



HIDEOUT, UTAH TOWN COUNCIL REGULAR MEETING AND CONTINUED PUBLIC HEARINGS

March 10, 2022

Agenda

PUBLIC NOTICE IS HEREBY GIVEN that the Town Council of Hideout, Utah will hold its Regular Meeting and Public Hearing electronically for the purposes and at the times as described below on Thursday, March 10, 2022.

This meeting will be an electronic meeting without an anchor location pursuant to Mayor Rubin's February 8, 2022 No Anchor Site Determination Letter.

All public meetings are available via ZOOM conference call and YouTube Live.

Interested parties may join by dialing in as follows:

Zoom Meeting URL: <https://zoom.us/j/4356594739> To join by telephone dial: US: +1 408 638 0986

Meeting ID: 435 659 4739

YouTube Live Channel: <https://www.youtube.com/channel/UCKdWnJad-WwvcAK75QjRb1w/>

Regular Meeting and Continued Public Hearings

6:00 PM

I. Call to Order

1. No Anchor Site Determination Letter

II. Roll Call

III. Approval of Council Minutes

1. December 9, 2021 Town Council Meeting Minutes DRAFT

IV. Public Input - Floor open for any attendee to speak on items not listed on the agenda

V. Public Hearing Items - **(These items will be continued to a future date. No discussion will take place at this meeting)**

1. Continued discussion and possible approval regarding an amendment of the official Town of Hideout Zoning Map to rezone parcels 00-0020-8181, 00-0020-8182, 00-0020-8184, and 00-0020-8185 (the "Boulders at Hideout Development") from Mountain (M) zone to Neighborhood Mixed Use (NMU), R20 (Residential 20), R6 (Residential 6), and R3 (Residential 3)
2. Continued discussion and possible approval of a Master Development Agreement (MDA) regarding the Boulders at Hideout Development

VI. Agenda Items

1. Discussion and possible adoption of Resolution 2022-R-XX regarding the updated Mountainland Association of Governments (MAG) Pre-Disaster Mitigation Plan for Summit, Utah and Wasatch Counties
2. Discussion and possible adoption of an Ordinance which will adopt the 2016 Wildland/Urban Interface Code and its Appendix C
3. Discussion and possible approval of a reallocation of funds for the budget ending fiscal year 6/30/2023
4. Discussion and possible adoption of a Public Infrastructure District (PID) policy
5. Possible adoption of Resolution 2022-R-XX regarding changes to the water meter fees, business licenses, and Public Infrastructure District (PID) application fee

VII. Closed Executive Session - Discussion of pending or reasonably imminent litigation, personnel matters, and/or sale or acquisition of real property as needed

VIII. Meeting Adjournment

Pursuant to the Americans with Disabilities Act, individuals needing special accommodations during the meeting should notify the Mayor or Town Clerk at 435-659-4739 at least 24 hours prior to the meeting.

HIDEOUT TOWN COUNCIL

10860 N. Hideout Trail

Hideout, UT 84036

Phone: 435-659-4739

Posted 3/9/2022



February 8, 2022

DETERMINATION REGARDING CONDUCTING TOWN OF HIDEOUT PUBLIC MEETINGS
WITHOUT AN ANCHOR LOCATION

The Mayor of the Town of Hideout hereby determines that conducting a meeting with an anchor location presents a substantial risk to the health and safety of those who may be present at the anchor location pursuant to Utah Code section 52-4-207(5) and Hideout Town Ordinance 2020-03. The facts upon which this determination is based include: The seven-day rolling percent and number of positive COVID-19 cases in Utah has been over 35.76% of those tested since February 2, 2022. The seven-day average number of positive cases has been, on average, 2172.7 per day since February 7, 2022.

This meeting will not have a physical anchor location. All participants will connect remotely. All public meetings are available via YouTube Live Stream on the Hideout, Utah YouTube channel at: <https://www.youtube.com/channel/UCKdWnJad-WwvcAK75QjRb1w/>

Interested parties may join by dialing in as follows:

Meeting URL: <https://zoom.us/j/4356594739>

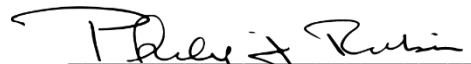
To join by telephone dial: US: +1 408-638-0986

Meeting ID: 4356594739

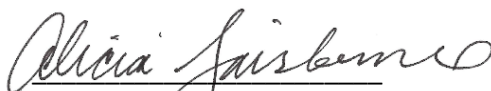
Additionally, comments may be emailed to hideoututah@hideoututah.gov. Emailed comments received prior to the scheduled meeting will be considered by Council and entered into public record.

This determination will expire in 30 days on March 10, 2022.

BY:


Phil Rubin, Mayor

ATTEST:


Alicia Fairbourne, Town Clerk



Minutes
Town of Hideout
Town Council Regular Meeting and Continued Public Hearing
December 09, 2021

The Town Council of Hideout, Wasatch County, Utah met in Regular Meeting and Continued Public Hearing on December 9, 2021 at 6:15 p.m. electronically via Zoom due to the ongoing COVID-19 pandemic.

Regular Meeting and Continued Public Hearing

I. Call to Order

2. Mayor Rubin's No Anchor Site Determination Letter

Mayor Rubin called the meeting to order at 6:21 p.m. and reminded participants there was no anchor site due to the ongoing COVID-19 pandemic.

II. Roll Call

Present: Mayor Phil Rubin
 Council Member Chris Baier
 Council Member Carol Haselton
 Council Member Sheri Jacobs
 Council Member Ralph Severini

Excused: Council Member Bob Nadelberg

Staff Present: Town Attorneys Polly McLean and Cameron Platt
 Town Administrator Jan McCosh
 Town Planner Thomas Eddington
 Director of Engineering and Public Works Timm Dixon
 Public Works Director Daniel Allen
 Town Engineers Ryan Taylor and Dillon Bliler
 Town Clerk Alicia Fairbourne
 Town Treasurer Wes Bingham

Others Present: Troy Morgan, Abi Kau, Heather Kruse, Ashley Burr, Paula Eldredge, Jack Walkenhorst, Nate Brockbank, Kathleen Shepley, Glen Gabler, Wasatch County Sheriff Jared Rigby, Bruce Woelfle, Jonathan Gunn, and others who may have logged in using a partial name or using only a phone number.

III. Approval of Council Minutes

1. **October 16, 2020 Meeting Minutes DRAFT**

There were no changes or corrections made to the October 16, 2020 Meeting Minutes.

2. **May 13, 2021 Meeting Minutes DRAFT**

Council Member Baier noted the following corrections:

- Page 3, line 13 should be a “community clean up event”
- Page 3, lines 22-23, “She asked Mr. Fields to be specific regarding any accusations in the future.”

3. **June 02, 2021 Meeting Minutes DRAFT**

There were no changes or corrections made to the June 02, 2021 Meeting Minutes.

4. **June 08, 2021 Silver Meadows Presentation Minutes DRAFT**

There were no changes or corrections made to the June 08, 2021 Silver Meadows Presentation Minutes.

5. **June 29, 2021 Board of Canvassers Meeting Minutes DRAFT**

There were no changes or corrections made to the June 29, 2021 Board of Canvassers Meeting Minutes.

Motion: Council Member Severini moved to approve the October 16, 2020; May 13, 2021; June 2, 2021; June 8, 2021; and June 29, 2021 minutes with the mentioned corrections to the May 13, 2021 minutes. Council Member Baier made the second. Voting Yea: Council Members Baier, Haselton, and Severini. Abstaining: Council Member Jacobs. Motion carried.

With respect to Sheriff Rigby’s time constraints, Mayor Rubin moved to Agenda Item number 1 prior to addressing the Public Hearing items.

Agenda Item:

1. **Update from Wasatch County Sheriff's Office regarding first year of service**

Mayor Rubin welcomed Sheriff Rigby from the Wasatch County Sheriff's Office. Sheriff Rigby presented a statistical report on the number of calls Officers had responded to within Hideout. He noted the Sheriff’s Office had worked approximately fifty-seven (57) hours of service in addition to the minimum level of service provided for citizens of Wasatch County. Council Member Severini inquired if any issues related to the roundabout were included in the spreadsheet. Sheriff Rigby explained it could be captured in another category, or it might not have resulted in a citation. Mayor Rubin reminded Council there were three-way cameras installed in the area which tracked activity. Violators of roundabout traffic laws were personally contacted prior to notifying the Sheriff’s Office.

Mayor Rubin stated Council would review the contract with the Sheriff's Office and discuss renewal in a future meeting.

Mayor Rubin proceeded to the Public Hearing portion of the agenda.

IV. Public Hearing Items

1. Review and possible approval regarding the final Lakeview Estates Subdivision and Ordinance

Town Planner Thomas Eddington recounted to Council the Lakeview Estates Subdivision had not been recorded within the six-month time frame per Hideout Town Code. Although there were no changes in the Subdivision, Town Code had been amended since the approval date and the developer agreed to make the changes to the Subdivision to comply with Town Code. Mr. Eddington reviewed the agreed upon changes, which included:

- 10.08.06(C) Monotony clause and 10.08.08 Design Standards: Major subdivisions (6 lots or more) shall not have greater than twenty percent (20%) of the structures with the same elevation and, in no case, shall any two (2) similar structures be located adjacent to each other or directly across the street. The differentiation of each structure shall be a combination of unique roof lines, garage step-backs, entry/porch location and canopy, fenestration, building materials and colors.
- 10.08.14 Roads and Road Requirements: T-O Engineering reviewed the roads and confirmed the Applicant met the road requirement of twenty-six feet (26') of pavement width.
- 10.08.20 Drainage and Storm Water Facilities: T-O Engineering reviewed the proposed stormwater infrastructure and confirmed the Applicant met the requirement.
- 10.08.34 Public Space Requirements: Lakeview Estates is required to have a minimum of 2.07 acres of public/open space. The Applicant agreed to approximately 8.04 acres of public/open space, broken down as follows:
 - Phase 1: None
 - Phase 2: 5.30 acres with a park including a ball court (plus 1.80 acres for stormwater retention; not applicable toward public/open space calculations)
 - Phase 3: 3.10 acres
 - The subdivision was connected via a trail system

Mr. Eddington noted the Town had placed a deed restriction on Lakeview Estates for twenty-five-foot (25') and thirty-foot (30') setbacks. However, the Applicant worked with Staff to reduce the number of retaining walls located throughout the subdivision, which resulted in the reduction of the setbacks to twenty feet (20') and twenty-five feet (25').

Council had no questions for the Applicant, and therefore, Mayor Rubin opened the floor for public input at 7:01 p.m. There being no questions from the public, Mayor Rubin closed public input at 7:02 p.m. and proceeded to discuss agenda item number 6 regarding the approval of possible changes on the Lakeview Estates Deed Restriction.

Town Attorney Polly McLean explained in 2019, the owners of the property entered into a deed restriction with the Town, which primarily addressed a rezone of the property from Mountain (M) to Residential Medium Density (RMD). She further explained with the RMD classification, additional density was allowed, however, limitations regarding building height and front setback / driveway length were enacted. The Council had previously approved the reduced setback length, however, the deed restriction was not amended or recorded to reflect the change. Mr. Eddington noted as building permits were issued, Town Engineers would make an effort to lengthen the setbacks as much as possible; twenty feet (20') and twenty-five feet (25') were a minimum.

There were no questions from Council regarding the amended deed restriction or subdivision approval of Lakeview Estates.

Motion: Council Member Severini made the motion to approve the Lakeview Estates final subdivision. Council Member Haselton made the second. Voting Yea: Council Members Baier, Haselton, Severini, and Jacobs. None opposed. Motion carried.

Mayor Rubin asked for a motion to approve the modified deed restriction to twenty-foot (20') setbacks.

Motion: Council Member Severini made the motion to approve the modified Lakeview Deed Restriction to twenty-foot (20') setbacks. Council Member Haselton made the second. Voting Yea: Council Members Baier, Haselton, Severini, and Jacobs. None opposed. Motion carried.

2. Review and possible approval of the Deer Waters Phase 4 Subdivision and Ordinance

Mr. Eddington explained Deer Waters Phase 4 was submitted with Phase 3, however, Phase 4 was delayed and did not get recorded within the six-month time frame per Hideout Municipal Code. Phase 4 was vested under the Code as of April, 2021 and had no additional requirements. He noted the park, which was to be completed by November 30, 2021 per the previously approved Ordinance, was not completed. He recommended Council approve an extension for completion of the park to June 30, 2022. He further noted the Master Development Agreement (MDA) required the dedication of the Jordanelle Special Service District (JSSD) parcel upon recordation of the final plat.

At 7:15 p.m., Mayor Rubin opened the floor to public input. Council addressed an email received by town resident Brett Rutter regarding the proposed fencing surrounding the pickleball court. He expressed concern regarding the height of the fence, noting the standards for backstops set by the USA Pickleball Association was at minimum ten feet (10'). Discussion ensued. It was determined the Developer and Mr. Eddington would work together to decide on an acceptable design and height.

Developer Nate Brockbank stated the JSSD parcel noted above was associated to the Military Installation Development Authority (MIDA) project which caused delays in the dedication of the land to the Town. Mayor Rubin agreed the JSSD parcel would not be required to be dedicated to the Town upon recordation of the Deer Waters Phase 4 plat map, however, it would be dedicated in the future.

The completion date for the park was discussed and determined to be October 31, 2022.

There were no further public comments.

Mayor Rubin reiterated the changes of the proposed Ordinance, which included:

- Changed “National Pickleball Association” to “USA Pickleball Association”
- Remove the wording “Phase 3” where appropriate in the Ordinance
- Add language regarding the height and color of the fencing surrounding the pickleball courts would be finalized between the Town Planner and Developer
- The date of completion of the park was October 31, 2022

Motion: Council Member Severini moved to approve the Deer Waters Phase 4 final subdivision with the noted modifications to the Ordinance. Council Member Jacobs made the second. Voting Yea: Council Members Baier, Haselton, Jacobs, and Severini. None opposed. Motion carried.

3. Review and possible adoption of the Parks, Open Space and Trails Plan as part of the General Plan

Mr. Eddington presented a report regarding the Parks, Open Space and Trails (POST) Plan. The POST Plan would become an amendment to the General Plan if adopted. The Town contracted with Integrated Planning & Design to create the POST Plan. A Steering Committee was created to help identify existing parks, open spaces and trails within the Town, rank priorities, and guide a plan for implementation of these priorities. The Committee also aided in obtaining project funding through grants.

The priorities identified were:

1. Ensure developer compliance with previously approved subdivisions
2. Finalize bike and pedestrian trails (Deer Springs and Rustler plat)
3. Collaborate with the counties and nearby communities to build the spine on SR-248 and coordinate efforts with Utah Department of Transportation (UDOT)
4. Purchase land for a park near the Town Center roundabout and tie into the trail in Dead Man’s Gulch which connects to Jordanelle State Park
5. Establish a connection to Jordanelle State Park
6. Connect the ‘last mile’ for all constructed trails and parks
7. Use conservation easements as a partnership tool to protect the land under power lines for parks/trails and explore similar opportunities on the Golf Course

Council Member Baier expressed her desire to connect the east and west sides of the Town by a pedestrian access either over or under SR-248. Mayor Rubin discussed the Town was in a Corridor Agreement with UDOT to provide additional stoplights along SR-248, as well as a pedestrian over or under pass.

Council commended the POST Committee and Mr. Eddington on the POST Plan and expressed that it was an excellent plan. Mayor Rubin noted several graphics were not updated and asked Mr. Eddington to update those graphics accordingly.

There being no further comments from the Council, Mayor Rubin opened the floor for public comment at 7:57 p.m. There were no comments from the public. Mayor Rubin closed public comment at 7:58 p.m.

Motion: Council Member Haselton moved to adopt the Parks, Open Space, and Trails Plan as part of the General Plan with the noted corrections. Council Member Severini made the second. Voting Yea: Council Members Baier, Haselton, Jacobs, and Severini. None opposed. Motion Carried.

4. Continued discussion and possible approval of the Official Zoning Map of the Town of Hideout

Mr. Eddington presented the updated Zoning Map and reviewed the request Mayor Rubin had regarding the economic ramifications of designating the Town-owned land south of Deer Springs and the Ross Creek entrance as a Neighborhood Commercial (NC) Zone. Mr. Eddington confirmed with the Wasatch County Assessor the Town was exempt from property taxes regardless of zoning designation. He noted, however, because the land fell under the MIDA overlay, the NC Zone was removed on the proposed Zoning Map but could be added once the details of the impact MIDA evolved. Council Member Severini corrected the zoning designation, stating it should be Neighborhood Mixed Use (NMU) to follow the Town Code should it be amended in the future. Mr. Eddington agreed, stating the NC Zone was replaced with either NMU or Commercial (C) Zone designations per current Town Code.

At 8:05 p.m., Mayor Rubin opened the floor for public comment. Town resident Jonathan Gunn spoke, stating the Staff Report (provided in the materials) noted a right-of-way designation clarification. He inquired if the right-of-way was only to be used for the purposes of emergency access or local government use and was not intended for general public use. Mayor Rubin clarified, stating public pedestrian use would be allowed, but vehicular traffic was limited to public utility vehicles, emergency personnel, or local government service vehicles.

There being no further comments from the public, Mayor Rubin closed public input at 8:08 p.m.

Motion: Council Member Severini moved to adopt the Hideout Zoning Map as proposed. Council Member Jacobs made the second. Voting Yea: Council Members Baier, Haselton, Jacobs, and Severini. None opposed. Motion carried.

V. Public Input - Floor open for any attendee to speak on items not listed on the agenda

At 8:11 p.m., Mayor Rubin opened the floor for public input.

Bruce Woelfle inquired if the dirt which was being dumped next to the home on the north side of the KLAIM development would be seeded. Mayor Rubin stated it was required to be stabilized and reseeded upon completion. The Town's Public Works Department Staff was working with the property owner and KLAIM Developers to determine when it would be completed.

Mr. Woelfle asked if there was a time frame of when the dirt being hauled to the Shoreline Development was to be completed, to which Mayor Rubin replied the work was completed for the season but would resume for future phases of the Shoreline Subdivision. Mr. Woelfle inquired if an Ordinance was in place prohibiting changing the topography of the Town. Mayor Rubin explained an Ordinance was in place, however, the Shoreline Subdivision was vested under prior Town Code before the Ordinance was adopted. Mr. Woelfle asked if the dirt was tested for

contaminants and was clean fill. Director of Engineering and Public Works Timm Dixon stated an Engineering Report was required to be submitted to the Town, which included a geotechnical report of the dirt. He stated mechanisms were in place to ensure the fill dirt was clean of contaminants. Shoreline Developer Glen Gabler confirmed the dirt was inspected by geotechnical engineers and was clean.

There being no further public comments, Mayor Rubin closed public input at 8:18 p.m.

VI. Agenda Items

1. Update from Wasatch County Sheriff's Office regarding first year of service

(Item #1 was discussed previously during the meeting)

2. Introductions of the Economic Development Committee and feedback from Council

Council Member Severini introduced the Economic Development Committee, which included Craig Dupper, Scott Davis, and Keith Marmer. Town Administrator Jan McCosh provided further input regarding each member and noted the exceptional qualifications and skills of the Members. She explained the Members were investigating sustainable cash flows and ways to maximize the funding opportunities available to the Town.

Council Member Severini noted Mr. Dupper had initiated a Mission Statement which included the Committee's top four goals. The Mission Statement would be distributed to Council and, upon approval, posted to the Town's website. Ms. McCosh suggested adding a page for the Committee's progress and contact information.

3. Update on MIDA

Heather Kruse and Ashley Burr, representatives from MIDA, presented project updates for MIDA, including the groundbreaking for the Mayflower Village; SkyRidge Mountain Community and completion of Jordanelle Parkway; five homes completed in SkyRidge with another twelve homes projected for completion by the end of the year; the North and South Portals were projected to be completed by Spring, 2022; and the grading for the Mayflower and Pioche Village Apartment Buildings was near completion.

Mayor Rubin discussed questions raised regarding the two buildings constructed along HWY-40 and asked for clarification on the intended use of the buildings. Ms. Kruse stated they were two of four buildings part of the Pioche Village Apartments and were designated as buildings A and D. There were over four hundred units within the four buildings. Each building had a projected completion timeline of twenty-four (24) months after the start of construction.

Mayor Rubin asked for clarification regarding the use of the North and South Portals. Ms. Kruse stated they would accommodate both pedestrian and vehicular traffic. The Portals were substantially complete but had additional work which was scheduled to be completed in the Spring. She noted the connector road from the North Portal to the frontage road and Jordanelle Parkway would be designed and constructed by MIDA. The South Portal connector road was projected to be started in 2022.

Ms. Kruse stated MIDA was working with UDOT and Wasatch County regarding the west side of the frontage road to include a connection piece on the North Portal which would connect into Deer Hollow Road. She further discussed the details of the trails which were constructed within the development.

4. Discussion regarding adoption of the 2016 Wildland/Urban Interface Code and Appendix C

Mayor Rubin presented the Wildland/Urban Interface Code (WUI) and reminded Council no action would be taken during the meeting. Ms. McLean explained a more recent WUI had been drafted but had not been adopted by the State. She discussed a worksheet, identified as Appendix C, which required an assessment to be performed to determine the fire hazard severity.

District Fire Warden Troy Morgan from Wasatch County Fire District explained the purpose of Appendix C was to keep the score to a moderate level and lessen the requirement of defensible space. The code would require trees to be a minimum of ten feet (10') away from a structure. Mayor Rubin expressed concern regarding the close proximity of the building lines and lot lines throughout the Town. Council Member Severini noted the Zoning Ordinance adopted in July, 2020 provided greater distance between the side setbacks.

Council Member Severini inquired if the WUI applied to existing homes or if it was limited to new homes. Mr. Morgan explained the code was not retroactive, rather, a landscaping plan showing the existing and proposed vegetation and Appendix C would be completed and submitted with each new building permit application. The Wasatch County Fire District would complete an on-site inspection prior to approving the building permit.

Mayor Rubin reminded the Council no action was to be taken during this meeting. The WUI would be discussed and reviewed in upcoming meetings.

5. Discussion and possible approval of an extension beyond the six-month timeline noted in Ordinance 2021-O-09 to record Shoreline Phases 2A (Amended) and 3 plat maps

Mayor Rubin explained the Shoreline Phases 2A (Amended) and 3 had not been recorded due to delays in obtaining construction materials and the Developer was asking for a six (6)-month extension to record the subdivision plats.

Developer Glen Gabler noted the sewer was completed and had passed inspection. The delay had to do with the manholes from the manufacturer. All materials were on site and Mr. Gabler had hoped to have the water and storm line completed within the next month and the curb and asphalt by the Spring.

Motion: Council Member Baier moved to approve a request for a six-month extension to record the final plat maps for Shoreline Phases 2A (Amended) and 3. Council Member Severini made the second. Voting Yea: Council Members Baier, Haselton, Jacobs, and Severini. None opposed. Motion carried.

6. Discussion and possible approval of changes to the deed restrictions for the Lakeview Estates Subdivision

(This item was discussed with Public Hearing Item number 1.)

7. Presentation of fiscal first quarter financials

(This item was deferred to the January meeting.)

8. Consideration and possible adoption of the Hideout Sewer Management Plan

Council had discussed the Sewer Management Plan in a previous meeting however, Council had requested additional time to review the Plan in detail prior to adoption. Ms. McLean stated she had consulted with the Utah Local Governments Trust (ULGT) regarding the No-Fault Sewage Backup Claims Program section and revised some language from the previous version.

Abi Kao with T-O Engineers provided an overview summary of the Plan. Town Engineer Ryan Taylor noted the document was intended to be revised and updated on a regular basis. Mayor Rubin pointed out Hideout had made great improvements regarding sewer line maintenance. Ms. Kao stated mappings and inspection videos were available for those who had access to the Geographic Information Systems (GIS).

The schedule for cleaning the pipes was discussed. Ms. Kao reviewed the sewer system cleaning schedule which showed the sections of pipes and schedule to be cleaned in the forthcoming years. Mayor Rubin stated the intent was to clean each section within the Town on a rotating schedule every five (5) years. Mr. Taylor noted the yellow sections of the cleaning schedule may need to be cleaned more frequently due to the slopes, conditions, and flows. Further discussion ensued.

Motion: Council Member Severini moved to adopt the Hideout Sewer Management Plan. Council Member Haselton made the second. Voting Yea: Council Members Baier, Haselton, Jacobs, and Severini. None opposed. Motion carried.

9. Discussion and possible approval of Ordinance 2021-O-15 amendments made to Hideout Town Code Chapter 7.18, Winter Parking for Vehicles and Snow Removal from Streets

Mr. Dixon and Town Attorney Cameron Platt discussed the proposed changes to the Ordinance. Council Member Baier noted the dates on the signs installed within the Town did not match the dates on the proposed Ordinance. Mr. Dixon noted the discrepancy and would correct the Ordinance. As in Section 7.18.080, Mayor Rubin expressed concern of additional Sections of Code which referenced the time frame for snow removal and stated those Sections would also need to be updated. Mr. Platt stated he would verify if that were the case.

Council Member Jacobs was concerned with Sections 7.18.140 and 7.18.150 regarding the fire hydrants to be uncovered and locations to be marked by the resident or landowner. Mr. Dixon explained the Sections mentioned related to fire hydrants located on private land. Mayor Rubin further explained the Town's process for notifying the resident, landowner, or developer, stating Staff would attempt to make yearly contact in order to provide notification of the requirement. Council Member Jacobs suggested for those hydrants located on private land, a letter should also be sent to those owners. Council agreed.

Motion: Council Member Baier moved to approve the Ordinance amending Hideout Town Code Chapter 7.18, Winter Parking for Vehicles and Snow Removal from Streets with the date corrections as mentioned. Council Member Jacobs made the second. Voting Yea: Council Members Baier, Haselton, Jacobs, and Severini. None opposed. Motion carried.

10. Discussion on issuing a Request for Proposals regarding a fee study for water, sewer, storm drain, transportation, trails and community development fees

Mayor Rubin provided information regarding a Request for Proposals (RFP) for a fee study to understand if the Town was inadvertently subsidizing the cost of operating and maintaining the water, sewer, storm drain, roads, et cetera. He expressed concern if the collected utility fees were adequate for covering the cost for utility services. He stated the Town should understand the actual cost of the work to ensure additional costs were not absorbed by the Town. He stated the studies were projected to cost more than what could be approved under his authority and would need Council approval. No action was needed at this time.

11. Adoption of Ordinance 2021-O-19 determining the 2022 Regular Town Council Meeting Schedule

Mayor Rubin presented Ordinance 2021-O-19 determining the 2022 Town Council Regular Meeting Schedule. There were no changes from Council.

Motion: Council Member Haselton moved to approve Ordinance 2021-O-19 determining the 2022 Regular Town Council Meeting Schedule. Council Member Jacobs made the second. Voting Yea: Council Members Baier, Haselton, Jacobs, and Severini. None opposed. Motion carried.

VII. Closed Executive Session - Discussion of pending or reasonably imminent litigation, personnel matters, and/or sale or acquisition of real property as needed

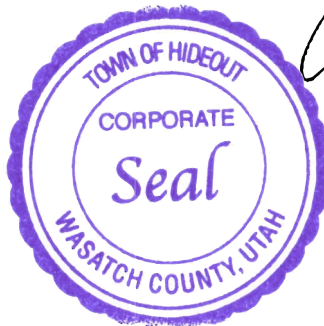
Mayor Rubin stated there was no need for a Closed Executive Session. He thanked the Council and Staff for their efforts and work done for the Town and wished everyone happy holidays and happy new year.

VIII. Meeting Adjournment

There being no further business, Mayor Rubin asked for a motion to adjourn.

Motion: Council Member Baier moved to adjourn the meeting. Council Member Severini made the second. Voting Yea: Council Members Baier, Haselton, Jacobs, and Severini. None opposed. Motion carried.

The meeting adjourned at 9:45 p.m.



Alicia Fairbourne
Alicia Fairbourne, Town Clerk

2022

PRE-DISASTER MITIGATION PLAN

For Summit, Utah, and Wasatch Counties



M A G

Expert Resources. Enriching Lives.

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Executive Summary

Purpose

To fulfill federal, state, and local hazard mitigation planning responsibilities; to promote pre- and post- disaster mitigation measures, short/long range strategies that minimize suffering, loss of life, and damage to property resulting from hazardous or potentially hazardous conditions to which citizens and institutions within the state are exposed; and to eliminate or minimize conditions which would have an undesirable impact on our citizens, the economy, environment, and the well-being of the state of Utah. This plan is an aid in enhancing city and state officials, agencies, and the public's awareness of the threat that hazards have on property and life and what can be done to help prevent or reduce the vulnerability and risk of each Utah jurisdiction.

Scope

Utah Pre-Disaster Mitigation Planning phase is statewide. The State of Utah will work with all local jurisdictions by means of the seven regional Association of Governments. The Mountainland Association of Governments area, which covers the counties of Summit, Utah, and Wasatch, will have a plan completed by Jan 1, 2022 to give to the Utah Division of Emergency Management. Future monitoring, evaluating, updating and implementing will take place as new incidents occur and or every three to five years and will be included in the local mitigation plans as well. Natural hazards addressed are: Flooding, Wildland Fire, Landslide, Liquefaction, Earthquake, Drought, Severe Weather, Climate Change, Avalanche, and Infestation.

Participating towns, cities, counties, and others

Summit County: Coalville, Francis, Henefer, Kamas, Oakley, Park City*, and South Summit School District.

Utah County: Alpine, American Fork, Cedar Fort, Cedar Hills, Eagle Mountain, Elk Ridge, Fairfield, Genola, Goshen, Highland, Lehi, Lindon, Mapleton, Nebo School District, Orem, Payson, Pleasant Grove, Provo, Salem, Santaquin, Saratoga Springs*, Spanish Fork, Springville, Vineyard, and Woodland Hills.

Wasatch County: Charleston, Daniel, Heber, Hideout, Independence, Interlaken, Midway, and Wallsburg.

*Park City and Saratoga Springs have separate Pre-Disaster Mitigation Plans

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Part 1 Introduction

The MAG region is vulnerable to natural, technological, and man-made hazards that have the possibility of causing serious threat to the health, welfare, and security of our citizens. The cost of response to and recovery from potential disasters can be lessened when attention is turned to mitigating their impacts and effects before they occur.

What is Hazard Mitigation?

Hazard mitigation is defined as any cost-effective action(s) that have the effect of reducing, limiting, or preventing vulnerability of people, property, and the environment to potentially damaging, harmful, or costly hazards. The National Institute of Building Services estimates that every \$1 spent on mitigation saves \$6 in recovery when the event occurs.

| National Institute of BUILDING SCIENCES™ | | ADOPT CODE | ABOVE CODE | BUILDING RETROFIT | LIFELINE RETROFIT | FEDERAL GRANTS |
|---|--|----------------|------------|-------------------|-------------------|----------------|
| Overall Benefit-Cost Ratio | | 11:1 | 4:1 | 4:1 | 4:1 | 6:1 |
| Cost (\$ billion) | | \$1/year | \$4/year | \$520 | \$0.6 | \$27 |
| Benefit (\$ billion) | | \$13/year | \$16/year | \$2200 | \$2.5 | \$160 |
|  Riverine Flood | | 6:1 | 5:1 | 6:1 | 8:1 | 7:1 |
|  Hurricane Surge | | not applicable | 7:1 | not applicable | not applicable | not applicable |
|  Wind | | 10:1 | 5:1 | 6:1 | 7:1 | 5:1 |
|  Earthquake | | 12:1 | 4:1 | 13:1 | 3:1 | 3:1 |
|  Wildland-Urban Interface Fire | | not applicable | 4:1 | 2:1 | not applicable | 3:1 |

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Hazard mitigation measures must be practical, cost effective, and environmentally and politically acceptable. Actions taken to limit the vulnerability of society to hazards must not in themselves be more costly than the value of anticipated damages.

The primary focus of hazard mitigation actions must be at the point at which capital investment decisions are made and based on vulnerability. Capital investments, whether for homes, roads, public utilities, pipelines, power plants, chemical plants or warehouses, or public works, determine to a large extent the nature and degree of hazard vulnerability of a community. Once a capital facility is in place, very few opportunities will present themselves over the useful life of the facility to correct any errors in location or construction with respect to hazard vulnerability. It is for these reasons that zoning ordinances, which restrict development in high vulnerability areas, and building codes, which ensure that new buildings are built to withstand the damaging forces of hazards, are the most useful mitigation approaches a city can implement.

Previously, mitigation measures have been the most neglected programs within emergency management. Since the priority to implement mitigation activities is generally low in comparison to the perceived threat, some important mitigation measures take time to implement. Mitigation success can be achieved, however, if accurate information is portrayed through complete hazard identification and impact studies, followed by effective mitigation management. Hazard mitigation is the key to eliminating long-term risk to people and property living in Utah from hazards and their effects. Preparedness for all hazards includes response and recovery plans, training, development, management of resources, and the need to mitigate each jurisdictional hazard.

The State Division of Emergency Management has identified hazards to be analyzed by each county. These hazards include avalanche, dam failure, debris flow, drought, earthquake, flood, flash flooding, infestation, landslide, problem soils, summer storm, tornado, urban and rural fires, and winter storm.

This regional/multi-jurisdictional plan evaluates the impacts, risks and vulnerabilities of natural hazards in a jurisdictional area affected by a disaster. The plan supports, provides assistance, identifies and describes mitigation projects for each annex. The suggestive actions and plan implementation for local and tribal governments could reduce the impact of future disasters. Only through the coordinated partnership with emergency managers,

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political entities, public works officials, community planners and other dedicated individuals working to implement this program was it accomplished.

Authority

Federal: Public Law 93-288 as amended, established the basis for federal hazard mitigation activity in 1974. A section of this Act requires the identification, evaluation, and mitigation of hazards as a prerequisite for state receipt of future disaster assistance outlays. Since 1974, many additional programs, regulations, and laws have expanded on the original legislation to establish hazard mitigation as a priority at all levels of government. When PL 93-288 was amended by the Stafford Act, several additional provisions were also added that provide for the availability of significant mitigation measures in the aftermath of Presidential declared disasters. Civil Preparedness Guide 1-3, Chapter 6- Hazard Mitigation Assistance Programs places emphasis on hazard mitigation planning directed toward hazards with a high impact and threat potential.

President Clinton signed the Disaster Mitigation Act of 2000 into Law on October 30, 2000. Section 322, defines mitigation planning requirements for state, local, and tribal governments. Under Section 322 States are eligible for an increase in the Federal share of hazard mitigation (HMGP), if they submit for approval a mitigation plan, which is a summary of local and/or regional mitigation plans, that identifies natural hazards, risks, vulnerabilities, and describes actions to mitigate the hazards risks and vulnerabilities in that plan.

State: The Governor's Emergency Operation Directive, The Robert T. Stafford Disaster Relief and Emergency Assistance Act, amendments to Public Law 93-288, as amended, Title 44, CFR, Federal Emergency Management Agency Regulations, as amended, State Emergency Management Act of 1981, Utah Code 53-2, 63-5, Disaster Response Recovery Act, 63-5A, Executive Order of the Governor, Executive Order 11, Emergency Interim Succession Act, 63-5B.

Local: Local governments play an essential role in implementing effective mitigation, both before and after disaster events. Each local government will review all damages, losses and related impacts to determine the need or requirement for mitigation action and planning whenever seriously affected by a disaster, or when applying for state or federal recovery assistance. In the counties and cities making up the MAG Region, the local executive responsible for carrying out plans and policies are the County

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Commissioners/Council Members and City Mayors. Local Governments must be prepared to participate in the post disaster Hazard Mitigation Team process and the pre-mitigation planning as outlined in this document.

Association of Governments: The Association of Governments have been duly constituted under the authority of Title XI, Chapter 13, Utah Code Annotated, 1953, as amended (The Interlocal Cooperation Act) and pursuant to Section 3 of the Executive Order of the Governor of the State of Utah, dated May 27, 1970, with the authority to conduct planning studies and to provide services to its constituent jurisdictions.

Region Description

Geography

The area's geography is quite varied with desert to the far west and high mountains in the east. The bulk of the population is found in the fertile valleys lying between mountains and lakes. Agricultural land supports mainly fruit orchards, some cattle and sheep ranches, grain farms, dairies, hogs, chickens and smaller individual farms. Pine clad slopes and oak brush foothills characterize much of the undeveloped mountain landscape that exists in the area. Development encroachment of hillsides is of real concern to environmentalists, planners, wildlife managers and fire marshals. The preservation of open space within urban settings is crucial to quality of life and community well-being.

The cities of Provo and Orem have always been the urban core of Utah County, but this is changing. The two largest metropolitan areas in the state, Salt Lake City and Provo/Orem, converge at the Point of the Mountain, creating a natural center for high growth in both jobs and population. Since the year 2000, the West Area (including Lehi, Eagle Mountain, and Saratoga Springs) has been the epicenter of statewide population growth, adding more than 102,000 people. Future growth explodes in the West Area. Most of Provo and Orem are developed established areas that have increased in density since 2000, adding 32,000 new people. Another 96,000 people are forecasted to move to the area, with increased density and Vineyard building up and out.

Population

The Mountainland area comprises three counties located in north central Utah having an estimated combined population of over 712,000 residents

Mountainland Region Population by County and Multi-County District 2020-2050

| | 2020 Census | 2030 | 2040 | 2050 |
|----------------|-------------|---------|-----------|-----------|
| MAG Total | 712,471 | 960,578 | 1,197,730 | 1,429,516 |
| Summit County | 42,145 | 50,558 | 57,983 | 63,097 |
| Utah County | 636,235 | 861,852 | 1,080,082 | 1,297,515 |
| Wasatch County | 34,091 | 48,168 | 59,665 | 68,904 |

Sources: U.S. Bureau of the Census; Utah Population Estimates Committee

| Percent Population by Race and Hispanic Origin Mountainland Counties, 2020 (most recent available) | | | | | |
|---|-------|-------|-------------------------------|-----------------------|----------|
| | White | Black | Amer. Indian Aleut, Eskimo | Asian or Pac. Isle | Hispanic |
| Summit | 94.5 | 1.2 | 0.6 | 2.0 | 11.5 |
| Utah | 92.7 | 0.8 | 0.8 | 2.8 | 12.2 |
| Wasatch | 95.4 | 0.8 | 0.7 | 1.2 | 13.7 |

Source: US Census Bureau, Census 2020

Part 2 Planning Process

Process

Project Approval

The Pre-Disaster Mitigation Plan process was presented to the MAG Executive Council (with elected officials for every jurisdiction) in October 2018. The Executive Council unanimously approved the process, which designated MAG planner Shauna Mecham to prepare a multi-jurisdictional plan for adoption by each community. In 2019 the Executive Council was informed that FEMA had awarded MAG \$71,250 in federal monies with a \$23,750 local match to update the Hazard Mitigation Plan.

Kick-off Meetings

In late 2019/early 2020 meetings were scheduled in each county and municipalities were encouraged to send representatives to learn the mitigation process and renew their strategies. MAG also presented hazard maps at a January Wasatch County Health Department event. Over 50 people stopped to interact with the map or ask questions.

| Wasatch County, November 14 2019 | North Utah County, December 11, 2019 | Central Utah County, December 11, 2019 | South Utah County, December 18, 2019 |
|--|---|--|--|
| <i>Special Speaker: Travis Wright of FFSL on Fire Mitigation</i> | <i>Special Speaker: Brad Bartholomew on BRIC grants</i> | <i>Special Speaker: Amy VanHorn and Dale Hamilton of the Bureau of Reclamation</i> | <i>Special Speaker: Ryan L. and Scott Elliott of the Bureau of Reclamation</i> |
| Lewis Hastings, WCHD | Scott Dabell, Lehi | Allison Jester, UC Sheriff's Office | Ryan Selee, Salem |
| Shane Owens, Midway | Mike Hadley, Eagle Mountain | Peter Quittner, Utah County EM | Jason Bond, Santaquin |
| Troy Morgan, WCFD | Jeff Weber, Eagle Mountain | Chris Blinzinger, Provo City | Erik Robinson, BoR |
| Ivan Spencer, Wasatch GIS | Kim Struthers, Lehi City | Heath Stevenson, Orem City EM | Jill Spencer, Payson |
| Jamie Baron, Heber City | Gary LeCheminant, Highland City | Taggart Bowen, Orem City | Travis Jockumsen, Payson |

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| | | | |
|--------------------------|-----------------------------|-----------------------------------|--------------------------|
| Jan McCosh, Hideout | Jennifer Hansen, FFSL | Don Overson, Vineyard | Scott Spencer, Payson |
| Ross Funk, Heber City | Julie Murphy, FFSL | Marty Beaumont, Pleasant Grove | |
| | Alan Jenkins, NUCWCD | Aaron Spencer, Pleasant Grove | |
| | Larry Mendenhall, NUCWCD | Adam Cowie, Lindon | |
| | | John Little, Spanish Fork | |
| | | Liz Hart, Vineyard | |
| | | Caleb Christen, Springville | |

MAG also presented to the Summit County Council of Governments in the same timeframe, attended by many of the mayors and commissioners in Summit County.

