

Part 3. MITIGATION PLAN

18. GUIDING PRINCIPLE, GOALS AND OBJECTIVES

Hazard mitigation plans must identify goals for reducing long-term vulnerabilities to identified hazards (44 CFR Section 201.6.c(3i)). The Steering Committee established a mission statement, a set of goals and measurable objectives for this update, based on data from the preliminary risk assessment and the results of the public involvement strategy. The mission statement, goals, objectives and actions in this plan all support each other. Goals were selected to support the mission statement. Objectives were selected that met multiple goals. Actions were prioritized based on the action meeting multiple objectives.

18.1 MISSION STATEMENT

A mission statement provides a vision for a process. It is not a goal because it does not describe a hazard mitigation outcome, and it is broader than a hazard-specific objective. The mission statement for the 2017 Ada County Multi-Hazard Mitigation Plan is as follows:

To reduce the vulnerability to natural hazards in order to protect the health, safety, welfare and economy of the Ada County community.

18.2 GOALS

The following are the mitigation goals for this plan update:

1. Protect lives and reduce hazard related injuries
2. Minimize or reduce current and future damage from natural hazards to property, including critical facilities and environment
3. Encourage the development and implementation of long-term, cost-effective mitigation projects
4. Maintain, enhance, and restore the natural environment's capacity to deal with the impacts of natural hazard events.
5. Improve emergency management preparedness, collaboration, and outreach within the planning area.

Achievement of these goals defines the effectiveness of a mitigation strategy.

18.3 OBJECTIVES

Each selected objective meets multiple goals, serving as a stand-alone measurement of the effectiveness of a mitigation action, rather than as a subset of a goal. The objectives also are used to help establish priorities. The objectives are as follows:

1. Minimize disruption of local government and commerce operations caused by natural hazards.
2. Using best available data, science, and knowledge, continually improve understanding of the location and potential impacts of natural hazards.

3. Based on willing participation, encourage retrofit, purchase, or relocation of real property, based on one or more of the following criteria: level of exposure, repetitive loss history, and previous damage from natural hazards.
4. Based on understanding of risk, prevent or discourage new development in hazardous areas; if building occurs in high-risk areas, ensure that it is done in such a way as to minimize risk.
5. Strengthen codes and code enforcement to ensure that new construction and redevelopment of property and infrastructure can withstand the impacts of natural hazards.
6. Integrate hazard mitigation policies into local government land use plans that not only protect the built environment, but also maintain or enhance the natural environment's ability to withstand and recover from natural disasters, with an emphasis on the promotion of regional consistency in policy.
7. Develop new, and improve existing, early warning emergency notification protocols, systems, and evacuation procedures.
8. Educate the public on the area's potential natural hazards and ways to personally prepare, respond, recover and mitigate the impacts of these events.
9. Establish partnerships among all levels of government, the business community, and other stakeholders to improve and implement methods to protect life, property and the natural environment.
10. Increase the resilience and continuity of operations of identified critical facilities and infrastructure within the planning area.

19. MITIGATION BEST PRACTICES

Catalogs of hazard mitigation best practices were developed that present a broad range of alternatives to be considered for use in the planning area, in compliance with 44 CFR (Section 201.6.c.3.ii). These catalogs were developed through a facilitated session with the Steering Committee looking at strengths, weaknesses, obstacles and opportunities within the planning area for each identified hazard of concern. The planning team augmented the catalogs with best practices from state and federal publications as well as experience from past planning efforts. One catalog was developed for each hazard of concern evaluated in this plan. The catalogs for each hazard are listed in Table 19-1 through Table 19-8. The catalogs present best practices categorized in two ways:

- By what it 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 who would have responsibility for implementation:
 - Individuals
 - Businesses
 - Government.

Hazard mitigation actions recommended in this plan were selected from among the best practices presented in the catalogs or inspired by a review of the catalogs. The catalogs provide a baseline of mitigation best practices that are backed by a planning process, are consistent with the planning partners' goals and objectives, and are within the capabilities of the partners to implement. Some of these best practices may not be feasible based on the selection criteria identified for this plan. The purpose of the catalog was to equip the planning partners with a list of what could be considered to reduce risk from natural hazards within the planning area. Best practices in the catalog that are not included for the final action plan were not selected for one or more of the following reasons:

- The action is not feasible.
- The action is already being implemented.
- There is an apparently more cost-effective alternative.
- The action does not have public or political support.

Table 19-1. Catalog of Mitigation Alternatives—Dam/Canal Failure

Personal Scale	Corporate Scale	Government Scale
Manipulate Hazard		
<ul style="list-style-type: none"> None 	<ol style="list-style-type: none"> Remove dams Remove levees Harden dams 	<ol style="list-style-type: none"> Remove dams Remove flood control impounding facilities Harden dams
Reduce Exposure		
<ul style="list-style-type: none"> Relocate out of dam failure inundation areas. 	<ul style="list-style-type: none"> Replace earthen dams with hardened structures 	<ol style="list-style-type: none"> Replace earthen dams with hardened structures Relocate critical facilities out of dam failure inundation areas. Consider open space land use in designated dam failure inundation areas. Develop effective underground water storage as an alternative to dams and reservoir storage.
Reduce Vulnerability		
<ul style="list-style-type: none"> Elevate home to appropriate levels. 	<ul style="list-style-type: none"> Flood-proof facilities within dam failure inundation areas 	<ol style="list-style-type: none"> Adopt higher regulatory floodplain standards in mapped dam failure inundation areas. Retrofit critical facilities within dam failure inundation areas.
Increase Preparation or Response Capability		
<ol style="list-style-type: none"> Learn about risk reduction for the dam failure hazard. Learn the evacuation routes for a dam failure event. Educate yourself on early warning systems and the dissemination of warnings. 	<ol style="list-style-type: none"> Educate employees on the probable impacts of a dam failure. Develop a Continuity of Operations Plan. 	<ol style="list-style-type: none"> Map dam failure inundation areas. Enhance emergency operations plan to include a dam failure component. Institute monthly communications checks with dam operators. Inform the public on risk reduction techniques Adopt real-estate disclosure requirements for the re-sale of property located within dam failure inundation areas. Consider the probable impacts of climate in assessing the risk associated with the dam failure hazard. Establish early warning capability downstream of listed high hazard dams. Consider the residual risk associated with protection provided by dams in future land use decisions. Analyze and include elements of conservation and recreation benefits into any mitigation project.

Table 19-2. Catalog of Mitigation Alternatives—Drought

Personal Scale	Corporate Scale	Government Scale
Manipulate Hazard		
<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Groundwater recharge through stormwater management
Reduce Exposure		
<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Identify and create groundwater backup sources
Reduce Vulnerability		
<ol style="list-style-type: none"> 1. Drought-resistant landscapes 2. Reduce water system losses 3. Modify plumbing systems (through water saving kits) 	<ol style="list-style-type: none"> 1. Drought-resistant landscapes 2. Reduce private water system losses 	<ol style="list-style-type: none"> 1. Water use conflict regulations 2. Reduce water system losses 3. Distribute water saving kits
Increase Preparation or Response Capability		
<ul style="list-style-type: none"> • Practice active water conservation 	<ul style="list-style-type: none"> • Practice active water conservation 	<ol style="list-style-type: none"> 1. Public education on drought resistance 2. Identify alternative water supplies for times of drought; mutual aid agreements with alternative suppliers 3. Develop drought contingency plan 4. Develop criteria “triggers” for drought-related actions 5. Improve accuracy of water supply forecasts 6. Modify rate structure to influence active water conservation techniques 7. Consider the potential of issuing grants to municipalities and non-governmental organizations in implementation

