all of which play a key role in minimizing the impact of natural disasters such as wildfires, snowstorms, and windstorms. They provide the legal basis for enforcing safety standards and protecting critical infrastructure and public health.

The city maintains building codes to promote fire–resistant materials and designs, particularly in wildfire–prone areas. Zoning ordinances limiting development in high–risk zones–such as floodplains, steep slopes, and forested areas–further reduce exposure to hazards. Environmental regulations also reinforce to protect natural barriers such as wetlands and forest buffers, which mitigating flooding and erosion effects.

Land Use Development

Federal Laws

- *National Flood Insurance Program (NFIP).* Floodplain Management requirements encourage communities to adopt floodplain management practices, requiring compliance with specific building standards development in flood–prone areas.
- *Farmland Protection Policy Act (1981).* This act minimizes the impact of federal programs on farmland conversions to non–agricultural uses, preserving agricultural land that can help mitigate flood and erosion risks.
- *Coastal Zone Management Act (CZMA, 1972).* While more applicable to coastal regions, this act helps local governments manage land use along water bodies to reduce erosion and flood risks.

Washington State Laws

- *Growth Management Act (GMA, RCW 36.70A).* This law requires local governments in Washington to adopt comprehensive land use plans that incorporate hazard mitigation by steering development away from hazard–prone areas such as floodplains and steep slopes. It also promotes Urban Growth Areas (UGAs) to control urban sprawl, which helps limit infrastructure and housing exposure to hazards.

- *Washington State Shoreline Management Act (RCW 90.58*). This act governs land use along shorelines, requiring local governments to adopt plans that reduce the risk of flooding, erosion, and other hazards in shoreline areas. It is particularly relevant to areas near lakes, rivers, and wetlands.
- *Forest Practices Act (RCW 76.09).* This act Helps manage forested land use, reducing wildfire risks and maintaining environmental health. It regulates activities such as logging and land clearing that could increase vulnerability to hazards.
- *State Environmental Policy Act (SEPA, RCW 43.21C).* This act requires an environmental review of any significant development or land–use changes to ensure that potential hazards, such as flood risks, are considered in planning and decision–making processes.
- *Open Space Taxation Act (RCW 84.34*). This act encourages the conservation of open spaces, forests, and agricultural land, which can serve as natural buffers against hazards like flooding and wildfires.

Medical Lake Local Ordinances

- Zoning Ordinances. Zoning ordinances regulate land use by designating specific areas for residential, commercial, agricultural, and industrial uses. For hazard mitigation, zoning can restrict development in flood–prone areas, steep slopes, or wildfire–prone regions. These ordinances should be updated to reflect hazard risk assessments, steering development away from vulnerable zones.
- Critical Areas Ordinances (CAO). Critical Areas Ordinances protect environmentally sensitive areas like wetlands, steep slopes, aquifer recharge zones, and habitats that serve as natural buffers against hazards. CAOs help reduce the impact of hazards by preventing inappropriate development in these critical areas.
- Subdivision Ordinances. Subdivision Ordinances govern the layout of subdivisions to ensure that new developments consider natural hazards. Subdivision ordinances can require developers to set aside land for stormwater management, avoid building in hazard–prone areas, and design infrastructure that minimizes risk.
- Urban Growth Boundaries. These boundaries limit where urban development can occur, helping to concentrate development in safer areas while preserving open spaces and agricultural land that can act as natural buffers against hazards such as wildfires or floods.
- Open Space and Conservation Easements. Open Space and Conservation Easements encourage landowners to preserve portions of their land as open space or conservation areas, which can serve as natural mitigation features against hazards. These areas can help absorb floodwaters, reduce erosion, and serve as barriers to wildfires.

Including these land use laws and ordinances in the Medical Lake LHMP ensures future developments are resilient to natural hazards and that city growth is sustainable. By enforcing zoning regulations, protecting critical areas, and managing urban growth, the city can effectively reduce its vulnerability to disasters and ensure that land–use decisions contribute to the safety and well–being of its residents. These measures will mitigate the impacts of hazards and preserve the community's natural resources and environmental quality.

Assets at Risk

Medical Lake is a vibrant community with numerous assets that are critical to city functionality, well–being, and resilience. These assets include essential infrastructure such as power and water facilities, transportation networks including roads and bridges, and public buildings like schools, and hospitals. The city has a variety of natural assets including lakes, parks, and open spaces, which play a crucial role in community environmental health and recreational opportunities. Residential areas, businesses, and historic landmarks further enrich the fabric of the city and contribute to its economy and cultural identity. However, these assets face risks from a variety of hazards, including wildfires, floods, severe weather events, and earthquakes. Understanding the assets at risk is fundamental to ensuring targeted mitigation actions that enhance city resilience, protect lives, and minimize property loss.

Values at Risk

The Planning Team reviewed the definition of *critical facility*, ensuring this term is in line with the intent and capabilities of the County and its Planning Partners. Critical facilities include:

- Police stations, fire stations, city government facilities (including those that house critical information technology and communication infrastructure), vehicle and equipment storage facilities, communications center (dispatch), and emergency operations centers needed for disaster response before, during, and after hazard events.
- Public and private utilities and infrastructure vital to the maintenance or restoration of normal services to areas damaged by hazard events. These facilities include but are not limited to:
  - Public and private water supply infrastructure, water and wastewater treatment facilities and infrastructure, potable water pumping, flow regulation, distribution and storage facilities and infrastructure.
  - Public and private power generation (electrical and nonelectrical), regulation and distribution facilities and infrastructure.
  - Data and server communication facilities.
- Structures that manage or limit the impact of natural hazards such as regional flood conveyance systems, a potable water truck, main interconnect systems, and redundant pipes crossing fault lines and reservoirs.
- Major road and rail systems including bridges, airports, bus and marine terminal facilities.
- Educational facilities, including K-12 and community college.
- Hospitals and major medical/health care facilities.
- Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, and/or water–reactive materials.

Once the definition of critical facilities was confirmed, facilities within the planning area that fit the definition were inventoried and provided in Table 13 Critical Facilities. Data was collected from a variety of sources. Data attributes of identified critical facilities were provided to the Planning Team who developed a critical facilities overlay map. This map was compared with city hazard maps to identify critical facilities located in hazardous areas.

The list of critical facilities resides with City Administration who, over the course of time, will continue to update the list with new structures as they are identified or constructed. The Planning Team is aware there may be structures currently not included on the list and have established a means to ensure new structures are added for future evaluation. All critical facilities/infrastructure were analyzed in the risk assessment process to help rank risk and identify mitigation actions. The risk assessment for each hazard qualitatively discusses critical facilities with regard to that hazard.

Risk Assessment Methodology

Overview

Medical Lake is susceptible to a variety of natural and man–made hazards. Flooding is a significant concern, particularly during spring thaw and heavy rain events. The risk is highest around the lake and low–lying areas. FEMA Flood Insurance Rate Maps (FIRM) identify these flood zones. Flooding can damage infrastructure, homes, and disrupt transportation and emergency services. Historical flood events have caused significant property damage and necessitated emergency response measures.

Wildfires are another major hazard, especially in the surrounding forested areas and during dry summer conditions. The Washington State Department of Natural Resources provides wildfire risk assessments and mitigation strategies. Wildfires can lead to loss of life, property, and natural resources, as well as air quality issues. Evacuation plans and firebreaks are essential components of wildfire mitigation.

Severe storms, including thunderstorms, hail, and high winds, are common in the region and can occur year–round, with the most intense storms typically in spring and summer. Severe storms can cause damage to buildings and utilities, leading to power outages and hazards from falling debris. Building codes and storm shelters play a critical role in mitigating storm impacts.

Although less frequent, earthquakes also pose a risk to the city due to geologic fault line proximity. Earthquakes can cause structural damage, disrupt services, and pose significant safety risks. Seismic retrofitting of buildings and infrastructure is vital for reducing earthquake hazards.

Technological hazards include power outages, hazardous material spills, and transportation accidents, particularly due to city proximity to major highways and railways. These hazards are related to human activity and infrastructure and have the potential for significant environmental damage, health risks, and disruption of services. Emergency response plans and hazardous materials handling protocols are essential for mitigating these risks.

Hazard Identification

For this plan, the Planning Team considered the full range of natural hazards that could impact the planning area, listing hazards that present the greatest concern. This plan does not include non–natural (man–made) hazards, as they are addressed by the Spokane County THIRA. The process incorporated review of state, county, and local hazard planning documents as well as information on the frequency, magnitude, and costs associated with hazards that have impacted or could impact the planning area. Anecdotal information regarding natural hazards and the perceived vulnerability of the planning area assets to them was also used. Based on the review, the Planning Team confirmed the hazards to be addresses in this plan in Table 11 City Hazards.

City Hazard Identification

Table 11. City Hazards

Hazard	Notes
Severe Weather	Includes thunderstorms, high winds, hail, and snowstorms, causing damage to buildings, power outages, and road hazards.
Wildfire/Air Quality	Frequent summer wildfires pose risks to homes and infrastructure, with air quality often declining due to smoke.
Drought	Periods of low rainfall impact water supply, agriculture, and increase wildfire risks in the region.
Flooding	Particularly from spring runoff or severe storms, flooding can damage homes, infrastructure, and natural resources.
Earthquake	Proximity to fault lines makes occasional earthquakes a risk, with potential for structural damage.
Volcano (Ash Fall)	Ashfall from distant volcanic activity such as from Mount St. Helens, can impact air quality and disrupt services.
Landslide	Steep terrain in some areas creates risks of landslides, particularly after heavy rainfall or seismic activity.

Climate Change

Climate change impacts increase the risk for extreme events such as drought, storms, flooding and forest fires; more heat–related stress; and the spread of existing or new vector–born disease into the community. The city already faces these problems to some degree. Climate change has increased the frequency, intensity, extent and/or magnitude of the problems. Within the local hazard mitigation plan, climate change is addressed as a secondary impact for each evaluated hazard of concern. Each hazard of concern includes a section with a qualitative discussion on the probable impacts of climate change for that hazard. While models are currently being developed to assess the potential impacts of climate change, there are currently none are available to support hazard mitigation planning. As future models are developed, this risk assessment may be enhanced to better measure these impacts.

Risk Assessment Process

Once hazards were identified, the following steps were used by each Planning Partner to define the risk of each hazard:

1. Determine exposure to each hazard. Exposure was determined by overlaying hazard maps with an inventory of structures, facilities, and systems to determine which of them would be exposed to each hazard.

1. Assess vulnerability of exposed facilities. Vulnerability of exposed structures and infrastructure was determined by interpreting the probability of occurrence of each event and assessing structures, facilities, and systems that are exposed to each hazard. Tools such as GIS and Hazus (discussed below) were used in this assessment.

2. Where specific quantitative assessments could not be completed, vulnerability was measured in general, qualitative term, summarizing the potential impact based on past occurrences

spatial extent, and subjective damage and casualty potential. Those items were categorized utilizing the criteria established in the CPRI index.

3. The final step in the process was to determine the cumulative results of vulnerability based on the risk assessment and Calculated Priority Risk Index (discussed below) scoring, assigning a final qualitative assessment based on the following classifications:

Table 12. Calculated Priority Risk Index (CPRI) Ratings

Rating	Definition
Extremely Low	The occurrence and potential cost of damage to life and property is very minimal to nonexistent.
Low	Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.
Medium	Moderate potential impact. This rating carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster. Occurrences are frequent, with more documented historic events.
High	Widespread potential impact. This rating carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category have occurred in the past and have a high probability of reoccurring.
Extremely High	Very widespread with catastrophic impact. Hazards in this category may have occurred in the past and have a high probability of reoccurring.

Building Inventory

The Spokane County parcel layer was derived from the Spokane County GIS data site (downloaded December 3, 2024). This parcel layer consisted of 212,192 parcels. To be able to work with this large amount of data, the parcel data layer was converted from a polygon layer to a point layer. The parcel layer was analyzed to assess exposure to each hazard included in this plan, spatial queries were used to determine whether each parcel fell inside or outside the designated hazard zones.

Critical Facilities

Critical infrastructure data was sourced from two primary platforms: the OpenStreetMap (OSM) API and the Homeland Infrastructure Foundation–Level Data (HIFLD). The OSM API provided a wide range of infrastructure data including points of interest like gas stations, grocery stores, religious centers, and pharmacies. This open–source platform allowed for detailed, customizable queries to extract specific features relevant to the city hazard analysis. Complementing this, HIFLD offered authoritative datasets for key infrastructure categories including utilities, education facilities, energy facilities, water and wastewater facilities, communications towers, healthcare facilities, and emergency services. A comprehensive inventory of critical infrastructure was developed, enabling a thorough assessment of potential vulnerabilities to natural hazards by integrating these datasets.

A Critical Facilities List developed by the city and its Planning Partners included geospatial data for fire, police, schools, medical facilities, etc. Each Planning Partner was provided the critical facilities list upon completion of the analysis, on which impacts from each hazard are identified for each critical facility. Each Planning Partner then used that data to determine dollar cost impact (e.g., magnitude and severity within the Calculated Priority Risk Index discussed below). The critical facilities list is considered privileged in nature from public disclosure; however, each Planning Partner was left to make the determination as to how they wished to identify specific structures based on existing policies. Specific critical facility structure impact data was further identified within the various Critical Facilities Tables contained in each hazard profile, identified by critical facility type (e.g., power, water, wastewater, etc.). Building impact was further identified in Loss Matrix Tables, which provide the breakdown to each of the jurisdictional Planning Partners for use in completing their risk assessment. Where possible, that data further identifies the number of structures impacted and the population impacted based on the specific hazard of concern. That data is also identified within the various public outreach documents developed for the public outreach efforts, as appropriate. It should be noted that as with all data, the Critical Facilities List is continually in an update process and should not be considered all encompassing.

Table 13. Critical Facilities & Systems

Critical Infrastructure (Facility Type)	Hazard	General Replacement Value
Medical Lake Fire Department 124 S. Lefevre Street Medical Lake, WA 99022	Wildfire, Windstorm	$2 million
Medical Lake Police Department 124 S. Lefevre Street Medical Lake, WA 99022	Severe Weather, Windstorm	$1.5 million
Eastern State Hospital 850 Maple Street Medical Lake, WA 99022	Wildfire, Flood	$100 million
Craig Road Well 6603 S. Craig Road Cheney, WA 99004	Flood, Contamination	$500,000
Lehn Rd Well 26003 W. Lehn Road Medical Lake, WA 99022	Flood, Contamination	$500,000
Four Lakes Water District & Consolidated Support Service	Flood, Severe Weather	$3 million
Medical Lake Wastewater Treatment Facility 207 E. Ellen Avenue Medical Lake, WA	Flood, Severe Weather	$10 million
Avista Utilities (assets throughout Medical Lake)	Windstorm, Severe Weather	$5 million
Public Works 801 S Lefevre Street Medical Lake, WA 99022	Severe Weather	$2 million
Maintenance Shop	Severe Weather	$1 million

Critical Infrastructure (Facility Type)	Hazard	General Replacement Value
801 S. Lefevre Street Medical Lake, WA 99022		
City Hall 124 S. Lefevre Street Medical Lake, WA 99022	Severe Weather, Windstorm	$1.5 million
Public Transit (STA) 204 E. Lake Street Medical Lake, WA 99022	Severe Weather, Windstorm	$2 million
Burlington Northern Santa Fe (BNSF) Railway	Hazardous Materials Incident	$50 million
Medical Lake High School 200 E Barker Street Medical Lake, WA 99022	Severe Weather, Windstorm	$20 million
Medical Lake Middle School 1010 E. Lake Street Medical Lake, WA 99022	Severe Weather, Windstorm	$15 million
Hallett Elementary School 524 S. Hallett Street Medical Lake, WA 99022	Severe Weather, Windstorm	$500,000
MLSD Office 116 3rd Street Medical Lake, WA 99022	Severe Weather, Windstorm	$3 million
DSHS Shelter (old Pine Lodge gymnasium)	Severe Weather, Windstorm	$2 million
Lake's Harvest Foods 215 WA–902 Medical Lake, WA 99022	Fire, Severe Weather	$3 million
STCU–Medical Lake Branch (bank) 120 S. Broad Street Medical Lake, WA 99022	Wildfire, Flood	$3 million
WSECU (bank) 205 WA–902 Medical Lake, WA 99022	Flood, Severe Weather	$5 million
Hearthstone Senior Apartments 1020 E. Campbell Street Medical Lake, WA 99022	Wildfire, Windstorm	$1 million
Conoco (fuel) 710 WA–902 Medical Lake, WA 99022	Fire, Severe Weather	$2 million
Medical Lake Community Church 203 N. Washington Street Medical Lake, WA 99022	Wildfire, Windstorm	$2 million
St. Anne’s Catholic Church 708 E. Lake Street Medical Lake, WA 99022	Severe Weather, Windstorm	$1 million

Critical Infrastructure (Facility Type)	Hazard	General Replacement Value
Redemption Church 400 E. Grace Street Medical Lake, WA 99022	Severe Weather, Windstorm	$1 million
St. John's Lutheran Church 223 S. Hallett Street Medical Lake, WA 99022	Severe Weather, Windstorm	$1 million

Estimating Potential Loss

The city conducted a comprehensive risk assessment to estimate potential losses from various hazards including flooding, wildfires, severe weather, and earthquakes. This assessment used a combination of historical data, GIS mapping, and critical facility inventories to evaluate city vulnerabilities using FEMA Flood Insurance Rate Maps (FIRM) and state wildfire risk assessments, the city identified areas and infrastructure most exposed to these hazards, such as the Eastern State Hospital, wastewater treatment facilities, and local schools. Critical facilities were evaluated for exposure to specific hazards and replacement values were assigned based on the extent of potential damage. For instance, Eastern State Hospital was valued at $100 million, and Medical Lake High School at $20 million, representing significant assets at risk from hazards like flooding, severe weather, and wildfires.

The analysis categorized vulnerability into qualitative scales, ranging from Low to extremely High, based on historical occurrences and potential impacts. Vulnerability assessments were further refined using models such as Hazus to simulate hazard scenarios. This approach helped identify worst–case scenarios, such as catastrophic flooding or severe windstorms, and estimate associated financial impacts. For example, a severe flooding event was projected to result in direct losses of approximately $15 million including damage to infrastructure and facilities, while business interruption and emergency response costs could add an additional $3 million. Similarly, a major windstorm scenario was estimated to potentially cause direct losses of $10 million to critical infrastructure with another $2 million required for emergency response and recovery.

The analysis estimated that a catastrophic hazard event could result in total losses exceeding $26 million. These losses include direct damage to structures and infrastructure, as well as indirect costs such as business interruptions and liability from prolonged service disruptions. The city's use of GIS mapping and critical facility inventories provided a clear understanding of hazard exposure and enabled the prioritization of mitigation efforts. By updating these inventories regularly and incorporating climate change projections, the city ensures its risk assessment remains accurate and actionable. Comprehensive evaluation highlights the importance of proactive planning and resource allocation to mitigate potential impacts and strengthen resilience. The detailed methodology utilized in developing the hazards of concern and associated risk assessment are described in the sections below.

Hazards of Concern Risk Assessment Methodology

A comprehensive approach was undertaken to gather and analyze geospatial datasets from reliable sources to identify hazards. Key datasets were downloaded from federal and state agencies including the Federal Emergency Management Agency (FEMA), the U.S. Geological Survey (USGS),

and the LANDFIRE data portal. These datasets included flood zones, landslide susceptibility, wildfire fuel models, and critical infrastructure layers such as transportation networks, utilities, and emergency facilities. Each dataset was carefully selected based on its relevance to the region and its potential to provide critical insights into hazard risks and the vulnerability of essential infrastructure. Once obtained, the datasets were processed and analyzed using Geographic Information Systems (GIS) to identify areas within the city most susceptible to natural hazards and to assess the potential impact on critical infrastructure. This data–driven approach established a robust foundation for informed decision–making and effective hazard mitigation planning.

For hazards for which historical data is not adequate to model future losses as no specific damage functions have been developed, GIS is able to map hazard areas and calculate exposure if geographic information is available with respect to the location of the hazard and critical facilities inventory data. Areas and inventory susceptible to hazards of concern were mapped and exposure was evaluated. For other hazards, a qualitative analysis was conducted using the best available data and professional judgment. Locally relevant information was gathered from a variety of sources. Frequency and severity indicators include past events and the expert opinions of geologists, staff, emergency management personnel, and others. The primary data source was Spokane County GIS data, augmented with state and federal data sets, including FEMA, USGS, NOAA, WADOE, and WADNR data. Additional data sources for specific hazards are identified within the various profiles. The following methods were used to assess specific hazard loss for this plan:

Flood Hazard Zones

For Flood Hazard Zones, the most current flood hazard data layer was downloaded from the FEMA map service center which was dated to be current as of October 5, 2022. The 100–year and 500–year flood zones were identified using the attribute data from the Special Flood Hazard polygon layer. City parcels were determined to be inside and or outside the 100– and 500–year flood zones using spatial query methods. A critical facilities analysis was also conducted (inside and outside of Hazus), based on general exposure rather than estimated losses for some hazards of concern. Risk to structures was identified based on the structure location and the corresponding exposure to hazard location, where geographically established.

Wildfire Risk Areas

For Wildfire Risk Areas, the 2022 Fuel Model (FBFM13) dataset was downloaded from the LANDFIRE website. The FBFM13 dataset provided detailed information on fuel types and characteristics, enabling the assessment of wildfire risk areas by modeling fire behavior and identifying regions with higher susceptibility to ignition and spread. Wildfire risk areas were identified using the attribute data from the FBFM13 layer.

Landslides

For the Landslide Zones, the U.S. Landslide Inventory and Susceptibility layer from the USGS was accessed from the USGS website. This dataset provides an assessment of landslide susceptibility across the United States, categorizing areas based on factors such as slope, soil type, and historical landslide activity. This data is displayed as a raster and shows landslide susceptibility, offering valuable insights for identifying and prioritizing areas at higher risk of landslide occurrences. Historical landslide hazard data was used to assess exposure to landslides using Washington DNR Landslide Susceptibility Data in conjunction with Spokane County landslide data. This data depicts landslide susceptibility at a 10–meter resolution across the state of Washington.

Landslide damages are illustrated based on the number of parcels intersecting the landslide zone and within a 100–foot buffer.

Earthquake

Earthquake data was downloaded from various sources to identify earthquake hazards utilizing geological data to map fault lines, seismic zones, and soil conditions in and around the area. Resources such as the U.S. Geological Survey (USGS) seismic hazard maps and Washington State seismic data was referenced to provide a detailed understanding of regional seismic risks. Secondary hazards resulting from earthquakes such as soil liquefaction, landslides, and infrastructure vulnerabilities, were assessed to understand the potential community impacts.

Severe Weather

Severe weather data was downloaded from various sources including the Natural Resources Conservation Service and the National Climatic Data Center, as well as PRISM Precipitation, Average Low, and Average High data. Tornado Project data was utilized to identify any events which have occurred in the planning area.

Climate Change

Climate Change impacts are likely to intensify many of the hazards already faced by the community, increasing in frequency and severity. Wildfires are expected to become more frequent and destructive as rising temperatures and prolonged droughts create drier conditions, increasing fire risks and negatively impacting air quality. Severe weather events, such as thunderstorms, high winds, and snowstorms, may become more unpredictable and extreme due to shifting atmospheric patterns. Flooding, particularly in combination with dam failures, could worsen as heavier and more frequent rainfall events strain existing supporting infrastructure and flood–prone areas around the lake. Droughts are projected to become more severe, placing stress on water resources and heightening the risk of wildfires. Landslides could become more common with increased rainfall intensity, destabilizing certain slopes in the region. Climate change will likely increase city vulnerabilities to these hazards, emphasizing the need for stronger mitigation and adaptation strategies to protect the community.

Calculated Priority Risk Index Scoring Criteria

The Planning Team utilized a Calculated Priority Risk Index (CPRI) score for each hazard of concern, addressing impact at the city level for this plan.

Vulnerabilities are described in terms of impact to critical facilities, structures, population, economic values, and functionality of government which can be affected by the hazard event as identified in the tables below.

Hazard Impact Areas describe the geographic extent a hazard can impact a jurisdiction and are uniquely defined on a hazard–by–hazard basis. Hazard mapping allows for hazard analysis by geographic location where spatial differences exist. Some hazards can have varying levels of risk based on location. Other hazards cover larger geographic areas, affecting the area more uniformly. A system must be established which addresses all elements (people, property, economy, continuity of government) to rate each hazard consistently and in a manner addressing the functionality of each Planning Partner involved (e.g., municipality, fire district, public utility district, etc.).

The use of the Calculated Priority Risk Index allows such application based on established criteria to determine the risk factor. For identification purposes, the five criteria on which the CPRI is

based are probability, magnitude, geographic extent and location, warning time/speed of onset, and duration of the event. Those elements are further defined below.

The magnitude of potential hazard events was evaluated for each hazard. Magnitude is a measure of the strength of a hazard event and is usually determined using technical measures specific to the hazard. Magnitude was calculated for each hazard where property damage data was available and assigned a 25 percent weighting factor. Magnitude calculation was determined using the following: Property Damage/Number of Incidents)/$ of Building Stock Exposure=Magnitude**.**

Magnitude. In some cases, the Hazus model provided specific people/dollar impact data. For other hazards, a GIS exposure analysis was conducted. Magnitude was broken down as follows:

Rating Magnitude Percentage of People and Property Affected:

1. Negligible: <5 percent; very minor impact to people, property, economy, and continuity of government at 90 percent.
2. Limited: 6-24 percent; injuries or illnesses minor in nature, with only slight property damage and minimal loss associated with economic impact; continuity of government only slightly impacted, with 80 percent functionality.
3. Critical: 25-49 percent; injuries result in some permanent disability; 25-49 percent of population impacted; moderate property damage; moderate impact to economy with loss of revenue and facility impact; government at 50 percent operational capacity with service disruption more than one week, but less than a month.
4. Catastrophic: >50 percent; injuries and illness resulting in permanent disability and death to more than 50 percent of the population; severe property damage greater than 50 percent; economy significantly impacted as a result of loss of buildings, content, inventory; government significantly impacted; limited services provided, with disruption anticipated to last beyond one month.

*Extent & Location***.** The measure of the percentage of the people and property within the planning area impacted by the event and the extent (degree) to which they are impacted. Extent and location were assigned a weighting factor of 20 percent, and broken down as follows:

Rating Magnitude Percentage of People and Property Affected:

1. Negligible: <10 percent; few if any injuries or illness. Minor quality of life lost with little or no property damage. Brief interruption of essential facilities and services for less than four hours.
2. Limited: 10-24 percent; minor injuries and illness. Minor, short term property damage that does not threaten structural stability. Shutdown of essential facilities and services for 4-24 hours.
4. Critical: 25-49 percent; serious injury and illness. Major or long–term property damage that threatens structural stability. Shutdown of essential facilities and services for 24-72 hours.
3. Catastrophic: more than 50 percent; multiple deaths, property destroyed or damaged beyond repair, complete shutdown of essential facilities and services for 3 days or more.

Warning Time/Speed of Onset. The rate at which a hazard occurs, or the time provided in advance of a situation occurring (e.g., notice of a cold front approaching or a potential hurricane, etc.) provides the time necessary to prepare for such an event. Sudden–impact hazards with no advanced

warning are of greater concern. Warning Time/Speed of onset was assigned a 10 percent weighting factor, and broken down as follows:

Rating Probable Amount of Warning Time:

1. >24 hours.
2. 12-24 hours.
3. 5-12 hours.
4. Minimal or no warning time.

Duration. The time span associated with an event was also considered, the concept being the longer an event occurs, the greater the threat or potential for injuries and damages. Duration was assigned a weighting factor of 5 percent, and was broken down as follows:

Rating Duration of Event:

1. 6-24 hours.
2. >24 hours.
3. <1 week.
4. >1 week.

This summarizes the analysis conducted by way of completion of the Calculated Priority Risk Index (CPRI) for hazard ranking. These ratings were then incorporated into an Excel Workbook, which calculates the CPRI Score. The results are illustrated in Table 14.

Results & Methodology

During the Hazard Mitigation Workshop, Planning Partners engaged in a thorough process to confirm city hazard rankings. This process involved an open forum method of analysis, leveraging multiple sources of data and expertise to ensure a comprehensive evaluation. The primary steps in this process were:

- Hazard Identification Overview. The session began with a detailed presentation of identified city hazards, accompanied by relevant data including mapping information, FEMA guidance, and state/local hazard reports. This provided a solid foundation for a well–informed ranking process.
- Subject Matter Expertise. Each participant, including emergency managers, public safety officials, and infrastructure experts, contributed insights based on practical experience and historical knowledge of local hazards. This helped ensure thorough consideration of the unique city aspects and vulnerabilities.
- Community Resilience Impact. Planning Partners assessed the potential social impact of each hazard, focusing on community resilience and how quickly the community could recover from a hazard event. FEMA guidelines for assessing community resilience were applied in this analysis.

- Expected Annual Loss and Risk Scores. The group reviewed FEMA Expected Annual Loss Risk Scores to quantify the economic risks posed by different hazards, providing a financial perspective on the vulnerability of local assets.
- Infrastructure and Critical Facility Assessments. An in–depth analysis of infrastructure vulnerabilities and critical facility locations was performed using scores reflecting the potential impacts of hazard events on vital city infrastructure. These assessments were key to determining the prioritization of mitigation strategies.
- Collaborative CPR Scoring. The Calculated Priority Risk Index (CPRI) scoring process was conducted collaboratively with participants discussing each hazard in detail before assigning final scores. This consensus–based approach ensured the final rankings reflected a balanced view of potential impacts, risks, and vulnerabilities.

Below is the completed hazard ranking table showcasing the results of the CPRI scoring methodology developed during the workshop:

Table 14. Calculated Priority Risk Index (CPRI) Scoring

Hazard	Probability	Magnitude	WT	Duration	Score
Wildfire (Air Quality)	3	3	4	4	3.5
Drought	4	2	1	4	2.75
Severe Weather	3	2	2	3	2.5
Flooding	2	2	2	4	2.5
Earthquake	1	2	4	2	2.25
Volcanic Activity	1	2	1	4	2
Landslides	1	1	4	1	1.75

Limitations

Multiple data sets were used in the risk assessment development incorporated into this planning effort. In attempting to utilize these various sources, discrepancies may exist. The models and information presented in this document do not replace or supersede any official document or product generated to meet the requirements of any state, federal, or local program which may be much more detailed and encompassing beyond the scope of this project. This document is intended for planning purposes only. This document and its contents were prepared exclusively for the City of Medical Lake and its Planning Partners to support hazard mitigation planning, including the integration of relevant data into other planning mechanisms as appropriate. While this process utilized the best available science and scientific data, the Planning Team, consultant, and Planning Partners did not conduct a scientific analysis within this document, and none should be construed.

The process reproduced only existing data in different ways to meet the guidelines and requirements of 44 CFR 201.6. All data layers utilized are identified within the various sections of this document should reviewers wish greater clarification and information. Loss estimates, exposure assessments, and hazard–specific vulnerability evaluations rely on the best available data and

methodologies. Uncertainties are inherent in any loss estimation methodology and arise in part from incomplete scientific knowledge concerning natural hazards and their effects on the built environment. Uncertainties also result from:

- approximations and simplifications necessary to conduct a study,
- incomplete or outdated inventory, demographic or economic parameter data,
- the unique nature, geographic extent and severity of each hazard,
- mitigation measures already employed, and
- the amount of advance notice residents have available to prepare for a specific hazard event.

These factors can affect loss estimates by a factor of two or more. Therefore, potential exposure and loss estimates are approximate and are for planning purposes only—not life safety measures. The results do not predict precise outcomes and should be used only to understand relative risk. As is customary with all such planning efforts, the city and its Planning Partners will continue to collect additional data to assist in better estimating potential losses associated with other hazards as science increases the validity of data over the long term. Some assumptions were made by the Planning Partnership in an effort to capture as much data as necessary to supplant any significant data gaps. One example of this is the valuation for structures within the assessed data. For structures for which data was not provided, missing information was determined using averages of similar types of structures, determining square footage and applying a multiplier. This process is identified in the Hazus User Guide.

Some hazards, such as earthquakes, are pre–loaded with scientifically determined scenarios used during the modeling process that do not allow for data manipulation as with other hazards, such as flood. In the case of earthquake, greater reliance existed on the use of the Hazus default data, which is known to be less accurate, most often causing higher loss values. While loss estimates are provided, they should be viewed with this flaw in mind. A much more in–depth scientific analysis is necessary to rely on this type of data with a high degree of accuracy. Readers should view this document as a baseline or starting point and information should be further studied and analyzed by scientists and other subject matter experts in hazard–specific fields.

Hazard Profiles & Vulnerability Assessment

The vulnerability assessment highlights the populations, infrastructure, and resources at risk from these hazards. At–risk populations include the elderly, disabled, and economically disadvantaged individuals who may require additional support during emergencies. Critical infrastructure, such as hospitals, schools, and emergency response facilities, must be protected to ensure community resilience. Homes, businesses, and natural resources are also at risk from various hazards, necessitating targeted mitigation efforts. Special attention is needed for vulnerable populations including those with Vulnerability of At–Risk and Functional Needs (AFN) Populations who may have limited resource and support access during emergencies. Ensuring that emergency plans are inclusive and accessible is a key component of the mitigation strategy.

Hazard Profiles

Hazard profiles describe risks associated with identified hazards of concern. Each profile describes the hazard and planning area vulnerabilities. Steps used to define the risk of each hazard include the:

- general overview and description of hazard,
- identification of previous occurrences,
- geographic areas most affected by the hazard,
- event frequency estimates,
- severity estimates,
- warning time likely to be available for response, and
- risk and vulnerability assessment, which includes identification of impact on people, property, economy and the environment.

Hazard: Severe Weather

Severe weather, though typically impacting limited areas, are highly dangerous and can lead to significant property damage. Severe weather can include hazardous conditions produced by thunderstorms including damaging winds, tornadoes, large hail, flooding, flash flooding, and winter storms associated with freezing rain, sleet, snow and strong winds. Severe weather encompasses a range of hazardous conditions often produced by thunderstorms and winter storms. These include damaging winds, tornadoes, large hail, flooding, flash flooding, freezing rain, sleet, snow, and strong winds. Severe weather conditions encompass a variety of natural phenomena that can significantly impact communities, infrastructure, and ecosystems. These include:

- Damaging Winds. Strong winds, often associated with thunderstorms, can exceed speeds of 58 mph. Such winds are capable of uprooting trees, downing power lines, and causing structural damage to buildings.
- Tornadoes. These are rotating columns of air extending from thunderstorms to the ground, capable of producing widespread destruction. Tornadoes vary in intensity and are measured using the Enhanced Fujita Scale, ranging from EF0 (weak) to EF5 (violent).
- Large Hail. Hailstones form when updrafts in thunderstorms carry raindrops into extremely cold areas of the atmosphere. Hailstones larger than .75 inches can damage crops, vehicles, roofs, and windows.
- Flooding and Flash Flooding. Prolonged rainfall, rapid snowmelt, or intense downpours can lead to water levels exceeding the capacity of rivers, streams, and drainage systems. Flash flooding occurs quickly, often within minutes or hours, posing significant risks to life and property.
- Freezing Rain. This occurs when raindrops freeze upon contact with cold surfaces, forming a layer of ice. Freezing rain can make roads hazardous, damage trees, causing power outages by burdening power lines.
- Sleet. Sleet consists of frozen raindrops that bounce on impact with the ground. Unlike snow, sleet pellets are compact and can accumulate to create slick road conditions.
- Snow. Heavy snowfall can disrupt transportation, cause roof collapses, and lead to hypothermia in extreme cold conditions. Snowstorms are particularly hazardous when combined with strong winds.
- Strong Winds. High winds unaccompanied by precipitation can lead to dust storms, hazardous travel conditions, and property damage. In winter, strong winds combined with snow can create blizzard conditions.

Each of these elements pose unique challenges necessitating preparedness measures such as early warning systems, reinforced infrastructure, and emergency response plans to mitigate their impacts. These hazards can occur independently or in combination, amplifying their destructive potential.

Profile

Severe weather includes a wide range of natural phenomena that can disrupt daily life, damage infrastructure, and pose significant community risks. From thunderstorms producing damaging winds and tornadoes to freezing rain and heavy snow, these events require thorough understanding and preparation to mitigate their impacts. This comprehensive overview explores the profiles and

effects of various severe weather conditions, as well as the importance of preparedness strategies to ensure safety and resilience.

Strong & Damaging Winds

Damaging winds, often exceeding 58 mph are a common feature of severe thunderstorms or large-scale weather systems. These winds can uproot trees, snap power lines, and cause structural damage to homes and buildings. The resulting debris often creates additional hazards, disrupting transportation and causing extended power outages. Preparedness measures such as securing loose outdoor items and reinforcing structures can help reduce the risks posed by damaging winds.

High winds are generated by differences in atmospheric pressure where air moves from areas of high pressure to low pressure in an attempt to equalize the imbalance. This process is influenced by the Earth's rotation (The Coriolis Effect) and variations in surface temperatures which create strong air currents. The speed and intensity of winds depend on the pressure gradient force—the steeper the pressure difference over a given distance, the stronger the winds. Factors such as friction with the Earth's surface and the Coriolis effect (caused by the Earth's rotation) further shape the direction and speed of the winds.

Several mechanisms contribute to the development of high winds. The pressure gradient force is a primary driver with steeper gradients such as those in cold fronts or cyclones producing faster winds. Jet streams, high–altitude bands of fast–moving air formed by temperature contrasts, can induce strong surface winds. Tropical and extratropical cyclones also generate intense winds by creating spiraling airflows around low–pressure centers. Geographic features like mountains and valleys amplify wind speeds with funneling effects in narrow mountain passes or downslope winds such as Chinooks or Santa Ana winds, causing rapid air movement. Thunderstorms and microbursts which involve intense downdrafts, can also create localized but extremely strong winds, sometimes exceeding 100 mph.

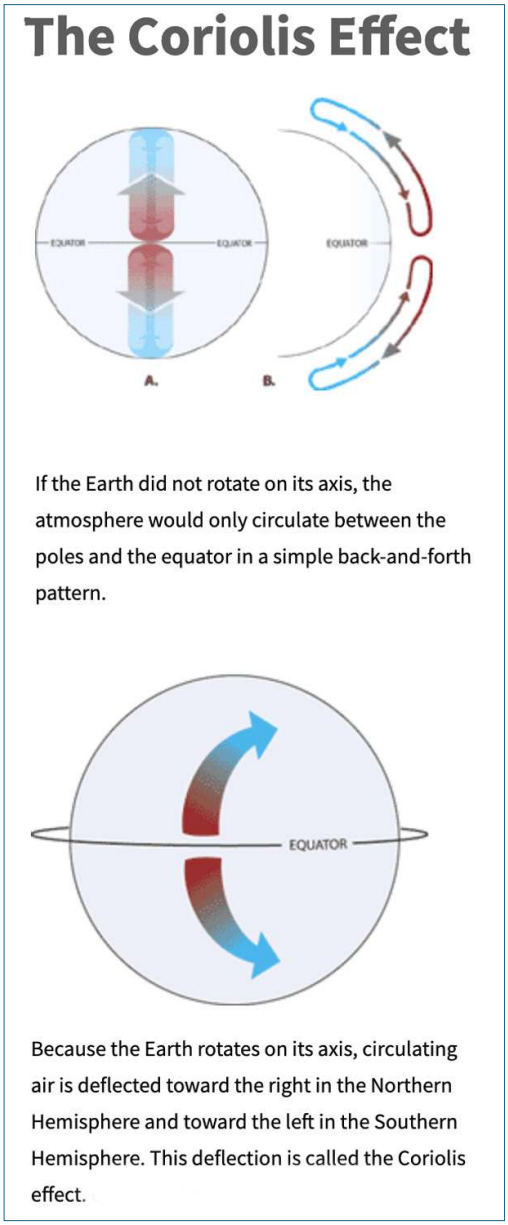


Figure 9. The Coriolis Effect (NOAA)

The development of high winds is closely tied to measurable atmospheric conditions. Wind speeds can range from gentle breezes of 1-15 mph to damaging winds exceeding 58 mph typically associated with storms. Temperature differentials between air masses play a significant role as rapid temperature changes create steep pressure gradients that enhance wind speeds. Frictional effects also influence wind development. Over oceans, minimal friction allows winds to accelerate, while over land, surface roughness slows winds but generates turbulence. High winds are often

seasonally or geographically specific, occurring during hurricane seasons in coastal regions or as downslope wind events in mountainous areas.

High winds are primarily driven unique regional geography and weather patterns, typical of the semi–arid climate of eastern Washington. The city lies within the West Plains area which features open terrain and significant temperature variations that contribute to steep pressure gradients. These gradients are a primary factor in the development of strong winds, particularly during seasonal transitions when cold and warm air masses collide.

Area proximity to mountain ranges also plays a role as air descending from higher elevations accelerates due to compression and warming, creating downslope winds. The city's location in a region affected by Chinook winds and cold fronts amplifies wind speeds during certain weather events. Summer thunderstorms may generate localized high winds through downdrafts while winter storms often bring strong gusts associated with frontal systems. The relatively flat, open landscape of the West Plains allows these winds to move unimpeded, further increasing their intensity.

High winds can reach damaging speeds, causing power outages, uprooting trees, and posing risks to infrastructure and transportation. Understanding the mechanisms behind wind development assists local authorities and residents prepare for, and mitigate the impacts of, these frequent and sometimes severe weather events.

Tornadoes

Tornadoes are among the most destructive severe weather events, featuring rotating columns of air that can cause widespread devastation. Tornadoes are classified on the Enhanced Fujita (EF) Scale, ranging from EF0 (weak) to EF5 (violent). These powerful storms can demolish buildings, uproot vegetation, and scatter debris over long distances, posing significant risks to life and property. Emergency plans that include designated shelters and access to weather alerts are critical for surviving tornadoes.

Table 15. Enhanced Fujita Scale

EF Scale	Class	Wind Speed (mph)	Description
EF0	Weak	65-85	Gale
EF1	Weak	86-110	Moderate
EF2	Strong	111-135	Significant
EF3	Strong	136-165	Severe
EF4	Violent	166-200	Devastating
EF5	Violent	>200	Incredible

Tornadoes represent the most extreme form of high winds, forming under specific atmospheric conditions. Tornado development begins within supercell thunderstorms which feature a rotating updraft called a mesocyclone. This rotation is caused by wind shear where wind speed or direction changes significantly with altitude. As warm, moist air rises rapidly within the storm, it interacts with cooler air aloft, creating atmospheric instability. If a strong downdraft tilts the rotating air column downward, the mesocyclone can extend to the ground, forming a tornado.

Tornadoes typically form in regions with pronounced temperature gradients such as the Great Plains in the United States but can also occur in areas like Medical Lake during severe thunderstorms. While most tornadoes last only a few minutes, their destructive winds can flatten buildings, uproot trees, and displace vehicles. To mitigate the risks posed by high winds and tornadoes, preparedness measures such as early warning systems, designated shelters, and real–time weather monitoring are essential for protecting lives and property.

Large Hail

Large hailstones form in thunderstorms with strong updrafts, with sizes ranging from small pellets to grapefruit–sized chunks. Hail can cause significant damage to crop, vehicles, windows, and roofs. It also poses risks to people and animals caught outdoors during a storm. Preventative measures, such as parking vehicles under cover and using hail–resistant materials can minimize hail–related damage.

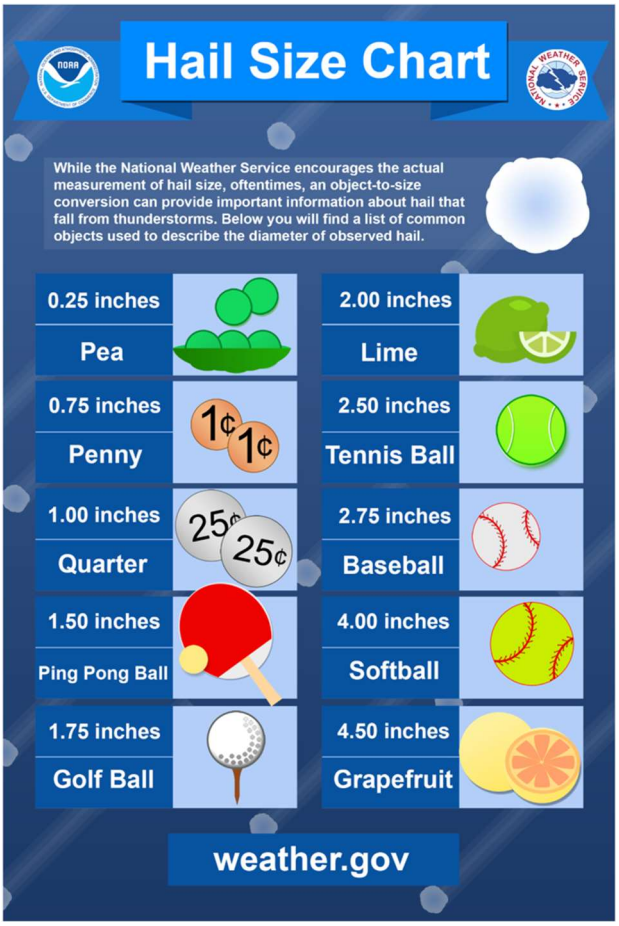


Figure 10. Hail Size Chart (NOAA/NWS)

Large hail forms during severe thunderstorms when strong updrafts carry water droplets into the upper, freezing regions of a cumulonimbus cloud. These updrafts suspend the droplets, which freeze into ice pellets as they collide with supercooled water and additional ice particles. The process continues as the hailstones are lifted repeatedly through the updraft, accumulating layers of ice with each cycle. Once the hailstones become too heavy for the updraft to support, they fall to the ground. The size of hailstones is determined by the strength of the updrafts; stronger updrafts result in larger hailstones. Hail can range in size from small pellets, about the size of peas, to massive hailstones exceeding 4 inches in diameter, comparable to the size of grapefruits.

The occurrence of large hail is influenced by several atmospheric conditions, including strong vertical wind shear, high levels of atmospheric instability, and sufficient moisture in the lower levels of the atmosphere. Hailstorms are most common in regions with pronounced temperature differences, such as the central United States, but they can occur almost anywhere thunderstorms develop. Large hail is particularly hazardous because it often accompanies severe thunderstorms capable of producing damaging winds and tornadoes, amplifying the risk of destruction.

The impacts of large hail are significant and far reaching. Hailstones can damage crops, strip vegetation, and injure livestock, leading to substantial agricultural losses. In urban areas, hail can shatter windows, dent vehicles, and damage roofs, siding, and other structures. Larger hailstones pose severe risks to people and animals caught outdoors, causing injuries or even fatalities. To minimize the damage caused by hailstorms, individuals and communities should take precautions

such as parking vehicles in covered areas, installing hail–resistant roofing materials, and seeking shelter indoors when thunderstorms are forecasted. Early weather monitoring and alerts are also crucial for reducing the risks associated with large hail events.

Flooding and Flash Flooding

Flooding and flash flooding are severe weather hazards caused by prolonged rainfall, rapid snowmelt, or dam failures. Flash floods, occurring within minutes or hours, are particularly dangerous as they offer little time for evacuation. These events submerge homes, roads, and bridges, erode soil, and can result in significant loss of life and property. Mitigation strategies include avoiding flood–prone areas, elevating structures, and having an evacuation plan in place. This hazard is further developed in the Flooding Hazard Profile.

Freezing Rain & Sleet

Freezing rain occurs when rain freezes upon contact with cold surfaces, forming a layer of ice. This phenomenon creates hazardous driving conditions, damages power lines and trees, and increases the likelihood of falls and injuries. To mitigate the impacts of freezing rain, individuals should avoid unnecessary travel, use salt or sand on walkways, and ensure emergency supplies are available for potential power outages. Sleet consists of frozen raindrops that bounce upon hitting the ground, creating slick and hazardous surfaces. While less damaging than freezing rain, sleet still poses significant risks for drivers and pedestrians. Limiting travel during sleet storms and promptly clearing walkways can help prevent accidents and injuries.

Sleet and freezing rain are two forms of winter precipitation that occur under specific atmospheric conditions, each presenting unique challenges and hazards. Sleet forms when raindrops fall through a layer of freezing air near the ground, causing them to freeze into small, solid ice pellets before reaching the surface. In contrast, freezing rain occurs when raindrops pass through a shallow layer of sub–freezing air close to the surface, freezing upon contact with cold objects, forming a smooth glaze of ice. Both require a temperature profile with a warm layer of air aloft, where precipitation initially forms as rain, and a colder layer near the surface, where freezing occurs.

These phenomena are typically associated with winter storms, particularly along the boundaries of warm and cold air masses such as during the approach of a warm front or the passage of a cold front. While sleet creates accumulations of ice pellets on roads and walkways, freezing rain covers surfaces with a solid layer of ice, leading to more severe disruptions. Freezing rain is especially hazardous as it adheres to trees, power lines, and infrastructure, often causing widespread power outages, downed branches, and transportation challenges. Sleet, though less destructive, can still reduce traction on roadways and sidewalks, increasing the risk of accidents and falls.

The impacts of sleet and freezing rain are far reaching. Sleet accumulations make roads and walkways slick, hindering transportation and daily activities. Freezing rain exacerbates risks by forming a heavy, icy glaze that can damage power infrastructure, collapse tree limbs, and severely impact air and ground travel. Individuals should avoid unnecessary travel during storms, equip vehicles with winter tires, and promptly clear walkways of sleet accumulations to mitigate these hazards. Monitoring weather forecasts and advisories is essential for effective preparation and response to these winter weather events, ensuring community safety and minimizing disruptions.

Snow

Snow, formed when water vapor freezes into ice crystals, ranges in severity from light flurries to heavy blizzards. Significant snowfall can disrupt transportation, damage roofs under its weight,

and increase the risk of frostbite and hypothermia in extreme conditions. Preparation for snowstorms includes maintaining emergency supplies, using appropriate snow removal tools, and wearing insulated clothing.

Snow forms when atmospheric conditions allow water vapor to freeze directly into ice crystals, bypassing the liquid phase. This process occurs in clouds where temperatures are at or below 32°F (0°C). Tiny airborne particles, known as aerosols or ice nuclei, serve as the foundation for ice crystal formation. Water vapor condenses onto these particles and freezes, forming intricate hexagonal structures characteristic of snowflakes. The crystals grow as they collide with supercooled water droplets, which freeze upon contact. When the ice crystals become heavy enough, they fall to the ground as snow if surface temperatures are also below freezing.

The development of snow depends on several critical atmospheric factors. Temperature is paramount; the entire column of air from the cloud to the ground must be cold enough to prevent the snow from melting. Snowflakes can survive descent through shallow warm layers, but prolonged exposure to above–freezing temperatures causes them to melt into rain or sleet. Moisture in the atmosphere is another key component, as higher moisture levels allow for greater ice crystal growth, resulting in heavier snowfall. Lift, provided by mechanisms such as cold fronts, low–pressure systems, or orographic effects (air rising over mountains), promotes the upward motion of air, cooling it further and enhancing snow formation.

Snow development data includes measurements of snowfall intensity, accumulation, and duration. Snowfall rates are categorized as Heavy (greater than 1.0 inch per hour). Snow–to–liquid ratios are another important metric, representing the amount of liquid water contained in snow; ratios typically range from 10:1 (10 inches of snow per 1 inch of liquid water) in wetter conditions to 30:1 in drier, colder environments. Snowfall totals vary significantly based on geography, altitude, and proximity to moisture sources, with mountainous and northern regions often experiencing the heaviest accumulations.

Large weather systems influence snow formation such as lake–effect snow events. Lake–effect snow occurs when cold air passes over relatively warmer lakes, picking up moisture and releasing it as heavy snowfall on downwind shores. Snowstorms are categorized based on impact and duration, with blizzards being the most severe, characterized by sustained winds over 35 mph and visibility reduced to less than .25 miles for three or more hours.

Understanding the process and data associated with snow formation is crucial for forecasting and managing its impacts. Snow affects transportation, energy demand, water resources, and ecosystems. Accurate forecasting of snow events involves monitoring temperature profiles, moisture availability, and atmospheric dynamics to predict timing, intensity, and accumulation. By leveraging this data, communities can prepare for and respond effectively to snow events, minimizing risks and disruptions.

Extent & Location

The city experiences a range of severe weather phenomena shaped by its semi–arid climate, geographic location, and proximity to the Cascade and Rocky Mountain Ranges. Regional weather patterns are influenced by seasonal transitions and atmospheric dynamics, resulting in a variety of hazardous conditions impacting daily life, infrastructure, and ecosystems. These phenomena include high winds, tornadoes, large hail, sleet, freezing rain, snow, and occasional flooding.

- High winds are among the most frequent severe weather occurrences in the community. The open terrain of the West Plains area allows winds to gain intensity, particularly during seasonal

transitions when strong pressure gradients develop between air masses. Downslope winds from nearby mountain ranges and storms contribute to these events, with gusts exceeding 58 mph capable of causing power outages, property damage, and transportation hazards.

- While tornadoes are less common, they remain a potential threat during severe thunderstorms. Tornado development is linked to supercell thunderstorms that form during warmer months. Although typically weaker than those in Tornado Alley (Central US), tornadoes in the region can still cause localized destruction, uprooting trees, damaging buildings, and scattering debris.
- Large hail occasionally accompanies severe thunderstorms, particularly in the spring and summer. Strong updrafts within storms produce hailstones that can damage crops, vehicles, and buildings. The agricultural sector is especially vulnerable, as hail can devastate fields and livestock in a short amount of time.
- Sleet and freezing rain are common winter hazards, typically occurring when warm and cold air masses interact. Sleet accumulates as ice pellets on roads and sidewalks, creating slippery conditions, while freezing rain forms a solid glaze of ice that can coat power lines, trees, and infrastructure. These conditions frequently disrupt transportation and utilities, posing risks to public safety.
- Snow is a regular feature of winters in the community, varying from light flurries to heavy snowstorms. Prolonged snowfall can lead to significant accumulations, which disrupt transportation, stress infrastructure, and increase the risk of roof collapses and hypothermia. Snow provides a vital water resource for the region but requires constant management through snow removal and emergency preparedness to minimize disruptions.
- Occasionally, flooding and flash flooding occur during rapid snowmelt or intense rainfall events. Floods can submerge low–lying areas, damage homes, and erode soil, posing threats to the community and environment.

Together, these severe weather phenomena shape the city's challenges and resilience methods. Each event demands tailored preparedness and mitigation strategies—from reinforcing infrastructure to community–wide emergency plans. Monitoring weather forecasts and investing in resilient infrastructure are vital steps for the city to adapt to and manage these recurring hazards. The city can continue to enhance safety and reduce vulnerabilities for its residents and ecosystems by understanding the dynamics of local severe weather.

Previous Occurrence(s)

Medical Lake experiences severe weather primarily during the spring and summer months, with events occasionally reaching severe levels. The area experienced 77 severe thunderstorm events from 2000-2024 including the 2015 windstorm that caused widespread power outages and property damage throughout Spokane County. These storms are becoming more frequent, causing concerns for future resilience.