These meetings discussed hazard mitigation and the planning process, examples of successful FEMA mitigation grants, additional concerns that should be incorporated in the plan, and recent disasters. Partners were also invited to present on items of concern to the area. MAG used these meetings to focus on particular hazards or add hazards such as air quality and to build relationships with other agencies.

Shortly after these kick-off meetings COVID shut-downs drastically slowed the plan process. MAG took this time to review the previous plan, made additions, corrections, and update maps and projections.

Individual Meetings

For this plan update MAG made a special effort to have one-on-one contact with each jurisdiction to allow for better discussion of risk and explore mitigation strategies.

In the summer of 2021 MAG met with each jurisdiction and pertinent stakeholders to present their risk analysis, explore hazard maps, and brainstorm mitigation strategies. A complete list of contact information and dates contacted can be found in the Appendix.

Representatives from each community who participated in the hazard mitigation meetings

| Summit County | | |
|--------------------------------|----------------|------------|
| Position | Name | Meeting |
| Coalville Public Works | Kyle Clark | 10/28/2021 |
| Coalville Wastewater Treatment | Sam Adams | 10/28/2021 |
| Francis Planner | Katie Henneuse | 6/14/2021 |

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| | | |
|--|---------------------|----------------|
| Francis/Kamas | Scott Kettle | 6/14/2021 |
| Henefer Mayor | Kay Richins | 8/11/2021 |
| Oakley | Amy Rydalch | 8/16/2021 |
| South Summit School District | Kip Bigelow | 7/19/2021 |
| South Summit School District | Kathy Carr | 7/19/2021 |
| Summit County Planner | Ray Milliner | 8/18/2021 |
| | | |
| Utah County | | |
| Position | Name | Meeting |
| Alpine | Shane Sorensen | 6/17/2021 |
| American Fork Engineer | Scott Sensanbaugher | 6/14/2021 |
| American Fork Public Works/Engineer | Ben Hunter | 6/14/2021 |
| Cedar Fort Mayor | David Gustin | 12/17/2020 |
| Cedar Hills City Manager | Chandler Goodwin | 6/14/2021 |
| Cedar Hills/AF Fire | Aaron Brems | 6/14/2021 |
| Central Utah Water Conservancy District | Mike Whimpey | 12/8/2021 |
| CUWCD | Blake Buehler | 12/8/2021 |
| CUWCD | Chris Elison | 12/8/2021 |
| CUWCD | Cort Lambson | 12/8/2021 |
| CUWCD | KC Shaw | 12/8/2021 |
| Eagle Mountain | Greg Stone | 6/22/2021 |
| Eagle Mountain Fire Chief | Embret Fossum | 6/22/2021 |
| Eagle Mountain Primary | Jeff Weber | 6/22/2021 |
| Elk Ridge City Manager | Royce | 7/8/2021 |
| Fairfield Mayor | Brad Gurney | 12/17/2020 |
| Genola Town Clerk | Lucinda Daily | 7/29/2021 |
| Goshen Mayor | Steven Staheli | 6/9/2021 |
| Health Dept Emergency Response Coordinator | Ryan Strabel | 6/30/2021 |
| Highland Finance Director | Tyler Bahr | 6/17/2021 |
| Highland Planning | Nathan Crane | 6/17/2021 |
| Lehi Emergency Management Committee director | Scott Debell | 7/7/2021 |
| Lehi Emergency Management Committee director | Scott Sampson | 7/7/2021 |

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| | | |
|-----------------------------------|-----------------------|-----------|
| Lehi Engineering | Ross Spencer | 7/7/2021 |
| Lehi Planning | Kim Struthers | 7/7/2021 |
| Lehi Planning | Mike West | 7/7/2021 |
| Lindon Administration | Adam Cowie | 6/15/2021 |
| Lindon Emergency Manager | Kelly Johnson | 6/15/2021 |
| Mapleton Planner | Brian Tucker | 6/30/2021 |
| Mapleton Public Works | Steven Lord | 6/30/2021 |
| Nebo Risk Management | Kathy Carling | 7/20/2021 |
| Orem Emergency Manager | Heath Stevenson | 6/22/2021 |
| Orem Engineer | Sam Kelly | 6/22/2021 |
| Payson | Jill Spencer | 6/14/2021 |
| Payson | Travis Jockumsen | 6/14/2021 |
| Payson Facilities Manager | Shane Spencer | 6/14/2021 |
| Payson Fire Marshall | Scott Spencer | 6/14/2021 |
| Pleasant Grove Engineering | Aaron Wilson | 6/15/2021 |
| Provo | Melissa McNalley | 6/10/2021 |
| Provo Airport | Donavon Cheff | 6/11/2021 |
| Provo EM | Chris Blinzinger | 6/10/2021 |
| Provo Planner | Robert Mills | 6/10/2021 |
| Provo Stormwater Engineer | Jared Penrod | 6/10/2021 |
| Santaquin | Jason Bond | 7/26/2021 |
| Santaquin EM | Chris Lindquist | 7/26/2021 |
| Santaquin Engineer | Jason Lidet | 7/26/2021 |
| Santaquin Engineer | Norm Beagley | 7/26/2021 |
| Santaquin Fire Chief | Ryan Lind | 7/26/2021 |
| Spanish Fork | Travis Warren | 6/9/2021 |
| Spanish Fork Economic Development | Dave Anderson | 6/9/2021 |
| Spanish Fork Emergency Manager | Trevor Sperry | 6/9/2021 |
| Spanish Fork Public Works | Marlo | 6/9/2021 |
| Springville Engineer | Jeff Anderson | 6/30/2021 |
| Utah Co. Emergency Manager | Peter Quittner | 6/30/2021 |
| Utah County | Emily, Lindsey, James | 6/30/2021 |

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| | | |
|----------------------------------|-----------------------------|----------------|
| Utah County Emergency Management | Allison Jester/Janeen Olson | 6/30/2021 |
| Utah County Fire Warden FFSL | Josh Berg | 6/30/2021 |
| Vineyard | George Reid | 6/7/2021 |
| Vineyard Engineer | Nassim | 6/7/2021 |
| Vineyard Planner | Briam Perez | 6/7/2021 |
| Woodland Hills | Corbett Stephens | 7/8/2021 |
| WUI Coordinator | Dax Reid | 6/30/2021 |
| Wasatch County | | |
| Position | Name | Meeting |
| Charleston Mayor | Brenda Kozlowski | 8/25/2021 |
| Daniel | Eric Bunker | 7/7/2021 |
| Heber City EM | Lt. Jeremy Nelson | 6/15/2021 |
| Heber City Planner | Jamie Baron | 6/15/2021 |
| Hideout | Lynnette Shindurling | 8/4/2021 |
| Independence | Lauren Boldger | 8/25/2021 |
| Interlaken Clerk | Bart Smith | 8/27/2021 |
| Interlaken Mayor | Greg Harrigan | 8/27/2021 |
| Midway | Michael Henke | 7/7/2021 |
| Wallsburg Mayor | Celeni Richins | 8/23/2021 |
| Wasatch Co GIS | Ivan Spencer | 6/15/2021 |
| Wasatch County Emergency Manager | Jeremy Hales | 6/15/2021 |
| | | |

Notice given to partner organizations

All school districts, water districts, public lands agencies, and surrounding MPOs and emergency responders were invited to attend the kick-off and Draft Plan Presentation meetings. Central Utah Water Conservancy District, South Summit School District, and Nebo School District were active participants.

See the Appendix for a complete list of those offered the opportunity to attend and comment.

Other Presentations:

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MAG's Technical Advisory Committee, July 26 202: Twenty+ engineers and planners in Utah County

Utah County Emergency Manager's Committee, October 26 2021: Roughly 15 Emergency Managers and Fire Chiefs from cities, universities, and utility companies in Utah County

Central Utah Water Conservancy District Participation

The Central Utah Water Conservancy District (CUWCD or District) was formally established pursuant to the provisions of the Water Conservancy Act in 1964. The District presently serves all or part of the following eight counties in the State of Utah: Duchesne, Juab, Salt Lake, Sanpete, Summit, Uintah, Utah, and Wasatch Counties. Consistent with its mission and values, the District acts as a provider of wholesale water to various water conservancy districts, metropolitan water districts, municipalities, individuals, and corporations within the boundaries of the District. The District has had two previous FEMA approved hazard mitigation plans and will be updating its plans during 2022. The future development of the CUWCD water system will mainly be with a strong emphasis on water conservation, planning of needed additional regional water supply facilities, and incorporation of natural hazard mitigation. The District will also continue in its current efforts to address and incorporate natural hazard mitigation (i.e., seismic upgrades/standards, lightning protection, backup power, wildfire – both direct and indirect effects, etc.) into future design and construction projects whether they are for new facilities or for capital replacement projects. The included projects will help fulfill said efforts.

Because CUWCD has some sensitive information, they looked at their assets and facilities independently to create and prioritize mitigation strategies. Their methodology is included in the Methods sections of this plan.

Public Input

Website

In October 2019 MAG updated hazard mitigation page on its website, Mountainland.org/hazards, with information on the plan and the planning process and contact information so interested parties could email comments on the draft plan from the web site. MAG also emailed all the contacts from the 2017 plan and began updating contact information. As the plan came together in 2021 MAG posted Story Maps and, in October 2021, the Draft Plan on its website. In December 2021 the Draft Pre-Disaster Mitigation Plan was featured on the main page with a comment box.

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Open Houses

Normally, the Plan would have been presented at open Houses were held in conjunction with a Transportation Open House. MAG was able to present at a Wasatch County Preparedness Fair on 11 Nov, 2019 where they interacted with 50+ members of the public as well as several Wasatch County Fire Personnel. COVID restrictions on group gatherings made traditional meetings impossible for most of 2020 and 2021. MAG chose to focus on small meetings with cities and asked cities to promote the draft plan through their social media platforms, MAG lacking social media itself. As open houses begin again MAG will seek opportunities to share the final plan with the public.

Draft Plan Presentations



MAG shared the draft plan in a series of lunch meetings similar to the kick-off meetings, but with an emphasis on inviting elected officials such as city councilors. FEMA's Mitigation Specialist, Brandon Webb, also presented on BRIC grants and successful mitigation efforts. These meetings served to connect communities internally, to nearby communities, and state resources.

| Draft Pre-Disaster Mitigation Plan Presentation Attendees | |
|---|-------------------|
| | |
| Wasatch County | October 13 |
| Heber City Planner | Jamie Baron |
| Heber City Planning Director | Tony Kohler |
| Wasatch County | Lewis Hastings |
| Independence | Lauren Boldger |
| Daniel Councilmember | Mary Duggin |

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| | |
|-----------------------------------|--------------------|
| FEMA | Daniel Webb |
| Midway Councilmemb | Luke Robinson |
| Wasatch County Councilmember | Kendall Crittenden |
| CUWCD | Roger Pearson |
| Midway Councilmemb | Steve Dougherty |
| Heber City Administrator | Matt Brower |
| Heber City Mayor | Keleen Potter |
| | |
| Summit County | October 28 |
| Emergency Manager | Kathryn McMullin |
| Summit Co Public Works | Derrick Radke |
| Summit Co Manager's Office | Janna Young |
| Summit Co | Glenn Wright |
| Summit Co Environmental Health | Spencer Smith |
| Coalville Public Works | Kyle Clark |
| Coalville Wastewater Treatment | Sam Adams |
| Oakley City | Kelly Kimber |
| Francis/Kamas | Scott Kettle |
| Francis Planner | Katie Henneuse |
| Park City Fire District | Ashley Lewis |
| North Summit Fire District | Ian Nelson |
| FFSL /County Fire Warden | Bryce Boyer |
| S Summit School District | Kip Bigelow |
| S Summit School District | Kathy Carr |
| | |
| North Utah County | October 20 |
| Alpine | Shane Sorensen |
| Lehi Planning | Kim Struthers |
| Lehi Emergency Management | Scott Debell |
| Lehi Emergency Management | Scott Sampson |
| Lehi Planning | Mike West |
| Lehi Environmental Sustainability | Todd Munger |

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| | |
|-----------------------------------|---------------------|
| Lehi City Council | Paige Albrecht |
| American Fork Engineer | Scott Sensanbaugher |
| Eagle Mountain Primary | Jeff Weber |
| Eagle Mountain | Greg Stone |
| Eagle Mountain Fire Chief | Embret Fossum |
| Eagle Mountain Engineer | Chris Trusty |
| Highland Mayor | Rod Mann |
| | |
| South Utah County | October 21 |
| Salem | Greg Gurney |
| Payson | Jill Spencer |
| Payson | Travis Jockumsen |
| Santaquin | Jason Bond |
| Santaquin EM | Chris Lindquist |
| Santaquin Engineer | Norm Beagley |
| Santaquin | Jon Lundell |
| Genola Town Clerk | Lucinda Daily |
| WUI Coordinator | Dax Reid |
| | |
| Central Utah County | October 25 |
| Orem Emergency Manager | Heath Stevenson |
| Provo EM | Chris Blinzinger |
| Provo Stormwater Engineer | Jared Penrod |
| Provo | D Cheff |
| Provo Planner | Robert Mills |
| Lindon Administration | Adam Cowie |
| Lindon Emergency Manager | Kelly Johnson |
| Vineyard | George Reid |
| Vineyard Engineer | Nassim |
| Spanish Fork Economic Development | Dave Anderson |
| Spanish Fork | Travis Warren |
| Mapleton Planner | Brian Tucker |

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| | |
|----------------|----------------|
| PG Engineering | Marty Beaumont |
| PG Engineering | Aaron Wilson |

Identifying Hazards

MAG identified several hazards addressed in the Hazard Mitigation Plan. The hazards were identified through a process that included researching past disasters, Geographic Information System (GIS) data, and the Utah State Hazard Mitigation Plan.

The original hazard mitigation plan identified several potential hazards for the region. The list was reviewed by staff and at the kick-off meetings. MAG used GIS to overlay current development with hazard data. This data was used to identify which hazards had the greatest risk for each city. These hazards were then presented in greater detail in the following county portions of this plan.

Updating the 2017 Plan

The primary task for MAG staff was to update the existing Pre-Disaster Hazard Mitigation Plan. The updates are scattered throughout this plan and target in several key areas.

Online Resources – MAG created a simplified, interactive, online version of the plan for city staff, elected officials, and interested public. It will be easier to navigate than a lengthy .pdf and should make using the plan easier.

Background Information - The Mountainland Region has grown and changed since the last plan and regional information has been updated to reflect it.

Hazard Data – All mapping and profiling data for each hazard and was updated using the latest and best available sources.

Future Development – As MAG experiences incredible growth, emphasis was placed on examining the locations of development pressure within communities and discussing appropriate mitigation measures through zoning, building codes, and land preservation.

Mitigation Strategies – Individual meetings with each community served to brainstorm locally-relevant mitigation strategies and support strategies mentioned in other community plans.

Other plans and reports – The plan contains and/or references other mitigation plans, neighboring organizations' reports and state data to provide the most robust picture and technical information available.

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While much of the plan may seem to look similar to the 2017 plan, each portion has been reviewed and updated to reflect the most current information possible.

Incorporating Existing Plans

Existing Plans, Studies, Reports and
Technical Information Reviewed

How Incorporated

| | |
|---|--|
| Utah State Hazard Mitigation Plan | Comparing MAG counties to the state as a whole, describing the impact of some hazards not prevalent in MAG counties, county-level earthquake and drought losses. |
| National Integrated Drought Information System https://www.drought.gov/historical-information | Historic drought information by county, used to calculate probability. |
| The Utah Roadmap: Positive Solutions for Air Quality and Climate Change | Air Quality information and mitigation strategies for Air Quality and Climate Change |
| HAZUS Provo Segment 7.2 ShakeMap Scenario (2009) | County-wide earthquake losses estimates |
| U of U Seismograph Catalog https://quake.utah.edu/earthquake-information-products/earthquake-catalogs | Locations and magnitude of past earthquakes |
| FEMA National Flood Insurance Program | Floodplain maps of 100-yr, 500-yr, and levee-protected areas used in risk analysis, also example code requirements for city NFIP participation |
| Community Improvement Projects (see city websites) | Identify desired projects relating to mitigation in various communities |
| Governor's Office of Planning and Budget (2020 estimates) | Demographic information for Utah counties and cities. |
| Landslide Maps of Utah (2010) Elliott A. and Harty K. Utah Department of Natural Resources. | Identify location and extent of historic landslides and classify landslide types (comes with GIS files) |

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| | |
|--|---|
| DAMVIEW Dam Safety Database Information Viewer (2019). Utah Division of Water Rights. www.waterrights.utah.gov | Identify and map low, moderate, and high risk dams. Information includes ownership, Emergency Action Plan, and first downstream town. |
| The Wasatch Fault (1996) Utah Geological Survey Public Information Series 40 | Basic understanding of Wasatch Fault, including diagrams specific to the Wasatch Fault which were replicated in this Plan with permission. |
| Utah Lake Basin Water; Planning for the Future (2014) Utah Division of Water Resources. | Water conservation plans by jurisdiction |
| West Wide Wildfire Risk Assessment (2008) Council of Western State Foresters | Used in Fire Risk Assessment, clipped to MAG boundaries and risk adjusted for local highs and lows. Data has since been updated. |
| National Oceanic and Atmospheric Administration (NOAA) Storm Events Database | Locating weather and other disaster events; date, location, severity, and \$ losses. |
| The landslide handbook—A guide to understanding landslides (2008) Highland, L.M., and Bobrowsky, Peter, Reston, Virginia, U.S. Geological Survey Circular 1325, 129 p. | Wonderfully explained basics of landslides and how to mitigate. Great graphics. |
| FEMA NFIP Inundation Maps | Used to visualize and analyze 100 yr and 500 yr flood risk. Many maps had been updated since 2017, with some communities seeing significant changes in the number of homes in the floodplain. |
| Utah AGRC | Locations of critical buildings and infrastructure ie schools, fire stations, hospitals, etc. |
| UDOT Open Data Portal | GIS data for roads, bridges, and culverts used to estimate losses. |

Part 3 Risk Assessment

Profiling Hazard Events

Visit the County Sections, Parts 5-7, for hazard analysis specific to each county. This section includes general descriptions, definitions, and mitigation strategies for hazards identified by MAG.

The following table identifies the recurrence and frequency of hazards in the State of Utah. Hazard profiles for each of the counties are in each specific county annex.

Hazard Recurrence and Frequency, adapted from Utah 2019 State Hazard Mitigation Plan

| Hazard | Number of Events | Years in Record | Recurrence Interval (years) | Hazard Frequency and Probability/Year |
|--|------------------|-----------------|-----------------------------|---------------------------------------|
| Droughts (<-2 PDSI) | 17 | 123 | 7.2 | 14% |
| Earthquakes (≥ 5.0) | 60 | 168 | 2.8 | 36% |
| Landslides * | unknown | unknown | unknown | unknown |
| Flood (injuries) | 23 | 18 | 0.8 | 127% |
| Tornadoes (all) | 134 | 150 | 1.1 | 89% |
| Avalanches (fatalities) | 116 | 60 | 0.52 | 193% |
| Wildfires (>100,00 total acres burned in a year) | 8 | 15 | 1.9 | 53% |
| Lightning (fatalities) | 67 | 69 | 1 | 97% |

PDSI, Drought Years as indicated by NOAA, <http://www.ncdc.noaa.gov/temp-and-precip/timeseries/?parameter=pdsi&month=10&year=2010&filter=1&state=42&div=0>

Magnitude 5.0 or larger Data from UGS and University of Utah Seismography Station.

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* Landslide recurrence intervals cannot be predicted because landslides often have recurrent movement with the same landslides moving each year depending on climate.

Tornado and Avalanche data courtesy of the NOAA.

<http://www.wrh.noaa.gov/slc/climate/tornado.php>

http://www.wrh.noaa.gov/slc/projects/disasters/avalanche_deaths.php

Lightning data courtesy of NOAA, http://www.lightningsafety.noaa.gov/stats/59-12_State_Ltg_Fatality_Map-rates.pdf

Earthquakes

An earthquake is the sudden release of tension built up over years as tectonic plates shift all across the earth's surface. Plates tend to rupture along weak zones referred to as faults. When plates rupture, they produce seismic waves that are transmitted through the rock outward producing ground shaking. Earthquakes are unique multi-hazard events, with the potential to cause huge amounts of damage and loss. Secondary effects of a sudden release of seismic energy (earthquake) include: ground shaking, surface fault rupture, liquefaction, tectonic subsidence, slope failure, and various types of flooding.

The Intermountain Seismic Belt (ISB), which Mountainland is part of, is a zone of pronounced earthquake activity up to 120 miles wide extending in a north south direction 800 miles from Montana to northern Arizona. The Utah portion of the ISB trends from the Tremonton Cache Valley area south through the center of the state, along the Wasatch Front, and the southwest through Richfield and Cedar City concluding in St. George. "The zone generally coincides with the boundary between the Basin and Range physiographic province to the west and the Middle Rocky Mountains and Colorado Plateau physiographic provinces to the east" (*Homebuyers Guide to Earthquake Hazards in Utah*, Eldredge 1996).

Ground Shaking

Ground shaking causes the most impact during an earthquake because it affects large areas and is the origin of many secondary effects associated with earthquakes. Ground shaking, which generally lasts 10 to 30 seconds in large earthquakes, is caused by the passage of seismic waves generated by earthquakes. Ground shaking is measured using Peak Ground Acceleration (PGA). The PGA measures the rate in change of motion relative to the established rate of acceleration due to gravity.

Liquefaction

While living directly on a fault line is far from ideal, structures farther away can experience equal or greater damage depending on the underlying soil. Deep sediments, such as those surrounding Utah Lake, increase the frequency of seismic waves, which are more damaging to short, stiff structures like the common home. Loose soils are also more susceptible to liquefaction, when loose soils with a high water table behave like a fluid during episodes of shaking. Liquefaction is possible in earthquakes magnitude 5.0 and higher. Local geologic conditions, such as depth of sediment and sediment make up, affect earthquake waves.

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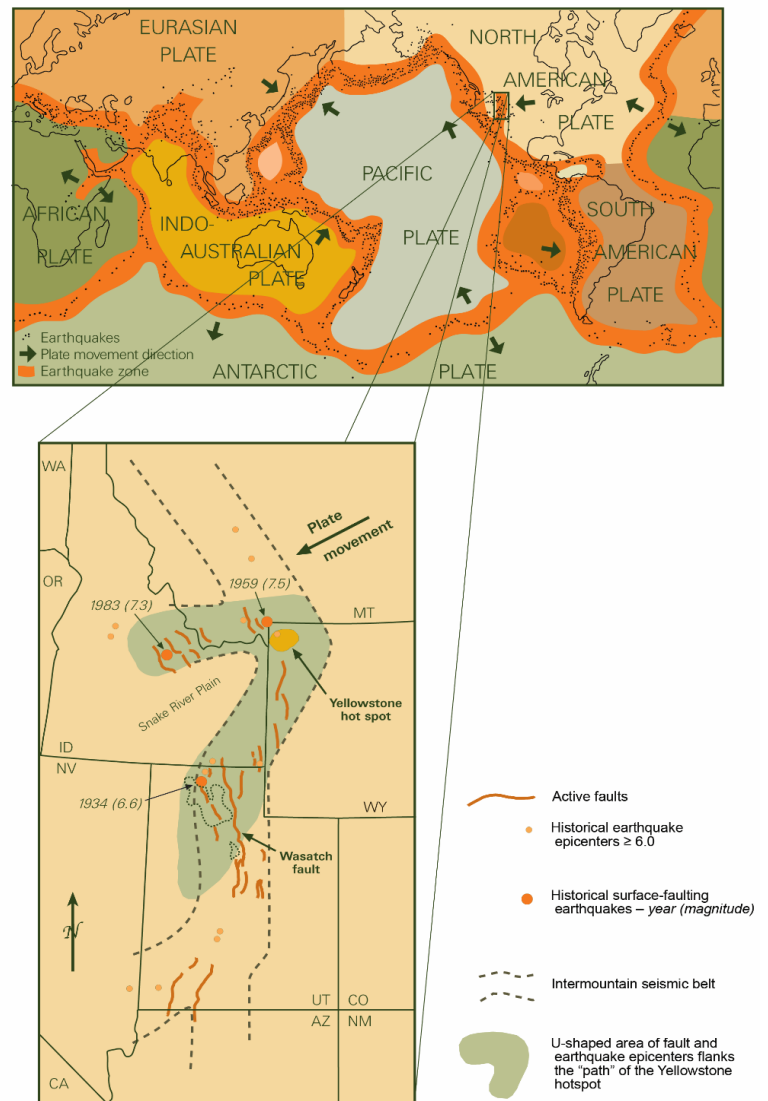


Figure Utah Geological Survey

Surface Fault Rupture

During a large earthquake fault movement may propagate along a fault plane to the surface, resulting in surface rupture along the fault plane. The Wasatch fault is a normal (mountain building) fault with regards to movement, meaning the footwall of the fault is pushed upward and the hanging wall slips downward. Thus faulting is on a vertical plane, which results in the formation of large fault scarps. Surface fault rupture along the Wasatch fault is expected for earthquakes with magnitudes of 6.5 or larger. The largest probable earthquake that could strike the Mountainland region is an earthquake with an estimated magnitude between 7.0 and 7.5; an earthquake of this magnitude, based on current research, would create "surface fault rupture with a displacement of between 16 to 20 feet in height with break segments 12 to 44 miles long" (*Homebuyers Guide to Earthquake Hazards in Utah*, Eldredge 1996). In historic time surface fault rupture has only occurred once in Utah; the 1934 Hansel Valley earthquake with a magnitude 6.6 produced 1.6 feet of vertical offset.

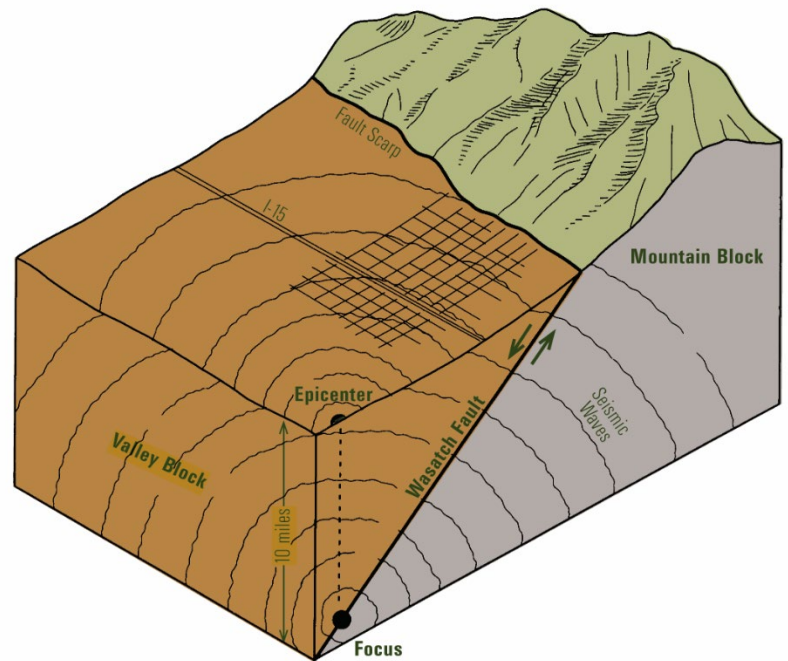


Figure Utah Geological Survey

Surface fault rupture presents several hazards. Anything built on top of the fault or crossing the fault has a high potential to be destroyed in the event of displacement. Foundations will be cracked, buildings torn apart, damage to roads, utility lines, pipelines, or any other utility line crossing the fault. It is almost impossible to design anything within reasonable cost parameters to withstand an estimated displacement of 16 to 20 feet.

Secondary Earthquake Threats

The major secondary effects of earthquakes include liquefaction, avalanches, rock fall, slope failure, and various types of flooding. Since other sections address mass movement and flooding they will not be discussed in depth here. It is important to keep in mind, however, the impact these secondary hazards could have on the response to an earthquake.

Various Flooding Issues Specific to Earthquakes

Earthquakes could cause flooding due to the tilting of the valley floor, dam failure and seiches in lakes and reservoirs. Flooding can also result from the disruption of rivers and streams. Water tanks,

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pipelines, and aqueducts may be ruptured, or canals and streams altered by ground shaking, surface faulting, ground tilting, and landslide.

Seiches

Standing bodies of water are susceptible to earthquake ground motion. Water in lakes and reservoirs may be set in motion and slosh from one end to the other, much like in a bathtub. This motion is called a seiche (pronounced “saysh”). A seiche may lead to dam failure or damage along shorelines.

Modified Mercalli Intensity Scale

| Intensity | Effects | Geologic Effects |
|-----------|---|---|
| I | Barely felt by sensitive few. | |
| II | Felt by few indoors. | |
| III | Felt by several indoors. Hanging objects may sway. | |
| IV | Felt by many indoors and few outdoors. Dishes, windows, etc. rattle | Rock falls may be triggered |
| V | Felt by almost everyone. Some plaster walls crack. Small, unstable objects are displaced. Hanging objects swing greatly. | Liquefaction may be triggered. |
| VI | Felt by all. Some heavy furniture moved. Damage light. | Strong shaking. |
| VII | Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken. | Very strong shaking. Seiche waves may be produced; small slumps and slides along sand and gravel banks. |
| VIII | Slight damage in specially designed structures; considerable in ordinary substantial buildings with partial collapse; great in poorly built structures. | Severe shaking. Surface rupturing fractures. Spring or well water may change flow rate, etc. |

*Adapted from [The Severity of an Earthquake](#), a U. S. Geological Survey General Interest Publication.

Probability of Future Damaging Earthquakes

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Severe earthquakes, by their nature, are rare disasters. Tectonic plates move fractions of an inch per year, slowly building up tension until they “break”. In the case of devastating earthquakes, the process can take decades to centuries. The graphic below depicts how often and how long ago significant earthquakes have occurred along the Wasatch Front. According to the USGS, there is a 57% probability of a magnitude 6.0 or above earthquake occurring along the Wasatch Front in the next 50 years.

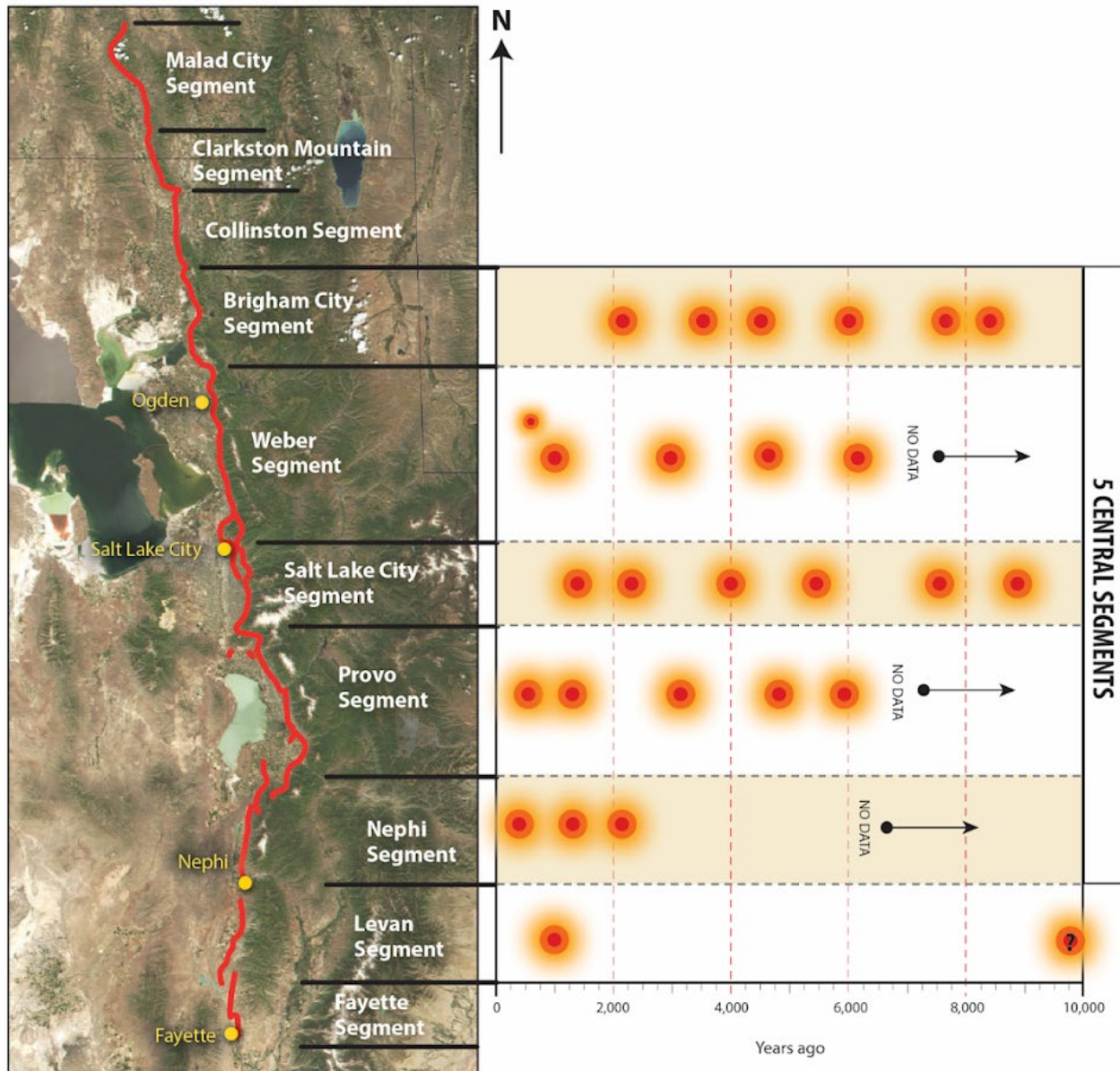


Figure 3 Utah Geological Survey

Potential Mitigation Strategies

Part 3 Risk Assessments

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The following mitigation strategies are provided so that communities may be aware of measures that could be used to limit the exposure to earthquake related damage.

| Objectives | Strategies |
|--|---|
| Local Planning and Regulations Adopt & Enforce Building Codes Incorporate Earthquake Mitigation into Local Planning Map and Assess Community Vulnerability to Seismic Hazards Conduct Inspections of Building Safety | <ul style="list-style-type: none"> • Create a seismic safety committee to recommend changes in standards • Adopt International Building Code (IBC) • Offer financial incentives to home and business owners who retrofit • Inventory vulnerable public and commercial buildings • Use GIS to map shaking and secondary hazards • Incorporate seismic strengthening into Capital Improvement Plan • Require the hazardous materials be located outside areas of seismic hazards |
| Structure and Infrastructure Projects Protect Critical Facilities and Infrastructure Implement Structural Mitigation Techniques | <ul style="list-style-type: none"> • Use flexible piping to extend water, sewer, or natural gas service • Retrofit critical public facilities • Brace generators, elevators, and other equipment • Install shutoff valves where water mains cross fault lines • Install window film to prevent injuries from shattered glass |
| Education and Awareness Increase Earthquake Risk Awareness Conduct Outreach to Builders, Architects, Engineers and inspectors Provide Information on Structural and Non-Structural Retrofitting | <ul style="list-style-type: none"> • Encourage homeowners to install latches on cabinets and drawers • Offer GIS mapping online for residents and design professionals • Conduct information sessions on seismic code • Train building staff on form ATC-20 (Applied Technology Council) • Develop outreach to encourage homeowners to secure tall furniture • Establish a library of technical documents on structural mitigation options. |

Adapted from FEMA's "Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (2013)

Flooding

Humans have always sought out water for survival; drinking, agriculture, travel and energy. Some features like basins, plains, and alluvial fans appear ideal for homes built on flat ground or a gentle slope. Periodic flooding in riverine areas carries nutrients to soil ideal for agricultural production. The problem arises when builders expect the water that has shaped the very land they sit on to stop routine flooding and stay predictably within its bounds. The attraction to water plus effects of urbanization contribute to floods being the most common hazard in the United States.



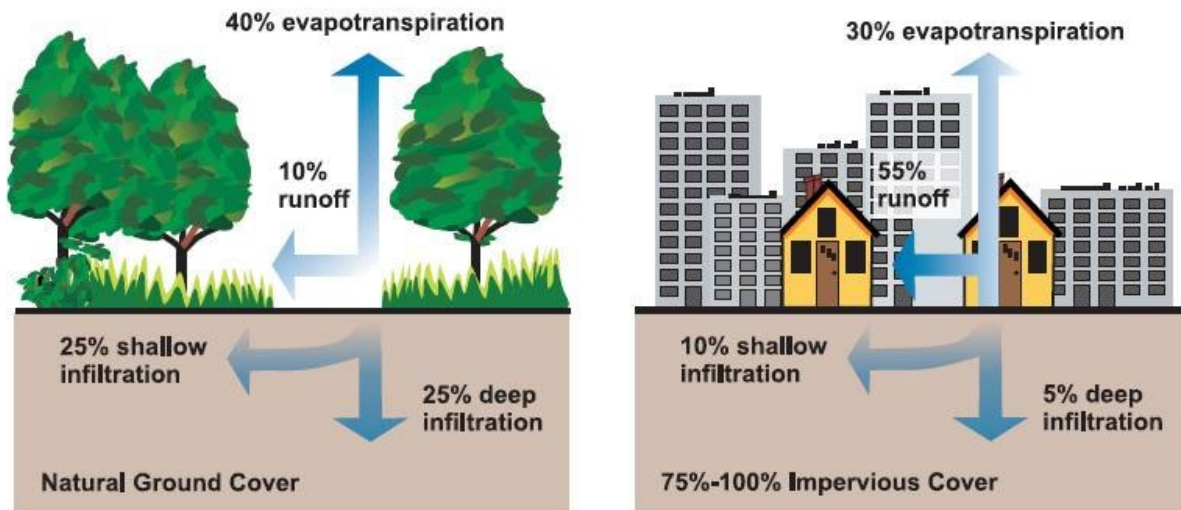
Sandbagging in Provo during the 1983 floods

Flooding is a temporary overflow of water onto lands not normally inundated by water producing measurable property damage or forcing evacuation of people and vital resources. Floods frequently cause loss of life; property damage and destruction; damage and disruption of communications, transportation, electric service, and community services; crop and livestock damage and loss, and interruption of business. Floods also increase the likelihood of hazards such as transportation accidents, contamination of water supplies, and health risk increase after a flooding event.

Several factors determine the severity of floods including rainfall intensity and duration, and rapid snow melt. A large amount of rainfall over a short time span can result in flash flood conditions. Small amounts of rain can also result in flooding at locations where the soil has been previously saturated or if rain concentrates in an area having impermeable surfaces such as large parking lots, paved roadways, or post burned areas with hydrophobic soils. Topography and ground cover are also contributing factors for floods. Water runoff is greater in areas with steep slopes and little or no vegetative ground cover.

Frequency of inundation depends on the climate, soil, and channel slope. In regions where substantial precipitation occurs during a particular season or in regions where annual flooding is due to spring melting of winter snowpack, areas at risk may be inundated nearly every year.

The Mountainland region can experience both rapid snow melt in the Spring and severe summer storms. As Summit, Utah, and Wasatch counties grow they must take into account the effects of urbanization on the ability of soil to absorb rainfall. The diagram below demonstrates how a built-up environment alters water dynamics.



Effects of Urbanization (EPA)

Conditions which may exacerbate floods:

| | |
|---------------------------|-----------------|
| Impermeable surfaces | Debris |
| Steeply sloped watersheds | Contamination |
| Constrictions | Soil saturation |
| Obstructions | Velocity |

Explanation of Common Flood Terms

FIRM: Flood Insurance Rate Map

100-year flood: Applies to an area that has a 1 percent chance, on average, of flooding in any given year. However, a 100-year flood could occur two years in a row, or once every 10 years. The 100 year-flood is also referred to as the base flood.