Table 19-3. Catalog of Mitigation Alternatives—Earthquake

Personal Scale	Corporate Scale	Government Scale
Manipulate Hazard		
<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None
Reduce Exposure		
<ul style="list-style-type: none"> • Locate outside of hazard area (off soft soils) 	<ul style="list-style-type: none"> • Locate or relocate mission-critical functions outside hazard area where possible 	<ul style="list-style-type: none"> • Locate critical facilities or functions outside hazard area where possible
Reduce Vulnerability		
<ol style="list-style-type: none"> 1. Retrofit structure (anchor house structure to foundation) 2. Secure household items that can cause injury or damage (such as water heaters, bookcases, and other appliances) 3. Build to higher design 	<ol style="list-style-type: none"> 1. Build redundancy for critical functions and facilities 2. Retrofit critical buildings and areas housing mission-critical functions 	<ol style="list-style-type: none"> 1. Harden infrastructure 2. Provide redundancy for critical functions 3. Adopt higher regulatory standards
Increase Preparation or Response Capability		
<ol style="list-style-type: none"> 1. Practice “drop, cover, and hold” 2. Develop household mitigation plan, such as creating a retrofit savings account, communication capability with outside, 72-hour self-sufficiency during an event 3. Keep cash reserves for reconstruction 4. Become informed on the hazard and risk reduction alternatives available. 5. Develop a post-disaster action plan for your household 	<ol style="list-style-type: none"> 1. Adopt higher standard for new construction; consider “performance-based design” when building new structures 2. Keep cash reserves for reconstruction 3. Inform your employees on the possible impacts of earthquake and how to deal with them at your work facility. 4. Develop a Continuity of Operations Plan 	<ol style="list-style-type: none"> 1. Provide better hazard maps 2. Provide technical information and guidance 3. Enact tools to help manage development in hazard areas (e.g., tax incentives, information) 4. Include retrofitting and replacement of critical system elements in capital improvement plan 5. Develop strategy to take advantage of post-disaster opportunities 6. Warehouse critical infrastructure components such as pipe, power line, and road repair materials 7. Develop and adopt a Continuity of Operations Plan 8. Initiate triggers guiding improvements (such as <50% substantial damage or improvements) 9. Further enhance seismic risk assessment to target high hazard buildings for mitigation opportunities 10. Develop a post-disaster action plan that includes grant funding and debris removal components 11. Consider the potential of issuing grants to municipalities and non-governmental organizations in implementation

Table 19-4. Catalog of Mitigation Alternatives—Flood

Personal Scale	Corporate Scale	Government Scale
Manipulate Hazard		
<ol style="list-style-type: none"> 1. Clear stormwater drains and culverts 2. Institute low-impact development techniques on property 	<ol style="list-style-type: none"> 1. Clear stormwater drains and culverts 2. Institute low-impact development techniques on property 	<ol style="list-style-type: none"> 1. Maintain drainage system 2. Institute low-impact development techniques on property 3. Dredging, levee construction, and providing regional retention areas 4. Structural flood control, levees, channelization, or revetments. 5. Stormwater management regulations and master planning 6. Acquire vacant land or promote open space uses in developing watersheds to control increases in runoff
Reduce Exposure		
<ol style="list-style-type: none"> 1. Locate outside of hazard area 2. Elevate utilities above base flood elevation 3. Institute low impact development techniques on property 	<ol style="list-style-type: none"> 1. Locate business critical facilities or functions outside hazard area 2. Institute low impact development techniques on property 	<ol style="list-style-type: none"> 1. Locate or relocate critical facilities outside of hazard area 2. Acquire or relocate identified repetitive loss properties 3. Promote open space uses in identified high hazard areas via techniques such as: planned unit developments, easements, setbacks, greenways, sensitive area tracks. 4. Adopt land development criteria such as planned unit developments, density transfers, clustering 5. Institute low impact development techniques on property 6. Acquire vacant land or promote open space uses in developing watersheds to control increases in runoff 7. Encourage the creation of a floodplain acquisition fund to acquire land or easements that benefit flood hazard mitigation
Reduce Vulnerability		
<ol style="list-style-type: none"> 1. Retrofit structures (elevate structures above base flood elevation) 2. Elevate items within house above base flood elevation 3. Build new homes above base flood elevation 4. Flood-proof existing structures 	<ol style="list-style-type: none"> 1. Build redundancy for critical functions or retrofit critical buildings 2. Provide flood-proofing measures when new critical infrastructure must be located in floodplains 	<ol style="list-style-type: none"> 1. Harden infrastructure, bridge replacement program 2. Provide redundancy for critical functions and infrastructure 3. Adopt appropriate regulatory standards, such as: increased freeboard standards, cumulative substantial improvement or damage, lower substantial damage threshold; compensatory storage, non-conversion deed restrictions 4. Stormwater management regulations and master planning 5. Adopt “no-adverse impact” floodplain management policies that strive to not increase the flood risk on downstream communities

Personal Scale	Corporate Scale	Government Scale
Increase Preparation or Response Capability		
<ol style="list-style-type: none"> 1. Buy flood insurance 2. Develop household mitigation plan, such as retrofit savings, communication capability with outside, 72-hour self-sufficiency during and after an event 	<ol style="list-style-type: none"> 1. Keep cash reserves for reconstruction 2. Support and implement hazard disclosure for the sale/re-sale of property in identified risk areas. 3. Solicit cost-sharing through partnerships with other stakeholders on projects with multiple benefits. 	<ol style="list-style-type: none"> 1. Produce better hazard maps 2. Provide technical information and guidance 3. Enact tools to help manage development in hazard areas (stronger controls, tax incentives, and information) 4. Incorporate retrofitting or replacement of critical system elements in capital improvement plan 5. Develop strategy to take advantage of post-disaster opportunities 6. Warehouse critical infrastructure components 7. Develop and adopt a Continuity of Operations Plan 8. Consider participation in the Community Rating System 9. Maintain existing data and gather new data needed to define risks and vulnerability 10. Train emergency responders 11. Create a building and elevation inventory of structures in the floodplain 12. Develop and implement a public information strategy 13. Charge a hazard mitigation fee 14. Integrate floodplain management policies into other planning mechanisms within the planning area. 15. Consider the probable impacts of climate change on the risk associated with the flood hazard 16. Consider the residual risk associated with structural flood control in future land use decisions 17. Enforce National Flood Insurance Program 18. Adopt a stormwater management master plan 19. Consider the potential of issuing grants to municipalities and non-governmental organizations in implementation 20. Analyze and include elements of conservation and recreation benefits into any mitigation project

Table 19-5. Catalog of Mitigation Alternatives—Landslide

Personal Scale	Corporate Scale	Government Scale
Manipulate Hazard		
<ol style="list-style-type: none"> 1. Stabilize slope (dewater, armor toe) 2. Reduce weight on top of slope 3. Minimize vegetation removal and the addition of impervious surfaces. 	<ol style="list-style-type: none"> 1. Stabilize slope (dewater, armor toe) 2. Reduce weight on top of slope 	<ol style="list-style-type: none"> 1. Stabilize slope (dewater, armor toe) 2. Reduce weight on top of slope
Reduce Exposure		
<ul style="list-style-type: none"> • Locate structures outside of hazard area (off unstable land and away from slide-run out area) 	<ul style="list-style-type: none"> • Locate structures outside of hazard area (off unstable land and away from slide-run out area) 	<ol style="list-style-type: none"> 1. Acquire properties in high-risk landslide areas. 2. Adopt land use policies that prohibit the placement of habitable structures in high-risk landslide areas.
Reduce Vulnerability		
<ul style="list-style-type: none"> • Retrofit home. 	<ul style="list-style-type: none"> • Retrofit at-risk facilities. 	<ol style="list-style-type: none"> 1. Adopt higher regulatory standards for new development within unstable slope areas. 2. Armor/retrofit critical infrastructure against the impact of landslides.
Increase Preparation or Response Capability		
<ol style="list-style-type: none"> 1. Institute warning system, and develop evacuation plan 2. Keep cash reserves for reconstruction 3. Educate yourself on risk reduction techniques for landslide hazards. 	<ol style="list-style-type: none"> 1. Institute warning system, and develop evacuation plan 2. Keep cash reserves for reconstruction 3. Develop a Continuity of Operations Plan 4. Educate employees on the potential exposure to landslide hazards and emergency response protocol. 	<ol style="list-style-type: none"> 1. Produce better hazard maps 2. Provide technical information and guidance 3. Enact tools to help manage development in hazard areas: better land controls, tax incentives, information 4. Develop strategy to take advantage of post-disaster opportunities 5. Warehouse critical infrastructure components 6. Develop and adopt a continuity of operations plan 7. Educate the public on the landslide hazard and appropriate risk reduction alternatives 8. Consider the potential of issuing grants to municipalities and non-governmental organizations in implementation