Table 16. Medical Lake Area Severe Thunderstorm Occurrences, 2000-2024 (NOAA)

NOAA Event ID	Area Affected	Date	Event Type
1176065	Spokane/Medical Lake	4/18/2024	Tornado

NOAA Event ID	Area Affected	Date	Event Type
1104965	Spokane/Medical Lake	5/27/2023	Flood
1073411	Spokane/Medical Lake	12/26/2022	Flood
1043209	Spokane/Medical Lake	6/12/2022	Flood
1043027	Spokane/Medical Lake	6/5/2022	Flash Flood
1033588	Spokane/Medical Lake	5/6/2022	Tornado
897693	Spokane/Medical Lake	5/30/2020	Thunderstorm Wind
893394	Spokane/Medical Lake	5/2/2020	Thunderstorm Wind
845008	Spokane/Medical Lake	7/23/2019	Lightning
834017	Spokane/Medical Lake	7/23/2019	Thunderstorm Wind
836472	Spokane/Medical Lake	7/23/2019	Thunderstorm Wind
836471	Spokane/Medical Lake	7/23/2019	Thunderstorm Wind
845037	Spokane/Medical Lake	7/23/2019	Thunderstorm Wind
818446	Spokane/Medical Lake	5/16/2019	Flood
818455	Spokane/Medical Lake	5/16/2019	Flood
818450	Spokane/Medical Lake	5/16/2019	Flood
707860	Spokane/Medical Lake	6/26/2017	Thunderstorm Wind
692102	Spokane/Medical Lake	4/1/2017	Flood
683461	Spokane/Medical Lake	3/9/2017	Flood
682513	Spokane/Medical Lake	2/16/2017	Flood
656927	Spokane/Medical Lake	10/5/2016	Funnel Cloud
642267	Spokane/Medical Lake	8/9/2016	Tornado
638332	Spokane/Medical Lake	7/22/2016	Hail
638339	Spokane/Medical Lake	7/22/2016	Thunderstorm Wind
638333	Spokane/Medical Lake	7/22/2016	Tornado
622758	Spokane/Medical Lake	5/4/2016	Thunderstorm Wind
622757	Spokane/Medical Lake	5/4/2016	Thunderstorm Wind
616763	Spokane/Medical Lake	3/28/2016	Funnel Cloud
569256	Spokane/Medical Lake	5/29/2015	Thunderstorm Wind
569258	Spokane/Medical Lake	5/29/2015	Thunderstorm Wind
569217	Spokane/Medical Lake	5/29/2015	Thunderstorm Wind
569218	Spokane/Medical Lake	5/29/2015	Thunderstorm Wind
568693	Spokane/Medical Lake	5/26/2015	Funnel Cloud
534572	Spokane/Medical Lake	8/2/2014	Thunderstorm Wind

NOAA Event ID	Area Affected	Date	Event Type
533104	Spokane/Medical Lake	7/23/2014	Thunderstorm Wind
532096	Spokane/Medical Lake	6/26/2014	Heavy Rain
532102	Spokane/Medical Lake	5/5/2014	Thunderstorm Wind
504752	Spokane/Medical Lake	3/14/2014	Thunderstorm Wind
504742	Spokane/Medical Lake	3/14/2014	Thunderstorm Wind
504755	Spokane/Medical Lake	3/14/2014	Thunderstorm Wind
504778	Spokane/Medical Lake	3/5/2014	Flood
474473	Spokane/Medical Lake	9/15/2013	Thunderstorm Wind
470546	Spokane/Medical Lake	8/25/2013	Thunderstorm Wind
454985	Spokane/Medical Lake	6/29/2013	Lightning
394663	Spokane/Medical Lake	7/20/2012	Thunderstorm Wind
387486	Spokane/Medical Lake	7/14/2012	Hail
373849	Spokane/Medical Lake	4/27/2012	Flood
266184	Spokane/Medical Lake	11/16/2010	Thunderstorm Wind
130474	Spokane/Medical Lake	8/18/2008	Thunderstorm Wind
108434	Spokane/Medical Lake	6/11/2008	Hail
108432	Spokane/Medical Lake	6/11/2008	Hail
53342	Spokane/Medical Lake	8/31/2007	Hail
53344	Spokane/Medical Lake	8/31/2007	Hail
53345	Spokane/Medical Lake	8/31/2007	Hail
53346	Spokane/Medical Lake	8/31/2007	Thunderstorm Wind
53347	Spokane/Medical Lake	8/31/2007	Thunderstorm Wind
38241	Spokane/Medical Lake	6/29/2007	Thunderstorm Wind
28828	Spokane/Medical Lake	5/21/2007	Heavy Rain
5524290	Spokane/Medical Lake	7/12/2006	Thunderstorm Wind
5515859	Spokane/Medical Lake	6/13/2006	Flash Flood
5515807	Spokane/Medical Lake	6/10/2006	Flash Flood
5456579	Spokane/Medical Lake	6/21/2005	Thunderstorm Wind
5456580	Spokane/Medical Lake	6/21/2005	Thunderstorm Wind
5456588	Spokane/Medical Lake	6/21/2005	Thunderstorm Wind
5450111	Spokane/Medical Lake	5/17/2005	Hail
5418948	Spokane/Medical Lake	8/6/2004	Lightning
5395842	Spokane/Medical Lake	5/21/2004	Hail

NOAA Event ID	Area Affected	Date	Event Type
5395841	Spokane/Medical Lake	5/21/2004	Tornado
5375376	Spokane/Medical Lake	9/16/2003	Hail
5362821	Spokane/Medical Lake	6/10/2003	Hail
5362823	Spokane/Medical Lake	6/10/2003	Hail
5355285	Spokane/Medical Lake	5/24/2003	Thunderstorm Wind
5350807	Spokane/Medical Lake	4/3/2003	Thunderstorm Wind
5350806	Spokane/Medical Lake	4/3/2003	Thunderstorm Wind
5239878	Spokane/Medical Lake	4/27/2001	Lightning
5236253	Spokane/Medical Lake	3/13/2001	Thunderstorm Wind
5148799	Spokane/Medical Lake	7/3/2000	Hail

Declaration(s)

November 2015 Severe Weather–Windstorm Event
Incident Period: November 17, 2015

Details. The 2015 severe windstorm event that impacted much of Eastern Washington was one of the most significant severe weather events in the region's history. This windstorm brought hurricane–force winds to Eastern Washington, with gusts reaching up to 70 mph in some areas. The storm caused widespread damage to infrastructure, downed trees and power lines, and left hundreds of thousands of residents without power for days. Spokane County, which includes Medical Lake, was among the hardest–hit areas.

Impacts:

- Extensive damage to residential and commercial properties.
- Significant power outages affecting the region, with some outages lasting more than a week.
- Numerous roads blocked due to downed trees and debris.
- Disruption to emergency services and daily activities across the region.

Disaster Declaration. The severity of the event prompted state and federal responses. Washington Governor Jay Inslee declared a state of emergency, and FEMA later issued a federal disaster declaration (DR–4242–WA) to provide financial assistance for recovery efforts, including public infrastructure repairs and individual assistance.

December 2015–Severe Winter Storms and Straight–Line Winds
Incident Period: December 1–14, 2015

Details: A series of severe winter storms brought heavy snowfall, straight–line winds, flooding, landslides, and mudslides across multiple counties, including Spokane County. These conditions caused widespread power outages, road closures, and property damage.

Disaster Declaration: On February 2, 2016, a Major Disaster Declaration (4253–DR–WA) was issued, providing federal assistance for recovery efforts in the affected areas.

January 2022–Severe Winter Storms, Straight–Line Winds, Flooding, Landslides, and Mudslides
Incident Period: January 1-15, 2022

Details. Eastern Washington, including Spokane County, experienced severe winter storms accompanied by straight–line winds, leading to flooding, landslides, and mudslides. The extreme weather resulted in significant infrastructure damage and disruptions.

Disaster Declaration. A Major Disaster Declaration (4650–DR–WA) was approved on March 29, 2022, facilitating federal aid for public infrastructure repairs and hazard mitigation.

These events highlight regional susceptibility to severe weather phenomena beyond wildfires, emphasizing the importance of comprehensive emergency preparedness and resilient infrastructure to mitigate the impacts of such natural disasters.

Frequency

Medical Lake experiences various severe weather phenomena throughout the year, influenced by its semi–arid climate, geographic location, and seasonal weather patterns. While some events, like snow and high winds, are relatively frequent and predictable, others, such as hailstorms or tornadoes, occur less regularly but still pose significant risks. Here is a comprehensive assessment of the frequency of severe weather in the region:

- High Winds. High winds are among the most frequent severe weather events, particularly during seasonal transitions in spring and fall. The open terrain of the West Plains area allows wind speeds to accelerate, especially during storms or when pressure gradients are steep. Downslope winds and cold fronts also contribute to frequent gusty conditions, with damaging winds occurring several times a year.
- Snow. Snow is a regular feature of winters in the area, occurring almost every year from November to March. The frequency of snowfall events ranges from light snow showers to heavy snowstorms. Blizzards, while less common, occasionally occur during intense winter storms, bringing sustained winds and significant snow accumulation.
- Freezing Rain and Sleet. Freezing rain and sleet occur a few times each winter, typically during transitional weather when warm air overrides a cold surface layer. While not as common as snow, these events are notable for their disruptive impact on transportation and infrastructure, often leading to hazardous road conditions and power outages.
- Large Hail. Hailstorms are infrequent but tend to occur during the spring and summer months. These events are associated with severe thunderstorms that develop when unstable atmospheric conditions create strong updrafts. Significant hail events may only occur every few years but can cause extensive damage to crop, vehicles, and buildings.
- Tornadoes. Tornadoes are rare in the area, but remain a possibility during severe thunderstorms, especially in late spring or early summer. While most tornadoes in the region are weak (EF0 or EF1 on the Enhanced Fujita Scale), their occurrence is sporadic, with only a handful of recorded instances in the area's history.

- Flooding and Flash Flooding. Flooding and flash flooding are uncommon but can occur during rapid snowmelt in the spring or following intense summer thunderstorms. These events are often localized but can be exacerbated by poor drainage or overwhelmed water systems.

Table 17. Summary of Frequency

Weather Phenomenon	Frequency	Peak Season
High Winds	Several times/year	Spring and Fall
Snow	Annually (multiple events)	November to March
Freezing Rain/Sleet	Several times/winter	Winter (Dec–Feb)
Large Hail	Rare (every few years)	Spring and Summer
Tornadoes	Very rare (sporadic)	Late Spring to Early Summer
Flooding/Flash Flooding	Infrequent (localized)	Spring (snowmelt) or Summer storms

Severity

Medical Lake experiences varying levels of severity from different types of severe weather with impacts ranging from minor inconveniences to significant disruptions. The severity of these phenomena depends on their intensity, frequency, and the extent of damage caused to infrastructure, ecosystems, and public safety. Below is a detailed assessment of the severity of each severe weather phenomenon affecting the community.

High Winds

- Severity Level: Moderate–to–High
- *Impacts*. High winds are frequent and can cause widespread damage, including downed trees, power outages, and property damage. Severe wind events, particularly those exceeding 58 mph, pose serious risks to transportation, utilities, and safety. The open terrain of the West Plains amplifies the impact of these winds.
- *Notable Events.* Regional windstorms have caused power outages lasting several days and damage to structures.

Snow

- Severity Level: Moderate
- *Impacts*. Snowfall is generally manageable but can become severe during heavy snowstorms or blizzards. These events disrupt transportation, increase energy demand, and can lead to structural collapses under excessive snow loads. The risk of hypothermia and frostbite adds to the public safety concerns.
- *Notable Events*. Prolonged snowfall in the winter of 2008-2009 led to transportation gridlock and significant snow removal challenges.

Freezing Rain and Sleet

- Severity Level: High

- *Impacts*. These events create hazardous conditions on roads, sidewalks, and power lines. Freezing rain is particularly severe, as it forms a glaze of ice that can cause power outages, tree damage, and treacherous travel conditions. Sleet, while less damaging than freezing rain, still poses risks for traffic and pedestrian safety.
- *Notable Events.* The ice storm of 1996 severely affected infrastructure, leading to long–lasting outages and widespread disruptions.

Large Hail

- Severity Level: Moderate
- *Impacts*. Hailstorms, while infrequent, cause significant damage to crops, vehicles, and buildings. Larger hailstones can injure people and livestock and devastate agricultural fields. The economic cost of hail events is substantial, particularly in farming communities.
- *Notable Events*. A 2003 hailstorm caused extensive damage to local crops and property.

Tornadoes

- Severity Level: High (Locally)
- *Impacts*. Though rare, tornadoes can cause catastrophic localized damage. Even weak tornadoes can uproot trees, damage roofs, and scatter debris, posing significant risks to life and property. The psychological impact of a tornado adds to its severity, despite its rarity.
- *Notable Events.* An EF1 tornado in 2011 near Medical Lake caused property damage and highlighted the need for improved early warning systems.

Flooding and Flash Flooding

- Severity Level: Moderate
- *Impacts.* Area flooding typically results from rapid snowmelt or intense rainfall. While not a frequent hazard, flooding can damage homes, erode soil, and overwhelm drainage systems. Flash floods, which occur quickly, pose immediate threats to safety and infrastructure.
- *Notable Events.* Spring flooding in 1997 due to rapid snowmelt caused damage to low–lying areas and required emergency response efforts.

Table 18: Summary of Severity

Weather Phenomenon	Severity	Primary Impacts
High Winds	Moderate to High	Power outages, property damage, transportation hazards.
Snow	Moderate	Disruptions to transportation, increased heating demand, risk of structural damage.
Freezing Rain/Sleet	High	Hazardous travel, power outages, and significant infrastructure risks.
Large Hail	Moderate	Agricultural losses, property damage, and injuries.
Tornadoes	High (localized)	Catastrophic damage to buildings and vegetation, risk to life.
Flooding/Flash Flooding	Moderate	Infrastructure damage, soil erosion, and potential for loss of life.

This severity assessment underscores the need for comprehensive emergency planning and infrastructure resilience. High winds, snow, and freezing rain pose the most consistent challenges, while infrequent events like tornadoes and hailstorms demand robust preparedness for their potential high–impact outcomes.

Warning Time

Warning time is a critical factor in mitigating the impacts of severe weather, allowing residents and authorities to prepare for incoming hazards. Warning time varies significantly across different types of severe weather, depending on the event's predictability and available detection technologies. Below is an analysis of warning times for severe weather phenomena in the area:

High Winds

- Warning Time: hours to days
- Details: Meteorologists can often predict high winds associated with storm systems or pressure gradients several days in advance. However, sudden wind gusts, such as those from microbursts or localized storms, may provide only a few hours of warning.

Snow

- Warning Time: 1-3 days
- Details: Snowstorms are relatively predictable, with modern weather models providing accurate forecasts a few days ahead. However, the intensity and duration of snow events may be refined closer to the onset.

Freezing Rain and Sleet

- Warning Time: hours to 1 day
- Details: Weather systems producing freezing rain and sleet are typically identified within 24 hours of their arrival. The exact timing and location of the transition from rain to freezing precipitation can vary, providing less precise warnings.

Large Hail

- Warning Time: minutes to hours
- Details: Large hail is often associated with severe thunderstorms, which are detected through radar technology. Warnings are issued once storm conditions suggest a high likelihood of hail, typically providing less than an hour of lead time.

Tornadoes

- Warning Time: minutes to hours
- Details: Tornadoes are challenging to predict. While supercell thunderstorms may be identified hours in advance, tornado–specific warnings often come with a lead time of 15-30 minutes, based on Doppler radar detection and visual confirmation.

Flooding and Flash Flooding

- Warning Time: hours to days (Flooding)/minutes to hours (Flash Flooding)
- Details: Gradual flooding caused by snowmelt or prolonged rainfall is typically forecasted days ahead. Flash flooding, however, provides little warning, often emerging within minutes or hours of intense precipitation.

Table 19: Summary of Warning Times

Weather Phenomenon	Typical Warning Time	Predictability
High Winds	Hours to days	High
Snow	1-3 days	High
Freezing Rain/Sleet	Hours to 1 day	Moderate
Large Hail	Minutes to hours	Moderate to Low
Tornadoes	Minutes to hours	Low (localized warnings available)
Flooding/Flash Flooding	Hours to days/minutes	High (flooding)/Low (flash floods)

Secondary Hazards

Severe weather events such as high winds, snow, freezing rain, sleet, hail, tornadoes, and flooding often lead to significant secondary hazards. These indirect consequences amplify the impacts of the initial weather events, prolong recovery efforts, and pose additional risks to public safety and infrastructure. Understanding these cascading effects is critical for developing effective preparedness and mitigation strategies.

- High winds frequently result in falling debris such as uprooted trees, broken branches, and dislodged materials, which can damage property and obstruct roads. Power outages are a common consequence of downed power lines, disrupting heating, cooling, and communication systems. Damaged electrical infrastructure increases the risk of fires, while blocked roads hamper emergency response efforts, creating further complications during windstorms.
- Snowfall, while a regular winter occurrence, poses several secondary hazards depending on its intensity. Heavy snow can accumulate on rooftops, leading to structural collapses and endangering occupants. Snow–covered and icy roads increase the likelihood of traffic accidents, while prolonged snowfall can isolate communities, delaying emergency services and supply deliveries. Extended exposure to cold weather also raises the risk of hypothermia and frostbite, particularly for vulnerable populations.
- Freezing rain and sleet are among the most hazardous winter weather phenomena due to their ability to cause widespread and prolonged disruption. Ice accumulation on power lines and transformers often leads to long–lasting outages, while the added weight of ice damages trees and utility poles. Hazardous travel conditions due to icy roads result in increased collisions, and frozen pipes disrupt water access, requiring extensive repairs.
- Large hail, though less frequent, can cause localized but significant damage. Hailstones can puncture roofs and windows, leading to water damage inside buildings. Agricultural losses from hailstorms can strain local economies, while hail injuries to livestock and vehicle damage create additional financial and logistical challenges. The aftermath of a hailstorm often demands immediate repairs and insurance claims processing.
- Tornadoes, though rare in Medical Lake, have devastating localized effects. Scattered debris from destroyed buildings, trees, and vehicles poses immediate risks to rescue efforts and survivors. Tornadoes can also damage industrial facilities, leading to hazardous material spills, and broken gas lines or electrical infrastructure increase the likelihood of fires and explosions. The

sudden and catastrophic nature of tornadoes often leaves lasting psychological trauma for affected individuals and communities.

- Flooding and flash flooding, while less frequent, can result in significant secondary hazards. Floodwaters erode soil, destabilizing building foundations and roadways, while contaminated water supplies pose health risks to the population. Prolonged water exposure leads to mold and mildew growth in structures, creating additional health hazards and costly repairs. Flooding also displaces residents, necessitating long–term shelter solutions and economic recovery efforts.

The range of secondary hazards associated with severe weather underscores the need for robust mitigation strategies.

Climate Change Impacts

Climate change is intensifying severe weather phenomena, exacerbating the frequency, intensity, and unpredictability of events such as high winds, snow, freezing rain, sleet, hail, tornadoes, and flooding. Rising global temperatures contribute to more extreme weather patterns by altering atmospheric dynamics. Warmer air holds more moisture, increasing the potential for intense precipitation events, including freezing rain and snowstorms. The changing climate also amplifies temperature gradients, which can strengthen pressure systems and result in more frequent and severe high winds. Hailstorms may become more intense as warmer surface air and cooler upper atmospheric temperatures create favorable conditions for hail formation.

Tornadoes, though rare in the city, may become more sporadic and difficult to predict due to shifting jet stream patterns influenced by climate change. Flooding, particularly flash flooding, is another critical concern, as intensified storms and rapid snowmelt events overwhelm drainage systems, leading to significant damage and displacement. Prolonged heat waves and dry conditions could exacerbate secondary hazards like wildfires, which are often triggered by high winds. The cascading impacts of these changes underscore the importance of integrating climate adaptation strategies into local planning.

Vulnerability

Medical Lake is highly vulnerable to severe weather events, which pose significant risks to public safety, infrastructure, the local economy, and the environment. These impacts underscore the importance of proactive measures to mitigate the effects of high winds, snowstorms, hail, freezing rain, flooding, and other extreme weather conditions, particularly for community At–Risk and Functional Needs (AFN) populations, including the elderly, individuals with disabilities, and those with limited access to resources.

Impact on Life, Health, and Safety. Severe weather events can result in injuries or fatalities due to falling debris, vehicle accidents, and prolonged exposure to harsh conditions, especially during winter storms. Vulnerable AFN populations face greater risks during extreme weather due to mobility challenges, inadequate shelter, or lack of timely access to essential services. Prolonged power outages, road blockages, and communication breakdowns can delay emergency services, increasing the risks for AFN individuals who may rely on assistive devices or medical care. The lack of accessible emergency shelters and resources for AFN populations further exacerbates their vulnerability during severe weather events.

Impact on Property. High winds, hail, and heavy snow can cause significant damage to homes, vehicles, and infrastructure. Structures such as roofs, windows, and siding are particularly

susceptible to damage during high winds or hailstorms. Flooding from rapid snowmelt or intense rainfall can devastate properties, especially in low–lying areas, causing costly repairs and potential displacement of residents, including those in the AFN community. Property damage in these vulnerable areas requires targeted relief efforts to ensure that AFN individuals have access to adequate housing and support during recovery.

Impact on Critical Facilities. Severe weather often disrupts critical infrastructure, including power grids, roads, and emergency services. Power outages and road blockages can hinder emergency response, impacting all residents, but especially AFN individuals who may depend on electrically powered medical devices or specialized transportation. Damage to hospitals, fire stations, and communication systems reduces the city's ability to respond effectively, leaving AFN populations at greater risk. In particular, accessible facilities for AFN individuals, including shelters and community centers, must be prioritized in recovery plans.

Impact on the Economy. Severe weather events disrupt local businesses due to property damage, power outages, and employee absenteeism caused by unsafe travel conditions. The financial strain from prolonged closures disproportionately affects small businesses, which are crucial to the local economy. For AFN populations, economic disruptions can mean a loss of services or essential community support, making it harder for them to recover from these events. Agricultural impacts from storm damage, crop destruction, and livestock injuries affect food supply chains, which may have a disproportionate impact on AFN individuals who rely on assistance programs.

Impact on the Environment. Severe weather causes environmental degradation, including soil erosion, vegetation loss, and contamination of water sources through increased runoff. Blockages in waterways from fallen trees and debris exacerbate flooding and disrupt local ecosystems. These environmental impacts also influence AFN populations by damaging the surrounding resources they depend on for food, water, and shelter. For example, floods that contaminate water sources may limit access to clean drinking water for all residents, especially for those with limited mobility or those who are medically vulnerable.

Future Development Considerations. As the city continues to grow, it is crucial to integrate severe weather mitigation strategies that address the needs of AFN populations in all future developments. This includes ensuring that infrastructure projects—such as roads, bridges, and emergency shelters—are built to be accessible to those with disabilities and are resilient to extreme weather. Strengthening building codes, improving drainage systems, and using sustainable land–use practices will help minimize the impact of severe weather on the broader community and vulnerable AFN populations. The design of housing developments should incorporate features such as backup power systems, accessible transportation routes, and emergency communication systems to protect AFN residents during and after severe weather events.

Severe weather presents complex challenges affecting the entire community, with amplified risks for AFN populations. Through focused planning, resilient infrastructure, and inclusive emergency response strategies, the city can enhance its preparedness for severe weather events, ensuring that all residents—especially those with functional needs—are better protected and supported during extreme conditions.

Issues

Severe weather poses significant challenges, impacting public safety, infrastructure, the economy, and the environment. The issues arising from extreme events such as high winds, snowstorms,

hail, freezing rain, and flooding highlight gaps in preparedness, infrastructure resilience, and resource accessibility, particularly for vulnerable populations.

Vulnerability of At–Risk and Functional Needs (AFN) Populations. Severe weather events disproportionately affect vulnerable populations, including the elderly, individuals with disabilities, and those with limited access to resources. AFN populations face increased risks due to mobility challenges, lack of access to safe and adequate shelter, and dependence on medical devices that require electricity. Emergency shelters and evacuation plans may not fully account for accessibility needs, leaving these groups at heightened risk during power outages, road closures, and storm events.

Aging and Insufficient Infrastructure. Medical Lake's infrastructure is vulnerable to damage from severe weather. High winds frequently down power lines, causing outages that disrupt daily life and emergency response. Heavy snow and freezing rain place stress on roofs and roadways, leading to collapses, cracks, and dangerous travel conditions. Insufficient drainage systems increase the risk of flooding, while outdated or weak utility systems make it difficult to restore power and water services quickly after extreme weather events.

Limited Emergency Response Capacity. Severe weather often overwhelms city emergency response systems. Power outages and blocked transportation routes hinder access to critical facilities like hospitals and fire stations. Emergency responders may struggle to reach affected areas, especially during snowstorms or floods. The lack of backup resources and equipment, such as generators or snow removal machinery, exacerbates these challenges, prolonging recovery times and increasing risks to public safety.

Economic Disruption. Severe weather significantly impacts the local economy. Businesses often face closures due to damaged facilities, power outages, and unsafe travel conditions for employees. Small businesses, which form a vital part of the community, are particularly vulnerable to prolonged disruptions. The agricultural sector suffers from crop damage, soil erosion, and livestock losses caused by hailstorms, flooding, and extreme cold, creating ripple effects throughout the regional economy.

Environmental Degradation. Severe weather events cause lasting damage to the surrounding natural environment. Flooding leads to soil erosion, contamination of water sources, and damage to aquatic ecosystems. High winds and hailstorms can uproot vegetation and create debris that block waterways, increasing the risk of subsequent flooding. These environmental impacts often require costly cleanup efforts and can have long–term effects on regional ecological health.

Inadequate Early Warning Systems and Preparedness. Although weather forecasting has improved, there are gaps in communicating timely and effective warnings to residents. Some residents may lack access to real–time alerts or may not understand the severity of impending weather events, leading to delayed or inadequate responses. Preparedness measures, such as emergency kits and evacuation plans, may not be widespread or robust enough to address the needs of the entire community, particularly AFN populations.

Growing Risks from Climate Change. Climate change intensifies the frequency and severity of extreme weather. Rising temperatures increase the potential for heavier snowfalls, stronger winds, and more frequent flooding events. As the region continues to grow, the lack of climate–resilient infrastructure and planning may exacerbate city vulnerabilities to these changing weather patterns, creating further risks for residents and businesses.

Resource Limitations for Recovery and Mitigation. The city faces challenges in securing adequate resources for recovery after severe weather events. Limited funding for disaster response and

infrastructure improvements delays repairs and leaves the community vulnerable to repeated impacts. The city may also lack the staffing and technical expertise required to implement large–scale mitigation strategies, such as improved drainage systems or wind–resistant building codes.

Consequence Analysis

Severe weather events in the city result in wide–ranging consequences that impact public safety, infrastructure, the economy, and the environment. The cascading effects of these events amplify their severity, highlighting the need for a thorough understanding of their direct and indirect impacts. Below is a consequence analysis of severe weather phenomena in Medical Lake:

Public Safety and Health Consequences. Severe weather events directly endanger the lives of residents through falling debris, vehicle accidents, and exposure to extreme temperatures. Winter storms increase the risk of hypothermia and frostbite, while floods and freezing rain create hazardous conditions for travel. Vulnerable populations, such as the elderly, individuals with disabilities, and those without stable housing, are disproportionately affected. Delayed emergency responses due to blocked roads and power outages can further compromise public safety and access to medical care, worsening the outcomes for those with chronic health conditions or acute injuries.

Infrastructure Damage and Service Disruptions. Severe weather often leads to extensive infrastructure damage. High winds can topple trees and power lines, resulting in prolonged power outages that disrupt heating, cooling, and communication systems. Heavy snow and ice place stress on roofs, leading to structural collapses and road damage. Flooding exacerbates these issues by undermining building foundations and overwhelming drainage systems. Disruptions to critical facilities, such as hospitals, fire stations, and schools, hinder the city's ability to respond to emergencies and resume normal operations.

Economic Impacts. The economic consequences of severe weather events are significant. Businesses face closures due to property damage, power outages, and unsafe travel conditions for employees. Small businesses are particularly vulnerable, as prolonged disruptions can lead to financial losses and even permanent closures. Agricultural losses from hailstorms, flooding, and extreme cold further strain the local economy, reducing crop yields and harming livestock. The cost of repairs, recovery, and insurance claims creates financial burdens for residents and local government.

Environmental Degradation. Severe weather events disrupt the natural environment in and around the city. High winds and hailstorms damage vegetation and wildlife habitats, while floods erode soil, spread contaminants, and damage aquatic ecosystems. Blocked waterways from debris exacerbate flood risks and reduce water quality. The environmental consequences are costly to address, having long–term effects on the ecological balance of the region.

Social and Community Impacts. Severe weather events can fragment communities, particularly when residents are displaced due to flooding, property damage, or prolonged power outages. Social cohesion is further tested as resources are stretched thin, and recovery efforts are delayed. Vulnerable populations may face long–term challenges, such as loss of housing or employment, compounding the difficulty of recovery. The psychological toll of severe weather events, including anxiety and stress, is another significant consequence, particularly for individuals who experience repeated exposure to such events.

Long–Term Development Challenges. As the community continues to grow, severe weather events pose challenges for sustainable development. Infrastructure built without resilience to high winds, flooding, or heavy snow is more likely to fail, creating higher costs for repairs and

rebuilding. Climate change further exacerbates these risks, increasing the likelihood of more frequent and severe weather events. Without proactive planning and mitigation strategies, the city risks perpetuating vulnerabilities that will affect future generations.

Table 20: Key Consequences

Category	Key Consequences
Public Safety	Injuries, fatalities, hypothermia, delayed emergency response, disproportionate impact on vulnerable populations.
Infrastructure	Power outages, structural damage, road failures, disrupted critical facilities.
Economic	Business closures, agricultural losses, increased recovery costs, financial strain on residents and local government.
Environmental	Soil erosion, habitat destruction, water contamination, increased flood risks.
Social	Community displacement, psychological toll, resource shortages, delayed recovery efforts.
Development	Increased costs for rebuilding, challenges in integrating climate resilience, future infrastructure vulnerabilities.

Severe weather creates a ripple effect of consequences affecting all aspects of life in the community. Addressing these challenges requires a comprehensive approach, including investing in resilient infrastructure, enhancing emergency response capabilities, and integrating climate adaptation into future development. By understanding the full scope of these consequences, the city can better prioritize resources and strategies to mitigate the impacts of severe weather.

Results

Severe weather events produce wide–ranging and often long–lasting results, affecting public safety, infrastructure, the economy, and the environment. The immediate and cascading effects of these events highlight city vulnerabilities to high winds, snowstorms, hail, freezing rain, and flooding. Below are the key results associated with severe weather in Medical Lake:

Loss of Life and Public Safety Risks. Severe weather events result in injuries and, in some cases, fatalities. Falling debris, traffic accidents on icy or flooded roads, and prolonged exposure to cold temperatures during winter storms are common risks. Vulnerable populations, including the elderly, those with disabilities, and individuals without adequate shelter, are disproportionately affected. The inability to access emergency services due to road closures or power outages further exacerbates public safety challenges.

Widespread Infrastructure Damage. Severe weather frequently damages critical infrastructure in the community. High winds down power lines and damage buildings, while heavy snow and ice stress roofs and roads, leading to structural collapses and transportation disruptions. Flooding caused by intense rainfall or rapid snowmelt undermines building foundations, overwhelms drainage systems, and damages roadways. These impacts strain recovery resources and require significant investment in repairs.

Economic Disruptions. Severe weather events disrupt business operations, leading to financial losses. Power outages, facility damage, and unsafe travel conditions often result in business closures, especially for small enterprises. The agricultural sector is also heavily impacted, with storms

causing crop losses, soil erosion, and livestock injuries. The cumulative economic effects include reduced local productivity, increased recovery costs, and financial hardships for residents and business owners.

Environmental Degradation. Severe weather events lead to long–term environmental damage. High winds and hailstorms destroy vegetation and wildlife habitats, while floods erode soil, spread contaminants, and harm aquatic ecosystems. Debris from storms blocks waterways, increasing the risk of future flooding and degrading water quality. These environmental results require extensive recovery efforts to restore ecological balance.

Social and Community Impact. Severe weather often displaces residents, particularly those living in flood–prone or heavily damaged areas. Prolonged power outages and infrastructure failures isolate communities, delaying recovery and creating hardships. Vulnerable populations, such as the At–Risk and Functional Needs (AFN) community, face additional challenges in accessing resources, shelter, and emergency services. The psychological toll of severe weather, including stress and anxiety, further impacts community well–being.

Challenges to Long–Term Development. Severe weather results in delayed or derailed development projects due to repeated damage and resource diversion to recovery efforts. Without proactive planning, new infrastructure and housing developments remain vulnerable to future events, perpetuating the cycle of damage and repair. Climate change exacerbates these challenges by increasing the frequency and severity of extreme weather events.

Table 21: Summary of Results

Category	Key Results
Public Safety	Injuries, fatalities, delayed emergency response, heightened risks for vulnerable populations.
Infrastructure	Damaged power lines, collapsed roofs, road failures, overwhelmed drainage systems.
Economic	Business closures, agricultural losses, increased financial burdens on residents and local government.
Environmental	Soil erosion, habitat destruction, water contamination, blocked waterways.
Social	Community displacement, resource shortages, psychological stress.
Development	Vulnerable new infrastructure, delayed progress on projects, increased costs for resilient development.

The results of severe weather demonstrate the interconnected nature of its impacts on Medical Lake. Addressing these challenges requires a comprehensive approach, including resilient infrastructure, improved emergency planning, and climate adaptation measures. By focusing on mitigation and recovery strategies, the city can minimize the long–term consequences of severe weather events and ensure a safer, more sustainable future for its residents.

Hazard: Wildfire & Air Quality

Wildfires are uncontrolled fires that burn in forests, grasslands, or other natural areas. These fires are fueled by dry vegetation, high temperatures, low humidity, and strong winds, often spreading rapidly over vast areas. Wildfires may start naturally, such as from lightning strikes, or be caused by human activity, including unattended campfires, discarded cigarettes, or deliberate acts. In regions like Medical Lake, the dry, semi–arid climate and periodic high winds create favorable conditions for wildfires, especially during the summer and early fall months.

One of the most significant impacts of wildfires is the degradation of air quality. Wildfires produce large amounts of smoke containing particulate matter (PM2.5, particulate matter 2.5 microns and below), carbon monoxide, nitrogen oxides, and volatile organic compounds. These pollutants reduce air quality and create health hazards, particularly for vulnerable populations such as children, the elderly, and individuals with respiratory or cardiovascular conditions. Fine particulate matter (PM2.5) from wildfire smoke can penetrate deep into the lungs, aggravating asthma, bronchitis, and other respiratory illnesses, and increasing the risk of heart attack and stroke. Prolonged exposure to wildfire smoke has also been linked to long–term respiratory and cardiovascular damage.

The effects of wildfire smoke are not limited to the immediate vicinity of the fire. Strong winds can transport smoke over hundreds or even thousands of miles, impacting air quality in distant communities. Located near forested and grassland area, Medical Lake is particularly vulnerable to wildfire smoke events during fire season. Poor air quality from wildfires can lead to widespread health advisories, school and business closures, and reduced outdoor activity.

Wildfires also release significant amounts of greenhouse gases, such as carbon dioxide and methane, contributing to climate change, which in turn increases the frequency and intensity of future wildfires. This creates a feedback loop where more wildfires degrade air quality and exacerbate climate change impacts.

Profile

Wildfires are destructive, uncontrolled fires that occur in forests, grasslands, shrublands, or other natural areas. They are fueled by dry vegetation, high temperatures, low humidity, and strong winds, which create conditions for rapid and expansive fire spread. In regions like Medical Lake, the semi–arid climate, coupled with periodic high winds and hot summers, significantly heightens the risk of wildfires, especially during late summer and early fall months. While wildfires are a natural part of many ecosystems, they are increasingly exacerbated by human activities and climate change, resulting in more frequent, larger, and more intense fire events.

Wildfire causes are categorized into natural and human–induced factors. Natural causes, such as lightning strikes during thunderstorms, are a primary ignition source for wildfires, particularly in dry regions. However, human activities account for a substantial number of wildfires, with common triggers including unattended campfires, discarded cigarettes, equipment malfunctions, and intentional arson. Climate change further amplifies wildfire risks by creating drier and more flammable conditions through rising global temperatures, prolonged droughts, and shifting weather patterns. These factors increase the likelihood and intensity of wildfires, posing significant challenges to communities in the area.

Wildfires have a profound impact on air quality, releasing large amounts of pollutants into the atmosphere. These pollutants include particulate matter (PM2.5), consisting of fine particles small enough to penetrate deep into the lungs, causing respiratory and cardiovascular problems. Carbon monoxide (CO), another pollutant, reduces oxygen delivery in the body and poses severe risks to

individuals with heart conditions. Nitrogen oxides (NOx) and volatile organic compounds (VOCs) contribute to ground–level ozone formation, worsening smog and respiratory issues. Wildfire smoke may contain toxic chemicals such as benzene and formaldehyde, depending on the materials burned. The health impacts of wildfire smoke range from short–term effects, such as eye irritation, coughing, sore throat, wheezing, and shortness of breath, to long–term effects, including chronic respiratory diseases, reduced lung function, and an increased risk of heart attacks and strokes. Vulnerable populations, including those with asthma, COPD, or cardiovascular conditions, are particularly at risk.

The geographic reach of wildfire smoke further exacerbates its impacts, as smoke can travel hundreds or even thousands of miles from the fire zone. This means the city can experience significant air quality concerns even from wildfires occurring in neighboring regions or states, highlighting the widespread nature of this hazard.

Beyond air quality, wildfires have devastating environmental and ecological impact, releasing significant amounts of greenhouse gases such as carbon dioxide (CO_2) and methane, contributing to climate change and creating a feedback loop of increasing wildfire risks. Vegetation loss from fires destroys forests and grasslands, leading to habitat destruction for wildlife and disrupting local ecosystems. Vegetation removal also increases the likelihood of soil erosion and landslides, particularly during heavy rains that follow fire events. Wildfires contribute to water contamination, as ash and debris enter water bodies, reducing water quality and harming aquatic ecosystems.

Wildfires present a complex and growing threat to local communities with far–reaching consequences for public health, air quality, and the environment. Addressing these challenges requires a combination of prevention, mitigation, and adaptation strategies to protect residents and natural ecosystems.

Extent & Location

The wildfire risk map (below) highlights levels of wildfire hazard potential across the city, ranging from very Low to Very High. The map shows the city is categorized as having Moderate wildfire risk, with large portions of the central and southeastern areas identified as particularly vulnerable. These zones (marked in yellow) suggest significant fuel loads such as dry vegetation or brush, creating conditions conducive to fire spread under certain circumstances. High–risk zones (in orange) are concentrated along the southern and southwestern city boundaries. These areas feature dense vegetation or grasslands that are highly flammable, increasing the potential for wildfire ignition and rapid spread. In contrast, Low–risk zones (light green) and Very Low–risk zones (dark green) are scattered throughout the northern and western portions of the city where the fire risk is less severe due to reduced vegetation or other mitigating factors.

High–risk zones along the city's southern and southwestern edges pose a particular threat due to proximity to residential and urban areas, raising concerns about fire encroachment. The Moderate risk areas, which are the most extensive, encompass much of the city, including residential neighborhoods and community infrastructure. The wildfire map reveals that Medical Lake faces

significant wildfire vulnerabilities, with the majority of the city classified as Moderate-risk and portions of the southern areas falling into High–risk zones.

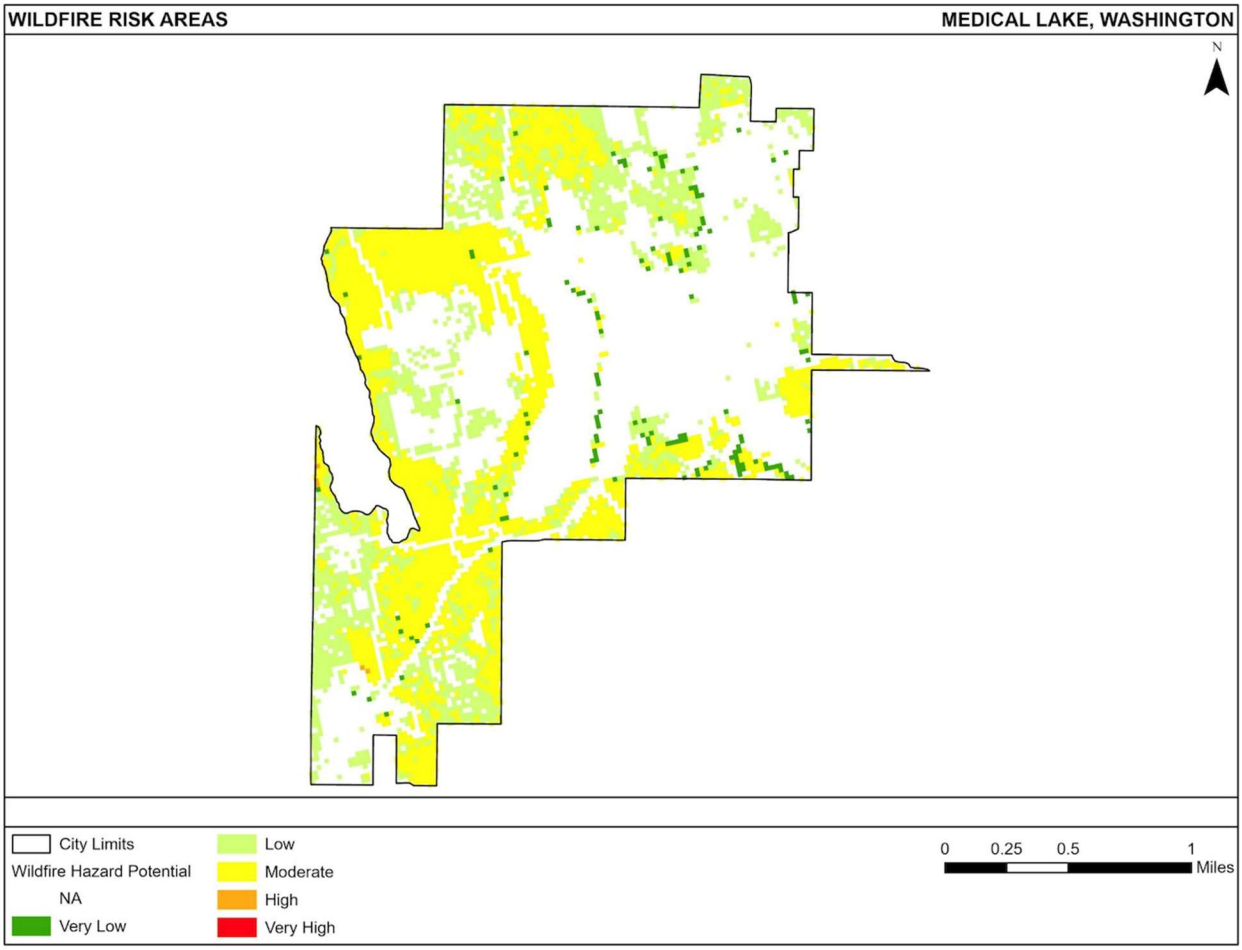


Figure 11. City of Medical Wildfire Risk Areas

Air Quality

Medical Lake faces significant air quality challenges due to its location within the semi–arid West Plains region of eastern Washington. Air quality in the city is influenced by local factors such as wildfires, agricultural activity, vehicular emissions, and both regional and distant pollution sources. The extent of air quality concerns varies seasonally, with the summer and early fall months posing the highest risks due to wildfire smoke while winter months can bring air stagnation events that exacerbate pollution levels.

The city's geographic location places it in close proximity to wildfire–prone areas including grass-lands and forests in surrounding Spokane County and neighboring states. During wildfire season, smoke containing particulate matter (PM2.5), carbon monoxide, and other pollutants can drift into the city, reducing visibility and degrading air quality. Wildfire smoke impacts are far reaching, as strong winds can carry smoke from fires hundreds or even thousands of miles away, affecting Medical Lake even when no local fires are burning. This widespread nature of wildfire smoke highlights city vulnerabilities to regional and national air quality events.

Air quality in the community is also impacted by localized sources. Agricultural operations, which are prevalent in the surrounding region, can contribute dust and chemical emissions to the air, particularly during harvest seasons. City proximity to highways and industrial activity generates vehicle emissions and other pollutants that affect urban air quality. During winter months, temperature inversions can trap pollutants close to the ground, leading to poor air quality and increased health risks for residents, particularly vulnerable populations such as children, the elderly, and individuals with pre–existing respiratory or cardiovascular conditions.

Medical Lake's location downwind of regional air pollution sources and its susceptibility to seasonal variations in air quality make monitoring and mitigation efforts critical. Real–time air quality data, public advisories, and community preparedness are essential for managing the impacts of poor air quality on residents' health and well–being. Efforts to reduce local emissions, promote cleaner transportation options, and prepare for wildfire smoke events are key to improving and maintaining air quality.

Previous Occurrence(s)

Over recent decades, the community faced several significant wildfires. Among these, the 2023 Gray Fire stands out. The Gray Fire, which ignited on August 18, 2023, near Gray Road west of the city, spread rapidly eastward, driven by strong winds and dry conditions. By September 1, 2023, the fire had burned approximately 10,085 acres and was fully contained. The fire's swift progression led to Level 3 evacuation orders for the city and the unincorporated community of Four Lakes, displacing an estimated 5,000 residents. The blaze destroyed 259 structures, including many homes, and tragically resulted in one fatality. The fire also prompted temporary closures of Interstate 90 and State Route 902, significantly disrupting transportation in the region.

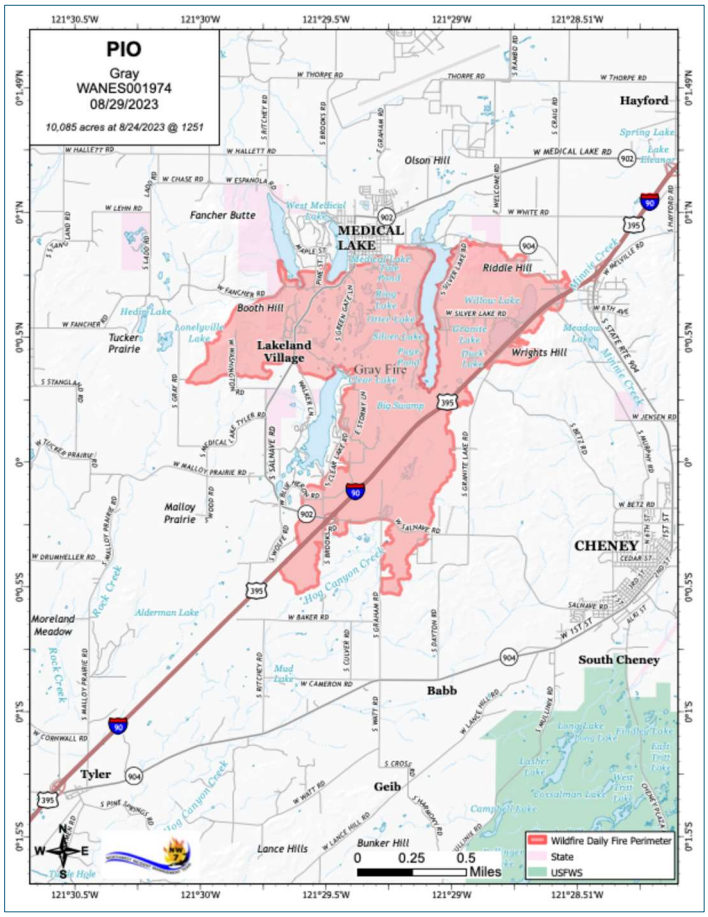


Figure 12. Gray Fire Boundary, 2023 (InciWeb)

Following the disaster, Spokane County declared a state of emergency, enabling the mobilization of state and federal resources to fight the fire and provide assistance to affected communities. The Gray Fire was alleged to have been ignited by sparks from a faulty light owned by Inland Power and Light Company. It ranks as one of the most destructive wildfires in Washington State history, underscoring the critical importance of fire prevention measures and emergency preparedness in minimizing the impact of such natural disasters.

Although large area wildfires do not occur often in the area, they can and do occur in the region—affecting air quality, transportation, and property. For example, several years before the Gray Fire, the Whitney Fire began on September 7, 2020, near Davenport, Washington (west of the city) and the greater Spokane area. High winds and extremely dry conditions drove rapid fire expansion, burning approximately 123,000 acres before it was fully contained. The Whitney Fire threatened local communities and produced substantial smoke, affecting air quality across much of eastern Washington, including Medical Lake and Spokane. The hazardous air quality caused by smoke from the Whitney Fire and other regional fires during the 2020 season led to health warnings and recommendations for residents to remain indoors. Schools and businesses in Spokane and surrounding areas faced closures due to poor visibility and high particulate matter, impacting outdoor activities and public health.

While the city does not generally have consistently poor air quality, wildfire smoke events and occasional winter inversions can lead to periods where air quality can become a concern for residents, particularly those with respiratory conditions or sensitivities.

Declaration(s)

During large wildfire events, emergency declarations are often issued at the state and federal levels. Two wildfire–related disaster declarations were declared in the past 10 years including:

Table 22. Medical Lake Wildfire–related Disaster Declarations

Disaster Number	Date	Disaster/Event	Type
FM–5479–WA	August 2023	Gray Wildfire	Fire
DR–4243–WA	Summer 2015	Washington Wildfires	Fire

In addition to the Gray Fire disaster declaration, Washington Governor Jay Inslee declared a state of emergency during the 2020 wildfire season due to widespread wildfire impacts across the state, including the local area. Federal disaster declarations may also be requested to access additional resources for firefighting and recovery.

Frequency

Wildfires are a recurring hazard in and around the city, particularly during the late summer and early fall months when the region experiences dry conditions, high temperatures, and occasional high winds. The semi–arid climate of eastern Washington creates an environment conducive to wildfires with fuel sources like dry grasses, brush, and forests readily igniting during fire season. While the city may not experience frequent direct wildfire incidents, its proximity to wildfire–prone areas, such as the surrounding West Plains and forested regions of Spokane County, results in regular wildfire risk exposure. Wildfire seasons in the region have become longer and more severe due to climate change, with significant fire events occurring almost annually. The area has faced increased wildfire activity in recent decades, leading to heightened risks for property damage and smoke exposure.

Air quality issues are closely tied to seasonal patterns, with the most significant concerns arising during the wildfire season in the summer and early fall. During this time, smoke from regional and distant wildfires frequently degrades air quality, creating unhealthy or hazardous conditions for residents. Medical Lake often experiences poor air quality due to smoke carried by prevailing

winds from wildfires across the Pacific Northwest or neighboring states even when fires are not burning locally. Such events occur multiple times during a typical fire season and can last for days or even weeks, depending on the severity and proximity of the fires.

In addition to wildfire smoke, the city experiences air quality challenges during the winter months due to air stagnation events caused by temperature inversions. These inversions trap pollutants close to the ground, leading to increased concentrations of particulate matter (PM2.5) and other pollutants from local sources such as vehicle emissions, residential heating, and agricultural activity. While less frequent than summer smoke events, winter inversions contribute to periodic declines in air quality, posing risks to vulnerable populations, including individuals with respiratory or cardiovascular conditions.

Wildfires and air quality concerns are recurring issues, occurring with regularity during specific seasons. Wildfire smoke is the most prominent contributor to poor air quality, particularly during late summer and early fall, while winter stagnation events exacerbate localized pollution levels. Seasonal patterns highlight the need for continuous monitoring and preparedness, as the frequency of wildfire and air quality events has increased in recent years due to development.

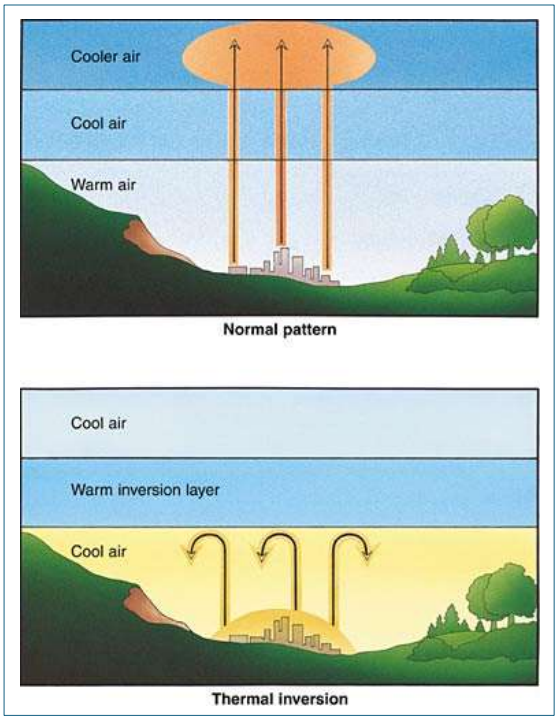


Figure 13. Thermal Inversion (Carleton)

Severity

Wildfires represent a severe city hazard due to the and cascading impacts. The semi–arid climate, wildfire–prone areas such as grasslands, forests, and highly vulnerable during the fire season. Wildfires vegetation, and extreme heat can spread rapidly, property, infrastructure, and public safety. While city boundaries are less frequent, the potential for remains a concern. The most severe wildfires can businesses, and critical facilities, as well as the related debris and erosion can damage the local climate change and regional potential for widespread destruction combined with city proximity to the West Plains—making the city fueled by high winds, dry posing significant threats to direct wildfire incidents within the encroachment from nearby fires lead to the destruction of homes, displacement of residents. Wildfire–environment, increasing the risk of subsequent flooding and soil degradation. The increasing frequency and intensity of wildfires, driven by climate change, exacerbate the severity of the threat. Extended fire seasons, more intense heat waves, and prolonged drought conditions create ideal conditions for large–scale wildfires.

Air quality concerns, primarily stemming from wildfire smoke and winter air stagnation events, pose serious health risks to residents. The severity of these events depends on the duration and concentration of pollutants, particularly fine particulate matter (PM2.5). Wildfire smoke significantly reduces air quality during the summer and early fall, often creating hazardous conditions for days or weeks at a time. Vulnerable populations, such as children, the elderly, and individuals with pre–existing respiratory or cardiovascular conditions, face increased risks of health

complications, including asthma exacerbations, bronchitis, heart attacks, and strokes. Prolonged exposure to wildfire smoke can also lead to chronic respiratory diseases and reduced lung function, further compounding the public health impacts.

The long–term severity of these hazards is further magnified by climate change, which increases the likelihood of prolonged droughts, heat waves, and more intense wildfires. Without proactive measures, these events are expected to grow in frequency and impact, posing ongoing challenges to community health, safety, and resilience.

Warning Time

The warning time for wildfires varies significantly based on the type of fire and its proximity to the community. Large, regional wildfires often provide a longer warning time, ranging from hours to days, depending on fire location, weather conditions, and the rate of spread. For instance, fires in nearby forests or grasslands are typically monitored by fire management agencies, allowing for evacuation orders and public warnings to be issued well in advance. However, fast–moving wildfires driven by high winds, such as those originating in grasslands or brush near the city, may develop rapidly, providing only minutes to hours of warning. In such cases, residents and emergency responders must act quickly to implement evacuation and fire suppression measures.

The effectiveness of wildfire warnings depends on real–time data from satellite imagery, fire mapping, and local observation networks. Alerts are disseminated through platforms such as emergency management systems, text alerts, social media, and traditional media channels. Despite advancements in detection and communication technologies, sudden changes in weather conditions, such as wind shifts, can reduce warning time.

The warning time for air quality issues in the community also varies based on the source of pollution. During wildfire smoke events, air quality warnings are often issued hours to days in advance as smoke plumes from nearby or regional fires are tracked by meteorological and air quality monitoring agencies. These agencies use tools such as the Air Quality Index (AQI) and satellite data to predict when and where smoke will impact air quality. However, the intensity and duration of smoke events can be difficult to forecast precisely, particularly if new fires ignite or existing fires escalate unexpectedly.

For winter air stagnation events, warning times are typically longer, often ranging from days to a week, as these events are driven by predictable atmospheric conditions such as temperature inversions. Meteorologists can anticipate inversions and issue air stagnation advisories to warn residents of expected increases in pollutant concentrations. These warnings allow time for individuals to limit outdoor activities, prepare air purifiers, and avoid activities that worsen indoor air pollution, such as burning wood or using non–ventilated heaters.

While the systems in place for wildfire and air quality warnings are generally effective, several challenges remain. The rapid onset of fast–moving wildfires may outpace warning systems, especially in areas close to ignition points. Similarly, shifting wind patterns during wildfire smoke events can cause sudden changes in air quality, reducing the reliability of longer–term predictions. Vulnerable populations, such as individuals with respiratory conditions, require particular attention during these events, as even short delays in issuing warnings can have severe health consequences.

Secondary Hazards

Wildfires and air quality issues trigger a wide range of secondary hazards that compound their primary impacts, creating cascading risks for public safety, infrastructure, and the environment. These hazards often amplify the severity and duration of the initial event, making mitigation and recovery efforts more challenging. Below is a comprehensive analysis of the secondary hazards related to wildfires and air quality.

Debris and Falling Vegetation. Wildfires often result in weakened or burned trees and vegetation, increasing the risk of falling branches, trees, or debris. This secondary hazard poses threats to public safety, damages structures and vehicles, and blocks transportation routes, hampering evacuation and emergency response efforts. The potential for falling debris is particularly high in areas near Medical Lake's wildland–urban interface, especially after fires have scorched large areas of vegetation.

Post–Wildfire Flooding and Mudslides. One of the most severe secondary hazards of wildfires is the heightened risk of flooding and mudslides following heavy rain. Fires remove vegetation that stabilizes soil, leaving the ground vulnerable to erosion. Burned soil can also become hydrophobic, repelling water instead of absorbing it, which leads to rapid runoff during storms. These events pose significant risks to city infrastructure, roads, and residential areas located in low–lying or sloped regions, especially in areas with High or Moderate wildfire risk.

Long–Term Air Quality Degradation. Wildfire smoke impacts air quality during the fire and leaves lingering pollutants in the air for days or weeks. Ash and particulate matter (PM2.5) may settle in urban areas, contributing to localized air quality degradation even after fires are extinguished. This prolongs health risks for residents, particularly for those with pre–existing respiratory or cardiovascular conditions, children, and the elderly.

Strain on Critical Infrastructure. Both wildfires and air quality events can place significant stress on critical infrastructure. Power lines are often damaged or destroyed in wildfires, causing prolonged outages that affect heating, cooling, communication, and emergency response systems. Poor air quality can also impact operations at critical facilities, such as hospitals, by increasing the number of patients seeking medical care for respiratory or cardiovascular issues, potentially overwhelming local healthcare systems.

Displacement and Housing Challenges. Wildfires frequently destroy homes, leading to the displacement of residents. Even if properties are not directly affected by flames, mandatory evacuation orders disrupt communities, leaving some residents without shelter for extended periods of time. Secondary hazards such as smoke infiltration or contamination can make homes uninhabitable, exacerbating the housing crisis and increasing demand for temporary shelters.