Base Flood Elevation (BFE): As shown on the FIRM, is the elevation of the water surface resulting from a flood that has a 1% chance of occurring in any given year. The BFE is the height of the base flood,

usually in feet, in relation to the National Geodetic Vertical Datum (NGVD) or 1929, the North American Vertical Datum (NAVD) of 1988, or other datum referenced in the FIS report.

National Flood Insurance

Program (NFIP): The NFIP is a Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management

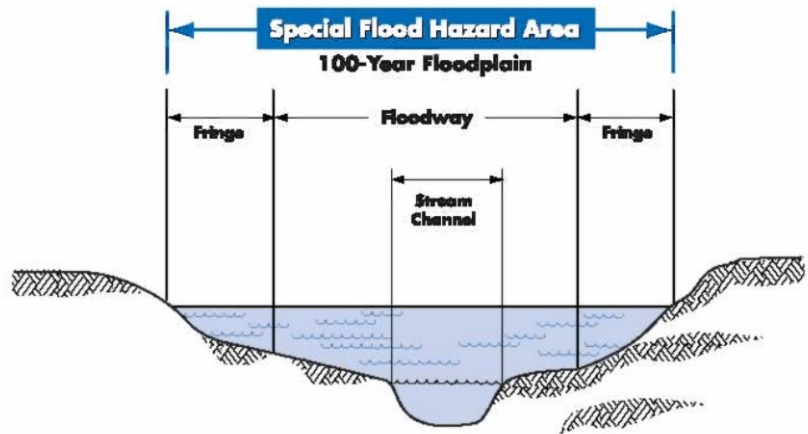
regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal Government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the Federal Government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods.

Special Flood Hazard Area (SFHA): Is the shaded area on a FIRM that identifies an area that has a 1% chance of being flooded in any given year (100-year floodplain).

Floodway: Is the stream channel and that portion of the adjacent floodplain that must remain open to permit passage of the base flood without raising that water surface elevation by more than one foot.

Potential Mitigation Strategies

The following mitigation strategies are provided so that communities may be aware of measures that could be used to limit the exposure to flood related damage.



| Objective | Strategies |
|---|---|
| Local Planning and Regulations Improve Compliance with NFIP Incorporate Flood Mitigation into Local Planning Limit or Restrict Development in Floodplain Areas Adopt and Enforce Building Codes Improve Storm Water Management | <ul style="list-style-type: none"> • Complete and maintain FEMA elevation certificates for buildings • Use "green infrastructure" program to link, manage, & expand greenways • Mitigate hazards during infrastructure planning • Develop stream buffer ordinance or limit impervious surfaces • Prohibit or limit floodplain development • Require the hazardous materials be located outside areas flood areas • Complete a storm water drainage study for known problem areas |
| Structure and Infrastructure Projects Preserve Floodplains as Open Space Conduct Regular Maintenance for Drainage Systems and Flood Control Protect and Restore Natural Flood Mitigation Measures Protect Critical Facilities | <ul style="list-style-type: none"> • Allow developers to increase density in another area to keep flood area vacant • Routinely clean and repair storm water drains • Detect and prevent illegal discharges into storm water and sewer systems • Retain thick vegetation on public lands flanking rivers • Protect and enhance landforms that serve as natural barriers • Require critical facilities to be built above 500-year flood elevation |
| Education and Awareness Educate Property Owners | <ul style="list-style-type: none"> • Provide accurate floodplain maps |

*Adapted from FEMA's "Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (2013)

Dam Failure

Dams are frequently built for recreation, flood control, fire protection, irrigation and water storage. Most dams are small earthen works on private property, causing limited damage if they fail. Summit, Utah, and Wasatch counties have hundreds of dams, but only 48 are likely to put life at risk should they fail. The most hazardous of these are the Deer Creek and Jordanelle Dams, which could engulf entire communities in Wasatch and Utah counties.

Dam failures are defined as the failure of a man made water impoundment structure, which sometimes results in catastrophic downgrade flooding. The diagram below depicts common features of dams.

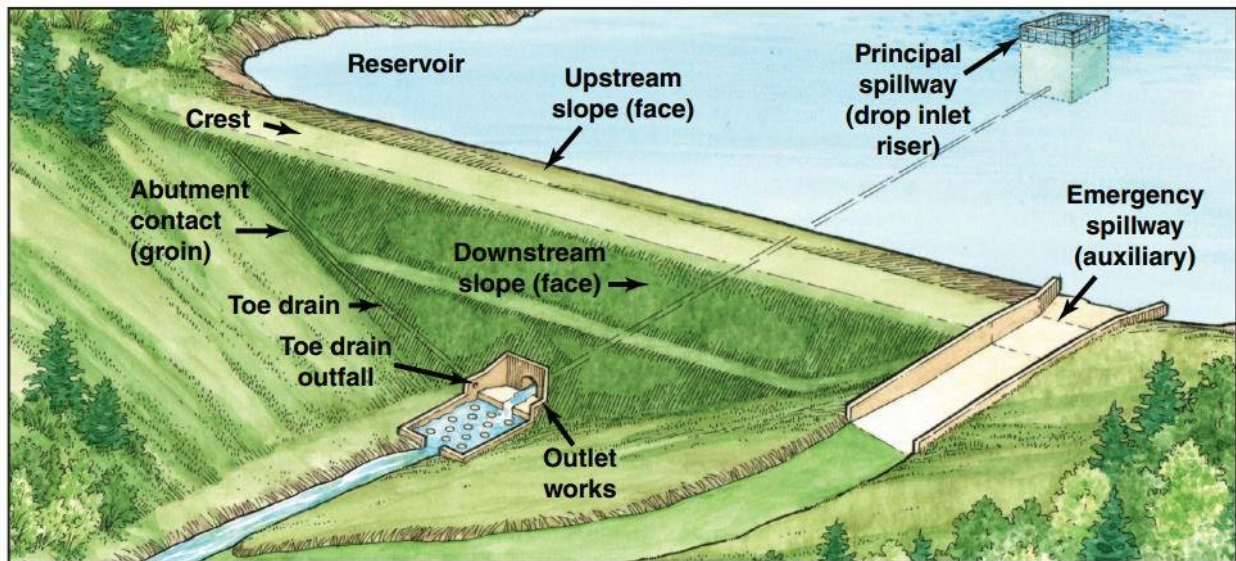


Figure 6 Dam Features. Created by the Forest Service and FEMA

Dam failure can have many causes, as seen below. Overtopping, or when water comes over the top of the dam after a significant rain event or because of a low area in the crest of a dam, can quickly erode the crest, slope, and toe of the dam quickly leading to failure. Overtopping is specifically mentioned as a possibility if the Jordanelle dam fails due to piping, then raises the water level in the Deer Creek dam until it experiences overtopping. Earthquakes can instigate many of the problems a dam normally faces, such as mass movement (a slump or landslide), cracking, and/or liquefaction leading to stability failure.

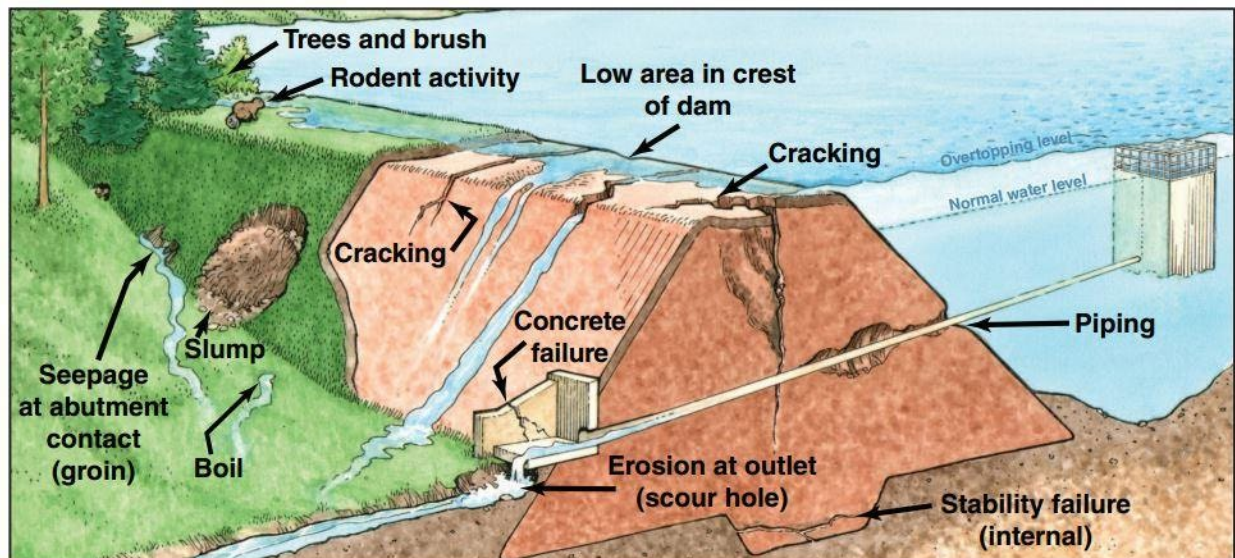


Figure 7 Possible dam problems. Graphic created by the Forest Service & FEMA.

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According to the Bureau of Reclamation, the Jordanelle Dam is built to withstand a 7.5 magnitude earthquake on the Wasatch Fault 19 miles to the west or a 6.5 magnitude earthquake directly beneath the dam. Deer Creek dam also experienced extensive renovations from 2003-2008, and is now much less likely to suffer serious adverse effects in the event of an earthquake. The Utah State Engineer has been charged with regulating non-federal dams in the State since 1919. The Engineer ensures that all non-federal dams are inspected routinely and that the results of those inspections are available to the public. With the passing of the Federal Dam Safety Act in the 1970's, Utah created a Dam Safety Section responsible for all non-federal dams.

The State Dam Safety Section has developed a hazard rating system for all non-federal dams in Utah. Downstream uses, the size, height, volume, and incremental risk/damage assessments of dams are all variables used to assign dam hazard ratings in the Dam Safety classification system. Using the hazard ratings systems developed by the Dam Safety Section, dams are placed into one of three classifications: high, moderate, and low. Dams receiving a low rating would have insignificant property loss due to dam failure. Moderate hazard dams would cause significant property loss in the event of a breach. High hazard dams would cause a possible loss of life in the event of a rupture. The frequency of dam inspection is designated based on hazard rating with the Division of Water Rights inspecting high-hazard dams annually, moderate hazard dams biannually and low-hazard dams every five years. There are more than 150 dams in the Mountainland Region of which 48 have received a high hazard rating by Dam Safety.

According to the Dam Safety Program, During the last several decades, there has been a better understanding of how dams function, and new minimum standards have been established. In order to provide for public safety, the Legislature has provided grant funding since 1992 in various amounts to the Board of Water Resources to appropriate for dam safety projects. From 1997 to 2007, approximately \$4.3 million was appropriated per year. In 2008, the amount was reduced to approximately \$700,000. From 2009 to present, funding has been \$3.8 million per year for high hazard dam rehabilitations. These projects become necessary due to infrastructure aging, hazard creep and standards modernization. (Regular maintenance and other work may not be eligible for grant funding.)

Historically, the cost of each dam safety project has averaged about \$2-3 million. (Cost varies depending on the size of the dam and the extent of the deficiencies.) **At the current level of funding, the state can fund, on average, only one or two dam safety projects each year.** With each passing year, inflation chips away at the dollar's buying power, and the ability to complete projects continues to diminish.

In order for the remaining high hazard dams to be brought up to minimum safety standards, an estimated \$250 million is needed. **At the current funding rate, this is estimated to take about 66 years.** If funding were increased by \$6.2 million to a total of \$10 million per year, the dams could be upgraded in approximately 25 years.

The Board of Water Resources will continue to work with the Dam Safety program to determine which dams are the highest priority and to address these projects as funds allow, but the current level of funding is insufficient to address all the minimum standard issues. As a result, dam safety projects are being delayed due to a lack of funds. Additional funding would accelerate urgent dam safety upgrades.

The following information regarding a failure of both Jordanelle and Deer Creek Dams and resulting loss was prepared by the United States Department of the Interior Bureau of Reclamation entitled “Dam Failure and Maximum Operational Release, Inundation Study: Deer Creek Dam” completed, February 2002. The Bureau of Reclamation is in the process of reviewing their policies for sharing this information with the public and MAG hopes to use more recent maps in the next plan update.

Introduction and Purpose

On February 27, 1995, the Commissioner of the Bureau of Reclamation (Reclamation) issued a policy statement regarding establishing an Emergency Management Program at Reclamation dams. This policy stated that Reclamation would offer technical support and assistance to communities and jurisdictions downstream of Reclamation dams to ensure that adequate dam-specific emergency operation plans are in place. Directives for the emergency management program state that Emergency Actions Plans (EAP) shall be developed and are to contain descriptions of potentially affected areas in the flood plain with inundation maps wherever appropriate. Studies are designed to assess the worst case scenario, when a reservoir at full capacity suddenly experiences an instantaneous failure. More often than not, dam owners have enough forewarning of a problem to remedy it or at least give warning. The dam failure study below was prepared to meet the goals and objectives of the Commissioner’s directives.

The purpose of the study was to identify potential flood hazard areas resulting from the unlikely events of “sunny day” failure of Deer Creek Dam (referring to an event that occurs when severe weather, earthquakes, or other extreme events are not present), the maximum operational release of Deer Creek Dam and the “sunny day” failure of Jordanelle Dam resulting in the failure of Deer Creek Dam due to overtopping.

These studies are standard practice within Reclamation and therefore do not reflect in any way upon the integrity of either Jordanelle or Deer Creek Dams.

Previous Studies

The Denver Office completed a previous Flood Inundation Study in June of 1990. It addressed two conditions, 1) a PMF (Probable Maximum Flood) causing the failure of Deer Creek Dam; and 2) a PMF (Probable Maximum Flood) causing the failure of Jordanelle Dam, which then results in the failure of Deer Creek Dam. Both scenarios were accomplished using the National Weather Service (NWS) DAMBRK model. Cross sections and some dam breach parameters were obtained from these studies for use in this report.

Description of Jordanelle Dam

Jordanelle Dam and reservoir is located on the Provo River in Wasatch County in north central Utah about 5 miles north of Heber City, Utah. The reservoir has a storage capacity of 311,000 acre-feet at active conservation, and a total reservoir storage capacity of 361,500 acre-feet.

The primary purpose of the reservoir is to provide Municipal and Industrial water for use in Salt Lake City and northern Utah County. Additional project purposes include flood control, recreation, Heber Valley irrigation water, and fish and wildlife enhancement.

Description of Deer Creek Dam

Deer Creek Dam and reservoir are located on the Provo River about 16 miles northeast of Provo, Utah and about 10 miles southwest of Heber City, Utah. Deer Creek Dam consists of a zoned earthfill structure, spillway and outlet works. The reservoir has a storage capacity of 152,570 acre-feet at the top of the gates, which is elevation 5,417 feet. The reservoir is part of a collection system, which stores and releases water from the Duchesne River, Weber River, and also the Provo River drainage. The primary recipients of the water are cities and farms along the Wasatch Front. It also provides year-round power generation and is used heavily for recreational purposes.

Study Results

The results indicate that flooding resulting from the sunny day failures of either Jordanelle or Deer Creek Dams will inundate the residential areas along the Provo Canyon corridor and in Orem and Provo, which could result in the loss of life. In addition, parts of Springville located within the flood plain south of Provo, Utah as well as major highways and road crossings would be heavily impacted by the floodwaters.

The routings of the floods were terminated at approximately 10 hours for the sunny day failure of Jordanelle and Deer Creek Dams. About 10 hours after flooding begins, most of the floodwaters are safely contained by Utah Lake. The results of the flood routing are listed in the attached tables.

Sunny day failure of Jordanelle Dam resulting in the failure of Deer Creek Dam due to overtopping, identifies results obtained from the sunny day failure of Jordanelle Dam modeled as a piping failure. The table includes the maximum water surface, peak flows, and flood arrival times from the beginning of the failure of Jordanelle Dam to the flood arrival at Provo City.

Sunny day failure of Jordanelle Dam

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| River Miles Downstream of Deer Creek Dam | Maximum Water Surface Elev (Feet) | Depth Above Streambed (Feet) | Arrival Time of Leading Edge (Hrs) | Arrival Time of Peak Flow (Hrs) | Maximum Flow (CFS) | Location |
|--|-----------------------------------|------------------------------|--|---------------------------------|--------------------|-----------------------|
| 0.0 | 5439 | 165 | River Miles Downstream of Deer Creek Dam | 2.5 | 3,573,000 | Deer Creek Dam |
| 10.0 | 4926 | 104 | 2.0 | 2.9 | 3,124,000 | Mouth of Provo Canyon |
| 14.5 | N/A | N/A | 2.5 | 3.0 | 3,085,000 | Provo City |

*Arrival times are from the beginning of Jordanelle Dam failure

*Mile 0.0 is at the downstream toe of Deer Creek Dam

Sunny day failure of failure of Deer Creek Dam identifies results obtained from the sunny day failure of Deer Creek Dam modeled as a piping failure. The table includes the maximum water surface, peak flows, and flood arrival times from the beginning of the failure of Deer Creek Dam to the flood arrival at Provo City.

Sunny day failure of Deer Creek Dam

| River Miles Downstream of Deer Creek Dam | Maximum Water Surface Elev (Feet) | Depth Above Streambed (Feet) | Arrival Time of Leading Edge (Hrs) | Arrival Time of Peak Flow (Hrs) | Maximum Flow (CFS) | Location |
|--|-----------------------------------|------------------------------|------------------------------------|---------------------------------|--------------------|-----------------------|
| 0.0 | 5381 | 107 | 0.1 | 0.7 | 1,550,000 | Deer Creek Dam |
| 10.0 | 4915 | 93 | 0.8 | 1.1 | 1,397,000 | Mouth of Provo Canyon |
| 14.5 | N/A | N/A | 0.9 | 1.2 | 1,386,000 | Provo City |

*Arrival times are from the beginning of Deer Creek Dam failure

*Mile 0.0 is at the downstream toe of Deer Creek Dam

Maximum operational release of Deer Creek Dam identifies the results of the maximum operational release from Deer Creek Dam to the mouth of Provo Canyon, based on the maximum release of 13,500 cfs. The table includes the maximum water surface, depth above streambed, and peak flows obtained at the cross sections modeled.

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Maximum operational releases of Deer Creek Dam (Releases are based on continuous flow of 13,500 cfs)

| River Miles Downstream of Deer Creek Dam | Maximum Water Surface (Elev) | Depth Above Streambed (Feet) | Maximum Flow (CFS) |
|--|------------------------------|------------------------------|--------------------|
| 0.0 | 5289 | 15 | 13,500 |
| 10.0 | 4836 | 14 | 13,500 |

*Mile 0.0 is at the downstream toe of Deer Creek Dam

Inundation Maps

Inundation maps produced from this study are shown on U.S. Geological Survey Quadrangle maps (Scale 1:24,000). They combine flood inundation boundaries from both the National Weather Service's (NWS) DAMBRK one dimensional model, which was used to route flows between Deer Creek Dam and the mouth of Provo Canyon, and MIKE 21, the two dimensional model which terminates at Utah Lake. The flood inundation boundaries shown on the maps for each scenario were taken from the 1993 study and are located in the county annexes.

Mitigation

| | |
|---|--|
| Local Planning and Regulations | |
| Include Dam Failure scenarios into Local Planning | <ul style="list-style-type: none"> • Designate multiple escape routes for inundation zone • Require the hazardous materials be located outside inundation zone |
| Map and Assess Community Vulnerability to Dam Failure | <ul style="list-style-type: none"> • Use GIS to map inundation zones for high-risk dams (if not previously done) • Incorporate seismic strengthening into Capital Improvement Plan |
| Include Dam Owners in Planning Process | <ul style="list-style-type: none"> • Use dam's Emergency Response Plan in city emergency response plan • Invite dam owners to attend planning workshops when applicable |
| Structure and Infrastructure Projects | |
| Conduct seismic retrofitting | <ul style="list-style-type: none"> • Incentivize dam owners to retrofit high-risk dams |
| Partner with dam owners for upgrades | <ul style="list-style-type: none"> • Designate a dam liaison from the public works department to talk to owners |

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| | |
|-------------------------------------|---|
| Education and Awareness | |
| Educate the Public on their Risk | • Make maps and reports readily available |
| Review Inspection Results Regularly | • Designate employee to review inspection results on a yearly basis |

*Adapted from FEMA's "Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (2013)

Wildland Fire

Identifying Hazards

A wildfire is an uncontrolled fire spreading through vegetative fuel often exposing or consuming structures. Wildfires often begin unnoticed and spread quickly and are usually sighted by dense smoke. Wildfires are placed into two classifications Wildland and Wildland-Urban Interface. Wildland fires are those occurring in an area where development is essentially nonexistent, except for roads, railroads, or power lines. Wildland-Urban Interface fire is a wildfire in a geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels. As the populations of the MAG region grow, residents build farther into wildland areas. This can pose problems for local fire departments as they endeavor to extend their services to new homes.



When discussing wildland fire, it is important to remember that fires are part of a natural process and are needed to maintain a healthy ecosystem. If fires are suppressed for longer than the ecosystem is accustomed to and debris collects in the understory, any wildland fire that occurs will have more fuel to burn and be more difficult to control. Land Management agencies across the state try to keep the fuel low load through controlled burns, manual removal, and other practices. Three basic elements are needed for a fire to occur (1) a heat source (2) oxygen and (3) fuel. Fuel and oxygen are readily available in the MAG region. Major ignition sources for wildfire are lightning and human causes such as arson, prescribed burns, recreational activities, burning debris, sparks from equipment, and carelessness with fireworks. About half of all wildfires started in Utah can be attributed to human activities, with the other half caused by lightning. Once a wildfire has started, vegetation, topography and weather are all conditions having an affect on wildfire behavior.

Potential Mitigation Strategies

The following mitigation strategies have been provided so that communities may be aware of measures that could be used to limit the exposure to Wildland Fire related damage.

| Objective | Strategies |
|--|---|
| Local Planning and Regulations Map and Assess Vulnerability to Fire Reduce Risk through Land Use Planning Develop a Wildland-Urban Interface Code | <ul style="list-style-type: none"> • Use GIS mapping to analyze planning decisions, zoning, development, etc • Designate high-risk areas and specify conditions for use and development • Involve Fire Protection agencies in determining standards for development • Address access, signage, fire hydrants, water availability, vegetation, etc |
| Structure and Infrastructure Projects Create Defensible Space Around Structures Conduct Maintenance | <ul style="list-style-type: none"> • Create defensible space around power lines, oil and gas lines, etc. by removing vegetation and flammable materials • Replace flammable vegetation with less flammable species • Arson prevention cleanup in areas of abandoned structures, trash, etc. |
| Natural Systems Protection Implement a Fuels Management Program | <ul style="list-style-type: none"> • Perform maintenance including fuel management: pruning, selective logging, etc. • Sponsor local "slash and clean-up" days to reduce fuel loads along the WUI |
| Education and Awareness Participate in Firewise Program Increase Wildfire Risk Awareness Educate Property Owners about Wildfire Mitigation Techniques | <ul style="list-style-type: none"> • Consult Firewise guidance in encouraging best practices for the community • Organize local fire department tour to show officials vulnerable areas • Install fire mitigation systems such as interior and exterior sprinklers • Remove dead or dry leaves and other combustibles near/on homes |

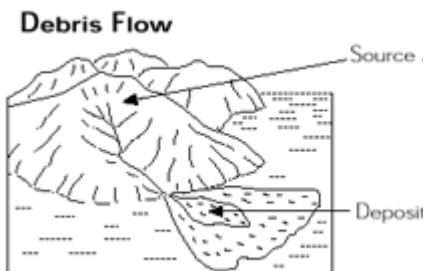
*Adapted from FEMA's "Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (2013)

Landslides

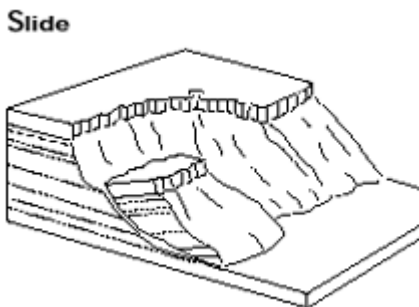
Many hazards are characteristically intertwined. Lightning may start a Wildfire or excessive rain could lead to a dam failure. Landslides are no exception. Landslides, often referred to as mass movement, occur any time the driving forces of gravity outweigh the resisting forces (friction, cohesion, strength of material) of a slope. This can be accelerated by a fire, which destroys the vegetation keeping soil in place, or a flood that lubricates soil particles and decreases the friction holding them in place. Earthquakes can also instigate movement of an unstable slope. Any area with a slope could be a site of mass movement. Mountain slopes with the spectacular views sought by many homeowners are especially susceptible to landslide activity. Though there have been fewer catastrophic landslide disasters than flood or fire, there are numerous events where a few homes are damaged or made to undertake extensive mitigation measures because the land under their foundation is slowly creeping out of place.

Mass movement can occur at a snail's pace or faster than a flood. The speed depends on the composition of the mass being moved and the cause of the movement. There are several types of mass movement, the most relevant of which are explained below.

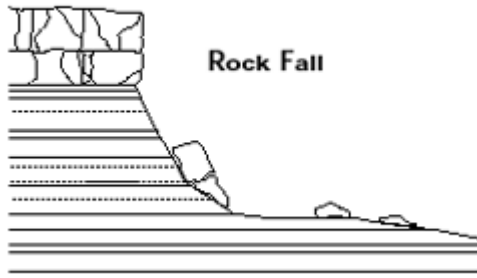
Three Common Types of Landslides in Utah



Debris flows consist of sediment-water mixtures that flow down a streambed or hillside, commonly depositing sediment at canyon mouths in fan-like deposits known as alluvial fans. These often occur during episodes of heavy rain, especially if a slope has experienced de-vegetation from fire or construction. Debris flows can start with just a few cubic feet of material and gain huge quantities as they quickly flow downhill.



Slides are down slope movements of soil or rock on slopes. They can occur so slowly that the only evidence is gradual cracking of a home's walls and foundations or fast enough to kill. There are several activities that increase the likelihood of this type of mass movement occurring, such as cutting into the toe of a slope, overwatering, adding weight (such as a house) to the top of a slope, and removing vegetation (especially trees).



Rock falls consist of rock(s) falling from a cliff or cut slope and are very common in the canyon country of southern Utah. Rock falls, by definition, involve material travelling through the air and happen very quickly. Earthquakes are often a trigger, as is repeated freezing and thawing which expands cracks within the rock.

Potential Mitigation Strategies

The following mitigation strategies are provided so that communities may be aware of methods that could be used to limit the exposure to landslide/Problem Soils related damage.

| Objective | Strategies |
|--|--|
| Local Planning and Regulations Manage Development in Landslide Hazard Areas Open Space Warn inhabitants after triggering events Map and Assess Community Vulnerability to Landslides | <ul style="list-style-type: none"> • Locate utilities outside landslide areas • Limit new development in steep slope/high-risk areas • Leave open space or setbacks on and near at-risk slopes • Monitor at-risk slopes after fire, intense rainfall, or other events • Assess vegetation in wildfire-prone areas to prevent landslides after fires • Inventory infrastructure in areas vulnerable to landslides |
| Structure and Infrastructure Projects Prevent Impacts to Roadways Install drain fields Remove Existing Buildings and Infrastructure from Hazard Areas | <ul style="list-style-type: none"> • Apply soil stabilization measures on steep, publicly-owned slopes • Install drains on slopes with naturally poor drainage • Acquire at-risk buildings and infrastructure • Enforce permanent restrictions on development |
| Education and Awareness Educate Public on Hazardous areas Real Estate disclosure Educate the public on correct watering practices and slope vegetation | <ul style="list-style-type: none"> • Make public hazard maps • Ensure that homebuyers know risk before purchasing homes on slopes • Disperse guidelines for correct watering practices to those in vulnerable areas • Recommend services and plants to those living on or near steep slopes |

*Adapted from FEMA's "Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (2013)

Part 4 Regional Hazards

Introduction

Many hazards are difficult to map at a county level due to their unpredictability or widespread effects. Severe weather, infestations, algal blooms, and drought have been recognized as regional hazards for this plan. Identifying one portion of the region being more prone to these hazards than another is impractical due to the lack of specific spatial data and their widespread nature. Each jurisdiction has the opportunity to address these hazards on an individual mitigation level.

Air Quality

Description

Poor air quality is caused by harmful emissions from vehicles, homes, industry, and wildfire that have serious health, climate, and environmental consequences.

Although air quality is gradually improving, air pollution reduces the lifespan of the average Utahian by 2 years. Vehicle emissions account for half of air pollution. The Wasatch Front's geography make inversions especially severe while the entire West suffers during wildfire season.

Probability: High in Utah County, low in Summit and Wasatch Counties

Severity: Critical, causes hospital visits and premature deaths.

Vulnerability

Children, the elderly, those with health conditions, and fetuses are at greater risk for hospitalization on bad air days. Utah County's pollution is bad enough that it must submit plans to the EPA to improve its air, but Wasatch County is also concerned about the pollution and has had monitors in place since 2016.

Mitigation Strategies

- Adopt emissions reduction goals

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- Promote teleworking
- Support research
- Accelerate Quality Growth efforts (ie denser, more walkable places)
- Encourage Electric Vehicles and infrastructure
- Consider market-based approaches
- Reduce auto-dependency

Experts estimated that air pollution in Utah causes 2480 to 8000 premature deaths annually (90% confidence interval) and decreases the median life expectancy by 1.1 to 3.6 years. Economic costs of air pollution in Utah totaled **\$0.75 to \$3.3 billion annually**, up to 1.7% of the state's gross domestic product. -(Errigo et al, Human Health and Economic Costs of Air Pollution in Utah: An Expert Assessment. *Atmosphere*. 2020; 11(11):1238. <https://doi.org/10.3390/atmos11111238>)

Algal Blooms

Algal blooms occur when naturally occurring cyanobacteria in the water multiply very quickly in warm conditions, producing cyanotoxins that can pose serious health risks.

Probability: High, especially in Utah Lake

Severity: Critical, can cause injuries or deaths

While blooms can happen naturally in pristine mountain lakes and impaired urban waterways, certain conditions (i.e. usually warmer waters and high concentrations of phosphorus and nitrogen) can increase the likelihood of blooms. As global temperatures increase, scientists have noticed blooms at an increasing frequency. Nitrogen and phosphorus are common pollutants that can come from sewage treatment plants, erosion and urban and agricultural runoff.

Vulnerability

Lake-adjacent cities and businesses that depend on water recreation are adversely affected by algal blooms, as is the perception of water safety at large. Children and pets are more likely to ingest water.

Mitigation Strategies

Proper land management and the investment in new technologies to treat wastewater can reduce the likelihood of blooms.

- Reduce the amount of fertilizer use on lawns
- Use phosphorus-free fertilizer and detergent when possible

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- Fix leaking septic systems
- Keep yard debris such as leaves or grass clippings from washing into storm drains
- Pick up pet waste

Severe Weather

Utah, Summit, and Wasatch counties have an ideal site and situation for a variety of severe weather events. Utah's distance from the moderating effects of oceans results in hot summers and cold winters, unlike coastal areas that enjoy less extreme temperatures. In addition, the mountains create opportunity for precipitation which can be severe. The benefit of the mountains (other than providing necessary water) is that they prevent more severe tornadoes by breaking up the bodies of warm, moist air and cool, dry air necessary for formation. Numerous opportunities for recreation in the Wasatch and Uintah mountains place a greater number of people at risk during severe weather events, whether it be summer hikers struck by lightning or skiers caught in a snow storm.

"Severe weather" includes the following events grouped for convenience.

Hazard National Weather Service Guidelines for Event Type

| | |
|--|--|
| Winter Weather, Blizzard, Snow Storm | A winter storm which produces the following conditions for 3 hours or longer: (1) sustained winds or frequent gusts 30 knots (35 mph) or greater, and (2) falling and/or blowing snow reducing visibility frequently to less than 1/4 mile, on a widespread or localized basis. -OR- A winter precipitation event that causes a death, injury, or a significant impact to commerce or transportation but does not meet locally/regionally defined warning criteria. A Winter Weather event could result from one or more winter precipitation types (snow, or blowing/drifting snow, or freezing rain/drizzle), on a widespread or localized basis |
| Cold, Wind Chill, Extreme Cold | Period of low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined advisory (typical value is -18°F or colder) conditions, on a widespread or localized basis. There can be situations where advisory criteria are not met, but the combination of seasonably cold temperatures and low wind chill values (roughly 15°F below normal) must result in a fatality. Normally, cold/wind chill conditions should cause human and/or economic impact. |

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| | |
|--|--|
| Dense Fog | Water droplets suspended in the air at the Earth's surface, over a widespread or localized area, reducing visibility to values equal to or below locally/regionally established values for dense fog (usually 1/4 mile or less) and impacting transportation or commerce. No direct fatalities. |
| Hail | Hail 3/4 of an inch or larger in diameter will be entered. Hail accumulations of smaller size which cause property and/or crop damage, or casualties, should be entered. |
| Heavy Rain | Unusually large amounts of rain which do not cause a flash flood or flood, but cause damage, e.g., roof collapse or other human/economic impact. |
| High Wind, Thunderstorm Wind, Strong Wind | Sustained non-convective winds of 35 knots (40 mph) or greater lasting for 1 hour or longer or winds (sustained or gusts) of 50 knots (58 mph) for any duration (or otherwise locally/regionally defined), on a widespread or localized basis. In some mountainous areas, the above numerical values are 43 knots (50 mph) and 65 knots (75 mph), respectively. -OR- Non-convective winds gusting less than 50 knots (58 mph), or sustained winds less than 35 knots (40 mph), resulting in a fatality, injury, or damage. -OR- Winds, arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 50 knots (58 mph), or winds of any speed (non-severe thunderstorm winds below 50 knots) producing a fatality, injury, or damage. |
| Lightning | A sudden electrical discharge from a thunderstorm, resulting in a fatality, injury, and/or damage. |
| Tornado, Funnel Cloud | A rotating, visible, extension of a cloud pendant from a convective cloud with circulation not reaching the ground. The funnel cloud should be large, noteworthy, or create strong public interest to be entered. -OR- A violently rotating column of air, extending to or from a cumuliform cloud or underneath a cumuliform cloud, to the ground, and often (but not always) visible as a condensation funnel. Literally, in order for a vortex to be classified as a tornado, it must be in contact with the ground and extend to/from the cloud base, and there should be some semblance of ground-based visual effects such as dust/dirt rotational markings/swirls, or structural or vegetative damage or disturbance. |

Lightning

During the development of a thunderstorm, the rapidly rising air within the cloud, combined with the movement of the precipitation within the cloud, causes electrical charges to build. Generally, positive charges build up near the top of the cloud, while negative charges build up near the bottom. Normally, the earth's surface has a slight negative charge. However, as the negative charges build up near the base of the cloud, the ground beneath the cloud and the area surrounding the cloud becomes positively charged. As the cloud moves, these induced positive charges on the ground follow the cloud like a shadow. Lightning is a giant spark of electricity that occurs between the positive and negative charges within the atmosphere or between the atmosphere and the ground. In the initial stages of development, air acts as an insulator between the positive and negative charges. When the potential between the positive and negative charges becomes too great, there is a discharge of electricity that we know as lightning.

Heavy Snowstorms

A severe winter storm deposits four or more inches of snow during a 12-hour period or six inches of snow during a 24-hour period. According to the official definition given by the U.S. Weather Service, the winds must exceed 35 miles per hour and the temperature must drop to twenty degrees Fahrenheit (20° F) or lower. All winter storms make driving extremely dangerous.

Hail Storms

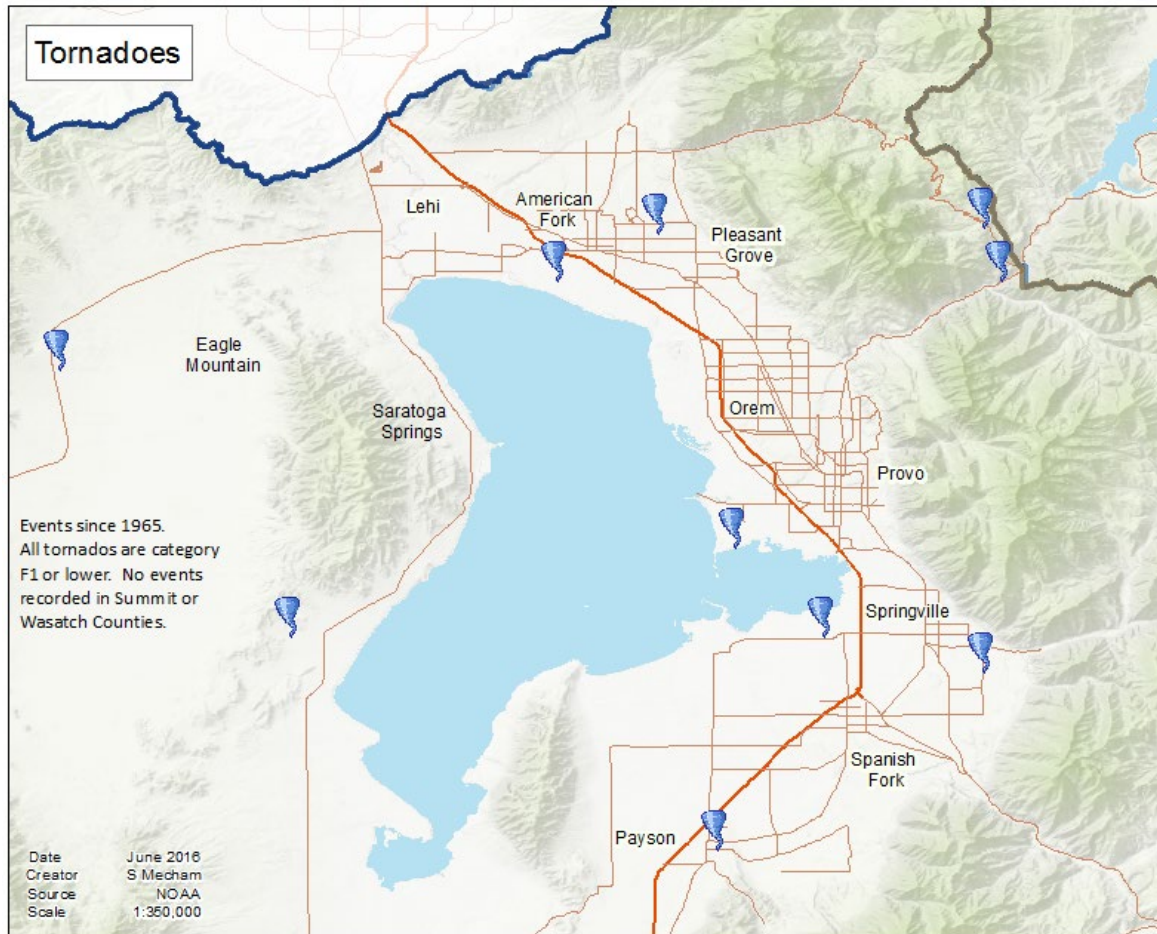
Hailstones are large pieces of ice that fall from powerful thunderstorms. Hail forms when strong updrafts within the convection cell of a cumulonimbus cloud carry water droplets upward causing them to freeze. Once the droplet freezes, it collides with other liquid droplets that freeze on contact. These rise and fall cycles continue until the hailstone becomes too heavy and falls from the cloud.

Tornados

A tornado is a violently rotating column of air extending from a thunderstorm to the ground. Tornadoes often occur at the edge of an updraft or within the air coming down from a thunderstorm. Due to the Mountainland region's topography, it has only experienced tornadoes category F1 and lower. The most destructive tornado in the state of Utah occurred in 1999, striking downtown Salt Lake City and resulting in 1 death, dozens

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of injuries and \$170 million in damage. Even so, that tornado was only an F2 and dissipated upon reaching the foothills.



Avalanches

Avalanches are a rapid down-slope movement of snow, ice, and debris. Snow avalanches are a significant mountain hazard in Utah, and nationally account for more deaths each year than earthquakes. Avalanches are the result of snow accumulation on a steep slope and can be triggered by ground shaking, sound, or a person. Avalanches consist of a starting zone, a track, and a run-out zone. The starting zone is where the ice or snow breaks loose and starts to slide. The Track is the grade or channel down which an avalanche travels. The run-out zone is where an avalanche stops and deposits the snow.