Table 19-6. Catalog of Mitigation Alternatives—Severe Weather

Personal Scale	Corporate Scale	Government Scale
Manipulate Hazard		
• None	• None	• None
Reduce Exposure		
• None	• None	• None
Reduce Vulnerability		
<ol style="list-style-type: none"> 1. Insulate house 2. Provide redundant heat and power 3. Insulate structure 4. Plant appropriate trees near home and power lines (“Right tree, right place” National Arbor Day Foundation Program) 	<ol style="list-style-type: none"> 1. Relocate critical infrastructure (such as power lines) underground 2. Reinforce or relocate critical infrastructure such as power lines to meet performance expectations 3. Install tree wire 	<ol style="list-style-type: none"> 1. Harden infrastructure such as locating utilities underground 2. Trim trees back from power lines 3. Designate snow routes and strengthen critical road sections and bridges
Increase Preparation or Response Capability		
<ol style="list-style-type: none"> 1. Trim or remove trees that could affect power lines 2. Promote 72-hour self-sufficiency 3. Obtain a NOAA weather radio. 4. Obtain an emergency generator. 	<ol style="list-style-type: none"> 1. Trim or remove trees that could affect power lines 2. Create redundancy 3. Equip facilities with a NOAA weather radio 4. Equip vital facilities with emergency power sources. 	<ol style="list-style-type: none"> 1. Support programs such as “Tree Watch” that proactively manage problem areas through use of selective removal of hazardous trees, tree replacement, etc. 2. Establish and enforce building codes that require all roofs to withstand snow loads 3. Increase communication alternatives 4. Modify land use and environmental regulations to support vegetation management activities that improve reliability in utility corridors. 5. Modify landscape and other ordinances to encourage appropriate planting near overhead power, cable, and phone lines 6. Provide NOAA weather radios to the public 7. Consider the potential of issuing grants to municipalities and non-governmental organizations in implementation

Table 19-7. Catalog of Risk Reduction Measures—Volcano

Personal Scale	Corporate Scale	Government Scale
Manipulate Hazard		
<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Limited success has been experienced with lava flow diversion structures
Reduce Exposure		
<ul style="list-style-type: none"> • Relocate outside of hazard area, such as lahar zones 	<ul style="list-style-type: none"> • Locate mission critical functions outside of hazard area, such as lahar zones whenever possible. 	<ul style="list-style-type: none"> • Locate critical facilities and functions outside of hazard area, such as lahar zones, whenever possible.
Reduce Vulnerability		
<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Protect corporate critical facilities and infrastructure from potential impacts of severe ash fall (air filtration capability) 	<ol style="list-style-type: none"> 1. Protect critical facilities from potential problems associated with ash fall. 2. Build redundancy for critical facilities and functions.
Increase Preparation or Response Capability		
<ul style="list-style-type: none"> • Develop and practice a household evacuation plan. 	<ol style="list-style-type: none"> 1. Develop and practice a corporate evacuation plan 2. Inform employees through corporate sponsored outreach 3. Develop a cooperative 	<ol style="list-style-type: none"> 1. Public outreach, awareness. 2. Tap into state volcano warning system to provide early warning to residents of potential ash fall problems

Table 19-8. Catalog of Mitigation Alternatives—Wildfire

Personal Scale	Corporate Scale	Government Scale
Manipulate Hazard		
<ul style="list-style-type: none"> • Clear potential fuels on property such as dry overgrown underbrush and diseased trees 	<ul style="list-style-type: none"> • Clear potential fuels on property such as dry underbrush and diseased trees 	<ol style="list-style-type: none"> 1. Clear potential fuels on property such as dry underbrush and diseased trees 2. Implement best management practices on public lands.
Reduce Exposure		
<ol style="list-style-type: none"> 1. Create and maintain defensible space around structures 2. Locate outside of hazard area 3. Mow regularly 	<ol style="list-style-type: none"> 1. Create and maintain defensible space around structures and infrastructure 2. Locate outside of hazard area 	<ol style="list-style-type: none"> 1. Create and maintain defensible space around structures and infrastructure 2. Locate outside of hazard area 3. Enhance building code to include use of fire resistant materials in high hazard area.
Reduce Vulnerability		
<ol style="list-style-type: none"> 1. Create and maintain defensible space around structures and provide water on site 2. Use fire-retardant building materials 3. Create defensible spaces around home 	<ol style="list-style-type: none"> 1. Create and maintain defensible space around structures and infrastructure and provide water on site 2. Use fire-retardant building materials 3. Use fire-resistant plantings in buffer areas of high wildfire threat. 	<ol style="list-style-type: none"> 1. Create and maintain defensible space around structures and infrastructure 2. Use fire-retardant building materials 3. Use fire-resistant plantings in buffer areas of high wildfire threat. 4. Consider higher regulatory standards (such as Class A roofing) 5. Establish biomass reclamation initiatives
Increase Preparation or Response Capability		
<ol style="list-style-type: none"> 1. Employ techniques from the National Fire Protection Association’s Firewise Communities program to safeguard home 2. Identify alternative water supplies for fire fighting 3. Install/replace roofing material with non-combustible roofing materials. 	<ol style="list-style-type: none"> 1. Support Firewise community initiatives. 2. Create /establish stored water supplies to be utilized for firefighting. 	<ol style="list-style-type: none"> 1. More public outreach and education efforts, including an active Firewise program 2. Possible weapons of mass destruction funds available to enhance fire capability in high-risk areas 3. Identify fire response and alternative evacuation routes 4. Seek alternative water supplies 5. Become a Firewise community 6. Use academia to study impacts/solutions to wildfire risk 7. Establish/maintain mutual aid agreements between fire service agencies. 8. Create/implement fire plans 9. Consider the probable impacts of climate change on the risk associated with the wildfire hazard in future land use decisions 10. Consider the potential of issuing grants to municipalities and non-governmental organizations in implementation

20. MITIGATION ACTIONS AND IMPLEMENTATION

20.1 SELECTED COUNTYWIDE MITIGATION ACTIONS

The planning partners and the Steering Committee determined that some actions from the mitigation catalogs could be implemented to provide hazard mitigation benefits countywide. Table 20-1 lists the recommended countywide actions, the lead agency for each, and the proposed timeline. The parameters for the timeline are as follows:

- Short Term = to be completed in 1 to 5 years
- Long Term = to be completed in greater than 5 years
- Ongoing = currently being funded and implemented under existing programs.