Water Contamination. Fires generate ash, debris, and chemicals that can wash into water bodies during rainstorms, contaminating drinking water supplies and aquatic ecosystems. This could impact surface water quality in local lakes and reservoirs, as well as groundwater sources. Contaminated water negatively affects residents, posing risks to agriculture and wildlife.

Economic Disruption. Secondary hazards from wildfires and air quality have prolonged economic impacts. Businesses may experience extended closures due to damaged infrastructure, evacuation orders, or poor air quality that discourages customers and employees from traveling. The agricultural sector is particularly vulnerable, as secondary hazards like soil erosion and water contamination can lead to reduced crop yields and increased operational costs.

Public Health Risks. In addition to immediate respiratory issues caused by wildfire smoke, secondary health risks emerge from prolonged exposure to poor air quality. These include chronic respiratory diseases, stress–related illnesses due to displacement, and increased vulnerability to heat–related illnesses if power outages affect cooling systems. The psychological toll on residents, particularly those who have experienced property loss or prolonged evacuation, is another significant secondary hazard.

Wildfire–Driven Climate Feedback Loops. Wildfires release large quantities of carbon dioxide (CO_2) and methane into the atmosphere, contributing to climate change. This creates a feedback loop, as climate change increases the frequency and intensity of wildfires, further exacerbating air quality and environmental hazards. As part of the broader West Plains region, Medical Lake is increasingly vulnerable to these climate–driven risks.

Table 23: Summary of Secondary Hazards

Hazard	Key Impacts
Debris and Vegetation	Safety risks, property damage, blocked transportation routes
Flooding and Mudslides	Erosion, infrastructure damage, heightened flood risks in burn scars
Air Quality Degradation	Lingering health risks from particulate matter and ash
Critical Infrastructure	Power outages, overwhelmed healthcare facilities, disrupted emergency response
Displacement	Housing shortages, increased demand for shelters
Water Contamination	Polluted drinking water, harm to aquatic ecosystems
Economic Disruption	Business closures, agricultural losses, increased recovery costs
Public Health Risks	Chronic respiratory illnesses, psychological stress, vulnerability to heat–related illnesses
Climate Feedback Loops	Increased greenhouse gas emissions, exacerbated climate change impacts

Climate Change Impacts

Climate change is a significant driver of increased wildfire activity and deteriorating air quality. Rising global temperatures, prolonged droughts, and changing precipitation patterns have created conditions that exacerbate the frequency, intensity, and duration of wildfires. These changes also amplify secondary impacts, such as prolonged poor air quality and increased risks to public health, infrastructure, and the environment.

Intensification of Wildfires. Climate change has extended wildfire seasons, making them longer and more severe. Warmer temperatures dry out vegetation, creating highly flammable fuel that ignites easily. The city's semi–arid climate, already prone to seasonal dryness, faces amplified risks as heat waves become more frequent and prolonged. Higher temperatures also lead to faster snowmelt, reducing the water available to sustain vegetation during the summer months, further increasing the risk of fires. More frequent and intense wind events, another effect of climate change, contribute to the rapid spread of wildfires in the region.

Degradation of Air Quality. Wildfires release massive amounts of pollutants, including particulate matter (PM2.5), carbon monoxide, nitrogen oxides, and volatile organic compounds. As climate change intensifies wildfire activity, the duration and severity of poor air quality events in the area are increasing. During fire seasons, smoke from regional and distant wildfires can blanket the area for days or weeks, creating hazardous conditions for residents. The increased frequency of wildfires contributes to a vicious cycle of air pollution, as more greenhouse gases released into the atmosphere accelerate climate change, leading to more wildfires and extended smoke exposure.

Secondary Impacts and Feedback Loops. Climate change exacerbates wildfires and air quality issues, creating cascading effects. Burned areas are prone to soil erosion, mudslides, and flooding, which can damage infrastructure and water quality. Wildfires release significant amounts of CO_2 and methane, contributing to a climate feedback loop. These emissions increase global temperatures, further worsening wildfire conditions and making future fire seasons even more severe.

Economic and Environmental Consequences. The economic costs of climate change–driven wildfires and air quality degradation in Medical Lake are substantial. Wildfires destroy property, disrupt businesses, and strain municipal budgets for firefighting and recovery efforts. Poor air quality leads to increased healthcare costs and reduced workforce productivity as residents experience health problems. Damage to ecosystems, including loss of vegetation and wildlife habitats, has long–term consequences for biodiversity and environmental stability.

Climate change is a powerful force shaping the severity and frequency of wildfires and air quality issues. The community must take proactive steps to adapt to the changing environment and mitigate further damage as these hazards grow more intense. The city can build resilience, protect its residents, and ensure a sustainable future by addressing the causes and consequences of climate change.

Vulnerability

Medical Lake's vulnerability to wildfires is determined by a range of factors including the proximity of residential areas to wildlands, the preparedness of local infrastructure, and the capacity of fire response services. The growing population in areas adjacent to forests and grasslands increases the potential impact of wildfires.

Impact on Life, Health, and Safety. Wildfires pose direct threats to life and safety, particularly for residents living in high–risk zones near wildlands. Smoke from fires can also lead to significant health impacts, including respiratory issues. Evacuations are often necessary in the event of a wildfire and residents with mobility challenges are especially vulnerable during these emergencies.

Impact on Property. Homes and businesses located near wildlands are at high risk of destruction from wildfires. Properties with wooden structures, inadequate defensible space, and poor fireproofing measures are most vulnerable. Wildfires can cause millions of dollars in damage to private properties and public buildings.

Impact on Critical Facilities. Critical facilities such as hospitals, fire stations, and water treatment plants can be severely affected by wildfires. If these facilities are damaged or forced to shut down, it can hinder emergency response efforts and recovery operations. Ensuring these facilities are fire–hardened and have emergency power supplies is crucial for community resilience.

Impact on Economy. Wildfires can have a substantial economic impact on the local community, affecting tourism, agriculture, and small businesses. Firefighting, emergency response,

evacuation, and recovery costs can strain local government budgets. Destroyed infrastructure and loss of property can disrupt economic activity for extended periods.

Impact on Environment. Wildfires significantly affect the environment by destroying habitats, contributing to soil erosion, and impacting water quality. Wildlife can be displaced or killed, and forested areas can take decades to recover. Wildfires release large amounts of carbon dioxide into the atmosphere, contributing further to climate change.

Future Trends in Development. As the city's population grows and development expands into previously undeveloped areas, the risk of wildfires will continue to increase. More homes and businesses in the wildland–urban interface increase the potential for future wildfire damage. Future development plans must incorporate fire–resistant building codes and land use planning to mitigate wildfire risks.

Issues

Urban Expansion into High–Risk Areas. As development continues into the wildland–urban interface (WUI), there is an increased exposure to wildfire risk. New developments in these zones are often more susceptible due to proximity to forests and grasslands.

Lack of Fire–Resistant Infrastructure. Many homes and buildings may not meet modern fire–resistant building codes or have adequate defensible space around them, increasing the likelihood of property damage during a wildfire.

Limited Emergency Response Resources. While local fire departments are equipped to handle

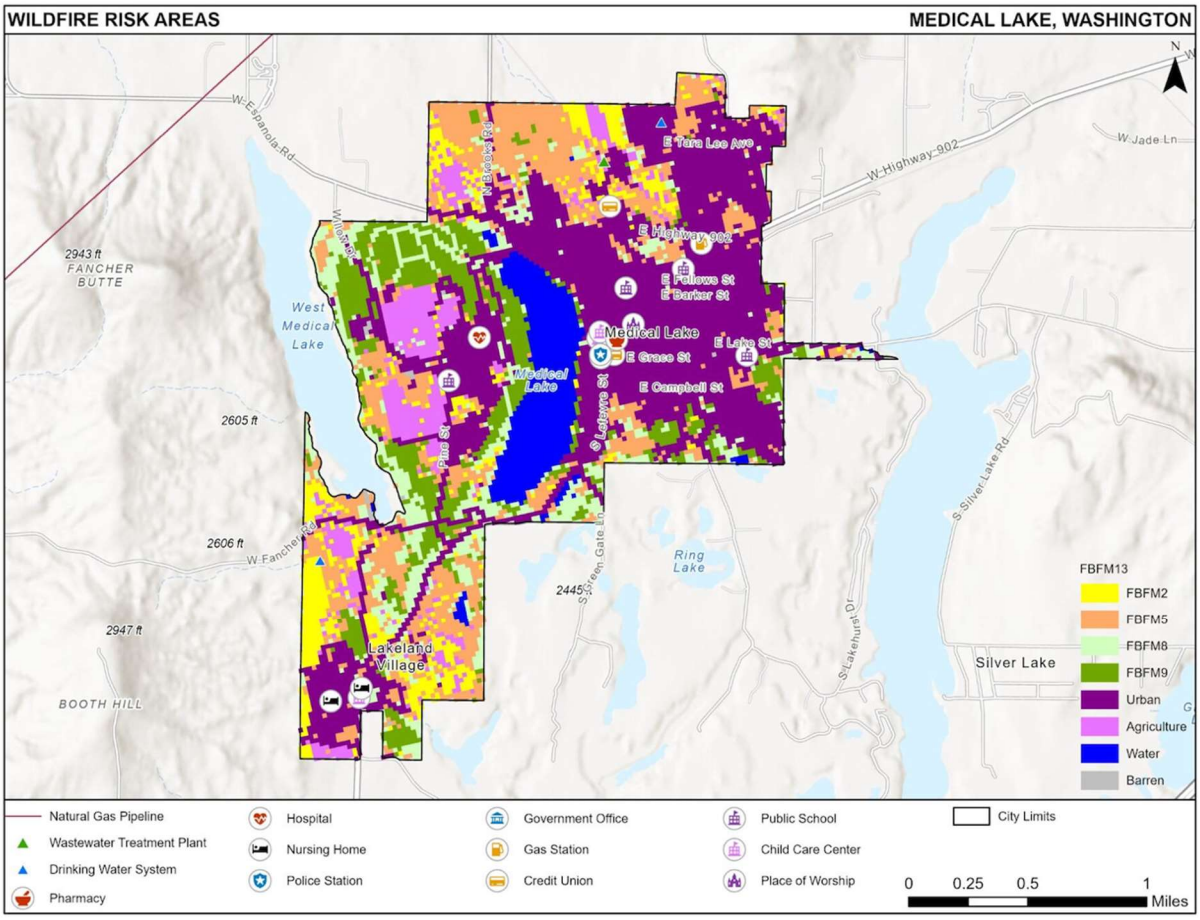


Figure 14. Wildfire Risk Areas

smaller fires, large–scale wildfire events could overwhelm resources. Mutual aid from state and federal agencies is often necessary during major events.

Public Awareness and Preparedness. Public understanding of wildfire risks and preparedness strategies is a significant issue. Education campaigns are needed to ensure residents know evacuation routes, how to create defensible space, and how to reduce fire risks on their properties.

Consequence Analysis

The map of Wildfire Risk areas in Figure 14 (above) illustrates city wildfire risk areas and the locations of critical infrastructure, such as hospitals, schools, nursing homes, and natural gas pipelines. By overlaying color–coded wildfire risk zones with key facilities, the map reveals the potential consequences of wildfire events for public safety, infrastructure, and the local economy. High–risk wildfire areas, particularly those near essential services and populated neighborhoods, highlight city vulnerabilities to fast–spreading fires.

Key facilities such as the hospital, nursing home, and public schools are located within or near Moderate–to–High wildfire risk zones, increasing the potential for service disruptions and safety concerns during a wildfire. Natural gas pipelines and drinking water systems also intersect wildfire–prone areas, raising the risk of cascading hazards such as explosions, leaks, or water contamination. By presenting this spatial analysis, the map provides valuable insights into city wildfire

vulnerabilities, emphasizing the need for proactive planning and resource allocation to minimize the impacts of future wildfire events.

Impact on Critical Facilities. Many critical facilities, such as the hospital, nursing home, and public schools, are located in proximity to wildfire-prone areas (zones classified under FBFM2, FBFM5, FBFM8, and other high-risk fuel models). The hospital and nursing home, essential for community health and emergency services, could face significant risks from direct fire damage or smoke infiltration. Damage or disruption to these facilities would impair the city's ability to provide care for vulnerable populations during and after a wildfire. Schools and childcare centers may require temporary closures, disrupting education and placing additional stress on families.

Risk to Public Utilities and Infrastructure. The presence of natural gas pipelines and drinking water systems within or near wildfire risk zones increases the likelihood of cascading hazards. Wildfires can damage gas pipelines, leading to potential explosions or leaks that exacerbate fire impacts. Similarly, drinking water systems could become contaminated with ash and debris during post-fire runoff, leading to health risks and increased costs for water treatment. Wastewater treatment plants are also susceptible to damage, which could disrupt sanitation services and create environmental contamination.

Threats to Residential Areas and Displacement. Residential areas, particularly those near the urban-wildland interface, are located within or adjacent to wildfire risk zones. These areas face the dual threat of direct fire damage to homes and the need for evacuations. Displacement of residents during a wildfire event could lead to temporary shelter needs and long-term housing challenges. For families, this displacement can result in economic strain and psychological stress, especially if homes are lost or rendered uninhabitable.

Transportation and Accessibility Issues. Key transportation routes, including major roads like Highway 902, run through or alongside wildfire risk areas. If these roads are compromised by fire or debris, it could impede evacuation efforts and hinder the delivery of emergency response services. Blocked roads may isolate parts of the city, making it difficult for residents to reach safety or for first responders to access fire-affected areas.

Economic Impacts. Agricultural zones and urban areas indicated on the map are susceptible to fire-related damage. For the agricultural sector, fires can destroy crops, livestock, and equipment, resulting in significant economic losses. Urban businesses near high-risk zones may face closures due to fire damage, smoke-related health advisories, or disrupted transportation networks. Recovery costs for rebuilding damaged infrastructure and restoring services can strain city budgets.

Environmental Consequences. Wildfire-prone areas overlap with vegetation-rich zones, which, when burned, could lead to environmental degradation. The loss of vegetation increases the risk of soil erosion, particularly in hilly areas such as those near West Medical Lake and Lakeland Village. Post-fire flooding or mudslides could exacerbate the damage, affecting residential and agricultural lands. The destruction of wildlife habitats and reduced biodiversity are also long-term consequences for the local ecosystem.

Public Health Risks. The map shows that key facilities, including schools, nursing homes, and medical centers, are at risk of being affected by wildfire smoke, which can lead to significant public health issues. Prolonged exposure to smoke can exacerbate respiratory and cardiovascular conditions, especially for children, the elderly, and individuals with pre-existing health conditions. Mental health challenges stemming from evacuations, property loss, and prolonged disruptions could affect the well-being of residents.

This map highlights the significant consequences wildfires could have on the city's critical infrastructure, public health, and economy. The proximity of key facilities to high-risk zones underscores the importance of proactive mitigation measures and emergency preparedness to protect the community from wildfire-related hazards.

Results

Wildfires and air quality issues pose significant challenges, impacting public safety, infrastructure, the environment, and community well-being. Direct wildfire consequences such as property destruction, displacement, and loss of critical facilities, are compounded by long-term air quality degradation, which poses serious health risks to residents. These combined hazards create a ripple effect of economic, environmental, and social consequences.

Wildfires have the potential to destroy homes, businesses, and critical infrastructure, including hospitals, schools, and utility systems. The destruction of vegetation exacerbates soil erosion and increases the risk of post-fire flooding and mudslides, leading to further environmental and infrastructure damage. Displaced residents often face long-term housing challenges, while businesses experience interruptions that strain the local economy. Agricultural losses due to burned crops and damaged equipment further contribute to financial hardships for the community.

Air quality issues, primarily driven by wildfire smoke and seasonal air stagnation events, present persistent health risks. Prolonged exposure to fine particulate matter (PM2.5), carbon monoxide, and other pollutants exacerbates respiratory and cardiovascular conditions, particularly among vulnerable populations such as children, the elderly, and individuals with pre-existing health conditions. Poor air quality also disrupts outdoor activities, reduces workforce productivity, and strains healthcare systems, further compounding its impact on the community.

The environmental consequences of wildfires and air quality degradation are equally severe. Wildfires release large amounts of greenhouse gases, contributing to climate change and creating a feedback loop that intensifies future fire seasons. Wildlife habitats are destroyed, and water sources are often contaminated by ash and debris, reducing the availability of clean drinking water and harming aquatic ecosystems. The cumulative impact of these environmental changes can take years, if not decades, to recover from.

The combined effects of city wildfire and air quality challenges require a comprehensive approach to prevention, mitigation, and recovery. By investing in resilient infrastructure, enhancing wildfire response systems, improving air quality monitoring, and educating residents on emergency preparedness, the city can reduce the long-term consequences of these hazards and protect the health and safety of its community.

By incorporating wildfire risks into future land use and development plans, Medical Lake can promote sustainable development and prevent further expansion into high-risk areas and ensure that new developments are built with wildfire risks in mind.

Hazard: Drought

Drought is a natural phenomenon that affects surface water (rivers, lakes, and reservoirs), groundwater reserves, soil moisture, and ecosystem health. They can develop slowly over weeks, months, or even years and are often exacerbated by high temperatures, increased evaporation rates, and reduced rainfall or snowfall. Droughts can have severe consequences, including reduced agricultural yields, water scarcity for communities, degradation of ecosystems, and increased wildfire risk due to dry vegetation. Climate change is intensifying drought patterns in many regions by altering precipitation cycles, increasing temperatures, and lengthening periods of dryness. Addressing drought requires proactive water management strategies, conservation efforts, and sustainable land-use practices to mitigate its impacts on people and the environment.

Profile

Drought is a prolonged period of insufficient precipitation that leads to water shortages, impacting ecosystems, agriculture, water supplies, and human activities. Unlike other natural disasters, droughts often develop gradually, making their onset less noticeable, but the effects are widespread and long-lasting. Drought intensity, duration, and geographic extent can vary significantly, sometimes persisting for weeks, months, or even years, depending on environmental and climatic conditions. Drought is not solely defined by a lack of rainfall but also by increased evaporation rates, reduced snowmelt, and human water usage, all of which exacerbate water shortages.

Drought can be categorized into several types based on its specific impacts. Meteorological drought is defined by prolonged reductions in precipitation compared to historical norms, often marking the first stage of drought development.

- *Hydrological drought* occurs when these reductions lead to declining water levels in rivers, lakes, reservoirs, and aquifers, directly affecting water supplies.
- *Agricultural drought* results from insufficient soil moisture, disrupting crop growth and livestock grazing, leading to food shortages and economic losses.
- *Socioeconomic drought* emerges when water shortages disrupt human activities, leading to increased food prices, reduced industrial productivity, and widespread social and economic impacts.

Drought occurs when there is a prolonged imbalance between water supply, such as precipitation, and water demand, driven by evaporation, human use, and natural processes. Scientifically, drought arises from a combination of atmospheric, environmental, and human factors, often magnified by climate change. A primary cause is a lack of precipitation, which can result from atmospheric circulation patterns. High-pressure systems suppress the upward movement of moist air necessary for cloud formation and rainfall, leading to extended dry periods. Climate variability, such as El Niño and La Niña, disrupts global weather patterns, reducing rainfall in some regions and causing drought. Shifts in the jet stream or persistent high-pressure systems can steer rain-bearing storms away from areas that depend on consistent precipitation.

Increased evaporation also plays a critical role in drought development. Rising global temperatures, driven by climate change, enhance evaporation rates from soil, vegetation, and water bodies. This depletes water resources faster, particularly during heatwaves and prolonged dry periods. In regions reliant on snowmelt for water, higher temperatures reduce snowpack accumulation and cause earlier and faster melting, creating a mismatch between water supply timing and demand. Wind patterns further exacerbate drought by transporting moisture away from soil and plants, accelerating the drying process.

Human activities significantly contribute to drought conditions. Deforestation reduces moisture recycling as trees release water vapor into the atmosphere through transpiration. Without forests, rainfall decreases, and dry spells become more prolonged. Poor land management, including overgrazing and excessive farming, degrades soil, reducing its ability to retain moisture. Water mismanagement, such as over-extraction of groundwater and inefficient irrigation, depletes water reserves faster than they can be replenished, intensifying water scarcity during drought.

Climate change acts as a magnifying force for drought. By increasing global temperatures and altering precipitation patterns, climate change intensifies natural drought cycles. Warmer air holds more moisture, leading to heavier rainfall in some areas while leaving others drier for longer periods. Prolonged heatwaves caused by climate change further exacerbate drought by drying out the soil and increasing evaporation. Geographical and topographical factors also contribute to drought, with arid and semi-arid regions naturally more prone due to limited rainfall and high evaporation rates. Areas in the rain shadow of mountain ranges or regions with trapped heat due to topography face even greater challenges.

Drought impacts are extensive, affecting the environment, agriculture, the economy, and public health. Environmentally, drought leads to loss of biodiversity as water-dependent plants and animals are unable to survive in arid conditions. It increases wildfire risk by drying vegetation and creates soil degradation and erosion, making the land less productive. Agricultural impacts include crop failure, reduced livestock productivity, and food shortages, which directly affect farmer incomes and lead to economic instability. On a broader scale, drought causes economic losses due to reduced agricultural output, strained water supply systems, and disruptions to industrial processes reliant on water. Public health is also at risk, as water scarcity affects drinking water availability and quality, while food shortages result in malnutrition. Prolonged droughts may force migration and displacement, particularly in vulnerable regions where water and food security are already fragile.

Historically, severe droughts have caused catastrophic consequences. The Dust Bowl of the 1930s in the United States, for example, combined prolonged drought with poor land management practices, resulting in widespread agricultural failure, economic hardship, and mass migration. More recently, the California drought from 2011 to 2017 strained water supplies, disrupted agriculture, and contributed to severe wildfires, highlighting the increasing severity of modern droughts due to climate change. In East Africa, the 2010–2011 drought led to famine, food shortages, and displacement, affecting millions of people across several countries and emphasizing the human cost of prolonged drought events.

Extent & Location

Droughts can affect the entire region surrounding Medical Lake, including agricultural lands, natural water bodies, and residential areas. The city relies on groundwater and surface water sources, and extended drought conditions can lead to water restrictions and rationing. Droughts can also have far-reaching effects on neighboring communities, particularly in Spokane County, as they share regional water resources.

The U.S. Drought Monitor map below indicates that Spokane County (where Medical Lake is located) is and will continue experiencing widespread drought conditions over the next decade. The county is categorized into two drought severity levels: Moderate Drought (D1) and Severe Drought (D2). These classifications provide a clear picture of the extent and intensity of water scarcity affecting the region.

Situated within the western portion of Spokane County, Medical Lake falls under the Severe Drought (D2) category. This classification indicates significant water stress, with potential impacts such as reduced soil moisture, limited surface water availability, and challenges for agriculture, ecosystems, and local water supply systems. Severe drought conditions often result in heightened fire risk due to dry vegetation, a critical concern given its proximity to wildfire-prone areas. D2 drought impacts could include restrictions on water usage for irrigation, declines in crop yields, and challenges for local industries that rely on consistent water supplies.

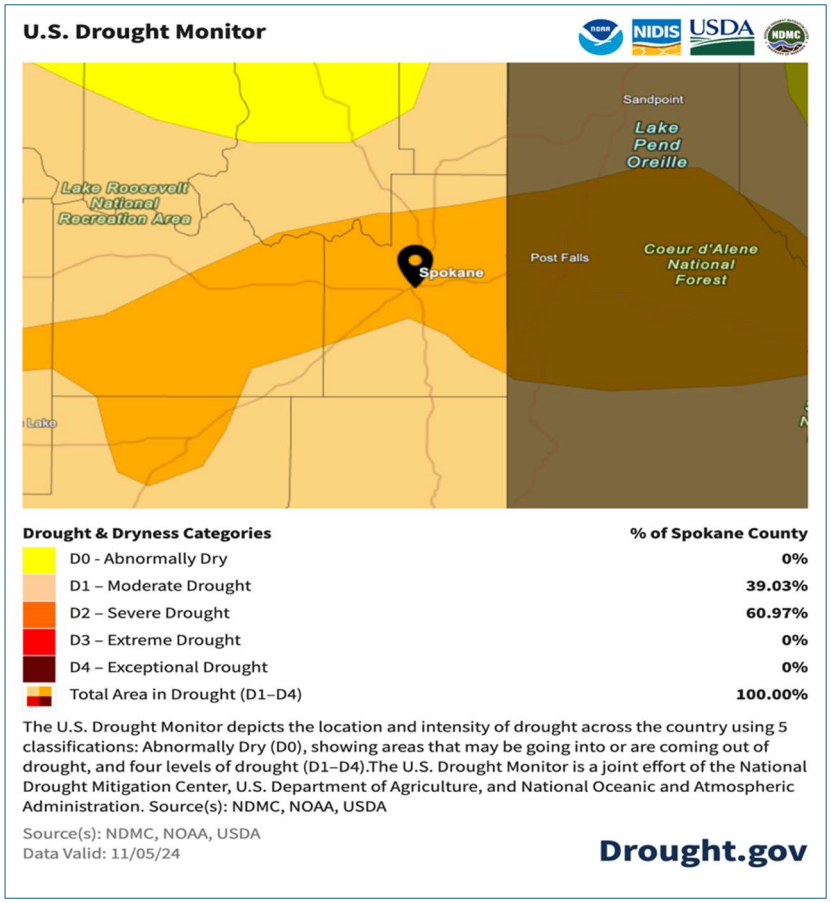


Figure 15. City of Medical Drought Monitor Map

The map also shows that 39.03 percent of the area will maintain Moderate Drought (D1), characterized by early-stage drought impacts such as reduced river flow and declining soil moisture. However, the majority of the area lies in the more severe D2 category, accounting for 60.97 percent of the total area. There are no areas classified as Abnormally Dry (D0), Extreme Drought (D3), or Exceptional Drought (D4), which suggests that while drought conditions will remain serious, they may not escalate to the most critical levels.

Previous Occurrence(s)

Droughts are not uncommon in Eastern Washington. Significant drought events have occurred throughout the state in recent decades. For example, Washington experienced severe drought conditions in 2015 when the state declared a drought emergency. Medical Lake, reliant on local reservoirs and groundwater sources, faced challenges maintaining adequate water supplies during that period. More recently, drought conditions have persisted during the summer months due to a combination of low snowpack and reduced rainfall.

Table 24. Previous Drought Occurrences in the Medical Lake area

Time Period	Drought Description
2024	1. Statewide drought emergency declared April 16, 2024, with limited exceptions for Seattle, Everett, and Tacoma metro areas, due to low snowpack and forecasts for a dry and warm spring and summer. 2. Low snowpack levels, early snow melt, below–average precipitation, and elevated temperatures. 3. Declaration enabled the allocation of up to $4.5 million in drought response grants to assist affected communities and sectors.
2023	1. Statewide drought advisory in June 2023 and a drought emergency for 12 watersheds by July 2023. 2. Emergency drought declarations issued for 12 Washington State watersheds including Nooksack (WRIA 1), Lower Skagit (WRIA 3), Upper Skagit (WRIA 4), Dungeness–Elwha (WRIA 18), Lyre–Hoko (WRIA 19), Sol Duc–Hoh (WRIA 20), Walla Walla (WRIA 32), Lower Yakima (WRIA 37), Naches (WRIA 38), Upper Yakima (WRIA 39), Methow (WRIA 48), and Okanogan (WRIA 49). 3. Lower Spokane Watershed (WRIA 54) was not specifically named in state watershed declarations. 4. Declarations issued in response to early snowmelt, a lack of spring rain, and low stream flows, which significantly impacted water availability in these regions. 5. Increased reliance on aquifer–sourced water supplies in Medical Lake.
2021	1. Recent drought, extreme heatwave that impacted eastern Washington, caused water shortages and stressed agricultural systems. 2. State implemented measures to support water conservation and assist affected agricultural operations. 3. Groundwater pumping increased to meet demand, stressing aquifers supplying city wells. 4. Residents encouraged to conserve water for non–essential uses. 5. Medical Lake water levels drop, impacting fish populations as warmer, shallow water created unsuitable conditions for species that normally thrive in cooler, well–oxygenated water. 6. Diminished appeal of recreational activities like swimming, boating, and fishing, impacting local businesses and tourism. 7. Extremely dry conditions and heightened wildfire risk led to poor air quality, smoke from regional fires prompted health advisories.
2019	1. Unusually dry conditions significantly impacting agriculture, water resources, and ecosystems throughout the region. 2. Governor Jay Inslee issued an emergency drought declaration on May 20, 2019, in 24 watersheds statewide. 3. Below–average snowpack and spring rainfall led to decreased river and stream flows. 4. Medical Lake affected by overall water shortage, although not listed in drought declaration area. 5. Pressure on municipal water supplies, prompting local officials to encourage residents to adopt water conservation measures to safeguard essential resources. 6. Dry conditions heightened wildfire risk in surrounding areas, with the city taking proactive steps in fire preparedness to mitigate potential hazards.

Time Period	Drought Description
2015	1. Washington's "snow drought." 2. WSDA Estimate: gross revenue losses between $633-773 million (WSDA). 3. Record–low snowpack from warm winter temperatures. 4. Reduced water availability during summer, affecting agriculture, fisheries, and power generation. 5. Lower lake levels and warmer water temperatures impacted local trout population; trout rely on cool, well–oxygenated water. 6. Contributed to one of the worst wildfire seasons in state history, fires burning extensively across central/eastern Washington.
2004/2005	1. Widespread water shortages and challenges for agriculture, fisheries, and municipal water systems. 2. Statewide drought emergency declared on March 10, 2005. 3. State Legislature approved $12 million supplemental budget request providing funds for buying water, improving wells, implementing other emergency water supply projects, and hiring temporary state staff to respond to the drought emergency. 4. Exceptionally low snowpack levels (26% of normal average) with high temperatures and minimal rainfall, severely reduced water availability. 5. Strained local water resources in Medical Lake, leading to mandatory water conservation measures to ensure water supply. 6. Heightened wildfire risks from dry vegetation in surrounding area; local infrastructure tested with dwindling water supply. 7. Emphasized vulnerability of small communities to prolonged dry conditions, prompting renewed focus on water conservation.
2001	1. Widespread water shortages and economic impacts, particularly affecting agriculture, hydropower production, and municipal water supplies. 2. State rainfall/snowpack totals only about 60% of normal. 3. Statewide drought emergency declared March 14, 2001. 4. Result of warm weather melting snowpack into streams a month earlier than normal. 5. 90,000 acres of agricultural land taken out of production (orchards & sugar beets). 6. City experienced dwindling water supplies for residents, business, and municipal operations. 7. Led to strict water use regulations and conservation efforts within the city to ensure availability of essential water services. 8. Increased wildfire threats, prompting preparedness measures and community–wide conservation efforts.
1992-1994	1. Multi–year drought severely impacted eastern Washington. 2. Department of Ecology declared drought emergency March 14, 1992, to respond to severe water shortages and impacts on agriculture, fisheries, and municipal water supplies. 3. Prompted revised water rights legislation. 4. Establishment of Drought Emergency Response Programs created more robust drought response framework for severe droughts.

Time Period	Drought Description
	5. Increased coordination between state agencies, paving the way for the development of the Washington State Drought Contingency Plan, formalized how state responds to future droughts. 6. Drought–driven fires impacted rural and forested areas, causing property damage, threatening natural habitats, and creating challenges for firefighting efforts. 7. Highlighted increased competition for limited water resources among agriculture, municipalities, and environmental needs.
1977	1. Water shortages affected nearly every sector, including agriculture, industry, and municipal water supplies. 2. Historically low snowpack and minimal rainfall left rivers and reservoirs at critical levels, prompting the state to declare a drought emergency and implement stringent water use restrictions. 3. Strain on city water resources, with local officials urging residents to conserve water to ensure the availability. 4. Reduced water levels affected recreational activities on Medical Lake, an important aspect of community life and local tourism. 5. Increased wildfire risk in and around the city, spurring increased fire preparedness and awareness efforts. 6. Public and private drinking–water systems reported water supply problems, requiring solutions for new water sources. 7. Federal Power Commission ordered public utilities on the Columbia River to release water to help fish survive, prompting complex water conservation vs public use concerns. 8. Agriculture experienced drought–related losses exceeding $400 million.
4/1934-3/1937	1. Prolonged drought (Dust Bowl era) created severe hardships, particularly in agriculture and municipal water supplies in Washington State and other areas of western US. 2. Minimal rainfall, drastically low river flows, and depleted groundwater resources. 3. Strained local water supplies in Medical Lake, challenging the city to provide for residents, prompting early water conservation efforts when such practices were not yet widespread. 4. The area surrounding Medical Lake, reliant on agriculture, faced reduced crop yields, threatening local economies, exacerbating impacts on already struggling families. 5. Dry conditions heightened wildfire risks, requiring increased vigilance in fire prevention and response.
1928-1932	1. Part of a larger drought period affecting the western US. 2. Precursor to Dust Bowl conditions of 1930s with significant agricultural losses. 3. Low rainfall and reduced snowpack led to declining water levels in lakes and rivers, impacting local agriculture and water supplies. 4. Dryland farmers in local area faced reduced crop yields and soil degradation due to lack of precipitation. 5. Drought likely caused lower lake levels in the city, affecting fish habitats and reducing recreational opportunities, which were important for the community economy.

Time Period	Drought Description
	6. Early instance of the community confronting water scarcity effects, highlighting the need for sustainable water practices. 7. Fostered sense of resilience in rural communities, later valuable during subsequent droughts. 8. Large–scale irrigation projects and water conservation efforts became more prevalent after Dust Bowl years; challenges faced in this drought underscored vulnerability of regional supply.
6-8/1922	1. Prolonged dry conditions, limited water resources, severely affecting agricultural production, municipal water supplies, and natural landscape. 2. Groundwater and water table decline; impacted wells and local water supplies; particularly concerning for small towns and farms reliant on shallow wells for drinking water and irrigation. 3. Water scarcity led to early conservation efforts and water use restrictions to prioritize essential needs. 4. Significant crop losses from insufficient irrigation, impacting local food supplies and economy. 5. Heightened wildfire risks, increased focus on fire prevention. 6. Highlighted fragility of water resources, emphasizing need for proactive water management.

Declaration(s)

State or local drought declarations may be issued when water supplies reach critically low levels. The Governor of Washington declared a drought emergency specifically including the Medical Lake area during the 2015 drought, while other declarations had secondary effects on the area. Such declarations enable local governments to implement water conservation measures, restrict water usage, and access emergency funding for drought mitigation efforts.

Table 25. Drought Declarations Affecting Medical Lake, Washington

Issue Date	End Date	Issuing Authority	Details
4/16/2024	12/31/2024	Washington State Department of Ecology	Statewide drought emergency declared with limited exceptions for Seattle, Everett, and Tacoma metro areas, due to low snowpack and forecasts for a dry/warm spring and summer.
7/24/2023	12/31/2023	Washington State Department of Ecology	Drought emergency declared in a 12 counties of Washington state due to early snowmelt, a lack of spring rain, and low–flowing streams.
7/14/2021	12/31/2021	Washington State Department of Ecology	Historically dry spring and summer followed by record–breaking heat wave, prompted the Department of Ecology to issue a drought emergency for most of the state, excluding Seattle, Tacoma, and Everett.

Issue Date	End Date	Issuing Authority	Details
5/15/2015	12/31/2015	Washington State Department of Ecology	Known as the "snowpack drought," this event led to a statewide drought declaration due to record–low snowpack levels and subsequent water shortages.
3/10/2005	12/31/2005	Washington State Department of Ecology	Declaration addressed low snowpack and reduced stream flows, impacting agriculture, fisheries, and municipal water supplies.
3/14/2001	12/31/2001	Washington State Department of Ecology	Declaration made in response to low snowpack and anticipated water shortages affecting multiple sectors including agriculture and municipal water supplies.
7/10/1992	9/30/1994	U.S. Department of Agriculture (USDA)	USDA issued federal disaster declaration in response to the drought, allowing affected counties in Washington access to federal aid including emergency loans and disaster relief programs aimed at mitigating agricultural losses and supporting water resource management efforts.
6/15/1992	9/30/1994	Washington State Department of Ecology	Prolonged drought period led to state emergency declaration addressing significant water shortages affecting agriculture, fisheries, and municipal water supplies. Declaration enabled the state to implement water conservation strategies, issue emergency water permits, and provide financial assistance to impacted sectors.
4/15/1977	12/31/1977	U.S. Department of Agriculture (USDA)	USDA declared federal drought disaster for Washington State, enabling access to federal assistance programs for affected farmers and communities. This included emergency loans and technical support to address water shortages and crop failures resulting from the drought.
3/10/1977	12/31/1977	Washington State Department of Ecology	Severe drought with record–low snowpack and precipitation levels. State declaration enabled implementation of water conservation measures, allocation of emergency funds, and coordination with federal agencies to mitigate drought impacts on agriculture, fisheries, and municipal water supplies.

Frequency

The frequency of droughts in the local area has been steadily increasing, largely as a result of climate change. Historically, significant drought events occurred approximately every 10 to 15 years with shorter, less severe dry periods interspersed between them. However, in recent decades,

the region has experienced more frequent and prolonged drought conditions. This shift is attributed to a combination of reduced annual precipitation and rising average temperatures, which together create an environment of persistent dryness.

The increased frequency of drought events is particularly concerning given regional reliance on seasonal precipitation and snowmelt to replenish water supplies. Warmer temperatures lead to earlier snowmelt, reducing water availability during the critical summer months when demand is highest. Periods of below–average rainfall have become more common, exacerbating the strain on local water resources.

Climate models predict these trends will continue, with drought conditions becoming a more regular occurrence in the local area. This heightened frequency places added stress on city infrastructure, natural resources, and community resilience. It underscores the urgent need for proactive measures, including improved water management practices, investment in drought–resistant technologies, and enhanced community awareness to mitigate the impacts of more frequent droughts.

By recognizing the increasing frequency of droughts and implementing adaptive strategies, the city can better prepare for and respond to these recurring challenges, ensuring long–term sustainability and resilience for the community.

Severity

Drought severity in the local area varies significantly depending on the duration, intensity, and geographic extent of the event. Mild droughts may cause temporary inconvenience, such as minor water use restrictions, but severe droughts have the potential to disrupt daily life, damage the economy, and harm the environment. Prolonged and intense drought conditions can lead to critical water shortages for agricultural, industrial, and residential sectors, creating far–reaching consequences for the community.

The agricultural sector, a vital component of the local economy, is particularly vulnerable to severe drought. Prolonged dry conditions reduce crop yields and increase production costs, causing significant financial losses for farmers. Livestock operations are also affected as water supplies for grazing and feed crops diminish. These impacts can cascade through the local economy, affecting food prices and employment in agricultural and related industries.

For residential users, severe droughts may limit water availability for essential purposes, such as drinking, cooking, and sanitation. Mandatory water rationing may become necessary, creating challenges for households and potentially impacting public health. Industrial operations that rely on consistent water supplies may face disruptions, leading to revenue losses and a decline in economic productivity.

Drought severity also puts immense stress on local ecosystems. Reduced water levels in rivers, lakes, and wetlands can destroy habitats, harm aquatic species, and lower biodiversity. Soil quality may deteriorate due to prolonged dryness, increasing the risk of erosion and desertification. Drought conditions heighten the risk of wildfires, as dry vegetation provides ample fuel for fires to spread rapidly. This amplifies the economic, social, and environmental damage caused by drought.

The combination of these factors highlights the significant risks associated with severe drought. Proactive measures, such as sustainable water management, community education, and investment in drought–resistant practices, are essential to mitigate the impacts of increasingly severe drought conditions on the region.

Warning Time

Unlike sudden–onset natural disasters, droughts develop gradually, allowing for significant lead time to monitor and respond to changing conditions. The slow progression of drought is typically predictable through long–term weather forecasts, water supply data, and soil moisture levels. This gradual onset provides local governments and residents with critical warning time, ranging from several months to years, to prepare for and mitigate the impacts of a potential drought.

State and local agencies rely on advanced monitoring systems to track indicators of drought, such as precipitation deficits, declining river flows, and groundwater levels. The Washington State Department of Ecology plays a pivotal role in this process by regularly monitoring water availability and issuing drought advisories when conditions indicate the likelihood of prolonged dryness. These advisories provide timely information to help communities implement water–saving measures, such as conservation programs and restrictions on non–essential water use.

Modern meteorological tools and climate models enhance the ability to predict droughts with greater accuracy. Seasonal forecasts and drought outlooks, provided by agencies such as the National Weather Service and the U.S. Drought Monitor, enable proactive planning at the regional and local levels. These tools give city policymakers and residents sufficient time to adopt strategies to reduce water consumption, secure alternative water sources, and prepare for the economic and environmental impacts of drought.

The advance warning time for droughts underscores the importance of using this lead time effectively. Public education campaigns, improved water management practices, and investments in drought–resilient infrastructure can be initiated well before severe conditions arise.

Secondary Hazards

Droughts often lead to secondary hazards including:

- Wildfire Risk. Prolonged drought conditions dry out vegetation, increasing the risk of wildfires in and around Medical Lake.
- Agricultural Losses. Drought can devastate local crops, leading to economic losses for farmers and food supply disruptions.
- Increased Reliance/Pressure on Underground Water Sources._Drought conditions can potentially limit the amount of water filtered through aquifer recharge zones to the existing public water supply wells, ultimately affecting aquifer water levels and the amount of water available for public use.
- Water Supply Contamination. Lower water levels can result in higher concentrations of pollutants in lakes, rivers, and reservoirs, impacting water quality.
- Ecosystem Stress. Drought can lead to habitat loss, reduce biodiversity, and cause long–term damage to local ecosystems.

Climate Change Impacts

Climate change is expected to exacerbate drought conditions by increasing temperatures and altering precipitation patterns. Reduced snowpack in the winter months means less runoff to fill reservoirs and groundwater supplies in the spring and summer. Increased evaporation rates due to higher temperatures further reduce water availability. These changes may result in more frequent and severe droughts in the future, making water conservation and management a top priority for the city.

Vulnerability

Medical Lake is vulnerable to droughts due to its reliance on surface and groundwater for drinking water and agricultural irrigation. The agricultural sector is especially vulnerable, as drought can reduce crop yields and lead to financial losses. Ecosystems dependent on consistent water supplies are at risk of degradation during prolonged droughts.

- Impact on Life, Health, and Safety. Drought impacts on human health include reduced water availability for consumption, poor water quality, and higher rates of heat–related illnesses. Vulnerable populations, such as the elderly and low–income households, may struggle to cope with water shortages or the increased cost of utilities. Prolonged drought can also increase stress and mental health challenges among residents facing economic or environmental impacts.
- Impact on Property. While drought itself does not directly damage structures, prolonged drought conditions can reduce property values in agricultural areas due to declining crop productivity. Water restrictions may also increase the cost of maintaining lawns, landscaping, and private gardens, potentially impacting residential property values.
- Impact on Critical Facilities. Critical facilities, such as hospitals, fire departments, and water treatment plants, are essential to the functioning of the community during a drought. Reduced water availability can strain these facilities, limiting their ability to operate effectively. Fire departments, in particular, may face challenges if drought conditions increase wildfire risks while also limiting water supplies for firefighting.
- Impact on Economy. The agricultural sector is the most directly affected by drought. Lower crop yields and higher irrigation costs can result in significant economic losses for farmers and the region's economy. Businesses that rely on a stable water supply, such as food processing and manufacturing, may experience disruptions or higher operational costs. In extreme cases, drought can also lead to job losses and a decline in local economic activity.
- Impact on Environment. Droughts can cause severe damage to the environment by reducing water levels in lakes and rivers, drying out wetlands, and stressing local ecosystems. Aquatic species are particularly vulnerable to reduced water flows, while terrestrial wildlife may face food and water shortages. Drought conditions also increase the risk of wildfires, which can cause long–lasting damage to ecosystems.
- Future Trends in Development. As the community population grows and development expands, water demands will increase. Future development plans must consider the potential for drought and ensure that water resources are managed sustainably. This includes investing in water–saving technologies, improving water infrastructure, and encouraging new developments to be more water–efficient.

Issues

Water Supply Management. Medical Lake faces significant challenges in managing its limited water resources during periods of drought. Prolonged dry conditions strain city water supply systems, making it essential to implement effective management strategies to ensure long–term sustainability. This includes diversifying water sources, enhancing groundwater recharge programs, and developing contingency plans for emergency water distribution. Regular monitoring of water levels and usage patterns is also critical to anticipate shortages and allocate resources efficiently.

Agricultural Vulnerability. Drought poses a severe threat to the local agricultural community. Local farmers depend heavily on consistent and reliable water supplies for crop irrigation and livestock needs. Prolonged drought conditions can lead to reduced crop yields, soil degradation, and

significant financial losses, endangering the livelihood of many in the agricultural sector. Reduced agricultural productivity can have cascading effects on the local economy, including higher food prices and increased unemployment. Developing drought–resistant crops, providing financial support to farmers, and investing in efficient irrigation technologies are crucial measures to address this vulnerability.

Public Awareness and Water Conservation. Increased public awareness of water conservation strategies is essential to mitigate the impacts of drought on the community. Residents must be educated on the importance of conserving water through public outreach campaigns, workshops, and school programs. Strategies such as installing water–efficient appliances, reducing outdoor water use, and identifying leaks in household systems can significantly reduce water consumption. The enforcement of water use restrictions, such as limiting non–essential water usage during drought periods, will play a vital role in preserving water resources for critical needs.

Aging Water Infrastructure. Aging city water infrastructure exacerbates the challenges posed by drought. Many components of the current system, including pipelines, storage facilities, and treatment plants, may be outdated or insufficient to handle prolonged drought conditions. Water loss from leaks and inefficiencies in the distribution system further compounds the problem. Upgrading and modernizing city water infrastructure is imperative to ensure reliable water delivery and storage capacity. Investments in technologies such as smart meters, leak detection systems, and expanded storage reservoirs will enhance city abilities to adapt to and withstand future drought conditions.

Long–Term Drought Mitigation Strategies. To address the multifaceted impacts of drought, the city must adopt a comprehensive approach that includes short–term and long–term strategies. These strategies should involve partnerships with state and federal agencies to secure funding for water infrastructure improvements, as well as collaboration with neighboring communities to share resources and knowledge. Climate change adaptation measures, such as assessing the potential impacts of rising temperatures and shifting precipitation patterns, will be crucial to ensuring future city drought resilience. By prioritizing sustainable water management, community engagement, and infrastructure modernization, the city can effectively reduce the adverse impacts of drought and secure its water future.

Consequence Analysis

The consequences of a severe drought in Medical Lake are broad and far reaching:

Water Shortages. A severe drought would result in critical water shortages across all local sectors including residential, agricultural, and industrial use. Prolonged water scarcity may lead to the implementation of mandatory water restrictions and rationing to conserve dwindling supplies. Households could face limited access to water for basic needs such as drinking, cooking, and sanitation. The agricultural sector, which heavily depends on consistent water availability, would suffer from irrigation deficits, further compounding the issue. Industrial operations reliant on water for production processes could experience significant slowdowns or shutdowns, disrupting supply chains and local services. Emergency water distribution systems may become necessary, placing additional strain on city resources.

Economic Impact. The economic consequences of drought would be profound, particularly for the agricultural community, which forms a significant part of the local economy. Reduced crop yields due to insufficient irrigation could result in financial losses for farmers, threatening their livelihoods and increasing the risk of farm closures. Secondary impacts include reduced employment

opportunities in farming and related industries, further affecting household incomes and exacerbating financial instability. Businesses reliant on water, such as food processing plants and nurseries, may face operational disruptions, leading to revenue losses and layoffs. Increased food prices due to reduced agricultural output could create financial strain for residents, especially vulnerable populations.

Environmental Degradation. Prolonged drought can have devastating effects on the local environment, leading to habitat destruction, reduced biodiversity, and declining ecosystem health. Wetlands and other water–dependent ecosystems may dry up, resulting in the loss of critical habitats for fish, birds, and other wildlife. Reduced water levels in lakes, streams, and aquifers can lead to poor water quality, increasing the concentration of pollutants and harmful algae blooms. Drought conditions also contribute to soil degradation and erosion, further impacting the agricultural sector and increasing the risk of desertification in affected areas. These environmental changes could have long–lasting implications for regional natural resources and ecosystem services.

Health and Safety. The health and safety of city residents would be at significant risk during a severe drought. Higher temperatures associated with drought conditions could lead to an increase in heat–related illnesses, particularly among vulnerable populations such as the elderly, children, and outdoor workers. Respiratory issues may also become more prevalent due to increased dust and poor air quality, exacerbated by wildfire smoke often associated with dry conditions. Limited access to clean water could also compromise hygiene and sanitation, increasing the risk of waterborne diseases. Public health infrastructure and emergency services may be strained as they respond to the compounded health impacts of drought.

Social and Community Impacts. Drought conditions may also lead to heightened stress and anxiety among residents, particularly those whose livelihoods depend on water availability. Social tensions could arise due to competition for limited resources, such as water rights and allocations, potentially straining relationships between stakeholders, including farmers, businesses, and local government. Community resilience and preparedness efforts would be critical in mitigating these social consequences and fostering collaboration to address shared challenges.

Results

Implementing effective drought mitigation strategies can bring substantial and lasting. By proactively addressing water management challenges, the city can strengthen its resilience to future droughts while minimizing the impacts on its residents, businesses, and natural resources.

Improved Water Conservation. One of the most immediate and measurable outcomes of drought mitigation efforts is improved water conservation. Promoting water–saving practices among residents, businesses, and the agricultural sector can significantly reduce water consumption. Investments in water–efficient technologies, such as low–flow fixtures, smart irrigation systems, and leak detection tools, further enhance conservation efforts. These measures ensure a more sustainable water supply during drought periods, helping the community maintain essential water services even in prolonged dry conditions.

Stronger Agricultural Resilience. The agricultural sector, which is particularly vulnerable to drought, stands to benefit greatly from mitigation strategies. By supporting farmers with drought–resistant crop varieties, efficient irrigation techniques, and financial incentives for sustainable practices, the city can minimize the economic impact of water shortages on the agricultural community. These strategies preserve the livelihoods of farmers, contributing to food security and economic stability in the region.

Enhanced Public Awareness. Educational campaigns play a vital role in fostering a culture of water conservation within the community. By increasing public awareness about the importance of conserving water and offering practical tips for reducing personal water usage, residents become active participants in city drought mitigation efforts. Public awareness initiatives also help to build community support for policies such as water use restrictions and infrastructure upgrades, ensuring their successful implementation.

Long–Term Water Infrastructure Improvements. Upgrading city water infrastructure is a critical component of drought mitigation, and the results of these investments are immediate and long lasting. Improvements such as expanding water storage capacity, modernizing delivery systems, and enhancing groundwater recharge capabilities ensure a more reliable water supply for residents and businesses. Reducing water loss from leaks and inefficiencies in the distribution system helps to maximize the availability of existing resources. These infrastructure upgrades position the city to better withstand future droughts and adapt to changing climate conditions.

Broader Community and Environmental Benefits. Beyond these direct results, effective drought mitigation strategies contribute to broader benefits for the community and environment. Reduced water consumption alleviates stress on local ecosystems, preserving habitats and biodiversity. Economic stability is enhanced as businesses and agricultural operations can continue functioning despite water shortages. A proactive approach to drought management fosters a sense of preparedness and resilience, strengthening community trust in local leadership and infrastructure.

By implementing these strategies, the city can achieve sustainable water management and ensure the long–term well–being of its residents, economy, and environment, even in the face of increasing drought challenges.

Hazard: Flooding

Flooding is a natural hazard that can occur in the community due to several factors including heavy rainfall, rapid snowmelt, or the failure of water control infrastructure like dams or levees. While the city is not located in a high flood risk zone compared to coastal or riverine communities, Medical Lake is susceptible to localized flooding, especially during periods of intense rainfall or rapid thaw in the spring. Floods can impact homes, businesses, infrastructure, and the local environment.

Profile

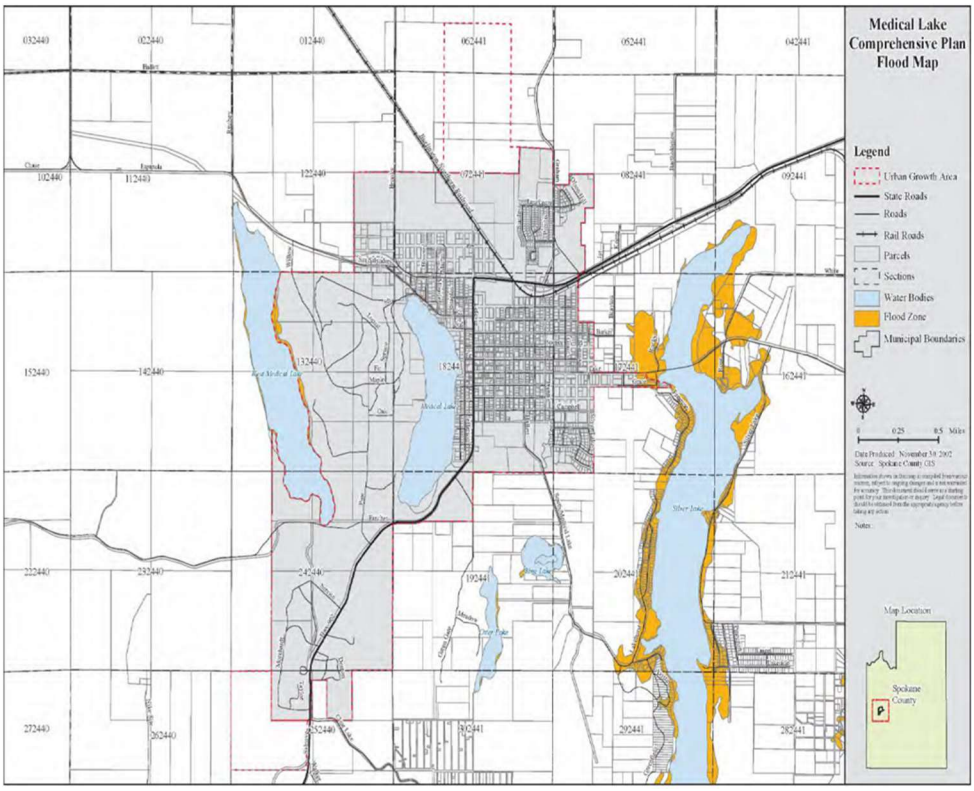


Figure 16. City of Medical Lake Comprehensive Plan Flood Map (AEDA)

Flooding typically occurs when water bodies such as lakes, rivers, or stormwater drainage systems overflow, inundating surrounding areas. Flash floods can result from heavy rainfall that overwhelms drainage systems or from snowmelt that raises lake and groundwater levels. Urban flooding can also occur due to poor stormwater management in built–up areas. Floodwaters can be fast moving, leading to erosion and property damage, or they can be stagnant, contributing to public health issues such as water contamination.

Extent & Location

The most flood–prone areas in the city include low–lying sections of the community, particularly around the lake itself and areas with poor drainage systems. Heavy rain or snowmelt can raise the water levels of Medical Lake and nearby water bodies, leading to localized flooding in residential neighborhoods and public spaces. Urban areas with large amounts of impervious surfaces (such as roads and parking lots) are also susceptible to flash flooding due to reduced absorption of water into the ground.

Frequently flooded areas (Figure 16) are those areas found within the flood plain subject to one percent or greater chance of flooding in any given year. Frequently flooded areas perform important hydrologic functions and may present a risk to persons and property.

Classifications of frequently flooded areas include, at a minimum, the 100–year flood plain designations of the Federal Emergency Management Agency and the National Flood Insurance Program. The city has flooded areas within its boundaries which fit with the city shorelines and accompanying surface waters, including lakes, rivers, streams, creeks, and wetlands.

Wetlands (Figure 17) are areas inundated or saturated by surface and/or ground water at a frequency and duration sufficient to support (and during normal conditions do support) a prevalence of vegetation typically adapted for life in saturated soils. Wetlands typically include swamps, marshes, bogs, and similar areas, but they do not include wetlands intentionally created from non–wetland sites including (but not limited to) irrigation and drainage ditches, grassy swales, canals, detention facilities, farm ponds or landscape amenities. Wetlands created from non–wetland areas as a result of mitigation due to the conversion of naturally occurring wetlands to other uses, shall be considered a wetland. An Eastern Washington University study in the mid–1990s indicated the presence of potential wetland areas within the city. Studies done for the National Wetlands Inventory indicated several wetlands within the community as well.