The two main factors affecting avalanche activity include weather and terrain, large frequent storms combined with steep slopes result in avalanche danger. Additional factors that contribute to slope stability are the amount of snow, rate of accumulation, moisture

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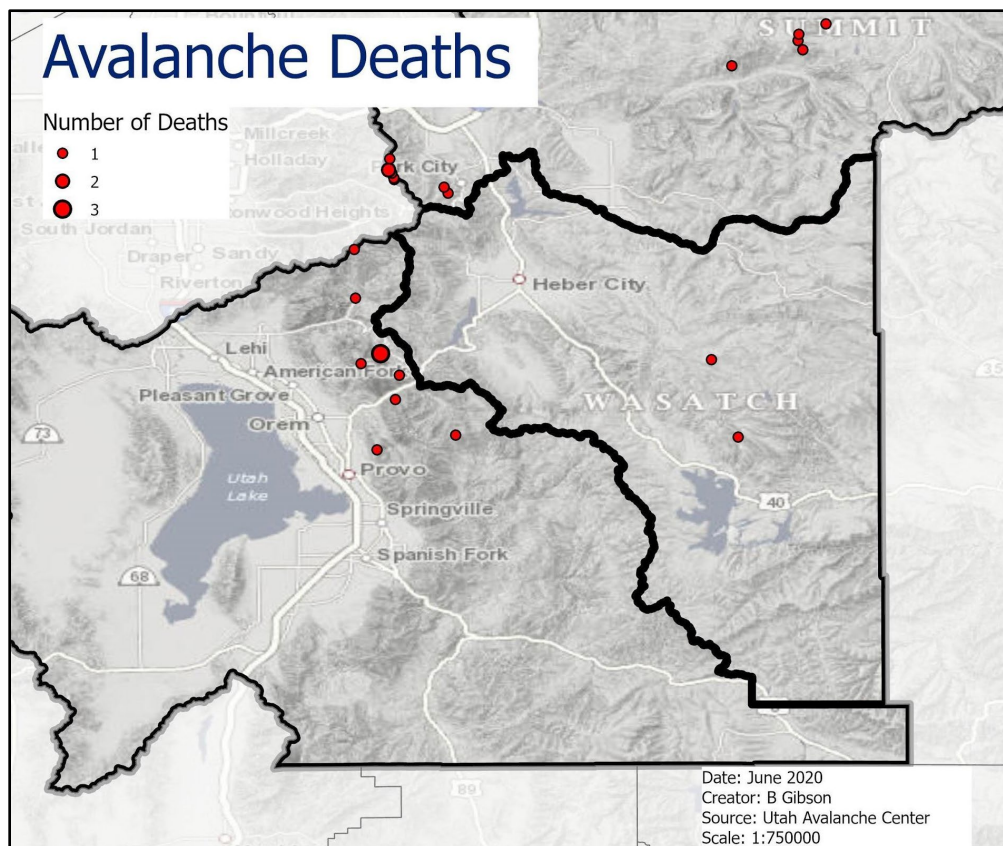
content, snow crystal types and the wind speed and direction. In Utah, the months of January through April have the highest avalanche risk.

Topography plays a vital role in avalanche dynamics. Slope angles between 30 to 45 degrees are optimum for avalanches with 38 degrees being the bulls-eye. Slopes with an angle above 45 degrees continually slough, thereby preventing large accumulation. The risk of avalanches decreases on slope angles below 30 degrees.

Types of Avalanches Common in Utah:

Dry or slab avalanches occur when a cohesive slab of snow fractures as a unit and slides on top of weaker snow, breaking apart as it slides. Slab avalanches occur when additional weight is added quickly to the snow pack, overloading a buried weaker layer. Dry snow avalanches usually travel between 60-80 miles per hour, reaching this speed within 5 seconds of the fracture, resulting in the deadliest form of snow avalanche.

Wet avalanches occur when percolating water dissolves the bonds between the snow grains in a pre-existing snow pack, decreasing the strength of the buried weak layer. Strong sun or warm temperatures can melt the snow and create wet avalanches. Wet avalanches usually travel about 20 miles per hour.



Potential Mitigation Strategies

The following mitigation strategies are provided so that communities may be aware of methods that could be used to limit the exposure to Severe Weather/Avalanche related damage.

| Objective | Strategies |
|--|--|
| Local Planning and Regulations | |
| Adopt and Enforce Building Codes | • Enforce building codes for roof snow loads |
| Adopt Zoning Codes in Avalanche Areas | • Limit development in avalanche risk areas |
| Create Early Warning Systems | • Make National Weather Service warnings easily accessible to residents |
| Structure and Infrastructure Projects | |
| Protect Power Lines | • Install redundancies and loop-feeds, design lines to fail in small sections |
| Protect Critical Facilities and Equipment | • Install lightning protection on critical infrastructure and surge protection |
| Reduce Impacts to Roadways | • Use snow fences or rows of vegetation to limit blowing and drifting snow |
| | • Install sheds over roads below avalanche terrain |
| Education and Awareness | |
| Conduct Winter Weather Risk Awareness | • Distribute family and traveler emergency preparedness information |
| Assist Vulnerable Populations | • Encourage homeowners to install CO monitors and alarms |
| Educate Property Owners about Freezing Pipes | • Identify and organize outreach to vulnerable populations |
| | • Educate homeowners on locating water pipes inside insulated areas |

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- Inform homeowners on allowing a faucet drip during extreme cold

*Adapted from FEMA's "Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (2013)

Assessing Vulnerability

Severe weather can be a regular part of living in the Mountainland Region. Fortunately, the intensity of severe weather in the region has been limited to moderate levels. Some vulnerability assessment is made in the County Profiles based on previous losses.

Development Trends

In some instances, growth in certain areas such as mountainsides and canyons can decrease accessibility and increase other risks such as avalanche. Communities should develop education requirements as part of the development process. Other hazards such as lightning and hail are relatively independent of small-scale geography and are not exacerbated by development. Climate change could increase the amount of energy in the air, resulting in more powerful summer storms and their related hazards. Climate change could increase the amount of energy in the air, resulting in more powerful summer storms and their related hazards.

Profile

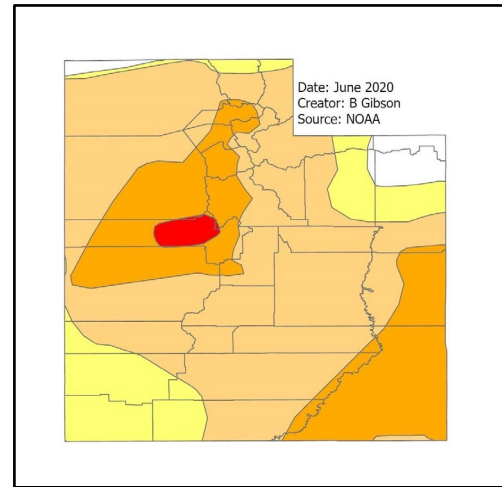
| | |
|--------------------------------------|--|
| Frequency | Frequent. Multiple events happen each year. |
| Severity | Moderate |
| Location | Region wide with some locations more frequent due to geography. |
| Seasonal Pattern | All year depending upon the type of event. |
| Duration | Seconds to Days |
| Speed of Onset | Immediate |
| Probability of Future Occurrences | Extremely likely. All counties average multiple damaging severe weather events every year. |

History

Due to the large number of incidents that have been recorded the history table was omitted from this section and a summary is in each County Profile.

Drought

Drought is a normal recurrent feature of climate, although many people in Utah erroneously consider it a rare and random event. It occurs in virtually all climatic zones, but has greater effects in semi-arid zones (such as Utah) where consistently lower levels of precipitation decrease the margin of tolerance for lengthy events. Droughts are slow-onset hazards, which result from long periods of below normal precipitation. Drought is a temporary aberration and differs from aridity since the latter is restricted to low rainfall regions and is a permanent feature of climate.



A common measure of drought is the Palmer Drought Severity Index (PDSI), which quantifies the existence of a drought through measures of soil moisture. A caveat of the PDSI is that it does not account for human access to water, such as reservoir levels. The PDSI may show no drought while human and agricultural sources are still recovering from multiple years of water storage depletion.

| Palmer Drought Severity Index PDSI | Description | Possible Impacts |
|------------------------------------|------------------|--|
| -1.0 to -1.9 | Abnormally Dry | Short-term dryness slowing planting, growth of crops/pastures |
| -2.0 to -2.9 | Moderate Drought | Some damage to crops/pastures Streams, reservoirs, or wells low Voluntary water-use restrictions requested |
| -3.0 to -3.9 | Severe Drought | Crop/pasture losses likely Water shortages common Water restrictions imposed |
| -4.0 to -4.9 | Extreme Drought | Major crop/pasture losses Widespread water shortages or restrictions |

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| | | |
|--------------|---------------------|---|
| -5.0 or less | Exceptional Drought | Shortages of water in reservoirs, streams, and wells creating water emergencies Exceptional and Widespread crop/pasture losses |
|--------------|---------------------|---|

*Adapted from U.S. Drought Monitor

Profile

| | |
|--|---|
| Frequency | Frequent |
| Severity | Severe primarily to agriculture |
| Location | Region wide |
| Seasonal Pattern | Summer |
| Duration* | Average: 11 years, longest in record: 44 years |
| Speed of Onset | Incremental with impact increasing. |
| Probability of Future Occurrences* | Moderate: 10% (PDSI -2.0 or lower) Severe: 4% (PDSI -3.0 or lower) |
| *Estimates according to NIDIS data based on tree-ring data from year 0 to 2017 | |

Assessing Vulnerability

Drought is a condition that affects every corner of the Mountainland Region. In the developed world, droughts no longer threaten the availability of drinking water and do not put lives at risk. The same cannot be said for one's livelihood. As most of the agriculture in the region is irrigated, low water levels can have the greatest effect on rural communities where farming is still prominent. As growth occurs, water will continue to be converted to non-agricultural uses and therefore increasing the remaining farmers' vulnerability to drought. Each of the three counties has rural communities that could be affected. Droughts also stress wildlife and heighten the risk of wildfire.

Development Trends

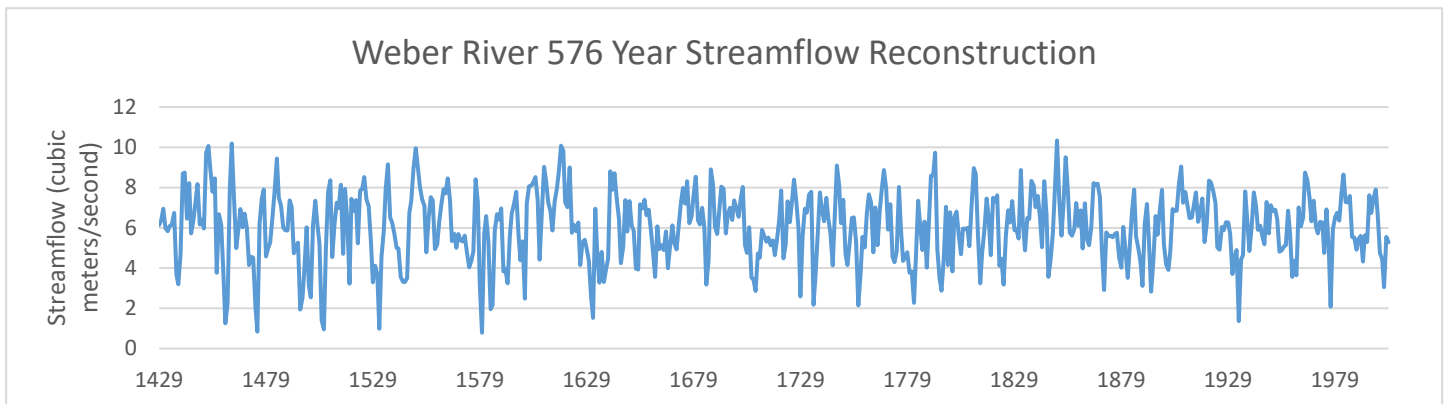
As the state and region continue to be among the fastest growing in the U.S., drought will become a more pronounced threat. Existing water development projects such as reservoirs have been able to minimize the effects of drought on people and agriculture to this point. Both future and current water users will need to develop more sustainable

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practices to ensure that droughts will continue to have only moderate effects on the region. Climate change will certainly have an effect on the region, but what that effect is remains to be seen. Current projections suggest that additional heat will result in a milder winter with less snow and more rainfall in the spring. Since the region depends on snowmelt as a sort of “time release” source the lack thereof necessitates other methods of storing water in addition to greater efficiencies.

History

Tree ring data can also be used to extend the drought record far beyond the instrumental record. Correlating tree ring widths from hundreds of trees across the region provides a much broader sample of precipitation variability going back hundreds of years. In fact, tree ring data suggests that the instrumental record has actually been relatively drought-free compared to the entire record. For example, the following reconstruction of the Weber River (which correlates well with all three counties) shows the 20th century having the fewest severely dry years of the entire record. The National Integrated Drought Information System was used to calculate probability for MAG’s counties.



Matthew F. Bekker, R. Justin DeRose, Brendan M. Buckley, Roger K. Kjelgren, and Nathan S. Gill . 2014. A 576-Year Weber River Streamflow Reconstruction from Tree Rings for Water Resource Risk Assessment in the Wasatch Front, Utah. Journal of the American Water Resources Association. doi: 10.1111/jawr.12191 <https://www.ncdc.noaa.gov/paleo/study/16416>. Accessed 11 July 2016

Mitigation

Installing secondary meters saves water. Data shows significant savings of 20-30%. Over the last few years, legislation has been passed to require meters on new secondary

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connections, and \$2 million annually has been appropriated in matching grant funds to offset the cost of installation in first- and second-class counties.

Potential Mitigation Strategies

The following mitigation strategies are provided so that communities may be aware of measures that could be used to limit the exposure to drought related damage.

| Objective | Strategies |
|--|--|
| Local Planning and Regulations | |
| Monitor Water Supply | <ul style="list-style-type: none">• Regularly check for leaks to minimize water supply losses• Develop agreements for secondary water sources• Develop an ordinance to restrict public water use for non-essential items• Adopt ordinances to prioritize water use, especially for emergencies• Identify potential for wildfire due to drought• Establish grazing policy or permitting to prevent overgrazing |
| Plan for Drought | |
| Require Water Conservation | |
| During Drought Conditions | |
| Identify Secondary Effects of Drought | |
| Prevent Overgrazing | |
| Structure and Infrastructure Projects | |
| Retrofit Water Supply Systems | <ul style="list-style-type: none">• Upgrade water delivery systems to eliminate breaks and leaks |
| Natural Systems Protection | |
| Enhance Landscaping and Design Measures | <ul style="list-style-type: none">• Incorporate drought tolerant or xeriscape practices into landscape ordinances• Use permeable surfaces to reduce runoff and promote groundwater recharge• Legislate to protect stream flows and aquifers |
| Protect Water Sources | |
| Education and Awareness | |
| Educate Residents on Water Saving Techniques | <ul style="list-style-type: none">• Install low-flow showerheads and toilets• Encourage installation of graywater systems in homes for water reuse• Rotate crops by growing on the same fields every season to reduce soil erosion• Use zero and reduced tillage to minimize soil disturbance• Encourage agricultural interests to purchase insurance to cover drought loss |
| Educate Farmers on Soil and Water Conservation Practices | |
| Purchase Crop Insurance | |
| | |

*Adapted from FEMA's "Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (2013)

Pests

Utah, “The Beehive State”, has an agricultural industry valued at over a billion dollars. Insects such as the honeybee are generally a vital and positive part of the ecological system that makes agriculture possible. However, there are instances when an insect population much larger than average (such as Grasshopper/Cricket Infestations) or insects from outside the region (such as the invasive Emerald Ash Borer) destabilize the ecosystems where they occur. The Utah Department of Agriculture and Food monitors numerous pests, conducts pest control, and educates the public on identification and mitigation. Other insects are vectors, or travelling hosts, for diseases that can be contracted by humans. Mosquitos and ticks are the most common carriers of disease.



Profile

| | |
|-----------------------------------|---|
| Frequency | Frequent |
| Severity | Severe primarily to agriculture. |
| Location | Region Wide - especially agricultural areas and around lakes and reservoirs. |
| Seasonal Pattern | Spring and Summer |
| Duration | Days to Years |
| Speed of Onset | Incremental. |
| Probability of Future Occurrences | Very High – Crop/Forest damage due to infestations is reported every year. Vector borne illnesses are reported almost every year. |

Development Trends

Regarding infestations of crop and range land, as land use shifts from agriculture to housing there will be less impact from infestations on the agricultural sector simply because there will be less agriculture. On the other hand, individual homeowners are less reliable when it comes to eliminating pests than large agricultural areas owned by informed persons that depend on pest removal for their livelihood. As development occurs there is more opportunity for weeds to take hold at the edges of disturbed land.

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Numbers of invasive species may also increase as Utah markets increase participation in global markets.

Agricultural Pest Risks

Below is a short list of pests having high potential damage according to the Utah Department of Agriculture and Food (UDAF). For more information on pest control, behavior, statistics, and experts see UDAF's website at www.ag.utah.gov

Summary of Invasive and Native Pest Risks in the State of Utah

| | |
|------------------------------|---|
| Asian Defoliators | Significant potential threat to Utah's forests and related industries |
| Emerald Ash Borer | Threaten to kill all ornamental and native ash trees in Utah |
| European Corn Borer | Potential to devastate Utah's \$25 million corn harvest |
| Gypsy Moth | Potential to disrupt Utah's \$2 million honey industry; health risks to humans and livestock |
| Honey Bee Pests and Diseases | Potential to destroy Utah's watersheds, coniferous forests, and residential landscapes |
| Japanese Beetle | Potential to damage Utah's \$128 million nursery and floriculture industry, and \$34 million fruit industry |
| Mormon Cricket & Grasshopper | Potential to significantly reduce Utah's \$509 million small grain and field crop industry |
| Orchard Pests | Fruit industry pest, potential to devastate Utah's \$34 million fruit industry |
| Red Imported Fire Ant | Economic damage caused in the US exceeds \$5 billion and is a public health risk |

*Adapted from Utah Department of Agriculture and Food's 2015 Insect Report

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Mormon Crickets and Grasshoppers merit a special mention in terms of their history in Utah. This devastating insect plagued the early pioneers. Today, 150 years later, the Mormon cricket still economically devastates some parts of Utah.

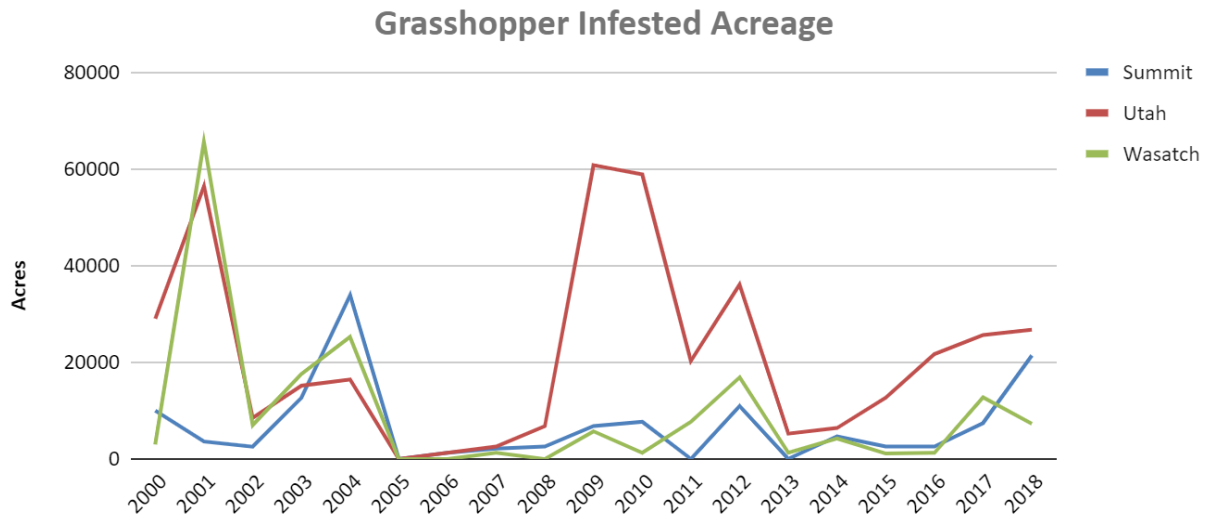


Figure 8. Utah Mormon Cricket and Grasshopper Report 2018, UDAF



In June of 2003, Utah Governor Mike Leavitt declared a State of Emergency in 18 of Utah's 29 counties, where crickets and grasshoppers had eaten 1.5 million acres. Problems associated with cricket infestations usually deal with crop loss as well as loss of rangeland for cattle and sheep. Consumption of residential landscaping is also a problem and more homes are built in western Utah County, which is in the path of crickets.

The crickets usually travel from west to east, starting in Nevada. In some instances, the cricket mass is so large and dense that cars and trucks lose traction on roads. Vehicles sliding off of roads can cause property damage and personal injury.

Health Risks

Biting insects have long been carriers of disease. Mosquitos carrying malaria and ticks with Lyme's disease have plagued countries for centuries. Even though Utah's cold winters effectively kill large numbers of infected vectors, there are still occurrences of West Nile Virus and Rocky Mountain Spotted Fever from time to time. It is inevitable that other vector borne illnesses will develop or be introduced in the future.

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West Nile Virus (WNV) is transmitted to humans through mosquito bites.

Mosquitoes become infected when they feed on infected birds that have high levels of WNV in their blood. Infected mosquitoes can then transmit WNV when they feed on humans or other animals. WNV is not transmitted from person to person and there is no evidence that handling live or dead infected birds can infect a person. Most WNV infected humans have no symptoms. A small proportion develops mild symptoms and less than 1% of infected people develop more severe illness that includes meningitis (inflammation of one of the membranes covering the brain and spinal cord) or encephalitis. Of the few people that develop encephalitis, a small proportion die but, overall, this is estimated to occur in less than 1 out of 1000 infections. Fortunately, the incidence of WNV in human and animal populations has been very low in Summit, Utah, and Wasatch counties for the past several years.

West Nile Virus Positive Samples in Summit, Utah, & Wasatch Counties

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|----------------|------|------|------|------|------|------|------|------|------|------|
| Human | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7 | 1 | 0 |
| Horse | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 |
| Mosquito Pools | 0 | 0 | 2 | 2 | 5 | 0 | 0 | 11 | 0 | 4 |

*Adapted from the Utah Department of Health West Nile Virus Reports

Rocky Mountain Spotted Fever (RMSF) is contracted by exposure to ticks infected with *Rickettsia rickettsii*. According to the CDC, there is a higher rate of exposure in the Southern Atlantic states and generally less than 20 cases per million persons occur in Utah. Individuals may experience a rash, fever, nausea, muscle pain, lack of appetite and conjunctival injection (red eyes). Antibiotics have proven to be an effective treatment when RMSF is identified early (especially in the first 5 days). RMSF has a mortality rate of 30% in untreated patients.

Mitigation

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For diseases transmitted by mosquitoes and ticks, the best prevention is to use insect repellents with DEET or Permethrin and cover exposed skin. Those going into wooded areas should try to find and remove ticks as soon as possible, both on the body and on clothes, gear, and pets. Standing water serving as breeding grounds for mosquitos should be eliminated or water changed regularly. Early identification and treatment is always important when infection is possible.

Mitigation strategies for pests range from poisoned bait and tilling to expose buried eggs to aerial spraying. The most effective method depends on each species' behaviors and physiology, but certain methods like aerial insecticides can have adverse effects on non-target species such as bees. Local Extension Offices of the Utah Department of Agriculture and Food provide species specific strategies.

Radon Gas

According to the EPA, Radon is a colorless, odorless gas emitted in the natural breakdown of uranium in soil, rock, and water. It is the second leading cause of lung cancer behind smoking, responsible for about 21,000 lung cancer deaths yearly. Radon gas has been detected in every state in the U.S., with 30% of homes tested in Utah exceeding the EPA recommended action level of 4 pCi/L (picoCuries of radon per liter of air). The following table from the EPA's Health Risks of Radon compares the risk of dying from radon exposure to other events.

Radon Risk If You Have Never Smoked

| Radon Level | If 1,000 people who never smoked were exposed to this level over a lifetime*... | The risk of cancer from radon exposure compares to**... | WHAT TO DO: |
|-------------|---|---|---------------|
| 20 pCi/L | About 36 people could get lung cancer | 35 times the risk of drowning | Fix your home |
| 10 pCi/L | About 18 people could get lung cancer | 20 times the risk of dying in a home fire | Fix your home |

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| | | | |
|-----------|---------------------------------------|-------------------------------------|---|
| 8 pCi/L | About 15 people could get lung cancer | 4 times the risk of dying in a fall | Fix your home |
| 4 pCi/L | About 7 people could get lung cancer | The risk of dying in a car crash | Fix your home |
| 2 pCi/L | About 4 people could get lung cancer | The risk of dying from poison | Consider fixing between 2 and 4 pCi/L |
| 1.3 pCi/L | About 2 people could get lung cancer | (Average indoor radon level) | (Reducing radon levels below 2 pCi/L is difficult.) |
| 0.4 pCi/L | | (Average outdoor radon level) | |

Note: If you are a former smoker, your risk may be higher.

* Lifetime risk of lung cancer deaths from EPA Assessment of Risks from Radon in Homes (EPA 402-R-03-003).

** Comparison data calculated using the Centers for Disease Control and Prevention's 1999-2001 National Center for Injury Prevention and Control Reports.

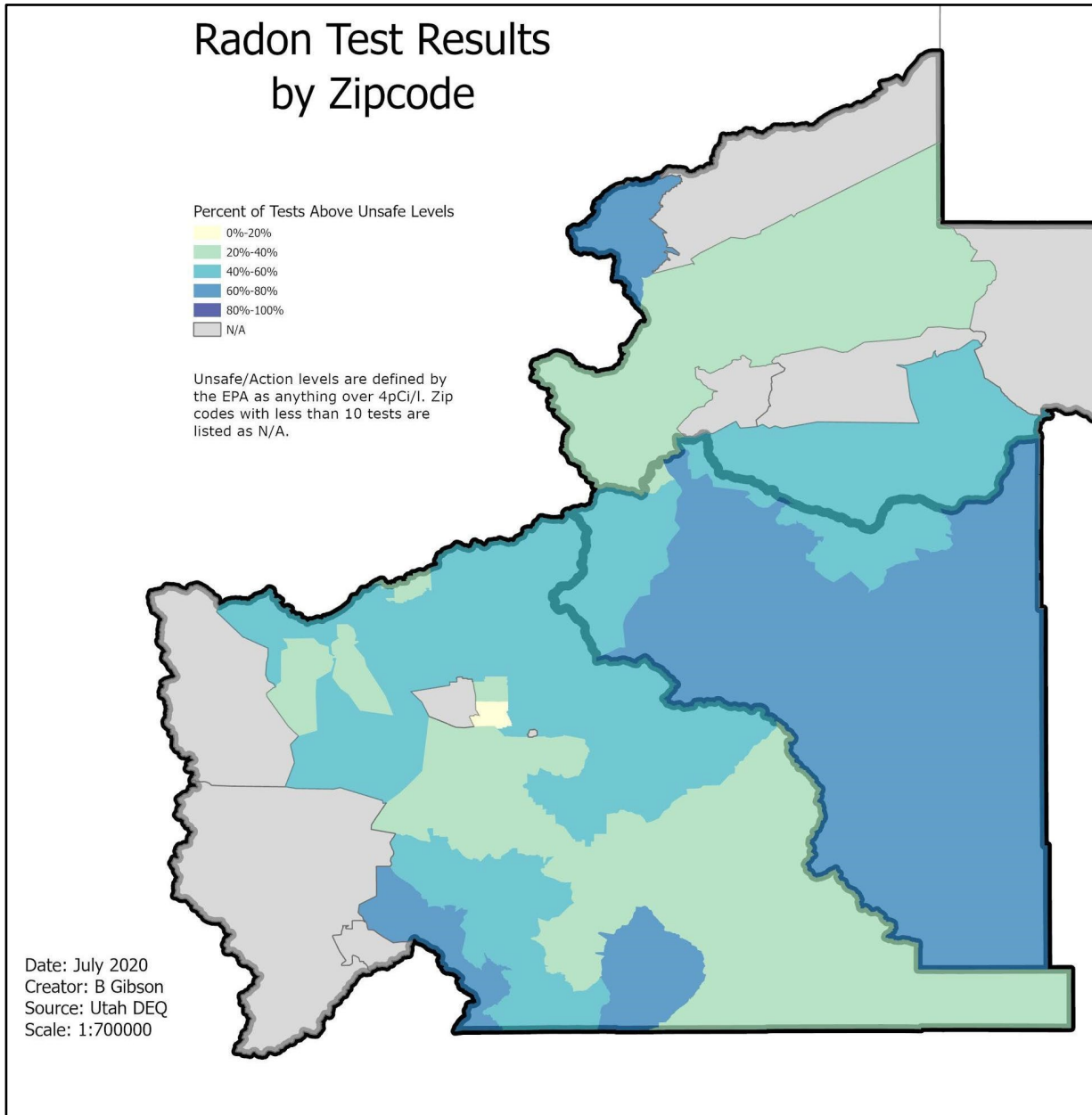
Profile

| | |
|-----------------------------------|---|
| Frequency | Permanent |
| Severity | Moderate to human health |
| Location | Region Wide |
| Seasonal Pattern | Ongoing, but more problematic in the winter |
| Duration | Ongoing |
| Speed of Onset | Permanent |
| Probability of Future Occurrences | Certain |

Assessing Vulnerability

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The level of Radon Gas in a home is as much a factor of home construction as it is geographic location. Radon travels from the soil into a home with lower pressure through openings in the foundation, be they cracks or the gaps around pipes. This occurs in old and new homes, though newer homes with moisture-control generally have fewer crevices in the foundation or basement walls. According to a survey in 2011 of 497 individuals, though 58% had heard of Radon Gas, only 12.5% had their homes tested. There are public education efforts underway to remedy the problem.



Development Trends

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As more homes are built, more people could be exposed to Radon Gas. There is some lobbying in Utah Congress for more funds to be allocated to awareness campaigns and for higher construction standards.

Potential Mitigation Strategies

There are several mitigation strategies for reducing Radon Gas levels within a building.

| Objective | Strategies |
|---|---|
| Local Planning and Regulations Require Developers to Offer Radon Reductions Systems to Homebuyers Require Radon Tests in State-Owned Buildings | <ul style="list-style-type: none"> • Choose developers who offer Radon-reducing construction • Require developers to discuss Radon mitigation options with buyers • Regularly test schools and other public facilities • Install mitigation measures when necessary |
| Structure and Infrastructure Projects Install Soil Suction Systems Fortify Foundations Ventilate home | <ul style="list-style-type: none"> • Use suction to remove radon from beneath the foundation to outdoor air • Seal cracks and openings in any wall or floor below grade • Open doors and windows to temporarily lower levels of Radon |
| Education and Awareness Encourage Home Testing Educate Public on Radon Risks | <ul style="list-style-type: none"> • Provide low-cost Radon test kits • Provide and distribute the EPA's "A Citizen's Guide to Radon" |

Part 5 Summit County Profiles and Mitigation

Background

Area: 1,849 square miles

County seat: Coalville

Origin of county name: the county includes high mountain summits that form the divides of the Weber, Bear, and Green River drainage areas

Points of interest: Park City area ski resorts, Park City Historic District, Rockport State Park, Echo Reservoir, High Uinta Wilderness Area

Economy: skiing, tourism, lumbering, livestock.

History: Summit County was created in 1854 from Green River and Great Salt Lake counties. The Uinta Mountains dominate the eastern portion of the county, and the western section is a high back valley of the Wasatch Mountains.

The first white men to visit the area were fur trappers and traders in the 1820s and 1830s. Until the arrival of the Mormons in 1847, Summit County was hunting grounds for Northern Shoshone Indians. In 1846 Lansford W. Hastings, a California promoter, announced a new cutoff on the California Trail that would eliminate several hundred miles and many days of travel. The cutoff turned southwest from Fort Bridger, Wyoming, and entered Utah and the northeastern corner of Summit County through Echo Canyon. It followed the Weber River to Salt Lake Valley, went around the south shore of the Great Salt Lake, and then west into Nevada. The first group to take this new cutoff was the Donner-Reed party in 1846. Blazing a road through the Wasatch Mountains cost them many days, and when they reached the Sierra they ran into early snow, with well-known tragic results. Many lost their lives. A year later, the pioneering Mormons adopted part of the Hastings Cutoff, but when they reached the Weber River they turned southwest to Emigration Canyon. This became the main trail for the immigration of the Mormons to Utah. In 1869 the Union Pacific Railroad, builder of the eastern portion of the transcontinental railroad, followed the Hastings Cutoff, and today part of Interstate 80 follows the Hastings and Mormon trails and the Union Pacific route through northern Summit County.

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The first settlers in Summit County arrived at Parley's Park in 1850. Wanship was settled in 1854, followed by Coalville, Hoytsville, and Henefer in 1859. When coal was discovered near Coalville, the Mormons established a mission there. During the 1860s, wagons hauled tons of coal from Coalville to the Salt Lake Valley settlements. In 1873 the Utah Eastern Railroad built a line from Echo Junction to Coalville to haul coal. This line eventually became part of the Union Pacific Railroad.

The discovery of silver, lead, and zinc in the Wasatch Mountains in the 1870s soon overshadowed the settlement and economic activities of the rest of the county. Park City, a mining town founded in 1872, continued to expand into the twentieth century. Many individuals made fortunes from the Park City mines. Mansions on South Temple in Salt Lake City reflect some of this wealth. Mining continued until the 1950s, at which time it no longer was profitable. For several decades Park City was on the verge of becoming a ghost town, but the area's rugged terrain and deep snow led to its rebirth as a winter sports center. Currently, skiing is a major economic activity in western Summit County, while the rest of the county is still noted for its farming and ranching. Other recreational opportunities including boating, fishing, and tourism, add to the county's diversified economy.

(Source: Utah Historical Encyclopedia, Craig Fuller, author)

Population

The following table shows current and projected population data:

| | 2020 Census | 2030 | 2040 | 2050 |
|----------------|-------------|---------|-----------|-----------|
| MAG Total | 712,471 | 960,578 | 1,197,730 | 1,429,516 |
| Summit County | 42,145 | 50,558 | 57,983 | 63,097 |
| Utah County | 636,235 | 861,852 | 1,080,082 | 1,297,515 |
| Wasatch County | 34,091 | 48,168 | 59,665 | 68,904 |

Select Area

Utah County

Demographics Utah County

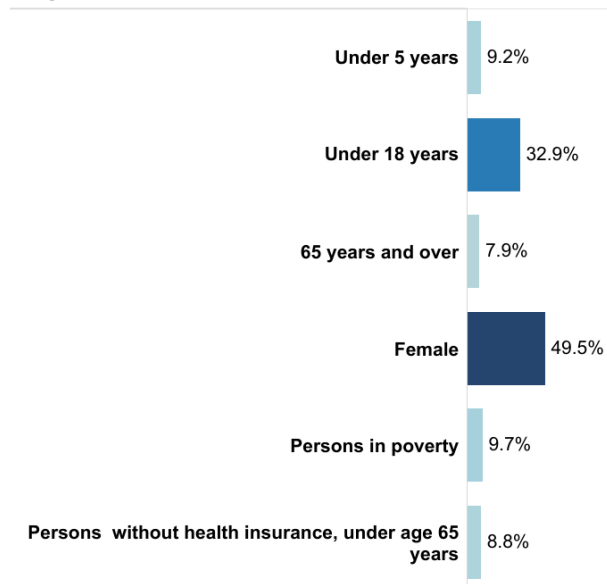
In Utah County, more than a third of residents are children under the age of 18, with less than 8% of the population over the age of 64. The average travel time to work is 22 minutes due in large part to those commuting to Salt Lake County for jobs.



2019 Race and Ethnicity

| | |
|--|-------|
| White, not Hispanic/Latino | 81.7% |
| Hispanic/Latino*** | 12.2% |
| Two or More Races | 2.8% |
| Asian | 1.9% |
| Native Hawaiian/Other Pacific Islander | 0.9% |
| American Indian/Alaska Native | 0.8% |
| Black/African American | 0.8% |

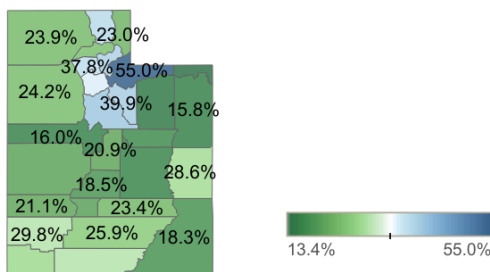
Population Shares, 2015-2019



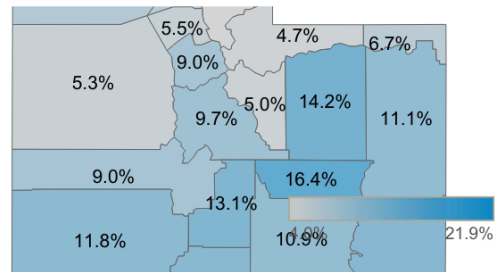
Other Facts

| | |
|--|---------|
| Households, 2015-2019 | 165,991 |
| Housing units, July 1, 2019 | 186,554 |
| Median value of owner-occupied housing units, 2015-2019 | 305,500 |
| Persons per household, 2015-2019 | 4 |
| Mean travel time to work (minutes), workers age 16 years+, 2015-2019 | 22 |
| Veterans, 2015-2019 | 14,296 |
| Veteran-owned firms, 2012 | 3,003 |
| Women-owned firms, 2012 | 13,891 |

Bachelor's Degree or Higher, 2015-2019*



Persons Below Poverty, 2019



Updated 7/13/2021 8:10:38 PM

* Population 25 years and older. ** Population 5 years and older. *** Hispanics/Latinos may be of any race; also included in applicable race category. **** Civilian Population 16 years and older.

Source: U.S. Census Bureau. For more information: <http://www.census.gov>

Economy

Summit County has been the recipient of many new businesses, much residential and commercial development, and a thriving ski and tourism economy that defines its character and atmosphere. Summit County's local economy is largely driven by the activities of Park City and the Snyderville Basin. Eastern Summit County and its cities also face numerous growth and development pressures, although not exhibiting anywhere near the level of investment that is pushing the western half of the county. With numerous venues of the 2002 Winter Olympics and desires to host another Winter Olympics, economic growth in the tourism sector should continue in the future.

Hazards Compared

Hazard Matrix

| | | | | | |
|--------------------|---------------|------------|---------------------------------|-------------|--------------|
| Probability | Highly Likely | | Winter Weather, Avalanche | | |
| | Likely | Hail | Flood, Drought, Lightning, Wind | Fire | |
| | Possible | | Landslide | | |
| | Unlikely | | Tornado | Dam Failure | Earthquake |
| | | Negligible | Limited | Critical | Catastrophic |

Severity

| Hazard | Years in Record | Yearly Probability | Deaths Annualized | Injuries Annualized | \$ Losses Annualized | Source |
|--------|-----------------|--------------------|-------------------|---------------------|----------------------|--------|
|--------|-----------------|--------------------|-------------------|---------------------|----------------------|--------|

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| | | | | | | |
|--------------------------|-----------|------|------|------|-------------|---|
| Avalanche Fatalities | 23 | 204% | 2.16 | 1 | \$2,800 | NOAA |
| Drought, Moderate | 2018 | 9% | 0 | 0 | NA | National Integrated Drought Information System, USDA |
| Earthquake | | 1% | NA | NA | \$1,500,000 | HAZUS Salt Lake City 7.0 Magnitude Scenario |
| Floods | 23 | 39% | | | \$224,000 | NOAA, HAZUS 2019 State Hazard Mitigation Plan |
| Hail | 60 | 17% | 0 | 0 | \$0 | NOAA |
| Landslide s/ Debris Flow | 56 | 4% | 0 | 0 | \$411,000 | SHELDUS |
| Lightning | 25 | 16% | 0.16 | 0.35 | \$0 | NOAA |
| Wildfires | 6 | 250% | | | \$734,000 | Utah Division of Forestry Fire and State Lands and BLM with cost of fighting fire |
| Wind | 60 | 50% | 0 | 0.1 | \$7,400 | NOAA (High Wind, Strong Wind and Thunderstorm Wind) |
| Winter Weather | 19 | 242% | 0.48 | 2.64 | \$64,224 | NOAA (Blizzards/Heavy Snow/Winter Storm/Winter Weather) |
| Tornadoes | 71 | 0% | | | | NOAA |
| Volcanoes | 5,000,000 | 0% | 0 | 0 | \$0 | |

*Probability: Number of Events/Years in Record

Standards from FEMA IS 235: Emergency Planning Course

Potential Magnitude

Catastrophic: More than 50% of community affected

Critical: 25 to 50%

Limited: 10 to 25%

Negligible: Less than 10%

Probability Calculated using # of event/years in record

Highly likely: Near 100% probability in next year

Likely: 10 -100% probability in next year, or at least one chance in next 10 years.