Table 20-1. Action Plan—Countywide Mitigation Actions

Hazards Addressed	Lead Agency	Possible Funding Sources or Resources	Time Line ^a	Objectives
<p>CW-1—Sponsor and maintain a natural-hazard informational website to include the following types of information:</p> <ul style="list-style-type: none"> • Hazard-specific information such as warning, private property mitigation alternatives, important facts on risk and vulnerability • Pre- and post-disaster information such as notices of grant funding availability • CRS creditable information • Links to planning partners' pages, FEMA and Idaho Office of Emergency Management • Natural hazard mitigation plan information such as progress reports, mitigation success stories, update strategies, Steering Committee meetings. 				
All	ACEM	ACEM Operation Budget	Short term, ongoing	2,8,9
<p>CW-2—The Steering Committee will remain as a viable body over time to monitor progress of the plan, provide technical assistance to planning partners and oversee the update of the plan according to schedule. This body will continue to operate under the ground rules established at its inception.</p>				
All	ACEM	Can be funded under existing programs	Short term, ongoing	6,8,9
<p>CW-3—All planning partners that committed to the update effort will formally adopt this plan when pre-adoption approval has been granted by the Idaho Office of Emergency Management (IOEM) and FEMA Region X. Each planning partner will adhere to the plan maintenance protocol identified in this plan. All actions under this action will be coordinated by ACEM</p>				
All	ACEM/ Each planning partner	Can be funded under existing programs	Short term	All
<p>CW-4—Continue to implement ongoing public outreach programs administered by ACEM. Seek opportunities to promote the mitigation of natural hazards within the planning area, utilizing information contained within this plan.</p>				
All	ACEM	Can be funded under existing programs	Short term, ongoing	2,8,9
<p>CW-5—Seek out and use the best available data, science and technology to update the risk assessment to this plan as that data, science, technology and funding resources become available.</p>				
All	ACEM	FEMA Hazard Mitigation Grant funding, RiskMAP, federal hazard analysis funding	Long-Term, depends on funding	2,9
<p>CW-6—Continue to support and coordinate with the Idaho Silver Jackets program.</p>				
All	ACEM	Can be funded under existing programs	Short term, ongoing	2,6,8,9

Hazards Addressed	Lead Agency	Possible Funding Sources or Resources	Time Line ^a	Objectives	
CW-7— Provide technical support and coordination for available grant funding opportunities to the planning partnership	All	ACEM	Can be funded under existing programs. This technical assistance is a reimbursable activity under FEMA Hazard Mitigation Grant Programs	Short term	2,9
CW-8—Participate as a cooperating partners with FEMA and other stakeholders in FEMA's RiskMAP initiative	All	ACEM	Can be funded under existing programs. Could be subsidized with funding under the RiskMAP initiative	Short term	2,9
CW-9— Leverage public outreach partnering capabilities (such as CERT) within the planning area to promote a uniform and consistent message on the importance of proactive hazard mitigation.	All	ACEM	ACEM Operation Budget	Short Term, ongoing	All
CW-10— Coordinate mitigation planning and project efforts within the planning area to leverage all resources available to the planning partnership.	All	ACEM	ACEM Operation Budget	Short Term, ongoing	1,9,10
CW-11— Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive and severe repetitive loss properties as a priority. Seek opportunities to leverage partnerships within the planning area in these pursuits.	All	Planning Partners	Hazard Mitigation Grant funding	Long-term, depends on funding	3,9
CW-12— Utilize information contained within the Ada County Multi-Hazard Mitigation Plan to support updates to other emergency management plans in effect within the planning area.	All	ACEM	Can be funded under existing programs	Short term, ongoing	1,2,6,10
CW-13—Using the most current Hazus model and other data available, examine exposure and level of risk to the known hazards of concern for first responder facilities and identified potential sheltering sites.	All	ACEM, all First Responder planning partners	Can be funded under existing programs	Long-term, depends on funding	2,9
CW-14— Based on identified risks, relocate or structurally harden first responder facilities as needed. Relocation may not be an option based on response requirements of the organization.	All	ACEM, all Planning Partners	Hazard mitigation or emergency management grant funding	Long-term, depends on funding	3,9
CW-15— Using the most current Hazus model and other data available, categorize potential sheltering sites from lowest to highest exposure to the known hazards of concern. Identify partners that own the sheltering sites and encourage building enhancements at those sites that would allow for operations during a major disaster event.	All	ACEM, all Planning Partners	Can be funded under existing programs, to be augmented by mitigation planning grant funding at next plan update.	Long-term, depends on funding	2,9

20.2 BENEFIT/COST REVIEW

44 CFR requires the prioritization of the action plan according to a benefit/cost analysis of the proposed projects and their associated costs (Section 201.6.c.3iii). The benefits of proposed projects were weighed against estimated costs as part of the project prioritization process. The benefit/cost analysis was not of the detailed variety required by FEMA for project grant eligibility under the Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) grant program. A less formal approach was used because some projects may not be implemented for up to 10 years, and associated costs and benefits could change dramatically in that time. Therefore, a review of the apparent benefits versus the apparent cost of each project was performed. Parameters were established for assigning subjective ratings (high, medium and low) to the costs and benefits of these projects.

Cost ratings were defined as follows:

- **High**—Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants and fee increases).
- **Medium**—The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
- **Low**—The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program.

Benefit ratings were defined as follows:

- **High**—Project will provide an immediate reduction of risk exposure for life and property.
- **Medium**—Project will have a long-term impact on the reduction of risk exposure for life and property, or project will provide an immediate reduction in the risk exposure for property.
- **Low**—Long-term benefits of the project are difficult to quantify in the short term.

Using this approach, projects with positive benefit versus cost ratios (such as high over high, high over medium, medium over low, etc.) are considered cost-beneficial and are prioritized accordingly.

For many of the strategies identified in this action plan, the partners may seek financial assistance under the HMGP or PDM programs, both of which require detailed benefit/cost analyses. These analyses will be performed on projects at the time of application using the FEMA benefit-cost model. For projects not seeking financial assistance from grant programs that require detailed analysis, the partners reserve the right to define “benefits” according to parameters that meet the goals and objectives of this plan.

20.3 COUNTYWIDE ACTION PLAN PRIORITIZATION

Table 20-2 lists the priority of each countywide action, using the same parameters used by each of the planning partners in selecting their actions. A qualitative benefit-cost review was performed for each of these actions. The priorities are defined as follows:

- **High Priority**—A project that meets multiple objectives (i.e., multiple hazards), has benefits that exceed cost, has funding secured or is an ongoing project and meets eligibility requirements for the HMGP or PDM grant program. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority**—A project that meets goals and objectives, that has benefits that exceed costs, and for which funding has not been secured but that is grant eligible under HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is secured. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority**—A project that will mitigate the risk of a hazard, that has benefits that do not exceed the costs or are difficult to quantify, for which funding has not been secured, that is not eligible for HMGP or PDM grant funding, and for which the time line for completion is long term (1 to 10 years). Low priority projects may be eligible for other sources of grant funding from other programs.