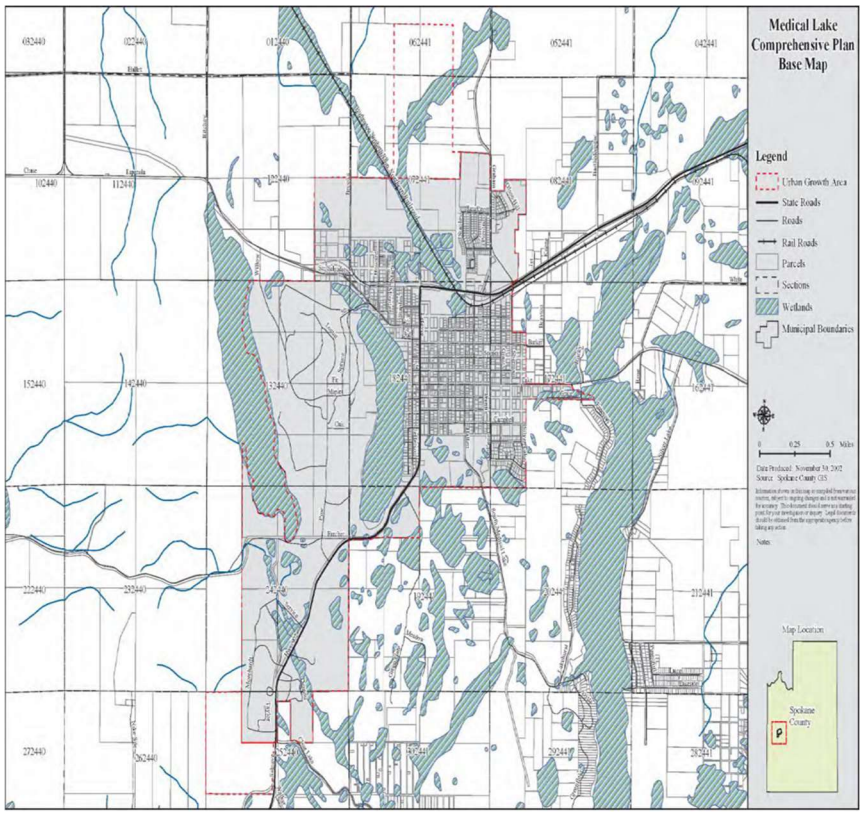


Figure 17. City of Medical Lake Wetlands Map (AEDA)

Previous Occurrence(s)

Medical Lake experienced 14 episodes of localized flooding in the past, particularly during years with heavier–than–average rainfall or rapid snowmelt. Though large–scale floods are not common, instances of street flooding and water accumulation in low–lying areas have been reported. Floods in the region are usually associated with spring thaw or seasonal storms that overwhelm the existing drainage systems.

Table 26. Medical Lake Flooding Occurrences, 2000-2024 (NOAA)

NOAA Event ID	Affected Area	Date	Event Type
1104965	Spokane/Medical Lake	5/27/2023	Flood
1073411	Spokane/Medical Lake	12/26/2022	Flood
1043209	Spokane/Medical Lake	6/12/2022	Flood
1043027	Spokane/Medical Lake	6/5/2022	Flash Flood
818446	Spokane/Medical Lake	5/16/2019	Flood
818455	Spokane/Medical Lake	5/16/2019	Flood
818450	Spokane/Medical Lake	5/16/2019	Flood
692102	Spokane/Medical Lake	4/1/2017	Flood
683461	Spokane/Medical Lake	3/9/2017	Flood
682513	Spokane/Medical Lake	2/16/2017	Flood
504778	Spokane/Medical Lake	3/5/2014	Flood
373849	Spokane/Medical Lake	4/27/2012	Flood
5515859	Spokane/Medical Lake	6/13/2006	Flash Flood
5515807	Spokane/Medical Lake	6/10/2006	Flash Flood

Declaration

During significant flood events, local or state authorities may declare a state of emergency to access additional resources and funding for recovery efforts. Although no federal flood disaster declarations have been issued for Medical Lake in recent history, localized flooding has led to minor emergency declarations at the city level, primarily focused on water management and infrastructure repair.

Frequency

Flood events in the city are not as frequent as in coastal or riverine communities, but the city can expect minor flooding events every few years, particularly during periods of heavy rain or snowmelt. The frequency of urban flooding due to overwhelmed drainage systems is expected to increase with continued development and potential climate change impacts, such as increased rainfall intensity and variability.

Severity

Severity of flooding in the local area tends to be localized but can cause significant disruptions. Flash flooding from intense storms can damage roads, overwhelm drainage systems, and flood homes or businesses. Floodwaters can damage property, infrastructure, and utilities, such as power and water systems, while also leading to traffic disruptions and temporary road closures. In more severe events, prolonged flooding can lead to erosion and damage to the natural environment.

Warning Time

Flooding can develop quickly, especially in the case of flash floods, with limited warning time. However, more predictable seasonal flooding related to snowmelt or prolonged rainfall may provide days to weeks of preparation time. Weather forecasting and flood warning systems play a crucial role in alerting residents and authorities about imminent flood risks. The city relies on National Weather Service (NWS) flood watches, warnings, and real–time data from river and lake gauges.

Secondary Hazards

Flooding often leads to several secondary hazards, including:

- Landslides. Saturated soil from floodwaters can lead to landslides, especially in areas with steep terrain.
- Water Contamination. Floodwaters often carry pollutants such as sewage, chemicals, and debris, contaminating drinking water supplies and natural ecosystems.
- Infrastructure Damage. Flooding can weaken roads, bridges, and buildings, increasing the risk of structural failure.
- Mold Growth. Prolonged flooding can lead to mold growth inside buildings, posing health risks to residents.

Climate Change Impacts

Climate change is expected to increase the frequency and intensity of flooding in the area due to more extreme and unpredictable weather patterns. Higher temperatures are likely to result in more intense rainfall events and quicker snowmelt, both of which contribute to flood risk. Changes in seasonal precipitation could lead to wetter winters and drier summers, stressing city stormwater management and water infrastructure.

Vulnerability

Medical Lake is vulnerable to flash floods and localized urban flooding, particularly in low–lying areas and locations near water bodies. Older infrastructure and poorly maintained drainage systems increase city vulnerabilities, while the growing population in the region places additional strain on stormwater management systems.

- Impact on Life, Health, and Safety. Flooding poses direct risks to life and safety, especially when floodwaters rise quickly or involve strong currents. Drowning, injuries from debris, and health issues related to waterborne contaminants are primary concerns. Vulnerable populations, including the elderly and those with mobility issues, may face difficulties evacuating flooded areas. Flooding can also exacerbate mental health issues due to the stress of evacuation, property loss, and prolonged recovery periods.
- Impact on Property. Floodwaters can cause significant damage to homes, businesses, and infrastructure. Water damage to buildings can result in costly repairs, especially if foundations, electrical systems, or plumbing are affected. Stagnant floodwater may lead to mold growth, further damaging homes and creating health hazards. Flooded properties, especially those without flood insurance, may face financial hardships.
- Impact on Critical Facilities. Flooding can disrupt critical facilities such as hospitals, fire stations, and utilities. Flooded roads may delay emergency response times, while damaged water and sewage treatment facilities can lead to public health risks. Ensuring that critical

infrastructure is resilient to flood risks is vital for maintaining public safety and ensuring the continuity of essential services during flood events.

- Impact on Economy. Flooding can have a significant economic impact, especially if city businesses and agricultural sectors are affected. Business closures due to water damage, road closures, or supply chain interruptions can result in financial losses. The cost of repairing damaged infrastructure, homes, and public facilities can strain local government budgets.
- Impact on Environment. Flooding can have detrimental effects on the local environment, including the erosion of soils, damage to wetlands, and contamination of water bodies with pollutants. Wildlife habitats may be destroyed, and aquatic species can be impacted by changes in water quality. Invasive species may also spread more rapidly after floods, as they can be carried by floodwaters to new areas.
- Future Trends in Development. As community development continues, particularly in low–lying areas and near water bodies, flood risks may increase. Urbanization leads to more impervious surfaces, such as roads and buildings, which reduce natural water absorption and increase surface runoff during heavy rains. Future development planning must incorporate flood risk reduction strategies, such as better stormwater management systems and the enforcement of flood–resistant building codes.

Issues

Several critical factors contribute to local flood risks, necessitating a comprehensive hazard mitigation approach:

- Inadequate Stormwater Management. City stormwater infrastructure may not be sufficient to handle heavy rainfall events, leading to urban flooding in areas with poor drainage.
- Development in Flood–Prone Areas. Continued development in low–lying areas increases city exposure to flood risks. Zoning regulations and land–use planning need to account for flood hazards.
- Lack of Public Awareness. Residents may not fully understand their flood risks, especially if they are not located in FEMA–designated flood zones. Public education about flood preparedness and insurance is essential.
- Aging Infrastructure. Older infrastructure, including drainage systems and roads, may not be capable of withstanding modern flood conditions, necessitating upgrades.

Consequence Analysis

In the event of significant flooding, consequences for the city may include:

- Property Damage. Flooding can lead to the destruction of homes, businesses, and public infrastructure, requiring expensive repairs and disrupting daily life for residents.
- Economic Losses. Business closures, damage to agricultural lands, and disruptions to transportation networks can result in financial losses for the community.
- Public Health Risks. Contaminated floodwaters, mold growth, and delayed emergency response times due to damaged roads can lead to health risks for residents.

- Long–term Recovery Challenges. The recovery process from a major flood event can be prolonged, especially if critical infrastructure is severely damaged. Financial resources may be limited, slowing down rebuilding efforts.

Results

The results of implementing flood mitigation strategies would include:

- Improved Flood–Resistant Infrastructure. By upgrading stormwater management systems, Medical Lake can reduce the risk of urban flooding and protect critical infrastructure from damage.
- Better Public Awareness and Preparedness. Through public education campaigns, residents will be better informed about flood risks and how to prepare for potential flood events.
- Stronger Zoning and Land Use Planning. By incorporating flood risk into future development plans, the city can avoid building in high–risk flood areas and ensure that new developments are designed to withstand flooding.
- Enhanced Emergency Response Capabilities. Strengthening coordination between local, state, and federal agencies will improve the city's ability to respond to flood events quickly and effectively, minimizing damage and ensuring public safety.

Hazard: Earthquake

Earthquakes occur when energy stored in the Earth's crust is suddenly released, typically due to the movement of tectonic plates along faults. While the city is not located directly on a major fault line, it is still vulnerable to seismic activity due to its proximity to the Cascadia Subduction Zone and multiple fault systems in the Pacific Northwest. Earthquake risks are heightened by the potential for secondary impacts such as soil liquefaction, landslides, and damage to critical infrastructure. The community sits amidst a geologically diverse and seismologically significant landscape. Despite its serene environment and lack of major fault lines running through the local area, the city is influenced by its proximity to active tectonic zones in the Pacific Northwest. This region, known for its seismic activity, presents a variety of earthquake–related hazards that can impact the natural and built environments.

Medical Lake is situated in the Inland Northwest, an area defined by its complex geological structures and dynamic tectonic history. Regional subsurface is characterized by deep layers of basalt deposited by ancient lava flows, which overlay fault systems that have evolved over millions of years. Among these fault systems is the Spokane Fault, a relatively small yet significant feature that, though less active than faults along Washington's western coast, still poses a seismic risk. Other minor, unmapped, or poorly understood fault systems in the vicinity contribute to the seismic hazard profile of the area.

To the west of the city, the *Cascadia Subduction Zone* looms as a tectonic powerhouse. This major boundary, where the *Juan de Fuca Plate* subducts beneath the North American Plate, is capable of generating megathrust earthquakes 9.0 Mw or higher. While the city is located well inland, such large–scale seismic events could still induce strong ground shaking, disrupt regional infrastructure, and trigger secondary hazards such as landslides and liquefaction. Beyond megathrust events, smaller crustal and intraplate earthquakes originating closer to the Inland Northwest remain a more immediate concern for the city.

The unique geological makeup of the area, including porous soils, glacial deposits, and proximity to water bodies, amplifies the potential for certain earthquake hazards. The interconnection of these geological factors makes seismic risks multifaceted, requiring a thorough understanding of local geology and its interaction with broader tectonic processes.

Profile

An earthquake is the vibration of the earth's surface following a release of energy in the earth's crust. This energy can be generated by a sudden dislocation of the crust or by a volcanic eruption. Most destructive quakes are caused by dislocations of the crust. The crust may first bend and then, when the stress exceeds the strength of the rocks, break and snap to a new position. In the process of breaking, vibrations called "seismic waves" are generated. These waves travel outward from the source of the earthquake at varying speeds. Earthquakes tend to reoccur along faults, which are zones of weakness in the crust. Even if a fault zone has recently experienced an earthquake, there is no guarantee that all the stress has been relieved. Another earthquake could still occur. Earthquakes in the Pacific Northwest have been studied extensively. It is generally agreed that three source zones exist. While Medical Lake is not located directly on a major fault line, there are several seismic hazards and considerations in the surrounding region that could impact the area. Here are the main seismic hazards near the community:

- Cascadia Subduction Zone. Although the Cascadia Subduction Zone is located far west off the Pacific Coast (approximately 70-100 miles offshore from Washington), a major earthquake from this zone would be felt throughout the Pacific Northwest. While the shaking intensity would diminish the further inland, the city could experience light to moderate shaking during a large Cascadia earthquake. The zone has the potential to generate 9.0+ Mw earthquakes.

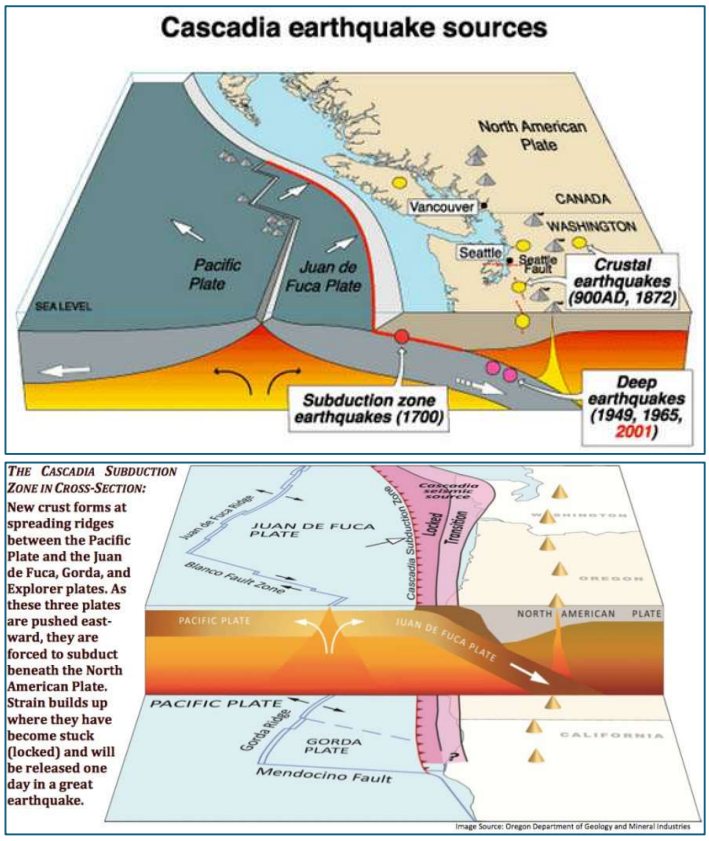


Figure 18. Cascadia Earthquake Sources (SAFE)

- Spokane Seismic Zone. The Spokane Seismic Zone is the closest local seismic hazard. This fault system, located just northeast of Medical Lake near Spokane, has experienced small to moderate earthquakes in recent decades. For example, in 2001, a 4.0 Mw earthquake occurred near Spokane, which caused minor damage to buildings and was felt in the local area. This zone is capable of generating earthquakes up to 5.0-6.0 Mw, which could cause localized damage.
- Deep Intracontinental Faults. Washington state is also home to several deep intracontinental faults that are located further away from the coast but still have the potential to cause large earthquakes. These faults are associated with complex regional tectonic structures. Earthquakes from these faults, such as the Naches Fault and the Olympic–Wallowa Lineament, can produce moderate earthquakes that would be felt across Eastern Washington.
- Crustal Faults and Earthquake Risk. In addition to major fault systems, the broader Columbia Plateau and Intermountain Seismic Belt in eastern Washington host several small crustal faults that can generate Low–to–Moderate magnitude earthquakes. These faults have the potential to cause localized shaking, particularly in areas near Spokane and the Columbia Basin.

Extent and Location

Spokane Seismic Zone. The Spokane Seismic Zone encompasses a region characterized by a network of faults and geologic features that contribute to its earthquake potential. A key feature within this zone is the Latah Fault, an inferred northwest–southeast trending fault that aligns with the courses of Hangman Creek and the Spokane River. This fault lies in Spokane County, extending near urban and suburban areas, including Medical Lake and surrounding communities. The seismic zone is defined by its susceptibility to shallow, crustal earthquakes, which can produce significant ground shaking even at moderate magnitudes, such as the modeled 5.5 Mw earthquake scenario in Figure 19.

The geologic composition of the region includes thick deposits of Miocene–era Latah Formation sediments and intercalated basalt flows from the Columbia River Basalt Group. These formations influence the propagation of seismic waves, with variations in sediment type and rock layers potentially amplifying ground motion in localized areas. Liquefaction risk is Moderate–to–High near water–saturated soils along the Spokane and Little Spokane rivers, further extending the seismic hazard to areas with loose, unconsolidated sediments.

This seismic zone impacts a broad geographic area, including parts of Spokane County and adjacent counties such as Stevens, Pend Oreille, and Whitman. The extent of its influence also incorporates critical infrastructure and residential zones, underscoring the importance of earthquake preparedness and risk mitigation efforts across the region. While historical seismic activity has been relatively low, the potential for damaging events within this zone highlights the need for continued monitoring and resilience planning.

Based on the color gradient, areas in red and yellow represent regions of higher seismic hazard, while areas in green and blue indicate lower hazard levels. For Medical Lake, the map demonstrates a Moderate seismic hazard. This is consistent with its proximity to the Spokane Seismic Zone which includes faults such as the Latah Fault and the northeast–trending fault associated with the 2001 earthquake sequence.

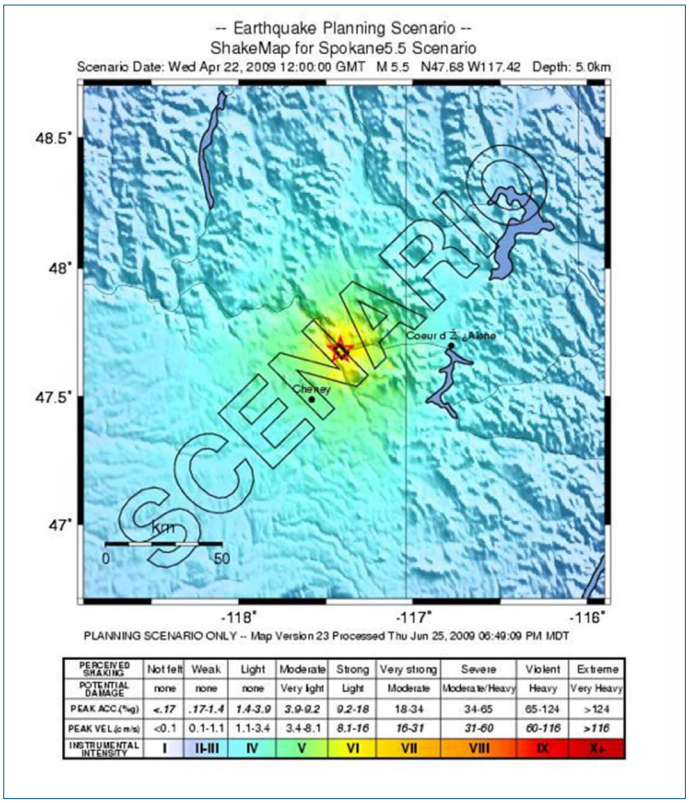


Figure 19. ShakeMap for M5.5 Earthquake on Latah Fault near Spokane (WA-DNR)

Cascadia Subduction Zone. While the city is not located near a major active fault, the region is still affected by distant seismic events such as those originating from the Cascadia Subduction Zone. Earthquakes in the region have historically been felt over a wide area including inland cities like Medical Lake. Earthquake vulnerabilities largely depend on building infrastructure types, soil conditions, and the proximity to regional fault systems.

Located approximately 70-100 miles off the Pacific Coast from northern California to British Columbia, the Cascadia Subduction Zone poses a significant seismic risk to the Pacific Northwest. While the local area (situated in eastern Washington) is located farther inland and away from the direct impacts of a potential megathrust earthquake from this zone, Medical Lake would still experience secondary effects due to the interconnectivity of regional infrastructure, economy, and emergency response systems.

The map in Figure 20 illustrates the projected seismic shaking intensity in Washington State under a Cascadia Subduction Zone earthquake scenario, using the Modified Mercalli Intensity (MMI) scale. Medical Lake, located near Spokane in the map below, is shown within the light blue region, which corresponds to light shaking (MMI 4). This indicates the city is relatively insulated from the most intense seismic effects of a Cascadia megathrust earthquake due to its inland location and distance from the subduction zone.

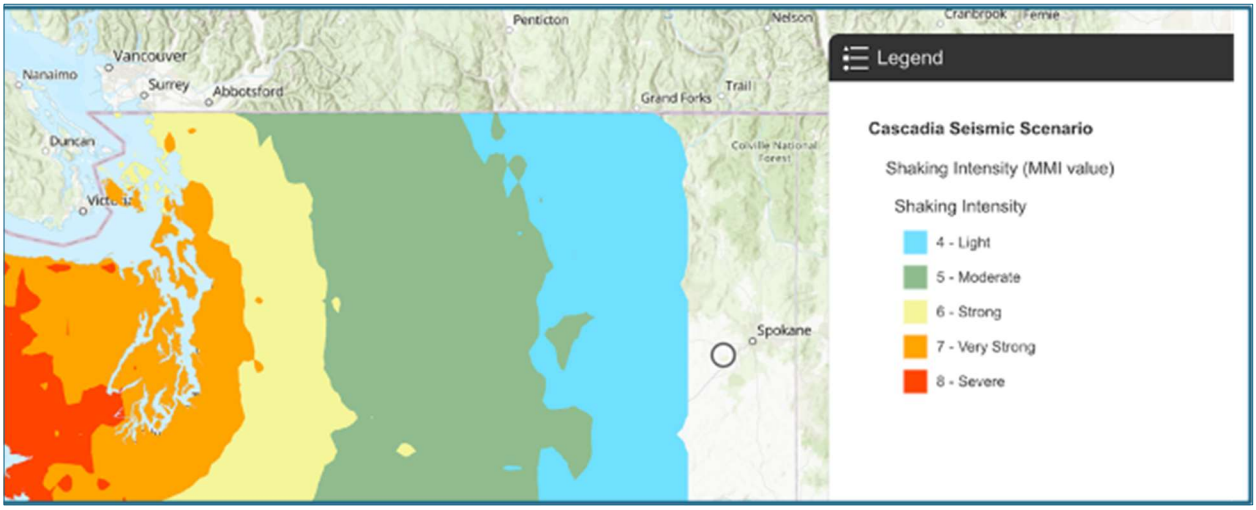


Figure 20. Cascadia Earthquake Model

- Shaking Intensity. The light blue shading suggests that shaking in the city is likely to be mild, with minor or no structural damage expected. People indoors may feel light shaking, but the impacts are unlikely to disrupt day–to–day activities significantly.
- Proximity to Stronger Shaking Zones. While Medical Lake is in a lower–intensity area, the map shows that regions closer to the Pacific Coast—particularly in western Washington—would experience much stronger shaking (yellow, orange, and red zones). These areas could face significant structural damage and potential secondary hazards such as landslides and liquefaction.
- Regional Infrastructure and Resources. Even if the city experiences relatively light shaking, the cascading effects of damage in the western part of the state could still indirectly affect the city. This could include supply chain disruptions, communication breakdowns, or population displacement from more heavily impacted areas.

Table 27. Earthquake Impact Assessments

Key Aspect	Description
Seismic Wave Types	1. P–Waves (Primary Waves): fast compressional waves, usually less damaging. 2. S–Waves (Secondary Waves): slower, shearing waves causing more damage. 3. Surface Waves: travel along the surface, causing the most severe shaking near the epicenter.
Intensity Factors	1. Magnitude (Mw): larger earthquakes release more energy, causing stronger shaking. 2. Distance from Epicenter: closer proximity results in more intense shaking. 3. Depth: shallow earthquakes lead to more surface shaking. 4. Soil/Rock Conditions: loose soils amplify shaking, solid rock dampens it.

Key Aspect	Description
Effects of Ground Shaking	1. Structural Damage: buildings, bridges, and other infrastructure may collapse or suffer damage. 2. Secondary Hazards: landslides, liquefaction, and utility failures can be triggered.
Measurement	1. Moment Magnitude Scale (Mw): reflects the total energy released during an earthquake, providing a consistent measurement across all earthquake sizes and depths. 2. Peak Ground Acceleration (PGA): measures the rate of ground movement during an earthquake.

Medical Lake is in a relatively low–risk area for direct impacts from a Cascadia earthquake. However, the city should not disregard the potential for indirect consequences, such as regional infrastructure failures, resource strain, or population movement, which could still affect its community and economy.

Previous Occurrence(s)

Medical Lake has not experienced a significant earthquake in recent history; however, the region has been affected by minor to moderate seismic events over the years. The 2001 Nisqually earthquake, with 6.8 Mw was felt across Washington State. Although damage within city boundaries was limited, the event highlighted city seismic activity vulnerabilities. Small earthquakes have been recorded in the broader Eastern Washington area, emphasizing the need for preparedness even in areas not considered high risk.

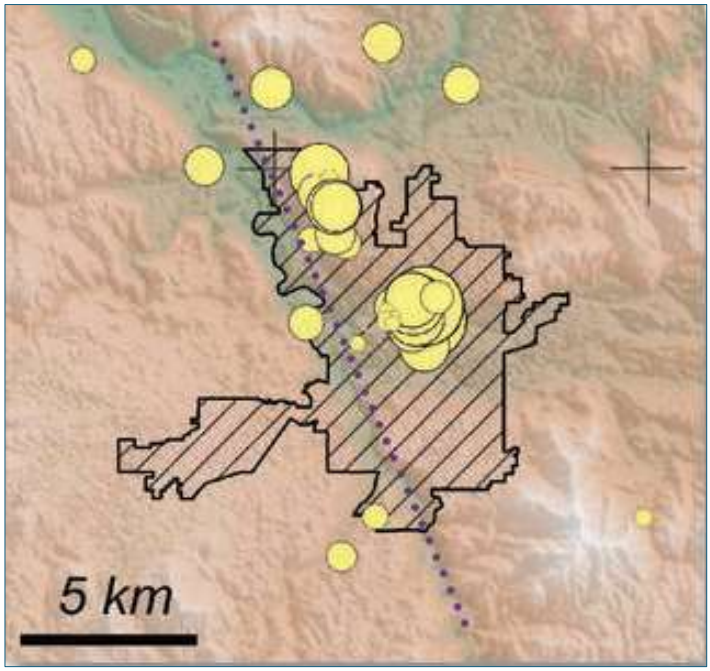


Figure 21. 2001 Spokane Earthquake Swarm (USGS)

The Spokane Seismic Zone (including communities like Medical Lake) is marked by a complex interplay of geologic features and seismic activity. A notable event (the Spokane Swarm) within this zone occurred in 2001, when a sequence of 105 small earthquakes (all less than 4 Mw, was recorded beneath Spokane. These earthquakes were accompanied by a slight ground elevation increase of about 1/2 inch. The deformation pattern of the ground surface suggested movement along a northeast–trending fault beneath Spokane; however, no mapped faults in the area had been active in the past 1.6 million years.

The last major earthquake from the Cascadia Subduction Zone occurred on January 26, 1700, with an estimated 8.7-9.2 Mw. This event caused widespread damage along the Pacific coast including the generation of a tsunami that reached Japan. Historical and geological evidence, including Native American legends, has corroborated the occurrence of this great earthquake. Scientists believe the Cascadia Subduction Zone is due for another major event and estimate a 37 percent chance of

a 7.1+ Mw earthquake occurring within the next 50 years. Such an earthquake would likely be felt throughout the entire Pacific Northwest, including areas farther inland like Medical Lake.

Table 28. Washington State Historical Earthquakes

Date	Earthquake Event	Magnitude	Potential Impact on Medical Lake
5/2001-9/2001	Spokane Earthquake Swarm	<3.9 Mw	1. Series of more than 100 small, shallow earthquakes centered near Spokane from May-September 2001. 2. Largest: 3.9 Mw–6/25/2001. 3. Shallow quakes, occurring less than a mile below the surface, amplified effects 4. Widespread ground shaking with audible booms. 5. No structural damage or injuries reported in Medical Lake. 6. Cause: localized stress changes in Earth's crust not along a major fault or volcanic system. 7. Increased awareness of seismic risks in eastern Washington (generally considered less seismically active than western Washington). 8. Effects experienced in Medical Lake: - Mild, noticeable impacts: rattling windows & minor vibrations. - Shallow depth made even small tremors perceptible - Loud booming sounds caused confusion and concern; mistaken for explosions.
2/28/2001	Nisqually Earthquake	6.8 Mw	1. Deep–focus earthquake centered near Olympia, Washington at 32–mile depth. 2. Caused by Juan de Fuca Plate subducting beneath the North American Plate. 3. Extensive damage across western Washington, particularly in Seattle, Tacoma, and Olympia. 4. Depth limited destruction compared to similarly powerful shallow earthquakes. 5. Caused widespread infrastructure damage, injuring 400+ people, no direct fatalities. 6. Economic Los: $2 billion 7. One of the costliest earthquakes in Washington State history. 8. Effects experienced in Medical Lake: - 250 miles NE of epicenter. - Minimal impact due to distance and the depth; mild, barely perceptible tremors. - Weak shaking, no structural damage, injuries, or significant disruptions reported.

Date	Earthquake Event	Magnitude	Potential Impact on Medical Lake
10/28/1983	Borah Peak (Idaho)	6.9 Mw	1. Epicenter near Borah Peak, Idaho; state's highest mountain. 2. Strongest recorded earthquake in Idaho's history. 3. 4 aftershocks 5.5+ Mw recorded within 1 year; felt in an area over 330,000 square miles. 4. Cause: rupture along Lost River Fault. 5. Significant ground deformation, 14–mile surface rupture, vertical displacements of up to 9 feet. 6. 2 children killed by falling debris in Challis, Idaho. 7. Extensive structural damage in nearby towns. 8. Effects experienced in Medical Lake: - 400 miles NW of epicenter; no direct impact. - Very weak shaking/likely imperceptible. - No records of damage or disruptions reported.
5/29/1965	Seattle Tacoma Earthquake	6.7 Mw	1. Centered near Des Moines, Washington at 37–mile depth. 2. Deep intraplate earthquake within subducting Juan de Fuca Plate, Cascadia Subduction Zone. 3. Widespread damage across western Washington, particularly Seattle and Tacoma. 4. Shaking caused structural damage, cracked walls and collapsed masonry. 5. 7 fatalities, 50+ injuries, $12.5 million in damages (approximately $110 million in 2024 dollars). 6. Effects experienced in Medical Lake: - Minimal impact, 250+ miles NE of epicenter. - Distance/depth significantly reduced effects on eastern Washington. - No reports of damage/notable shaking recorded.
8/17/1959	Hebgen Lake (Montana) Earthquake	7.2 Mw	1. Struck near Hebgen Lake, Montana. 2. Triggered by fault movement, Yellowstone region. 3. 6 aftershocks 5.5+ Mw within 1 day. 4. Initial EQ felt over 450,000 square miles. 5. Massive landslide killed 28 people dammed Madison River, formed Quake Lake. 6. Yellowstone campers trapped for days. 7. Economic Damage: $11 million to roads/timber. 8. Significant ground deformation, some areas sinking by 20+ feet. 9. Extensive aftershocks and disrupted roads, buildings, and infrastructure across the region. 10. Effects experienced in Medical Lake: - 400 miles west of the epicenter; effects minimal - Distance weakened effects, no damage reported.

Date	Earthquake Event	Magnitude	Potential Impact on Medical Lake
4/13/1949	Olympia Earthquake	6.7 Mw	1. Centered near Olympia, Washington; 37–mile depth impacting Olympia, Seattle, and Tacoma. 2. Significant damage across western Washington. 3. 8 fatalities; 50+ injuries; and widespread structural damage to unreinforced masonry buildings and infrastructure such as bridges and roads. 4. Estimated Losses: $25 million ($300 million today). 5. Effects experienced in Medical Lake: - 250 miles NE of epicenter, effects minimal. - Depth/distance reduced effects likely imperceptible, no damage reported.
7/15/1936	Walla Walla Earthquake	6.1 Mw	1. Centered near Milton–Freewater, Oregon just south of Walla Walla, Washington. 2. Depth: 6.2 miles; shallow depth amplified shaking, substantial damage in SE Washington/NE Oregon. 3. Strongest effects felt in Walla Walla and nearby. 4. Buildings suffered cracked walls, toppled chimneys, damage to masonry structures. 5. Estimated Losses: $100,000 (+/- $2.26 million in 2024 dollars). 6. Effects experienced in Medical Lake: - Epicenter 140 miles south of Medical Lake. - Likely weak/moderate shaking, rattling windows, minor disturbances. - No structural damage in Medical Lake due to the distance from epicenter. - Broader effects felt across much of eastern Washington, NE Oregon, and parts of Idaho, with reports of shaking in cities like Spokane, Yakima, and Boise. - Felt in Oregon, Washington and northern Idaho, greatest shaking in NE Oregon.
7/12/1872	North Cascades Earthquake	6.8-7.0 Mw	1. One of largest earthquakes in Washington State history. 2. Epicenter believed to be near Lake Chelan or Entiat Valley in North Cascades region. 3. Extensive damage including landslides, ground fissures, and destruction of buildings/infrastructure. 4. Shaking felt as far away as British Columbia, western Washington, even parts of Montana. 5. Effects experienced in Medical Lake: - 140 miles from likely epicenter, shaking would have been mild and likely went unnoticed. - Sparsely populated region at the time.

Date	Earthquake Event	Magnitude	Potential Impact on Medical Lake
			- Predates significant development in Medical Lake, no recorded impacts on community.
1/26/1700	Cascadia Subduction Zone Earthquake	8.7-9.2 Mw	1. Megathrust earthquake, one of the most powerful seismic events in North American history. 2. Triggered by Cascadia Subduction Zone, where Juan de Fuca Plate subducts beneath the North American Plate. 3. 620–mile fault rupture stretching from northern California to southern British Columbia. 4. Widespread subsidence, coastal landslides, and massive tsunami inundated PNW coast, reaching as far away as Japan. 5. Effects experienced in Medical Lake: - Region likely experienced weak/moderate shaking. - Medical Lake not yet settled, no direct records of impacts.

Declaration(s)

While no state or federal earthquake disaster declarations have been issued specifically for the City of Medical Lake, Washington State has declared emergencies after major earthquakes like the Nisqually earthquake in 2001. A local or state–level declaration would allow for emergency response efforts and the mobilization of resources to aid recovery in the event of a significant earthquake.

Frequency

Earthquakes in the Pacific Northwest are relatively infrequent, but the risk of a significant seismic event remains. Large earthquakes along the Cascadia Subduction Zone have historically occurred every 300-600 years, with the potential to cause widespread damage across the region. The frequency of experiencing noticeable seismic activity in the city is Low, but the city remains at risk from regional seismic events that could impact infrastructure, utilities, and public safety. The frequency of noticeable seismic activity in the city is Relatively Low, reflecting the city's distance from active faults and major tectonic boundaries. However, this infrequency does not eliminate the risk of sudden and potentially catastrophic impacts from regional earthquakes. Research and historical data suggest that even Moderate seismic events occurring hundreds of miles away can generate long–duration shaking capable of damaging older or poorly designed structures, disrupting utilities, and compromising critical infrastructure.

Severity

The severity of an earthquake's impact on the city depends on several factors including the magnitude, depth, distance from the epicenter, and local building codes. Moderate to strong earthquakes can cause damage to buildings, roads, bridges, and utilities. Older structures, especially those not built to modern seismic standards, are particularly vulnerable. Ground shaking can lead to structural collapses, fires, and widespread disruptions to essential services. Compounding the potential severity is regional geological composition—including deep basalt layers, glacial

deposits, and loose soils—can amplify seismic waves, increasing the intensity of ground shaking in localized areas. Secondary hazards such as soil liquefaction, landslides, and water infrastructure failure can exacerbate the damage, particularly during rare but high–magnitude seismic events.

Moment Magnitude Scale (Mw). To determine extent, earthquake magnitude is widely used to measure earthquakes, but it differs from intensity scales like the Modified Mercalli Intensity (MMI) Scale. Magnitude quantifies the energy released at the source of an earthquake, providing an objective and standardized measurement of earthquake size. It reflects the total energy released at the focus, the point beneath the surface where the earthquake originates, and is independent of where the measurement is taken. This means that an earthquake's magnitude remains constant regardless of distance from the observer to the epicenter.

Magnitude is calculated using seismic waves recorded by instruments called seismometers, with the most commonly used modern scale being the Moment Magnitude Scale (Mw). This scale has largely replaced the older Richter Scale for scientific purposes, providing a more accurate representation of an earthquake's total energy. The Moment Magnitude Scale considers factors such as the area of the fault rupture, the amount of slip along the fault, and the rigidity of the rocks involved. It is logarithmic, meaning each whole number increase on the scale represents a tenfold increase in wave amplitude and approximately 32 times more energy released.

For example, small earthquakes with magnitudes less than 3.0 Mw are typically not felt by people but are detected by instruments, while Moderate earthquakes between 4.0 Mw and 6.0 Mw may cause minor to moderate damage near the epicenter. Large earthquakes with 7.0 Mw or higher can cause significant damage over wide areas. Unlike magnitude, which is a measure of earthquake energy at its source, intensity describes the observed effects of the earthquake at specific locations and varies based on factors like distance from the epicenter, local geology, and building structures. Magnitude provides a standardized way to classify and compare earthquakes globally, helping scientists and emergency responders quickly understand the scale of an event and its potential for widespread damage.

Warning Time

Unlike other natural hazards, earthquakes offer no warning time. They occur suddenly and without any prior indication, making preparedness and resilience critical. Early warning systems, such as ShakeAlert, are being developed to provide a few seconds to minutes of advance notice of an earthquake, which can be critical for automated systems like shutting down utilities and initiating emergency protocols. However, the time for human response is limited.

Secondary Hazards

Earthquakes can trigger multiple secondary hazards including:

- Ground Shaking. Ground shaking refers to the movement of the Earth's surface during an earthquake. It is one of the most noticeable and damaging effects of seismic activity. Ground shaking occurs when seismic waves—energy waves released by an earthquake—travel through the Earth's crust. These waves cause the ground to vibrate, move, or shake, which can range from subtle tremors to violent, destructive shaking. Even though the city is not in a High seismic risk zone, ground shaking from distant large earthquakes (e.g., Cascadia or Spokane Seismic Zone events) can still affect structures and infrastructure. The degree of shaking will depend on the magnitude of the earthquake and the distance from the fault. Even though the city is not in a High seismic risk zone, ground shaking from distant large earthquakes (e.g., Cascadia or

Spokane Seismic Zone events) can still affect structures and infrastructure. The degree of shaking will depend on the magnitude of the earthquake and the distance from the fault.

- Soil Liquefaction. This is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking or other rapid loading. Soil liquefaction is not a major concern in Medical Lake due to the area's basalt bedrock foundation. Although the city is not located in a high–risk liquefaction zone, certain areas with saturated soils or near water sources, like the West Plains Aquifer, could potentially experience soil instability. This could cause buildings and infrastructure to sink or tilt if a significant earthquake occurs, particularly in areas with loose, unconsolidated soils around the lake and wetlands.

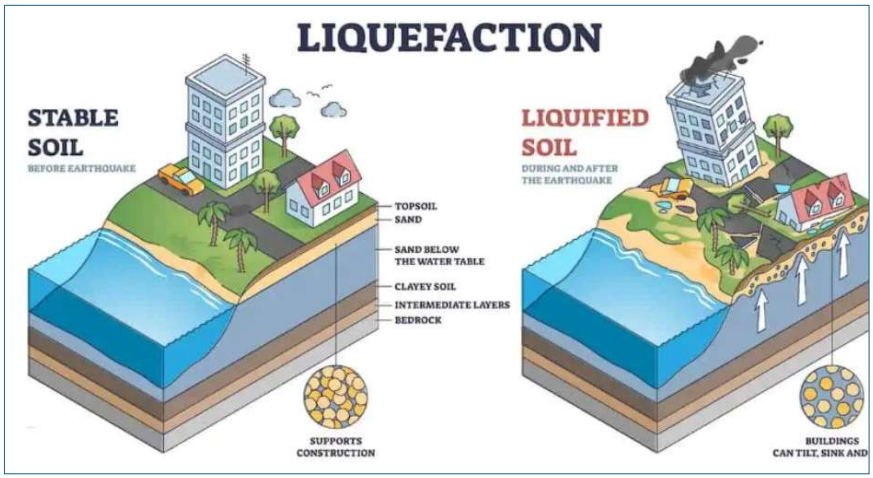


Figure 22. Soil Liquefaction (AES)

- Landslides. Earthquakes often trigger landslides, causing significant and even catastrophic damage to houses. If infrastructure is in the path of an earthquake–induced landslide, it is at risk for damage from landslide debris, as well as sliding downhill. The region around the city, while generally flatter compared to the mountainous regions of Washington, still has some hilly and sloped areas. Earthquakes, especially following heavy rainfall or snowmelt, could trigger landslides in unstable areas, impacting transportation routes like State Route 902 and affecting infrastructure located near sloped terrains.
- Fires. Damage to natural gas lines and electrical systems during an earthquake could result in fires, particularly in older buildings or critical infrastructure like the city Fire Department and Eastern State Hospital. Firefighting efforts could be hampered if water lines are damaged in the process, complicating emergency response efforts.
- Dam or Levee Failure. While the city does not have large dams nearby, any potential failure of local water retention structures or nearby reservoirs (like those in Spokane County) due to seismic activity could cause flooding in low–lying areas. City wastewater treatment facilities and water supply systems would be particularly vulnerable.
- Utility Disruptions. Earthquakes could damage essential infrastructure, such as water mains, power lines, and telecommunications systems. Prolonged outages would limit access to essential services, affecting facilities like Avista Utilities, Craig Road Well, and the Medical Lake Wastewater Treatment Facility. These disruptions could severely impact emergency response capabilities and daily operations in the city.

Climate Change Impacts

While climate change does not directly cause earthquakes, it can exacerbate the secondary hazards associated with seismic events. For example, increased rainfall or snowmelt can make slopes more prone to landslides during an earthquake, and changing groundwater levels can affect soil stability.

Climate change may also increase the risk of fires, which could worsen the impact of an earthquake by overwhelming firefighting capabilities.

Vulnerability

The vulnerability of the city to earthquakes depends on the age and resilience of its infrastructure, as well as the city's preparedness for seismic events. Buildings constructed before modern seismic codes are more likely to suffer damage or collapse during an earthquake. City critical infrastructure, such as utilities, hospitals, and transportation networks, may be vulnerable to disruption, complicating response and recovery efforts. While the city is not directly on the fault line or the coastline, the area could still feel Light to Moderate shaking during a Cascadia Subduction Zone earthquake. The key concerns for Medical Lake would be:

- Secondary Effects. Shaking from a large earthquake, even hundreds of miles away, could cause structural damage to older buildings and infrastructure in the region. Critical infrastructure, such as Medical Lake Fire Department, Public Works, and healthcare facilities like Eastern State Hospital may be affected if seismic waves reach inland.
- Disruptions to Services. Cascadia earthquakes could cause widespread power outages, disruptions to communication systems, and shortages in emergency supplies across the Pacific Northwest. The West Plains Aquifer, which serves the local community and the surrounding areas, could also face potential contamination from surface pollutants or disruptions in water supply services.
- Transportation and Supply Chain Disruptions. Regional highways, railroads, and air traffic could be severely impacted by damage from the earthquake, affecting the movement of goods, emergency supplies, and resources to and from the city. The Burlington Northern Santa Fe (BNSF) Railway, which runs near the city, might experience operational delays or damage, creating transportation challenges.
- Emergency Response Coordination. Emergency services would likely be called upon to support broader regional response efforts. Collaboration with nearby cities such as Spokane, Airway Heights, and Fairchild Air Force Base would be critical in addressing any fallout from the seismic event. City emergency plans would need to account for the possibility of providing shelter or medical support to displaced residents from other parts of the state.

While the city is not in the immediate danger zone of a Cascadia Subduction Zone earthquake, the effects of such an event would likely ripple through the community. The local infrastructure, emergency response systems, and critical resources like water and power could be impacted by a regional earthquake.

As the city continues to grow, ensuring that new developments adhere to seismic building codes will be critical to reducing future earthquake vulnerability. Increasing urbanization also means that more people and infrastructure are at risk during a seismic event. Land–use planning and zoning regulations should consider earthquake risk when approving new developments, especially in areas with unstable soils or proximity to faults.

Issues

Several critical factors contribute to earthquake risks, necessitating a comprehensive hazard mitigation approach:

- Aging Infrastructure. Many of the city's buildings, roads, and utilities were built before modern seismic standards were adopted. These structures are more vulnerable to damage or collapse during an earthquake.
- Lack of Public Awareness. While residents may be aware of the risk of earthquakes, many may not fully understand how to prepare for seismic events or retrofit older buildings to improve their earthquake resistance.
- Critical Infrastructure Vulnerabilities. Essential services like water, electricity, and telecommunications could be disrupted during an earthquake, complicating emergency response efforts.
- Limited Earthquake–Resistant Building Standards. Some buildings in the city, especially older homes and commercial properties, may not meet modern earthquake–resistant building codes, increasing their vulnerability to seismic events.

Consequence Analysis

In the event of a significant earthquake, the consequences for Medical Lake would include:

- Damage to Infrastructure. Buildings, roads, bridges, and utilities could be severely damaged or destroyed, leading to widespread disruptions in transportation, communications, and public services.
- Economic Losses. Business closures, property damage, and disruptions to transportation networks would result in significant economic losses. Rebuilding efforts would require substantial resources and time.
- Public Health and Safety Risks. Earthquakes can lead to injuries, fatalities, and displacement of residents. Damaged hospitals or emergency services could slow response times and complicate rescue efforts.
- Environmental Impacts. Earthquakes can cause landslides, damage ecosystems, and lead to contamination of water supplies, particularly if industrial facilities or hazardous material storage areas are damaged.

Results

The results of implementing earthquake mitigation strategies would include:

- Improved Infrastructure Resilience. Retrofitting older buildings and upgrading critical infrastructure to meet seismic standards would reduce the damage caused by future earthquakes.
- Better Public Preparedness. Through public education and earthquake drills, residents will be better prepared to respond to seismic events, reducing injuries and fatalities.
- Enhanced Emergency Response Capabilities. Strengthening coordination between local, state, and federal agencies will improve the city’s ability to respond to earthquakes quickly and effectively, minimizing damage and ensuring public safety.

Hazard: Volcano/Ashfall

The Pacific Northwest is home to several active volcanoes including Mount St. Helens, Mount Rainier, Mount Adams, Mount Baker, and Mount Hood. While Medical Lake lies largely outside the immediate hazard zones of Pacific Northwest volcanoes, such as pyroclastic flows or lahars. The city is, however, within reach of volcanic ashfall, as demonstrated by the Mount St. Helens eruption, making ash deposition the primary volcanic hazard for the area. Ashfall events can disrupt transportation, damage infrastructure, impact public health, and cause economic losses. The 1980 eruption of Mount St. Helens demonstrated the far–reaching impacts of volcanic ash, with ashfall affecting communities hundreds of miles away, including Medical Lake and other cities in Eastern Washington.



Figure 23. Mount St. Helens Eruption, 1980 (USGS)

Profile

Volcanic ashfall occurs when explosive eruptions release ash, gas, and rock into the atmosphere, which is then carried by winds over long distances. Ashfall is composed of fine particles of volcanic glass, minerals, and rock fragments that can damage respiratory systems, contaminate water supplies, disrupt transportation networks, and harm machinery. In the city, the primary concern related to volcanic hazards is the potential for ashfall from regional volcanoes, especially Mount St. Helens, Mount Rainier, and others in the Cascade Range. The amount of ashfall depends on the size of the eruption, wind patterns, and distance from the volcano.

Extent & Location

Ashfall from a volcanic eruption can affect the entire city, depending on the wind direction and the size of the eruption. Ash from large eruptions can travel hundreds of miles and blanket entire cities, causing air quality issues, transportation disruptions, and damage to infrastructure. In the 1980 eruption of Mount St. Helens, the city received a significant amount of ashfall, disrupting daily life and requiring extensive cleanup efforts. Ashfall can affect urban and rural areas, with agricultural lands being particularly vulnerable to ash contamination.

The map in Figure 24 depicts volcanic hazard zones around Mount St. Helens, categorized by colors to represent different threats. Red areas near the volcano indicate zones directly affected by pyroclastic flows, thick tephra, ballistic ejecta, and rockfall, including locations like Spirit Lake and the Johnston Ridge Observatory. Yellow zones show regions prone to lahars, which travel along river valleys such as the North and South Fork Toutle River, Kalama River, and the Cowlitz River, reaching downstream communities like Kelso and Longview. Orange zones highlight areas impacted by regional lava flows from past eruptions, primarily affecting surrounding valleys.

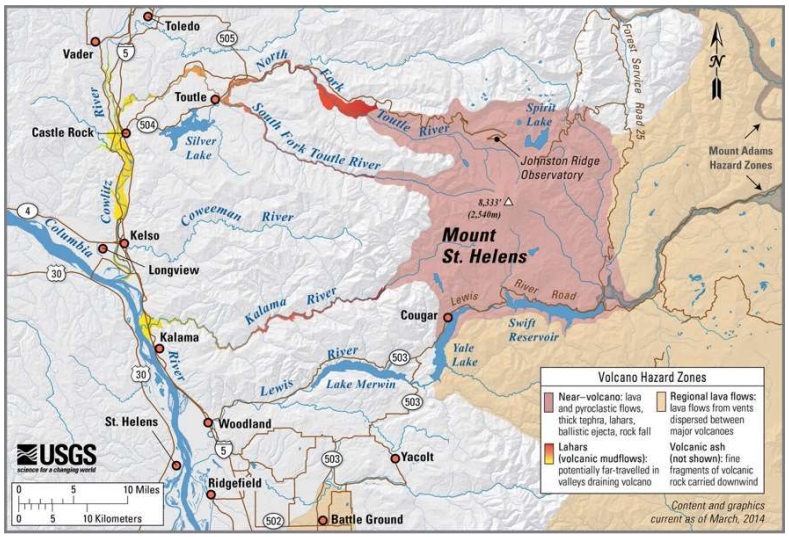


Figure 24. Mount St. Helens Volcano Hazard Zones (USGS)

Located in eastern Washington, Medical Lake is too far from Mount St. Helens to experience direct impacts such as pyroclastic flows, lahars, or lava flows. but volcanic ash fallout could reach the area depending on wind patterns. The map in Figure 25 illustrates the projected ashfall dispersion from a volcanic eruption in the Pacific Northwest. The color gradient, ranging from red to green, represents ash height (in kilometers) as it spreads across the region. Red indicates higher concentrations of ash near the eruption site, while green represents lower concentrations as the ash disperses further. The arrow shows the direction of ash movement, influenced by prevailing winds. The dashed and solid lines delineate the predicted areas of significant ashfall impact, with the denser fallout occurring closer to the eruption site. The map suggests that ashfall could reach the local area, located in eastern Washington depending on the prevailing winds and the scale of the eruption. If ash disperses in this direction, the city could experience disruptions to air quality, transportation, and infrastructure. Fine ash particles (PM2.5) can pose respiratory health risks, contaminate water supplies, and impact agriculture. The extent of the impact would depend on the concentration of ash reaching the region.

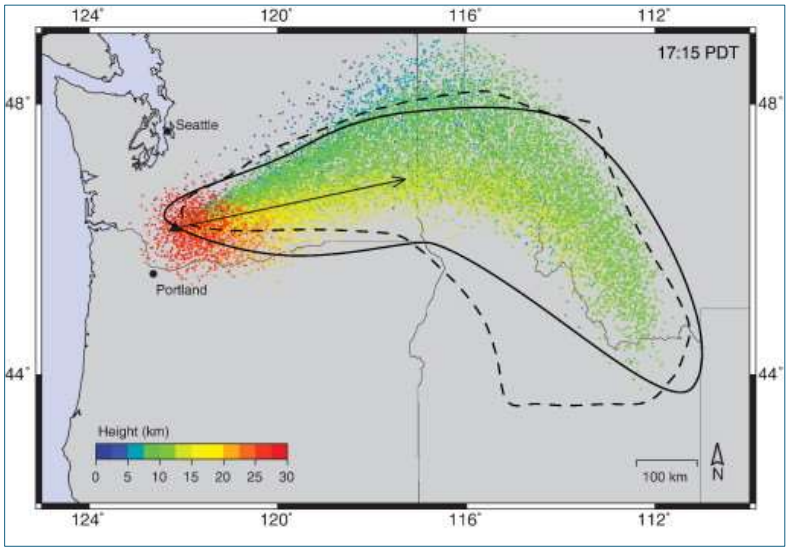


Figure 25. Projected Ashfall Dispersion from PNW Volcanic Eruption (Fero, et al., 2008)

Previous Occurrence(s)

Medical Lake has experienced ashfall from volcanic eruptions in the past, most notably during the 1980 Mount St. Helens eruption. Ash clouds spread across Eastern Washington, resulting in significant disruptions to air travel, transportation, and public health. The ash caused widespread damage to machinery, clogged air filtration systems, and posed respiratory hazards to residents. While no significant volcanic events have impacted the local community since then, the potential for future ashfall events remains.

Declaration

During the 1980 Mount St. Helens eruption, a state of emergency was declared in Washington State, allowing local, state, and federal agencies to coordinate response efforts and provide resources for cleanup and recovery. If a major volcanic eruption occurs in the local area and the city is affected by ashfall, local, state, or federal emergency declarations would likely be issued to facilitate response and recovery operations.

On April 3, 1980, Washington State took proactive measures to protect public safety when Governor Dixy Lee Ray declared a state of emergency, citing the real possibility of a major eruption or mudflow. This declaration enabled the mobilization of state resources and coordination with federal agencies to prepare for potential disasters. The May 18, 1980, eruption of Mount St. Helens prompted a federal disaster declaration under the Stafford Act to provide immediate assistance for the catastrophic impacts on Washington State. President Jimmy Carter issued the federal disaster declaration on May 22, 1980, covering counties in southwestern Washington, including Cowlitz, Skamania, and Lewis Counties, but the economic and environmental impacts extended across much of the state.

Frequency

Volcanic eruptions and ashfall are rare but high–impact events. The frequency of significant volcanic eruptions in the Cascade Range is unpredictable, with major eruptions like Mount St. Helens occurring once every few decades. Ashfall affecting the city is an infrequent event, but the risk remains due to the presence of active volcanoes in the region. On average, large eruptions from Cascade volcanoes occur every 100 to 200 years, but smaller eruptions could still produce localized ashfall.

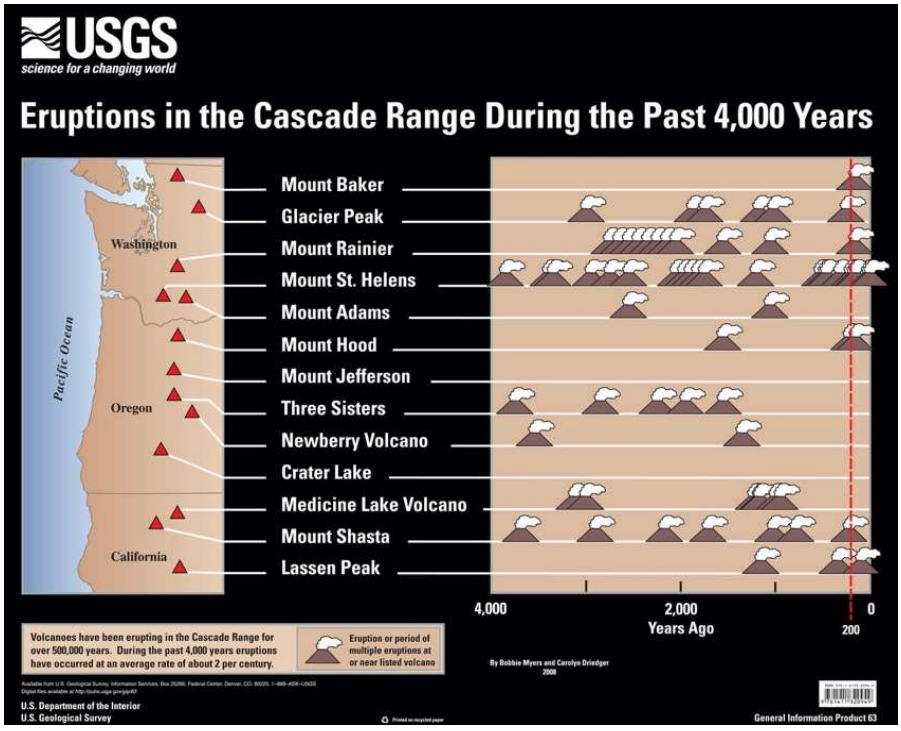


Figure 26. Cascade Range Eruptions in the Past 4,000 Years (USGS)

Severity

The severity of ashfall depends on the size of the eruption and the amount of ash deposited. Even small amounts of ash can cause significant problems by clogging machinery, contaminating water supplies, and affecting air quality. In severe cases, heavy ashfall can collapse roofs, disrupt transportation, damage crops, and pose serious respiratory health risks.