Possible: 1-10% probability in next year, or at least one chance in next 100 years.

Unlikely: Less than 1% probability in next 100 years

Standards we modified to fit our region

Severity per incident

Catastrophic: Many lives, a great deal of property

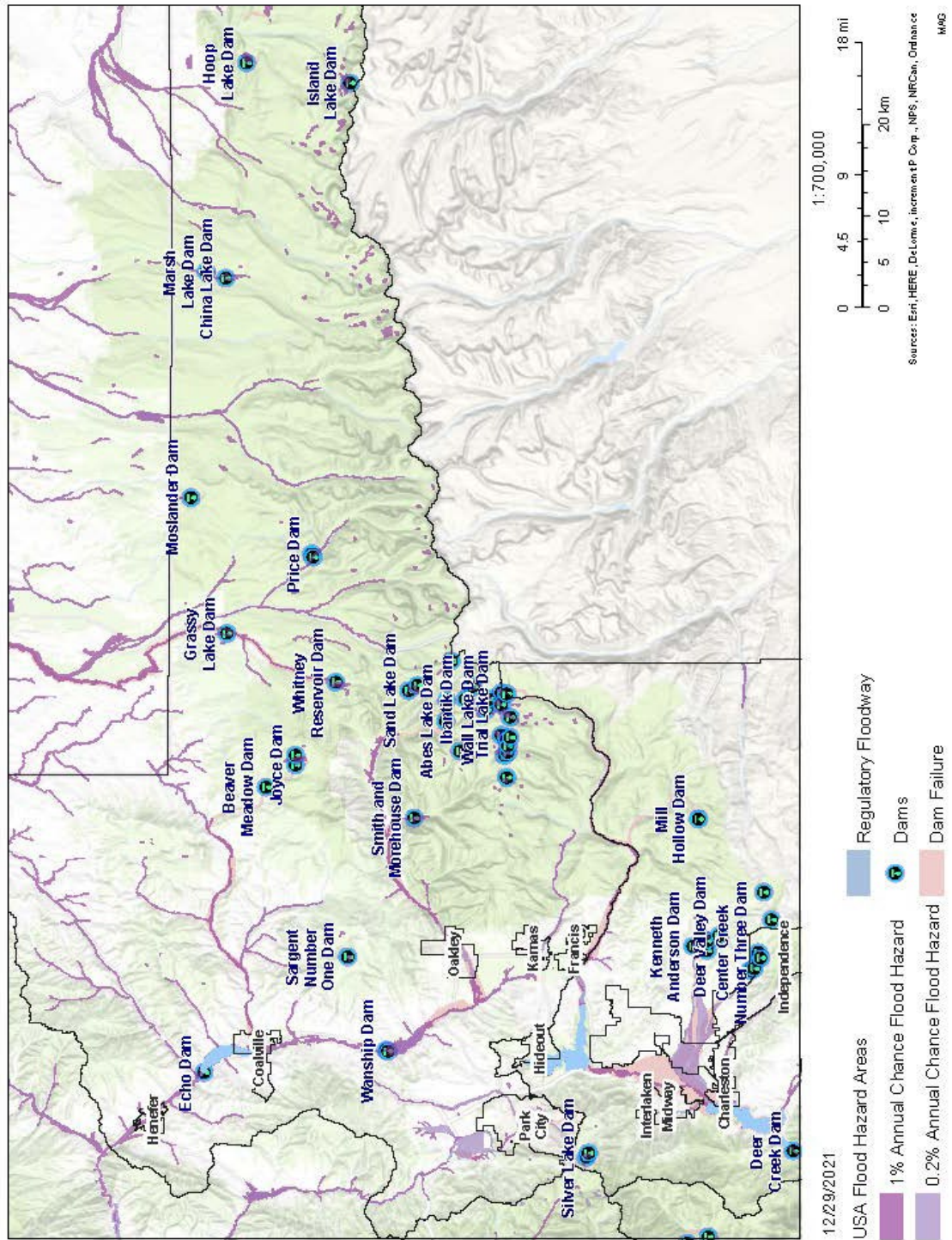
Critical: Multiple lives lost and/or multiple properties affected

Limited: Some property loss, less than 3 lives lost

Negligible: Some property, no life lost

Flooding

Flood Hazards in Summit County



Overview

Although Utah is considered a dry desert state, flooding does occur. Most floods have occurred either from snow melt or severe thunderstorms. Often, flooding is increased by soils that are more impervious due to either wildfire or drying out. Floods occur on a regular basis in Summit County. Most of the communities within the county are built around or near a stream or river such as the Provo or Weber. Each of these communities share a similar susceptibility to flooding.

Profile

| | |
|--|---|
| Frequency | Flooding happens within Summit County on a fairly regular basis. |
| Severity | Moderate |
| Location | Primarily along streams, rivers and bodies of water. |
| Seasonal Pattern | Spring time due to snow melt. Isolated events throughout the year due to severe weather (microburst). |
| Duration | A few hours to a few weeks depending upon conditions |
| Speed of Onset | Sudden to 12 hours |
| Probability of Future Occurrences | High - for delineated floodplains there is a 1% chance of flooding in any given year. |

Development Trends

As development occurs on the mountainous terrain and along the shores of reservoirs, or along river and stream corridors, more homes will be in danger of floods. Communities need to make developers and homeowners aware of the danger as well as contribute to mitigation actions. Cities should review every development to ensure that it is in compliance with NFIP guidelines.

The following table identifies the communities in Summit County with their NFIP Status.

| Jurisdiction | Floodplain | Current Effective Map Date | Floodplain Admin |
|---------------------|--|-----------------------------------|----------------------------|
| Coalville | Participating in NFIP. Coalville has ordinances for Flood Damage and Prevention, Provisions for Flood Hazard | March 2021 | Paul Taylor, City Engineer |

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| | | | |
|---------------|---|------------|---------------------------------|
| | Reduction in pertaining to water infrastructure, as well as a Sensitive Lands Ordinance prohibiting building within 100' of a floodplain. | | |
| Francis | Participating in the NFIP, adopted and incorporated most recent FIRMs | March 2021 | Katie Henneuse, City Planner |
| Kamas | Adopted March 2021 FIRMs, more homes now in the mapped floodplain. Has a Flood Damage and Prevention Ordinance. | March 2021 | Amanda Huffmyer, City Planner |
| Oakley | Participating in NFIP. Chapter 8 of city code deals addresses Flood Control. | March 2021 | Planner Stephanie Woolstenhulme |
| Park City | Participating in the NFIP, has Flood Damage Prevention and Sensitive Lands ordinances. | March 2021 | Engineer John Robertson |
| Summit County | Participating in NFIP | March 2021 | Engineer Michael Kendell |

Assessing Vulnerability: Addressing Repetitive Loss Properties

There are no repetitive loss properties in Summit County (FEMA, 2021).

History

Flooding

| Location/Extent | Date | Fatalities | Damages | Source |
|--|-----------|------------|-------------|---------------------------|
| Summit | 7/29/1969 | 0 | \$1,250 | SHELDUS |
| Summit County | 4/30/1983 | 0 | \$4,761,905 | FEMA Disaster Declaration |
| Summit County | 6/7/1986 | 0 | \$50,000 | SHELDUS |
| Summit and Wasatch Counties: Heavy rains combined with snowmelt to bring the Emigration Creek above its banks and flood 5 homes along the bank. Damage amounts estimates from newspaper clippings. | 4/15/2006 | 0 | \$50,000 | NOAA |
| Peoa: Abnormally warm temperatures in early June, combined with a deep late season snowpack, led to excessive snowmelt across northern Utah. This | 6/6/2010 | 0 | \$5,000,000 | NOAA |

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| | | | | |
|--|-----------|---|----------|------|
| caused flooding on both Little Cottonwood Creek and the Weber River near Oakley. | | | | |
| Peoa | 6/24/2011 | 0 | \$20,000 | NOAA |
| Coalville Much of the precipitation remained as rain in Coalville, and two straight days of rain proved to be too much for one of the open culverts in the town. When that drainage system failed to handle the volume of water, four homes were flooded along 150 South in Coalville, with two of those homes experiencing extensive flooding. One of the significantly damaged homes was flooded with a couple feet of water, and the other had 6 inches of water. | 2/9/2014 | 0 | \$40,000 | NOAA |

Summit County has received a total of \$85,392.68 in FEMA Flood claims since 1978

Summit County and its cities in the NFIP program have 0 repetitive loss facilities

Dams

Summit County also has 4 High Hazard dams. Each has an Emergency Action Plan that can be found at waterrights.utah.gov. Trial Lake Dam failed in 1986 from piping of organics in the foundation contact. It was rebuilt in 1990 by the Central Utah Water Conservancy District with CH2M Hill as the project engineer. As part of the Central Utah Project, BOR assumed responsibility for the dam in 2005. It is no longer listed as a high hazard dam.

| Name | Miles to 1 st Downstream Town | First Downstream Town |
|---------------------|--|-----------------------|
| Boyer Lake | 12 | Coalville |
| Fish Lake | 21 | Oakley |
| Smith and Morehouse | 14 | Oakley |
| Whitney | 38 | Evanston |

Mitigation

Strategies include:

Incorporate flood mitigation into local planning by developing a floodplain management plan, mitigating hazards during planning, establishing a “green infrastructure” program to link greenways, and obtaining easements for water retention and drainage

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Form partnerships to support floodplain management such as a regional watershed council or citizen committee to discuss issues and recommend projects.

Limit or restrict development in floodplain areas by providing incentives to develop elsewhere, protecting buffers around water resources, limiting impervious surfaced within developed parcels, or prohibiting development in the floodplain.

Adopt and enforce building codes and development standards such as the International Building Code and increasing “freeboard” requirements aka the number feet above base flood elevation that new building must have.

Improve stormwater management planning by completing stormwater drainage studies and master plans, regulating development in upland areas to reduce runoff, and encouraging low impact development techniques.

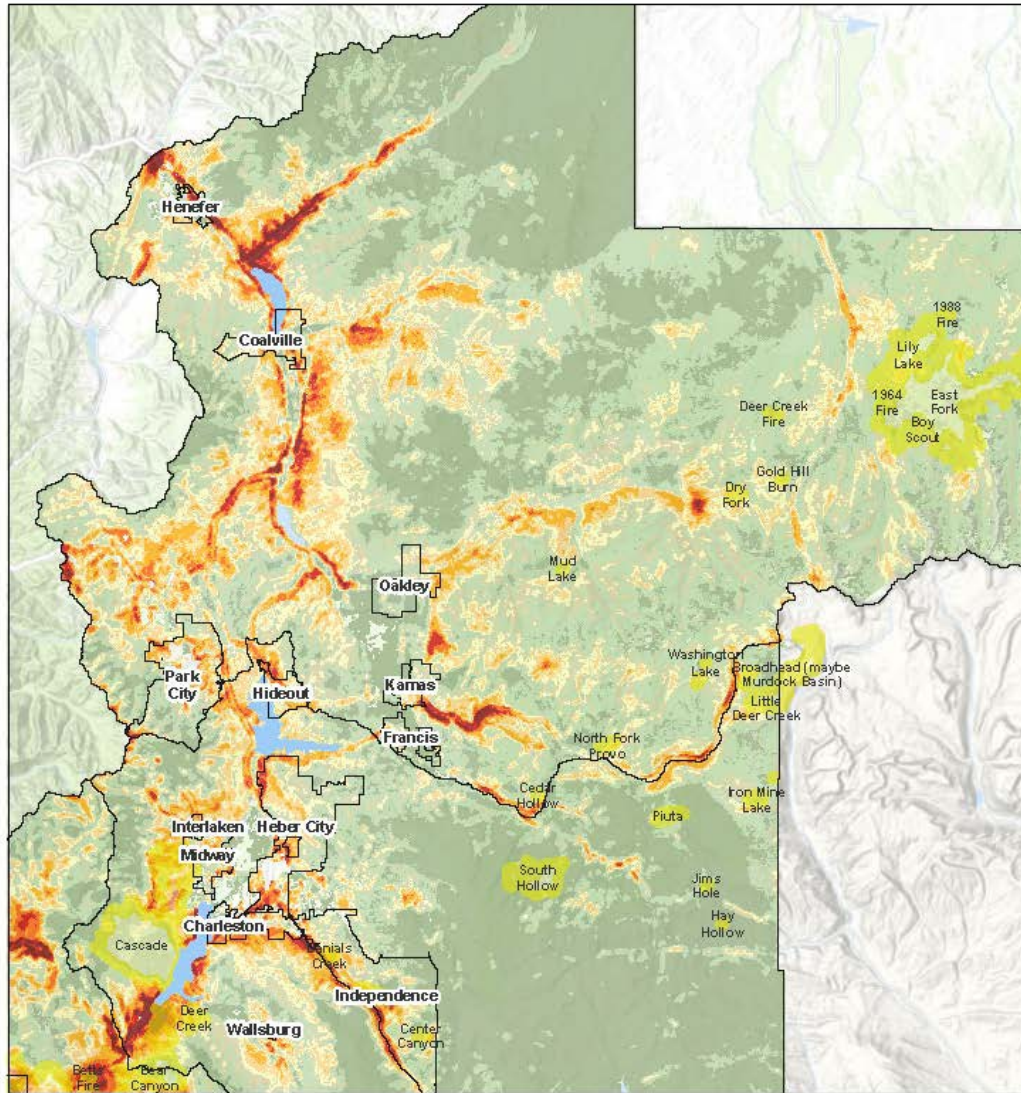
Adopt policies to reduce runoff such as more trees, on-site retention for stormwater and firefighting, and encouraging porous pavement and vegetation in parking areas.

Use natural systems such as preserving wetlands and riverbanks, restoring vegetation, acquire open space in targeted areas, and offer density bonuses to developers for leaving flood-prone areas vacant.

Protect and enhance infrastructure and critical facilities by elevating roads and bridges, floodproofing water treatment facilities, stabilizing shoulders and embankments, installing backup generators, expanding culverts, and require new critical facilities be built outside the floodplain.

Wildland Fire

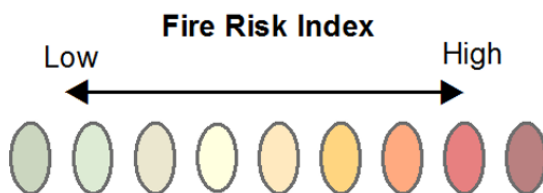
Fire Hazards in Summit County



12/29/2021

Pre-2015 Wildland Fires

1:600,000
0 3.75 7.5 15 mi
0 5 10 20 km



Sources: Esri, HERE, DeLorme, Incent P. Corp., NPS, NRCAn, Ordnance Survey, © OpenStreetMap contributors, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user

MAG

Overview

Fire is a natural part of every ecosystem, but decades of wildland fire suppression during a historically cooler time period resulted in a buildup of fuels (vegetation) and development in wildfire-prone areas. With the 2010's megadrought, increased outdoor recreation, development pressure particularly along the Wasatch back (Wasatch and Summit counties), and climate change, the likelihood of damaging fire is increasing.

Though we have more assets in high-risk areas, the technology for early warning and fire-hardened homes has also advanced. This combined with better planning and enforcement can improve protection of assets already in place.

Wildfire is the most frequently occurring natural hazard within the Summit County area. It can also pose the most imminent danger to current and future residents. Each jurisdiction is surrounded by mountains and has structures abutting forested areas.

Development Trends

As development occurs on the bench areas of Summit County more homes will be in danger of wildfire. Communities, developers and homeowners need to be aware of the danger. Cities and the county should also require firebreaks and access roads along urban/wildland interfaces. Although development brings homes closer to areas of potential wildfire, it also brings water and access for firefighters closer to the urban fringe. Firewise community development principles, such as not storing firewood near homes, installing fire resistant roofing and cleaning debris from rain gutters will reduce potential losses.

Profile

| | |
|------------------|--|
| Frequency | Multiple wildland fires occur in Summit County Every year. |
| Severity | Moderate |
| Location | Hillsides and mountainous areas, open grass and range lands. |
| Seasonal Pattern | Summer and fall depending on weather conditions. |
| Duration | A few hours to a few weeks depending upon conditions |
| Speed of Onset | 1 to 48 hours |

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| | |
|-----------------------------------|------|
| Probability of Future Occurrences | High |
|-----------------------------------|------|

History

Following are a few of the most significant since 2016. More than half of fires are human caused and even relatively small fires, if near critical facilities, can be quite costly.

Fortunately, no lives have been lost and few structures destroyed in the past decade.

| Incident Name | Start Date | Total Spent Fighting Fire | Acres | Fire Cause | Specific Cause |
|-----------------|-------------------|---------------------------|-------|--------------|--------------------------|
| Slate | August 24, 2018 | \$1,099,629 | 666 | Natural | Lightning |
| Monvisto | June 21, 2018 | \$1,015,773 | 64 | Human | Uncontrolled/ Unattended |
| Box Canyon | July 28, 2016 | \$796,704 | 1,200 | Human | null |
| Tervels | September 3, 2018 | \$583,872 | 586 | Human | Arson |
| State Line | August 20, 2019 | \$250,150 | 14 | Unknown | Other Small Equipment |
| Fire Canyon | October 17, 2020 | \$208,701 | 1,671 | Human | Other |
| Tollgate Canyon | July 30, 2018 | \$207,036 | 286 | Human | Other Small Equipment |
| Echo Road Shed | August 28, 2016 | \$111,487 | 309 | Undetermined | Fire Arms Use |
| Echo 80 | August 29, 2019 | \$69,261 | 46 | Unknown | Lightning |
| Fire Canyon | June 14, 2018 | \$23,780 | 83 | Natural | Lightning |

Communities At Risk

The following list consists of communities throughout Utah that have been determined by wildland fire officials to be at risk from wildland fire. The "Overall Score" represents the sum of multiple risk factors analyzed for each community. Examples of some risk factors are fire history, local vegetation, and firefighting capabilities. The Overall Score can range from 0 (No risk) to 12 (Extreme risk). This score allows Utah's fire prevention program officials to assess relative risk and

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create opportunities for communications with those communities on the list.
Bolded communities are those with a Community Wildfire Preparedness Plan.

| Community Name | Overall Score | Community Name | Overall Score |
|-----------------------------------|---------------|-------------------------|---------------|
| Bear River Lodge Christmas Meadow | 11 | River Song Ranch | 9 |
| Big Canyon Ranch | 11 | Silver Springs | 9 |
| Jeromy Ranches/Red Hawk | 11 | Stage Coach | 9 |
| Kamas East | 11 | Stillman Ranch | 9 |
| Manorlands/Unitalands | 11 | Summit Park | 9 |
| Pine Meadows/Forest Meadows | 11 | Upton | 9 |
| Pine Mountain | 11 | Weber Wild | 9 |
| Promontory | 11 | Alpine Acres | 8 |
| The Pines | 11 | Black Hawk | 8 |
| Two Bear | 11 | Freeman Ranch | 8 |
| 1000 Peaks Ranch | 10 | Grass Creek | 8 |
| Aerie | 10 | Mountain Valley Ranches | 8 |
| Bridge Hollow | 10 | Park City | 8 |
| Deer Valley | 10 | Silver Creek | 8 |
| Garff Ranches | 10 | Sun Peak | 8 |
| Gorgoza Park | 10 | The Canyons | 8 |
| Hidden Cove | 10 | Weber Meadowview | 8 |
| Hidden Lake | 10 | Wild Willow | 8 |
| Holiday Park | 10 | Woodland | 8 |
| Maple Ridge Ranches | 10 | Beaver Springs | 7 |
| Marion Ranches | 10 | Canyon Rim | 7 |
| Mill Hollow Scout Camp | 10 | Deer Mountain | 7 |
| North Bench Farms | 10 | Glennedale | 7 |
| Rockport Ranches | 10 | Highland Estates | 7 |
| Samak | 10 | Aspen Mountain | 6 |
| Silver Summit | 10 | Francis | 6 |
| Solamere | 10 | Henefer | 6 |
| South Fork | 10 | Hoytsville | 6 |
| South Ridge | 10 | Kamas | 6 |
| Bear Hollow | 9 | Oakley | 6 |
| Cherry Canyon Ranches | 9 | Wanship | 6 |
| Colonies at White Pine | 9 | Coalville | 5 |

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| | | | |
|---|---|-------------|---|
| Echo Creek Ranches | 9 | Marion | 5 |
| Little Dipper | 9 | Peoa | 5 |
| Meadow Haven | 9 | Snyderville | 5 |
| Monvisto | 9 | | |
| Pinebrook | 9 | | |
| Pineway | 9 | | |
| Ranch Place | 9 | | |
| *Bolded Communities have a Community Wildfire Protection Plan (CWPP) Developed with FFSL. | | | |

Mitigation

The Utah Division of Forestry, Fire, and State Lands (FFSL) has helped communities develop Community Fire Plans. According to the FFSL, the purpose of community fire planning is to:

- Empower communities to organize, plan, and take action on issues impacting community safety
- Enhance levels of fire resistance and protection to the community
- Identify the risks of wildland/urban interface fires in the area
- Identify strategies to reduce the risks to homes and businesses in the community during a wildfire

Other strategies include limiting development in the Wildland Urban Interface, fuel management, prescribed burns, hardening buildings against fire with appropriate shingles, vent covers to prevent embers entering home, maintaining an emergency water supply and appropriate water pressures, using appropriate plantings around homes, and much more. See wildfirerisk.org or FEMA's [Strategies handbook](#) for a more complete list.

Landslide

Overview

Landslides are common natural hazards in Utah that often occur when the pull of gravity becomes greater than the cohesion of soil. Land movement can occur without warning and can result in destructive, costly outcomes. Various types of landslides in Utah are debris flows, slides, and rockfalls.

Steep slopes, mountainous terrain, rock types, and narrow, debris-choked canyons all contribute to our region's susceptibility to landslide hazards. Wildfire can remove stabilizing vegetation and increase landslide risk. Many hillslopes are prone to mass movement, particularly where development has taken place on existing landslides or where grading has modified a slope and reduced its stability. Therefore, historical landslides, prehistoric landslides, and steep slopes prone to mass movement must be thoroughly investigated prior to development activities, along with regional groundwater and landscape and other irrigation activities. Excessive irrigation can easily cause a neighbor near or on a slope to lose their home from a landslide by elevating the groundwater table.

Development Trends

Park City, the economic center of Summit County, boasts the largest ski areas in the United States with five-star lodges and numerous condos tucked into the hillside. Park City's success is largely due to its picturesque slopes, and future development will most assuredly be related to scenic views and resort development. Due to the high value of the development occurring not only in Park City but also other towns throughout the county, measures should be taken to reduce the potential for loss. Increased analysis and geotechnical reports should become an integral part of the development and building process. Careful consideration should be given to ensure cutting and filling for any project minimizes potential loss.

Profile

| | |
|------------------|---|
| Frequency | Movement likely occurs nearly every year. |
| Severity | Moderate; several structures have been condemned. |
| Location | Along most mountains and hillsides. |
| Seasonal Pattern | Spring when ground saturation is at its peak. |
| Duration | Minutes to years. |

mountainland.org/hazards

| | |
|-----------------------------------|---|
| Speed of Onset | Seconds to days. |
| Probability of Future Occurrences | Likely – Due to terrain and construction within sloped areas. |

History

| Location | Date | Damages | Source |
|---------------|----------|----------------|------------------|
| Summit County | 1/1/1983 | \$8,603,666.52 | SHELDUS database |
| Summit County | 1/1/1984 | \$1,471,256.97 | SHELDUS database |

Note that only events of great magnitude are recorded in National databases. Numerous events involving few structures have occurred but are not recorded in disaster databases.

Mitigation Strategies

Nearly all recent landslides have occurred as reactivations of pre-existing landslides. Some strategies include:

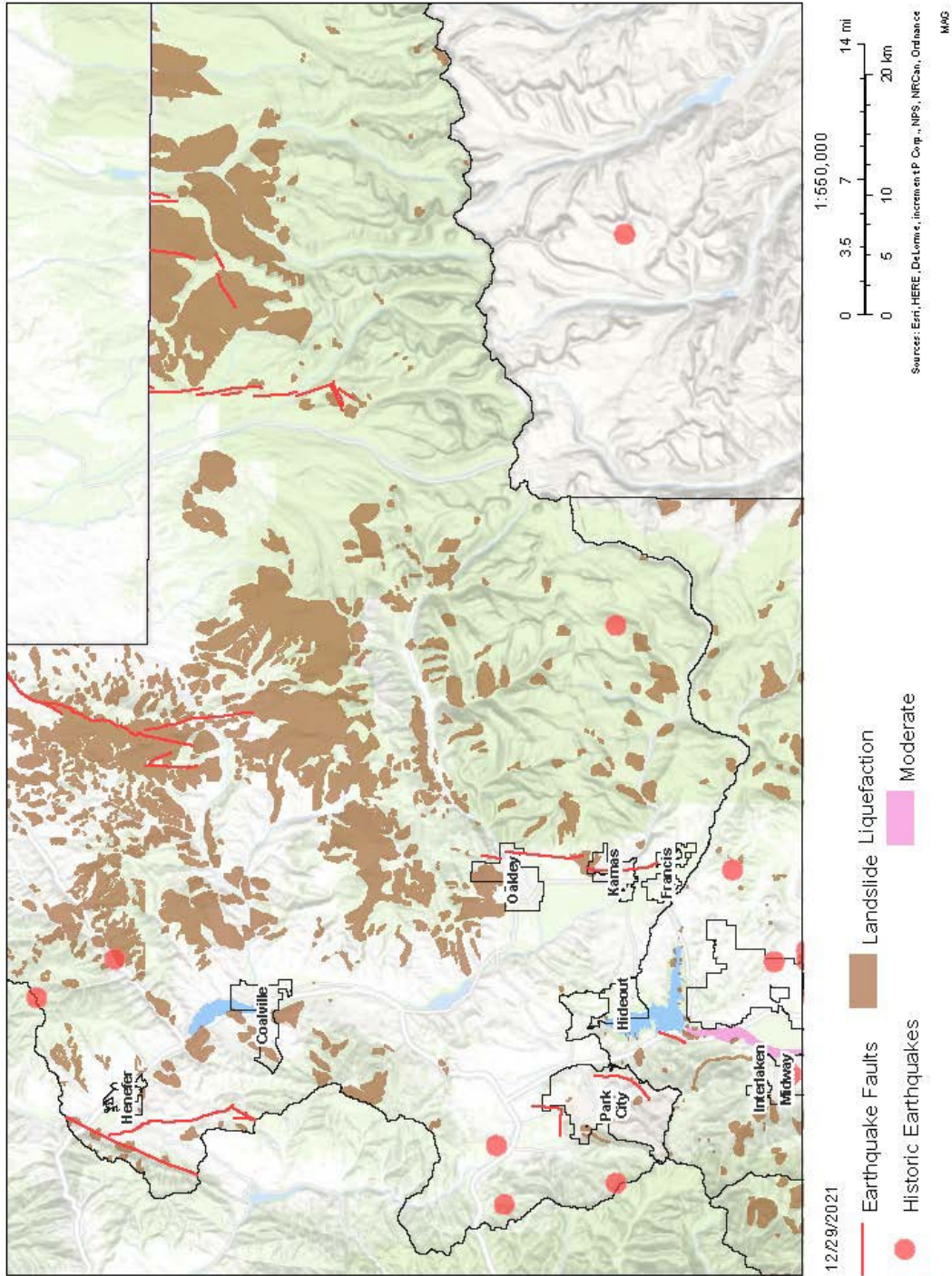
Prohibit building on steep slopes, require thorough investigations and geotechnical studies for buildings in areas prone to landslides, and prevent over-irrigating. The use of very-low water xeriscape landscaping and/or smart irrigation controllers that adjust the amount of water applied to landscapes based on weather, plant/turf, and soil data, can significantly reduce the amount of excess water that percolates through the soil as groundwater and save money.

- Creating a plan to implement reinforcement measures in high-risk areas.
- Defining steep slope/high-risk areas in land use and comprehensive plans and creating guidelines or restricting new development in those areas.
- Creating or increasing setback limits on parcels near high-risk areas.
- Locating utilities outside of landslide areas to decrease the risk of service disruption.
- Restricting or limiting industrial activity that would strip slopes of essential top soil.
- Incorporating economic development activity restrictions in high-risk areas.

See FEMA's [Strategies handbook](#) for a more complete list.

Earthquake

Earthquake Hazards in Summit County



Overview

Earthquakes occur when tectonic plates suddenly release tension built up over decades of strain. The Wasatch Fault has a strong earthquake about every 300 years and we are "due" for another. While some scenic homes are built directly on a fault, the way a building is constructed and the stability of soils underneath are a large factor in its resilience. Pre-1990's brick homes are usually unreinforced and very brittle, posing a great risk to occupants during a quake.

As development occurs in Summit County, more buildings and people will be in danger from earthquakes. However, newer buildings will be built to higher standards, which will decrease the risk of damage compared to older structures. It is interesting to note that when most residential structures are engineered, out of the three categories of design criteria; seismic zone, wind shear and snow load; the design criteria for wind shear overrules the other criteria.

Development Trends

Due to Summit County being outside of the Wasatch Fault zone the severity of a potential earthquake is thought to be lower. Recent development trends have been to build on steeper slopes and benches which can lessen the potential for liquefaction but increase susceptibility to earthquake triggered landslides. Ultimately, new construction in the area equals more structures that are susceptible to earthquakes. Each construction project should be thoroughly reviewed for resistance to ground shaking and other earthquake related hazards.

Profile

| | |
|--|--|
| Frequency | Low: Events above 3.0 on the Richter scale are rare. Minor events (below 3.0) occur every month. |
| Severity | High (up to 5.0) |
| Location | Some faults throughout the county. |
| Seasonal Pattern | None |
| Duration | 1 to 6 minutes excluding aftershocks. |
| Speed of Onset | Seconds |
| Yearly probability of Future Occurrences | 93% probability that an earthquake Magnitude 5 or higher will occur somewhere along the Wasatch Front in the next 50 years, though effects would be diminished in Summit County. |

mountainland.org/hazards

| | |
|--------|---|
| Losses | The State HAZUS Salt Lake 7.0 scenario estimates \$1.5 million annualized losses for Summit County. |
|--------|---|

History

There have been few events of note in recorded history within Summit County, but a 2020 event in Magna, Salt Lake County, gave the state a glimpse of what could happen. The State of Utah has also put a few earthquake scenarios through its HAZUS software, yielding loss estimates and maps of potential damages on the Wasatch Front.

Magna Earthquake: Days after the US shutdown to slow the COVID 19 pandemic, a 5.7 earthquake struck Magna township in Salt Lake County. The most noticable damages occurred in multi-story building such as the brick façade of a large commercial building, but several mobile homes were condemned and the Utah Department of Public Safety estimates \$70-100 million in public structure and infrastructure damage. Fortunately, no one was injured or killed and the public facilities were insured.

| Location | Magnitude | Date |
|---------------------------------|-----------|-----------|
| E of Snyderville, Summit County | 3.3 | 11/6/1988 |
| Kimball Junction, Summit County | 3.4 | 12/6/1995 |
| W of Park City, Summit County | 3.5 | 6/30/1999 |
| SW of Emery | 3 | 9/5/2005 |
| S of Summit Park | 3.3 | 9/18/2017 |

*United States Geological Survey: earthquake.usgs.gov/earthquakes/search

Mitigation

Strategies include restricting building on known fault lines or steep slopes, requiring geotechnical studies for buildings on problem soils, retrofitting critical infrastructure, educating homeowners on retrofitting options and securing items to the wall, requiring large/reinforced foundations or piers in liquefaction areas, and many more. See **Utah Earthquake Safety** or FEMA's **Strategies Handbook** for more details.

Severe Weather

Overview

Summit County's mountainous terrain makes it particularly susceptible to Winter Weather. Add to the topography those who seek snowy slopes for recreation and disaster can ensue, as seen in the table below. Avalanches, typically a voluntary risk, have caused the most deaths in Summit County, particularly around areas like Park City during recreational activities. These numbers will only increase as development in tourism-centered areas grows. Snow/Winter Weather is responsible for the most injuries and monetary damages of any type of severe weather. Summit County government actively emphasizes household accountability and preparation as individuals from less rural settings move into the area.

Profile

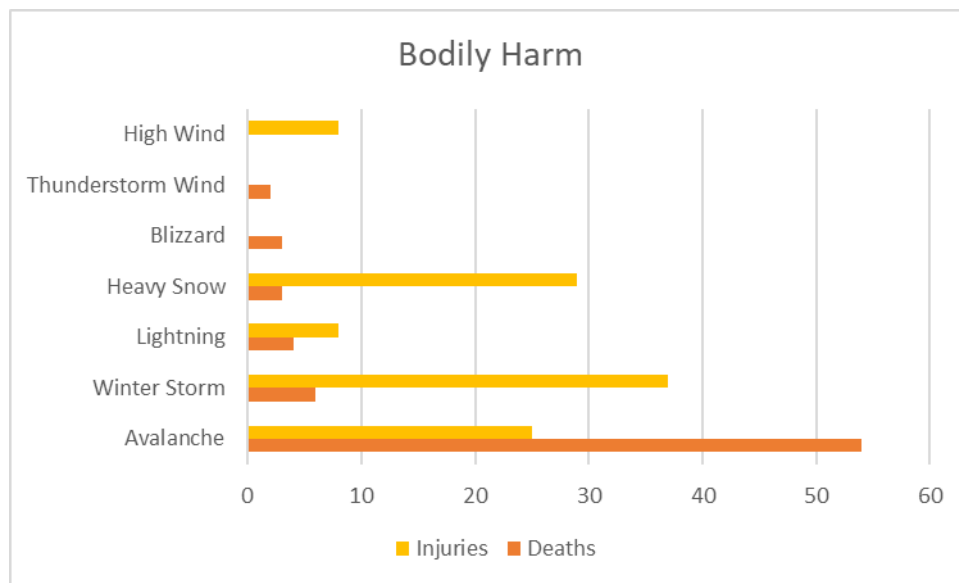
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|-----------------------------------|---|
| Frequency | Frequent Multiple events happen each year. |
| Severity | Moderate |
| Location | Region wide with some locations more frequent due to geography. |
| Seasonal Pattern | All year depending upon the type of event. |
| Duration | Seconds to Days |
| Speed of Onset | Immediate |
| Probability of Future Occurrences | Very Probable. Avalanche and Winter Weather have the highest probability of occurrence of all weather hazards facing Summit County. |

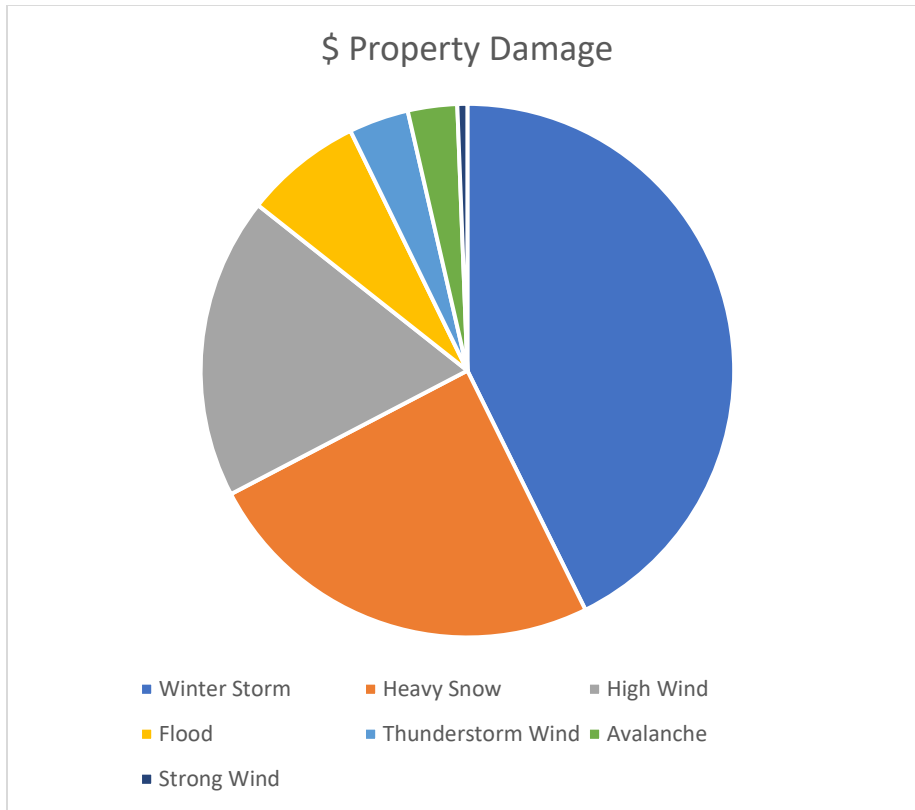
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History

NOAA Storm Event Database 1950-2021

| Row Labels | Deaths | Injuries | \$ Property Damage | \$ Crop Damage |
|--------------------|-----------|------------|--------------------|----------------|
| Avalanche | 54 | 25 | 70000 | 0 |
| Blizzard | 3 | 0 | 0 | 0 |
| Cold/wind Chill | 0 | 0 | 0 | 0 |
| Flood | 0 | 0 | 167000 | 0 |
| Hail | 0 | 0 | 0 | 200 |
| Heavy Snow | 3 | 29 | 577000 | 8600 |
| High Wind | 0 | 8 | 428600 | 0 |
| Lightning | 4 | 8 | 0 | 0 |
| Strong Wind | 0 | 0 | 14200 | 0 |
| Thunderstorm | | | | |
| Wind | 2 | 0 | 85000 | 0 |
| Winter Storm | 6 | 37 | 1000000 | 20000 |
| Winter Weather | 0 | 0 | 0 | 0 |
| Grand Total | 72 | 107 | 2341800 | 28800 |



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Mitigation

For buildings: Adopt and enforce building codes related to roof snow loads and wind speeds. Require CO monitors.

For Infrastructure: Install redundancies in power lines, lightning protection and surge protection on critical infrastructure, and snow sheds over roadways.

For everyone: Educate homeowners on protecting water pipes during cold weather and travelling safely. Encourage participation in emergency alerts.

See FEMA's [Strategies handbook](#) for a more complete list.

Community Risks and Strategies

Overview

Listed below are the damage assessments for each of the participating jurisdictions followed by an update of the community's mitigation strategies from the 2017 plan, after which are the strategies the community wishes to pursue in the course of this plan. Damage assessments were calculated using the methodologies mentioned in the Methods section. Strategies were developed by each community with assistance from MAG as requested. The subsequent county and city strategies reflect the advancement of local and regional goals and continue the community's vision for the security and prosperity of the region. These goals include:

- Reducing the impact of natural hazards on life, property, and preserving the environment
- Minimizing damage to infrastructure and services and protecting their ability to respond
- Preventing potential hazards from affecting area or mitigating its effects
- Increasing public awareness, capabilities and experience
- Ensuring the safety of citizens and visitors
- Enabling cooperation between citizens and emergency and public services
- Maintaining cooperation with, and adherence to, FEMA guidelines
- Developing zoning and other plans that decrease development in hazardous areas
-

The guiding factor in prioritizing mitigation strategies for local communities was the principle that mitigation should provide the ***greatest amount of good to the greatest number of people, after considering resources, staffing, and other constraints***. Probability of occurrence, past events, and damage estimates compiled during the risk assessment in this plan were heavily considered. Overall, each community individually considered their own capabilities, staffing, and resources as they prioritized their own mitigation strategies.