Table 20-2. Prioritization of Countywide Mitigation Actions

Action #	# of Objectives Met	Benefits	Costs	Do Benefits equal or exceed Costs?	Is project Grant eligible?	Can Project be funded under existing programs/ budgets?	Priority (High, Med., Low)
CW-1	3	Low	Low	Yes	No	Yes	High
CW-2	3	Low	Low	Yes	No	Yes	High
CW-3	10	Low	Low	Yes	No	Yes	High
CW-4	3	Low	Low	Yes	No	Yes	High
CW-5	2	Medium	Medium	Yes	Yes	No	Medium
CW-6	4	Low	Low	Yes	No	Yes	High
CW-7	2	Low	Low	Yes	Yes	Yes	High
CW-8	2	Low	Low	Yes	Yes	Yes	High
CW-9	10	Low	Low	Yes	No	Yes	High
CW-10	3	Low	Low	Yes	No	Yes	High
CW-11	2	High	High	Yes	Yes	No	Medium
CW-12	4	High	Low	Yes	Yes	Yes	High
CW-13	2	Low	Medium	Yes	Yes	Yes	High
CW-14	2	High	High	Yes	Yes	No	Medium
CW-15	2	Low	Medium	Yes	Yes	Yes	High

20.4 PLAN ADOPTION

A hazard mitigation plan must document formal adoption by the governing body of the jurisdiction requesting federal approval of the plan (44 CFR, Section 201.6.c.5). For multi-jurisdictional plans, each jurisdiction requesting approval must document that it has been formally adopted. This plan will be submitted for a pre-adoption review to the Idaho Office of Emergency Management and the Insurance Services Office (FEMA’s CRS contractor) prior to adoption. Once pre-adoption approval has been provided, all planning partners will formally adopt the plan update. All partners understand that DMA compliance and its benefits cannot be achieved until the plan is adopted. Copies of the resolutions adopting this plan for all planning partners and the final approval letter from FEMA can be found in Appendix F of this volume.

20.5 PLAN MAINTENANCE STRATEGY

A hazard mitigation plan must present a plan maintenance process that includes the following (44 CFR Section 201.6.c.4):

- A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan over a 5-year cycle
- A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate
- A discussion on how the community will continue public participation in the plan maintenance process.

This section details the formal process that will ensure that the 2017 Ada County Multi-Hazard Mitigation Plan remains an active and relevant document and that the planning partners maintain their eligibility for applicable funding sources. The plan maintenance process includes a schedule for monitoring and evaluating the plan annually and producing an updated plan every five years. This chapter also describes how public participation will be integrated throughout the plan maintenance and implementation process. It explains how the mitigation strategies outlined in this Plan will be incorporated into existing planning mechanisms and programs, such as

comprehensive land-use planning processes, capital improvement planning, and building code enforcement and implementation. The Plan’s format allows sections to be reviewed and updated when new data become available, resulting in a plan that will remain current.

20.6 PLAN IMPLEMENTATION

The effectiveness of the hazard mitigation plan depends on its implementation and incorporation of its action items into partner jurisdictions’ existing plans, policies and programs. Together, the action items in the Plan provide a framework for activities that the partners can implement over the next 5 years. The planning team and the Steering Committee have established goals and objectives and have prioritized mitigation actions that will be implemented through existing plans, policies and programs.

Ada County Emergency Management (ACEM) will have lead responsibility for overseeing the Plan implementation and maintenance strategy. Plan implementation and evaluation will be a shared responsibility among all planning partnership members and agencies identified as lead agencies in the mitigation action plans (see planning partner annexes in Volume 2 of this plan).

20.7 STEERING COMMITTEE

The Steering Committee is a volunteer body that oversaw the development of the Plan and made recommendations on key elements of the plan, including the maintenance strategy. It was the Steering Committee’s position that an oversight committee with representation similar to the initial Steering Committee should have an active role in the Plan maintenance strategy. Therefore, it is recommended that a steering committee remain a viable body involved in key elements of the Plan maintenance strategy. The new steering committee should strive to include representation from the planning partners, as well as other stakeholders in the planning area.

The principal role of the new steering committee in this plan maintenance strategy will be to review the annual progress report and provide input to ACEM on possible enhancements to be considered at the next update. Future plan updates will be overseen by a steering committee similar to the one that participated in this update process, so keeping an interim steering committee intact will provide a head start on future updates. Completion of the progress report is the responsibility of each planning partner, not the responsibility of the steering committee. The steering committee’s role will be to review the progress report in an effort to identify issues needing to be addressed by future plan updates.

20.8 ANNUAL PROGRESS REPORT

The minimum task of each planning partner will be the evaluation of the progress of its individual action plan during a 12-month performance period. This review will include the following:

- Summary of any hazard events that occurred during the performance period and the impact these events had on the planning area
- Review of mitigation success stories
- Review of continuing public involvement
- Brief discussion about why targeted strategies were not completed
- Re-evaluation of the action plan to determine if the timeline for identified projects needs to be amended (such as changing a long-term project to a short-term one because of new funding)
- Recommendations for new projects
- Changes in or potential for new funding options (grant opportunities)
- Impact of any other planning programs or initiatives that involve hazard mitigation.

The planning team has created a template to guide the planning partners in preparing a progress report (see Appendix G). The plan maintenance steering committee will provide feedback to the planning team on items included in the template. It is the intent of the planning team to prepare an annual report on the progress of the plan. This report should be used as follows:

- Posted on the ACEM website page dedicated to the hazard mitigation plan
- Presented to planning partner governing bodies to inform them of the progress of actions implemented during the reporting period
- For planning partners that participate in the Community Rating System, the report can be provided as part of the CRS annual re-certification package. The CRS requires an annual recertification to be submitted by October 1 of every calendar year for which the community has not received a formal audit. To meet this recertification timeline, the planning team will strive to complete progress reports between June and September each year.

Uses of the progress report will be at the discretion of each planning partner. Annual progress reporting is not a requirement specified under 44 CFR. However, it may enhance the planning partnership's opportunities for funding. While failure to implement this component of the plan maintenance strategy will not jeopardize a planning partner's compliance under the DMA, it may jeopardize its opportunity to partner and leverage funding opportunities with the other partners. Each planning partner was informed of these protocols at the beginning of this planning process, and each partner acknowledged these expectations with submittal of a letter of intent to participate in this process.

20.9 PLAN UPDATE

Local hazard mitigation plans must be reviewed, revised if appropriate, and resubmitted for approval in order to remain eligible for benefits under the DMA (44 CFR, Section 201.6.d.3). The Ada County partnership intends to update the hazard mitigation plan on a 5-year cycle from the date of initial plan adoption. This cycle may be accelerated to less than 5 years based on the following triggers:

- A Presidential Disaster Declaration that impacts the planning area
- A hazard event that causes loss of life
- An update of the County or participating city's comprehensive plan

It will not be the intent of future updates to develop a complete new hazard mitigation plan for the planning area. The update will, at a minimum, include the following elements:

- The update process will be convened through a steering committee.
- The hazard risk assessment will be reviewed and, if necessary, updated using best available information and technologies.
- The action plans will be reviewed and revised to account for any actions completed, dropped, or changed and to account for changes in the risk assessment or new partnership policies identified under other planning mechanisms (such as the comprehensive plan).
- The draft update will be sent to appropriate agencies and organizations for comment.
- The public will be given an opportunity to comment on the update prior to adoption.
- The partnership governing bodies will adopt their respective portions of the updated plan.

20.10 CONTINUING PUBLIC INVOLVEMENT

The public will continue to be apprised of the plan's progress through the ACEM website, including providing copies of annual progress reports on the website. Each planning partner has agreed to provide links to the County

hazard mitigation plan website on their individual jurisdictional websites to increase avenues of public access to the plan. ACEM has agreed to maintain the hazard mitigation plan website. This site will not only house the final plan, it will become the one-stop shop for information regarding the plan, the partnership and plan implementation. Upon initiation of future update processes, a new public involvement strategy will be initiated based on guidance from a new steering committee. This strategy will be based on the needs and capabilities of the planning partnership at the time of the update. At a minimum, this strategy will include the use of local media outlets within the planning area.

20.11 INCORPORATION INTO OTHER PLANNING MECHANISMS

The information on hazard, risk, vulnerability and mitigation contained in this plan is based on the best science and technology available at the time this update was prepared. The Ada County Comprehensive Plan and the comprehensive plans of the partner cities are considered to be integral parts of this plan. The County and partner cities, through adoption of comprehensive plans and zoning ordinances, have planned for the impact of natural hazards. The Plan update process provided the County and the cities with the opportunity to review and expand on policies contained within these planning mechanisms. The planning partners used their comprehensive plans and the hazard mitigation plan as complementary documents that work together to achieve the goal of reducing risk exposure to the citizens of the Ada County. An update to a comprehensive plan may trigger an update to the hazard mitigation plan.