The 1980 eruption of Mount St. Helens caused extensive damage across Washington State, with total costs to the state estimated at over $1 billion (equivalent to approximately $3.5 billion in 2024 dollars). This figure encompasses a wide range of impacts on infrastructure, agriculture, forestry, in addition to negative economic impacts on residents, businesses and industries across the state. For Medical Lake, the main threats include damage to infrastructure, public health hazards, and economic disruptions, especially in agriculture and tourism.

Warning Time

Volcanic eruptions typically provide some warning through increased seismic activity, ground deformation, and gas emissions, monitored by agencies like the U.S. Geological Survey (USGS). However, ashfall can occur quickly following an eruption, depending on wind patterns and volcano location. The Pacific Northwest Seismic Network (PNSN) and the USGS issue alerts and warnings for volcanic activity, which allow residents and local authorities to take protective measures, such as staying indoors, closing ventilation systems, and preparing for potential evacuation in severe cases.

Secondary Hazards

Volcanic eruptions and ashfall can lead to several secondary hazards, including:

- Air Quality Issues. Volcanic ash poses a significant respiratory hazard, especially for people with pre–existing conditions like asthma or chronic respiratory diseases.
- Water Contamination. Ashfall can contaminate drinking water supplies, particularly open water sources like lakes, rivers, and reservoirs, as well as disrupt water treatment facilities.
- Infrastructure Damage. Ash can clog stormwater systems, cause roof collapses due to the weight of ash, and damage mechanical systems such as HVAC units, engines, and electronics.
- Economic Disruption. Agricultural lands may be covered in ash, damaging crops and soil, leading to economic losses. Businesses may be forced to close temporarily due to ash accumulation and infrastructure damage.
- Transportation Disruptions. Ash can reduce visibility on roads, clog vehicle air filters, and shut down air travel due to the risk of engine failure from ash ingestion.

Climate Change Impacts

Climate change does not directly influence volcanic activity; however, it may affect the secondary impacts of volcanic eruptions. For example, changes in precipitation patterns may influence how ash is dispersed or how quickly it is removed from the atmosphere. The cumulative impacts of climate–related hazards (like drought or extreme weather) could compound the effects of ashfall by making ecosystems more vulnerable.

Vulnerability

Medical Lake is vulnerable to ashfall, primarily due to its proximity to active volcanoes in the Cascade Range. While the city is not at risk for direct lava flows or pyroclastic events, the entire

population is vulnerable to ash–related impacts. Public health, critical infrastructure, and the local economy are the primary areas of concern. Older buildings with less robust structural integrity may also be more vulnerable to the weight of heavy ash deposits.

- Impact on Life, Health, and Safety. Ashfall can have severe health impacts, particularly respiratory issues, as fine ash particles can irritate the lungs and exacerbate conditions such as asthma. Vulnerable populations, such as the elderly, children, and those with pre–existing respiratory conditions, are particularly at risk. In extreme cases, people may need to wear masks or remain indoors for extended periods. Ashfall can also limit access to medical services due to transportation disruptions.
- Impact on Property. Volcanic ash can accumulate on rooftops, leading to structural damage or collapse, especially in older buildings not designed to withstand the additional weight. The abrasive nature of ash can damage windows, electrical systems, HVAC units, and machinery. Buildings may also require extensive cleaning following ashfall, which can be costly and time consuming.
- Impact on Critical Facilities. Critical facilities, such as hospitals, emergency services, and water treatment plants, are especially vulnerable to ashfall. Ash can clog air filtration systems, damage electrical and mechanical equipment, and contaminate water supplies. Ensuring that critical facilities are equipped with proper filtration systems and backup power is essential to maintaining public safety during an ashfall event.
- Impact on Economy. The economic impact of ashfall can be significant, particularly in sectors such as agriculture, tourism, and transportation. Crops can be damaged or destroyed by ash accumulation, and soil may require remediation before planting can resume. Businesses may face closures due to transportation disruptions or damage to buildings and equipment. Cleanup efforts can also be costly, straining local government budgets and delaying economic recovery.
- Impact on Environment. Ashfall can have profound environmental impacts, including the contamination of soil and water resources. Ash can alter the pH of water bodies, harm aquatic life, and damage ecosystems by burying vegetation. Large amounts of ash can disrupt local habitats and wildlife. Cleanup efforts in natural areas may take years to restore the environment to its pre–event state.
- Future Trends in Development. As the city continues to develop, it is essential that new construction and infrastructure projects account for the risk of ashfall. Ensuring that buildings are constructed to withstand the weight of ash accumulation, particularly on roofs, will be crucial. Future development should also focus on improving stormwater management systems to handle potential ash–clogging, and critical infrastructure should be equipped with protective measures like air filtration and backup power systems.

Issues

Several critical factors contribute to ashfall risks in Medical Lake, necessitating a comprehensive hazard mitigation approach:

- Public Awareness. Many residents may not fully understand the potential impacts of ashfall or how to prepare for it, especially since volcanic eruptions are relatively rare. Public education is crucial for ensuring preparedness.

- Infrastructure Vulnerabilities. Older buildings, stormwater systems, and critical infrastructure may not be adequately equipped to handle ash accumulation, leading to potential property damage and service disruptions.
- Air Quality and Public Health. Volcanic ash can pose serious respiratory health risks, especially for vulnerable populations. Ensuring the city has adequate stockpiles of protective equipment like masks is essential.
- Economic Disruption. Businesses, particularly in agriculture and tourism, could face significant economic losses due to ashfall. Recovery efforts may be prolonged due to the costs associated with cleanup and infrastructure repair.

Consequence Analysis

In the event of significant volcanic ashfall, consequences for the city would include:

- Damage to Infrastructure. Buildings, roads, and critical facilities could suffer damage from ash accumulation, particularly older structures with less robust roofs or air filtration systems.
- Health Risks. The primary public health concern during an ashfall event is respiratory issues, especially for individuals with pre–existing conditions like asthma. There may be increased hospital visits and strain on healthcare services.
- Economic Losses. Agriculture could suffer significant losses due to ash contamination, while businesses may close temporarily due to ash cleanup and damage to buildings and equipment.
- Environmental Impacts. Ashfall can cause long–term environmental damage, including soil contamination, disruption to ecosystems, and harm to wildlife.

Results

The results of implementing volcanic ashfall mitigation strategies would include:

- Improved Infrastructure Resilience. Upgrading buildings and critical facilities with reinforced roofs, proper air filtration, and backup power systems would reduce the risk of damage from ashfall.
- Better Public Awareness and Preparedness. Educating residents about the risks of ashfall and how to prepare for volcanic eruptions would improve public safety and reduce health risks.
- Enhanced Emergency Response Capabilities. Ensuring that emergency services are prepared to respond quickly to ashfall events, including providing respiratory protection and setting up shelters, would minimize the impact on public health and safety.
- Economic Recovery. Establishing cleanup protocols and ensuring access to emergency funding would help the city recover more quickly from ashfall events, reducing the long–term economic impact.

Hazard: Landslide

Landslides occur when gravity causes rock, soil, and other debris to move downslope, often triggered by factors such as heavy rainfall, rapid snowmelt, earthquakes, volcanic activity, or human activities like construction. Medical Lake is not in an area of particularly high landslide risk compared to more mountainous regions, but localized landslides can still occur in areas with unstable soils, steep slopes, or during extreme weather events. Landslides can damage infrastructure, disrupt transportation, and pose threats to life and property, particularly in areas with poorly drained soils or inadequate vegetation.

Profile

Landslides can take many forms, including rock falls, debris flows, and mudslides. They are typically triggered by natural processes like prolonged rainfall or rapid snowmelt, but human activities such as deforestation, improper land use, and poorly planned construction can increase landslide risks. In Medical Lake, the primary landslide concerns arise from areas with steep slopes, loose soils, and proximity to water bodies where erosion can undermine the stability of slopes. While the city is not as prone to large landslides as more mountainous areas, landslides triggered by heavy rainfall or ground saturation are still a concern, particularly along roadways and near critical infrastructure. Landslides are often initiated by natural processes but can be exacerbated by human activities. Common triggers include:

- Prolonged Rainfall. Extended periods of rain saturate soils, reducing cohesion and causing slopes to fail. Heavy storms can lead to saturated soils along steep inclines, particularly near waterways or hillsides.
- Rapid Snowmelt. Sudden warming during the spring can cause snow to melt quickly, adding significant water to the soil. This rapid saturation increases the likelihood of slope instability.
- Seismic Activity. Earthquakes can destabilize slopes by shaking loose rock and soil. While earthquakes in the local area are less frequent than in other parts of Washington, regional seismic events could potentially trigger landslides in vulnerable areas.
- Human Activities
  - Deforestation: removing vegetation weakens root systems that help stabilize soil, making slopes more susceptible to failure.
  - Improper Land Use: construction on or near unstable slopes, particularly without adequate planning or mitigation measures, can significantly increase landslide risks.
  - Drainage Alterations: poorly planned water management systems can lead to water pooling or erosion, undermining slope stability.

Extent & Location

Landslides are generally localized, occurring in areas with steep slopes, unstable soils, or near bodies of water where erosion is present. Areas of concern may include natural bluffs, road cuts, and hillsides that become unstable during or after heavy rains. Landslides can range from small soil slips that affect only minor areas to larger debris flows that can block roads, damage buildings, and threaten human lives. Areas of poor drainage are particularly vulnerable to mudslides during heavy rain events.

According to USGS U.S. Landslide Inventory and Susceptibility heatmapping, the most numerous occurrences of local landslide susceptibility lie in two areas: 1) west and southwest of West Medical Lake, 2) northeast of Medical Lake itself, and 3) along the northern and eastern edges of Medical Lake. Although no large landslides have occurred in these areas recently, they are susceptible to future landslides and should be considered in hazard mitigation planning.

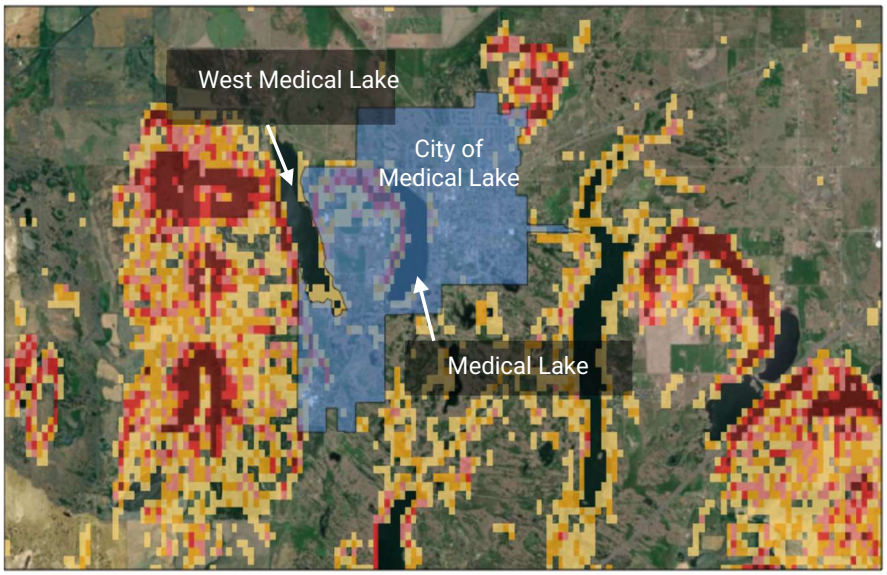


Figure 27. Medical Lake Landslide Inventory & Susceptibility (Mirus et al., 2024)

Previous Occurrence(s)

While large–scale landslides have not been a frequent issue, small, localized events have occurred, typically triggered by heavy rain or rapid snowmelt. For example, past occurrences have included minor landslides along slopes adjacent to roads or near water bodies where soil saturation and erosion have weakened hillsides. Regional landslide susceptibility can increase during prolonged periods of wet weather or after forest fires that destabilize the soil by removing vegetation.

Declaration(s)

Although no federal or state emergency declarations have been issued specifically for landslides in Medical Lake, localized landslide events have occasionally resulted in emergency road closures and the need for repairs. If a major landslide were to occur, local or state–level declarations would be necessary to mobilize resources for response and recovery. Federal declarations might be sought if a landslide caused widespread infrastructure damage or loss of life.

Frequency

Landslides are relatively infrequent but can occur during heavy rainfall events, particularly after prolonged wet periods that saturate the soil. Landslides triggered by rapid snowmelt or human activities, such as construction on unstable slopes, are also possible but are less common. The frequency of small, localized landslides can be expected to increase during particularly wet years or in areas with erosion problems.

Severity

The severity of landslides can vary significantly, depending on the amount of debris involved and the size of the slope failure. Smaller landslides may cause minor disruptions, such as temporary road blockages or property damage, but larger events could result in significant infrastructure damage, road closures, and threats to public safety. In areas with steep slopes and inadequate drainage, mudslides can occur, carrying large amounts of debris and posing a serious hazard to buildings,

transportation routes, and critical facilities. The severity of landslides is typically greater when they coincide with other hazards, such as heavy rainfall, flooding, or wildfires.

Warning Time

Landslide warning time is often short, particularly in the case of fast–moving events like debris flows or mudslides. However, landslide risk can be predicted based on weather conditions, soil saturation levels, and slope stability assessments. Local authorities can issue warnings when prolonged rainfall is expected, or when snowmelt is rapid and likely to saturate the soil. Modern technology, such as landslide early warning systems, can also provide real–time data to help predict landslide occurrences and issue timely warnings.

Secondary Hazards

Landslides can lead to several secondary hazards, including:

- Flooding. Landslides can block rivers or drainage channels, leading to flooding in nearby areas as water backs up behind the debris.
- Infrastructure Damage. Landslides can damage roads, bridges, utilities, and buildings, leading to secondary hazards like power outages, gas leaks, and transportation disruptions.
- Wildfires. Landslides may occur after wildfires, as the loss of vegetation destabilizes slopes, leading to increased risk of soil erosion and landslides during subsequent rainfall events.
- Water Contamination. Landslides can disrupt water systems or contaminate water supplies by introducing sediment and debris into water sources.

Climate Change Impacts

Climate change may exacerbate landslide risks in the local area by increasing the frequency and intensity of extreme weather events, such as heavy rainfall and rapid snowmelt. Warmer temperatures can lead to more intense storms and unpredictable precipitation patterns, which in turn increase the likelihood of landslides, particularly in areas with unstable soils. Climate change can lead to more frequent wildfires, which further destabilize slopes by removing vegetation, increasing the risk of post–fire landslides during subsequent rain events.

Vulnerability

Landslide vulnerability is primarily driven by topography, soil conditions, and the proximity of certain areas to steep slopes or water bodies. Areas with poor drainage, steep hillsides, or past erosion problems are particularly vulnerable. Infrastructure built near unstable slopes or in poorly drained areas may be at higher risk, and efforts to improve slope stability, drainage, and land–use planning can help reduce vulnerability. Although the city does not face the same high landslide risks as mountainous regions, the city has specific vulnerabilities due to its geological and hydrological context. Key factors influencing landslide risks include:

- Steep Slopes. Areas with even moderate inclines are prone to soil movement, especially during prolonged wet weather or rapid snowmelt.
- Loose Soils. Unconsolidated soils, particularly those near water bodies, are at greater risk of saturation and failure. Erosion along banks and slopes adjacent to lakes and streams further increases instability.

- Proximity to Water Bodies. Erosion from water bodies in the city can undermine nearby slopes, leading to localized landslides. Increased erosion rates during heavy rainstorms or flood events compound these risks.
- Critical Infrastructure. Roads and other infrastructure near steep or unstable areas may be particularly vulnerable to landslides. For example, roadways cutting through hilly terrain or along slopes could be impacted by debris flows, causing transportation disruptions and safety concerns.

Impact

- Impact on Life, Health, and Safety**.** Landslides pose a direct threat to life and safety, particularly if they occur near homes, roadways, or other areas where people are present. Fast–moving debris flows can cause injury or death, while slower landslides may cause displacement or isolation if roads are blocked, or homes are damaged. Public safety is also at risk if emergency response efforts are hindered by landslide–induced road closures or other infrastructure damage.
- Impact on Property. Landslides can cause significant damage to property, especially buildings and homes located on or near slopes. The movement of earth and debris can undermine foundations, damage utilities, and render properties uninhabitable. Landslides can also damage landscaping, driveways, and retaining walls. The cost of repairs and mitigation can be high, particularly if properties require extensive stabilization efforts.
- Impact on Critical Facilities. Critical facilities, such as hospitals, fire stations, and utilities, are essential to the functioning of the community during and after a landslide. If these facilities are located in landslide–prone areas or if access to them is blocked by landslides, it can hinder emergency response efforts. Roads and transportation routes used by emergency services are especially vulnerable, and landslide–related road closures can delay response times and access to essential services.
- Impact on Economy. Landslides can have significant economic impacts, especially if they cause long–term damage to infrastructure or disrupt transportation routes. Repairing roads, bridges, and utilities can be costly, and businesses may experience losses due to property damage or reduced accessibility. In rural areas, landslides can also damage agricultural land, leading to economic losses for farmers. The cost of landslide mitigation and recovery can strain local government budgets.
- Impact on Environment. Landslides can have significant environmental impacts, including soil erosion, habitat destruction, and changes to local ecosystems. Sediment and debris from landslides can clog streams and rivers, affecting water quality and aquatic life. Landslides can also remove vegetation, destabilize slopes, and increase the risk of further erosion in the future. The recovery of natural areas affected by landslides can take years, and in some cases, ecosystems may not fully recover.
- Future Trends in Development. As the city population grows and development expands into previously undeveloped areas, the risk of landslides may increase, particularly in areas with steep slopes or poor drainage. Future development must consider landslide risks when planning new construction, infrastructure projects, and roadways. Incorporating landslide mitigation strategies, such as slope stabilization, proper drainage systems, and enforcing building codes in landslide–prone areas, will be essential for reducing future risk.

Issues

Several critical factors contribute to landslide risks in the city, necessitating a comprehensive hazard mitigation approach:

- Slope Stability. Areas with steep slopes or poorly drained soils are particularly vulnerable to landslides, especially during periods of heavy rainfall or snowmelt.
- Inadequate Drainage. Poor drainage systems can lead to soil saturation, increasing the risk of landslides, particularly in areas near water bodies or with high water tables.
- Lack of Public Awareness. Many residents may not be fully aware of landslide risks or how to mitigate them, especially if they live near vulnerable slopes or drainage areas.
- Infrastructure Vulnerability. Roads, bridges, and critical facilities may be located in areas prone to landslides, increasing the risk of damage and service disruptions during landslide events.

Consequence Analysis

In the event of a significant landslide, the consequences for the city would include:

- Infrastructure Damage. Roads, bridges, and buildings near unstable slopes could suffer significant damage, leading to road closures, property loss, and costly repairs.
- Economic Losses. Landslides can disrupt transportation and business operations, resulting in lost revenue and high costs for rebuilding and mitigation. Agricultural land may also be affected by soil erosion or debris.

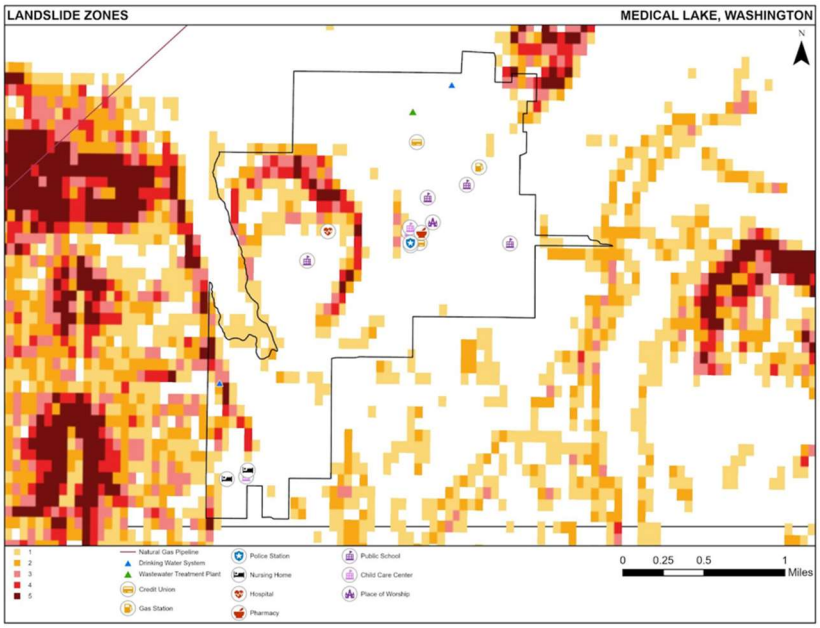


Figure 28. Medical Lake Landslide Zones

- Public Health and Safety Risks. Landslides can cause injuries, fatalities, and displacements, particularly if they occur in residential areas or along roads used by commuters and emergency services.
- Environmental Impacts. Landslides can lead to long–term environmental damage, including soil erosion, habitat loss, and water contamination, requiring significant recovery efforts.

Landslide consequence analysis highlights areas susceptible to landslides alongside critical infrastructure such as public schools, hospitals, gas stations, and police stations. Regions in darker shades (red) indicate areas of higher landslide risk, while lighter shades (yellow) signify lower risk. Notably, several critical facilities, including hospitals and schools, appear to be located near or adjacent to these risk zones. Natural gas pipelines and other utilities traverse regions with Moderate–to–High landslide susceptibility, potentially increasing vulnerability during seismic or extreme weather events. The clustering of high–risk zones around essential infrastructure underlines

the importance of targeted mitigation measures, such as slope stabilization and retrofitting structures, to protect public safety and ensure continued functionality during emergencies. The following specific infrastructure is located near or within areas of Moderate–to–High landslide susceptibility in Medical Lake:

- Public School. One public school is situated near a region of Moderate landslide risk (orange shading). This proximity could pose challenges during a natural disaster, particularly in ensuring student and staff safety.
- Hospital. The hospital is located adjacent to a higher–risk zone (red shading). Landslides in this area could obstruct emergency access routes or disrupt operations during critical events.
- Gas Stations. At least one gas station is near Moderate–risk zones. Disruptions or damage here could lead to fuel supply interruptions, complicating emergency responses.
- Natural Gas Pipelines. The pipelines traverse areas of varying landslide susceptibility, including zones with significant risk. Damage to these pipelines could pose fire or explosion hazards, compounding risks during an earthquake or heavy rainfall.
- Police Station. The police station is relatively close to a lower–risk zone (yellow shading), though its proximity suggests possible minor disruption risks.
- Wastewater Treatment Plant. A facility linked to the water supply or wastewater treatment appears to lie in proximity to a Moderate–risk zone, raising concerns about potential service interruptions.

Each of these facilities is critical to public safety and functionality, highlighting the need for preemptive risk reduction measures, such as retrofitting structures, reinforcing surrounding slopes, and developing emergency access plans to mitigate the potential impacts of landslides.

Results

The results of implementing landslide mitigation strategies would include:

- Improved Slope Stability. Stabilizing vulnerable slopes and improving drainage systems will reduce the likelihood of landslides and protect property and infrastructure from damage.
- Better Public Awareness and Preparedness. Educating residents about landslide risks and how to protect their homes and properties will improve public safety and reduce vulnerability.
- Enhanced Infrastructure Resilience. Upgrading roads, bridges, and critical facilities to withstand landslide events will minimize disruptions and ensure continuity of essential services.
- Reduced Environmental Damage. Implementing erosion control measures and protecting natural areas from development will help preserve the environment and reduce the long–term impacts of landslides.

Capability Assessment

City capabilities include local emergency response teams, mutual aid agreements with neighboring communities, and existing infrastructure for disaster response and recovery. The city does not have an established emergency management plan or adequate resources in place for immediate response to incidents. There is a need for enhanced training, equipment, and public awareness programs to further strengthen community resilience. The city's emergency management team works closely with local, state, and federal agencies to coordinate response efforts and ensure effective communication during emergencies. Ongoing training programs for emergency responders and public education campaigns are essential for maintaining a high level of preparedness.

County Capability Assessment

Spokane County has developed various mitigation strategies, incorporating a range of legal, regulatory, administrative, and financial capabilities that strengthen resilience to natural hazards which the City of Medical Lake utilizes to enhance its preparedness and mitigation efforts. The county's efforts include:

- Legal and Regulatory Capability. Spokane County has comprehensive plans such as the Growth Management Act (GMA), Critical Areas Ordinance, and floodplain management regulations. These tools aim to limit exposure to hazards by regulating land use and ensuring that new developments consider hazard risks.
- Key Ordinances. Key Ordinances include zoning regulations, subdivision ordinances, and building codes aligned with International Code Council standards.
- Administrative and Technical Capability. The county has a strong administrative infrastructure, including emergency managers, planners, and GIS personnel trained to handle hazard mitigation tasks. Departments such as Public Works and Planning & Community Services support hazard planning through the technical expertise of their staff.
- Fiscal Capability. Funding is allocated through programs like the Capital Improvement Plan and Community Development Block Grants. These financial mechanisms are supplemented by external funding from federal programs like FEMA's Pre–Disaster Mitigation Program and Hazard Mitigation Grant Program.
- Community Outreach and Education. The county collaborates with local organizations to enhance public awareness through education and outreach campaigns related to hazard preparedness. Programs include utilizing social media, public meetings, and workshops.

Local Capability Assessment

Medical Lake shows considerable local capability, though there are areas where improvements are possible:

- Regulatory and Technical Capabilities. The city has adopted building codes and zoning regulations in line with state and federal standards.
- Critical Facilities. the city has identified critical infrastructure and maintains a list to prioritize protection during hazards like storms and wildfires.

- Response Infrastructure. While the city has established emergency response infrastructure, including collaboration with state and federal agencies, the city requires more training and resources to enhance resilience against hazards.
- Staff, Technical Resources, and Constraints. The City of Medical Lake has a range of staff, technical resources, and partnerships that support hazard mitigation efforts. The Planning and Public Works Departments oversee land use regulations, infrastructure maintenance, and development policies that contribute to risk reduction. The Fire Department and Spokane County Fire District #3 provide emergency response capabilities, fire prevention programs, and wildfire mitigation expertise. Emergency Management Staff coordinate disaster preparedness initiatives and response strategies in collaboration with regional and state agencies. Additionally, the city leverages partnerships with Spokane County Emergency Management, Fairchild Air Force Base, and local utility providers to enhance resource-sharing and response capabilities.

Despite these strengths, certain constraints may impact the implementation of mitigation actions. Limited funding and staffing remain challenges, as the city relies on grant programs such as FEMA's Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) funding to support large-scale projects. Technical limitations, including access to advanced hazard modeling software and GIS mapping capabilities, may also affect risk assessment accuracy and infrastructure planning. Furthermore, coordination across agencies can be complex, requiring ongoing communication and collaboration to ensure seamless implementation of mitigation strategies. To address these challenges, the City of Medical Lake aims to expand training opportunities for staff, pursue additional funding sources, and strengthen interagency coordination. By identifying and addressing these constraints, the city can enhance its overall capability to implement effective hazard mitigation initiatives and improve community resilience.

Assessment Analysis

Medical Lake has several notable capabilities in disaster preparedness and response but also faces challenges that need to be addressed. The city benefits from the presence of local emergency response teams and mutual aid agreements with neighboring communities, which enhance regional resilience during large–scale events. The city has adopted building codes and zoning regulations aligned with state and federal standards, helping regulate land use and mitigate exposure to hazards. The city has also identified critical infrastructure and maintains a prioritized list for protection during events such as storms and wildfires. Collaboration with local, state, and federal agencies further strengthens city abilities to coordinate disaster response efforts effectively.

However, there are significant gaps in city emergency management capabilities. the city does not currently have fully established emergency management plans, leaving a critical void in guiding immediate response actions during disasters. The city also faces a shortage of necessary equipment and resources, which limits its ability to respond independently to hazard events. There is a need for enhanced training programs for emergency responders to improve readiness and operational capabilities. Public education and awareness programs are another area requiring development, as greater community involvement and preparedness are essential to strengthening resilience.

Despite these challenges, there are opportunities to improve. Expanding training initiatives for emergency responders will enhance their ability to manage diverse hazard scenarios. Similarly, public education campaigns and outreach efforts can promote hazard awareness and preparedness among residents. By leveraging Spokane County's advanced regulatory, technical, and fiscal capabilities, the city can align its hazard mitigation strategies with county programs and access

additional resources such as FEMA grants. Without immediate improvements, however, the city remains vulnerable to hazards like wildfires, storms, and floods, and existing emergency infrastructure could face strain during large–scale disasters. Addressing these gaps and leveraging opportunities will be critical to enhancing the city's resilience to future hazards.

Conclusion

Based on the evaluation of city capabilities, it is clear that while it has a solid foundation in hazard mitigation and disaster preparedness, significant improvements are needed to address existing gaps. Medical Lake benefits from local emergency response teams, mutual aid agreements with neighboring communities, and adherence to state and federal standards for building codes, which collectively enhance its resilience to disasters. The identification of critical infrastructure and prioritized protection for hazards such as storms and wildfires further strengthen its preparedness.

However, the lack of a fully developed emergency management plan, insufficient resources, and limited public awareness programs highlight critical areas for improvement. The city's ability to respond effectively to hazard events is hindered by the need for enhanced training programs for emergency responders and greater investment in necessary equipment and resources. Robust public education campaigns are essential to promote hazard awareness and preparedness among residents. Addressing these issues will be crucial for ensuring the city can effectively manage future hazard scenarios and build a more resilient community. Proactive action to close these gaps will provide a stronger safeguard for city residents and infrastructure against future disasters.

Mitigation Strategy

The City of Medical Lake is part of a broader community (Spokane County) and seeks to align with the county's guiding principal:

> *"Utilizing community partnerships and planning, reduce the vulnerability to natural hazards in order to protect the health, safety, welfare, environment, and economy of the Greater Spokane area within Spokane County."*

Although this is the City of Medical Lake's first stand-alone Local Hazard Mitigation Plan (LHMP), the city participated in the 2020 Spokane County Hazard Mitigation Plan (HMP) as an approved jurisdiction. As part of that regional effort, Medical Lake adopted mitigation goals and actions relevant to its risk profile at the time. In this stand-alone plan, the City has reviewed the progress made on those previously identified actions and documented their status in Table 35. Several actions were carried forward, completed, or refined based on updated risk assessments, new community priorities, and lessons learned from the 2023 Gray Fire. In addition, this plan reflects changes in development, including new residential and commercial infrastructure, improvements in city services, and expanded broadband. The City's mitigation priorities have shifted toward wildfire mitigation, drought resilience, and severe weather hardening, in response to increased hazard frequency and community concern. This updated and localized planning effort enables more precise mitigation investments and demonstrates the City's commitment to maintaining FEMA eligibility and long-term community resilience.

Since the City's participation in the 2020 Spokane County Hazard Mitigation Plan, Medical Lake has experienced modest development primarily within previously zoned residential and institutional areas. New development has generally occurred outside of mapped floodplains and high-risk wildfire areas, minimizing added exposure. However, residential infill near the wildland-urban interface (WUI) on the west side of the city, adjacent to areas affected by the 2023 Gray Fire, has increased the number of structures vulnerable to future wildfires. Additionally, infrastructure upgrades, including stormwater improvements and expanded road resurfacing, have improved resilience in areas historically affected by severe weather and drainage challenges. No significant development has occurred in known landslide or volcanic ashfall hazard zones. As a result, the city's overall vulnerability profile has shifted slightly, with increased concern for wildfire-exposed development and the need for enhanced drought and severe weather protections in newly populated areas.

Goals & Objectives

Mitigation strategies for the city include specific goals, objectives, and actions to reduce community risks from identified hazards. These goals and objectives are designed to address the most significant risks and build resilience within the community.

Based on the results of the risk assessment, the Medical Lake Local Hazard Mitigation Planning Committee (HMPC) developed a mitigation strategy for reducing city risks and vulnerabilities to hazards. The resulting Mitigation Strategy for the city planning area is comprised of goals and objectives, along with a mitigation action plan which includes a series of mitigation action projects and implementation measures.

Based on the risk assessment, the HMPC identified goals and objectives for reducing city hazard vulnerabilities. Goals and objectives of this multi–hazard mitigation plan developed by the planning committee are listed in the table below.

Table 29. Mitigation Goals & Objectives

Goal	Objectives
Goal 1 Minimize risks and vulnerabilities of the City of Medical Lake to the impacts of natural hazards and protect lives and reduce damages and losses to property, economy, public health and safety, and the environment.	1. Minimize loss of life and injury and protect public health and safety of all city residents and visitors, including at–risk populations. 2. Minimize economic and resource impacts and promote long–term viability and sustainability of city resources. 3. Minimize impacts to existing and future development from all hazards. 4. Minimize impacts to natural and cultural resources. 5. Minimize impacts to watersheds and promote watershed health.
Goal 2 Provide protection for critical facilities, infrastructure, utilities, and services from hazard impacts.	1. Harden critical facilities, infrastructure, and utilities; create redundancy and reliability to prevent or minimize loss and facilitate recovery. 2. Design and/or retrofit critical facilities, infrastructure, and utilities necessary for continuity of government to allow them to remain operational during and following a disaster. 3. Minimize impacts of extended power outages.
Goal 3 Improve public awareness, education, communication, & preparedness for all hazards.	1. Enhance public outreach, education, and preparedness programs to include all hazards of concern. 2. Increase public knowledge of the risk and vulnerability to identified hazards and their recommended responses to disaster events to reduce losses. 3. Utilize multiple public outreach avenues and modern communication platforms, such as new technologies and social media. 4. Provide information and alerts about potential, developing, and ongoing emergency situations through extensive alert and warning systems that convey information to all residents, in multiple languages and formats to ensure it is widely accessible. 5. Educate the public on evacuation planning and sheltering options for all hazard types, encompassing all groups (e.g., residents, visitors, second homeowners, vulnerable populations, animals). 6. Increase community awareness and participation in hazard mitigation activities.
Goal 4 Increase community capabilities to mitigate losses and to be prepared for, respond to, and recover from a disaster event.	1. Continue enhancements to Emergency Services capabilities, integrating new technologies to reduce losses and save lives. 2. Improve interagency (local, state, federal) emergency coordination, planning, training, exercising, and communication to ensure effective community preparedness, response, and recovery. 3. Improve interagency coordination with respect to implementation of mitigation activities, including multi–jurisdictional efforts.

Goal	Objectives
	4. Enhance the use of shared resources and develop a strong mutual aid support system. 5. Maintain current service levels, at a minimum. 6. Develop funding mechanisms to enhance emergency services for additional staffing and enhanced services. 7. Increase first responder awareness of vulnerable populations and other priority needs during a hazard event, utilizing enhanced technology to pre–identify and communicate. 8. Utilize lessons learned (debriefing) to improve response capabilities. 9. Promote efficient recovery from incidents to minimize impacts to lives, environment, and economy.
Goal 5 Ensure a more resilient city that can adapt to hazards created or exacerbated by climate change.	1. Reduce city greenhouse gas (GHG) emissions as specified in relevant sustainability plans to reduce the hazards exacerbated by climate change. 2. Consider climate change adaptation strategies in flood and inundation hazard planning. 3. Consider climate change adaptation strategies in planning for high fire hazard severity zones. 4. Protect groundwater and reduce the impacts from drought and climate change.
Goal 6 Reduce fire severity and mitigate undesirable fire outcomes in the City of Medical Lake.	1. Reduce life safety issues, property loss, and damages associated with wildfires. 2. Prevent and reduce wildfire ignitions and wildfire–related losses. 3. Restore and maintain fire–resilient landscapes on public and private lands. 4. Create fire–adaptive communities by facilitating interagency cooperation, communication, and support between agencies and the public. 5. Mitigate undesirable fire outcomes for the environment, watersheds, and quality of life.
Goal 7 Maintain FEMA eligibility and position the community for grant funding.	1. Maintain the requirement of updating the Local Hazard Mitigation Plan (LHMP) every 5 years. 2. Continue to increase the number of participants in future LHMP updates to provide eligibility for FEMA pre– and post–mitigation funding and other related funding sources. 3. Continue compliance with the National Flood Insurance Program (NFIP) and enhance the floodplain management program through participation in the NFIP Community Rating System (CRS) where feasible. *Although Goal 7 states that the City of Medical Lake will "continue compliance with the National Flood Insurance Program (NFIP) and Community Rating System (CRS)," FEMA's* Community Status Book *currently lists the City's NFIP status as* suspended. *This indicates that, as of the latest review, the city is not in good standing with the NFIP and is ineligible for NFIP flood insurance. The inclusion of Goal 7 reflects Medical Lake's intent to reestablish NFIP participation*

Goal	Objectives
	and, over time, seek CRS classification to support flood risk reduction and improve access to insurance incentives for residents. The city recognizes the importance of NFIP participation in hazard mitigation, funding eligibility, and floodplain management, and is committed to resolving compliance issues and meeting FEMA requirements for reinstatement.

Mitigation Actions

The Local Hazard Mitigation Plan (LHMP) is designed to protect the community from a wide range of natural and man–made hazards. The LHMP serves as a proactive roadmap to reduce the potential impact of disasters by identifying vulnerabilities, assessing risks, and outlining comprehensive mitigation strategies. This plan is intended to help safeguard lives, property, and critical infrastructure while enhancing city resilience. The LHMP incorporates a variety of mitigation actions such as evacuation planning, communication improvements, shelter provisions, and public education and was developed through collaboration with key stakeholders including local agencies, emergency responders, and community members. By integrating immediate and long–term solutions, the plan ensures the city is well–prepared to respond to and recover from potential emergencies, while also fostering a culture of preparedness and resilience throughout the community.

Citywide Evacuation Plans

- Action. Develop and regularly update citywide evacuation plans that include clearly marked evacuation routes and staging areas. Incorporate vehicle and pedestrian evacuation plans.
- Purpose. Ensure safe and efficient evacuation during emergencies such as wildfires, earthquakes, or other hazards.
- Implementation. Work with Spokane County Emergency Management and local law enforcement to design and test evacuation plans. Conduct city–wide evacuation drills annually to keep the community prepared.

Mapping & Supporting Special Needs Populations

- Action. Develop a database of special needs populations (e.g., elderly, disabled, non–English speakers) in the community who may require assistance during an emergency. This data can be shared securely with emergency responders.
- Purpose. Provide targeted support to vulnerable populations during an evacuation or disaster event.
- Implementation. Coordinate with local health services, hospitals, and social workers to create and maintain a list. Ensure this is updated annually or as needed.

Shelter–In–Place Plans

- Action. Establish and disseminate clear shelter–in–place plans, including protocols for staying inside during hazardous air quality (e.g., ashfall, wildfire smoke) or chemical hazards.
- Purpose. Reduce exposure to hazards that require staying indoors.

- Implementation. Develop educational materials on sheltering in place for various hazards, including instructions on how to seal windows, filter air, and maintain supplies during long–term stays.

Continuity of Operations Plan (COOP)

- Action. Develop a Continuity of Operations Plan (COOP) for critical city services, including public works, law enforcement, and utilities.
- Purpose. Ensure that essential city functions can continue during and after a disaster event.
- Implementation. Coordinate with department heads to develop department–specific continuity plans, focusing on alternate facilities, redundant systems, and key personnel succession planning.

Communication Plans (Radios, Satellite Phones)

- Action. Establish redundant communication systems, including the purchase and maintenance of satellite phones, two–way radios, and a robust emergency communication network.
- Purpose. Ensure uninterrupted communication between emergency personnel during disasters when cell towers or other infrastructure may fail.
- Implementation. Test communication systems quarterly and provide training to all key staff members. Ensure the city Emergency Operations Center (EOC) has full communication capabilities.

Firewising & Community Education Programs

- Action. Develop a community–wide "Firewise" program to educate residents about wildfire risk and mitigation techniques (e.g., creating defensible space, fire–resistant building materials).
- Purpose. Reduce the vulnerability of homes and businesses to wildfires.
- Implementation. Partner with local fire departments and the Department of Natural Resources to offer workshops and home inspections focused on wildfire prevention.

City Emergency Plans (Including Specific Hazards)

- Action. Develop and maintain comprehensive emergency response plans tailored to specific hazards (wildfires, floods, earthquakes, volcanic ashfall).
- Purpose. Ensure the city is prepared to respond effectively to a wide range of natural hazards.
- Implementation. Review and update plans annually, ensuring alignment with state and federal emergency protocols.

Notification & Communication System Development

- Action. Develop an alert and notification system, similar to systems used in tsunami–prone areas, to ensure rapid communication with residents during emergencies.
- Purpose. Provide real–time information on hazards, evacuation orders, shelter locations, and other critical updates.
- Implementation. Implement an opt–in system for residents via text, email, and voice alerts. Regularly test the system, with drills conducted at least once per year.

Vulnerable Population Engagement

- Action. Conduct regular outreach to vulnerable populations, including low–income residents, the elderly, and individuals with limited mobility, to ensure they are included in emergency planning efforts.
- Purpose. Ensure equitable access to emergency preparedness resources and support.
- Implementation. Partner with local nonprofit organizations and faith–based groups to distribute emergency preparedness materials and conduct community workshops.

Development of a Community Shelter

- Action. Build a multi–purpose community center that can function as an emergency shelter during disasters and house essential services like food distribution and medical aid).
- Purpose. Provide a safe refuge for residents during large–scale disasters when evacuation is not possible.
- Implementation. Secure funding through (FEMA) grants and local initiatives. Partner with local builders and architects to design a facility that is disaster resilient.

Development of Alert & Notification System

- Action. Develop a localized public alert and notification system that integrates with regional systems, such as the Spokane County Integrated Public Alert & Warning System (IPAWS).
- Purpose. Improve the city's ability to rapidly disseminate information to residents in an emergency.
- Implementation. Regularly test the system and conduct public awareness campaigns to ensure maximum enrollment and understanding of how the system works.

Training & Drills (Including ICS, Emergency Response Teams, HAZMAT)

- Action. Provide ongoing training for city staff and community leaders in Incident Command System (ICS) protocols, as well as emergency response and management best practices.
- Purpose. Strengthen the city's ability to respond effectively to disasters through well–coordinated efforts.
- Implementation. Organize city–wide ICS training sessions annually and conduct quarterly drills that involve multiple agencies and stakeholders.

Emergency Kits & Preparedness Materials

- Action. Develop a city–sponsored program to encourage all households to have emergency kits that contain essential supplies (food, water, medications) for at least 72 hours.
- Purpose. Increase individual and family preparedness, reducing strain on city resources during an emergency.
- Implementation. Distribute free educational materials and provide low–cost emergency kits to low–income families and seniors. Organize annual preparedness fairs where residents can build or update their kits.

Community Workshops on Hazard Preparedness

- Action. Organize annual community workshops focused on hazard preparedness, covering topics such as creating emergency kits, home fire safety, and family communication plans during disasters.
- Purpose. Educate residents on how to prepare for and respond to different types of disasters.
- Implementation. Partner with local experts and community organizations to lead these workshops. Offer incentives, such as free emergency kits, for participants.

Plan Revisions & Annual Review

- Action. Establish a regular review and revision process for the city's Local Hazard Mitigation Plan, ensuring that it is updated at least annually and after major disasters.
- Purpose. Keep the plan relevant and aligned with current best practices, new hazard data, and changes in the community.
- Implementation. Form a committee of city staff, emergency responders, and community members to review the LHMP annually and make necessary updates.

Table 30 below outlines a comprehensive framework for enhancing community resilience and preparedness through actionable goals and plans. Each goal is paired with targeted actions, clear objectives, and specific implementation strategies to address diverse hazards, ranging from natural disasters to infrastructure vulnerabilities. The initiatives span critical areas such as minimizing risk and vulnerability, protecting infrastructure, improving public awareness, increasing community capabilities, adapting to climate change, reducing wildfire risks, and maintaining FEMA eligibility for funding. By addressing identified gaps and leveraging coordinated efforts, the strategies aim to ensure community safety, enhance operational continuity, and foster sustainable adaptation to future challenges.

Table 30. Mitigation Goal Crosswalk

Goal # & Title	Responsible Party	Timeframe	Action/Plan	Objective(s)	Implementation	Gaps Identified
Goal 1 Minimize risk and vulnerability.	Public Health	2025-2030	Develop a database for mapping special needs populations	Target support for vulnerable populations during emergencies	Coordinate with local health services, hospitals, and social workers to create and maintain the list	None
	City Administrator	2025-2030	Implement wildfire defensible space around properties	Minimize loss of life, protect public health	Collaborate with local fire departments; offer defensible space programs	
	City Planning	2025-2030	Floodplain management regulations	Minimize impacts to future development and natural resources	Enforce floodplain zoning regulations and restrict development	

Goal # & Title	Responsible Party	Timeframe	Action/Plan	Objective(s)	Implementation	Gaps Identified
	City Planning	2025-2030	Seismic retrofitting of critical infrastructure	Protect critical infrastructure from seismic activity	Secure FEMA grants for retrofitting critical infrastructure	
	City Planning	2025-2030	Citywide evacuation plans	Ensure public safety through coordinated evacuation efforts	Work with county emergency services to develop evacuation routes	
Goal 2 Protect critical Infrastructure.	Public Works	2025-2030	Establish redundant communication systems (Radios, Satellite phones)	Ensure uninterrupted communication between emergency personnel	Test communication systems quarterly and ensure EOC readiness	None
	Public Works	2025-2030	Harden critical facilities (e.g., fire/police stations)	Ensure continuity of operations for emergency services	Upgrade emergency facilities; ensure redundancy in power and communication systems	
	Public Works	2025-2030	Enhance redundancy in water and wastewater systems	Increase resilience in water and wastewater infrastructure	Work with water engineers and districts to build redundancy	
Goal 3 Improve public awareness and Education.	City Administrator	2025-2030	Community workshops on hazard preparedness	Increase community awareness of disaster preparedness	Partner with local experts and organizations to lead workshops	None
	City Administrator	2025-2030	Firewise programs and community education on wildfire risks	Reduce wildfire risks through education and landscape management	Offer home inspections and workshops through the Firewise program	
	City Administrator	2025-2030	Public outreach on wildfire, earthquake, and flood preparedness	Enhance public knowledge of hazards and preparedness	Conduct public workshops, distribute materials, and use social media campaigns	
	City Plans	2025-2030	Develop evacuation and shelter–in–place plans	Provide clear evacuation and sheltering instructions	Provide multilingual instructions through online and public portals	

Goal # & Title	Responsible Party	Timeframe	Action/Plan	Objective(s)	Implementation	Gaps Identified
Goal 4 Increase community capabilities.	City Plans	2025-2030	Emergency Kits and Preparedness Materials	Increase household preparedness with emergency kits	Distribute materials and provide low–cost emergency kits to vulnerable families	None
	City Administrator	2025-2030	Training and drills (including ICS, HAZMAT)	Improve emergency response and coordination among agencies	Organize city–wide training for ICS and HAZMAT protocols	
	City Plans	2025-2030	Development of a community shelter for emergency refuge	Provide emergency refuge during large–scale disasters	Secure funding through grants and partner with architects for design	
	City Administrator	2025-2030	Develop a Continuity of Operations Plan (COOP)	Maintain continuity of essential services during disasters	Collaborate with city departments to draft and maintain COOPs	
	City Administrator	2025-2030	Emergency response training for ICS and HAZMAT	Increase capacity for disaster response and preparedness	Conduct annual ICS training; develop mutual aid agreements	
Goal 5 Adapt to climate change hazards.	City Plans	2025-2030	Climate adaptation strategies for flood, fire, and drought planning	Incorporate climate adaptation into land use planning	Develop flood–resistant infrastructure and fire–resilient landscapes	Lack of detailed climate adaptation actions
	City Plans	2025-2030	Protect groundwater from climate change and drought impacts	Safeguard water resources against long–term climate impacts	Implement stormwater management and water monitoring systems	None
Goal 6 Reduce fire severity and wildfire risks.	City Plans	2025-2030	Create fire–adaptive communities through education and prevention	Reduce fire risks and protect properties	Partner with fire agencies to develop prevention programs	None
	City Plans	2025-2030	Prevent wildfire ignitions through	Reduce fire ignitions and	Launch Firewise programs to build defensible spaces	

Goal # & Title	Responsible Party	Timeframe	Action/Plan	Objective(s)	Implementation	Gaps Identified
			landscape resilience strategies	enhance landscape resilience		
Goal 7 Maintain FEMA eligibility and grant funding.	City Administrator	2025-2030	Update Local Hazard Mitigation Plan every 5 years	Maintain FEMA grant eligibility and funding access	Review and update the LHMP every 5 years with community input	None
	City Administrator	2025-2030	Plan revisions and annual review	Keep LHMP relevant and updated annually	Form a committee of city staff, emergency responders, and community members to review the LHMP annually	
	City Administrator	2025-2030	Reestablish NFIP participation and, over time, seek CRS classification to support flood risk reduction and improve access to insurance incentives for residents.	Reestablish NFIP participation and, over time, seek CRS classification	Form a committee of city staff, emergency responders, and community members to reestablish NFIP participation and CRS classification.	None

Hazard Mitigation Alternatives

To further increase resilience, FEMA's 2013 Catalog of Mitigation Ideas was presented to the Planning Team to provide ideas and concepts for potential action items. This document includes a broad range of alternatives for consideration for use in the planning area in compliance with 44 CFR (Section 201.6.c.3.ii) and can be applied to existing structures and new construction. The catalog serves as a baseline of mitigation alternatives that are supported by a thorough planning process, are consistent with the goals and objectives of the Planning Partners and are feasible for implementation. The presented alternatives are categorized in two ways:

By what the alternative would do:

- Manipulate a hazard.
- Reduce exposure to a hazard.
- Reduce vulnerability to a hazard.
- Increase the ability to respond to or be prepared for a hazard.

By whom would have responsibility for implementation:

- Individuals.
- Businesses.
- Government.

Hazard mitigation initiatives recommended in this plan were selected from among the alternatives presented in the catalog as well as projects identified by the Planning Partners and interested stakeholders specific to their jurisdiction. While not all alternatives may be feasible based on the selection criteria established for this plan, they are included to highlight potential viable actions that could reduce the influence of hazards in some manner, thereby contributing to the long–term resilience of the city.

Community engagement played a key role in the assessment process, ensuring that proposed measures reflect local needs and values. The analysis also highlighted the importance of addressing vulnerable populations, including seniors, low–income residents, and those with access and functional needs, to ensure equitable risk reduction across the community. The assessment concluded that a combination of structural and non–structural measures, tailored to the unique risks faced by the city, would provide the most comprehensive approach to hazard mitigation. This balanced approach enhances physical safety and strengthens social cohesion and community resilience.

Selected Mitigation Initiatives & Classification

Particular attention was given to plans and infrastructure, developing appropriate mitigation strategies, and enhancing community resilience through broad categories of actions. These categories include Local Planning and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, and Education and Awareness Programs. The Planning Team determined that additional initiatives from the mitigation catalogs could be implemented to further enhance hazard mitigation benefits citywide and adapt to emerging challenges. Table 31 lists the recommended city initiatives for 2025, categorized by FEMA mitigation types:

Table 31. Mitigation Initiatives & Types

Local Planning and Regulations	
Citywide Evacuation Plans	1. Develop and regularly update citywide evacuation plans that include clearly marked evacuation routes and staging areas, incorporating vehicle and pedestrian evacuation plans. 2. Work with Spokane County Emergency Management and local law enforcement to design and test evacuation plans.
Mapping & Supporting Special Needs Populations	1. Develop a database of special needs populations (e.g., elderly, disabled, non–English speakers) who may require assistance during emergencies. 2. Coordinate with local health services, hospitals, and social workers to create and maintain the list.
Shelter–in–Place Plans	Establish and disseminate clear shelter–in–place plans for hazardous events such as ashfall or chemical spills.
Continuity of Operations Plan (COOP)	1. Develop a COOP for critical city services, including public works, law enforcement, and utilities. 2. Coordinate with department heads to focus on alternate facilities, redundant systems, and succession planning.
Structure and Infrastructure Projects	

Local Planning and Regulations	
Communication Plans (Radios, Satellite Phones)	Establish redundant communication systems, including satellite phones and two–way radios, to ensure uninterrupted communication between emergency personnel during disasters.
Firewising & Community Education Programs	Develop a community–wide "Firewise" program to educate residents about wildfire risk and mitigation techniques.
Development of a Community Shelter	Build a multi–purpose community center that can function as an emergency shelter during disasters and house essential services like food distribution and medical aid.
Natural Systems Protection	
City Emergency Plans (including specific hazards)	Develop and maintain comprehensive emergency response plans tailored to specific hazards (wildfires, floods, earthquakes, volcanic ashfall).
Firewising & Vegetation Management	Partner with local fire departments and the Department of Natural Resources to offer workshops and home inspections focused on wildfire prevention and implement vegetation management to create defensible space.
Education and Awareness Programs	
Notification & Communication System Development	Develop an alert and notification system to ensure rapid communication with residents during emergencies.
Vulnerable Population Engagement	Conduct regular outreach to vulnerable populations, including low–income residents, the elderly, and individuals with limited mobility, to ensure they are included in emergency planning efforts.
Community Workshops on Hazard Preparedness	Organize annual community workshops covering topics like emergency kits, home fire safety, and family communication plans during disasters.
Emergency Kits & Preparedness Materials	1. Develop a city–sponsored program to encourage all households to have emergency kits for at least 72 hours. 2. Provide free educational materials and low–cost kits to low–income families and seniors.

Many of these initiatives are also identified by other Planning Partners who support the effort, reflecting updated priorities and the continued commitment to enhancing community resilience in 2025. Table 31 identifies city–specific initiatives, focusing on hazard–specific response plans and enhancing coordination with regional emergency systems to build a resilient community.

Changes in Priorities and Progress

As a participating jurisdiction in the 2020 Spokane County Hazard Mitigation Plan, the City of Medical Lake adopted mitigation priorities that focused broadly on regional coordination, wildfire exposure, and public awareness. Since that time, significant events such as the 2023 Gray Fire and observed increases in severe weather events have led to a realignment of local priorities. Wildfire resilience has become the top concern, followed by severe weather preparedness and drought

mitigation. These updated priorities are reflected in the 2025 LHMP through the addition of new mitigation actions targeting drought resilience, severe weather facility hardening, and expanded public education campaigns. The city has also advanced several actions from the previous plan (see Table 35) and removed or refined outdated projects. The 2025 plan places a stronger emphasis on infrastructure hardening, vulnerable population outreach, and integration with land use and stormwater planning, reflecting a more proactive, localized approach to hazard mitigation.

Analysis of Mitigation Activities

Each Planning Partner further reviewed its recommended initiatives to classify them based on the hazard it addresses and the type of mitigation it involves. This analysis incorporated, among others, the Community Rating System scale, identifying each mitigation action item by type. Mitigation types used for this categorization are as follows.

- Prevention. Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. This includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
- Public Information and Education. Public information campaigns or activities which inform residents and elected officials about hazards and ways to mitigate them—a public education or awareness campaign including efforts such as: real estate disclosure, hazard information centers, and school–age and adult education—all of which bring awareness of the hazards of concern.
- Structural Projects. Efforts taken to secure against acts of terrorism, man–made, or natural disasters. Types of projects include levees, reservoirs, channel improvements, or barricades which stop vehicles from approaching structures to protect.
- Property Protection. Actions taken that protect the properties. Types of efforts include structural retrofit, property acquisition, elevation, relocation, insurance, storm shutters, shatter resistant glass, sediment and erosion control, stream corridor restoration, etc. Protection can be at the individual homeowner level, or a service provided by police, fire, emergency management, or other public safety entities.
- Emergency Services/Response. Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities (e.g., sandbagging).
- Natural Resource Protection. Wetlands and floodplain protection, natural and beneficial uses of the floodplain, and best management practices. These include actions that preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- Recovery. Actions that involve the construction or re–construction of structures in such a way as to reduce the impact of a hazard, or that assist in rebuilding or re–establishing a community after a disaster incident. It also includes advance planning to address recovery efforts which will take place after a disaster. Efforts are focused on re–establishing the planning region in such a way as enhance resiliency and reduce impacts to future incidents. Recovery differs from response, which occurs during, or immediately after an incident. Recovery views long–range, sustainable efforts.

Cost Benefit Analysis

Mitigation initiatives were evaluated and ranked using a structured evaluation method to assess each proposed mitigation project. This method focused on identifying the potential economic, social, and safety benefits of each initiative relative to the associated costs, using a range of estimated values. Projects were analyzed based on their ability to reduce immediate risks to life, property, and essential services. The prioritization process was guided by requirements under 44 CFR (Section 201.6.(c)(3)(iii), which requires a benefit–cost analysis of proposed projects and their associated costs.

The evaluation aimed to ensure that resources are allocated efficiently to projects that provide the most significant reduction in risk and enhancement of community resilience. Initiatives that demonstrated significant community impact, particularly in terms of improving safety and resilience, were prioritized accordingly. This structured analysis approach also provided a transparent and objective basis for decision–making, focusing on maximizing benefits while managing the financial feasibility of each project.