Summit County

| Hazard | # Buildings | \$ Buildings (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
|-------------------------------|-------------|--------------------------|------------------|--------------------|----------------|
| Dam Failure | 1,254 | 427,897 | 2.66 | 16.50 | 0.00 |
| Fire Risk High | 2,212 | 1,202,856 | 40.00 | 25.95 | 27.48 |
| Fire Risk Moderate | 9,545 | 5,831,456 | 73.29 | 47.99 | 10.58 |
| Flood 1% Yearly Probability | 1,591 | 478,128 | 21.86 | 5.51 | 15.07 |
| Landslide | 940 | 335,659 | 14.03 | 12.46 | 2.15 |
| Liquefaction Moderate to High | 0 | 0 | 0.00 | 0.00 | 0.00 |

Statement of Vulnerabilities: Summit County is very concerned with protecting its critical lands, such as waterways, riparian areas, ridgelines, steep slopes, and groundwater sources. There are also issues with mine tailings and soil contamination in and near Park City. Development pressure in the Snyderville basin incentivized to not build on critical lands. If a sewer line were installed in the North-South Summit Corridor development would skyrocket, but there are no plans to do so. As any development occurs it is important to keep people out of high-fire risk areas or have appropriate mitigation measures for buildings in fire-prone land.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|--|------------|----------|----------|---------|-----------------------|-----------------------|
| Assess County Courthouse for possible retrofits in addition to those include in the 1990's remodel | Earthquake | Mod | 1-2 yrs | 2k | Local gov | Local gov |
| Prohibit building on slopes >30% and require soils studies for proposed buildings in landslide-prone areas | Landslide | Mod | Ongoing | Minimal | Local gov, Developers | Local gov, Developers |

| | | | | | | |
|--|---------------|------|---------|------------|----------------------|----------------------|
| Bolster regulations for building near avalanche paths | Avalanche | Mod | 1 yr | Staff time | Local gov | Local gov |
| Require 5,000 gallons of water storage for homes in East Summit along with defensible space | Fire | High | Ongoing | Minimal | Local gov, homeowner | Local gov, homeowner |
| Discourage building in areas with dense vegetation and require city council approval for proposed sites | Fire | High | Ongoing | Staff time | Local gov | Local gov |
| Begin a 5-year review of buildings required to have defensible space | Fire | High | 1 yr | Staff time | Local gov | Local gov |
| Fire Department reviews all applications for building in fire risk areas | Fire | High | Ongoing | Staff time | Local gov | Local gov |
| Update landscape ordinance to be more waterwise by reducing turf and encouraging grey water/rainfall storage | Drought | Mod | 1 yr | Staff time | Local gov | Local gov |
| Work with HOAs to install and maintain firewise and waterwise landscaping | Fire, Drought | Mod | Ongoing | Staff time | Local gov | Local gov, HOA |
| East Summit Sewer Advisory Committee must approve water and sewer plans for new development | Drought | Mod | Ongoing | Staff time | Local gov | Local gov |
| Follow FEMA requirements for building in the floodplain, such as foundation vents, elevating above base flood level, and prohibiting basements | Flood | Mod | Ongoing | Staff time | Local gov | Local gov |
| Use Critical Lands Overlay to protect waterways, riparian areas, steep slopes, | All | High | Ongoing | Staff time | Local gov | Local gov |

| | | | | | | |
|--|-------|------|---------|------------|-------------------------------|--------------------------------------|
| ridgelines, etc. and work with builders to develop elsewhere | | | | | | |
| Participate in chipping program through the State Fire Program for single family residences | Fire | Mod | Ongoing | 75k | Local gov, State Fire Program | Summit County |
| Promote Firewise Community Certification to all communities within the wildland-urban interface | Fire | High | Ongoing | Staff time | Local gov | Local governments, Summit Co support |
| Host biannual meetings for the Wildfire Summit group, focused on HOAs and what they need to accomplish goals described in their CWPPs. | Fire | High | Ongoing | Staff time | Summit County, HOAs | Summit County, HOAs |
| Share funding information for fuel mitigation efforts through Wildfire Summit Group | Fire | Mod | Ongoing | Staff time | Summit County | Summit County |
| Meet with HOAs individually to provide guidance and information regarding wildfire | Fire | Mod | Ongoing | Staff time | Summit County | Summit County, HOAs |
| Perform home inspections to help homeowners "harden" their homes in the event of a wildfire | Fire | Mod | Ongoing | Staff time | Summit County, individuals | Summit County, individuals |
| Get estimates for flood mitigation for the Courthouse, located in the SFHA, which has records stored in the basement. | Flood | Mod | 1-2 yrs | TBD | Summit County | Summit County |

| | | | | | | |
|--|-----|------|---------|----------------|-----------------------|---------------|
| Install generators in the Public Works and Health Dept/Library buildings | All | High | 2-3 yrs | ~35k/generator | Summit County, Grants | Summit County |
|--|-----|------|---------|----------------|-----------------------|---------------|

2017 Update

Protecting Current Residents and Structures

| Hazard | Action | Priority | Timeline | Cost | Funding | Responsible Party | Completed? If not, why? |
|--------------------------|---|----------|----------|---------|--------------------|--|--|
| Flooding/ Dam Failure | Promote NFIP participation. | High | Ongoing | Minimal | Local Cash, Grants | USDI – Bureau of Reclamation, Local Government UDEM, FEMA, UDHS, MAG | Yes |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local Cash, Grants | Local Government, MAG, UDEM, FEMA | Not necessary. Only pre-2000 building was retrofitted in late 1990's |
| Wildfire | Educate homeowners on FIREWISE practices. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, Utah Div of FFSL, County Fire Districts | Yes |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Med | 1 year | TBD | Local Cash, Grants | Local Government, UGS, UDEM, MAG, FEMA | Yes |
| All-Hazards Planning | CEMPC –(Community Emergency Management Planning Committee) | High | Ongoing | Minimal | Local Cash, Grants | Local Government UDEM, FEMA | Yes |
| HazMat Planning | LEPC | High | Ongoing | Minimal | Local Cash, Grants | Local Government UDEM, FEMA | Yes |

Protecting Future Residents and Structures

| Hazard | Action | Priority | Timeline | Cost | Funding | Responsible Party | Completed? |
|--------|--------|----------|----------|------|---------|-------------------|------------|
|--------|--------|----------|----------|------|---------|-------------------|------------|

| | | | | | | | |
|--------------------------|---|------|---------|---------|--------------------|--|--------------------------|
| Flooding/ Dam Failure | Update Flood and Inundation mapping and incorporate them into general plans and ordinances. | High | 2 years | TBD | Local Cash, Grants | USDI – Bureau of Reclamation, Local Government UDEM, FEMA, UDHS, MAG | Yes |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, MAG, UDEM, FEMA | Yes |
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk. | High | 1 year | Minimal | Local Cash, Grants | Local Government, Utah Div of FFSL, County Fire Districts | Yes |
| Landslide | Coordinate and update landslide mapping within the area with UGS and USGS. | High | 3 years | Minimal | Local Cash, Grants | Local Government, UGS, UDEM, MAG, FEMA | No, efforts fell through |
| All-Hazards Planning | CEMPC (Community Emergency Management Planning Committee) | High | Ongoing | Minimal | Local Cash, Grants | Local Government UDEM, FEMA | Yes |
| HazMat Planning | LEP (Local Emergency Planning Committee) | High | Ongoing | Minimal | Local Cash, Grants | Local Government UDEM, FEMA | Yes |

Coalville

| Hazard | # Buildings | \$ Buildings (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
|-------------------------------|-------------|--------------------------|------------------|--------------------|----------------|
| Dam Failure | 103 | 15,426 | 0.37 | 0.00 | 0.00 |
| Fire Risk High | 67 | 20,207 | 0.51 | 0.39 | 0.00 |
| Fire Risk Moderate | 83 | 18,761 | 1.74 | 0.88 | 0.00 |
| Flood 1% Yearly Probability | 76 | 12,849 | 0.71 | 0.39 | 0.00 |
| Landslide | 1 | 4 | 0.00 | 0.89 | 0.00 |
| Liquefaction Moderate to High | 0 | 0 | 0.00 | 0.00 | 0.00 |

Statement of Vulnerabilities: Coalville recently annexed land on the West side of town in a fire-prone area. Making sure that there are appropriate evacuation routes and buildings are well-constructed is very important. In the 1984 floods the efforts of citizens with sandbags were able to channel floodwaters down Main Street. Coalville will sure new development doesn't exacerbate potential flooding.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---|----------------|----------|----------|------------|-------------------------|----------------|
| New subdivisions must have retention ponds, multiple evacuation routes, and provisions for Active Transportation. | Flood, Fire | High | Ongoing | Staff time | Local gov | Local gov |
| Consider more fire-resistant building codes in the WUI | Fire | Mod | 1-2 yrs | Staff time | Local gov | Local gov |
| Add a water treatment facility | Drought | High | 2 yrs | 5 million | USDA grant, Local gov | Local gov |
| Install xeriscaping examples at public buildings | Drought | Mod | 2-3 yrs | Minimal | Local gov | Local gov |
| Continue to look into Electric Vehicle charging stations like the ones at the Courthouse | Climate Change | Mod | 2-4 yrs | 2k/station | Local gov, State Grants | Local gov |

| 2017 Strategy Update | | | | | | | |
|--------------------------|---|----------|----------|-----------|-----------------------|------------------|------------|
| Hazard | Action | Priority | Timeline | Cost | Potential Funding | Responsibility | Completed? |
| Flooding/ Dam Failure | Bridge/Culvert Expansion along Chalk Creek | High | 4 years | \$800,000 | Grants and Local Cash | Local Government | No |
| Wildfire | Fire Restriction ordinance | High | 6 months | No cost | N/A | Local Government | Yes |
| Landslide | Incorporate Landslide maps into Hazards Lands Map | High | 1 year | Minimal | Local Cash | Local Government | Yes |

| | | | | | | | |
|------------|--|--------|---------|----------|--------------------|-----------------------------|---------------------------------------|
| Earthquake | Conduct seismic retrofitting assessments for critical public facilities most at risk to earthquakes. (public works building and city building) | Medium | 2 years | Minimal | Local Cash | Local Government | No, lack of resources |
| Wildfire | Review and update Sensitive Land Ordinance so that it specifically addresses and incorporates FIREWISE landscaping requirements and allows for creating defensible zones around power lines, oil and gas lines and other infrastructure systems. | Medium | 2 years | Minimal | Local Cash, Grants | Local Government | Partially, could do more. |
| Wildfire | When updating the General Plan and future land use map include considerations for wildfire hazards within land use, public safety, and other elements of the General Plan. | Medium | 2 years | Minimal | Local Cash | Local Government | Partly, could do more in W annexation |
| Landslide | Incorporate, within development ordinances and reviews, setback requirements on parcels near high risk areas for landslides. | Medium | 2 years | Minimal | Local Cash | Local Government, USGS, UGS | Yes |
| Landslide | Enforces existing restrictions and/or limit activity that would strip slopes of essential topsoil and vegetation. | Medium | 2 years | Minimal | Local Cash | Local Government, USGS, UGS | Ongoing |
| Flooding | Evaluate and incorporate drainage capacities with detention and retention basins, keeping ditches clear by requiring debris removal, plan for necessary bridge and culvert modification. | High | 2 years | \$50,000 | Local Cash | Local Government | Yes |
| Flooding | Better understand the capacity of the city storm water system by updating the city's Stormwater Master Plan. | High | 2 years | \$70,000 | Local Cash/Grants | Local Government | Yes |

Central Utah Water Conservancy District

Due to the sensitive nature and complexity of CUWCD assets, they performed an independent risk analysis to create and prioritize the following mitigation strategies. Contact Blake Buehler of CUWCD for more information.

Vulnerabilities: The future development of the CUWCD water system will mainly be with a strong emphasis on water conservation, planning of needed additional regional water supply facilities, and incorporation of natural hazard mitigation. The District will also continue in its current efforts to address and incorporate natural hazard mitigation (i.e., seismic

upgrades/standards, lightning protection, backup power, wildfire – both direct and indirect effects, etc.) into future design and construction projects whether they are for new facilities or for capital replacement projects. The following proposal is to help fulfill said efforts.

| Package Priority | Mitigation Package: Facilities | County | B/C Ratio | Mitigation Description | Outside Contractor | In-House | CUWCD O&M | CUWCD CRP | CUWCD CIP | FEMA Grant | Implementation Timeline | Package Subtotal |
|------------------|---|-------------------------|-----------|------------------------|--------------------|----------|-----------|-----------|-----------|------------|-------------------------|------------------|
| Low | General Pipeline #1 - Stockpile Materials | Summit, Utah, & Wasatch | - | Material Stockpiling | | X | X | X | | | 6-10 Years | \$755,950 |
| Low | General Pipeline #2 - Training | Summit, Utah, & Wasatch | - | Training | X | X | X | | | | 6-10 Years | \$19,538 |

Francis

| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
|-------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Dam Failure | 1 | \$51 | 0.21 | 0.00 | 0.00 |
| Fire Risk High | 2 | \$514 | 0.06 | 0.00 | 0.00 |
| Fire Risk Moderate | 206 | \$63,268 | 0.46 | 0.00 | 0.00 |
| Flood 1% Yearly Probability | 11 | \$2,082 | 0.19 | 0.00 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |

Statement of Vulnerabilities: Francis is experiencing some development pressure on the fire and flood-prone hillside. It's greatest current need, however, is a new water tank.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---|--------------------|----------|----------|------------|---|-----------------------|
| Any proposed subdivisions in the Wildland Urban Interface must have defensible space and fire-resistant materials | Fire | High | Ongoing | Staff time | Developers | Local gov, Developers |
| Construct a new water tank and well | Drought, Fire, All | High | by 2022 | 3 million | Impact & Annexation fees | Local gov |
| Participate in the County Chipping Program | Fire | High | Ongoing | 5k | Local gov, volunteer hour match, State fire program | Local gov |
| Inventory community center for seismic soundness | Earthquake | Mod | 2-3 yrs | 1k | Local gov | Local gov |
| Follow Water Restriction Plan during drought years | Drought | High | Ongoing | Staff time | Local gov | Local gov |

| Update of 2017 Strategies | | | | | | | |
|---------------------------|---|----------|----------|---------|--------------------|------------------------------|-------------------|
| Hazard | Action | Priority | Timeline | Cost | Funding | Responsibility | Completed? |
| Flooding/ Dam Failure | Promote NFIP participation. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local Cash, Grants | Local Government | No, limited staff |
| Wildfire | Educate homeowners on FIREWISE practices. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Medium | 1 year | TBD | Local Cash, Grants | Local Government, UGS | Yes |
| Flooding/ Dam Failure | Update Flood and Inundation mapping and incorporate them into general plans and ordinances. | High | 2 years | TBD | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |

| | | | | | | | |
|-----------------------|---|------|---------|---------|--------------------|-----------------------------|---------------------------------------|
| Flooding/ Dam Failure | Canal safety program. | High | 3 years | TBD | Local Cash, Grants | Local Government | No, limited staff and funding |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Somewhat, limited staff |
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk. | High | 1 year | Minimal | Local Cash, Grants | Local Government | No, limited staff |
| Landslide | Coordinate and update landslide mapping within the area with UGS and USGS. | High | 3 years | Minimal | Local Cash, Grants | Local Government, UGS, USGS | No, coordination efforts fell through |

Henefer

| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
|-------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Dam Failure | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Fire Risk High | 19 | \$5,542 | 2.26 | 0.57 | 1.09 |
| Fire Risk Moderate | 41 | \$9,694 | 0.31 | 0.50 | 0.05 |
| Flood 1% Yearly Probability | 17 | \$3,742 | 0.13 | 0.51 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |

Statement of Vulnerabilities: Henefer is in the middle of a moratorium on new connections to the city water system due to the lack of water metering and secondary water system. Out most pressing concern is installing a secondary water system, reliably monitoring and metering the current system, and developing water resources for future needs. Henefer lies atop a high pressure gas line that serves Salt Lake City. We work with Dominion Energy, who employs several of our citizens, to accurately map those lines, respond quickly to accidents, and share evacuation routes should a line be damaged. There is

development pressure in the recently-annexed south part of town, which only has one narrow road leading in and out. If development is to occur here we will need a bridge to bring a road over the Weber River and onto the frontage road.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|--|---------------------------------|----------|----------|------------|---|-----------------------|
| Trim trees and clear ditches | Flood, Fire | Mod | Ongoing | 5-10k | Local gov | Local gov |
| Add a second collection box for main water line in Franklin's Canyon, correct leaks, meter culinary water, and install automatic monitoring system on tanks. | Drought, Flood | High | 1 yr | 184k | CDBG grant, Local gov | Local gov |
| Install secondary water system | Drought, Flood | High | 1 yr | 3 mil | Utah State, Water Smart program, Board of Water Resources | Local gov, Utah State |
| Consider retrofitting city hall when it is remodelled include a community meeting room and other city amenities | Earthquake | High | 1-2 yrs | TBD | Local gov, grants | Local gov |
| Consider a sensitive lands ordinance to prohibit new buildings in the 100 yr floodplain | Flood | Mod | 1-2 yrs | Staff time | Local gov | Local gov |
| Coordinate with UDOT and Union Pacific on plans for rerouting traffic should a flood or earthquake damage I-84 at the narrows/Morgan county line | Flood, Earthquake, Gas incident | Mod | 1-2 yrs | Staff time | Local gov | Local gov |
| Run test wells to find best location for additional water sources | Drought, Flood | High | 1-2 yrs | 25k/well | Local gov | Local gov |
| Educate residents on low-cost retrofit options | Earthquake | Mod | 1 yr | Staff time | Local gov | Local gov |

| | | | | | | |
|---|-------------------------|-----|---------|------------|-------------------|-----------|
| Build bridge over Weber River to provide a second route out of South Henefer, where there is development pressure | Earthquake, Fire, Flood | Mod | 4 yrs | TBD | Local gov, grants | Local gov |
| Visit yearly with North Summit Fire Marshall | Fire | Mod | Ongoing | Staff time | Local gov | Local gov |
| Promote Summit County's early warning system | All | Mod | Ongoing | Staff time | Local gov | Local gov |
| Conduct monthly ham radio tests among citizens | All | Mod | Ongoing | Minimal | Local gov | Local gov |

2017 Strategy Update

Protecting Current Residents and Structures (Henefer)

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | Completed? |
|---------------------------|---|----------|----------|----------------|-------------------------------|-----------------------------------|---|
| Flooding | Timely notification system, organized equipment and aid | Med | 1 year | Minimal | Local Cash | Local Government | Yes, Summit Co notification and Henefer HAM radios |
| Drought | Monitor Spring flows, reservoir storage and usage | Moderate | Ongoing | Minimal | Local Cash, private owners | Local Government, private owners | In progress |
| Earthquake | Inspect structures and utilities. Facilitate repairs and clean up | High | 4 years | High | Local Cash, Grants, Insurance | Local Government, FEMA, Insurance | No, fire station is new enough and city center will be renovated soon |
| Hazardous Materials spill | Notification system for citizens and education | Moderate | 1 year | Minimal | Local Government | Local Government | Yes |
| Infectious Disease | Notification system | Moderate | 1 year | Minimal | Local Government | Local Government | Yes |

| | | | | | | | |
|----------|------------------------------------|----------|---------|----------|------------------|------------------|-------------|
| Wildfire | Provide water for fire suppression | Moderate | Ongoing | Moderate | Local Government | Local Government | In Progress |
|----------|------------------------------------|----------|---------|----------|------------------|------------------|-------------|

Protecting Future Residents and Structures

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | |
|-------------|---|----------|----------|----------------|---------------------------|-------------------|-------------|
| All Hazards | Timely notification system, organized equipment and aid | Med | 1 year | Minimal | Local Cash | Local Government | Yes |
| Wildfire | Provide water for fire suppression | Moderate | | Moderate | Local Government | Local Government | In Progress |

Kamas

| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
|-------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Dam Failure | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Fire Risk High | 27 | \$9,861 | 0.01 | 0.00 | 0.00 |
| Fire Risk Moderate | 250 | \$47,563 | 0.37 | 0.00 | 0.00 |
| Flood 1% Yearly Probability | 3 | \$1,227 | 0.00 | 0.00 | 0.00 |
| Landslide | 3 | \$1,136 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |

Statement of Vulnerabilities: A faultline runs through Kamas and several older buildings, including City Hall and schools, would be at risk if an earthquake occurred. Making these buildings safer is a top priority. Also, With updated floodplain maps several homes are now within the 100-yr floodplain, which runs along Beaver Creek through the center of town.

There is gradual development throughout the town and within or close to the wildfire interface zone.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---|------------|----------|----------|------------|----------------------|-----------------------|
| Require geotechnical report for proposed development on problem soils or slopes | Landslide | Mod | Ongoing | Minimal | Developer, Local gov | Developers, Local gov |
| Examine City Hall for seismic soundness | Earthquake | Mod | 2-3 yrs | 1k | Local gov | Local gov |
| Follow Water Restriction Plan during drought years | Drought | High | Ongoing | Staff time | Local gov | Local gov |
| Any proposed subdivisions in the Wildland Urban Interface must have defensible space and fire-resistant materials | Fire | High | Ongoing | Staff time | Developers | Local gov, Developers |

2017 Strategies Update

Protecting Current Residents and Structures

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | |
|--------------------------|---|----------|----------|----------------|---------------------------|------------------------------|-----------------------|
| Flooding/ Dam Failure | Promote NFIP participation. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local Cash, Grants | Local Government | No, limited resources |
| Wildfire | Educate homeowners on FIREWISE practices. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Medium | 1 year | TBD | Local Cash, Grants | Local Government, UGS | Yes |

Protecting Future Residents and Structures

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | |
|--------------------------|---|----------|----------|----------------|---------------------------|------------------------------|---------------------------------------|
| Flooding/ Dam Failure | Update Flood and Inundation mapping and incorporate them into general plans and ordinances. | High | 2 years | TBD | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes |
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk. | High | 1 year | Minimal | Local Cash, Grants | Local Government | No, not a lot of fire-prone area |
| Landslide | Coordinate and update landslide mapping within the area with UGS and USGS. | High | 3 years | Minimal | Local Cash, Grants | Local Government, UGS, USGS | No, coordination efforts fell through |

Oakley

| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
|-------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Dam Failure | 129 | \$30,304 | 0.56 | 0.49 | 0.00 |
| Fire Risk High | 7 | \$817 | 0.00 | 0.00 | 0.00 |
| Fire Risk Moderate | 69 | \$18,182 | 0.64 | 0.02 | 0.00 |
| Flood 1% Yearly Probability | 153 | \$36,984 | 0.76 | 0.60 | 0.00 |
| Landslide | 13 | \$20,339 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |

Statement of Vulnerabilities: Oakley's greatest concerns are with water; having enough culinary water to support existing and future residents and caring for the homes already in the 100 yr floodplain. Oakley is drilling a new culinary well and provides incentives to reduce watering areas. New subdivisions are encouraged to provide and maintain private secondary water systems. Regarding floods, no structures area allowed within 100' of the river and any proposals for building within the flood plain must conform to FEMA standards ie. building above base-flood elevation. Mild development is occurring South of Maple Ridge toward the city center and few homes are planned in the wildland urban interface.

| Mitigation Strategy | Action | Priority | Timeline | Cost | Funding | Responsibility |
|--|---------|----------|----------|---------------|-----------------------------------|----------------|
| Any new development with more than ~8 lots requires dual access and Fire Marshall approval | Fire | Mod | Ongoing | Staff time | Local gov | Local gov |
| Prohibit building within 100' of river, any proposed buildings within 100 yr floodplain must meet FEMA standards | Flood | High | Ongoing | None | Local gov | Local gov |
| Drill a new culinary well | Drought | High | 1 yr | \$1.5 million | USDA grant, ARPA grant, Local gov | Local gov |
| Replace turf at recreation complex with xeriscaping where possible, swap fields for courts | Drought | High | 2-3 yrs | \$1 million | RAP, Local gov | Local gov |
| Drill "wet well"/use irrigation water for recreation complex instead of using culinary water | Drought | High | 2-3 yrs | \$250k | Local gov | Local gov |
| Provide incentives to reduce watering area | Drought | Mod | Ongoing | Minimal | Local gov | Local gov |
| Provide density bonuses for developers that preserve riparian areas | Flood | High | Ongoing | Staff time | Local gov | Local gov |

| | | | | | | |
|---|----------------|------|---------|------------|-----------------|-----------|
| Increase water rates for higher tiers | Drought | High | 1 yr | Staff time | Local gov | Local gov |
| Encourage development to install secondary water systems that are privately maintained | Drought | High | Ongoing | Staff time | Local gov | Local gov |
| Prohibit building on slopes >30%, require geotech studies for other at-risk sites | Earth movement | Mod | Ongoing | Staff time | Local gov | Local gov |
| Perform engineering study of City Hall to determine cost and benefits of retrofits | Earthquake | Mod | 2-3 yrs | TBD | Local gov | Local gov |
| Improve 3 bridges determined to be deficient by the State | All | Mod | 2-3 yrs | \$50k | ARPA, Local gov | Local gov |
| Educate homeowners with shallow pipes on how to protect them from damage in the winter | Winter Weather | Mod | Ongoing | Minimal | Local gov | Local gov |
| Complete a Capital Improvements Plan for utilities and infrastructure | All | High | 1-2 yrs | \$50k | Local gov | Local gov |
| Educate homeowners on disaster preparedness through website, social media, and water bill | All | Mod | Ongoing | Staff time | Local gov | Local gov |

2017 Strategy Update

Protecting Current Residents and Structures (Oakley)

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | |
|--------|--------|----------|----------|----------------|---------------------------|-------------------|--|
|--------|--------|----------|----------|----------------|---------------------------|-------------------|--|

| | | | | | | | |
|-----------------------------|---|------|---------|---------|--------------------|------------------------------|--|
| Flooding/ Dam Failure | Promote NFIP participation | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Earthquake | Inventory current critical facilities for Seismic standards | High | 3 years | TBD | Local Cash, Grants | Local Government FEMA, USGS | No, only City Hall is post-2000 construction |
| Wildfire | Educate homeowners on FIREWISE practices | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes, ongoing |

Protecting Future Residents and Structures

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | |
|--------------------------|--|----------|----------|----------------|---------------------------|------------------------------|---|
| Flooding/ Dam Failure | Update Flood and Inundation mapping and incorporate them into general plans and ordinances | High | 3 years | TBD | Local Cash, Grants | Local Government, FEMA, USGS | Yes |
| Earthquake | Promote earthquake awareness | High | Ongoing | Minimal | Local Cash | Local Government | No, new staff not familiar with educational programs. |

Park City

Has an independently-created plan. Contact Mike McComb, Emergency Program Manager mike.mccomb@parkcity.org for more information.

South Summit School District

Vulnerabilities: South Summit's schools are located on or near the East Kamas Fault and a recent roofing project found deficient grout in the original building. All were built pre-seismic code and should be retrofitted to some degree until the school district can pass a bond to rebuilt them. The location for a new school serving the Promontory community might

contain mine tailings from old Park City metal works. The EPA has yet to determine whether or not they are present, but if they are significant work will have to be done to remediate the soil.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|--|----------------------|----------|----------|------------|--|--|
| Conduct a seismic study of schools in Kamas, which are close to the East Kamas Fault Line, to determine necessary retrofits and/or rebuilds | Earthquake | High | 4 yrs | 65k | South Summit School District, grants | South Summit School District |
| Irrigate sports fields with a new retaining pond and pumps utilizing South Summit's shared in the ditch company instead of culinary water | Drought | Mod | 3-4 yrs | 1 million | South Summit School District, grants | South Summit School District |
| Replace baseball field with artificial turf | Drought | Mod | 3-4 yrs | 1 million | South Summit School District, grants | South Summit School District |
| Work with the EPA to study possible mine tailings on the site of the future Elementary school near the Promontory community and remediate if necessary | Soil Contamination | High | 4 yrs | TBD | EPA, South Summit School District, Summit County | EPA, South Summit School District, Summit County |
| Tree trimming | Winter weather, Fire | Mod | Ongoing | 2k/yr | South Summit School District | South Summit School District |
| Determine need for backup generators at schools designated as evacuation centers | All | Mod | 1-2 yrs | TBD | South Summit School District | South Summit School District |
| Wildlife awareness education and considerations for building in migration corridors | Wildlife | Mod | Ongoing | Staff time | South Summit School District | South Summit School District |

Contacts and Participation

See Part III: Process for a complete accounting of participation

| Position | Name | Phone | Email | Small Meeting | Group Meeting |
|--------------------------------|------------------|--------------|--|---------------|---------------|
| Emergency Manager | Kathryn McMullin | 801-718-4628 | kcmcmullin@summitcounty.org | | Yes |
| Summit County Planner | Ray Milliner | 435-336-3118 | rmilliner@summitcounty.org | 18 August | |
| Summit Co Fire Marshall | Mike Owens | 435-940-2520 | mowens@pcfd.org | | |
| Summit Co Public Works | Derrick Radke | 435-336-3970 | dradke@summitcounty.org | | Yes |
| Summit Co Manager's Office | Janna Young | | | | Yes |
| Summit Co | Glenn Wright | | | | Yes |
| Summit Co Environmental Health | Spencer Smith | | | | Yes |
| Henefer Planner | Robert Richins | 435-336-5365 | henefertown@allwest.net | | |
| Henefer Mayor | Kay Richins | 801.599.8003 | henefermayor@gmail.com | Aug 11 | |
| Park City Emergency Manager | Kathryn McMullin | 435-615-5185 | kcmcmullin@summitcounty.org | | |
| Park City Planner | | | | | |
| Coalville Mayor | Trevor Johnson | 435-336-5981 | mayor@coalvillecity.org | | |
| Coalville | Niki Sargent | 435.659.6941 | niki.sargent@coalvillecity.org | | |
| Coalville Public Works | Zane Deweese | 435-336-5980 | zane.deweese@coalvillecity.org | | |
| Coalville Public Works | Kyle Clark | | | Oct 28 | Yes |
| Coalville Wastewater Treatment | Sam Adams | | | Oct 28 | Yes |
| Oakley | | 435-783-5734 | oakley@oakleycity.com | | |

| | | | | | |
|---|----------------|--------------------|---------------------------|---------|-----|
| Oakley Planner | Stephanie | | stephanie@oakleycity.com | | |
| Oakley | Amy Rydalch | | amy@oakleycity.com | Aug 16? | |
| Oakley City | Kelly Kimber | | kelly@oakleycity.com | | Yes |
| Francis/Kamas | Scott Kettle | 435-654-2226 | skettle@horrocks.com | June 14 | Yes |
| | | cell: 801-360-9735 | | | |
| Francis Public Works | | 435-783-6236 | lthomas@francisutah.org | June 14 | |
| Francis Planner | Katie Henneuse | 435-783-6236 | khenneuse@francisutah.org | June 14 | Yes |
| | | | | | |
| WUI Coordinator | Travis Wright | 385-505-4030 | tdwright@utah.gov | | |
| Park City Fire District | Ashley Lewis | | | | Yes |
| North Summit Fire District | Ian Nelson | | | | Yes |
| FFSL /County Fire Warden | Bryce Boyer | | | | Yes |
| N Summit School District | Kristy | | kbraithwaite@nsummit.org | | |
| S Summit School District | Kip Bigelow | | kbigelow@ssummit.org | 19 July | Yes |
| S Summit School District | Kathy Carr | | kathy.carr@ssummit.org | 19 July | Yes |
| S Summit School District Superintendent | Greg Maughan | | greg.maughan@ssummit.org | | |

Part 6 Utah County Profiles and Mitigation

Background

Area: 2,014 square miles; *county seat*: Provo; *origin of county name*: after the Ute Indians

The most striking geographical features of Utah County are the Wasatch Mountains along the eastern boundary, and Utah Lake, the state's largest fresh-water lake. The high mountains, rising over 11,000 feet, receive heavy snowfall which feeds the numerous rivers and creeks that flow into the lake. Though large in surface area, Utah Lake is very shallow--18 feet at its deepest point.

Before the valley was settled by Mormon pioneers in the 1840s and 1850s it was the home of the Ute Indians. They lived along the eastern shore of the lake and used fish from the lake as their main food source. The Spanish Catholic priests Dominguez and Escalante, who observed them in 1776, described these Indians as peaceful and kind. Dominguez and Escalante were trying to find a route between Santa Fe, New Mexico, and what is now southern California. When they came down Spanish Fork Canyon in the summer of 1776 they were the first non-Indians to enter Utah Valley.

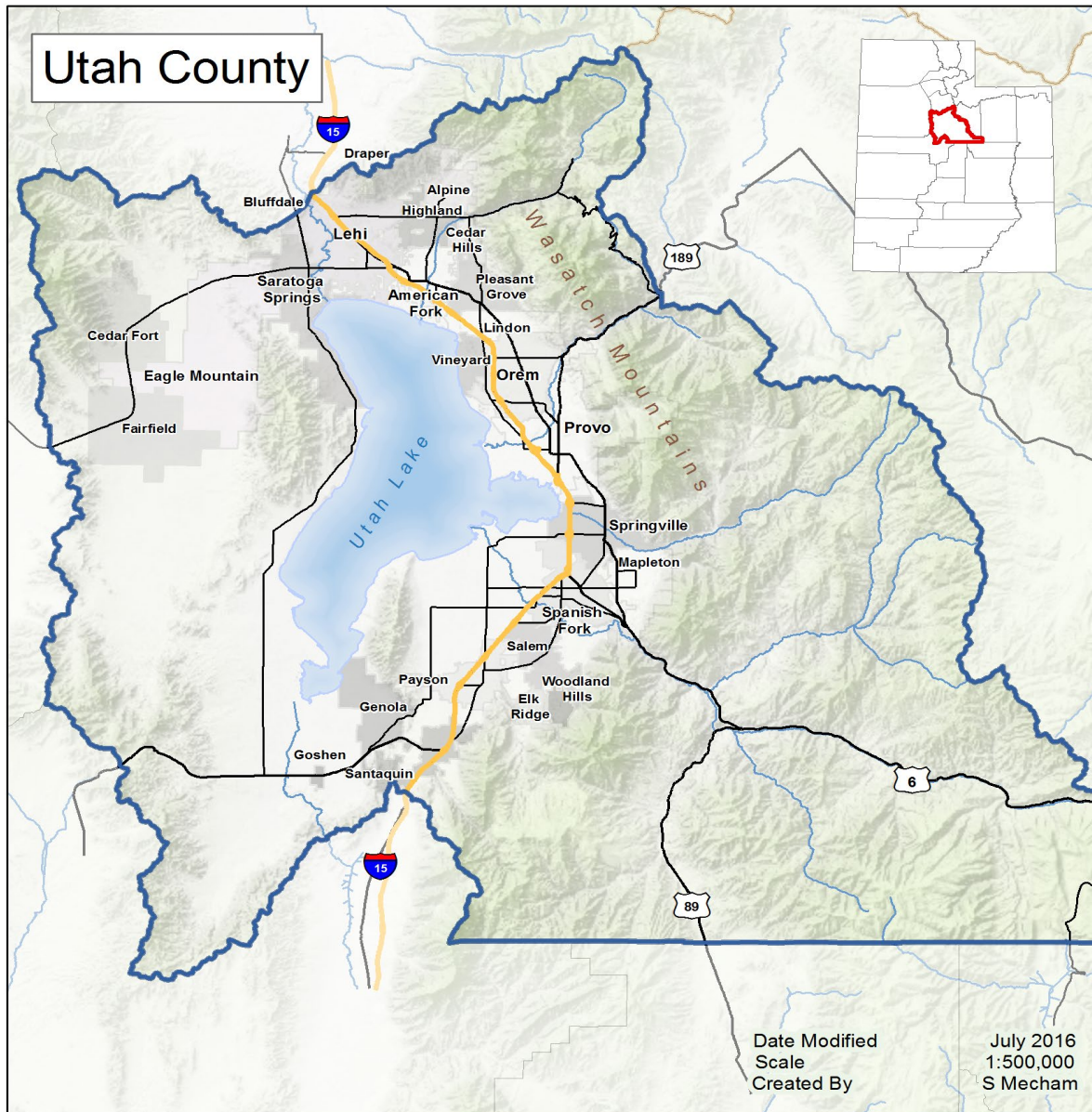
Mormon pioneers began settling Utah Valley in 1849. Like the Indians before them, they chose to settle on the fertile, well-watered strip of land between the mountains and Utah Lake. More than a dozen towns were established between Lehi on the north and Santaquin on the south. Provo, named for the French fur trapper Etienne Provost, has always been the largest town and the county seat.

In March 1849 thirty-three families, composed of about 150 people, were called to go to Utah Valley and establish communities in Lehi, Alpine, American Fork, Pleasant Grove, Springville, Spanish Fork, Salem, and Payson.

Mining was also an important industry in Utah County. In the late 1800s and early 1900s there were many successful mines in American Fork Canyon and in the Tintic mining district centered near Eureka, Juab County but included part of western Utah County. Many of the fine homes and business buildings in Provo were constructed with mining money.

Today, Utah County is known as the home of Brigham Young University. BYU was established in 1875 as a small high-school level "academy," but it has grown to become a major university with over 36,000 students in 2021. The Utah Valley University in Orem has

grown rapidly to over 41,000 students as well. Other major Utah County employers include Vivint, Doterra and Young Living Essential Oils. Each of the major communities in the county have high schools and libraries. A culturally active area, the county has its own symphony--the Utah Valley Symphony, and one of the state's finest art museums: the Springville Art Museum. Provo's Fourth of July Celebration is the largest in the state and most other communities have their own celebrations.



Population

Demographics Utah County

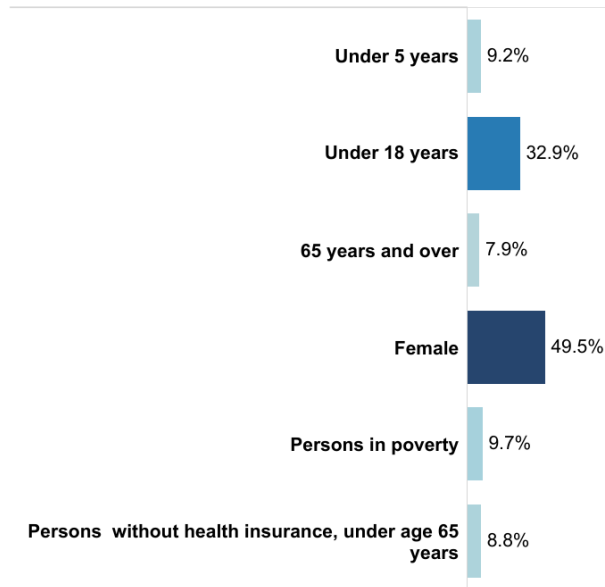
2019 Race and Ethnicity

In Utah County, more than a third of residents are children under the age of 18, with less than 8% of the population over the age of 64. The average travel time to work is 22 minutes due in large part to those commuting to Salt Lake County for jobs.



| | |
|--|-------|
| White, not Hispanic/Latino | 81.7% |
| Hispanic/Latino*** | 12.2% |
| Two or More Races | 2.8% |
| Asian | 1.9% |
| Native Hawaiian/Other Pacific Islander | 0.9% |
| American Indian/Alaska Native | 0.8% |
| Black/African American | 0.8% |

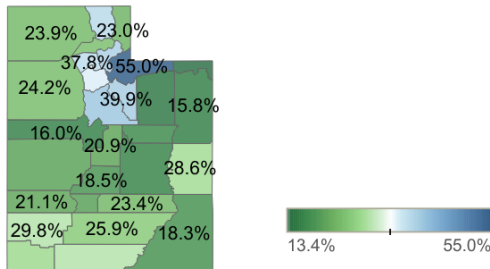
Population Shares, 2015-2019



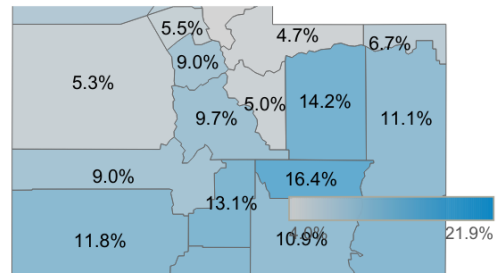
Other Facts

| | |
|--|---------|
| Households, 2015-2019 | 165,991 |
| Housing units, July 1, 2019 | 186,554 |
| Median value of owner-occupied housing units, 2015-2019 | 305,500 |
| Persons per household, 2015-2019 | 4 |
| Mean travel time to work (minutes), workers age 16 years+, 2015-2019 | 22 |
| Veterans, 2015-2019 | 14,296 |
| Veteran-owned firms, 2012 | 3,003 |
| Women-owned firms, 2012 | 13,891 |

Bachelor's Degree or Higher, 2015-2019*



Persons Below Poverty, 2019



Updated 7/13/2021 8:10:38 PM

* Population 25 years and older. ** Population 5 years and older. *** Hispanics/Latinos may be of any race; also included in applicable race category. **** Civilian Population 16 years and older.