All municipal planning partners support the creation of a linkage between the hazard mitigation plan and their individual comprehensive plans by identifying a mitigation action as such and giving that action a high priority. Other planning processes and programs to be coordinated with the recommendations of the hazard mitigation plan may include the following:

- Partners' emergency response plans
- Capital improvement programs
- Municipal codes
- Community design guidelines
- Water-efficient landscape design guidelines
- Stormwater management programs
- Water system vulnerability assessments
- Master fire protection plans.

Some action items do not need to be implemented through regulation. Instead, they can be implemented through the creation of new educational programs, continued interagency coordination, or improved public participation. As information becomes available from other planning mechanisms that can enhance this plan, that information will be incorporated via the update process.

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GLOSSARY

ACRONYMS

ACEM— Ada County Emergency Management

BLM—Bureau of Land Management

BREN— Boise River Enhancement Network

CDBG-DR—Community Development Block Grant Disaster Recovery grants

CFR—Code of Federal Regulations

cfs—cubic feet per second

CIP—Capital Improvement Plan

CRS—Community Rating System

DFIRM—Digital Flood Insurance Rate Maps

DHS—Department of Homeland Security

DMA —Disaster Mitigation Act

EAP—Emergency Action Plan

EPA—U.S. Environmental Protection Agency

ESA—Endangered Species Act

FEMA—Federal Emergency Management Agency

FERC—Federal Energy Regulatory Commission

FIRM—Flood Insurance Rate Map

FRCC—Fire Regime Condition Class

GIS—Geographic Information System

Hazus-MH—Hazards, United States Multi Hazard

HMGP—Hazard Mitigation Grant Program

HOA—Homeowners Association

IBC—International Building Code

IDWR—Idaho Department of Water Resources

IOEM—Idaho Office of Emergency Management

IRC—International Residential Code

MM—Modified Mercalli Scale

NEHRP—National Earthquake Hazards Reduction Program

NFIP—National Flood Insurance Program

NLSI—National Lightning Safety Institute

NOAA—National Oceanic and Atmospheric Administration

NWS—National Weather Service

PDM—Pre-Disaster Mitigation Grant Program

PGA—Peak Ground Acceleration

SFHA—Special Flood Hazard Area

SPI—Standardized Precipitation Index

TOD—Transit-Oriented Development

USGCRP—U.S. Global Change Research Program

USGS—U.S. Geological Survey

WUI—Wildland Urban Interface

DEFINITIONS

100-Year Flood: The term “100-year flood” can be misleading. The 100-year flood does not necessarily occur once every 100 years. Rather, it is the flood that has a 1 percent chance of being equaled or exceeded in any given year. Thus, the 100-year flood could occur more than once in a relatively short period of time. The Federal Emergency Management Agency (FEMA) defines it as the 1 percent annual chance flood, which is now the standard definition used by most federal and state agencies and by the National Flood Insurance Program (NFIP).

Acre-Foot: An acre-foot is the amount of water it takes to cover 1 acre to a depth of 1 foot. This measure is used to describe the quantity of storage in a water reservoir. An acre-foot is a unit of volume. One acre foot equals 7,758 barrels; 325,829 gallons; or 43,560 cubic feet. An average household of four will use approximately 1 acre-foot of water per year.

Asset: An asset is any man-made or natural feature that has value, including, but not limited to, people; buildings; infrastructure, such as bridges, roads, sewers, and water systems; lifelines, such as electricity and communication resources; and environmental, cultural, or recreational features such as parks, wetlands, and landmarks.

Base Flood: The flood having a 1% chance of being equaled or exceeded in any given year, also known as the “100-year” or “1% chance” flood. The base flood is a statistical concept used to ensure that all properties subject to the National Flood Insurance Program (NFIP) are protected to the same degree against flooding.

Basin: A basin is the area within which all surface water—whether from rainfall, snowmelt, springs, or other sources—flows to a single water body or watercourse. The boundary of a river basin is defined by natural topography, such as hills, mountains and ridges. Basins are also referred to as “watersheds” and “drainage basins.”

Benefit: A benefit is a net project outcome and is usually defined in monetary terms. Benefits may include direct and indirect effects. For the purposes of benefit-cost analysis of proposed mitigation measures, benefits are limited to specific, measurable, risk reduction factors, including reduction in expected property losses (buildings, contents and functions) and protection of human life.

Benefit/Cost Analysis: A benefit/cost analysis is a systematic, quantitative method of comparing projected benefits to projected costs of a project or policy. It is used as a measure of cost effectiveness.

Building: A building is defined as a structure that is walled and roofed, principally aboveground, and permanently fixed to a site. The term includes manufactured homes on permanent foundations on which the wheels and axles carry no weight.

Capability Assessment: A capability assessment provides a description and analysis of a community's current capacity to address threats associated with hazards. The assessment includes two components: an inventory of an agency's mission, programs and policies, and an analysis of its capacity to carry them out. A capability assessment is an integral part of the planning process in which a community's actions to reduce losses are identified, reviewed, and analyzed, and the framework for implementation is identified. The following capabilities were reviewed under this assessment:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability

Community Rating System (CRS): The CRS is a voluntary program under the NFIP that rewards participating communities (provides incentives) for exceeding the minimum requirements of the NFIP and completing activities that reduce flood hazard risk by providing flood insurance premium discounts.

Critical Area: An area defined by state or local regulations as deserving special protection because of unique natural features or its value as habitat for a wide range of species of flora and fauna. A sensitive/critical area is usually subject to more restrictive development regulations.

Critical Facility: A critical facility is one that is deemed vital to the Ada County planning area's ability to provide essential services while protecting life and property. A critical facility may be a system or an asset, either physical or virtual, the loss of which would have a profound impact on the security, economy, public health or safety, environment, or any combination of thereof, across the planning area. For the *Ada County Multi-Hazard Mitigation Plan*, the following are defined as critical facilities:

- Police stations, fire stations, paramedic stations, emergency vehicle and equipment storage facility-ties, and emergency operations and communications centers needed for disaster response before, during, and after hazard events.
- Public and private utilities and infrastructure vital to maintaining or restoring normal services to areas damaged by hazard events. These include but are not limited to water (potable, wastewater, stormwater facilities), impoundments (dams and irrigation conveyance facilities), utilities (transmission and distribution facilities for natural gas, power, geothermal) and communications (land-based telephone, cell phone, the internet emergency broadcast facilities and emergency radios).
- Public gathering places that could be utilized as evacuation centers during large-scale disasters.
- Hospitals, extended care facilities, urgent care facilities and housing that may contain occupants not sufficiently mobile to avoid death or injury during a hazard event
- Transportation systems that convey vital supplies and services to and throughout the community. These include roads, bridges, railways, airports and pipelines
- Government and educational facilities central to governance and quality of life along with response and recovery actions taken as a result of a hazard event
- Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, and/or water-reactive materials.
- Infrastructure designed to help safely convey high-water events from the event source to the perimeter of the planning area.

Cubic Feet per Second (cfs): Discharge or river flow is commonly measured in cfs. One cubic foot is about 7.5 gallons of liquid.

Dam: Any artificial barrier or controlling mechanism that can or does impound 10 acre-feet or more of water.

Dam Failure: Dam failure refers to a partial or complete breach in a dam (or levee) that impacts its integrity. Dam failures occur for a number of reasons, such as flash flooding, inadequate spillway size, mechanical failure of valves or other equipment, freezing and thawing cycles, earthquakes, and intentional destruction.