The results of the cost benefit analysis provided insight into the goals, cost estimates, benefits, and implementation strategies of each mitigation initiative, ensuring that decision–makers have the necessary information to prioritize and execute these efforts effectively. Each initiative was analyzed according to the following parameters:

- Cost Analysis. The estimated cost for each project was evaluated to determine the financial requirements for implementation. Costs were categorized as Low, Medium, or High in consideration of whether existing budget allocations could cover the expenses or if new funding would be required. Initiatives with lower costs that could be funded using the current budget were generally rated more favorably in terms of financial feasibility.
- Benefit Analysis. The benefits of each project were assessed based on the reduction of risk to life, property, and essential services. This analysis included quantifying direct and indirect benefits, such as avoided property damage, reduced casualties and injuries, and enhanced preparedness. Initiatives providing immediate and significant risk reduction, especially those aimed at protecting vulnerable populations and ensuring continuity of operations, were given a higher priority.
- Priority Ranking. The priority ranking of each initiative was determined based on a combination of cost and benefit analysis. Projects that provided high benefits relative to their costs were given a higher priority, as they were considered more cost–effective in enhancing community safety and resilience. The goal was to identify initiatives that offered the greatest positive impact on the community at a feasible cost, ensuring the city could effectively prepare for and mitigate potential hazards.

The initiatives were then categorized and summarized Table 32, with a focus on providing detailed information on costs, benefits, and implementation strategies to guide decision–makers in prioritizing and executing these critical mitigation efforts.

Table 32. Cost Benefit Analysis Priorities

Category	Initiative	Cost Analysis	Benefit Analysis	Priority	Estimated Cost
Local	Citywide Evacuation	Medium: requires additional	High: provides immediate risk reduction for	High	$80,000

Category	Initiative	Cost Analysis	Benefit Analysis	Priority	Estimated Cost
Planning & Regulations	Plans	coordination and budget amendment for resources.	life safety and evacuation efficiency.		
	Mapping & supporting Special Needs populations	Medium: requires collaboration with multiple agencies and ongoing maintenance.	High: ensures critical needs populations are adequately addressed during emergencies.	High	$50,000
	Shelter–in–Place Plans	Low: can be developed and implemented with current resources.	Medium: provides long–term risk reduction, especially during chemical spills or ashfall.	Medium	$20,000
	Continuity of Operations Plan (COOP)	Medium: needs input from various city services and possible budget amendment.	High: critical for maintaining city operations during and after an emergency.	High	$100,000
Structure & Infrastructure Projects	Communication Plans (radios, satellite phones)	Medium: requires equipment procurement and maintenance.	High: ensures uninterrupted emergency communication.	High	$75,000
	Firewising & Community Education Programs	Low: can be implemented with existing programs and minimal budget reallocation.	Medium: improves community awareness and reduces wildfire risk over time.	Medium	$25,000
	Development of Community Shelter	High: requires significant capital investment and construction.	High: provides a dedicated emergency facility for community safety.	High	$600,000
Natural Systems Protection	City Emergency Plans (Including Specific Hazards)	Medium: requires hazard assessments and multi–agency planning.	High: provides targeted emergency response for specific hazards, reducing risk exposure.	High	$75,000
	Firewising & Vegetation Management	Medium: requires ongoing partnership and periodic inspections.	Medium: reduces wildfire risk and enhances defensible space.	Medium	$40,000
Education and Awareness Programs	Notification & Communication System Development	Medium: requires technology implementation and budget amendment.	High: provides timely alerts to residents, crucial during emergencies.	High	$50,000
	Vulnerable Population Engagement	Low: can be implemented using existing	Medium: ensures inclusivity and preparedness	Medium	$15,000

Category	Initiative	Cost Analysis	Benefit Analysis	Priority	Estimated Cost
		community resources and outreach programs.	for vulnerable populations.		
	Community Workshops on Hazard Preparedness	Low: requires minimal resources for organizing annual events.	Medium: raises awareness and improves individual preparedness.	Medium	$10,000
	Emergency Kits & Preparedness Materials	Low: requires small initial investment for education and kit distribution.	Medium: enhances household preparedness across the community.	Medium	$20,000

Prioritization of Initiatives

The actions in this plan are prioritized based on a systematic evaluation of their potential impact and urgency. The prioritization process focuses on key criteria such as life safety, protection of critical infrastructure, support for vulnerable populations, preparedness and awareness, and long–term resilience. Actions that directly safeguard human lives, such as evacuation plans and wildfire prevention, were given the highest priority. Efforts to protect critical infrastructure, such as emergency services and utilities, also rank highly due to their essential role in maintaining public safety and service continuity during disasters. Medium–priority actions focus on public preparedness, communication, and support for at–risk groups, while low priority actions are those related to administrative functions, such as plan revisions and reviews. This approach ensures the most urgent and impactful actions receive immediate attention, while also maintaining a focus on long–term resilience and community–wide preparedness.

Table 33. Mitigation Actions & Prioritization

Goal # and Title	Action/Plan	Objective(s)	Priority Level
Goal 1 Minimize risk and vulnerability.	Develop a database for mapping special needs populations	Target support for vulnerable populations during emergencies	High: Vulnerable Populations
	Implement wildfire defensible space around properties	Minimize loss of life, protect public health	High: Life Safety
	Floodplain management regulations	Minimize impacts to future development and natural resources	High: Life Safety
	Seismic retrofitting of critical infrastructure	Protect critical infrastructure from seismic activity	High: Critical Infrastructure
Goal 2	Establish redundant communication	Ensure uninterrupted communication	High: Life Safety

Goal # and Title	Action/Plan	Objective(s)	Priority Level
Protect critical Infrastructure.	systems (Radios, Satellite phones)	between emergency personnel	
	Harden critical facilities (e.g., fire/police stations)	Ensure continuity of operations for emergency services	High: Critical Infrastructure
	Enhance redundancy in water and wastewater systems	Increase resilience in water and wastewater infrastructure	High: Critical Infrastructure
	Emergency response training for ICS and HAZMAT	Increase capacity for disaster response and preparedness	High: Critical Infrastructure
Goal 3 Improve public awareness and education.	Community workshops on hazard preparedness	Increase community awareness of disaster preparedness	Medium: Preparedness and Awareness
	Firewise programs and community education on wildfire risks	Reduce wildfire risks through education and landscape management	Medium: Preparedness and Awareness
	Public outreach on wildfire, earthquake, and flood preparedness	Enhance public knowledge of hazards and preparedness	Medium: Preparedness and Awareness
	Develop evacuation and shelter–in–place plans	Provide clear evacuation and sheltering instructions	Medium: Preparedness and Awareness
Goal 4 Increase community Capabilities.	Emergency Kits and Preparedness Materials	Increase household preparedness with emergency kits	Medium: Vulnerable Populations
	Development of a community shelter for emergency refuge	Provide emergency refuge during large–scale disasters	Medium: Preparedness and Awareness
	Training and drills (including ICS, HAZMAT)	Improve emergency response and coordination among agencies	Medium: Critical Infrastructure
	Develop a Continuity of Operations Plan (COOP)	Maintain continuity of essential services during disasters	Medium: Critical Infrastructure
Goal 5 Adapt to climate change hazards.	Climate adaptation strategies for flood, fire, and drought planning	Incorporate climate adaptation into land use planning	Medium: Preparedness and Awareness

Goal # and Title	Action/Plan	Objective(s)	Priority Level
	Protect groundwater from climate change and drought impacts	Safeguard water resources against long–term climate impacts	Medium: Preparedness and Awareness
Goal 6 Reduce fire severity and wildfire risks.	Create fire–adaptive communities through education and prevention	Reduce fire risks and protect properties	Low: Administrative
Goal 7 Maintain FEMA eligibility and grant funding.	Update Local Hazard Mitigation Plan every 5 years	Maintain FEMA grant eligibility and funding access	Low: Administrative

Mitigation Action Plan

Hazard mitigation actions are the cornerstone of the city's Local Hazard Mitigation Plan, representing proactive steps to reduce or eliminate the risks posed by natural and man–made hazards. These actions are designed to protect lives, property, critical infrastructure, and the environment while fostering community resilience. By identifying vulnerabilities and implementing targeted strategies, the city aims to minimize the impacts of disasters, reduce recovery costs, and enhance public safety. Hazard mitigation actions are informed by comprehensive risk assessments, public input, and collaboration with stakeholders, ensuring they address the unique challenges faced by the community. Through these actions, Medical Lake strives to build a safer and more prepared future for its residents, businesses, and visitors.

Overview

Significant progress was made in implementing mitigation actions to address hazards identified through a comprehensive risk assessment. Completed actions include critical infrastructure upgrades such as the $679,914 TIB–funded Barker Street paving and sidewalk project, the $902,129 TIB Red Town Initiative, and $260,133 for the Hallett and Grace sidewalk project, enhancing accessibility and public safety. Projects like the $395,867 solar array installation at the Wastewater Treatment Plant improve energy resilience, while the $495,000 joint pipe and lead gooseneck replacement project strengthens water system reliability.

Ongoing mitigation efforts continue to focus on high–priority risks, such as flooding, wildfires, and infrastructure vulnerabilities. The $950,000 stormwater mitigation initiative addresses flooding hazards, while the $1.58 million TIB Complete Streets Grant funds efforts to improve road safety and resilience. Projects like the $511,000 ADA ramp installation on Lake Street enhance accessibility and disaster preparedness for vulnerable populations. Wildfire mitigation and recovery remain a priority, with actions like the $300,000 Gray Fire Prospectus Engineering project supporting post–fire recovery and future hazard prevention.

These mitigation efforts demonstrate the city's commitment to reducing risks and enhancing community resilience through strategic investments and partnerships. By addressing vulnerabilities and building upon completed initiatives, the city is proactively working to safeguard its residents, infrastructure, and natural resources from future disasters.

Active Mitigation Actions

Table 34. Active Mitigation Actions

Project # & Name	Goal/ Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Completion Timeframe (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Streets	Infrastructure Resilience	Street Resurfacing	Aging Infrastructure	Public Works	$750,000	Varies (Grants Since 2022)	Various grants: TIB, Commerce, Ecology, etc.	Medium	Structural Projects
2. Stormwater	CIKR	Stormwater System Upgrades	Flooding	Public Works	$970,000	2025-2030	Pending grants (e.g., Hazard Mitigation Grant Program)	High	Structural Projects

3. Kitchen	Support Vulnerable Populations	Kitchen Upgrades	Vulnerable Population	City Administrator	TBD	2025-2030	Pending	Medium	Preparedness Enhancements
4. Public Outreach	Public Awareness & Education	Education Campaigns	Wildfires/ All Hazards	City Administrator	TBD	Ongoing	Public outreach grants, partnerships	High	Preparedness
7. ADA Ramps	Accessibility Improvements	ADA Ramps on Lake Street	Accessibility	Public Works	$511,000	2025 In–progress	SRTC	Medium	Accessibility Infrastructure
8. Stormwater Mitigation	Infrastructure Resilience	Stormwater Mitigation Projects	Flooding, Drainage Issues	Public Works	$950,000	2025 In–progress	Legislative Appropriations	High	Structural Projects
9. Fire Recovery	Fire Damage Recovery	Gray Fire Prospectus Engineering	Wildfires	City Administrator	$300,000	In–progress	Legislative Appropriations	High	Recovery and Resilience
10. Toxic Cleanup	Environmental Cleanup	Toxic Cleanup in Spokane and Pend Oreille	Hazardous Materials	City Administrator	$3,450,000	In–progress	Legislative Appropriations	High	Environmental Mitigation
13. Infrastructure Repair	Infrastructure Resilience	Road safety and Resilience	Evacuation Routes	City Administrator	$1.58 million	In–progress	TIB	Medium	Accessibility Infrastructure
14. Drought Resilience Plan	Infrastructure Resilience	Develop and implement a drought resilience plan including citywide water conservation, xeriscaping education, and irrigation retrofits for public spaces.	Drought	Public Works Department	$150,000	1–3 years	FEMA BRIC, WA Dept. of Ecology, DOE WaterSMART	Medium	Natural Resources Protection
15. Severe Weather Hardening	Infrastructure Resilience	Retrofit critical city facilities with storm-resilient roofing, emergency generators, and secure HVAC units to reduce	Severe Weather	Public Works / Fire Dept	$450,000	1–5 years	FEMA HMGP, BRIC, USDA Community Facilities Grant		Structure & Infrastructure Projects

Completed or Cancelled Mitigation Actions

Table 35. Completed or Cancelled Mitigation Actions

Project # & Name	Goal/ Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Completion Timeframe (in years)	Potential Funding Sources	Priority (High, Medium, Low	Mitigation Technique Category
5. Sidewalk Projects	Infrastructure Improvement	Hallett & Grace Sidewalk Project	Vulnerable Population & Pedestrian Safety	City Administrator	$260,133	2022 (complete)	TIB	Medium	Structural Projects
6. Solar Array	Renewable Energy Resilience	Solar Array at Wastewater Plant	Power Resilience	City Administrator	$395,867	2023 (complete)	Commerce/TransAlta	Medium	Energy Efficiency Projects
11. Joint pipe and lead gooseneck replacement	Infrastructure Resilience	Water System	Water Resilience	City Administrator	$495,000	2024 (complete)		Medium	Structural Projects
12. Road Projects	Infrastructure Improvement	Barker Street paving	Vulnerable Population & Evacuation	City Administrator	$679,914	2022 (complete)	TIB	Medium	Structural Projects

Funding Opportunities

Table 36. Mitigation Funding

Goal # and Title	Action/Plan	Specific Grants/Funding Source
Goal 1 Minimize risk and Vulnerability.	Develop a database for mapping special needs populations	FEMA HMGP, FEMA BRIC, Local Government Funding
	Implement wildfire defensible space around properties	FEMA HMGP, USFA Fire Prevention and Safety Grants
	Floodplain management regulations	FEMA HMGP, FEMA BRIC
	Seismic retrofitting of critical infrastructure	FEMA HMGP, FEMA BRIC
Goal 2 Protect critical infrastructure.	Establish redundant communication systems (Radios, Satellite phones)	SHSP, FEMA BRIC
	Harden critical facilities (e.g., fire/police stations)	FEMA BRIC, SHSP, State Infrastructure Funds
	Enhance redundancy in water and wastewater systems	FEMA BRIC, State Infrastructure Funds, Local Government
	Emergency response training for ICS and HAZMAT	SHSP, Local Emergency Services Funding
Goal 3 Improve public awareness and education.	Community workshops on hazard preparedness	FEMA PDM, CDBG
	Firewise programs and community education on wildfire risks	FEMA BRIC, USFA Fire Prevention and Safety Grants
	Public outreach on wildfire, earthquake, and flood preparedness	FEMA PDM, State Emergency Services Funds

Goal # and Title	Action/Plan	Specific Grants/Funding Source
	Develop evacuation and shelter–in–place plans	FEMA PDM, State Emergency Services Funds
Goal 4 Increase community capabilities.	Emergency Kits and Preparedness Materials	CDBG, FEMA PDM
	Development of a community shelter for emergency refuge	FEMA HMGP, FEMA BRIC, Architectural Partnerships
	Training and drills (including ICS, HAZMAT)	FEMA BRIC, Local Government
	Develop a Continuity of Operations Plan (COOP)	FEMA HMGP, Local Government
Goal 5: Adapt to climate change hazards.	Climate adaptation strategies for flood, fire, and drought planning	NOAA Climate Resilience Fund, FEMA BRIC
	Protect groundwater from climate change and drought impacts	NOAA Climate Resilience Fund, FEMA HMGP
Goal 6 Reduce fire severity and wildfire risks.	Create fire–adaptive communities through education and prevention	USFA Fire Prevention and Safety Grants, FEMA HMGP
Goal 7 Maintain FEMA eligibility and grant funding.	Update Local Hazard Mitigation Plan every 5 years	FEMA PDM, FEMA HMGP

Hazard mitigation and resilience–building are critical components of a community's ability to prepare for, respond to, and recover from disasters. Numerous federal, state, and local funding programs are available to assist municipalities in implementing proactive measures that reduce risks associated with natural and man–made hazards. These programs aim to strengthen infrastructure, enhance emergency response capabilities, and address vulnerabilities within communities. The following list highlights key funding opportunities that have been leveraged by communities nationwide to support long–term hazard mitigation and improve overall resilience.

- *EMA Hazard Mitigation Grant Program (HMGP).* This grant is typically available after a presidential disaster declaration and is used to fund long–term hazard mitigation projects, such as seismic retrofitting, floodplain management, and defensible space for wildfire protection.
- *FEMA Pre–Disaster Mitigation (PDM) Program.* This program provides funding to implement a sustained pre–disaster natural hazard mitigation program, focusing on activities such as infrastructure hardening and resilience improvements.
- *FEMA Building Resilient Infrastructure and Communities (BRIC).* This grant funds large–scale projects, such as building resilient public infrastructure, improving water systems, and adapting to climate–related hazards like flooding and wildfires.
- *U.S. Fire Administration (USFA) Fire Prevention and Safety Grants.* These grants are available for fire–prevention programs, including community education and the Firewise program.
- Community Development Block Grants (CDBG). These federal funds are often used by local governments to address hazards, particularly those impacting vulnerable populations, such as shelters or community preparedness programs.

- *National Oceanic and Atmospheric Administration (NOAA) Climate Resilience Fund.* This fund supports projects to improve climate resilience, such as flood adaptation and protecting groundwater.
- *State Homeland Security Program (SHSP).* This program provides funding for critical emergency services, including communication system upgrades and ICS training.

Implementation Plan

The implementation plan details the steps for each mitigation action, including timelines, responsible parties, and required resources. For example, retrofitting the city hall to withstand earthquakes is scheduled to be completed by 2025, with the Public Works Department responsible for the project. Resources needed include engineering services, construction materials, and funding from FEMA grants.

Identifying and securing funding from various sources is critical to the success of the mitigation strategy. Potential funding sources include the FEMA Hazard Mitigation Grant Program (HMGP), state and local government funds, private sector partnerships, and community fundraising efforts. Establishing a process to monitor progress and evaluate the effectiveness of the mitigation strategies is essential. An annual review will be conducted, and performance metrics will be developed to measure progress, such as the number of completed projects, reduced risk levels, and community preparedness levels.

Plan Maintenance

The plan will be reviewed and updated regularly to reflect changes in community priorities, new scientific data, and lessons learned from recent disasters. The review cycle will occur every five years or after a significant disaster. The update process will involve stakeholders and the public to ensure the plan remains relevant and effective.

Continued public involvement is crucial for the plan's success. Community meetings will be hosted annually to discuss progress and gather input and feedback mechanisms such as online portals and hotlines will be provided for residents to submit feedback and suggestions. Regularly reporting progress to local government officials, stakeholders, and the public is also essential. An annual report detailing the progress made towards implementing the mitigation actions will be published.

Maintenance Schedule

The Local Hazard Mitigation Plan (LHMP) is a critical element designed to ensure that all systems, equipment, and infrastructure essential for disaster preparedness, response, and recovery are regularly inspected, serviced, and maintained. This helps prolong the life of assets and helps ensure key systems are operational during emergencies, reducing vulnerability and mitigating risks.

LHMP Maintenance Schedule Components

Critical Infrastructure Identification. The schedule includes all critical infrastructure and equipment necessary for emergency operations, such as:

- communication systems (radios, satellite phones).
- backup generators.
- water and wastewater systems.
- emergency shelters.
- firefighting equipment.
- utility infrastructure (power, gas, broadband).

- transportation networks (roads, bridges).

Regular Inspections and Testing. The schedule should outline regular inspection times and test dates for critical systems to ensure operational readiness, such as:

- monthly generator testing to ensure backup power is available.
- quarterly communication system checks to verify redundancy (radios, satellite phones).
- annual inspections of shelter facilities for safety, functionality, and supply levels.
- seasonal inspections of firebreaks, flood barriers, or levees.

Risk–Based Prioritization. Infrastructure or equipment that poses the highest risk during a disaster (should receive more frequent maintenance. High–risk items should be inspected or tested more often than those deemed lower risk.

Types of Maintenance Activities

- Preventive Maintenance. Scheduled, routine maintenance tasks to prevent system failures, such as changing air filters in EOC HVAC systems or calibrating communication equipment.
- Corrective Maintenance. Repairs made to equipment or systems following a fault or failure, ensuring they are returned to operational readiness as quickly as possible.
- Seasonal Maintenance. Adjustments and preparations ahead of seasonal hazards, such as clearing drainage systems ahead of the rainy season or inspecting wildfire–prone areas.
- Assigned Responsibilities. Clearly define the personnel or departments responsible for performing each task, such as:
  - Public Works for utility infrastructure maintenance.
  - IT departments for communication systems testing.
  - fire departments for equipment and fire suppression system maintenance.

Maintenance Records. Detailed records of all maintenance activities should be kept to track:

- when maintenance was performed.
- tasks completed.
- whether any issues were identified.
- required follow–up actions.

These records ensure the LHMP can be updated to reflect any vulnerabilities identified during maintenance and that all critical systems remain operationally ready.

Table 37. Schedule for Critical Infrastructure in LHMP

Asset/System	Task	Frequency	Assigned Team	Notes
Backup Generators	Run load test, change oil, inspect	Quarterly	Public Works/ Electricians	Ensure fuel levels are adequate.

Asset/System	Task	Frequency	Assigned Team	Notes
City Hall	Inspect communication systems, test HVAC	Monthly	IT, Facilities Manager	Ensure redundancy with backup systems.
Water Supply Systems	Inspect/test valves & pressure	Bi–annually	Water Utility Team	Ensure water availability during emergencies.
Fire Suppression Equipment	Check & recharge fire extinguishers	Annually	Fire Department	Update inventory of fire suppression tools.
Emergency Shelters	Inspect structural integrity, supplies	Annually	Facilities Team	Ensure food, water, and medical supplies are stocked.
Flood Control Barriers	Inspect for wear, debris clearing	Seasonal	Public Works	Clear channels before rainy season.
Roadway Infrastructure	Inspect bridges, clear debris	Annually/after major events	Public Works	Ensure roadways are clear for evacuation routes.
Communication Systems	Test radios, satellite phones	Monthly	IT	Ensure all communication channels are operational.

Importance of the LHMP Maintenance Schedule

A Local Hazard Mitigation Plan (LHMP) is only as effective as its implementation and upkeep. The maintenance schedule is a cornerstone of this process, ensuring the community's critical infrastructure, emergency systems, and preparedness measures remain operational and resilient against disasters. Regular updates and evaluations are necessary to align the LHMP with evolving hazards, regulatory requirements, and community needs. By proactively maintaining these systems and resources, the town can minimize vulnerabilities, improve response capabilities, and foster community resilience while ensuring compliance with broader hazard mitigation goals.

- Reliability During Emergencies. Ensuring critical infrastructure and emergency systems are maintained guarantees they will function as intended during disaster events.
- Prevention of Failures. Regular maintenance can prevent sudden equipment failures during emergencies, reducing the risk to life and property.
- Compliance with Regulations. The maintenance schedule ensures compliance with local, state, and federal requirements for disaster preparedness and infrastructure safety.
- Cost–Effectiveness. Preventive maintenance is generally less expensive than emergency repairs or replacements, especially during disaster events when demand surges.
- Integration with LHMP Goals:

- Goal 1: Minimize Risk and Vulnerability. Maintaining critical systems (generators, fire suppression) directly reduces vulnerability to hazards by ensuring continuity of operations.
- Goal 2: Protect Critical Infrastructure. A regular maintenance schedule is essential for hardening and preserving critical infrastructure, ensuring systems function during crises.
- Goal 3: Improve Public Awareness, Education, Communication, and Preparedness for All Hazards. Provide regular training, outreach and inclusion for the community.
- Goal 4: Increase Community Capabilities. Ensuring that shelters, evacuation routes, and other resources are well–maintained builds community resilience and improves emergency response efforts.

A well–structured Maintenance Schedule is integral to the LHMP, ensuring that all critical assets and infrastructure are regularly maintained and ready for action during a disaster. This proactive approach reduces risks, ensures operational continuity, and supports the goals of hazard mitigation and emergency preparedness.

Monitoring Progress of Mitigation Activities

The Monitoring Progress of Mitigation Activities is a critical element of maintaining the Local Hazard Mitigation Plan (LHMP). This process ensures that planned actions are implemented and effective in reducing vulnerabilities and managing risks. Monitoring progress should be conducted semi–annually by the Hazard Mitigation Plan Maintenance Committee or a designated team. The tasks involved include tracking the status of mitigation projects, documenting completed and ongoing actions and identifying any projects that are delayed or have encountered barriers to implementation. It is essential to evaluate the reasons for delays and develop practical solutions to overcome obstacles. The progress monitoring process requires updating timelines, responsible agencies, and funding sources associated with each mitigation activity to reflect any changes in circumstances or priorities. The results of these evaluations should be communicated to stakeholders to maintain transparency and accountability. This monitoring process keeps the plan dynamic, providing valuable insights for improving future mitigation efforts. Regular tracking ensures that mitigation activities align with Spokane County's overarching hazard reduction goals and support community resilience against emerging threats.

The following table organizes the monitoring process into clear, actionable steps with assigned responsibilities, objectives, and timeframes to guide the city in effectively tracking mitigation activities.

Table 38. LHMP Maintenance Schedule

Step	Description	Frequency	Responsible Party	Objective
Establish a monitoring team	Form a team with representatives from local, stakeholders, and experts.	Initial Setup (then ongoing)	LHMP Maintenance Committee	Define roles and responsibilities for tracking and evaluating mitigation actions.
Develop a monitoring framework	Create an action inventory, set performance metrics, and establish a review	Initial Setup (then ongoing)	LHMP Maintenance Committee	Organize and standardize the process for tracking

Step	Description	Frequency	Responsible Party	Objective
	schedule. Use tools like spreadsheets or project management software.			mitigation actions effectively.
Gather data on mitigation actions	Collect updates via reports, field inspections, and stakeholder feedback to track action status (completed, in progress, delayed, not started).	Semi–annually	Agencies and responsible parties for each action	Collect accurate, up–to–date information on mitigation activities.
Evaluate progress and identify barriers	Compare actual progress with planned timelines and objectives, assess effectiveness, and identify challenges like funding or resource limitations.	Semi–annually	Monitoring Team	Identify what is working well and what needs adjustments to ensure progress.
Update action details	Revise timelines, funding sources, responsible parties, and priorities based on evaluations.	Semi–annually	LHMP Maintenance Committee	Keep the mitigation plan dynamic and responsive to changing conditions or emerging hazards.
Report progress	Prepare detailed progress reports and a public summary to share updates and maintain transparency.	Semi–annually	Medical Lake Emergency Manager	Maintain accountability and ensure community involvement in mitigation efforts.
Integrate lessons learned	Use findings from monitoring to refine mitigation actions and improve future planning and execution.	Semi–annually	LHMP Maintenance Committee	Enhance the effectiveness of future mitigation activities.
Conduct annual review	Include monitoring results in the annual LHMP review to ensure the plan reflects updated priorities and mitigation status.	Annually	Medical Lake Emergency Manager	Keep the LHMP up–to–date and aligned with city goals and community needs.

Maintenance Evaluation & Enhancement

The Maintenance Evaluation and Enhancement is critical for ensuring the City of Medical Lake Local Hazard Mitigation Plan (LHMP) remains a dynamic and effective tool for risk reduction and disaster resilience. This process involves regularly assessing plan relevance, identifying opportunities for improvement, and implementing enhancements based on changing conditions, stakeholder input, and lessons learned.

Evaluation Framework

A structured framework is used to systematically evaluate LHMP effectiveness. The framework involves:

- Performance Metrics. Establish clear criteria to measure the success of mitigation actions and plan objectives. These metrics may include reductions in community vulnerability, project implementation rates, and improvements in preparedness and response capabilities.
- Progress Reviews. Conduct regular reviews of mitigation actions to ensure they align with the timeline, budget, and intended outcomes. This includes evaluating whether the projects effectively address identified hazards.
- Stakeholder Feedback. Gather input from government agencies, local jurisdictions, community organizations, and the public to assess plan effectiveness and identify areas for improvement.

Annual Maintenance Review

Annual LHMP review ensures the document reflects current conditions and priorities. This review includes:

- incorporating updates to hazard profiles based on new data, recent disasters, or scientific studies.
- assessing the adequacy of current mitigation actions and identifying new strategies to address emerging risks.
- updating key sections, such as risk assessments, critical facilities, and community capabilities.

Post–Disaster Plan Updates.

Significant updates to the LHMP should be undertaken following a disaster event to ensure lessons learned are integrated. This involves:

- documenting disaster impacts, including damages to infrastructure, community resources, and vulnerable populations.
- evaluating the effectiveness of mitigation strategies during the disaster.
- adjusting risk assessments, mitigation priorities, and strategies based on new insights.

Enhancing the Plan

LHMP enhancements are informed by ongoing evaluations and new opportunities. Key actions include:

- Addressing Gaps**.** Identifying and resolving gaps in mitigation actions, such as underserved populations, underfunded projects, or unaddressed hazards.
- Leveraging Technology**.** Using Geographic Information Systems (GIS), data analytics, and other tools to improve hazard mapping and risk assessments.
- Strengthening Partnerships. Building stronger collaborations with state and federal agencies, tribal governments, and private–sector organizations to enhance mitigation capabilities and funding opportunities.

Integration with Other Plans.

The LHMP should be regularly integrated with other city, county and regional plans, including Emergency Operations Plan, and Climate Action Plan. This ensures that mitigation strategies are consistent across all planning efforts and align with broader community goals.

Documentation & Reporting.

All maintenance and enhancement activities must be well documented to provide a clear record of updates and changes. This includes:

- preparing annual progress reports detailing the status of mitigation actions, evaluation outcomes, and updates made to the LHMP.
- sharing summaries with the public to maintain transparency and accountability.
- submitting updates to FEMA and the Washington Emergency Management for review and compliance.

Continuous Improvement. The maintenance process should incorporate a continuous improvement cycle, where evaluations inform enhancements, and enhancements feed back into the next review cycle. This iterative process ensures the LHMP remains responsive to changing conditions, emerging hazards, and community needs. By maintaining a proactive approach to evaluation and enhancement, the city can ensure that its Local Hazard Mitigation Plan remains a living document that effectively reduces risks, builds resilience, and supports the safety and well–being of its communities.

Incorporation into Existing Planning Mechanisms

The successful implementation of the Medical Lake Local Hazard Mitigation Plan (LHMP) depends on its seamless integration into existing planning mechanisms. Incorporating the LHMP into other city, county, regional, and state plans ensures that hazard mitigation strategies align with broader community goals, enhance resilience, and optimize the use of resources. This integration also ensures the LHMP becomes a living document, informing and supporting decision–making across various sectors.

The LHMP should be directly linked to the Medical Lake Comprehensive Plan, which serves as the overarching framework for land use and development. Hazard mitigation strategies can be incorporated into land use policies to restrict construction in high–risk areas, such as floodplains or wildfire–prone zones. Infrastructure planning should align with mitigation priorities to reduce vulnerabilities, while growth management policies should incorporate hazard assessments to avoid creating new risks during community development. Coordination with the Emergency Operations Plan (EOP) is another essential element of integration. The LHMP can complement the EOP by providing pre–disaster mitigation actions that reduce the impact of hazards on response and recovery efforts. Preparedness activities, such as training, exercises, and community education, should include mitigation strategies. Protecting critical facilities identified in the EOP and aligning mitigation goals with continuity of operations plans are key areas for coordination.

Capital Improvement Plans (CIPs) offer another opportunity to integrate hazard mitigation measures, ensuring the protection of new and existing infrastructure investments. By incorporating the LHMP into CIPs, the city can prioritize resilient infrastructure projects, such as upgrades to withstand floods, and wildfires. This alignment also helps the city leverage funding opportunities, such as grants, to improve infrastructure and promote sustainable development. Similarly, hazard mitigation strategies must be incorporated into Climate Action Plans to address the growing impacts of climate change. This integration enables synergy between mitigation and adaptation, allowing actions to address current and future hazards. Strategies that reduce greenhouse gas emissions, such as energy–efficient rebuilding or green infrastructure, can also serve dual purposes by

reducing vulnerability to hazards while protecting natural ecosystems that act as buffers against disasters.

The LHMP should also be coordinated with regional and state–level planning efforts to ensure consistency and maximize the use of external resources. Aligning local actions with the State Hazard Mitigation Plan (SHMP) enhances effectiveness and increases funding eligibility. Coordination with regional transportation plans ensures the resilience of evacuation routes and transportation infrastructure, while integration with watershed and resource management plans supports flood mitigation strategies and natural resource conservation. At the community level, local and neighborhood plans should reflect hazard mitigation goals to build resilience from the ground up. Public engagement is essential for informing local initiatives and encouraging community involvement in risk reduction. Neighborhood–specific mitigation strategies can address risks unique to particular areas within the city, ensuring that all residents benefit from the LHMP.

To facilitate effective integration, several tools and mechanisms can be used. Policy alignment is a critical step, requiring a crosswalk analysis to identify opportunities for incorporating LHMP goals into existing policies and programs. Training and education for staff and stakeholders ensure they understand how to apply hazard mitigation strategies within their respective plans. Periodic reviews of planning documents help maintain alignment with the LHMP, while GIS mapping can overlay hazard data with existing plans to identify integration opportunities. Monitoring and reporting are also necessary to evaluate how effectively the LHMP has been incorporated into existing mechanisms. Regular updates to integrated plans ensure they reflect changes in hazard assessments or mitigation priorities, while annual reporting on integration efforts provides transparency and tracks progress. Feedback and lessons learned from implementation should inform continuous improvement.

By fully incorporating the Local Hazard Mitigation Plan into existing planning mechanisms, the city can ensure that mitigation strategies are effectively implemented, risks are minimized, and the community becomes more resilient to natural and man–made hazards. This integrated approach fosters coordination across departments and agencies, maximizes resource efficiency, and enhances the safety and sustainability of the city.

Continued Public Involvement

Public involvement is a cornerstone of a successful Local Hazard Mitigation Plan (LHMP) and must be maintained throughout the life of the plan to ensure community buy–in, transparency, and inclusiveness. Continued public involvement allows the community to actively participate in hazard mitigation efforts, providing valuable insights, fostering ownership, and ensuring the LHMP reflects the priorities and needs of residents.

To sustain public involvement, the city should host regular public meetings to provide updates to the LHMP, discuss progress on mitigation actions, and gather feedback from community members. These meetings should be accessible to all residents, including individuals with functional needs, non–English speakers, and those in remote areas. By using various outreach methods, such as virtual platforms, community newsletters, and local media, the city can maximize participation and ensure that all residents have opportunities to engage.

Community surveys are another essential tool for public involvement. Periodic surveys can be used to assess public awareness of hazards, understand community concerns, and gather input on the effectiveness of mitigation strategies. These surveys should be distributed through multiple

channels, such as online forms, paper surveys at public events, and distribution through local organizations, to reach diverse segments of the population. The results should inform updates to the LHMP and guide future mitigation actions.

Partnerships with community organizations, non–profits, and neighborhood groups are vital for fostering continued engagement. These partnerships help extend city reach and ensure that vulnerable populations, such as seniors, low–income residents, and tribal communities, are represented in the planning process. Local organizations can also assist in hosting workshops, distributing educational materials, and encouraging their members to participate in LHMP–related activities.

Educational initiatives are another critical aspect of continued public involvement. Medical Lake should develop ongoing campaigns to increase public awareness of local hazards, preparedness measures, and mitigation efforts. These campaigns can include workshops, school programs, and outreach events that promote understanding of the LHMP and encourage proactive community involvement in risk reduction activities.

A dedicated webpage for the Medical Lake LHMP should serve as a central hub for public information. The webpage should include the current plan, progress updates, meeting schedules, and opportunities for public comment. It can also provide an easy way for residents to submit feedback or report concerns related to hazard mitigation. Maintaining an active and transparent online presence will foster trust and ensure the public remains informed and engaged.

To track public involvement, the city should establish a process for documenting all engagement activities, including meeting attendance, survey participation, and feedback received. This documentation should be reviewed during the LHMP annual evaluation to assess the effectiveness of public outreach efforts and identify areas for improvement. Lessons learned from these evaluations should be used to enhance future public involvement strategies.

By fostering continued public involvement, the city ensures that its Local Hazard Mitigation Plan remains a collaborative effort. Engaging the community strengthens local resilience, ensures the plan addresses real–world concerns, and builds a culture of preparedness and risk reduction. This approach enhances the effectiveness of the LHMP while promoting trust, cooperation, and a shared commitment to city safety and sustainability.

Appendix A: Glossary

Table 39. Glossary Terms

Mitigation	Actions Taken to Reduce or Eliminate Long–Term Risks to Human Life & Property from Hazards
Capability Assessment	Evaluation of the ability of a community to implement effective mitigation measures.
Climate Adaption	Strategies to adjust to current or expected climate changes and minimize associated risks.
Community Resilience	The ability of a community to prepare for, respond to, and recover from disasters.
Critical Infrastructure	Essential systems and assets, such as hospitals, schools, and utilities, that are vital to the functioning of a community.
Disaster Mitigation Act of 2000 (DMA 2000)	A federal legislation that requires local governments to develop and adopt hazard mitigation plans to qualify for certain types of non–emergency disaster assistance.
Drought Contingency Plan	A structured response plan outlining measures to manage water resources during drought conditions.
Early Warning System	A system designed to detect imminent hazards and provide timely information to allow individuals and communities to take protective actions.
Earthquake	A sudden and violent shaking of the ground, often causing significant damage.
Emergency Management	The organization and coordination of resources to deal with all phases of emergencies and disasters.
Emergency Response	The immediate actions taken to ensure public safety and health during and immediately after a disaster.
Evacuation Route	A designated path or road that leads people to safety during an emergency.
Evacuation Shelter	A designated facility that provides temporary housing and basic needs during an emergency.
Flood Insurance Rate Map (FIRM)	Maps produced by FEMA that show areas at risk of flooding.
Floodplain Management	Policies and practices designed to reduce flood risk in areas prone to flooding.
Green Infrastructure	Sustainable and environmentally friendly infrastructure solutions, such as rain gardens and permeable pavements, that help manage stormwater and reduce flood risks.
Hazard	A potential source of harm or adverse effect on a person or property.
Hazardous Materials (HAZMAT)	Substances that pose a risk to health, safety, or the environment in case of release.
Incident Command System (ICS)	A standardized approach to command, control, and coordination of emergency response.

Mitigation	Actions Taken to Reduce or Eliminate Long–Term Risks to Human Life & Property from Hazards
Landslide Susceptibility	The likelihood of an area experiencing landslides based on geological and environmental factors.
Land Use Planning	The process of managing land resources to prevent or minimize exposure to hazards.
Mitigation Grant Programs	Funding initiatives, such as FEMA's Hazard Mitigation Grant Program, that support risk reduction projects.
Preparedness Campaign	Public outreach efforts to educate and engage communities in disaster preparedness.
Public Participation	The process of involving community members in decision–making and planning.
Resilience	The ability of a community to recover from the impacts of hazards.
Retrofit	To add new technology or features to older systems or buildings to make them safer and more resilient.
Risk Assessment	The process of identifying and evaluating risks posed by hazards.
Risk Communication	The exchange of information regarding potential hazards and safety measures with the public.
Severe Storm	A weather event characterized by strong winds, heavy rain, hail, lightning, and potentially tornadoes.
Shelter in Place	A directive to remain indoors during emergencies when evacuation is not necessary or safe.
Stormwater Management	Techniques to control and reduce runoff to prevent flooding and water pollution.
Technological Hazard	Hazards originating from technological or industrial conditions, including accidents, dangerous procedures, or failures.
Tsunami Inundation Zone	Areas expected to be flooded in the event of a tsunami.
Urban Interface Fire	Wildfires occurring where urban areas and undeveloped land meet, posing risks to communities.
Vulnerability	The susceptibility of people, property, infrastructure, and resources to damage from hazards.
Vulnerable Populations	Groups that may require additional support during emergencies, such as seniors, children, and individuals with disabilities.
Wildfire	An uncontrolled fire spreading through vegetative fuels, posing a threat to life and property.

Appendix B: Acronyms

Table 40. Acronyms

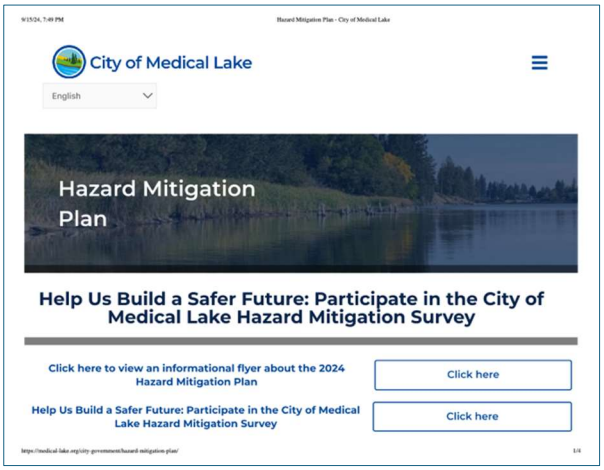
Acronym	Name
AFN	Access and Functional Needs
CDC	Centers for Disease Control and Prevention
CEMP	Comprehensive Emergency Management Plan
CERT	Community Emergency Response Team
COOP	Continuity of Operations Plan
CWPP	Community Wildfire Protection Plan
DNR	Department of Natural Resources
DMA 2000	Disaster Mitigation Act of 2000
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
ESF	Emergency Support Function
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GIS	Geographic Information System
HAZMAT	Hazardous Materials
HMP	Hazard Mitigation Plan
HMGP	Hazard Mitigation Grant Program
IAP2	International Association for Public Participation
ICS	Incident Command System
LEPC	Local Emergency Planning Committee
LHMP	Local Hazard Mitigation Plan
NGO	Non–Governmental Organization
NIMS	National Incident Management System
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service

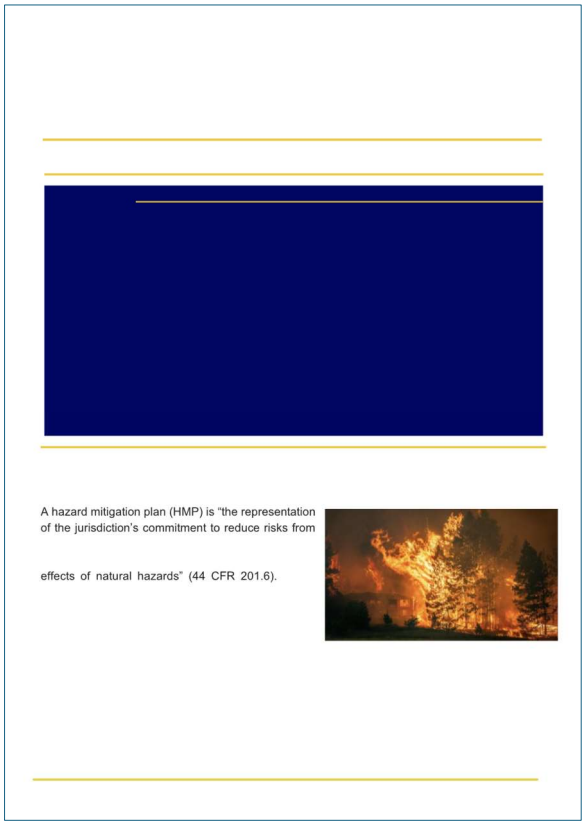
PIO	Public Information Officer
PW	Public Works
SAR	Search and Rescue
SCWR	Spokane County Water Resource
SHSP	State Homeland Security Program
SOP	Standard Operating Procedure
SVI	Social Vulnerability Index
THIRA	Threat and Hazard Identification and Risk Assessment
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
VOAD	Voluntary Organizations Active in Disaster

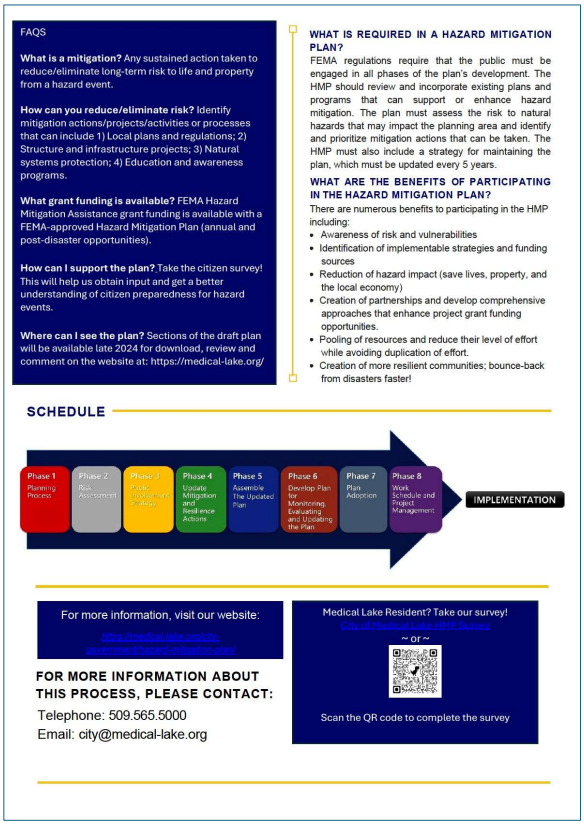
Appendix C: Community Involvement Documentation

The following section provides documentation of public participation, surveys, and public comments, highlighting the community involvement in the planning process.

Hazard Mitigation Plan Public Survey

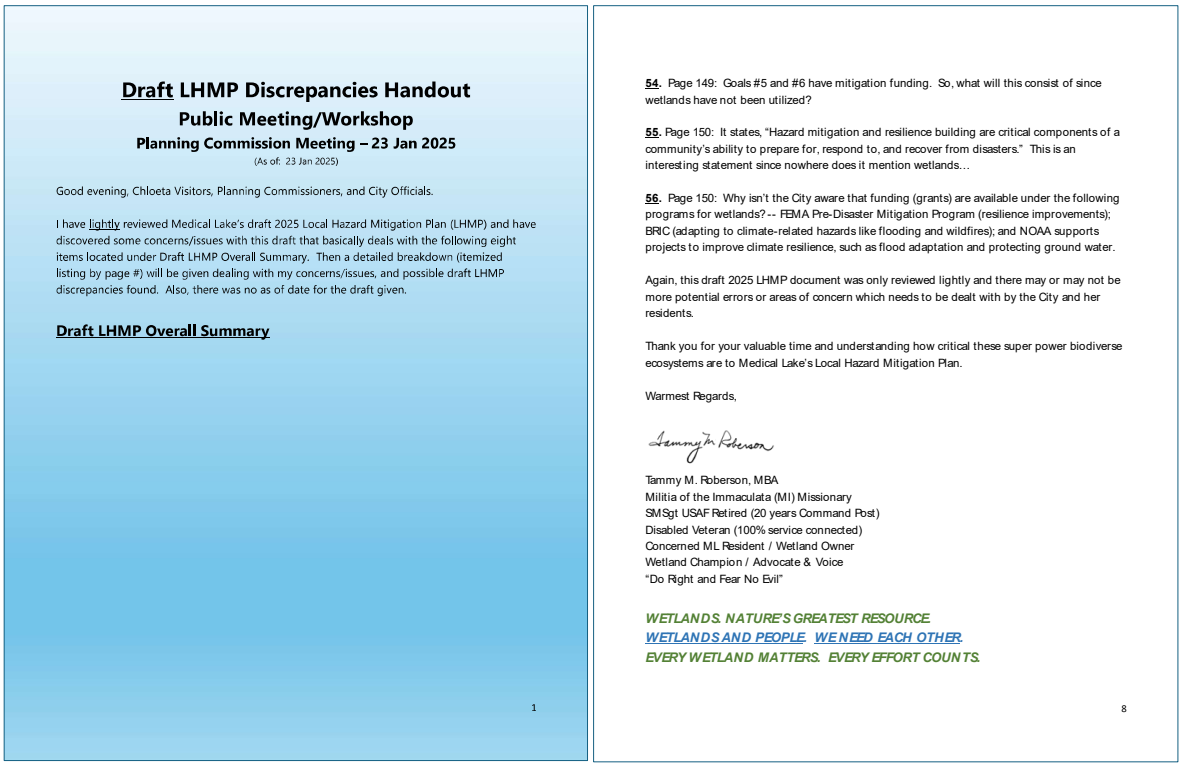






Public Feedback

Medical Lake received limited feedback on the draft Local Hazard Mitigation Plan. The information received was reviewed and applicable data was incorporated. The Draft plan was posted and accessible from January 18, 2025, to February 18, 2025. Below is a snippet of information received.



Draft LHMP Discrepancies Handout

Public Meeting/Workshop

Planning Commission Meeting – 23 Jan 2025

(As of: 23 Jan 2025)

Good evening, Chloeta Visitors, Planning Commissioners, and City Officials.

I have lightly reviewed Medical Lake's draft 2025 Local Hazard Mitigation Plan (LHMP) and have discovered some concerns/issues with this draft that basically deals with the following eight items located under Draft LHMP Overall Summary. Then a detailed breakdown (itemized listing by page #) will be given dealing with my concerns/issues, and possible draft LHMP discrepancies found. Also, there was no as of date for the draft given.

Draft LHMP Overall Summary

1

54. Page 149: Goals #5 and #6 have mitigation funding. So, what will this consist of since wetlands have not been utilized?

55. Page 150: It states, "Hazard mitigation and resilience building are critical components of a community's ability to prepare for, respond to, and recover from disasters." This is an interesting statement since nowhere does it mention wetlands…

56. Page 150: Why isn't the City aware that funding (grants) are available under the following programs for wetlands? -- FEMA Pre-Disaster Mitigation Program (resilience improvements); BRIC (adapting to climate-related hazards like flooding and wildfires); and NOAA supports projects to improve climate resilience, such as flood adaptation and protecting ground water.

Again, this draft 2025 LHMP document was only reviewed lightly and there may or may not be more potential errors or areas of concern which needs to be dealt with by the City and her residents.

Thank you for your valuable time and understanding how critical these super power biodiverse ecosystems are to Medical Lake's Local Hazard Mitigation Plan.

Warmest Regards,

Tammy M. Roberson, MBA
Militia of the Immaculata (MI) Missionary
SMSgt USAF Retired (20 years Command Post)
Disabled Veteran (100% service connected)
Concerned ML Resident / Wetland Owner
Wetland Champion / Advocate & Voice
"Do Right and Fear No Evil"

WETLANDS. NATURE'S GREATEST RESOURCE.
WETLANDS AND PEOPLE. WE NEED EACH OTHER.
EVERY WETLAND MATTERS. EVERY EFFORT COUNTS.

8

Appendix D: Risk Survey Data

The following section provides an overview of Risk survey data collected to offering the detailed information on the hazards identified and their potential impacts assessments from stakeholder engagement.

Survey Results (Stakeholder)

The stakeholder survey highlighted key priorities and concerns among agencies, organizations, and emergency response partners. Preferred communication methods for emergency alerts include text messages, social media, and local news stations, with some stakeholders emphasizing the need for centralized and streamlined messaging. High-risk areas identified include the south end of the city, wildland-urban interface zones, medical facilities, and infrastructure lacking backup power—particularly in the Fox Ridge/Hollow area with limited access. Existing mitigation measures vary, with stakeholders reporting non-structural efforts like policy changes, public education, and evacuation plans, while others focus on vegetation management and infrastructure improvements. Recommended strategies include expanding Firewise initiatives, engaging vulnerable populations in preparedness efforts, and ensuring clear, consistent emergency communication across all agencies.

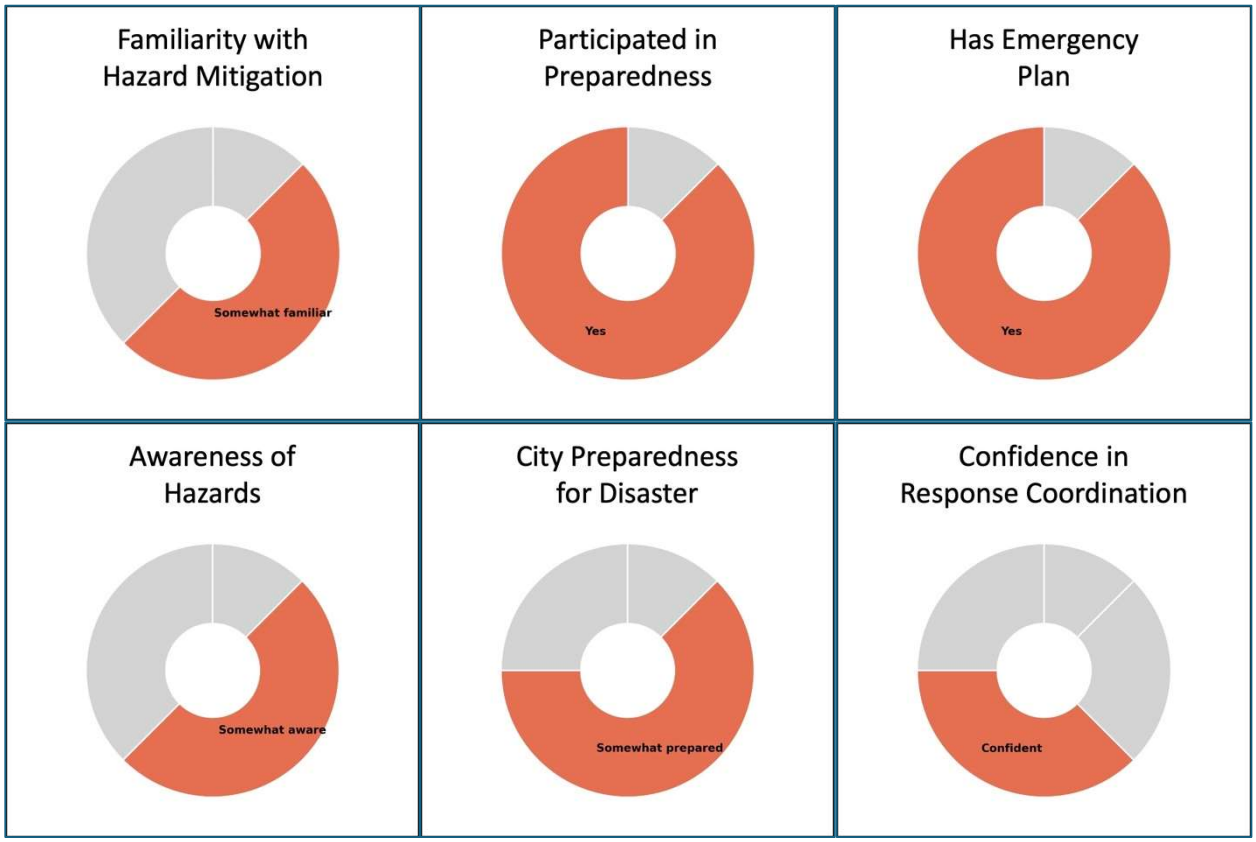
While infrastructure is generally rated as adequate, concerns exist regarding inter-agency coordination with calls for improved stakeholder meetings, resource-sharing, and defined roles for emergency response entities. Confidence in emergency response teams is high, but opinions on communication effectiveness are mixed, with some advocating for better alignment between agencies to prevent duplication of efforts. Stakeholders emphasized the need for continued collaboration, financial and logistical support, and infrastructure resilience to enhance the city's preparedness and recovery capabilities.

Participants were asked a series of hazard mitigation-related questions in eight major subcategories:

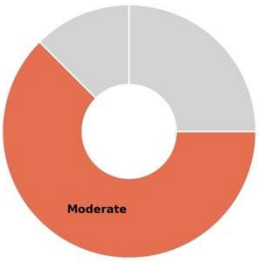
- Awareness and Preparedness. Stakeholders rated public awareness and preparedness as Moderate, with a need for more structured outreach, including community workshops, school programs, and printed materials. Many emphasized continued education and proactive engagement, especially for vulnerable populations.
- Identification of Hazards and Vulnerabilities. Key risks identified include wildland-urban interface areas, fire-damaged tree zones, medical and long-term care facilities, and infrastructure lacking backup power. Stakeholders highlighted the need for improved mapping of at-risk areas and better data on community vulnerabilities.
- Community Needs and Resources. Essential resources for hazard mitigation include financial assistance, technical support, volunteer engagement, and logistical aid. Stakeholders also stressed the importance of psychological support services and ensuring accessibility for all populations.
- Risk Assessment and Mitigation Strategies. Existing efforts focus on non-structural measures like policy changes, evacuation plans, and vegetation management. Recommended improvements include expanding the Firewise program, enhancing infrastructure redundancy, and better integrating hazard-specific response strategies.

- Communication and Coordination. While inter-agency communication is seen as somewhat effective, stakeholders highlighted the need for stronger coordination between emergency response teams, government agencies, and community partners. Scheduled stakeholder meetings and streamlined messaging were suggested.
- Public Awareness and Education. Public education is considered moderate, with stakeholders supporting targeted outreach via social media campaigns, school programs, and community workshops. Some recommended printed materials and PSAs for broader reach.
- Recovery and Reconstruction. Stakeholders rated the city's post-disaster recovery capabilities as somewhat prepared. They emphasized the need for financial support, volunteer assistance, supply chain reinforcement, and clear post-disaster action plans.
- Collaboration and Improvement. Stakeholders appreciate current partnerships but stress the need for ongoing collaboration through regular meetings, annual plan updates, and proactive engagement with all community sectors. Leadership continuity and cross-agency support are viewed as critical to long-term success.