Source: U.S. Census Bureau. For more information: <http://www.census.gov>

Hazards Compared

Hazard Matrix

| | | | | | |
|-------------|---------------|--------------------|---------------------------------------|------------------------|-------------------------|
| Probability | Highly Likely | Hail | Fire, Winter Weather, Wind, Avalanche | | |
| | Likely | Lightning, Tornado | Flood, Drought | Landslide/ Debris Flow | |
| | Possible | | | | |
| | Unlikely | | | | Earthquake, Dam Failure |
| | | Negligible | Limited | Critical | Catastrophic |
| | | Severity | | | |

Standards from FEMA IS 235: Emergency Planning Course

Potential Magnitude

Catastrophic: More than 50% of community affected

Critical: 25 to 50%

Limited: 10 to 25%

Negligible: Less than 10%

Probability Calculated using # of event/years in record

Highly likely: Near 100% probability in next year

Likely: 10 -100% probability in next year, or at least one chance in next 10 years.

Possible: 1-10% probability in next year, or at least one chance in next 100 years.

Unlikely: Less than 1% probability in next 100 years

Standards we modified to fit our region

Severity per incident

Catastrophic: Many lives, a great deal of property

Critical: Multiple lives lost and/or multiple properties affected

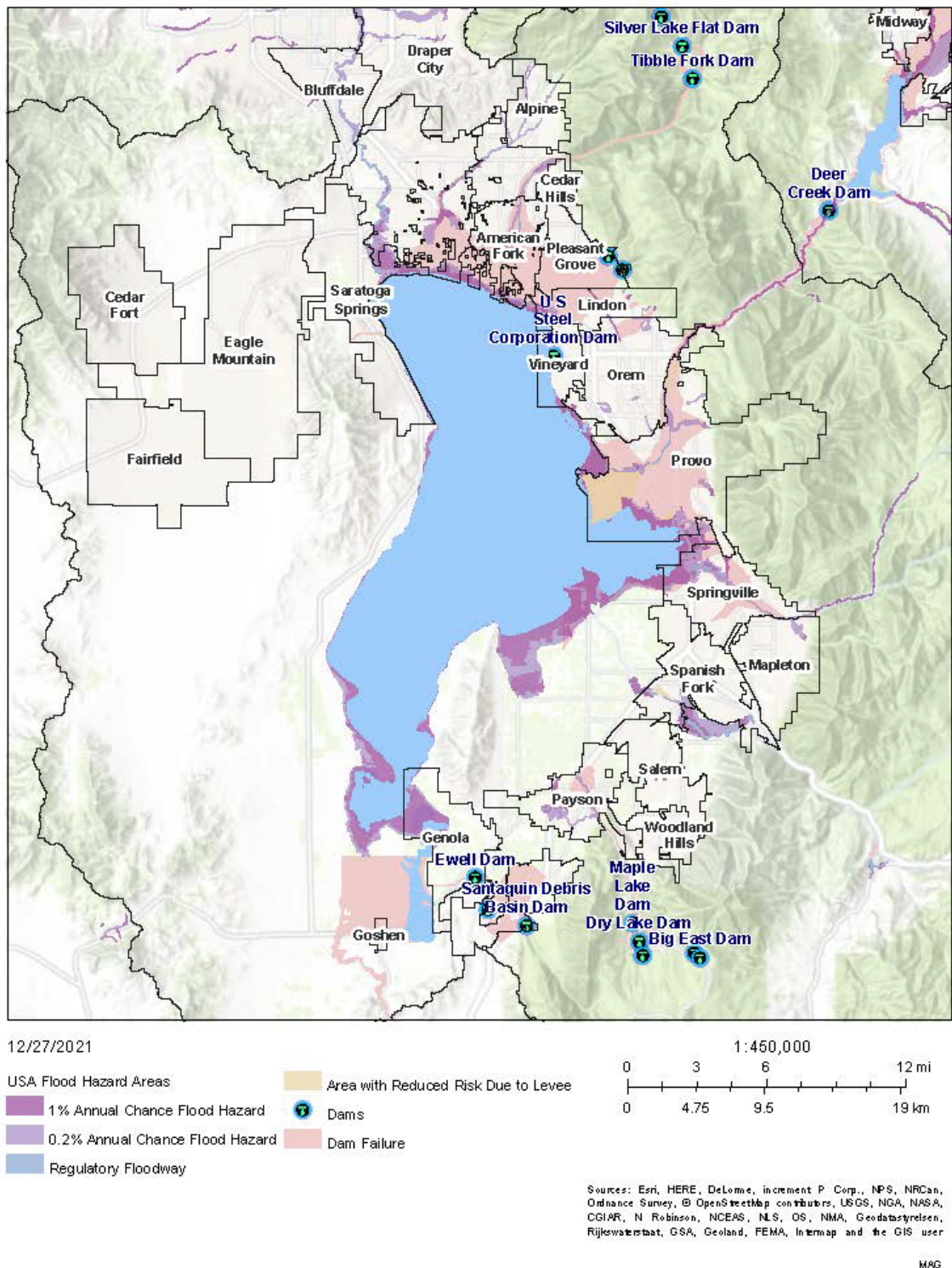
Limited: Some property loss, less than 3 lives lost

Negligible: Some property, no life lost

| Hazard | Years in Record | Yearly Probability | Deaths Annualized | Injuries Annualized | \$ Losses Annualized | Source |
|-------------------------------|-----------------|--------------------|-------------------|---------------------|----------------------|--|
| Air Quality Unhealthy for all | 12 | 75% | n/a | n/a | n/a | DEQ Monitoring Archive, days in exceedance of PM2.5 standard |
| Avalanche | 25 | 128% | 1.3 | 0.6 | \$2,800 | NOAA |
| Debris Flow | 16 | 44% | 0 | 0 | \$23,000 | NOAA |
| Drought, Moderate | 2018 | 10% | 0 | 0 | n/a | National Integrated Drought Information System |
| Earthquake | | 1% | 2.4 | 32 | \$24,000,000 | HAZUS Salt Lake City 7.0 & Provo Scenarios |
| Floods & Flash Floods | 23 | 139% | 0 | 0 | \$283,000 | NOAA, HAZUS, State Hazard Mitigation Plan |
| Hail | 71 | 58% | 2.7 | 32.7 | \$17,208 | NOAA/SHELDUS |
| Landslides | 51 | 25% | 0 | 0 | NA | SHELDUS, skewed by Thistle slide |
| Lightning | 25 | 32% | 0.04 | 0.16 | \$6,660 | NOAA |
| Tornadoes | 71 | 10% | 0 | 0 | \$2,582 | NOAA |
| Volcanoes | 5,000,000 | 0% | | | | |
| Wildfires | 6 | 1,167% | | | \$8,742,000 | Utah FFSL and BLM with cost of fighting fire |
| Wind | 71 | 97% | 0.4 | 0.7 | \$844,000 | NOAA (High Wind, Strong Wind and Thunderstorm Wind) |
| Winter Weather | 25 | 160% | 0.56 | 2.36 | \$65,636 | NOAA (Blizzards/Heavy Snow/Winter Storm/Winter Weather) |

Flooding

Flood Hazards in Utah County



Overview

Although Utah is considered a dry state, flooding does occur. Most floods occur either from snow melt or severe thunderstorms. Oftentimes flooding is increased by soils that are more impervious due to either wildfire or drying out. Floods occur on a regular basis in Utah County.

Profile

| | |
|-----------------------------------|---|
| Frequency | Some flooding happens within Utah County on almost a yearly basis. |
| Severity | Moderate |
| Location | Primarily along streams, rivers and along the shores of Utah Lake |
| Seasonal Pattern | Spring time due to snow melt. Isolated events throughout the year due to severe weather (microburst). |
| Duration | A few hours to a few weeks depending upon conditions |
| Speed of Onset | 1 to 12 hours |
| Probability of Future Occurrences | Moderate - for delineated floodplains there is a 1% chance of flooding in any given year. |

Development Trends

As development occurs on the bench areas of Utah Valley, along the shore of Utah Lake, or along river and stream corridors, more homes will be in danger of floods. Communities need to make developers and homeowners aware of the danger as well as contribute to mitigation actions. Cities should review every development that it is in compliance with NFIP guidelines.

The following table identifies the communities in Utah County with their NFIP Status.

Communities Participating in NFIP

| Jurisdiction | Floodplain | Map Date | Floodplain Admin |
|----------------|--|-----------|--|
| Alpine | Alpine participates in the NFIP. Though a few homes are located in the floodplain, it is very narrow and no new buildings are expected. Alpine has a Floodplain Damage Prevention Ordinance and well-organized Floodplain Permit. Alpine spent \$400k in 2013 to construct a wall which effectively protected its repetitive loss property from a debris flow that year. | June 2020 | Jed Muhlestein, City Engineer |
| American Fork | Participating in NFIP. City code 15.16 Addresses Floodplain Management, including floodplain administrator, building & subdivision requirements, etc. | June 2020 | Rebecca Andrus, City Engineer |
| Cedar Fort | No Special Flood Hazard Area | | Mayor Gustin |
| Cedar Hills | Not participating in NFIP. Cedar Hills does have a very small portion of 0.2% annual chance floodplain in the northernmost part of town, but none of it is developable; either on a golf course or in the Pleasant Grove Ditch. Code 11.7.10 addresses zoning for environmental hazards, including floods. | June 2020 | Chandler Goodwin, City Manager |
| Eagle Mountain | No Special Flood Hazard Area | | Ifo Pili, City Administrator |
| Elk Ridge | No Special Flood Hazard Area | | Royce Swensen, City Recorder |
| Fairfield | No Special Flood Hazard Area | | n/a |
| Genola | Participating in NFIP. Genola adopted a Flood Damage Prevention Ordinance in 2020. Floodplain is directly on or close enough to White Lake that development is not likely. | June 2020 | Lucinda Thomas, City Clerk |
| Goshen | Not participating in NFIP. Goshen doesn't currently have any floodplain in city boundaries. | | Mayor Staheli |
| Highland | Participating, incorporated 2021 NFIP updates, has projects for both rivers in city. Highland has a Flood Damage Prevention Ordinance as well as Provisions for Flood Damage Prevention. | | Nathan Crane, City Administrator |
| Lehi | Participating in NFIP, has code sections for Flood Damage Prevention and Provisions for Flood Hazard Reduction as well as additional requirements for the Utah Lake Shoreline and Jordan River Protection zones. | June 2020 | Jason Draper, Ben Hunter, Pallavi Pathak |
| Lindon | Participating in NFIP, has code for Flood Damage Prevention, Storm Drainage and Flood plans, and Methods of Reducing Flood Losses. | June 2020 | Michael Florence, Planning Director |

| | | | |
|----------------|---|-----------|--|
| Mapleton | Participating in NFIP. Mapleton has a Flood Damage Prevention Ordinance and has several small projects and development standards designed to capture the first inch of water as it cannot discharge water to Springville. | June 2020 | Cory Branch, City Administrator |
| Midway City | Participating in NFIP, has a Flood Damage Prevention Ordinance as well as Midway City Floodplain Overlay zones and a Sensitive Lands Overlay Zone that provides additional protection for streambeds and other flood-prone areas (Chapter 16.14) Any residential construction within 50 feet of a delineated flood zone shall have the lowest floor elevated 18 inches above the base flood elevation as shown on the FIRM and no construction is allowed within 50 feet of a floodplain in large-scale subdivisions. | 2012 | Michael Henke, City Planning Administrator |
| Orem | Participating in NFIP. City code sections 7, 10, and 17 address development standards in the floodplain, a Flood Damage Prevention Ordinance, and Supplementary Design Standards for high-risk areas. | June 2020 | Planning Manager Jason Bench |
| Payson | Participating in NFIP, has a Flood Damage Prevention and Sensitive Lands Ordinance with additional requirements for lands near streambeds. | June 2020 | City Engineer Travis Jockumsen |
| Pleasant Grove | Participating in NFIP, has Flood Damage Prevention and Sensitive Lands ordinances. | June 2020 | Engineer Marty Beaumont |
| Provo | Participating in NFIP and CRS, adopted 2020 FIRMs, study of Provo River levees and Utah Lake underway. The General Plan has a Flood Hazard & Control and Environmental Hazards section, as well as sections of code for Floodplain Management and Development Standards. | June 2020 | Robert Mills |
| Salem | Participating in NFIP and has adopted most recent FIRMs. Has a Flood Damage Prevention section of code, but there is more flooding risk at the base of canyons and from canals than in the 100-yr floodplain. Development code reads, "All subdivision proposals shall be consistent with the need to minimize flood damage. The subdivision layout shall make adequate provision for natural drainage channels and floodways. All water, sewer, and other utility systems and facilities located in designated flood areas shall be designed and constructed to minimize flood damage, including the infiltration of flood water into the system, or the discharge of the system into the flood waters. Base flood data shall be provided by the developer as part of the preliminary plat." | June 2020 | Ryan Steeley |
| Santaquin | Participating in NFIP, has a section of code for development in Floodplain Areas | June 2020 | Community Development |

| | | | |
|------------------|--|------------------------------|----------------------------|
| | | | Director Jason Bond |
| Saratoga Springs | <p>Participating in the NFIP, though there are no Special Flood Hazard Areas.</p> <p>The City recently completed a storm drainage study of the entire geographic area of the City. This study indicates areas more susceptible to flood damage and makes recommendations concerning the correct locations of detention ponds, storm channels and culvert facilities. The City will be installing these improvements over the next 10 years, as needed, to accommodate growth in existing and future neighborhoods. The City has also had the practice of trying to raise awareness of issues like flooding so that you can take whatever steps you need to ensure maximum protection. The City has already made or required developers to make improvements to install storm drain ponds, underground drain systems, and open storm channels leading to Utah Lake. The City also has several regional park facilities planned of over twenty (20) acres in size that will collect storm water during large storms. These facilities are all designed to divert and collect water away from residential areas.</p> <p>The City also requires Floodplain Development Permits (FDPs) any time that fill or structural improvements are proposed in the regulatory floodplain. The regulatory floodplain is that area shown on the approved FEMA Flood Insurance Rate Maps (FIRMs). These maps are available on the City website (see quick links) or at FEMA's Website. More complete and detailed information on floodplain management regulations and procedures can be found in Section 18.02 of the City Code."</p> <p>4.4.3 Goals to reduce/avoid long-term vulnerabilities to the identified hazards (Requirement §201.6(c)(3)(i))</p> <p>Mitigation of vulnerabilities in the long-term will be done in the following four ways:</p> <p>a) Mitigation options for currently known hazards are listed in Table 4.1. Table 4.1 provides a summary of currently identified hazard mitigation actions over the next ten years (2017 to 2026). This is the same table as in the MAG plan (since the City provided this table to MAG).</p> <p>b) Mitigation measures may be incorporated into capital improvement plans. Hazard mitigation is achieved over the long term by incorporation of hazard mitigation into capital improvement projects, as previously described in Section 4.3.</p> <p>c) Mitigation measures will be accomplished by participating in other mitigation regional actions in the MAG plan (not relisted here).</p> | No Special Flood Hazard Area | City Engineer Jeremy Lapin |

| | | | |
|----------------|---|-----------|--|
| | d) Mitigation measures will be accomplished by incorporating mitigation actions in the State of Utah Plan, as described in Attachment E (not relisted here). As recommended by FEMA (in comments dated August 17, 2017) future plan updates may incorporate master planning updates and other updated plans, such as transportation corridor and storm water plans. Future plan updates to the City's Plan (done every five years) may also incorporate future MAG and State of Utah Plan updates, as appropriate. | | |
| Spanish Fork | Participating in NFIP, Section 8.32 of City Code deals with Flood Control. | June 2020 | Surveyor Travis Warren |
| Springville | Participating in NFIP, has a Flood Damage Prevention Ordinance and Floodplain Overlay Zone, and has projects underway to move homes out of the 100 yr floodplain. | June 2020 | Engineer Jeff Anderson |
| Utah County | Utah County participates in the NFIP and uses the latest FIRMs. It is involved in multiple flood mitigation studies and projects and has Flood Protection and Critical Environmental Zone ordinances. | June 2020 | Zoning Director Bryce Armstrong |
| Vineyard | Participating in NFIP, section 15 of the zoning code is a Flood Damage Prevention ordinance. There are no structures in the floodplain. | June 2020 | Building Official George Reid |
| Woodland Hills | Participating in NFIP, City Code chapter 10 is the Flood Damage Prevention Ordinance and chapter 9 is a Flood Hazard and Natural Hazard Study requirement for new development in hazard-prone areas. | June 2020 | Public Works Director Corbett Stephens |

The primary goal for non-participating communities is to become a participating member of the NFIP.

Assessing Vulnerability: Addressing Repetitive Loss Properties

There are 2 repetitive loss facilities, one each in Alpine and Provo. Alpine has done extensive work around their facility.

History

Following are the narratives from a few of the more damaging floods/flash floods in Utah County. Flooding following fire is a common theme.

Santaquin, 9/12/2002

\$3,200,000

Heavy rains over several days caused flash flooding and mudslides below a burn area in Santaquin. The rain also caused a canal to overflow its banks in the same area, making conditions even worse. An estimated 3 million dollars damage was done to to about 40 homes and several vehicles as mudslides up to 7 feet deep moved down the hillside. No injuries were reported.

Utah County, 9/7/2013

\$2,943,600

Heavy rain caused flash flooding across much of urban Utah County, with multiple locations recording 0.6-0.8 inches of rain in only 15 minutes. The most significant damage from flooding was reported in Provo, Orem, Payson, and Santaquin. Street flooding was widespread and some roads incurred major damage, with the worst damage occurring at 900 North and Grand Avenue in Provo, where water undercut and washed out a large portion of the asphalt road. Debris from the storm was scattered across most local roadways, taking several days to clean up, and even closed some roads for a period of time. Flowing water caused also caused significant damage to large concrete stairs at Lions Park in Provo. At University Mall in Orem, water quickly filled the parking lot, submerging many cars in more than a foot of water.

Residential areas also received significant flood damage. In Provo, at least 25 homes had major damage, with more than 50 receiving minor damage. In Orem, approximately 30 homes received flood damage. In Santaquin, about 30 homes had flooding a foot deep or more, while about 30 other homes had flooding with less than a foot of water. Water wasn't the only problem in Santaquin, as the storm drainage system became overwhelmed, and raw sewage flowed into many homes.

Finally, the flooding also impacted Timpanogos Cave National Monument, where heavy rain and associated debris stranded 150 hikers for several hours, before rangers were able to clear a path and rescue them. The Monument was closed for two full days while debris was cleaned up from both the hiking trails and nearby State Route 92.

Bald Mountain and Pole Creek, 10/7/2018

The Bald Mountain and Pole Creek Fires started on August 24, 2018 and September 6, 2018, about 15 miles south of Provo, Utah in the Uinta-Wasatch-Cache National Forest. The relative risk of both fires was determined to be low and they were monitored until September 10 when weather changes brought strong winds and a series of Red Flag Warnings. The two fires soon merged and burned together until they were fully contained on October 7, 2018. The Bald Mountain Fire caused mandatory evacuations of Elk Ridge

and Woodland Hills. The Pole Creek Fire triggered mandatory evacuations for the Covered Bridge and Birds Eye communities, along with Diamond Fork and Right Fork Hobbie Creek Canyon. The two fires combined resulted in a total of 120,851 acres burned.

As a result of the burn severity, the potential for flash flooding and debris flow was high in some areas; threatening critical infrastructure, watershed, and the safety of residents. Utah County utilized the Emergency Watershed Protection Program to fund mitigation projects in multiple locations across the County. The project was broken up into 7 separate Damage Survey Reports and 6 different project areas including Utah County, Payson, Salem, Elk Ridge, Spanish Fork, and Woodland Hills. Major areas of concern included Diamond Fork, Lake Fork, Bennie Creek, Nebo Creek, Santaquin Canyon, and drainages near Spring Creek. The following projects were included in the application, sponsored by Utah County:

DSR 1 – Santaquin City/Utah County

1. Summit Creek - stream rehabilitation and debris removal
2. Santaquin Eastside Park - debris removal and installation of various types of silt fence
3. Crooked Canyon/Picayune Canyon – drainage and channel rehabilitation, earthen berm and rock riprap as well as installation of various types of silt fence
4. Santaquin Debris Basin - sediment removal

DSR 2 – Payson City/Utah County

1. Peteetneet Creek – stream rehab items including rock riprap, gabion baskets, earthen berm, culvert rehabilitation, channel cleaning and debris removal, and various types of silt fence
2. Payson Debris Basin – sediment removal

DSR 3 – Elkridge City

1. Loafer Canyon – earthen berm construction, installation of various types of silt fence, channel cleaning and debris removal

DSR 5 – Spanish Fork City

1. Crab Creek Spring – collection protection including installation of various types of silt fence and stream rehab including rechannelization, rock riprap, earthen berm, and culvert rehabilitation

DSR 6 – Woodland Hills City

1. Drainage rehabilitation including various types of silt fence installation, debris removal, rock riprap, channel cleaning and debris removal, and earthen berm

DSR 7 – Utah County

1. Nebo Creek - stream rehab items including rock riprap, gabion baskets, earthen berm, culvert rehabilitation, channel cleaning and debris removal, and various types of silt fence
2. Nebo Bridge – inlet and outlet protection control utilizing various types of silt fence and rock riprap, removal of debris
3. Eagles Landing - drainage and channel rehabilitation, earthen berm and rock riprap as well as installation of various types of silt fence
4. Diamond Fork - drainage and channel rehabilitation, earthen berm and rock riprap as well as installation of various types of silt fence
5. Thistle Debris Basin – sediment removal

Utah County is currently working toward additional mitigation projects through the Watershed Operations Program by conducting environmental studies to determine more permanent and long term solutions to reduce flooding and debris flows affecting various communities.

Utah County and its cities have received a total of \$671,397.02 in NFIP claims since 1978.

Dam Failure

Although there are no recorded dam failures in Utah County, there are several high risk dams. Each has its own emergency action plan and is regularly inspected. See waterrights.utah.gov DamView for more information or the Regional Hazards section of this plan for an assessment of Deer Creek and Jordanelle dams.

| Name | Miles to first downstream town | First downstream town | County |
|-------------------------------|--------------------------------|-----------------------|--------|
| Battle Creek | 0.2 | Pleasant Grove | Utah |
| Big East | 10 | Payson | Utah |
| Box Lake | 11 | Payson | Utah |
| Dry Creek | 3 | Lehi | Utah |
| Grove Creek | 0.1 | Pleasant Grove | Utah |
| Highland Northwest Irrigation | 0 | Highland City | Utah |
| Highland Pressure Pond | 0 | Highland City | Utah |
| Hobble Creek Debris Basin | 2 | Springville | Utah |

| | | | |
|---|-----|------------------|------|
| Israel Canyon | 0 | Saratoga Springs | Utah |
| Lehi Sandpit | 0 | Lehi | Utah |
| Lindon Dry Canyon Debris Basin | 1 | Orem | Utah |
| Lindon Irrigation Project I | 0.1 | Lindon City | Utah |
| Lindon Irrigation Project II | 0.1 | Lindon City | Utah |
| Maple Lake | 8 | Payson | Utah |
| Rock Canyon Debris Basin | 0.1 | Provo | Utah |
| Santaquin Debris | 1 | Santaquin | Utah |
| Santaquin Pressure Irrigation Reservoir | 0 | Santaquin | Utah |
| Saratoga Springs Secondary Water Pond | 0 | Saratoga Springs | Utah |
| Silver Lake Flat | 12 | American Fork | Utah |
| Slate Canyon Debris Basin I | 0.1 | Provo | Utah |
| Slate Canyon Debris Basin II | 0.1 | Provo | Utah |
| Spanish Fork Pressure Irrigation Pond | 1 | Spanish Fork | Utah |
| Tibble Fork | 1 | American Fork | Utah |
| Winward | 8 | Payson | Utah |

Mitigation

Strategies include:

Incorporate flood mitigation into local planning by developing a floodplain management plan, mitigating hazards during planning, establishing a “green infrastructure” program to link greenways, and obtaining easements for water retention and drainage

Form partnerships to support floodplain management such as a regional watershed council or citizen committee to discuss issues and recommend projects.

Limit or restrict development in floodplain areas by providing incentives to develop elsewhere, protecting buffers around water resources, limiting impervious surfaced within developed parcels, or prohibiting development in the floodplain.

Adopt and enforce building codes and development standards such as the International Building Code and increasing “freeboard” requirements aka the number feet above base flood elevation that new building must have.

Improve stormwater management planning by completing stormwater drainage studies and master plans, regulating development in upland areas to reduce runoff, and encouraging low impact development techniques.

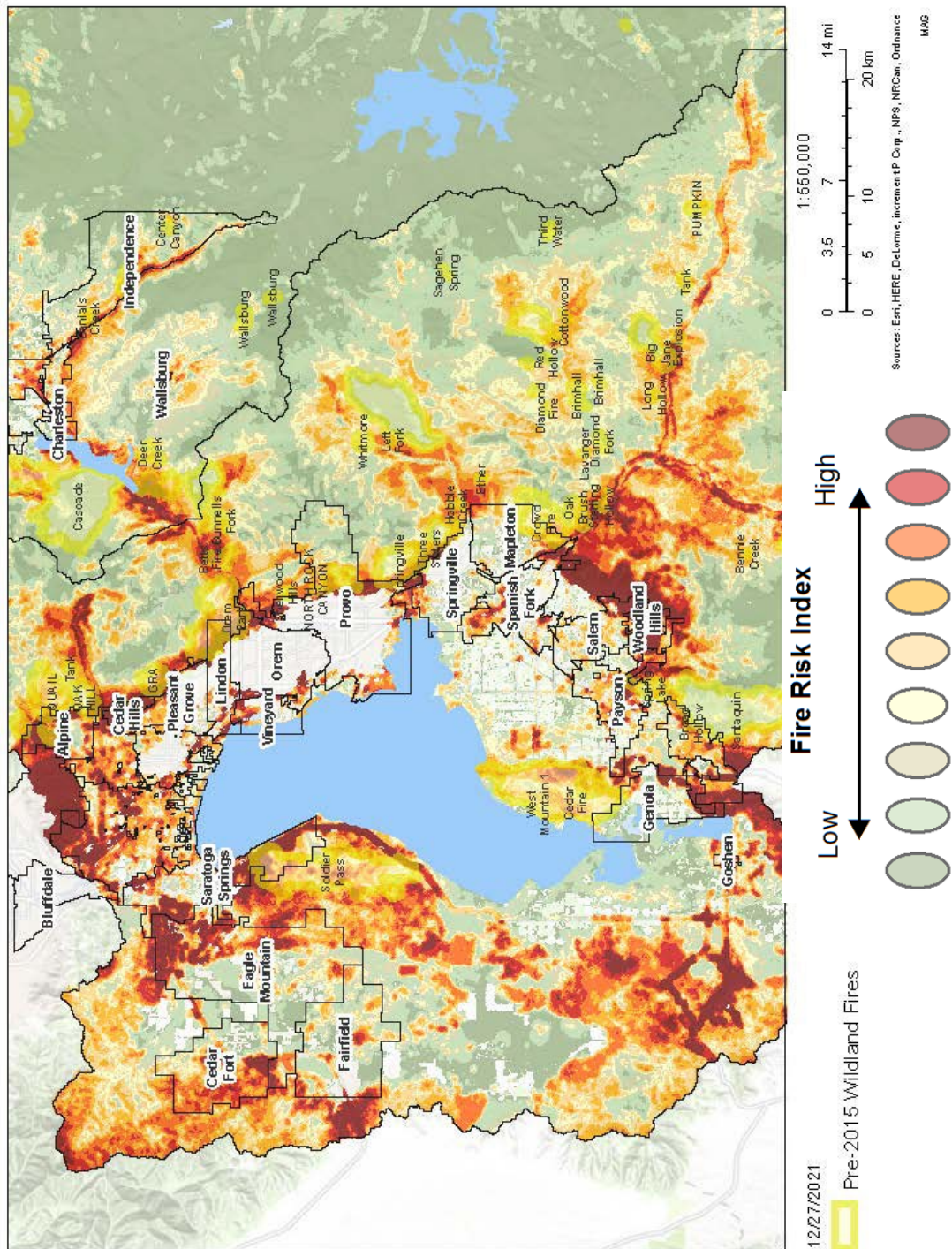
Adopt policies to reduce runoff such as more trees, on-site retention for stormwater and firefighting, and encouraging porous pavement and vegetation in parking areas.

Use natural systems such as preserving wetlands and riverbanks, restoring vegetation, acquire open space in targeted areas, and offer density bonuses to developers for leaving flood-prone areas vacant.

Protect and enhance infrastructure and critical facilities by elevating roads and bridges, floodproofing water treatment facilities, stabilizing shoulders and embankments, installing backup generators, expanding culverts, and require new critical facilities be built outside the floodplain.

Wildland Fire

Fire Hazards in Utah County



Overview

Fire is a natural part of every ecosystem, but decades of wildland fire suppression during a historically cooler time period resulted in a buildup of fuels (vegetation) and development in wildfire-prone areas. With the 2010's megadrought, increased outdoor recreation, development pressure, and climate change the likelihood of damaging fire is increasing.

Though we have more assets in high-risk areas, the technology for early warning and fire-hardened homes has also advanced. This combined with better planning and enforcement can improve protection of assets already in place.

Wildfires occur on a regular basis in Utah County. Most fires occur in the late summer to early fall. Although many fires occur from natural causes such as lightning, humans cause over half of all fires. Sparks from trains traveling on the railroad cause many small fires in south Utah County. People riding ATV's, using fireworks and campfires also start a number of fires in the area. Burn scars near populated areas are particularly difficult to manage, contributing to landslides and floods during rain events.

Profile

| | |
|-----------------------------------|--|
| Frequency | Multiple wildland fires occur in Utah County Every year. |
| Severity | Moderate/Limited |
| Location | Hillsides and mountainous areas, vegetated areas near rivers, open grass and rangelands. |
| Seasonal Pattern | Summer and fall depending on weather conditions. |
| Duration | A few hours to a few weeks depending upon conditions |
| Speed of Onset | 1 to 48 hours |
| Probability of Future Occurrences | Highly Likely 70 fires required management in the past 6 years alone |

Development Trends

As development occurs on the bench areas of Utah Valley more homes will be in danger of wildfire. Utah County has one of the greatest percentages of developable lands in the

wildland-urban interface in the state. Communities need to make developers and homeowners aware of the danger. Cities should also require firebreaks and access roads along urban/wildland interfaces. Although development brings homes closer to areas of potential wildfire, it also brings water and access for firefighters closer to the urban fringe. FIREWISE community development principles, such as not storing firewood near homes, installing fire resistant roofing and cleaning debris from rain gutters will reduce potential losses.

History

Following are a few of the most significant since 2016. More than half of fires are human caused and even relatively small fires, if near critical facilities, can be quite costly. Fortunately, no lives have been lost and few structures destroyed in the past decade.

| Incident Name | Start Date | \$ Spent Fighting Fire | Acres | Fire Cause | Specific Cause |
|----------------|--------------------|------------------------|--------|------------|--------------------------------------|
| Coal Hollow | August 4, 2018 | \$14,832,358 | 24,571 | Natural | Lightning |
| Bald Mountain | August 24, 2018 | \$9,397,458 | 18,603 | Natural | null |
| Bennion Creek | June 4, 2021 | \$6,175,979 | 8,298 | Natural | Lightning |
| William | September 6, 2020 | \$5,733,509 | 5,832 | Human | Fireworks (Consumer or Personal Use) |
| Range | October 17, 2020 | \$2,728,834 | 3,379 | Human | Fire Arms Use |
| Tank Hollow | August 11, 2017 | \$1,235,985 | 1,200 | Natural | Lightning |
| Knolls | June 28, 2020 | \$1,081,424 | 12,584 | Human | null |
| Ether Hollow | September 7, 2020 | \$1,051,368 | 848 | Human | Fire Arms Use |
| Round Peak | July 15, 2019 | \$1,026,916 | 236 | Human | Campfire |
| Pole Canyon | July 15, 2020 | \$767,634 | 487 | Human | Other, Unknown |
| Battle Creek 2 | September 12, 2020 | \$745,886 | 188 | Human | Default |
| Goose Point | August 21, 2019 | \$696,485 | 8,908 | Unknown | Other Small Equipment |
| Goshen | September 13, 2020 | \$691,557 | 372 | Human | null |

| | | | | | |
|--------------|-----------------|-----------|-----|---------|---------|
| Battle Creek | August 16, 2020 | \$621,704 | 40 | Human | Default |
| Alaska | July 30, 2019 | \$584,122 | 489 | Unknown | Default |

The Coal Hollow in 2018 began with a lightning strike in southeast Utah County and quickly grew to thousands of acres in hot, dry conditions. The fire prompted evacuations in Utah, Sanpete, and Carbon counties and required hundreds of firefighters to contain. It threatened hundreds of homes, rail lines, and I-6, a major trucking route. The fire also contributed to unhealthy air quality in adjacent counties, stifling summertime recreational activity. The fire was eventually suppressed as winds died down, consuming a total of 25,000 acres and costing over \$14 million to fight, not to mention lost productivity due to the closure of I-6 and evacuations. About a year after the fire, the Utah National Guard flew over the burn scar with the director of the Department of Air Quality, Congressmen Curtis and Ellertson, Utah National Guard Generals, Engineers and others.

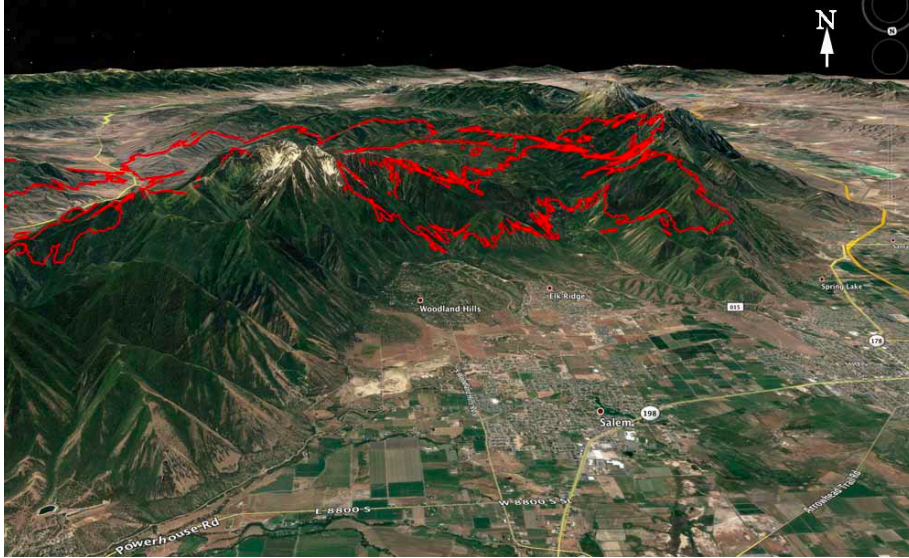
Worries about secondary hazards (flood, debris flow, and mudslides) had the National Guard and residents staging equipment such as jersey barriers and sandbags along high-risk areas. A mudslide did close Diamond Fork Road temporarily.

(Deseret News, Daily Herald, and Utah National Guard)

"The Bald Mountain and Pole Creek Fires started last year on August 24 and September 6 respectively about 15 miles south of Provo, Utah in the Uinta-Wasatch-Cache National Forest. Both fires were initially managed in a less than full suppression mode — allowed to spread within lines drawn on a map. Rainfall amounts ranging from 1.3" to 2.3" on August 25 put a damper on the fire activity, but within days the Energy Release Component had returned to the 90+ percentile range. Meanwhile the area had been classified as in Severe Drought by the Drought Monitor.

"The weather changed on September 10, bringing strong winds and a series of Red Flag Warnings causing the two fires to burn together. The final size was 120,851 acres.

"The Bald Mountain Fire caused mandatory evacuation of two cities: Elk Ridge and Woodland Hills. The Pole Creek Fire triggered mandatory evacuations for the Covered Bridge Community of the Spanish Fork Canyon along with the Diamond Fork Canyon and the Right Fork Hobbie Creek Canyon areas." -Wildfire Today



Communities At Risk

The following list consists of communities throughout Utah that have been determined by wildland fire officials to be at risk from wildland fire. The “Overall Score” represents the sum of multiple risk factors analyzed for each community. Examples of some risk factors are fire history, local vegetation, and firefighting capabilities. The Overall Score can range from 0 (No risk) to 12 (Extreme risk). This score allows Utah’s fire prevention program officials to assess relative risk and create opportunities for communications with those communities on the list. Bolded communities are those with a Community Wildfire Preparedness Plan.

| Community Name | Overall Score | Community Name | Overall Score |
|-----------------------|---------------|-----------------------------|---------------|
| Payson Canyon | 10 | Soldiers Summit Development | 8 |
| Cedar Fort | 9 | Spanish Fork Canyon | 8 |
| Dream Mine | 9 | Springdell | 8 |
| Elk Ridge | 9 | Tibble Fork | 8 |
| Silver Lake | 9 | Alpine Cove | 7 |
| Vivian Park | 9 | Elberta | 7 |
| Woodland Hills | 9 | Fairfield | 7 |
| Alpine | 8 | Genola | 7 |
| Cedar Hills | 8 | Goshen | 7 |
| Covered Bridge | 8 | Lindon | 7 |
| Diamond Fork Canyon | 8 | Mapleton | 7 |
| Eagle Mountain | 8 | Payson | 7 |
| Highland | 8 | Pleasant Grove | 7 |
| Hobble Creek | 8 | Salem | 7 |

| | | | |
|---|---|-------------------------|---|
| Lehi | 8 | Santaquin | 7 |
| Lofer Canyon | 8 | Spanish Fork City | 7 |
| Orem | 8 | Spring Lake | 7 |
| Provo | 8 | Sundance | 7 |
| Sheep Creek | 8 | Vineyard | 7 |
| Soldiers Summit Development | 8 | American Fork Canyon | 6 |
| | | Saratoga Springs | 6 |
| | | Springville | 6 |
| | | Wanrhodes Basin | 6 |
| *Bolded Communities have developed a Community Wildfire Preparedness Plan with FFSL | | | |

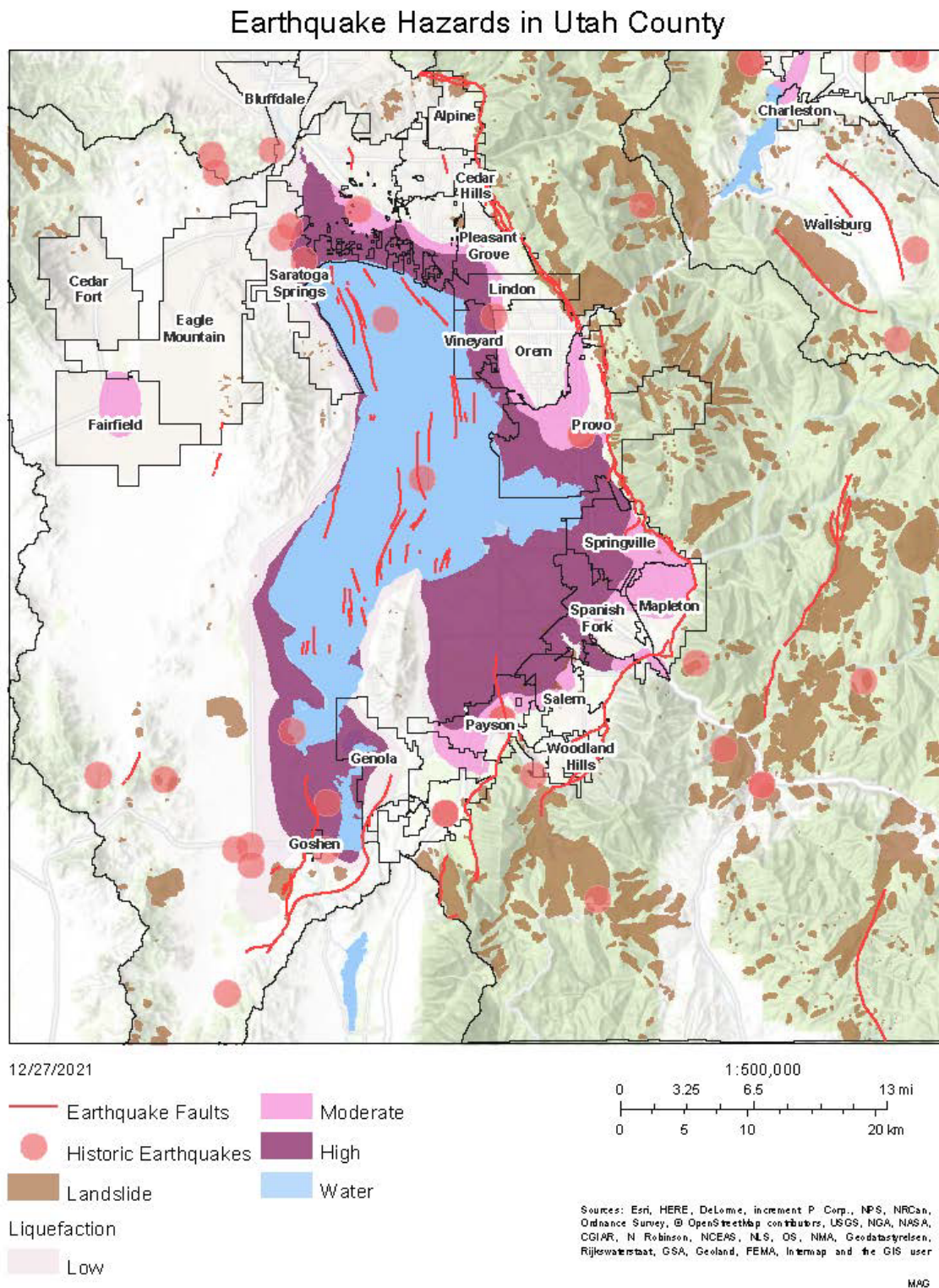
Mitigation

The FFSL has helped communities develop Community Fire Plans. According to the FFSL, the purpose of community fire planning is to:

- Empower communities to organize, plan, and take action on issues impacting community safety
- Enhance levels of fire resistance and protection to the community
- Identify the risks of wildland/urban interface fires in the area
- Identify strategies to reduce the risks to homes and businesses in the community during a wildfire

Other strategies include limiting development in the Wildland Urban Interface, fuel management, prescribed burns, hardening buildings against fire with appropriate shingles, vent covers to prevent embers entering home, maintaining an emergency water supply and appropriate water pressures, using appropriate plantings around homes, and much more. See wildfirerisk.org or FEMA's [Strategies handbook](#) for a more complete list.