Debris Avalanche: Volcanoes are prone to debris and mountain rock avalanches that can approach speeds of 100 mph.

Debris Flow: Dense mixtures of water-saturated debris that move down-valley; looking and behaving much like flowing concrete. They form when loose masses of unconsolidated material are saturated, become unstable, and move down slope. The source of water varies but includes rainfall, melting snow or ice, and glacial outburst floods.

Debris Slide: Debris slides consist of unconsolidated rock or soil that has moved rapidly down slope. They occur on slopes greater than 65 percent.

Disaster Mitigation Act of 2000 (DMA); The DMA is Public Law 106-390 and is the latest federal legislation enacted to encourage and promote proactive, pre-disaster planning as a condition of receiving financial assistance under the Robert T. Stafford Act. The DMA emphasizes planning for disasters before they occur. Under the DMA, a pre-disaster hazard mitigation program and new requirements for the national post-disaster hazard mitigation grant program (HMGP) were established.

Drainage Basin: A basin is the area within which all surface water- whether from rainfall, snowmelt, springs or other sources- flows to a single water body or watercourse. The boundary of a river basin is defined by natural topography, such as hills, mountains and ridges. Drainage basins are also referred to as **watersheds** or **basins**.

Drought: Drought is a period of time without substantial rainfall or snowfall from one year to the next. Drought can also be defined as the cumulative impacts of several dry years or a deficiency of precipitation over an extended period of time, which in turn results in water shortages for some activity, group, or environmental function. A hydrological drought is caused by deficiencies in surface and subsurface water supplies. A socioeconomic drought impacts the health, well-being, and quality of life or starts to have an adverse impact on a region. Drought is a normal, recurrent feature of climate and occurs almost everywhere.

Earthquake: An earthquake is defined as a sudden slip on a fault, volcanic or magmatic activity, and sudden stress changes in the earth that result in ground shaking and radiated seismic energy. Earthquakes can last from a few seconds to over 5 minutes, and have been known to occur as a series of tremors over a period of several days. The actual movement of the ground in an earthquake is seldom the direct cause of injury or death. Casualties may result from falling objects and debris as shocks shake, damage, or demolish buildings and other structures.

Exposure: Exposure is defined as the number and dollar value of assets considered to be at risk during the occurrence of a specific hazard.

Extent: The extent is the size of an area affected by a hazard.

Fire Behavior: Fire behavior refers to the physical characteristics of a fire and is a function of the interaction between the fuel characteristics (such as type of vegetation and structures that could burn), topography, and weather. Variables that affect fire behavior include the rate of spread, intensity, fuel consumption, and fire type (such as underbrush versus crown fire).

Fire Frequency: Fire frequency is the broad measure of the rate of fire occurrence in a particular area. An estimate of the areas most likely to burn is based on past fire history or fire rotation in the area, fuel conditions, weather, ignition sources (such as human or lightning), fire suppression response, and other factors.

Firewise: National Fire Protection Association program encouraging local solutions for wildfire safety by involving homeowners, community leaders, planners, developers, firefighters and others in the effort to protect people and property from the risk of wildfire. The program is co-sponsored by the U.S. Forest Service, the U.S. Department of the Interior, and the National Association of State Foresters.

Flash Flood: A flash flood occurs with little or no warning when water levels rise at an extremely fast rate

Flood Insurance Rate Map (FIRM): FIRMs are the official maps on which the Federal Emergency Management Agency (FEMA) has delineated the Special Flood Hazard Area (SFHA).

Flood Insurance Study: A report published by the Federal Insurance and Mitigation Administration for a community in conjunction with the community's Flood Insurance rate Map. The study contains such background data as the base flood discharges and water surface elevations that were used to prepare the FIRM. In most cases, a community FIRM with detailed mapping will have a corresponding flood insurance study.

Floodplain: Any land area susceptible to being inundated by flood waters from any source. A flood insurance rate map identifies most, but not necessarily all, of a community's floodplain as the Special Flood Hazard Area (SFHA).

Floodway: Floodways are areas within a floodplain that are reserved for the purpose of conveying flood discharge without increasing the base flood elevation more than 1 foot. Generally speaking, no development is allowed in floodways, as any structures located there would block the flow of floodwaters.

Floodway Fringe: Floodway fringe areas are located in the floodplain but outside of the floodway. Some development is generally allowed in these areas, with a variety of restrictions. On maps that have identified and delineated a floodway, this would be the area beyond the floodway boundary that can be subject to different regulations.

Freeboard: Freeboard is the margin of safety added to the base flood elevation.

Frequency: For the purposes of this plan, frequency refers to how often a hazard of specific magnitude, duration, and/or extent is expected to occur on average. Statistically, a hazard with a 100-year frequency is expected to occur about once every 100 years on average and has a 1 percent chance of occurring any given year. Frequency reliability varies depending on the type of hazard considered.

Fujita Scale of Tornado Intensity: Tornado wind speeds are sometimes estimated on the basis of wind speed and damage sustained using the Fujita Scale. The scale rates the intensity or severity of tornado events using numeric values from F0 to F5 based on tornado wind speed and damage. An F0 tornado (wind speed less than 73 miles per hour (mph)) indicates minimal damage (such as broken tree limbs), and an F5 tornado (wind speeds of 261 to 318 mph) indicates severe damage.

Goal: A goal is a general guideline that explains what is to be achieved. Goals are usually broad-based, long-term, policy-type statements and represent global visions. Goals help define the benefits that a plan is trying to achieve. The success of a hazard mitigation plan is measured by the degree to which its goals have been met (that is, by the actual benefits in terms of actual hazard mitigation).

Geographic Information System (GIS): GIS is a computer software application that relates data regarding physical and other features on the earth to a database for mapping and analysis.

Hazard: A hazard is a source of potential danger or adverse condition that could harm people and/or cause property damage.

Hazard Mitigation Grant Program (HMGP): Authorized under Section 202 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, the HMGP is administered by FEMA and provides grants to states, tribes and local governments to implement hazard mitigation actions after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to disasters and to enable mitigation activities to be implemented as a community recovers from a disaster

Hazards U.S. Multi-Hazard (Hazus-MH) Loss Estimation Program: Hazus-MH is a GIS-based program used to support the development of risk assessments as required under the DMA. The Hazus-MH software program assesses risk in a quantitative manner to estimate damages and losses associated with natural hazards. Hazus-MH is FEMA’s nationally applicable, standardized methodology and software program and contains modules for estimating potential losses from earthquakes, floods and wind hazards. Hazus-MH has also been used to assess vulnerability (exposure) for other hazards.

Hydraulics: Hydraulics is the branch of science or engineering that addresses fluids (especially water) in motion in rivers or canals, works and machinery for conducting or raising water, the use of water as a prime mover, and other fluid-related areas.

Hydrology: Hydrology is the analysis of waters of the earth. For example, a flood discharge estimate is developed by conducting a hydrologic study.

Intensity: For the purposes of this plan, intensity refers to the measure of the effects of a hazard.

Inventory: The assets identified in a study region comprise an inventory. Inventories include assets that could be lost when a disaster occurs and community resources are at risk. Assets include people, buildings, transportation, and other valued community resources.

Landslide: Landslides can be described as the sliding movement of masses of loosened rock and soil down a hillside or slope. Fundamentally, slope failures occur when the strength of the soils forming the slope exceeds the pressure, such as weight or saturation, acting upon them.

Lightning: Lightning is an electrical discharge resulting from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a “bolt,” usually within or between clouds and the ground. A bolt of lightning instantaneously reaches temperatures approaching 50,000°F. The rapid heating and cooling of air near lightning causes thunder. Lightning is a major threat during thunderstorms. In the United States, 75 to 100 Americans are struck and killed by lightning each year (see <http://www.fema.gov/hazard/thunderstorms/thunder.shtm>).