Below is a selection of some survey question response results:



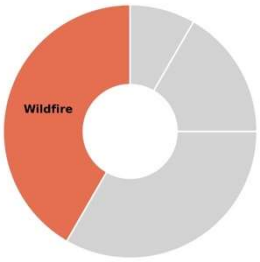
Public Awareness Level



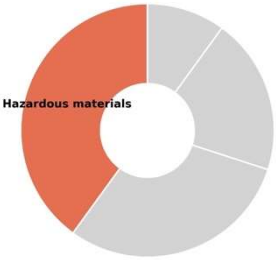
Post-Disaster Preparedness



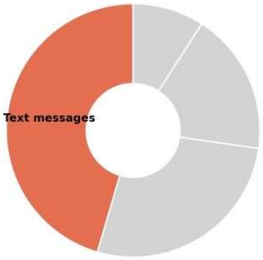
What types of natural hazards do you believe pose the greatest risk to the City of Medical Lake?



What types of man-made hazards do you believe pose the greatest risk to the City of Medical Lake?



What communication methods would you prefer for receiving emergency alerts and information?



Appendix E: Mitigation Action Worksheets

Mitigation action worksheets, outlining specific actions, responsible parties, timelines, and funding sources for each mitigation measure.

Citywide Evacuation Plans

Table 41. Citywide Evacuation Plans

Subject	Comments
Category	Local Planning and Regulations
Description	Develop and regularly update citywide evacuation plans that include clearly marked routes and staging areas, incorporating vehicle and pedestrian evacuation options. This includes collaborating with city departments, conducting evacuation drills, ensuring effective communication strategies are in place, and developing contingency plans for different types of emergencies.
Lead Agency	Emergency Management.
Key Partners	Law Enforcement, Public Works Department, community organizations, & Transportation Services.
Cost Analysis	Medium: requires additional coordination, staff time, and a budget amendment for additional resources such as signage, public communication, and training exercises.
Benefit Analysis	High: provides immediate risk reduction for life safety and evacuation efficiency, particularly during natural disasters like wildfires or floods. Ensures smooth coordination between agencies and efficient resource deployment during emergencies.
Priority	High
Estimated Cost	$80,000
Funding Sources	Local government budget, state emergency management grants.
Implementation Steps & Times	1. Coordinate with City Law Enforcement and Public Works for route planning, identifying key evacuation points and alternate routes. (Timeline: 3 months) 2. Conduct public meetings to inform residents about evacuation procedures including routes and safety measures. (Timeline: 1 month) 3. Install evacuation route signage throughout the city, with reflective materials to ensure visibility in low–light conditions. (Timeline: 4 months) 4. Hold annual evacuation drills in collaboration with community members and local organizations to evaluate preparedness and identify areas of improvement. (Timeline: ongoing) 5. Establish a public information hotline and digital platforms for real–time evacuation updates. (Timeline: 2 months)

Mapping & Supporting Special Needs Populations

Table 42. Mapping & Supporting Special Needs Populations

Subject	Comments
Category	Local Planning and Regulations
Description	Develop and maintain a database of special needs populations (e.g., elderly, disabled, non–English speakers) who may require assistance during emergencies. This initiative includes working with healthcare providers, social workers, local community leaders, and emergency response teams to gather and regularly update information. The database will be used to coordinate appropriate assistance, such as transportation and medical support, during emergencies.
Lead Agency	Health Services
Key Partners	Hospitals, social workers, community organizations, Emergency Management, & local it services.
Cost Analysis	Medium–requires collaboration with multiple agencies, data collection tools, secure IT infrastructure, and ongoing maintenance.
Benefit Analysis	High–ensures that critical needs populations receive timely assistance during emergencies, reducing vulnerabilities and ensuring equitable access to emergency services.
Priority	High
Estimated Cost	$50,000
Funding Sources	Federal grants for vulnerable population preparedness, & local health services budget.
Implementation Steps & Times	1. Partner with local healthcare providers, social services, and community organizations to identify individuals with special needs. (Timeline: 6 months) 2. Develop a secure database accessible to emergency responders, ensuring compliance with privacy laws and data security standards. (Timeline: 4 months) 3. Conduct regular updates to ensure accuracy of the information, with quarterly reviews involving community partners. (Timeline: ongoing) 4. Provide training to emergency responders on effectively assisting special needs populations during emergencies. (Timeline: 2 months) 5. Develop outreach materials and conduct workshops to educate special needs populations on what to expect during emergencies and how to prepare. (Timeline: 3 months)

Shelter–in–Place Plans

Table 43. Shelter–in–Place Plans

Subject	Comments
Category	Local Planning and Regulations
Description	Establish and disseminate clear shelter–in–place plans for hazardous events such as ashfall, chemical spills, or other airborne hazards. This includes preparing guidance materials, educating residents, coordinating with local media to ensure rapid dissemination of information, and establishing designated shelter–in–place locations in schools, community centers, and public buildings.
Lead Agency	City Emergency Management
Key Partners	Fire Department, Public Information Officers, local media outlets, schools, community centers
Cost Analysis	Low—can be developed and implemented with current staff resources, existing community facilities, and public communication channels.
Benefit Analysis	Medium—provides long–term risk reduction by ensuring residents are prepared to stay safe indoors during hazardous events, thereby reducing exposure to harmful elements.
Priority	Medium
Estimated Cost	$20,000
Funding Sources	Local community grants, in–kind contributions from local media partners
Implementation Steps & Times	1. Develop shelter–in–place instructions specific to different types of hazards, including air quality safety measures and food/water storage recommendations. (Timeline: 2 months) 2. Distribute printed and digital materials to all households, focusing on accessibility for non–English speakers and individuals with disabilities. (Timeline: 3 months) 3. Partner with local media outlets and social media platforms to broadcast shelter–in–place procedures during emergencies, ensuring widespread and rapid dissemination. (Timeline: 1–month, ongoing updates) 4. Conduct community workshops to educate residents on shelter–in–place strategies, including hands–on demonstrations at local community centers. (Timeline: 4 months) 5. Establish partnerships with schools and community centers to act as support hubs during shelter–in–place scenarios. (Timeline: 3 months)

Continuity of Operations Plan (COOP)

Table 44. Continuity of Operations Plan (COOP)

Subject	Comments
Category	Local Planning and Regulations
Description	Develop a COOP for critical city services, including public works, law enforcement, utilities, and healthcare. The COOP will outline procedures for maintaining essential functions in the event of a disruption, focusing on alternate facilities, redundant systems, clear succession planning, and resource allocation to ensure minimal disruption to public services.
Lead Agency	City Government
Key Partners	Department heads, Emergency Management, IT Department, Public Works, & healthcare providers.
Cost Analysis	Medium–requires input from multiple departments, budget amendments to accommodate alternate facilities and redundancy measures, and IT infrastructure investments.
Benefit Analysis	High–ensures the continuity of essential city operations during and after an emergency, minimizing disruption to public services and maintaining public confidence in government response capabilities.
Priority	High
Estimated Cost	$100,000
Funding Sources	State resilience grants, city government budget, private sector partnerships
Implementation Steps & Times	1. Identify essential city services, key personnel, and critical infrastructure components that must remain operational during emergencies. (Timeline: 3 months) 2. Develop alternate operational sites, including remote work capabilities, and establish redundant IT and communication systems. (Timeline: 6 months) 3. Train staff on COOP procedures, including succession planning and emergency delegation of authority. (Timeline: 4 months) 4. Conduct annual exercises to test the plan, involving all critical departments and updating the COOP based on lessons learned from these exercises. (Timeline: ongoing) 5. Coordinate with private sector partners to secure additional resources needed to maintain operations during extended emergencies. (Timeline: 2 months)

Communication Plans (Radios, Satellite Phones)

Table 45. Communication Plans (Radios, Satellite Phones)

Subject	Comments
Category	Structure and Infrastructure Projects
Description	Establish redundant communication systems, including satellite phones, two–way radios, and other communication tools, to ensure uninterrupted communication between emergency personnel during disasters. This includes acquiring the necessary equipment, training personnel, and maintaining the systems to ensure readiness.
Lead Agency	City Emergency Management
Key Partners	Public Works, emergency responders, & IT Department.
Cost Analysis	Medium–requires equipment procurement, staff training, and ongoing maintenance.
Benefit Analysis	High–ensures uninterrupted emergency communication, which is critical for coordinating response activities and ensuring public safety.
Priority	High
Estimated Cost	$75,000
Equipment Costs	$50,000 (satellite phones, two–way radios, maintenance tools)
Training Costs	$15,000 (personnel training sessions and materials)
Maintenance Costs	$10,000 (annual maintenance and testing)
Funding Sources	Local government budget, Homeland Security grants
Implementation Steps & Times	1. Procure necessary communication equipment, including satellite phones and two–way radios. (Timeline: 2 months) 2. Develop a training program for emergency personnel on how to use the communication equipment effectively. (Timeline: 1 month) 3. Conduct regular testing and maintenance of communication systems to ensure functionality during emergencies. (Timeline: ongoing, quarterly) 4. Coordinate with IT Department to establish backup communication protocols. (Timeline: 3 months)

Firewising & Community Education Programs

Table 46. Firewising & Community Education Programs

Subject	Comments
Category	Structure and Infrastructure Projects
Description	Develop a community–wide "Firewise" program to educate residents about wildfire risk and mitigation techniques. This includes organizing workshops, conducting home assessments for fire risks, and providing resources for vegetation management.
Lead Agency	Fire Department
Key Partners	Community organizations, Department of Natural Resources, local schools
Cost Analysis	Low–can be implemented with existing programs, volunteer support, and minimal budget reallocation.
Benefit Analysis	Medium–improves community awareness, reduces wildfire risk over time, and promotes active community involvement in fire prevention.
Priority	Medium
Estimated Cost	$25,000
Workshop and Education Costs	$10,000 (materials, venue, and outreach)
Assessment Tools	$5,000 (home assessment kits and equipment)
Community Outreach	$10,000 (flyers, public announcements, incentives)
Funding Sources	Community grants, in–kind contributions from local businesses
Implementation Steps & Times	1. Partner with community organizations and schools to develop educational materials on wildfire risks and prevention. (Timeline: 2 months) 2. Conduct home assessments to identify fire risks, focusing on vegetation management and defensible space. (Timeline: 3 months) 3. Organize community workshops to educate residents on fire prevention and safety. (Timeline: Quarterly) 4. Distribute educational flyers and offer incentives for community participation in Firewise practices. (Timeline: ongoing)

Development of a Community Shelter

Table 47. Development of a Community Shelter

Subject	Comments
Category	Structure and Infrastructure Projects
Description	Build a multi–purpose community center that can function as an emergency shelter during disasters. The center will also serve as a hub for community events and services during non–emergency periods.
Lead Agency	City Government
Key Partners	Community organizations, construction companies, & local businesses.
Cost Analysis	High–requires significant capital investment for construction, furnishing, and ongoing operational costs.
Benefit Analysis	High–provides a dedicated emergency facility for community safety, improves community resilience, and serves multiple functions outside of emergency periods.
Priority	$600,000
Construction Costs	$450,000 (building materials, labor, permits)
Furnishing and Equipment	$100,000 (cots, medical supplies, kitchen equipment)
Operational Costs	$50,000 (utilities, staffing, maintenance)
Funding Sources	Federal emergency management grants, local government budget, private donations
Implementation Steps & Times	1. Identify suitable land and acquire permits for construction. (Timeline: 4 months) 2. Partner with construction companies for the development of the facility. (Timeline: 8 months) 3. Furnish the shelter with necessary emergency equipment, including cots, medical supplies, and kitchen facilities. (Timeline: 2 months) 4. Conduct community outreach to inform residents about shelter location and use. (Timeline: 1 month) 5. Develop an operational plan for staffing and maintaining the shelter during emergencies. (Timeline: ongoing)

City Emergency Plans (Including Specific Hazards)

Table 48. City Emergency Plans (Including Specific Hazards)

Subject	Comments
Category	Natural Systems Protection
Description	Develop and maintain comprehensive emergency response plans tailored to specific hazards such as wildfires, floods, earthquakes, and volcanic ashfall. This includes hazard assessments, resource allocation, and coordination with state and federal agencies.
Lead Agency	City Emergency Management
Key Partners	Local law enforcement, public health, & state emergency agencies.
Cost Analysis	Medium–requires multi-agency planning, consultant support for hazard assessments, and community engagement.
Benefit Analysis	High–provides targeted emergency response for specific hazards, reduces risk exposure, and enhances community preparedness.
Priority	High
Estimated Cost	$75,000
Consultant Fees for Hazard Assessments	$30,000
Plan Development and Coordination	$25,000
Community Engagement and Training	$20,000
Funding Sources	State emergency preparedness grants, local government budget
Implementation Steps & Times	1. Conduct hazard assessments to identify specific risks faced by the community. (Timeline: 3 months) 2. Develop tailored emergency response plans, including resource allocation and roles for each hazard. (Timeline: 4 months) 3. Coordinate with state and federal agencies to align local plans with broader emergency management efforts. (Timeline: 2 months) 4. Train city staff and emergency responders on the updated plans. (Timeline: 2 months) 5. Engage the community through workshops and informational materials to raise awareness of specific hazards and responses. (Timeline: ongoing)

Firewising & Vegetation Management

Table 49. Firewising & Vegetation Management

Subject	Comments
Category	Natural Systems Protection
Description	Partner with local fire departments and the Department of Natural Resources to offer workshops and home inspections focused on wildfire prevention. This initiative also includes vegetation management programs to create defensible space around homes and critical infrastructure.
Lead Agency	Fire Department
Key Partners	Department of Natural Resources, Community Organizations, & Local Landscapers.
Cost Analysis	Medium–requires ongoing partnership, training, and community outreach for vegetation management and inspections.
Benefit Analysis	Medium–reduces wildfire risk and enhances defensible space, ultimately protecting property and lives.
Priority	Medium
Estimated Cost	$40,000
Workshops and Community Outreach	$15,000
Inspection and Vegetation Management Tools	$10,000 (pruning tools, safety gear)
Partnership and Coordination Costs	$15,000
Funding Sources	State wildfire prevention grants, community contributions
Implementation Steps & Times	1. Conduct community workshops on wildfire prevention, focusing on defensible space and safe landscaping practices. (Timeline: 2 months) 2. Partner with local landscapers to provide discounted vegetation management services to residents. (Timeline: 3 months) 3. Offer home inspections to assess fire risk and recommend mitigation measures. (Timeline: ongoing) 4. Distribute educational materials on the importance of vegetation management in reducing wildfire risk. (Timeline: 1 month)

Notification & Communication System Development

Table 50. Notification & Communication System Development

Subject	Comments
Category	Education and Awareness Programs
Description	Develop an alert and notification system to ensure rapid communication with residents during emergencies. This includes implementing a city–wide notification platform, integrating multiple communication channels (text, phone, email), and providing training on system use.
Lead Agency	City Emergency Management Office
Key Partners	IT Department, Public Safety, & local telecommunication providers.
Cost Analysis	Medium–requires technology implementation, software costs, and integration with existing systems.
Benefit Analysis	High–provides timely alerts to residents, crucial during emergencies, and ensures effective communication to prevent loss of life and property.
Priority	High
Software and Platform Costs	$30,000
Training and Implementation	$10,000
Annual Maintenance	$10,000
Estimated Cost	$50,000
Funding Sources	Federal communication grants, local government budget
Implementation Steps & Times	1. Procure and implement a notification platform that integrates multiple communication channels. (Timeline: 2 months) 2. Train city staff and emergency responders on the use of the notification system. (Timeline: 1 month) 3. Conduct system testing and simulations to ensure reliability during actual emergencies. (Timeline: 1 month) 4. Launch public awareness campaigns to educate residents on how to receive and respond to alerts. (Timeline: ongoing)

Vulnerable Population Engagement

Table 51. Vulnerable Population Engagement

Subject	Comments
Category	Education and Awareness Programs
Description	Conduct regular outreach to vulnerable populations, including low–income residents, the elderly, and individuals with limited mobility to ensure adequate inclusion in emergency planning and preparedness activities. This includes door–to–door visits, partnerships with community organizations, and providing tailored emergency preparedness kits.
Lead Agency	Community Services
Key Partners	Social workers, non–profit organizations, healthcare providers, & community volunteers.
Cost Analysis	Low–can be implemented using existing community resources, outreach programs, and volunteer efforts, with some budget for materials and transportation.
Benefit Analysis	Medium–ensures inclusivity and preparedness for vulnerable populations, reducing disparities in emergency readiness and increasing community resilience.
Priority	Medium
Outreach Materials	$5,000 (printed brochures, posters, and translated materials)
Emergency Preparedness Kits	$7,000 (basic supplies tailored for vulnerable groups)
Transportation and Volunteer Coordination	$3,000
Estimated Cost	$15,000
Funding Sources	Local non–profit contributions, community grants
Implementation Steps & Times	1. Partner with non–profit organizations and social workers to identify and map vulnerable populations within the community. (Timeline: 3 months) 2. Develop outreach materials in multiple languages to ensure accessibility. (Timeline: 2 months) 3. Conduct door–to–door visits and community events to engage with vulnerable populations and distribute preparedness kits. (Timeline: 4 months, ongoing) 4. Train community volunteers on effective communication and support techniques for engaging vulnerable residents. (Timeline: 1 month) 5. Establish a feedback mechanism to assess the needs of vulnerable groups and adapt engagement strategies accordingly. (Timeline: ongoing)

Community Workshops on Hazard Preparedness

Table 52. Community Workshops on Hazard Preparedness

Subject	Comments
Category	Education and Awareness Programs
Description	Organize annual community workshops covering topics such as emergency kits, home fire safety, family communication plans, and other hazard preparedness activities. These workshops will include interactive demonstrations, guest speakers from local emergency services, and distribution of preparedness materials.
Lead Agency	City Emergency Management Office
Key Partners	Fire department, community organizations, local schools, & emergency responders.
Cost Analysis	Low–requires minimal resources for organizing annual events, but includes costs for materials, venue, and incentives for participants.
Benefit Analysis	Medium–raises awareness, improves individual preparedness, and builds community networks that can support each other during emergencies.
Priority	Medium
Venue and Logistics	$3,000 (rental fees, permits, and utilities)
Materials and Equipment	$4,000 (printed guides, demonstration kits, audiovisual equipment)
Incentives for Participants	$3,000 (emergency supplies such as flashlights and first aid kits)
Estimated Cost	$10,000
Funding Sources	Local business sponsorships, state education grants
Implementation Steps & Times	1. Identify suitable venues for hosting community workshops, such as community centers and schools. (Timeline: 2 months) 2. Coordinate with local emergency responders and guest speakers for interactive demonstrations. (Timeline: 3 months) 3. Develop educational materials and interactive guides on hazard preparedness topics. (Timeline: 2 months) 4. Promote the workshops through local media, social media, and community bulletin boards to encourage participation. (Timeline: 1 month, ongoing) 5. Hold workshops annually, with follow–up surveys to assess participant understanding and gather feedback for future sessions. (Timeline: ongoing)

Emergency Kits & Preparedness Materials

Table 53. Emergency Kits & Preparedness Materials

Subject	Comments
Category	Education and Awareness Programs
Description	Develop a city–sponsored program to encourage all households to have emergency kits for at least 72 hours. This includes distributing educational materials on the importance of emergency preparedness, providing basic emergency kits to low–income households, and partnering with local businesses to offer discounts on emergency supplies.
Lead Agency	Community Services
Key Partners	Non–profit organizations, local businesses, retailers, & community volunteers
Cost Analysis	Low–requires an initial investment for kit supplies and educational materials but leverages partnerships for ongoing support.
Benefit Analysis	Medium–enhances household preparedness across the community, reducing reliance on emergency services during the initial hours of a disaster.
Priority	Medium
Emergency Kit Supplies	$12,000 (water, non–perishable food, flashlights, first aid kits)
Educational Materials	$5,000 (brochures, instructional videos, and posters)
Logistics and Distribution	$3,000 (storage, transportation, and volunteer coordination)
Estimated Cost	$20,000
Funding Sources	Federal emergency preparedness grants, local business contributions
Implementation Steps & Times	1. Partner with local businesses and non–profit organizations to source emergency supplies and assemble kits. (Timeline: 3 months) 2. Develop educational materials highlighting the importance of emergency preparedness and how to use the kits effectively. (Timeline: 2 months) 3. Identify and prioritize low–income households for distribution of free emergency kits. (Timeline: 1 month) 4. Coordinate with community volunteers to distribute kits and provide demonstrations on their use. (Timeline: 3 months) 5. Establish a partnership with local retailers to offer discounts on emergency supplies to the general public. (Timeline: ongoing)

Appendix F: Planning Meeting Documentation

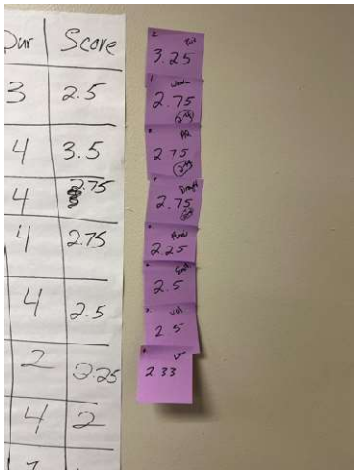
1. Hazard Mitigation Stakeholder Planning Meeting

Medical Lake HMP Initial Stakeholder Meeting

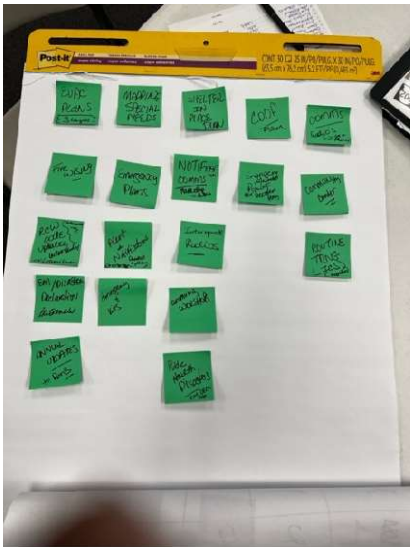
Name	Entity
Sonny Weathers	City of Medical Lake
Kelli Hawkins	Spokane Regional Health District
Greg Hafer	Consolidated Support Services, DSHS
Elisa Rodriguez	City of Medical Lake
Bill Dennstaedt	Spokane County Fire District #3
Kim Headrick	Medical Lake School District
Michele McCollum	Avista
Mike Kittilstved	Spokane County Sheriff's Office
Steve Cooper	City of Medical Lake
Scott Duncan	City of Medical Lake
Sharon Mandarino	Eastern State Hospital, DSHS
Chandra Fox	Spokane County Emergency Management
Terri Cooper	City of Medical Lake
Kaye Peterson	Silver Lake Bible Camp
Eric Carpenter (Zoom)	Eastern State Hospital, DSHS

2. Hazard Assessment Workshop





3. Hazard Mitigation Planning



Appendix G: Public & Stakeholder Engagement

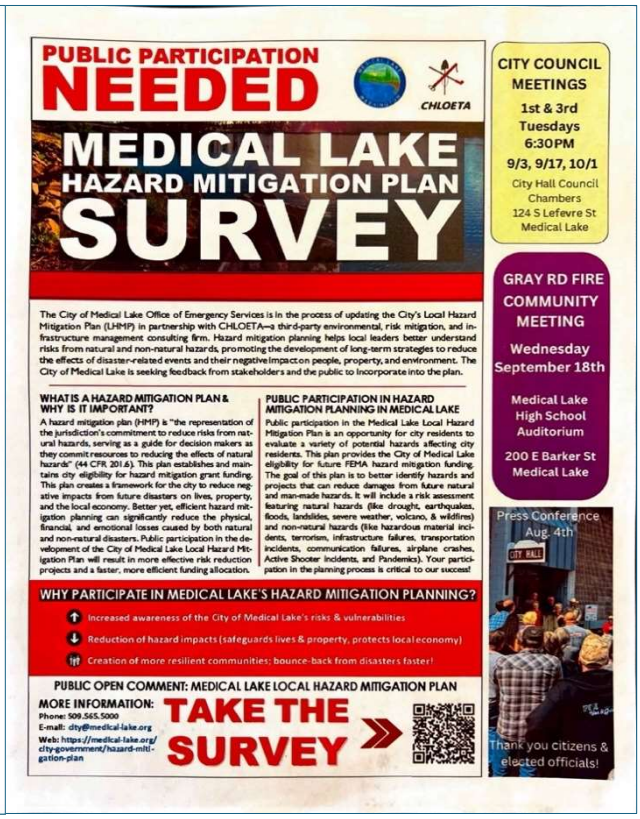
1. Public & Stakeholder Engagement Survey–Hazard Identification and Impact–Website





2. Public & Stakeholder Engagement Survey–Hazard Identification–Newsletter



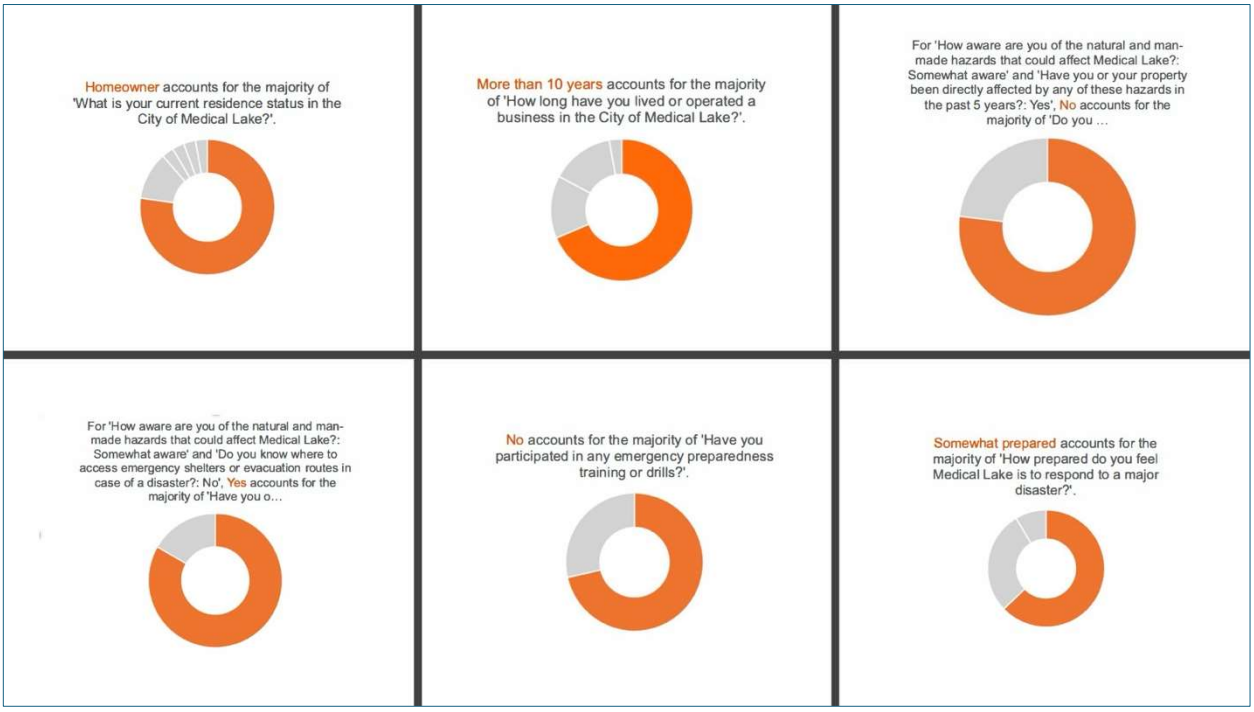


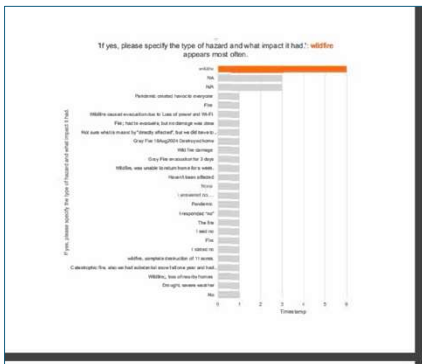
Survey Results

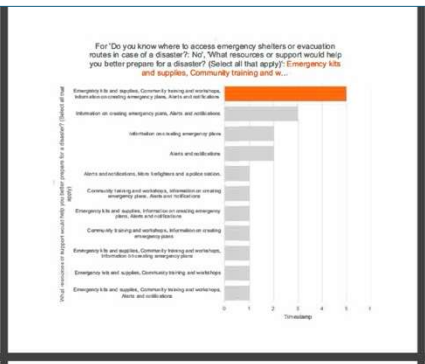
The survey inquired about hazard awareness and emergency preparedness for residents and business owners. Questions and responses covered details about awareness of natural and man–made hazards, previous disaster experiences, preparedness levels, and preferred communication methods for emergency alerts. Many participants felt wildfires, severe weather, and hazardous material incidents were significant threats. Several noted a lack of preparedness resources, communication failures, and the need for more community training, emergency alerts, and infrastructure improvements.

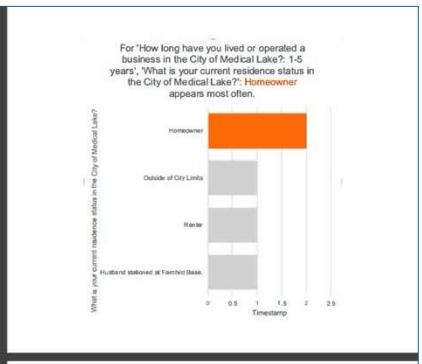
- Residency & Experience. Respondents include city homeowners, renters, and business owners with varying lengths of residence.
- Hazard Awareness. Most respondents are aware of potential hazards, particularly wildfires, severe weather, and hazardous materials incidents.
- Emergency Preparedness. Many have emergency plans in–progress; others lack plans/training.
- Recent Disaster Impact. Several respondents have been directly affected by wildfires, including evacuations and property loss.
- Perceived Readiness of Medical Lake. Responses vary, with many feeling "somewhat prepared," but some believe the city is not adequately prepared.
- Needed Resources. Common requests include emergency kits, community training, better alerts, and improved firefighter and police resources.
- Preferred Communication Methods. Text messages, emails, local news stations, and social media are the most preferred ways to receive emergency alerts.
- Additional Concerns. Some respondents highlight issues like communication failures, limited evacuation routes, and the need for better emergency coordination.

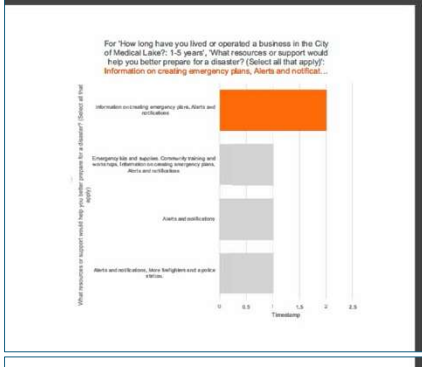
Below is a selection of some survey question response results:

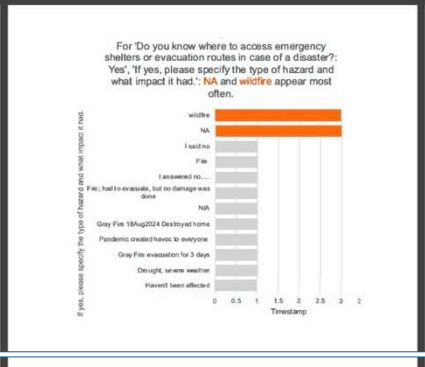


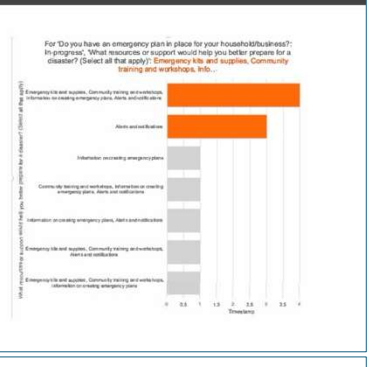

If yes, please specify the type of hazard and what impact it had.': wildfire appears most often.
Timestamp


For 'Do you know where to access emergency shelters or evacuation routes in case of a disaster?: No', 'What resources or support would help you better prepare for a disaster? (Select all that apply)': Emergency kits and supplies, Community training and w...
Timestamp


For 'How long have you lived or operated a business in the City of Medical Lake?: 1-5 years', 'What is your current residence status in the City of Medical Lake?': Homeowner appears most often.
Homeowner
Outside of City Limits
Renter
Husband stationed at Fairchild Base.
What is your current residence status in the City of Medical Lake?
Timestamp

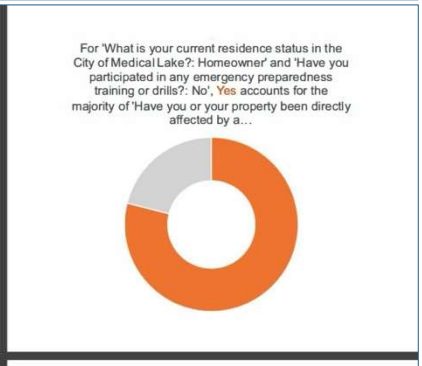

For 'How long have you lived or operated a business in the City of Medical Lake?: 1-5 years', 'What resources or support would help you better prepare for a disaster? (Select all that apply)': Information on creating emergency plans, Alerts and notificat...
Information on creating emergency plans, Alerts and notifications
Emergency kits and supplies, Community training and workshops, Information on creating emergency plans, Alerts and notifications
Alerts and notifications
Alerts and notifications, More firefighters and police station.
What resources or support would help you better prepare for a disaster? (Select all that apply)
Timestamp

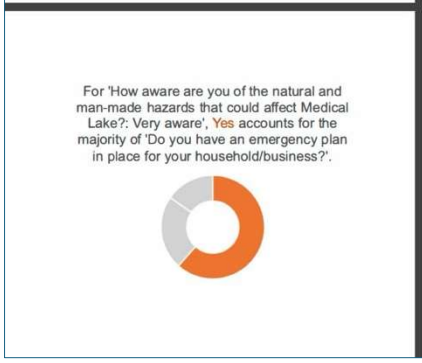

For 'Do you know where to access emergency shelters or evacuation routes in case of a disaster?: Yes', 'If yes, please specify the type of hazard and what impact it had.': NA and wildfire appear most often.
wildfire
NA
I said no
Fire
I answered no,...
Fire; had to evacuate, but no damage was done
NA
Gray Fire 18Aug2024 Destroyed home
Pandemic created havoc to everyone
Gray Fire evacuation for 3 days
Drought, severe weather
Haven't been affected
If yes, please specify the type of hazard and what impact it had.
Timestamp


For 'Do you have an emergency plan in place for your household/business?: In-progress', 'What resources or support would help you better prepare for a disaster? (Select all that apply)': Emergency kits and supplies, Community training and workshops, Info...
Timestamp


For 'Have you or your property been directly affected by any of these hazards in the past 5 years?: No', Yes accounts for the majority of 'Do you have an emergency plan in place for your household/business?'.

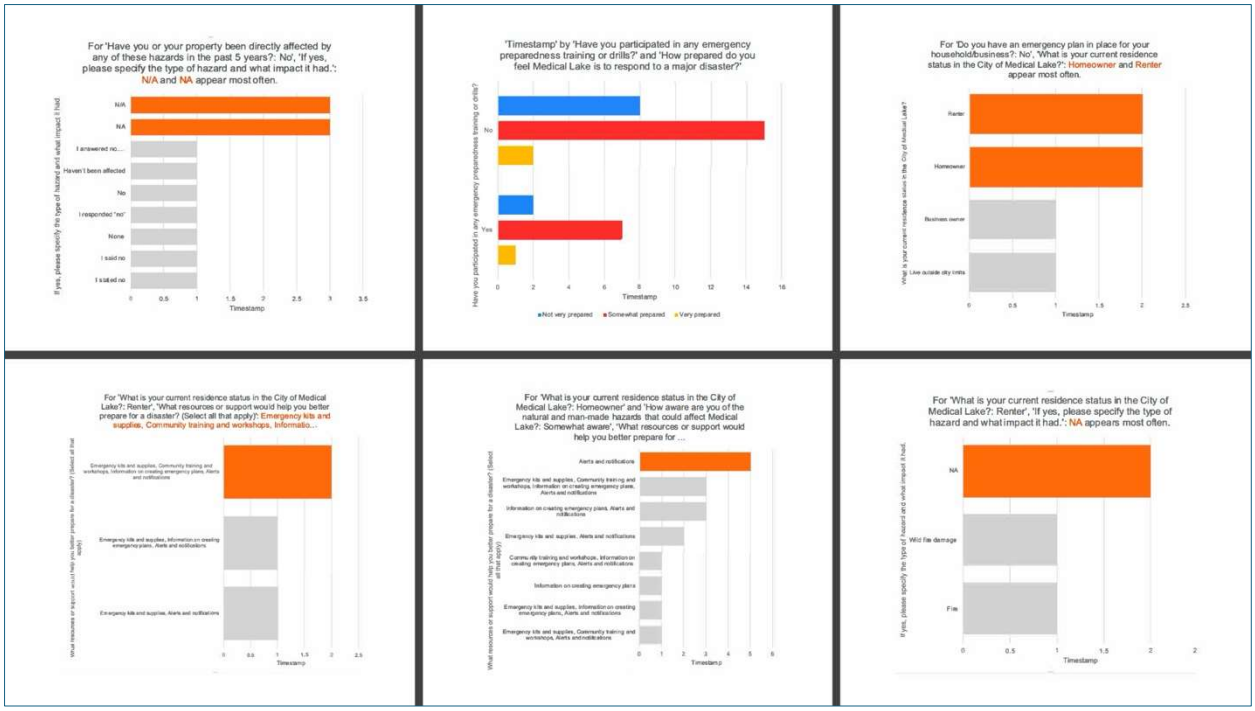

For 'Do you have an emergency plan in place for your household/business?: In-progress', No accounts for the majority of 'Do you know where to access emergency shelters or evacuation routes in case of a disaster?'.


For 'What is your current residence status in the City of Medical Lake?: Homeowner' and 'Have you participated in any emergency preparedness training or drills?: No', Yes accounts for the majority of 'Have you or your property been directly affected by a...


For 'How aware are you of the natural and man-made hazards that could affect Medical Lake?: Very aware', Yes accounts for the majority of 'Do you have an emergency plan in place for your household/business?'.


For 'What is your current residence status in the City of Medical Lake?: Homeowner', Yes accounts for the majority of 'Do you have an emergency plan in place for your household/business?'.


For 'How prepared do you feel Medical Lake is to respond to a major disaster?: Not very prepared', Yes accounts for the majority of 'Do you have an emergency plan in place for your household/business?'.



3. Press Release: Public Invitation to Review LHMP Final Draft.

City of Medical Lake
124 S. Lefevre St.
P.O. Box 369
Medical Lake, WA 99022-0369
tcooper@medical-lake.org

Terri Cooper, Mayor

FOR IMMEDIATE RELEASE
January 20, 2025

Writer/Contact: Sonny Weathers, City Administrator, City of Medical Lake
city@medical-lake.org | (509) 565-5000

Public Invited to Review and Provide Input on the City of Medical Lake's Hazard Mitigation Plan Update.

Medical Lake, WA. – The City of Medical Lake invites residents, businesses, and stakeholders to review and provide feedback on its Hazard Mitigation Plan (HMP). This plan, developed in collaboration with federal, state, and local partners, identifies strategies to minimize risks and enhance the city's resilience against natural disasters and other hazards.

The updated plan is in compliance with requirements outlined by the Federal Emergency Management Agency (FEMA) under the Disaster Mitigation Act of 2000 (DMA 2000). This legislation mandates that local governments develop and adopt a HMP to remain eligible for federal mitigation funding and disaster recovery assistance.

Why Review the Plan?

The Hazard Mitigation Plan serves as a roadmap for identifying vulnerabilities and implementing measures to protect life, property, and critical infrastructure in the event of

emergencies such as wildfires, floods, severe storms, and earthquakes. By providing input, the public helps ensure that the plan reflects community concerns, incorporates local knowledge, and prioritizes actions that address the city's most pressing risks.

Key Objectives of the Hazard Mitigation Plan Include:

- Assessing hazards and vulnerabilities specific to Medical Lake.
- Identifying and prioritizing cost-effective mitigation projects.
- Increasing public awareness and preparedness.
- Aligning with FEMA's Hazard Mitigation Planning requirements, including compliance with Title 44 of the Code of Federal Regulations (CFR) Part 201.

How to Participate:

The draft Hazard Mitigation Plan is available for public review online at www.medical-lake.org/city-government/hazard-mitigation-plan/ or in-person at City Hall, 124 S. Lefevre St in Medical Lake. Public comments will be accepted from 20 January 2024 through 21 February 2024. Residents are encouraged to submit feedback via email to city@medical-lake.org, by attending public meetings scheduled for January 23 at 5:30 pm and February 4 at 6:30 pm, both in City Hall.

What Happens Next?

Following the public review period, the city will incorporate feedback into the final version of the HMP before submitting it to FEMA for approval. Once approved, the plan will guide future investments in mitigation projects and increase the city's eligibility for federal grant programs.

"The safety and well-being of our community is a top priority," said Mayor Terri Cooper. "This plan is not just a requirement but an essential tool for reducing risks and ensuring we are prepared to respond to disasters. Your input is invaluable to making this plan as comprehensive and effective as possible."

For more information, please contact Sonny Weathers at 509-565-5000 or city@medical-lake.org.

Together, we can build a safer, more resilient Medical Lake.

Sincerely,

Terri Cooper, Mayor
City of Medical Lake

CC: Sonny Weathers, City Administrator

4. Public Meeting Announcements, Agenda and Minutes:

AGENDA
PLANNING COMMISSION
REGULAR MEETING
JANUARY 23, 2025, 5:30 PM

COMMISSION ATTENDANCE IN PERSON
PUBLIC MAY ATTEND IN PERSON OR
REMOTELY VIA ZOOM

Please note: To better serve our community, we are now offering Live Streaming of our Planning Commission Meetings on our YouTube channel (link is provided below). This will enable citizens who wish to just view the meeting and not participate (provide comments) to do so in the comfort of their homes. Those that wish to provide input during the citizen comment periods may join the meeting as usual via the Zoom link.

- **Join the Zoom Meeting** –
  https://us06web.zoom.us/j/87176943399?pwd=pkIaO6qBFxPba2DROFaGkOo4CbLhXN.1

  Meeting ID: 871 7694 3399
  Passcode: 446645

  One tap mobile
  +12532158782,,87176943399#,,,,*446645# US (Tacoma)
  +12532050468,,87176943399#,,,,*446645# US

  Find your local number: https://us06web.zoom.us/u/kzRzLKDTf

- **Watch the Live Stream on YouTube** –
  http://www.youtube.com/@CityofMedicalLake

WRITTEN PUBLIC COMMENTS

If you wish to provide written public comments for the Planning Commission meeting, please email your comments to erodriguez@medical-lake.org by 2:00 p.m. the day of the commission meeting and include all the following information with your comments:

1. The Meeting Date
2. Your First and Last Name
3. If you are a Medical Lake resident
4. The Agenda Item(s) which you are speaking about

*Note – If providing written comments, the comments received will be acknowledged during the public meeting, but not read. All written comments received by 2:00 p.m. will be provided to the Planning Commission in advance of the meeting.

Questions or Need Assistance? Please contact City Hall at 509-565-5000

1) **CALL TO ORDER, PLEDGE OF ALLEGIANCE, AND ROLL CALL**

2) **ADDITIONS TO AGENDA**

3) **INTERESTED CITIZENS: AUDIENCE REQUESTS AND COMMENTS**

4) **APPROVAL OF MINUTES**
   a) December 14, 2024, Meeting minutes

5) **STAFF REPORTS**

6) **SCHEDULED ITEMS**
   a) Public Meeting/Workshop regarding Hazard Mitigation Plan
   b) Wetlands Presentation – Tammy Roberson
   c) Downtown Park Name
   d) Design Standards

7) **PUBLIC HEARING** – None

8) **COMMISSION MEMBERS' COMMENTS OR CONCERNS**

9) **INTERESTED CITIZENS: AUDIENCE REQUESTS AND COMMENTS**

10) **CONCLUSION**

City of Medical Lake
124 S. Lefevre Street – City Council Chambers
Planning Commission Meeting
December 19, 2024 Minutes

NOTE: This is not a verbatim transcript. *Minutes contain only a summary of the discussion. A recording of the meeting is on file and available from City Hall.*

1) **CALL TO ORDER, PLEDGE OF ALLEGIANCE, AND ROLL CALL**
   a) Commissioner Hudson called the meeting to order at 5:30 pm, led the Pledge of Allegiance, and conducted roll call. Commissioner Mark was present on Zoom with all other Commissioners present in person.

2) **ADDITIONS TO AGENDA**
   a) No additions. Motion to approve as written made by Commissioner Mayulianos, seconded by Commissioner Munson, carried 5-0.

3) **INTERESTED CITIZENS: AUDIENCE REQUESTS AND COMMENTS**
   a) None.

4) **APPROVAL OF MINUTES** – November 21, 2024
   a) Motion to approve made by Commissioner Mayulianos, seconded by Commissioner Mark, carried 5-0.

5) **STAFF REPORTS**
   a) Elisa Rodriguez, City Planner - Department of Commerce reviewed MLMC change and it is in compliance. A public workshop will be held in January regarding Hazard Mitigation Plan representation and input. This is not a public hearing, it is to gather input from the Commission and other citizens.

6) **SCHEDULED ITEMS**
   a) New Planning Policies - Ms. Rodriguez explained that certain changes, such as technology updates, do not need a code change. Therefore, these changes will be made with policy updates. Used Land Use Review Applications as an example.
   b) Education Packet - Commissioner Mark complimented Commissioners Mayulianos and Jorgenson on their work on the packet. Motion to approve packet made by Commissioner Munson, seconded by Commissioner Jorgenson, carried 5-0.
   c) Downtown Park Name – suggestions: Lake St. Park, Lefevre Park, Downtown Park, City Park. Essence of park should be "fun".
      i) Motion to table to the next meeting made by Commissioner Mayulianos, seconded by Commissioner Munson, carried 5-0.
   d) Design Standards & Branding – discussed Snohomish, Pilchuk, historic focus.
      i) Motion to table to the next meeting made by Commissioner Hudson, seconded by Commissioner Mayulianos, carried 5-0.

7) **PUBLIC HEARING** – None

8) **COMMISSION MEMBERS' COMMENTS OR CONCERNS**
   a) Commissioner Hudson commented on Commissioner Munson's e-mail about condominiums in

Medical Lake.

b) Commissioner Mayulianos referenced an informational packet on wetlands that was sent by Medical Lake resident, Tammy Roberson. She would like to put it on the agenda for the January meeting. Motion to put it on the January agenda as an educational presentation made by Commissioner Mayulianos, seconded by Commissioner Hudson, carried 5-0.

9) **INTERESTED CITIZENS: AUDIENCE REQUESTS AND COMMENTS**

a) None.

10) **CONCLUSION**

a) Motion to conclude at 6:14 pm made by Commissioner Mark, seconded by Commissioner Mayulianos, carried 5-0.

_____

Roxanne Wright, Administrative Assistant

_____

Date

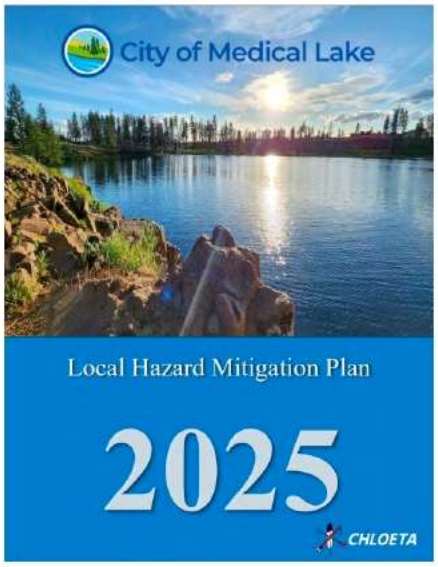
DRAFT

The Draft Hazard Mitigation Plan can be reviewed on the City website at:

https://medical-lake.org/city-government/hazard-mitigation-plan/

Chloeta will be presenting at the meeting.

They will appreciate your feedback.



5

CITY COUNCIL REGULAR MEETING
TUESDAY, FEBRUARY 4, 2025
HELD REMOTELY & IN PERSON AT CITY HALL
124 S. LEFEVRE ST.

- Sign up to provide Public Comment at the meeting via calling in.
- Submit Written Public Comment Before 4 pm on (February 4, 2025) - *SEE NOTE*

Please note: To better serve our community, we are now offering Live Streaming of our Council Meetings on our YouTube channel (link is provided below). This will enable citizens who wish to just view the meeting and not participate (provide comments) to do so in the comfort of their homes. Those that wish to provide input during the citizen comment periods, may join the meeting as usual via the Zoom link.

- **Join the Zoom Meeting** –
  https://us06web.zoom.us/j/89027547160?pwd=beFUSDvbX6zTP1ZM9MILHHBfsKPkK8.1

  Meeting ID: 890 2754 7160
  Passcode: 446645

  One tap mobile
  +12532050468,,89027547160#,,,,*446645# US
  +12532158782,,89027547160#,,,,*446645# US (Tacoma)

  Find your local number: https://us06web.zoom.us/u/k9eZTv4S6

- **Watch the Live Stream on YouTube** -
  http://www.youtube.com/@CityofMedicalLake

WRITTEN PUBLIC COMMENTS

If you wish to provide written public comments for the council meeting, please email your comments to sweathers@medical-lake.org by 4:00 p.m. the day of the council meeting and include all the following information with your comments:

1. The Meeting Date
2. Your First and Last Name
3. If you are a Medical Lake resident
4. The Agenda Item(s) which you are speaking about

*Note – If providing written comments, the comments received will be acknowledged during the public meeting, but not read. All written comments received by 4:00 p.m. will be provided to the mayor and city council members in advance of the meeting.

Questions or Need Assistance? Please contact City Hall at 509-565-5000

FEBRUARY 4, 2025 - REGULAR SESSION – 6:30 PM

1. **CALL TO ORDER, PLEDGE OF ALLEGIANCE, ROLL CALL**
2. **AGENDA APPROVAL**
3. **INTERESTED CITIZENS: AUDIENCE REQUESTS AND COMMENTS**
4. **ANNOUNCEMENTS / PROCLAMATIONS / SPECIAL PRESENTATIONS**
   A. Recognition of Planning Commission service
5. **REPORTS**
   A. Committee Reports/Council Comments
   B. Mayor
   C. City Administrator & City Staff
      i. Sonny Weathers, City Administrator
      ii. Dave Yuhas, Code Enforcement Officer – 2024 Q4 Code Enforcement Report
6. **WORKSHOP DISCUSSION**
   A. 2025 Extra Duty Deputy Agreement
   B. Vacant Property Ordinance Annual Report
   C. Draft Hazard Mitigation Plan Status
7. **ACTION ITEMS**
   A. Consent Agenda
      i. Approve **January 21, 2025,** minutes.
      ii. Approve **February 4, 2025,** Claim Warrants numbered **52162** through **52200** in the amount of **$414,734.50.**
8. **PUBLIC HEARINGS** – None
9. **RESOLUTIONS** – None.
10. **ORDINANCES** – None.
11. **EXECUTIVE SESSION** – None.
12. **EMERGENCY ORDINANCES** – None.
13. **UPCOMING AGENDA ITEMS**
14. **INTERESTED CITIZENS**
15. **CONCLUSION**

CITY OF MEDICAL LAKE
City Council Regular Meeting

6:30 PM | **MINUTES** | Council Chambers
January 21, 2025 | | 124 S. Lefevre Street

NOTE: This is not a verbatim transcript. Minutes contain only a summary of the discussion. A recording of the meeting is on file and available from City Hall.

COUNCIL AND ADMINISTRATIVE PERSONNEL PRESENT

Councilmembers
Chad Pritchard
Keli Shaffer
Lance Speirs (via Zoom)
Bob Maxwell
Ted Olson
Tony Harbolt

Administration/Staff
Terri Cooper, Mayor
Sonny Weathers, City Administrator
Koss Ronholt, Finance Director
Steve Cooper, WWTP Director
Elisa Rodriguez, City Planner
Glen Horton, Parks & Recreation Director
Roxanne Wright, Administrative Assistant

REGULAR SESSION – 6:30 PM

1. **CALL TO ORDER, PLEDGE OF ALLEGIANCE, ROLL CALL**
   A. Mayor Cooper called the meeting to order at 6:32 pm, led the Pledge of Allegiance, and conducted roll call.
      i. Councilmember Kennedy was previously excused and not present. Councilmember Speirs was present on Zoom. All other Council members were present in person.
      ii. Councilmember Pritchard submitted an absence request for the February 4th meeting. Motion to approve made by Councilmember Harbolt, seconded by Councilmember Shaffer, carried 6-0.
2. **AGENDA APPROVAL**
   A. Mayor Cooper added an Executive Session and requested to have it placed between agenda item 5 Reports. Motion to approve made by Councilmember Harbolt, seconded by Councilmember Maxwell, during discussion Councilmember Pritchard suggested placing it after agenda item 5 Reports, motion on the floor failed with all members voting nay. New motion to place the Executive Session after agenda item 5 Reports made by Councilmember Harbolt, seconded by Councilmember Maxwell, carried 6-0.
   B. Motion to approve agenda as amended made by Councilmember Shaffer, seconded by Councilmember Olson, carried 6-0.
3. **INTERESTED CITIZENS: AUDIENCE REQUESTS AND COMMENTS**
   A. Tammy Roberson, Medical Lake resident – spoke on wetlands. Submitted written documents to council via email as well. *The full comments are part of the official record on file at City Hall and can be requested in person or by sending an e-mail to records@medical-lake.org .*
4. **ANNOUNCEMENTS / PROCLAMATIONS / SPECIAL PRESENTATIONS** - none

5. **REPORTS**
   A. Public Safety
      i. SCSO Sherriff Kittilstved –Monthly crime stats included year end information. Most things were down. Shoplifting was the only crime that went up. Focusing on burglaries and encouraging citizens to lock vehicles and homes.
      ii. FD3 Chief Cory Rohrbach – year end call data – December was the slowest month of year with 45 calls. Up 19% over previous years. May have to do with sample size. Discussed recent press releases regarding emergency communication services (911).

   B. Councilmember Committee Reports and Comments
      i. Councilmember Pritchard – HCDAC applications being reviewed soon. Mayor will do an appointment letter for Councilmember Pritchard as his appointment to the HCDAC committee is up.
      ii. Councilmember Shaffer – Finance Committee met and reviewed claims, payroll and Q4 budget which Mr. Ronholt will discuss later in the meeting.
      iii. Councilmember Maxwell – General Government Committee Public Works update – Lake Street ADA upgrades scheduled for spring as weather permits. WWTP upgrades.
      iv. Councilmember Olson – General Government Committee - crews out dealing with frozen pipe calls. Public safety – big thank you to sheriff and FD3 for their precise reports.
      v. Councilmember Harbolt – no report.
      vi. Councilmember Speirs – STA meeting set subcommittee members and discussed prioritization for the year/legislative agenda.

   C. Mayor Cooper – shared that FEMA recently opened additional funding for disaster relief. Attended Cheney Community Court graduation, one graduate was from Medical Lake.

   D. City Administrator & City Staff
      i. Sonny Weathers, City Administrator – Planning Commission has two vacancies, requesting applications (due 1/31). The draft Hazard Mitigation Plan is out for public input, on website and Facebook. Encouraged community to attend the January 23rd Planning Commission meeting and/or the February 4th City Council meeting for more information. Solid Waste services contract ends the end of April. An RFP will be coming out soon. CTR plan is due for update by June of this year. WSDOT has approved draft plan.
      ii. Koss Ronholt, Finance Director – 2024 Q4 Budget Report
         1. Gave a presentation, see attached.

6. **EXECUTIVE SESSION**
   A. Mayor Cooper stated that she along with the Council, City Administrator, legal counsel, and John Leland with Upward Advisors would meet in executive session to discuss the purchase or sale of land as allowed by RCW 42.30.110(b)(c).
   B. No further action was expected to be taken following the executive session.
   C. The Council exited chambers to hold the Executive Session in the annex building. Session started at 7:20 pm and was scheduled to end at 7:35 pm.
   D. At 7:35 pm, Mayor Cooper extended the executive session for an additional 5 minutes with a new end time of 7:40 pm.
   E. Council returned to chambers and at 7:40 pm, Mayor Cooper called the regular meeting back to order.

7. **WORKSHOPS**
   A. MLMC Title 1 Amendments

i. Elisa Rodriguez, City Planner gave a presentation. See attached. Council would like to move forward with drafting and reviewing potential amendments.

B. L & I Manufactured Home Placement Contract Renewal
   i. Mr. Weathers explained the program and need for renewal. The City contracts with L & I for Manufactured Home Placement Inspections.

8. ACTION ITEMS

A. Consent Agenda
   i. Approve **January 7, 2025,** minutes.
      1. Motion to approve made by Councilmember Olson, seconded by Councilmember Shaffer, carried 6-0.
   ii. Approve **January 21, 2025,** Payroll Claim Warrants numbered **52107** through **52115** and Payroll Payable Warrants numbered **30194** through **30199** in the amount of **$162,190.84** and Claim Warrants numbered **52116** through **52161** in the amount of **$543,704.40.**
      1. Motion to approve made by Councilmember Shaffer, seconded by Councilmember Maxwell, carried 6-0.

9. PUBLIC HEARINGS – None

10. RESOLUTIONS

A. 25-731 Agreement with ControlFreek for WWTP Updates
   i. Mr. Weathers reviewed.
   ii. Motion to approve made by Councilmember Pritchard, seconded by Councilmember Olson, during discussion period, Councilmember Shaffer asked if there was cost associated since it isn't mentioned in the contract. Mr. Weathers – yes, there is cost associated. Councilmember Pritchard withdrew motion on the table. Mr. Weathers shared the cost with Council. Mayor Cooper requested to get pricing information added to contract as Attachment A. Motion to approve with Attachment A included made by Councilmember Shaffer, seconded by Councilmember Olson, carried 6-0.

11. ORDINANCES - none

12. EMERGENCY ORDINANCES - none

13. UPCOMING AGENDA ITEMS – none

14. INTERESTED CITIZENS: AUDIENCE REQUESTS AND COMMENTS - none

15. CONCLUSION

A. Motion to conclude at 8:26 pm made by Councilmember Pritchard, seconded by Councilmember Shaffer, carried 6-0.

_____ _____

Terri Cooper, Mayor Koss Ronholt, Finance Director/City Clerk

_____

Date

DRAFT

Appendix H: Planning Committee Meeting Notes

CHLOETA
701 Cedar Lake Blvd, Suite 320 | Oklahoma City, OK 73114 | +1 877 245 6382 | chloeta.com

24 JUL 2024

Subject: Medical Lake HMP PO240724

Re: Meeting Notes

SCHEDULE & ATTENDANCE

ATTENDEE LIST: Sonny Weathers (Medical Lake), Bobbie Jackson (Chloeta), Trey Jackson (Chloeta) and Heath Tebow (Chloeta)

MEETING NOTES

Meeting organized by Bobbie

- Discussed HMP Committee Identification:
  - Executive Team Mayor, Sonny, Department Directors
    - Public Works (water system)
    - Parks & Rec
    - Finance director (public safety & HR)
    - Wastewater treatment plant director
  - Key Stakeholders
    - Mayor
    - City Administrator
    - Public Works Director
    - WWTP Director
    - Finance Director.
  - External Stakeholders/Partners
    - Spokane County Sheriff's office (contract for law enforcement)
    - Spokane County Fire District 3
    - SCEM: Spokane County Emergency Management
    - School District (have agreements with them)
    - ESH: Eastern State Hospital (across the lake)
    - LV: Lakeland Village (across the lake)
    - CSS: Consolidate Support Staff
    - (SIA) Spokane International Airport
    - Spokane Regional Health District (pandemic)
    - Electrical service provider (AVISTA Utilities)
    - Silver Lake Bible camp
- *Date for coordination meeting (w/Sonny) scheduled for 0800 (PST) 5 Aug 2024 and bi-weekly thereafter.*
- *Date for Initial Planning Meeting (w/Stakeholders) scheduled for 1100- 1400 (PST) 5 Sep 2024 (Lunch & Learn) In-Person*
- Date for Initial Hazard Mitigation Workshop (w/Stakeholders) scheduled for *1100 - 1500* 26 Sep 2024 *(Lunch & Learn)*
- Discussed Public and Stakeholder medium input and Dates discussed multiple platforms to be utilized.
  - External Input/Public Hearings

  - Council meetings 1st & 3rd Tuesdays beginning at 6:30pm
  - Planning Commission Meetings 4th Thursday every month
  - Recent website redesign with added capabilities
  - Can do website surveys
  - Can use social media
  - Other events:
    - Outdoor concert series (AUG 29th, last concert of summer)
    - Reimagine Medical Lake (non-profit) farmers market (planning commission has a booth first week of every month)
    - Community newsletter published every month
    - Host community meetings for fire recovery efforts every month
- Discussed Goals and Objectives to be sent ahead of schedule to catch up on timeline.
- Approvals Process discussed.
- Discussed concerns and impacts of most recent fires.
- Project GANTT Chart Attached

DUE OUTS

- Bobbie – Provide a link for a shared drive for information.
- Bobbie – Send Bi-weekly invites starting on 5 Aug 2024.
- Sonny – Send out *Initial Planning Meeting (w/Stakeholders) scheduled for 1100-1400 (PST) 5 Sep 2024 (Lunch & Learn)*
- Sonny – Send Bobbie last Spokane HMP, Spokane County Comprehensive Emergency Management Plan and last portion of Medical Lake HMP.

Meeting concluded at approximately 1345 Central Time with no additional questions or concerns raised.

CHLOETA
701 Cedar Lake Blvd, Suite 320 | Oklahoma City, OK 73114 | +1 877 245 6382 | chloeta.com

19 AUG 2024

Subject: Medical Lake HMP PO240724

Re: Meeting Notes

SCHEDULE & ATTENDANCE

ATTENDEE LIST: Sonny Weathers (Medical Lake City Administrator), Bobbie Jackson (Chloeta), and Trey Jackson (Chloeta)

MEETING NOTES

Meeting organized by Bobbie

- Development of Surveys for Internal/External Stakeholders as well as Public Surveys in Google Format.
    - Executive Team Mayor, Sonny, Department Directors
        - Public Works (water system)
        - Parks & Rec
        - Finance director (public safety & HR)
        - Wastewater treatment plant director
    - Key Stakeholders
        - Mayor
        - City Administrator
        - Public Works Director
        - WWTP Director
        - Finance Director.
    - External Stakeholders/Partners
        - Spokane County Sheriff's office (contract for law enforcement)
        - Spokane County Fire District 3
        - SCEM: Spokane County Emergency Management
        - School District (have agreements with them)
        - ESH: Eastern State Hospital (across the lake)
        - LV: Lakeland Village (across the lake)
        - CSS: Consolidate Support Staff
        - (SIA) Spokane International Airport
        - Spokane Regional Health District (pandemic)
        - Electrical service provider (AVISTA Utilities)
        - Silver Lake Bible camp
- *Date for Initial Planning Meeting (w/Stakeholders) scheduled for 1100- 1400 (PST) 5 Sep 2024 (Lunch & Learn) changed to digital platform for Chloeta*
- Date for Initial Hazard Mitigation Workshop (w/Stakeholders) scheduled for *1100 - 1500* 26 Sep 2024 *(Lunch & Learn) in person for all stakeholders).*
- Discussed Public and Stakeholder medium input and Dates discussed multiple platforms to be utilized.
    - External Input/Public Hearings
    - Planning Commission Meetings 4th Thursday every month for public hearing on 24 October 2024.

  - Pending address for brochures for public survey assessment due to recent website redesign with added capabilities but City will send as soon as possible for public website surveys

- Discussed Goals and Objectives to be sent again for review and approval
- Reviewed Project GANTT Chart Attached and agreed may be some variation due to late kick off.
- Discussed department directors beginning to identify risks and mitigation actions to remediate risk.
- Discussed Medical Lake CIKR:
- Sonny: FEMA isn't providing any funding going forward
- Bobbie: there may be other ways to go about funding through FEMA
- Sonny hasn't talked to county yet but things did not go well through the last fire so they need more detail in their HMP to guard themselves; acknowledgment of politics and personalities involved
- Wants this plan to work together with the county
- **SCFD: Spokane County Fire District #3**
  - Had own fire dept but now contract through them
  - They operate out of medical lake's old fire dept space
  - 3 people onsite to respond
  - Not specific to medical lake, just putting med lake as priority with those 3 people
  - Normally good about making sure they can respond to everything
  - Fire risk is great all across the district
  - They're well-led with no response mutual aid issues so far
  - Not aware of any MOUs in place, will ask about the status to find out for sure
- State
  - State brings a lot of fire resources, depends on incident development
  - Almost 700 personnel assigned to recent "grey road fire"
- No current City EOC
  - Use city hall as a conduit to the community partners
  - No official responsibility to operate an EOC
  - Potential interest in running their own EOC
  - Sheriff has mobile EOC they dispatch
  - City Hall auditorium (could be used for shelter)
  - Would like to have their own EOC to be ready to function that way
  - County operates EOC and operates regionally
  - Everyone in Spokane County used that but they're moving away from the county program and doing their own thing
  - Doesn't know if having their own EOC would make things more efficient; county may not play along as well as they do now
  - Can see the value of pursuing their own facility to operate an EOC out of
  - Don't have the staff to play critical roles at the moment, however, they can assist
- **SCSO Spokane County Sheriff's Office**
  - No specialized law enforcement at the city level
  - Have access to all specialized LE services through the SCSO
  - City provides funding for their portion
  - Pay 300k per year per deputy (2 deputies)
  - Have additional regional deputies that fill in the gaps
- Emergency Communication Systems
  - Have regional emergency comms system **(SREC) Spokane Regional Emergency Communication**
  - Doesn't know if there's a backup system
- Emergency Medical System

  - Fire service does that for the city
  - Don't have ambulances assigned to the city
  - Roving ambulance services throughout the county
  - Nothing locally stationed
  - Eastern State hospital doesn't serve the public (psychiatric hospital)
  - **Spokane Regional Health District (SRHD)**
  - No hospital within the city
  - Last clinic moved out of town
  - Spokane serves as central health center hub for a very large area
    - No real issues with that
    - Both hospitals are in downtown Spokane, not far away
    - Life Flight is available
    - Doesn't recall any issues with supplies and services during COVID
    - Restricted elective surgeries, but that's about it
  - Public Health
    - Daily briefings during COVID
    - Info sharing was great, great partner
    - Everyone in region uses this system
    - Everyone's included
    - **Regional Health District did not declare a disaster during last fire**, were severely inhibited because of that. Everyone else declared disasters up to the federal level
- Water
  - Wells in the city but they're not just city wells (consolidated)
  - DSHS? has their own wells and reservoirs
  - City is their contingency operation plan
  - Small systems don't tend to perform very well during disasters
  - City water guy has good institutional knowledge of their purveyors, running their system and city system at the same time
  - 4 lakes a short distance from each other
  - Lots of air support drawing water from the lakes
    - No issues with water quality during this time
    - Monitor medical lakes water quality consistently; tested regularly (before and after fire, no significant impacts from fire)
- Wastewater
  - City asset (within city)
  - Power infrastructure
    - 5 backup locations selected for contingency power
    - Water and wastewater have SCADA systems
    - City lost power for SCADA system operation (no remote access to control); in process of creating redundant systems so this doesn't happen again
    - Plan is to have a hosting agreement with an operator so they can do remotely what needs to be done
    - Going from a single point of failure to multiple redundant systems
- Natural gas Infrastructure
  - No issues
  - Someone else operates this system
  - Working on getting GIS mapping of critical infrastructure
  - Very good about locating critical points in this system
  - Bobbie: Fed government also offers a mapping program for locating critical infrastructure points (they may be able to use)
    - Only zoning located on maps right now; want to add critical infrastructure to this
- Transportation

  - When 5,000 residents and 2,500 employees try to evacuate, State Route 902 inadequate for evacuation
  - Brooks road was under construction (unavailable)
  - I-90 was also backed-up on Friday afternoon
  - Many people work in Medical lake, but 90% live in Spokane
  - Creates quite a traffic scenario during rush hour times
  - Overwhelms the transportation system
- Communications
  - Any mobile tower MOUs? Part of Spokane County Broadband public development authority (BroadLink)
  - Many smaller cities have COWs
  - State lost internet during last disaster, couldn't serve customers or pull up records, needed internet access badly
  - Established BroadLink access and came online just weeks before last disaster
  - Use different radio/tv stations to publish info to public
  - Has more radio channel info to provide
  - What push system is used to publish info? Doesn't know but will get that to us (weather, push-to-talk info, AccuWeather?)
  - Notification system failed in the fire, city manager and mayor didn't get any notifications until the "leave now" notification came through
  - Fixed this through redundancy, doesn't know the system nome offhand
  - This is a new capability for them (need to establish protocols and training)
  - Going from decades of closing the door and not answering questions to being very proactive, in-progress
- Schools
  - No serious damage to schools during last fire
  - Discussions about existing space usage
- Will send preview of Google forms before they're published
- Will review goals and objectives and get back to us

DUE OUTS

- Bobbie – Goals and Objectives.
- Bobbie – Google Form Survey for Review/Approval prior to sending out to stakeholders
- Bobbie – Provide Updated GANT Chart
- Sonny – Review Goals and Objectives
- Sonny – Finish input for Critical Infrastructure Questions

NEXT MEETING

- Bi- Weekly Meeting 2 September 2024 (finish CIKR Review & Review Stakeholder Presentation
- *Initial Planning Meeting (w/Stakeholders) scheduled for 1100- 1400 (PST) 5 Sep 2024 (Lunch & Learn) -**Digital Platform***
- *Hazard Mitigation Workshop (w/Stakeholders)* scheduled for (PST) 26 Sep 2024 (Lunch & Learn) – In-person City Hall.

Meeting concluded at approximately 1100 (CST)/ 0900 (PST) with no additional questions or

CHLOETA
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16 SEP 2024

Subject: Medical Lake HMP PO240724

Re: Meeting Notes

SCHEDULE & ATTENDANCE

ATTENDEE LIST: Sonny Weathers (Medical Lake City Administrator), Bobbie Jackson (Chloeta), and Trey Jackson (Chloeta)

MEETING NOTES

Meeting organized by Bobbie

Discussed the information from the Tacoma HMP that incorporated the City of Medical Lake:

Water Supplies

- Aquifer is a diminishing resource.
- Flows into the Spokane Valley Aquifer, one of the largest ones in the country
- Isolated and limited on the Western Plains
- The highest contaminant levels in the country aside from where the chemicals (PFAS/PFOS - Polyfluoroalkyl/Perfluorooctane sulfonate substances) are manufactured – contaminants come mostly from the AFB and Airport.
- Competition among local cities ("all straws are in the same pool"); becomes a stewardship issue
- Lots of water rights, but not enough water to support all communities (more water rights than there is water). Used to fee Cheney , Airway Heights and Medical Lake. Now only Cheney and Medical Lake.
- "Don't drink Your Water" warnings in 2017 (when warnings began)
- Cheney is upstream of the contamination site
- Medical Lake is on the safe side of the aquifer for now
- If water level gets low enough; Medical Lake's water could become contaminated
- Currently have a 6-year water plan
- Many small independent water systems in the Medical Lake area
- Sharing aquifer supply with Cheney

Hazard Event History

- These appear to be accurate/ from previous.
- Except Add
    - Gray Wildfire
    - Add 2017 PFAB contamination; no direct impact but has indirect impact (direct result of federal operations, military bases and fire training centers); billions being spent to combat this

Flooding

- Does not appear to have changed since last plan
- Not aware of any changes (Medical Lake)
- Not sure if Medical Lake is registered in NFIP
- Lake controlled with pumps so don't have a flood plan; if water level gets high, city pumps it away
- If pumps fail, could be an issue
- Just one pump, no dams
- Is a causeway around Eastern State Hospital, but it's not a dam
- There is a historical creek and wetlands that collect water in the middle of town
- Flooding rated as Minor Risk by FEMA overall

Capability Assessment

- Will review in next meeting

Hazard Risk & Vulnerability Ranking (from last plan) reviewed

- Will complete update to this chart at Hazard Mitigation Workshop, based off stakeholder input
- Need additional Stakeholder Survey Responses – Weathers following up and updating contacts
- Public input: 17 HMP Public Survey entries currently
- Media Sources Used: social media (Facebook), newsletter, website
- **#4 wildfire risk in the state/urban interface**

CPRI - Calculated Priority Risk Index (review)

- Process reviewed

Mitigation Goals & Objectives

- Will need to capture the status of the actions from the last plan-update statuses provided (ML1 still under development)(ML2 completed) (ML3 ongoing)
- Can definitely come up with a few more objectives during plan development (Weathers)
- Will need Grant funding information for projects ongoing /started since last plan

Soils

- Did not include geologically hazardous areas (critical areas ordinance) recently because hazardous soil areas are difficult to identify, but there is interest in this and it does need to be included
- Do have some wetlands where it's probably best not to build upon
- Need Critical Areas Plan Ordinance Update (Weathers will send)

Infrastructure Assessment

This information will probably change for this plan, particularly in regard to communications

- **Update**: Medical Lake has a wastewater facility since 2000 (Last plan did not include this)
- **Update**: Power substation right outside of the city – Avista Power
- **Update**: Aquafer / 3 small water reservoirs/ 4 wells outside of town
- **Update**: Water supply comes from the aquifer; also draw water from reservoirs
- **Update**: 4 water wells and 3 reservoirs (water sources)
- Electric/Power Substation for Medical Lake is just outside the city limits; could be a cause for concern; was a great asset for staging (large parking areas) during the last fire

Wildfire Exposure

- Fire District can help validate these and provide updated info/data

Critical Facilities & Assessments

- Psychiatric Hospital has a forensics /unit not an open facility/doesn't provide public services at will
- Critical Resources All attempted to evacuate
- All facilities have similar site plan locations for evacuation; overcommitted with multiple organizations attempting to use the same resources
- **City doesn't really have a COOP plan**
- **Evacuation Plans: not very detailed**
- Gray Fire came from the south, so could only go north and east (ingress/egress easily impacted)
- Transportation routes: Not located very far from resources but it's difficult to get resources in and out of city
- 1874 Homes/ 55 total homes lost in the Gray Fire (hundreds of other structures damaged)
- Have a building inspector and a Code Enforcement Officer (part time)
    - 47 permits were pulled for rehab/reconstruction
    - 24 have been rebuilt (just a year later)
    - Building code is pretty standard but not updated or changed because of the fires
- Washington State 2021 Energy Code Update: didn't go into effect until this past March
    - 30% increase in cost of homebuilding
    - State forces play by the new rules even though location doesn't warrant it
    - We're trying to just get the homes rebuilt to get people back in their homes but this has been an impediment
    - Labor Unions are Enti-energy code update

Plan Review (base plan)

- Plans for inclusion Weathers will post for review on Sharepoint site
    - Zoning/Land Use ordinances
    - Storm management regulations
    - Wildfire Hazard Reduction ordinances (will share)
    - City has a plan on website; in midst of periodic update; due 30 June 2026
    - Existing is 2019 update
    - Critical Areas Ordinances (will share)
    - Shoreline Master Program (adopted 2021; haven't had to use it)
        - Under revision
        - Never got state review
        - Will be updated as well
- There has been a website update since a lot of these plans were posted so web links may not be updated or accessible
- Last plan did not include human-caused hazards, but is included in County THIRA
    - Probably don't want to include human-caused hazards in a public document (to prevent terrorism instances)
    - This plan is grant funded so it's publicly releasable (will consider)
    - Don't necessarily want the Terrorism section in this document but general information

DUE OUTS

- Sonny – Review Goals and Objectives
- Sonny – Finish input for Critical Infrastructure Questions
- Sonny – Provide Plans (mentioned above) on SharePoint
- ***Add Additional Meeting - 23 SEP 2024 Monday next week**

NEXT MEETING

- Weekly Meeting 23 September 2024 (finish CIKR Review & Review Stakeholder Results & Workshop Presentation)
- *Hazard Mitigation Workshop (w/Stakeholders)* scheduled for (PST) 26 Sep 2024 (Lunch & Learn) – In-person City Hall.

Meeting concluded at approximately 1130 (CST)/ 930 (PST) with no additional questions or concerns raised.

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21 OCT 2024

Subject: Medical Lake HMP PO240724

Re: Meeting Notes

SCHEDULE & ATTENDANCE

ATTENDEE LIST: Sonny Weathers (Medical Lake City Administrator), Bobbie Jackson (Chloeta), and Trey Jackson (Chloeta)

MEETING NOTES

Meeting organized by Bobbie

Discussed

- Gantt Chart. The City doesn't want to rush completion of the project but wants a thorough and well-developed document.
- Public and Stakeholder Hazard Vulnerability Survey closed out.
- Goal to have draft HMP completed next week.

Work Completed (Chloeta)

- Completed Hazard Vulnerability Analysis
- Critical infrastructure
- Mitigation Strategies (Analysis, Prioritization, Funding)
- Crosswalk Tables

Currently Working on (Chloeta)

- Hazard profiles & assessments
- Chronological timeline
- Maps (Comprehensive Plan)
- Plan Maintenance (how you'll maintain this plan for the next 5 years)

What is Needed from Medical Lake

- Maps (aquifer) - Easter Washington University and engineers are working on projects that may have this information
- Chronological timeline review
- Distribution of Land & Values (land & structure values)

  - [Medical Lake] Currently working on an analysis that may have these values

- Disaster declarations Review
- Mitigation Actions (past & ongoing)

DUE OUTS

- Sonny – Mitigation Actions
- Sonny – Aquifer Map

NEXT MEETING

- Weekly Meeting 23 September 2024 (finish CIKR Review & Review Stakeholder Results & Workshop Presentation)
- *Hazard Mitigation Workshop (w/Stakeholders)* scheduled for (PST) 26 Sep 2024 (Lunch & Learn) – In-person City Hall.

Meeting concluded at approximately 1030 (CST)/ 830 (PST) with no additional questions or concerns raised.

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6 NOV 2024

Subject: Medical Lake HMP PO240724

Re: Meeting Notes

SCHEDULE & ATTENDANCE

ATTENDEE LIST: Sonny Weathers (Medical Lake City Administrator), Bobbie Jackson (Chloeta), and Trey Jackson (Chloeta)

MEETING NOTES

Meeting organized by Bobbie

Discussed

- Gantt Chart Update
- Medical Lake may need some information to verify status of HMP for Grant purpose.

Work Completed (Chloeta)

- Completed Hazard Vulnerability Analysis
- Critical infrastructure
- Mitigation Strategies (Analysis, Prioritization, Funding)
- Crosswalk Tables

Currently Working on (Chloeta)

- Hazard profiles
- Chronological timeline
- Maps
- Plan Maintenance

What is Needed from Medical Lake

- Maps (aquifer) - Easter Washington University and engineers are working on projects that may have this information
- Distribution of Land & Values (land & structure values)
    - [Medical Lake] Currently working on an analysis that may have these values
- Disaster declarations Review
- Mitigation Actions (past & ongoing)

DUE OUTS

- Sonny – Mitigation Actions
- Sonny – Aquifer Map
- Bobbie send to Sonny -Distribution of Land Values
- Sonny -Mitigation Actions Review

NEXT MEETING

- Weekly Meeting 18 November 2024

Meeting concluded at approximately 1030 (CST)/ 830 (PST) with no additional questions or concerns raised.

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20 NOV 2024

Subject: Medical Lake HMP PO240724

Re: Meeting Notes

SCHEDULE & ATTENDANCE

ATTENDEE LIST: Sonny Weathers (Medical Lake City Administrator), Bobbie Jackson (Chloeta), and Trey Jackson (Chloeta)

MEETING NOTES

Meeting organized by Bobbie

Discussed

- Gantt Chart Update
- Working on mitigation strategies [Chloeta]
- Draft plan has been reposted to the SharePoint site
- Hazards have been developed
- Have all the public involvement we need at this point; will be another public involvement section when the draft plan is ready
- Haven't yet completely reviewed the aquifer information or made those updates, but will shortly
    - **Graphics** in there may be beneficial
    - Maps should be helpful
- We will review mitigation actions as well and update those as necessary
- Aquifer Systems
    - Aquifer is a recharge for that aquifer but not vice versa; Medical Lake is higher ground; 1-way system
    - Medical Lake's system benefit the aquifer but not vice versa
- Transportation
    - There's is a joint land use survey (around 2012ish)
    - There are risks from Fairchild's flight paths/sound counters
    - Agree re: Transportation Fairchild is a critical facility but probably shouldn't be listed in the transportation system
- Property Data (5 years old)
    - Working to find something more current
    - What we have right now is the GIS data from 2019
    - Is there a city assessor that may have more information on parcel layers?
        - No, GIS system is new and only layer is zoning right now
        - County info is what Medical Lake draws information from
        - Not a lot of change in Medical Lake in the last 5 years that is specific to the city
        - If there's nothing newer available, that's fine
- "Severe Weather" is encompassing of thunderstorm, straight-line winds, etc
- Added Gray Fire to the list for historical data
- Water Contamination

  - Will review to see if we need to make any changes
  - Medical Lake did have some compromise concerns with the Gray Fire; structures burned, and toxic debris flushed into sewer system
- Air Quality
  - Usually goes in as an impact from wildfires
  - Should we add air quality as a separate hazard?
- Drought
  - Will adjust aquifer language based on new aquifer information
  - SVRP Aquifer
  - Medical Lake monitors aquifer levels throughout the year
- Mayor would like to participate in the next biweekly meeting
- [Medical Lake] No issues accessing Sharepoint information
- Hasn't received any invoices for any work that Chloeta has done
- Next week is Thanksgiving so moved next checkin to the week following the holiday
- Public Participation should occur in the Planning Commission Meeting on December 19, 2024
  - Digital presentation is fine
  - Zoom link
  - Sonny will provide us information on that and put us on the agenda
  - Prefers presentation length of 30 mins or less
  - Will send copy of plan to participants
  - Can also post on website to allow public to see and review it

Work Completed (Chloeta)

- Completed Hazard Vulnerability Analysis
- Critical infrastructure
- Mitigation Strategies (Analysis, Prioritization, Funding)
- Crosswalk Tables

Currently Working on (Chloeta)

- Hazard profiles (draft completed)
- Chronological timeline
- Maps
- Plan Maintenance

What is Needed from Medical Lake

- Distribution of Land & Values (land & structure values)
- Disaster declarations Review

DUE OUTS

- Sonny -Mitigation Actions Review

NEXT MEETING

- Weekly Meeting 2 December 2024

Meeting concluded at approximately 10450 (CST)/ 845 (PST) with no additional questions or concerns raised.

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2 December 2024

Subject: Medical Lake HMP PO240724

Re: Meeting Notes

SCHEDULE & ATTENDANCE

ATTENDEE LIST: Sonny Weathers (Medical Lake City Administrator), Bobbie Jackson (Chloeta), Troy German (Chloeta) and Trey Jackson (Chloeta)

MEETING SUMMARY

Meeting focused on the progress of Medical Lake HMP. Key points included completion of 75% of the hazard mitigation plan, with final revisions and public review planned. Plan will be posted on Medical Lake's public website and reviewed by the state and FEMA. Upcoming tasks include finalizing the mitigation analysis, incorporating historical actions, and drafting the mitigation maintenance plan. Next steps involve scheduling a public meeting on January 23 (Planning Commission meeting) and a City Council briefing on February 4, 2024. Medical Lake will also consider press releases to enhance public engagement and ensure timely completion of the plan.

Action Items

[ ] Send Mitigation (Past, Present, Cancelled) Actions (Sonny)

[ ] Provide input on the mitigation actions and strategies to Bobbie.(Sonny)

[ ] Review draft plan next week. (Sonny)

[ ] Send a rough draft of the plan to the state representative for preliminary review by the end of week. (Sonny)

[ ] Post draft plan on a public website to allow for public review and input. (Sonny)

[ ] Brief the City Council on the draft plan at their February 4th meeting. (Bobbie)

[ ] Schedule Planning Commission meeting on January 23rd to present draft plan and receive public input. (Sonny)

Meeting Kickoff and General Discussion

- Confirms meeting participants.
- Reviewing of the Gantt chart, risk assessment, plan audit and policies, and public involvement surveys.

Hazard Mitigation Plan Progress

- Hazard mitigation plan is 75% complete and needs final review, public posting, and a public meeting.

- Plan will be sent to the state for approval, with potential updates based on public feedback.
- Further plan updates will include expanded hazard profiles, assessments, chronological timeline, and a capability assessment analysis.

Mitigation Analysis and Public Involvement

- Discussion to complete mitigation analysis, including the mitigation crosswalk, cost-benefit analysis, and mitigation action plan.
- Plan needs to incorporate historical and active mitigation actions, such as road repairs due to flooding or fire. Need input from Medical Lake.
- Medical Lake needs to review mitigation maintenance plan, Bobbie to send the rough draft by Friday.

Next Steps and Meeting Scheduling

- Bobbie and Sonny discuss next steps, including reviewing disaster declarations and mitigation actions.
- Discussion re: public Planning Commission meeting on January 23rd and City Council meeting on February 4th.
- Bobbie Jackson suggests using a combination of email and website form for public input, with a preference for in-person input at the public meeting.
- Discussion about importance of briefing City Council and Planning Commission on draft plan and public input process.

Final Preparations and Meeting Conclusion

- Bobbie plans to post final rough draft of plan by end of the week and requests any necessary input.
- Discussion about possibility of using press releases to inform public about plan and encouraging input.
- Bobbie reviewed chronological timeline of meetings and updates, ensuring all significant discussions are included.
- **Scheduling:**
    - Next meeting date: December 16th
    - Cancelled December 30th meeting due to holidays
    - Next meeting (following December 16th): January 6, 2025

Currently Working on (Chloeta)

- Plan Maintenance and other areas of the Plan with more details.

What is Needed from Medical Lake

- Distribution of Land & Values (review)
- Disaster declarations Review (review)
- Hazard Mitigation Actions (past, present, future)
- Review of HMP

Meeting concluded at approximately 1100 (CST)/ 0900 (PST) with no additional questions or concerns raised.

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18 December 2024

Subject: Medical Lake HMP PO240724

Re: Meeting Notes

SCHEDULE & ATTENDANCE

ATTENDEE LIST: Sonny Weathers (Medical Lake City Administrator), Bobbie Jackson (Chloeta), Troy German (Chloeta) and Trey Jackson (Chloeta)

MEETING SUMMARY

The meeting focused on finalizing the hazard mitigation plan, currently 75% complete, with emphasis on addressing state and FEMA requirements, public engagement, and incorporating key updates. Bobbie Jackson is tasked with consolidating hazard profiles, completing mitigation analysis, and ensuring compliance with Washington's emergency management standards, while Sonny Weathers will oversee public outreach, finalize his review, and integrate new mitigation details, including an $800,000 grant for backup generators. Public input will be gathered through a virtual planning commission meeting, city council briefing, and outreach via press releases and social media. The team aims to streamline the document, improve readability, and prepare for public presentations, with the next team meeting scheduled for January 6, 2025.

Action Items:

- Bobbie Jackson: Incorporate Sonny's feedback and suggestions to consolidate and reduce repetition in the hazard profiles and assessments.
- Bobbie Jackson: Finalize the hazard profiles, mitigation analysis, and alternate cost-benefit analysis.
- Bobbie Jackson: Ensure the plan meets the Washington's emergency management requirements.
- Sonny Weathers: Formally share the draft plan with the public, including a virtual meeting with the planning commission and a city council meeting, as well as a press release and social media posts. There is a web hosting location the draft plan will be placed.
- Sonny Weathers: Finish final review and comments of the plan
- Sonny Weathers: Add additional mitigation information to the plan ($800,000 grant for backup generators)

Gantt Chart and Plan Progress

- The project is currently at 75% completion, with the main remaining tasks being plan maintenance, hazard profiles, and mitigation analysis.
- Bobbie will finalize the hazard profiles, incorporate climate impact information, and add supporting annexes like meeting notes and rosters.
- Sonny – all Medical Lake Staff have reviewed Draft; he is finishing his review and will post tracking version on SharePoint for follow up

State Emergency Management Requirements

- Bobbie inquired about any checklists or requirements from the state's emergency management division, which is part of the military department.
- Sonny offered to reach out to his contacts to obtain any relevant checklists to ensure the plan meets state-level requirements prior to submission.

Public Engagement and Communication Strategy

- The team decided to share the draft plan with the public through a virtual meeting with the planning commission and a city council meeting.
- A press release, website posting, social media, and newsletter will be used to inform the public and gather their input.

Review and Technical Edits

- Bobbie explained the final technical review process to ensure the document is polished and meets FEMA's requirements.
- The plan is currently around 200 pages and is expected to reach 220-230 pages once all information is included.

Feedback and Plan Adjustments

- Sonny provided feedback on the plan, suggesting consolidation of some repetitive sections to improve readability.
- Bobbie acknowledged the feedback and plans to make adjustments to balance FEMA requirements and **community engagement.**

Final Preparations and Next Steps

- The team discussed the importance of the mitigation actions and ensuring they align with the city's goals.
- Sonny shared the good news about securing $800,000 in grant funds for backup generators for essential facilities and wellheads.
- The team will finalize the plan, incorporating all updates and feedback, and prepare for the presentations to the council and the public.

Scheduling:

- Cancelled December 30th meeting due to holidays
- **Next meeting (following December 16th): January 6, 2025**
- Planning Commission meeting on January 23 (Public Invitation)
- City Council briefing on February 4, 2024 (Public Invitation)

Meeting concluded at approximately 1100 (CST)/ 0900 (PST) with no additional questions or concerns raised.

PARTICIPANT FEEDBACK FORM

Thank you for participating in this Workshop.

Your observations, comments, and input are greatly appreciated, and provide invaluable insight that will better prepare Medical Lake against threats and hazards. Any comments provided will be treated in a sensitive manner and all personal information will remain confidential. Please keep comments concise, specific, and constructive.

Part I: General Information

Please enter your responses in the form field.

Participant Information	
Name (optional):	Scott Duncan
Agency/Organization Affiliation:	City of Medical Lake
Position Title:	Public Works Director
Years of Experience in Present Position:	3 years
Location during Workshop:	City hall

Please Complete.

Agency:	City of Medical Lake
Role:	Public Works director
Name:	Scott Duncan

Part III: Workshop Design

1. Other vulnerabilities not addressed but should be included:

Cold weather / ~~fire~~ / ~~flood~~
Power generation back up
Rapid Response Flow chart when the Hazard occurs the mitigation plan.

PARTICIPANT FEEDBACK FORM

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Part I: General Information

Please enter your responses in the form field.

Participant Information	
Name (optional):	JOHN A LAYMAN
Agency/Organization Affiliation:	CONSOLIDATED SUPPORT SERVICES
Position Title:	MAINTENANCE MANAGER
Years of Experience in Present Position:	3 YRS
Location during Workshop:	MEDICAL LAKE CITY HALL

Please Complete.

Agency:	
Role:	
Name:	

Part II: Workshop Design

Please rate, on a scale of 1 to 5, your overall assessment of the Workshop relative to the statements provided, with **1 indicating strong disagreement, 2 indicating disagreement, 3 indicating neutral, 4 indicating agree,** and **5 indicating strong agreement.**

Assessment Factor	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Briefings were informative and provided the necessary information.	1	2	3	4	(5)
Workshop participants included the right people in terms of level and mix of disciplines.	1	2	3	4	(5)
Workshop participation was appropriate.	1	2	3	4	(5)
The workshop increased my understanding about and familiarity with the capabilities and resources of other participating organizations.	1	2	3	4	(5)

PARTICIPANT FEEDBACK FORM

Thank you for participating in this Workshop.

Your observations, comments, and input are greatly appreciated, and provide invaluable insight that will better prepare Medical Lake against threats and hazards. Any comments provided will be treated in a sensitive manner and all personal information will remain confidential. Please keep comments concise, specific, and constructive.

Part I: General Information

Please enter your responses in the form field.

Participant Information	
Name (optional):	Brent Roberts
Agency/Organization Affiliation:	Consolidated Support Services
Position Title:	WDM
Years of Experience in Present Position:	11 years
Location during Workshop:	Medical LAKE

Please Complete.

Agency:	
Role:	
Name:	

Part II: Workshop Design

Please rate, on a scale of 1 to 5, your overall assessment of the Workshop relative to the statements provided, with **1 indicating strong disagreement, 2 indicating disagreement, 3 indicating neutral, 4 indicating agree,** and **5 indicating strong agreement.**

Assessment Factor	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Briefings were informative and provided the necessary information.	1	2	3	4	(5)
Workshop participants included the right people in terms of level and mix of disciplines.	1	2	3	4	(5)
Workshop participation was appropriate.	1	2	3	4	(5)
The workshop increased my understanding about and familiarity with the capabilities and resources of other participating organizations.	1	2	3	4	(5)

Assessment Factor	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The Workshop provided the opportunity to address significant decisions in support of mitigation identification.	1	2	3	4	(5)
After this Workshop I agree with the Vulnerabilities Identified.	1	2	3	(4)	5
After this Workshop I agree with Mitigation efforts identified.	1	2	3	(4)	5
After this Workshop I agree with the rank ordering of identified Mitigation efforts.	1	2	3	(4)	5

Assessment Factor	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The Workshop provided the opportunity to address significant decisions in support of mitigation identification.	1	2	3	4	(5)
After this Workshop I agree with the Vulnerabilities Identified.	1	2	3	4	(5)
After this Workshop I agree with Mitigation efforts identified.	1	2	3	4	(5)
After this Workshop I agree with the rank ordering of identified Mitigation efforts.	1	2	3	4	(5)

Participant Feedback Form
Medical Lake Hazard Mitigation Workshop

Assessment Factor	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The Workshop provided the opportunity to address significant decisions in support of mitigation identification.	1	2	3	(4)	5
After this Workshop I agree with the Vulnerabilities Identified.	1	2	3	(4)	5
After this Workshop I agree with Mitigation efforts identified.	1	2	3	(4)	5
After this Workshop I agree with the rank ordering of identified Mitigation efforts.	1	2	3	(4)	5

PARTICIPANT FEEDBACK FORM

Thank you for participating in this Workshop.

Your observations, comments, and input are greatly appreciated, and provide invaluable insight that will better prepare Medical Lake against threats and hazards. Any comments provided will be treated in a sensitive manner and all personal information will remain confidential. Please keep comments concise, specific, and constructive.

Part I: General Information

Please enter your responses in the form field.

Participant Information	
Name (optional):	Kaye Peterson
Agency/Organization Affiliation:	Silver Lake Bible Camp
Position Title:	Guest Services Director
Years of Experience in Present Position:	1.5
Location during Workshop:	Medical Lake City Hall

Please Complete.

Agency:	Silver Lake Bible Camp
Role:	Guest Services Director
Name:	Kaye Peterson

Part II: Workshop Design

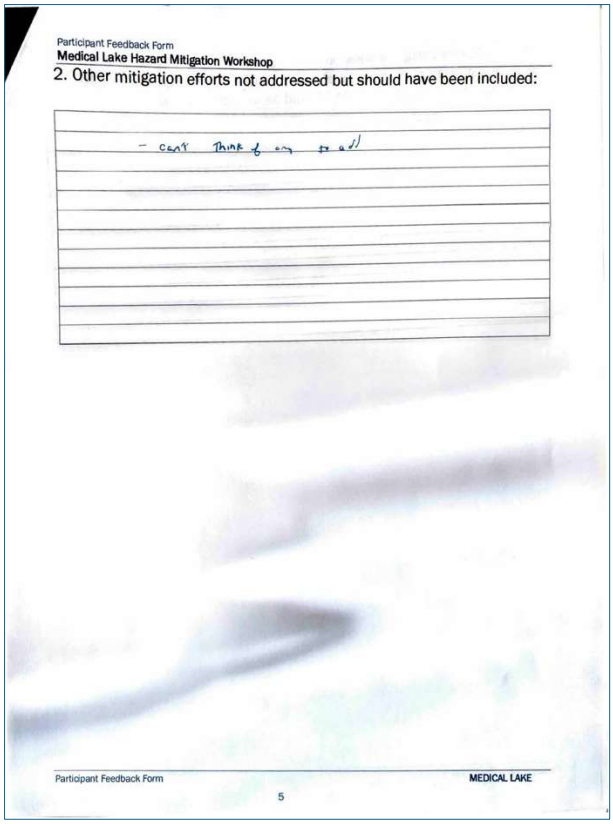
Please rate, on a scale of 1 to 5, your overall assessment of the Workshop relative to the statements provided, with **1 indicating strong disagreement, 2 indicating disagreement, 3 indicating neutral, 4 indicating agree,** and **5 indicating strong agreement.**

Assessment Factor	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Briefings were informative and provided the necessary information.	1	2	3	(4)	5
Workshop participants included the right people in terms of level and mix of disciplines.	1	2	3	(4)	5
Workshop participation was appropriate.	1	2	3	(4)	5
The workshop increased my understanding about and familiarity with the capabilities and resources of other participating organizations.	1	2	3	4	(5)

Part III: Workshop Design

1. Other vulnerabilities not addressed but should be included:

none that I can think of at all to from our discussions

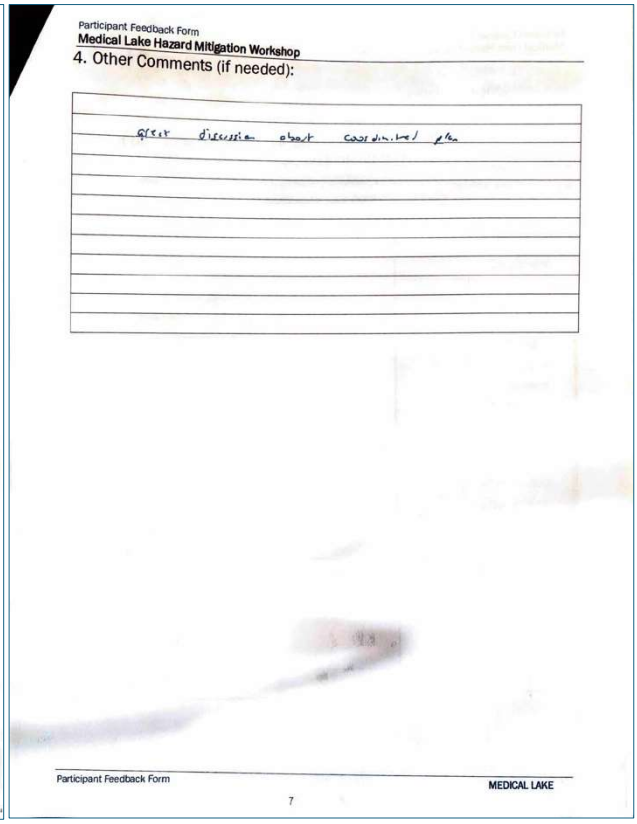


Participant Feedback Form
Medical Lake Hazard Mitigation Workshop

2. Other mitigation efforts not addressed but should have been included:

- can't think of any at all

Participant Feedback Form MEDICAL LAKE
5



Participant Feedback Form
Medical Lake Hazard Mitigation Workshop

4. Other Comments (if needed):

great discussion about coordinated plan

Participant Feedback Form MEDICAL LAKE
7



Participant Feedback Form
Medical Lake Hazard Mitigation Workshop

PARTICIPANT FEEDBACK FORM

Thank you for participating in this Workshop.

Your observations, comments, and input are greatly appreciated, and provide invaluable insight that will better prepare Medical Lake against threats and hazards. Any comments provided will be treated in a sensitive manner and all personal information will remain confidential. Please keep comments concise, specific, and constructive.

Part I: General Information

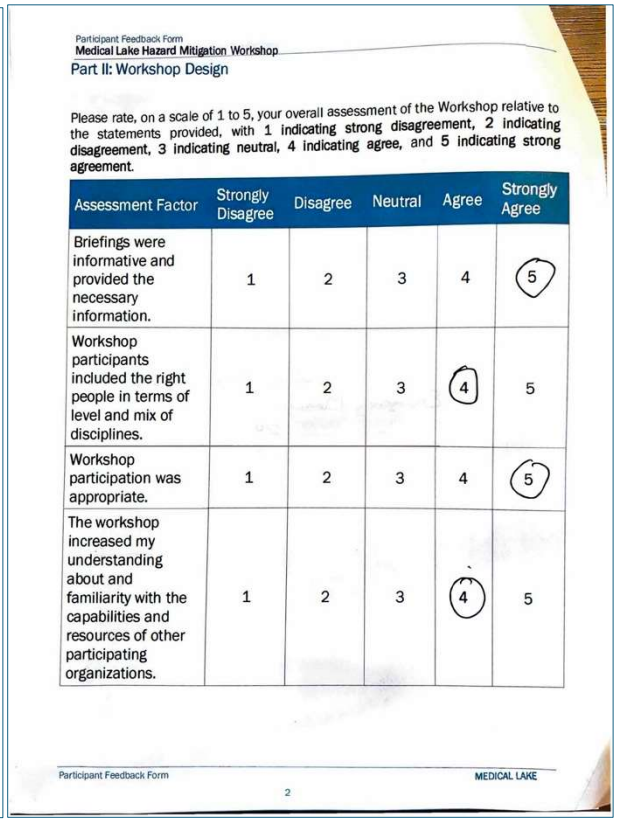
Please enter your responses in the form field.

Participant Information	
Name (optional):	
Agency/Organization Affiliation:	Eastern State Hospital
Position Title:	Emergency Manager
Years of Experience in Present Position:	20
Location during Workshop:	

Please Complete.

Agency:	
Role:	
Name:	

Participant Feedback Form MEDICAL LAKE
1



Participant Feedback Form
Medical Lake Hazard Mitigation Workshop

Part II: Workshop Design

Please rate, on a scale of 1 to 5, your overall assessment of the Workshop relative to the statements provided, with **1 indicating strong disagreement, 2 indicating disagreement, 3 indicating neutral, 4 indicating agree, and 5 indicating strong agreement.**

Assessment Factor	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Briefings were informative and provided the necessary information.	1	2	3	4	(5)
Workshop participants included the right people in terms of level and mix of disciplines.	1	2	3	(4)	5
Workshop participation was appropriate.	1	2	3	4	(5)
The workshop increased my understanding about and familiarity with the capabilities and resources of other participating organizations.	1	2	3	(4)	5

Participant Feedback Form MEDICAL LAKE
2

PARTICIPANT FEEDBACK FORM

Thank you for participating in this Workshop.

Your observations, comments, and input are greatly appreciated, and provide invaluable insight that will better prepare Medical Lake against threats and hazards. Any comments provided will be treated in a sensitive manner and all personal information will remain confidential. Please keep comments concise, specific, and constructive.

Part I: General Information

Please enter your responses in the form field.

Participant Information	
Name (optional):	Kimberly Headrick
Agency/Organization Affiliation:	Medical Lake School Dist.
Position Title:	Superintendent
Years of Experience in Present Position:	2
Location during Workshop:	In-person ML City Hall

Please Complete.

Agency:	Medical Lake School District
Role:	Superintendent
Name:	Kimberly Headrick

Assessment Factor	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The Workshop provided the opportunity to address significant decisions in support of mitigation identification.	1	2	3	(4)	5
After this Workshop I agree with the Vulnerabilities Identified.	1	2	3	(4)	5
After this Workshop I agree with Mitigation efforts identified.	1	2	3	(4)	5
After this Workshop I agree with the rank ordering of identified Mitigation efforts.	1	2	3	(4)	5

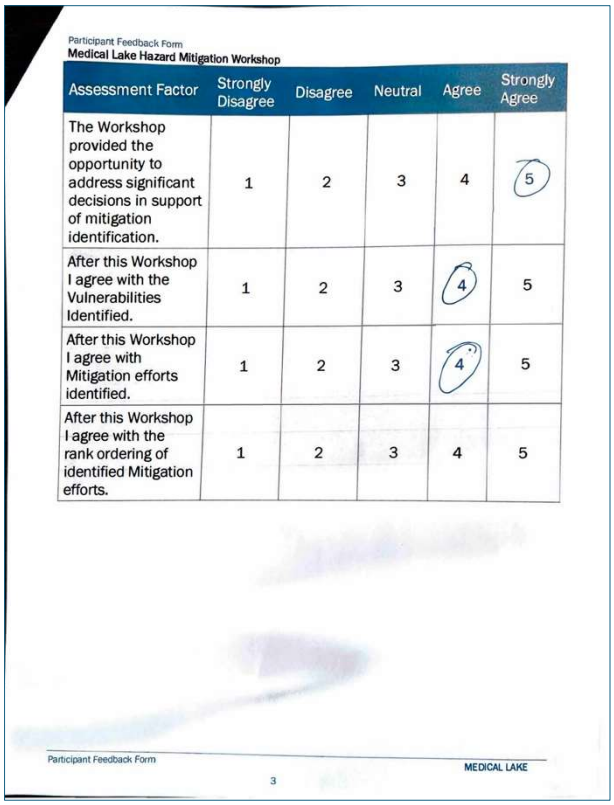
2. Other mitigation efforts not addressed but should have been included:

Reductions for infrastructure
Building a training team for events w/ multiple operational periods

Part II: Workshop Design

Please rate, on a scale of 1 to 5, your overall assessment of the Workshop relative to the statements provided, with **1 indicating strong disagreement, 2 indicating disagreement, 3 indicating neutral, 4 indicating agree,** and **5 indicating strong agreement.**

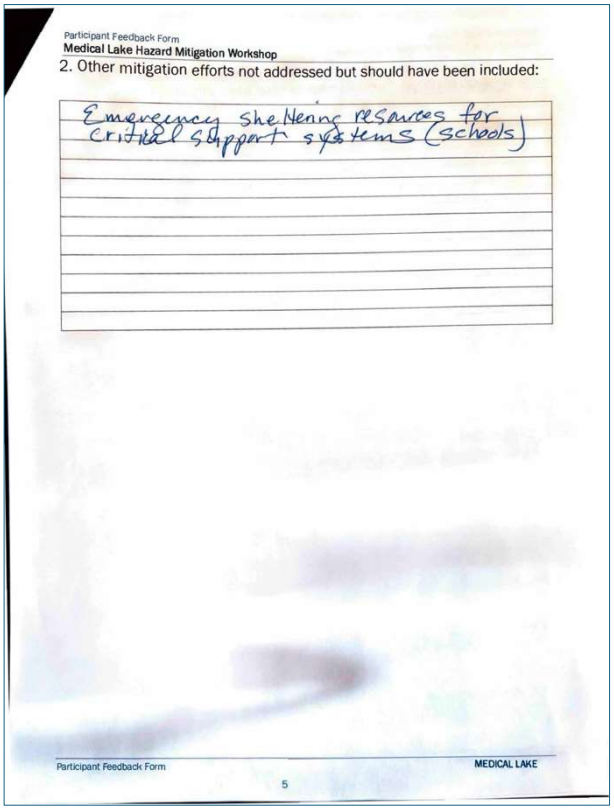
Assessment Factor	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Briefings were informative and provided the necessary information.	1	2	3	(4)	5
Workshop participants included the right people in terms of level and mix of disciplines.	1	2	3	(4)	5
Workshop participation was appropriate.	1	2	3	(4)	5
The workshop increased my understanding about and familiarity with the capabilities and resources of other participating organizations.	1	2	3	(4)	5



Participant Feedback Form
Medical Lake Hazard Mitigation Workshop

Assessment Factor	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The Workshop provided the opportunity to address significant decisions in support of mitigation identification.	1	2	3	4	(5)
After this Workshop I agree with the Vulnerabilities Identified.	1	2	3	(4)	5
After this Workshop I agree with Mitigation efforts identified.	1	2	3	(4)	5
After this Workshop I agree with the rank ordering of identified Mitigation efforts.	1	2	3	4	5

Participant Feedback Form MEDICAL LAKE
3

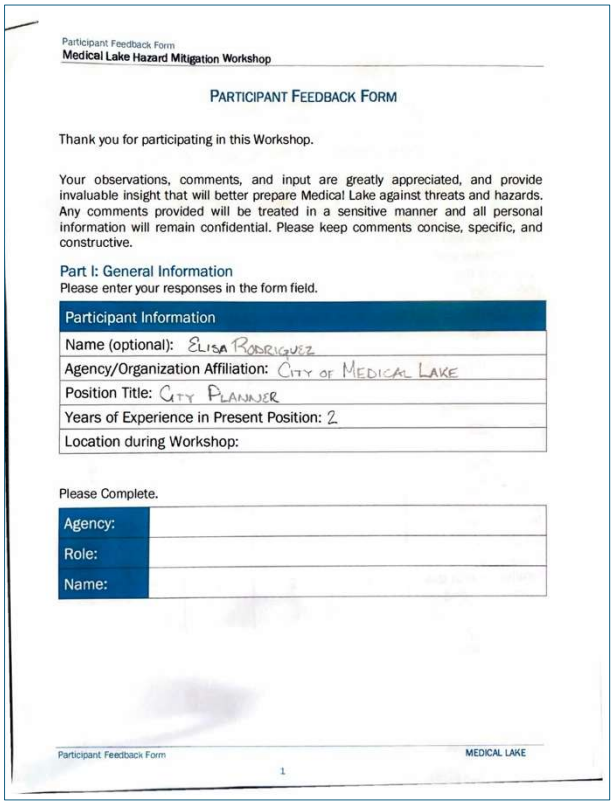


Participant Feedback Form
Medical Lake Hazard Mitigation Workshop

2. Other mitigation efforts not addressed but should have been included:

Emergency Sheltering resources for critical support systems (schools)

Participant Feedback Form MEDICAL LAKE
5



Participant Feedback Form
Medical Lake Hazard Mitigation Workshop

PARTICIPANT FEEDBACK FORM

Thank you for participating in this Workshop.

Your observations, comments, and input are greatly appreciated, and provide invaluable insight that will better prepare Medical Lake against threats and hazards. Any comments provided will be treated in a sensitive manner and all personal information will remain confidential. Please keep comments concise, specific, and constructive.

Part I: General Information

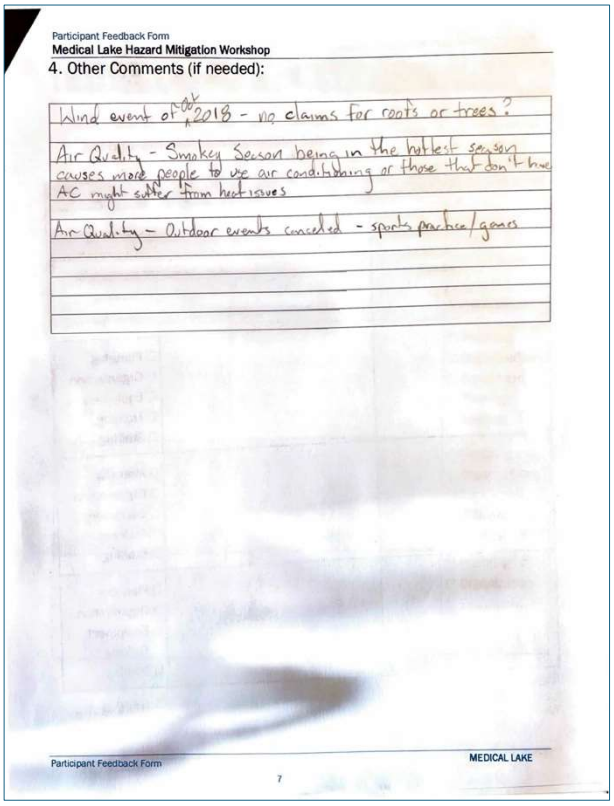
Please enter your responses in the form field.

Participant Information
Name (optional): ELISA RODRIGUEZ
Agency/Organization Affiliation: CITY OF MEDICAL LAKE
Position Title: CITY PLANNER
Years of Experience in Present Position: 2
Location during Workshop:

Please Complete.

Agency:	
Role:	
Name:	

Participant Feedback Form MEDICAL LAKE
1



Participant Feedback Form
Medical Lake Hazard Mitigation Workshop

4. Other Comments (if needed):

Wind event of Oct 2018 - no claims for roots or trees?

Air Quality - Smokey Season being in the hottest season causes more people to use air conditioning or those that don't have AC might suffer from heat issues

Air Quality - Outdoor events canceled - sports practice/games

Participant Feedback Form MEDICAL LAKE
7

Appendix I: FEMA Approval

Appendix I: HMP Adoption

The below is an example adoption letter to be replaced upon FEMA approval of this Hazard Mitigation Plan.

Resolution No. _____

Adoption of the Hazard Mitigation Plan Approved by FEMA

WHEREAS, the City of Medical Lake has developed a comprehensive Hazard Mitigation Plan (HMP) in accordance with the requirements of the Disaster Mitigation Act of 2000, federal regulations, and applicable state and local laws; and

WHEREAS, the HMP has been reviewed and approved by the Federal Emergency Management Agency (FEMA), thereby meeting all necessary planning requirements and ensuring the City's eligibility for FEMA mitigation grant programs; and

WHEREAS, the adoption of this HMP reflects the City's commitment to reducing risks to life, property, and the community from natural hazards and disasters, and to fostering a resilient and proactive approach to hazard mitigation; and

WHEREAS, the formal adoption of this plan authorizes the designated City officials and departments to implement the mitigation strategies and actions outlined within the plan;

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Medical Lake that:

The Hazard Mitigation Plan, as prepared and approved by FEMA, is hereby formally adopted as the City's official plan for reducing long-term risks from natural hazards.

The City Manager, along with any duly designated officials, is authorized to take all necessary actions and execute all documents required to implement the provisions of the Hazard Mitigation Plan and to submit the requisite evidence of adoption to state and federal agencies.

A copy of this resolution and the adopted HMP shall be maintained in the official records of the City of Medical Lake and distributed to all relevant departments, agencies, and stakeholders.

ADOPTED by the City Council of the City of Medical Lake on this _____ day of _____, 2025.

_____

Terry Cooper, Mayor

_____

Koss Ronholt, Finance Director/City Clerk

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