Liquefaction: Liquefaction is the complete failure of soils, occurring when soils lose shear strength and flow horizontally. It is most likely to occur in fine grain sands and silts, which behave like viscous fluids when liquefaction occurs. This situation is extremely hazardous to development on the soils that liquefy, and generally results in extreme property damage and threats to life and safety.

Local Government: Any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity.

Magnitude: Magnitude is the measure of the strength of an earthquake, and is typically measured by the Richter scale. As an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value.

Mass movement: A collective term for landslides, mudflows, debris flows, sinkholes and lahars.

Mitigation: A preventive action that can be taken in advance of an event that will reduce or eliminate the risk to life or property.

Mitigation Actions: Mitigation actions are specific actions to achieve goals and objectives that minimize the effects from a disaster and reduce the loss of life and property.

Objective: For the purposes of this plan, an objective is defined as a short-term aim that, when combined with other objectives, forms a strategy or course of action to meet a goal. Unlike goals, objectives are specific and measurable.

Peak Ground Acceleration: Peak Ground Acceleration (PGA) is a measure of the highest amplitude of ground shaking that accompanies an earthquake, based on a percentage of the force of gravity.

Preparedness: Preparedness refers to actions that strengthen the capability of government, citizens and communities to respond to disasters.

Presidential Disaster Declaration: These declarations are typically made for events that cause more damage than state and local governments and resources can handle without federal government assistance. Generally, no specific dollar loss threshold has been established for such declarations. A Presidential Disaster Declaration puts into motion long-term federal recovery programs, some of which are matched by state programs, designed to help disaster victims, businesses and public entities.

Probability of Occurrence: The probability of occurrence is a statistical measure or estimate of the likelihood that a hazard will occur. This probability is generally based on past hazard events in the area and a forecast of events that could occur in the future. A probability factor based on yearly values of occurrence is used to estimate probability of occurrence.

Repetitive Loss Property: Any NFIP-insured property that, since 1978 and regardless of any changes of ownership during that period, has experienced:

- Four or more paid flood losses in excess of \$1000; or
- Two paid flood losses in excess of \$1000 within any 10-year period since 1978 or
- Three or more paid losses that equal or exceed the current value of the insured property.

Return Period (or Mean Return Period): This term refers to the average period of time in years between occurrences of a particular hazard (equal to the inverse of the annual frequency of occurrence).

Riverine: Of or produced by a river. Riverine floodplains have readily identifiable channels. Floodway maps can only be prepared for riverine floodplains.

Risk: Risk is the estimated impact that a hazard would have on people, services, facilities and structures in a community. Risk measures the likelihood of a hazard occurring and resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate or low likelihood of sustaining damage above a particular threshold due to occurrence of a specific type of hazard. Risk also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

Risk Assessment: Risk assessment is the process of measuring potential loss of life, personal injury, economic injury, and property damage resulting from hazards. This process assesses the vulnerability of people, buildings and infrastructure to hazards and focuses on (1) hazard identification; (2) impacts of hazards on physical, social and economic assets; (3) vulnerability identification; and (4) estimates of the cost of damage or costs that could be avoided through mitigation.

Risk Ranking: This ranking serves two purposes, first to describe the probability that a hazard will occur, and second to describe the impact a hazard will have on people, property and the economy. Risk estimates for the City are based on the methodology that the City used to prepare the risk assessment for this plan. The following equation shows the risk ranking calculation:

$$\text{Risk Ranking} = \text{Probability} + \text{Impact (people + property + economy)}$$

Robert T. Stafford Act: The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 100-107, was signed into law on November 23, 1988. This law amended the Disaster Relief Act of 1974, Public Law 93-288. The Stafford Act is the statutory authority for most federal disaster response activities, especially as they pertain to FEMA and its programs.

Sinkhole: A collapse depression in the ground with no visible outlet. Its drainage is subterranean. It is commonly vertical-sided or funnel-shaped.

Special Flood Hazard Area: The base floodplain delineated on a Flood Insurance Rate Map. The SFHA is mapped as a Zone A in riverine situations and zone V in coastal situations. The SFHA may or may not encompass all of a community's flood problems

Stakeholder: Business leaders, civic groups, academia, non-profit organizations, major employers, managers of critical facilities, farmers, developers, special purpose districts, and others whose actions could impact hazard mitigation.

Stream Bank Erosion: Stream bank erosion is common along rivers, streams and drains where banks have been eroded, sloughed or undercut. However, it is important to remember that a stream is a dynamic and constantly changing system. It is natural for a stream to want to meander, so not all eroding banks are "bad" and in need of repair. Generally, stream bank erosion becomes a problem where development has limited the meandering nature of streams, where streams have been channelized, or where stream bank structures (like bridges, culverts, etc.) are located in places where they can actually cause damage to downstream areas. Stabilizing these areas can help protect watercourses from continued sedimentation, damage to adjacent land uses, control unwanted meander, and improvement of habitat for fish and wildlife.

Steep Slope: Different communities and agencies define it differently, depending on what it is being applied to, but generally a steep slope is a slope in which the percent slope equals or exceeds 25%. For this study, steep slope is defined as slopes greater than 33%.

Sustainable Hazard Mitigation: This concept includes the sound management of natural resources, local economic and social resiliency, and the recognition that hazards and mitigation must be understood in the largest possible social and economic context.

Thunderstorm: A thunderstorm is a storm with lightning and thunder produced by cumulonimbus clouds. Thunderstorms usually produce gusty winds, heavy rains, and sometimes hail. Thunderstorms are usually short in duration (seldom more than 2 hours). Heavy rains associated with thunderstorms can lead to flash flooding during the wet or dry seasons.

Tornado: A tornado is a violently rotating column of air extending between and in contact with a cloud and the surface of the earth. Tornadoes are often (but not always) visible as funnel clouds. On a local scale, tornadoes are the most intense of all atmospheric circulations, and winds can reach destructive speeds of more than 300 mph. A tornado's vortex is typically a several hundred feet in diameter, and damage paths can be up to 1 mile wide and 50 miles long.

Vulnerability: Vulnerability describes how exposed or susceptible an asset is to damage. Vulnerability depends on an asset's construction and contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power. Flooding of an electric substation would affect not only the substation itself but businesses as well. Often, indirect effects can be much more widespread and damaging than direct effects.

Watershed: A watershed is an area that drains downgradient from areas of higher land to areas of lower land to the lowest point, a common drainage basin.

Wildfire: These terms refer to any uncontrolled fire occurring on undeveloped land that requires fire suppression. The potential for wildfire is influenced by three factors: the presence of fuel, topography and air mass. Fuel can include living and dead vegetation on the ground, along the surface as brush and small trees, and in the air such as tree canopies. Topography includes both slope and elevation. Air mass includes temperature, relative humidity, wind speed and direction, cloud cover, precipitation amount, duration, and the stability of the atmosphere at the time of the fire. Wildfires can be ignited by lightning and, most frequently, by human activity including smoking, campfires, equipment use and arson.

Wildland-Urban Interface Area: The geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels.

Windstorm: Windstorms are generally short-duration events involving straight-line winds or gusts exceeding 50 mph. These gusts can produce winds of sufficient strength to cause property damage. Windstorms are especially dangerous in areas with significant tree stands, exposed property, poorly constructed buildings, mobile homes (manufactured housing units), major infrastructure, and aboveground utility lines. A windstorm can topple trees and power lines; cause damage to residential, commercial, critical facilities; and leave tons of debris in its wake.

Zoning Ordinance: The zoning ordinance designates allowable land use and intensities for a local jurisdiction. Zoning ordinances consist of two components: a zoning text and a zoning map.