Landslide



Overview

Landslides are common natural hazards in Utah that occur when the pull of gravity becomes greater than the cohesion of soil. Land movement can occur without warning and can result in destructive, costly outcomes. Various types of landslides in Utah are debris flows, slides, and rockfalls.

Steep slopes, mountainous terrain, rock types, and narrow, debris-choked canyons all contribute to our region's susceptibility to landslide hazards. Wildfire can remove stabilizing vegetation and increase landslide risk. Many hillslopes are prone to mass movement, particularly where development has taken place on existing landslides or where grading has modified a slope and reduced its stability. Therefore, historical landslides, prehistoric landslides, and steep slopes prone to mass movement must be thoroughly investigated prior to development activities, along with regional groundwater and landscape and other irrigation activities. Excessive irrigation can easily cause a neighbor near or on a slope to lose their home from a landslide by elevating the groundwater table.

The foothills and alluvial fans on the bench areas of Utah County are quickly developing. Landslides and debris flows often occur after a wildfire event. The following table illustrates the vulnerability assessment for landslides in Utah County.

Profile

| | |
|-----------------------------------|---|
| Frequency | Movement occurs nearly every year. |
| Severity | Critical, several structures have been condemned and major transportation routes temporarily closed |
| Location | Along most benches and hillsides, especially near burn scars. |
| Seasonal Pattern | Spring when ground saturation is at its peak. |
| Duration | Minutes to years. |
| Speed of Onset | Seconds to days. |
| Probability of Future Occurrences | Moderate: 25% |

Development Trends

Development along the foothills and bench areas is very desirable and as more development occurs, more homes will be at risk for landslide damage. As more of the county land is developed, marginal areas with problematic soils will be developed. Increased analysis and geotechnical reports should become an integral part of the development and building process. Careful consideration should be given to ensure cutting and filling for any project is minimized.

History

Landslide/Debris Flow

| Location | Date | Damages | Source | Details |
|------------------------------|------------|----------------|--|--|
| Utah | 12/27/1964 | \$500 | SHELDUS | |
| Utah | 1/1/1983 | \$200,000,000 | SHELDUS | Record precipitation triggered many landslides, including Thistle |
| Utah | 1/1/1983 | \$8,603,666.52 | SHELDUS | |
| Utah | 1/1/1984 | \$1,471,256.97 | SHELDUS | |
| Santaquin | 9/12/2002 | \$500,000 | Utah Geologic Survey | The Mollie fire in 2001 and days of light rain created the conditions for the debris flow by exposing bare soil and saturating ground. |
| Provo | 9/10/2003 | \$0 | SHELDUS | Debris-Flow, Fire related. Damages prevented by diversion works. |
| Spring Lake, Santaquin | 7/26/2004 | \$500,000 | SHELDUS, the Geological Society of America | Debris-Flow, Fire related |
| Sage Vista Lane, Cedar Hills | 4/28/2005 | \$1,000,000 | FEMA Disaster Declaration & Utah Geological Survey | Above-average precipitation reactivated historic landslides, exacerbated by development at the base of the hill. |

| | | | | |
|-------------------------------------|-----------|--------------------------|---------------------------------|--|
| Provo | 5/12/2005 | One guest house damaged | SHELDUS, Utah Geological Survey | A 13-ton rock rolled down Y mountain over a mile after a spring storm, coming to a stop in a guest house. |
| Sherwood Hills, Provo | 6/28/2005 | Multiple homes condemned | SHELDUS | High groundwater tables after a wet winter triggered slow slide |
| Utah County | 9/7/2013 | \$200,000 | NOAA | Summer storms combined with fire scars resulted in several landslides this year. |
| Utah County | 8/22/2013 | \$15,000 | NOAA | |
| Utah County | 7/16/2013 | \$10,000 | NOAA | |
| Utah County, Tank Hollow & Birdseye | 9/8/2019 | \$149,000 | NOAA | Heavy rain over the Tank Hollow & Pole Creek Fire burn scars produced a debris flow across U.S. Highway 6 at milepost 202. |

Case Studies

Thistle Slide

In 1983 the town of Thistle, Utah, known to many highway travelers as the small community where both the Spanish Fork River and nearby U.S. highways branch, was eliminated by the costliest landslide on record in the United States.

Thistle was located at the triple junction of transportation systems leading south to Sanpete County, east to the coal counties of Carbon and Emery and points beyond, and northwest to the Wasatch Front and Salt Lake City. Two major highways converged at Thistle (U.S. Highways 89 and 6). Until the landslide, two rail lines also converged at Thistle--the main line of the Denver and Rio Grande Western Railroad (D&RGW) joining Denver and Salt Lake City, and a branch line to Marysvale.

Storms heralding the 1982 to 1986 wet cycle kicked off the wettest month ever recorded at the Salt Lake City International Airport in September 1982, and saturated the ground before the winter snows. The winter was neither exceptionally wet nor cold. However, snows and cold nights continued late into April and May 1983, and resulted in an unusually late and sudden snowmelt when temperatures did warm up. May snowpacks of northern Utah averaged two to three times their normal. Utah's landslide problems correlate with precipitation and snowmelt. Two large landslides in the early spring alerted geologic experts to the situation. The National Weather Service briefed local and national officials

about the unusual conditions. Yet even with the geologic and climatic indicators, the events of April, May, and June caught the state by surprise.

Starting in January, the D&RGW watched the Thistle area as well as several other landslide-prone areas near Soldier Summit. Their geotechnical experts visited the area on April 12. Days later, when the Thistle landslide began to move visibly, no one recognized it as a major hazard. The railroad tracks went out of alignment on Wednesday, 13 April. The highway became bumpy, fractured, and became impassable on Friday, 15 April. The streambed and deposits on the canyon floor rose approximately one foot an hour as a huge tongue of earth piled up against the bedrock buttress of Billies Mountain, filled the canyon, and dammed the river. The waters of the Spanish Fork River rapidly created Thistle Lake upstream of the landslide dam.

The railroad company and the Utah Department of Transportation (UDOT) initially tried to keep the railroad tracks, highway, and river open. Sunday, 17 April the landslide defeated efforts to cut down through the rising toe of the landslide and allow passage of the river water. Efforts to siphon waters rising behind the landslide dam also failed. Rising lake waters drowned the community of Thistle. That very day, the president of the D&RGW announced at Thistle that the railroad would tunnel a new railroad course through Billies Mountain. To be successful, the tunnel had to be above Thistle Lake's eventual highest water line. Railroad experts in consultation with the state decided to form the landslide into a dam and to construct an overflow spillway tunnel to control the uppermost rise of the lake. Having calculated how fast an overflow tunnel could be constructed, and how fast the lake would rise, they began drilling. The state took charge of public safety priorities. Armies of workers and heavy equipment shaped the landslide dam while it moved by transferring 500,000 cubic yards of earth from the middle area of the landslide onto its toe. This also provided a platform from which to construct the tunnels. The state constructed a third tunnel to drain the impounded water. UDOT decided to relocate the highway over Billies Mountain. The Army Corps of Engineers constructed a pumping system to keep Thistle Lake from rising to dangerously high levels.

The impounded water rose at approximately the rate predicted and the D&RGW contractors completed the overflow tunnel system with two days to spare. Trains passed through the new tunnel on 4 July, eighty-one days after the initiation of the project and eleven days before the contracted completion date. The new tunnel provided a permanent bypass for the Spanish Fork River around the landslide. The relocated highway encountered difficult geotechnical problems. The highway opened at the end of the year but was often closed due to major rockfalls and slope stability problems.

The town of Thistle was destroyed. The Marysvale branch line of the railroad was never reopened, leaving a large area of central Utah without rail service. Thistle resulted in Utah's first presidential disaster declaration and became the most costly landslide the United

States had experienced. The Utah Business and Economic and Research Bureau reported the following dramatic impacts of the landslide. The D&RGW and Utah Railway embargoed all shipments that normally went through Thistle. The rerouting surcharge of \$10 per ton virtually stopped coal shipments. Two trucking companies laid off workers, cancelled contracts, and even suspended operations. Most of the area's coal mines laid off miners, cancelled contracts, and experienced shut downs. Some miners' commutes suddenly exceeded 100 miles. Some coal haulage commutes trebled. Due to market conditions and the Thistle landslide, coal production dropped nearly 30 percent in 1983. Uranium producers paid substantially more for supplies in an already soft market. At least one oil company became non-competitive due to increased travel costs. Tourism in the area, particularly in-state tourism, sagged in response to negative publicity and difficult access. To the south, the blockage of route 89 and the Marysville line hurt coal companies, turkey and feed operations, and gypsum, cement, and clay shipments.

The Thistle landslide caused total estimated capital losses of \$48 million and revenue losses of \$87 million, plus associated losses in tax revenues. Direct costs of Thistle tally over \$200 million, including relocating the railroad at a cost of \$45 million, relocating the highway at a cost of \$75 million, and lost revenue to the railroad of \$1 million per day (which totaled \$80 million, including \$19 million in charges that the D&RGW paid the Union Pacific to use their rail lines).

See: O.B. Sumsion, Thistle . . . Focus on Disaster (1983).

Buckley Draw- Springville Fire

The Springville fire started on June 30, 2002 at 7:19 p.m. The fire burned a total of 2,207 acres above dozens of homes. The immediate post fire impacts for Provo City were: loose surface rock, silty and sandy soils, and blackened steep (40% grade) hillsides. Steep terrain and impervious soils cause rapid run off with rocks. Post fire conditions increased sediment expectations to 13 tons per acre. Brian McInerney of the NWS stated our risk level was the highest in the state.

Recommendations for mitigation offered to Provo City included the Uinta National Forest rehabilitating the burn area with vegetation (seed and mulch) and installing wire fences in the upper channel. The Natural Resource Conservation Service (NRCS) and the Emergency Watershed Program (EWP) implemented temporary measures to reduce the transport of sediment. Additionally, a Rain Activated Weather Station (RAWS) unit was relocated to the Buckley Draw area (elevation of 9,143 feet) to monitor site conditions on Sunday, July 13, 2002.

Provo City held public meetings on Sunday, July 13, and Monday, July 14, 2002 to present information and resources for the residents. National Flood Insurance Program (NFIP) information distributed. Sandbags and sand drops were scheduled and delivered.

On July 15, 2002, information was distributed to the Neighborhood regarding the increase in risk of post fire debris flow, with information about the NFIP program. Communication links to relay current hazard information to the residents were established. The evacuation plan was updated.

On July 16, 2002 a helicopter overview of the burn area was taken. Provo Public Safety responders had a Post Fire Debris Flow Risks in Utah class on July 31, 2002. NRCS and the EWP engineered a trench to redirect potential debris flow. Provo City obtained the necessary property agreements. Two debris flow events just to the north and just to the south of Provo in September, 2002 provided motivation to secure agreements and build the trench.

A SNOTEL was installed above the Little Rock Canyon drainage to monitor soil moisture and snow pack conditions on 22 October, 2002.

At the April 29, 2003 neighborhood meeting, the debris flow in Santaquin was contrasted with the conditions at the Buckley Draw. Plans for trench construction were discussed. A flag notification system and evacuation plan for the residents for the risk level was proposed and accepted. A web link with updated hazard information, a phone 'hot line' with an updated message, and a notification procedure alerting the Neighborhood Chair of any changes in the hazard level were implemented. A practice evacuation drill was held on Saturday, May 10, 2003.

The 1500 feet long trench was essentially complete on July 28, 2003. Weather conditions continued to be monitored on a daily basis.

At approximately 3:00 a.m. on September 10, 2003, four separate debris flows were triggered. The second largest flow came down the newly finished trench. There was little or no warning. This flow would have been life threatening and would have caused significant property damage without the debris trench in place. The spreader fences in the debris field distributed the runoff materials and completely contained this debris flow.

Mitigation

In Utah County, most recent mass movement is the result of rain on burn scars, and the strategies to for fire will also apply to this secondary hazard.

Nearly all recent landslides have occurred as reactivations of pre-existing landslides. Some strategies include:

Prohibit building on steep slopes, require thorough investigations and geotechnical studies for buildings in areas prone to landslides, and prevent over-irrigating. The use of very-low water xeriscape landscaping and/or smart irrigation controllers that adjust the amount of water applied to landscapes based on weather, plant/turf, and soil data, can significantly reduce the amount of excess water that percolates through the soil as groundwater and save money.

- Creating a plan to implement reinforcement measures in high-risk areas.
- Defining steep slope/high-risk areas in land use and comprehensive plans and creating guidelines or restricting new development in those areas.
- Creating or increasing setback limits on parcels near high-risk areas.
- Locating utilities outside of landslide areas to decrease the risk of service disruption.
- Restricting or limiting industrial activity that would strip slopes of essential top soil.
- Incorporating economic development activity restrictions in high-risk areas.

See FEMA's [Strategies handbook](#) for a more complete list.

Earthquake

Overview

Earthquakes occur when tectonic plates suddenly release tension built up over decades of strain. The Wasatch Fault has a strong earthquake about every 300 years and we are "due" for another. While some scenic homes are built directly on a fault, the way a building is constructed and the stability of soils underneath are a large factor in its resilience. Pre-1990's brick homes are usually unreinforced and very brittle, posing a great risk to occupants during a quake.

Liquefaction occurs when loose soils such as those at the mouth of a canyon or near a lake begin to act like a liquid when subject to prolonged shaking.

Utah County is particularly susceptible to earthquakes and their secondary hazards due to its situation between (or in many cases, on top of) the fault line and Utah Lake's unstable soils. While Summit and Wasatch counties may see some damage due to shaking and certainly a few landslides, Utah County is certain to have mass movement along the bench and liquefaction in the numerous homes (and utilities) built near the lake in addition to the normal collapse of chimneys and broken glass from an earthquake magnitude 5.0 and above. Fires are also common following earthquakes in urbanized areas as gas lines break, electrical shorts occur, and response capabilities of firefighters are overwhelmed by the number of incidents and possibly damaged streets and water lines.

Profile

| | |
|-----------------------------------|---|
| Frequency | Low: Events above 3.0 on the Richter scale are rare. Minor events (below 3.0) occur every month, but generally aren't felt. |
| Severity | High (up to 7.0) |
| Location | Multiple faults throughout the county with the primary Wasatch Fault along the mountain benches. |
| Seasonal Pattern | None |
| Duration | 1 to 6 minutes excluding aftershocks. |
| Speed of Onset | Seconds |
| Probability of Future Occurrences | 93% probability that an earthquake Magnitude 5 or higher will occur somewhere along the Wasatch Front in the next 50 years |

mountainland.org/hazards

| | | |
|--------|---|--------------------------------|
| Losses | 2.4 deaths annualized, 32 injuries annualized | \$24,000,000 losses annualized |
|--------|---|--------------------------------|

Development Trends

Although Utah County faces rapid development, new buildings are designed to withstand earthquakes much better than pre-1990s structures. Many of the older multi-story unreinforced masonry structures, where immediate deaths often occur, are city buildings and schools that are being rebuilt to seismic standards.

Envision Utah recently looked at different growth scenarios and what percentage of Utah County would be affected by a seismic event. Their analysis found that focusing development west of the lake will result in greater losses than working toward infill development.

As people move to Utah from areas without disasters they will need to be educated on the simple things that homeowners can do to reduce the impacts of an earthquake in their homes, such as securing heavy furniture and having flexible piping.

History

There have been few events of note in recorded history within Utah County, but a 2020 event in Magna, Salt Lake County, gave the state a glimpse of what could happen. The State of Utah has also put a few earthquake scenarios through its HAZUS software, yielding loss estimates and maps of potential damages on the Wasatch Front.

Magna Earthquake: Days after the US shutdown to slow the COVID 19 pandemic, a 5.7 earthquake struck Magna township in Salt Lake County. The most noticeable damages occurred in multi-story building such as the brick façade of a large commercial building, but several mobile homes were condemned and the Utah Department of Public Safety estimates \$70-100 million in public structure and infrastructure damage. Fortunately, no one was injured or killed and the public facilities were insured.

Earthquakes

| Location | Magnitude | Date |
|----------------------|-----------|-----------|
| Santaquin/Goshen | VI-VII | 2-Oct-00 |
| Elberta, Utah County | 3.8 | 4/6/1980 |
| Elberta, Utah County | 5 | 5/24/1980 |
| Lindon, Utah County | 4.7 | 2/20/1981 |

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| | | |
|--|-----|------------|
| Diamond Fork Campground, Utah County | 3.2 | 5/6/1994 |
| Payson Lakes Campground, Utah County | 3.3 | 7/6/1995 |
| Near Strawberry Reservoir, Utah County | 3 | 1/5/1998 |
| Goshen, Utah County | 3 | 1/23/2010 |
| Rocky Ridge, Juab/Utah County | 3.2 | 7/5/2011 |
| Rocky Ridge, Juab/Utah County | 3.6 | 7/22/2011 |
| Thistle, Utah County | 3.7 | 2/4/2012 |
| Bluffdale | 3.2 | 11/25/2016 |
| Bluffdale | 3.7 | 2/15/2019 |

*United States Geological Survey: earthquake.usgs.gov/earthquakes/search

Mitigation

Strategies include restricting building on known fault lines or steep slopes, requiring geotechnical studies for buildings on problem soils, retrofitting critical infrastructure, educating homeowners on retrofitting options and securing items to the wall, requiring large/reinforced foundations or piers in liquefaction areas, and many more. See **Utah Earthquake Safety** or FEMA's **Strategies Handbook** for more details.

Severe Weather

Overview

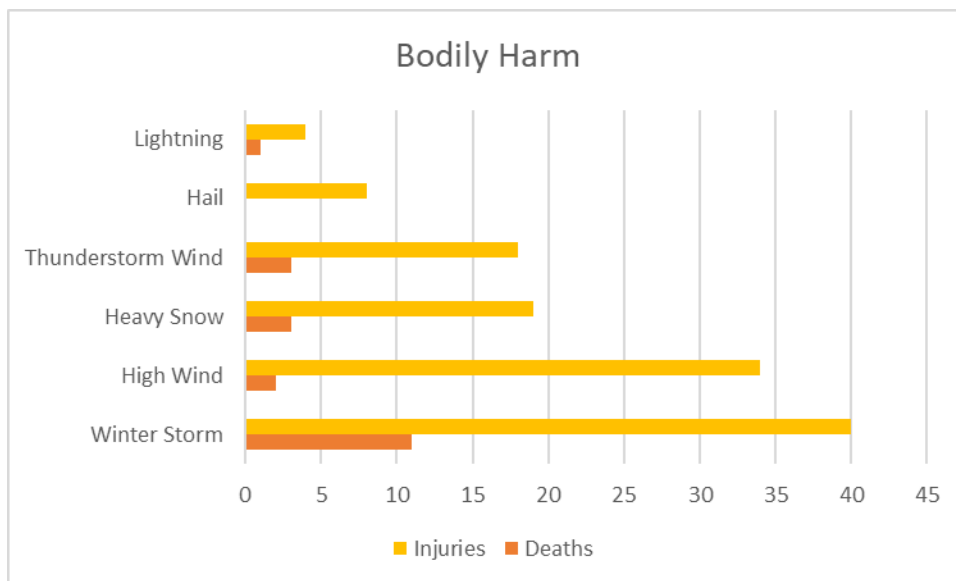
Utah County's mountainous terrain makes it particularly susceptible to Severe Weather, especially Winter Weather. Add to the topography those who seek snowy slopes for recreation and disaster can ensue, as seen in the table below. Avalanches, typically a voluntary risk, have caused the most deaths in Utah County. Winter weather has caused the most injuries. Wind is responsible for the most monetary damages of any type of severe weather. These numbers will only increase as the population grows, though crop damages should decrease as agricultural land is converted to urban.

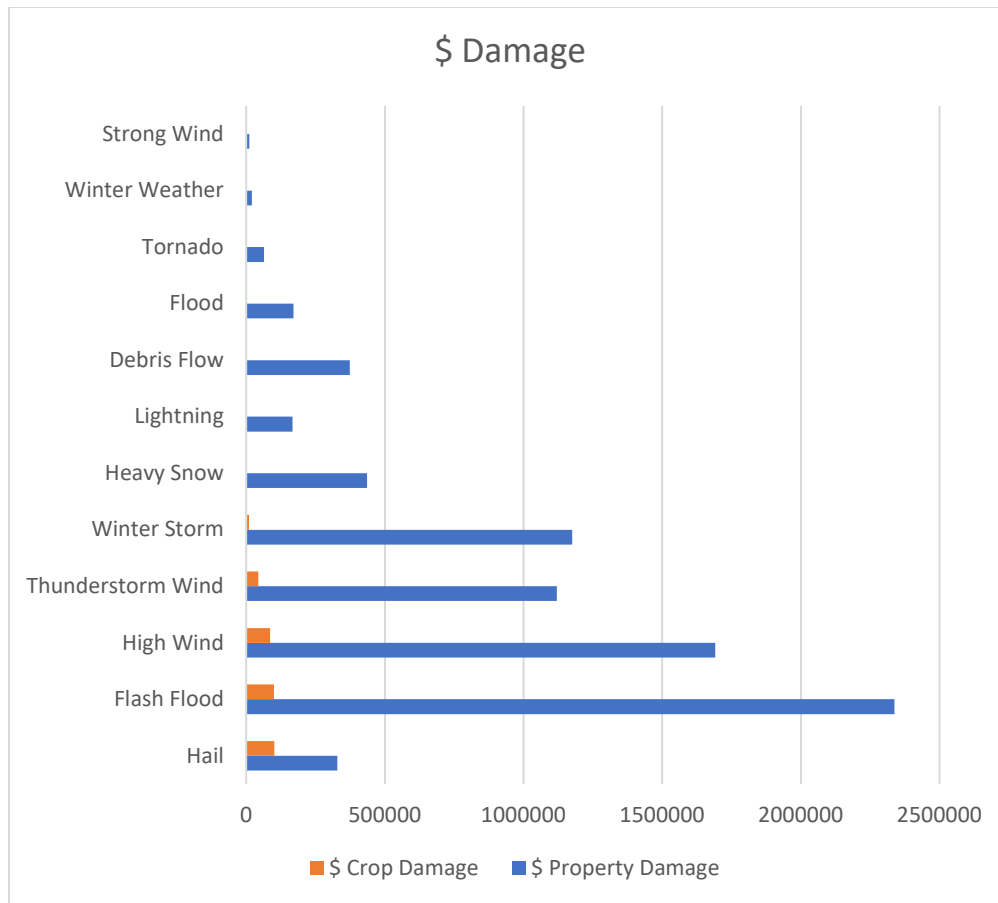
Profile

| | |
|-----------------------------------|--|
| Frequency | Frequent Multiple events happen each year. |
| Severity | Moderate |
| Location | Region wide with some locations more frequent due to geography. |
| Seasonal Pattern | All year depending upon the type of event. |
| Duration | Seconds to Days |
| Speed of Onset | Immediate |
| Probability of Future Occurrences | Highly probable. Winter Weather and Hail have the highest probability of occurrence of all weather hazards facing Utah County. |

History

| Row Labels | Deaths | Injuries | \$ Property Damage | \$ Crop Damage |
|--------------------|-----------|------------|--------------------|----------------|
| Blizzard | 0 | 0 | 0 | 0 |
| Cold/wind Chill | 0 | 0 | 0 | 0 |
| Debris Flow | 0 | 0 | 374000 | 0 |
| Flash Flood | 0 | 0 | 2338000 | 100000 |
| Flood | 0 | 0 | 170000 | 0 |
| Hail | 0 | 8 | 329000 | 101200 |
| Heavy Snow | 3 | 19 | 435500 | 400 |
| High Wind | 2 | 34 | 1691100 | 85800 |
| Ice Storm | 0 | 0 | 0 | 0 |
| Lake-effect Snow | 0 | 0 | 0 | 0 |
| Lightning | 1 | 4 | 166500 | 0 |
| Strong Wind | 0 | 0 | 11000 | 0 |
| Thunderstorm | | | | |
| Wind | 3 | 18 | 1119600 | 44000 |
| Tornado | 0 | 0 | 64530 | 0 |
| Winter Storm | 11 | 40 | 1175000 | 10000 |
| Winter Weather | 0 | 0 | 20000 | 0 |
| Grand Total | 20 | 123 | 7894230 | 341400 |



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Mitigation

For buildings: Adopt and enforce building codes related to roof snow loads and wind speeds. Require CO monitors.

For Infrastructure: Install redundancies in power lines, lightning protection and surge protection on critical infrastructure, and snow sheds over roadways.

For everyone: Educate homeowners on protecting water pipes during cold weather and travelling safely. Encourage participation in emergency alerts.

See FEMA's [Strategies handbook](#) for a more complete list.

Community Damage Assessment and Mitigation

Overview

Each jurisdiction represented by this plan has participated in the creation of its contents and given local input into their individual mitigation goals and priorities. Listed below are the damage assessments for each of the participating jurisdictions followed by an update of the community's mitigation strategies from the 2017 plan, after which are the strategies the community wishes to pursue in the course of this plan. Damage assessments were calculated using the methodologies mentioned in the Methods section. Strategies were developed by each community. The subsequent county and city strategies reflect the advancement of local and regional goals and continue the community's vision for the security and prosperity of the region. These goals include:

- Reducing the impact of natural hazards on life, property, and preserving the environment
- Minimizing damage to infrastructure and services and protecting their ability to respond
- Preventing potential hazards from affecting area or mitigating its effects
- Increasing public awareness, capabilities and experience
- Ensuring the safety of citizens and visitors
- Enabling cooperation between citizens and emergency and public services
- Maintaining cooperation with, and adherence to, FEMA guidelines
- Developing zoning and other plans that decrease development in hazardous areas

The guiding factor in prioritizing mitigation strategies for local communities was the principle that mitigation should provide the ***greatest amount of good to the greatest number of people, after considering resources, staffing, and other constraints***. Probability of occurrence, past events, and damage estimates compiled during the risk assessment in this plan were heavily considered. Overall, each community individually considered their own capabilities, staffing, and resources as they prioritized their own mitigation strategies.

Utah County

Loss Estimates

| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Dam Failure | 42,431 | \$12,287,233 | 123.53 | 154.17 | 72.92 |
| Fire Risk High | 27,140 | \$9,154,898 | 90.42 | 335.63 | 70.75 |
| Fire Risk Moderate | 18,775 | \$5,605,592 | 75.31 | 285.05 | 78.31 |
| Flood 1% Yearly Probability | 910 | \$229,828 | 5.72 | 30.92 | 1.73 |
| Landslide | 1,377 | \$473,143 | 36.29 | 59.68 | 9.07 |
| Liquefaction Moderate to High | 70,362 | \$20,556,665 | 272.45 | 409.51 | 180.53 |
| Earthquake (Pre-1990 buildings) | 2,459 | \$597,467 | | | |

Utah County spends a great deal of time and money on wildland fire mitigation. It protects critical infrastructure such as waterways (Provo Canyon), airports, and evacuation routes. Wildfire has threatened water resources recently and triggered debris flows on de-vegetated slopes. We are also aware of the need to protect our resources from terrorism and have plans for doing so. The County Health Department is crucial for educating residents about preparing for natural disasters and improving the health of citizens at large so they are individually more resilient. We know that a large earthquake is likely in the next few decades and are building to code, gradually retrofitting and constantly educating to mitigate its damage. Utah County is one of the fastest-growing counties in the nation and we reduce the risk of fire to new buildings and infrastructure in an ever-expanding area with codes and guidelines for fire-hardened homes, seismic soundness, and adequate evacuation routes.

| Hazard | Action | Priority | Timeline | Cost | Funding | Responsibility |
|--------|--------|----------|----------|------|---------|----------------|
|--------|--------|----------|----------|------|---------|----------------|

| | | | | | | |
|--|--------------------|------|---------|------------------|-------------------------------|---|
| Participation in FFSL's Cooperative Wildfire System program, including brush removal, education, and a host of other prevention measures | Fire | High | Ongoing | 55k/yr | Utah County, cities/towns | Utah County and participating cities |
| Replace roofs and targeted chipping program in Sundance | Fire | High | 1-3 yrs | 30k for chipping | Utah County, homeowners | Utah County |
| Perscribed burns in Hobble Creek | Fire | High | Ongoing | TBD | Utah County | Utah County |
| Install/improve the exit out the east end of Springdell in cooperation with UDOT on the Upper Dell dirt road across USFS property in both directions i.e. up Provo Canyon to the east or west to Squaw Peak Road) or the Lower Dell road that would exit onto Provo Canyon Road. | Fire | Mod | 2-4 yrs | TBD | Utah County, UDOT | Utah County, UDOT, Springdell residents |
| Create and improve dipping sites near Covered Bridge | Fire | High | 1-3 yrs | TBD | Utah County, DNR | Utah County, DNR |
| Educate on water conservation and good watering practices | Drought | Mod | Ongoing | TBD | Utah County | Utah County, Utah State |
| Evacuation planning, especially for inhabited canyons | Fire, All | Mod | Ongoing | MInimal | Utah County | Utah County, community |
| Construct an additional detention basin at the southeast end of Mapleton | Flood, debris flow | High | 1-2 yrs | 300k | Utah County, Grants, Mapleton | Utah County |

| | | | | | | |
|--|---------------------------|------|----------|------------|---------------------------------|-------------|
| Avalanche controls, including snow sheds and fences, in Provo Canyon | Avalanche, winter weather | High | Ongoing | TBD | UDOT, Utah State | UDOT |
| Purchase more chipping machines | Fire | Mod | 1-2 yrs | \$65k each | Utah County | Utah County |
| Retrofit Historic Courthouse | Earthquake | Mod | 5-10 yrs | 10 million | Utah County, BRIC, other grants | Utah County |
| Update community wildfire protection plan | Fire | Mod | 1 yr | Staff time | Utah County | Utah County |
| Participate in updating FIRMs for Utah Lake | Flood | Mod | 1-3 yrs | Staff time | FEMA | FEMA |

| 2017 Strategies Update | | | | | | | |
|------------------------|-------------------------------------|----------|----------|---------|--|--|-------------|
| Hazard | Action | Priority | Timeline | Cost | Funding Sources | Estimated Cost | Completed? |
| Wildfire | Fuel Mitigation plan with AF canyon | High | 1 year | Minimal | Local Cash | Local Government | Yes |
| Flooding/ Drought | Highline Canal Retrofit | High | 3 years | TBD | Local Cash, Water Conservancy District | Local Government, Water Conservancy District | In Progress |
| Flooding | Canal assessment with Provo City | High | 2 years | TBD | Local Cash | Local government, Provo City | In progress |
| Terrorism | Natural Resource Protection | High | Ongoing | TBD | Local Cash, grants | Local government | Yes |

| | | | | | | | |
|-------------|-------------------------------------|------|--------|-----|------------|------------------|-----|
| All Hazards | Implement Early Notification System | High | 1 year | TBD | Local Cash | Local Government | Yes |
|-------------|-------------------------------------|------|--------|-----|------------|------------------|-----|

Alpine

Loss Estimates

| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Dam Failure | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Fire Risk High | 789 | \$429,868 | 0.00 | 0.08 | 0.00 |
| Fire Risk Moderate | 552 | \$241,710 | 0.09 | 0.55 | 0.00 |
| Flood 1% Yearly Probability | 8 | \$4,805 | 0.00 | 0.02 | 0.00 |
| Landslide | 5 | \$2,433 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Earthquake (Pre-1990 buildings) | 829 | \$201,953 | | | |

Statement of Vulnerabilities: Alpine's chief concern is the increased probability of post-fire debris flows on de-vegetated hills along its east side. There is very little land left to develop and no new buildings planned in high-risk fire areas with the hillside ordinance.

| Action | Hazard | Priority | Timeline | Cost | Potential Funding | Responsible Party |
|--|-----------|----------|----------|---------|-------------------|----------------------|
| Require geotechnical reports for any proposed development on problem soils or steep slopes | Landslide | Mod | Ongoing | Minimal | Developer | Local gov, Developer |

| | | | | | | |
|---|-----------------|------|---------|------------|-----------|-----------|
| Restructure water rates | Drought | High | 1 yr | Staff time | Local gov | Local gov |
| Educate residents on disaster preparedness and promote the Great Utah Shake Out | Earthquake, All | Mod | Ongoing | Staff time | Local gov | Local gov |
| Maintain foothill trails as access roads for vegetation maintenance and fire response | Fire | High | Ongoing | 10k | Local gov | Local gov |
| Improve drought restrictions plan | Drought | Mod | 1-2 yrs | Staff time | Local gov | Local gov |
| Educate homeowners on firewise practices, especially defensible space | Fire | Mod | Ongoing | Staff time | Local gov | Local gov |

| 2017 Strategy Update | | | | | | | |
|-----------------------|---|----------|----------|---------|--------------------|------------------------------|---------------------------------------|
| Hazard | Action | Priority | Timeline | Cost | Funding | Responsibility | Completed? |
| Flooding/ Dam Failure | Promote NFIP participation. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local Cash, Grants | Local Government | Not necessary, none built before 2000 |
| Wildfire | Educate homeowners on FIREWISE practices. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes, ongoing |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Medium | 1 year | TBD | Local Cash, Grants | Local Government, UGS | Yes, ongoing |
| Flooding/ Dam Failure | Update Flood and Inundation mapping and incorporate them into general plans and ordinances. | Ongoing | 2 years | TBD | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes |

| | | | | | | | |
|----------|---|---------|---------|---------|--------------------|------------------|-----|
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk. | Ongoing | 1 year | Minimal | Local Cash, Grants | Local Government | Yes |
| Drought | Identify drought assessment criteria. Notify residents of drought conditions. | Medium | 2 years | TBD | Local Cash | Local Government | Yes |

American Fork

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 5,777 | \$1,711,775 | 18.75 | 9.52 | 6.99 |
| Fire Risk High | 418 | \$277,078 | 3.61 | 0.58 | 0.39 |
| Fire Risk Moderate | 707 | \$299,228 | 2.20 | 1.43 | 1.94 |
| Flood 1% Yearly Probability | 19 | \$2,923 | 0.39 | 0.01 | 0.00 |
| Landslide | 180 | \$55,588 | 0.49 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 2,973 | \$1,091,471 | 17.28 | 8.59 | 6.39 |
| Earthquake (Pre-1990 buildings) | 4,584 | \$1,213,659 | | | |

Statement of Vulnerabilities: The main vulnerability identified by American Fork is the cross-section of the American Fork River. Through the core of American Fork, the river goes through a series of culverts, many of which may be sized too small. This poses a flooding risk to many surrounding homes and businesses. This is something that we as a city are studying with the Army Corps of Engineers.

| Action | Hazard | Priority | Timeline | Cost | Potential Funding | Responsibility |
|--------|--------|----------|----------|------|-------------------|----------------|
|--------|--------|----------|----------|------|-------------------|----------------|

| | | | | | | |
|---|------------|------|---------|------------|---|---|
| Install secondary water metering | Drought | High | 2 yrs | 9 million | Bureau of Reclamation, Local Cash | Local Gov |
| Improve outflow and grades for the debris basin | Flood | High | 1-2 yrs | 250k | Debris Basin board (American Fork, Highland, and Cedar Hills) | Debris Basin board (American Fork, Highland, and Cedar Hills) |
| Repair and expand culverts on American Fork River | Flood | High | Ongoing | TBD | Local gov | Local gov |
| Adopt 2021 NFIP maps and update ordinances | Flood | Mod | 1 yr | Staff time | Local gov | Local Gov |
| Inventory historic City Hall for possibility of earthquake retrofits | Earthquake | Mod | 2-5 yrs | TBD | Local gov | Local gov |
| Complete an environmental assessment for the watershed and a plan to better assess the vulnerabilities and determine a procedure to mitigate flooding issues. | Flood | High | 2-3 yrs | 400k | Local gov, NRCS | Local gov, NRCS |

| 2017 Strategy Update | | | | | | | |
|----------------------|--|----------|----------|---------|--------------------|------------------------------|--|
| Hazard | Action | Priority | Timeline | Cost | Potential Funding | Responsibility | Completed? |
| Flood | Promote NFIP participation. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local Cash, Grants | Local Government | No, most buildings are new. City Hall should be checked. |

| | | | | | | | |
|--------------------|---|--------|---------|---------|--------------------|------------------------------|---------------------------------------|
| Landslide, Drought | Public education on and correct watering practices and retaining measures in susceptible areas. | Medium | 1 year | TBD | Local Cash, Grants | Local Government, UGS | Yes |
| Flood | Update Flood and Inundation mapping and incorporate them into general plans and ordinances. | High | 2 years | TBD | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Somewhat |
| Landslide | Coordinate and update landslide mapping within the area with UGS and USGS. | High | 3 years | Minimal | Local Cash, Grants | Local Government, UGS, USGS | No, coordination efforts fell through |

Cedar Fort

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Fire Risk High | 45 | \$9,671 | 0.85 | 0.00 | 0.00 |
| Fire Risk Moderate | 83 | \$14,398 | 0.23 | 0.00 | 0.00 |
| Flood 1% Yearly Probability | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Earthquake (Pre-1990 buildings) | 90 | \$11,672 | | | |

Statement of Vulnerabilities: Past fires near Cedar Fort have presented a significant risk and future fire could reach the town itself, affecting community assets like the fire station and school building. Increased efforts to clear brush on the hillsides have

proven difficult. The only real development pressure comes from land on the east side that property owners request be annexed into Eagle Mountain.

| Action | Hazard | Priority | Timeline | Estimated Cost | Potential Funding | Responsibility |
|---|--------|----------|--------------------|-----------------|------------------------|----------------|
| Participate in Utah County Chipping program to reduce fuels | Fire | High | Ongoing | Volunteer hours | Local gov, Utah County | Local gov |
| Educate firewise principles such as defensible space during the 24th of July celebration and in the water bill. | Fire | Mod | Ongoing | Staff time | Local gov | Local gov |
| Encourage participation in CERT. | All | Mod | Once every 4 years | Minimal | Local gov | Local gov |

| 2017 Strategy Update | | | | | | | |
|----------------------|---|----------|----------|---------|----------------------------|-----------------------------------|---------------------------|
| Hazard | Action | Priority | Timeline | Cost | Potential Funding | Responsibility | Completed? |
| Earthquake | Provide CERT classes | High | 1 year | Minimal | Local Cash | Fire Department, Local Government | No |
| Wildfire | Fuel Thinning | High | 2 years | Minimal | BLM, DNR, SITLA | BLM, DNR, SITLA | Yes, as needed |
| Wildfire | Education (Pamphlets at 24 July Celebration, notices in Water Bill) | High | Yearly | Minimal | Local Cash, Forest Service | Local Government, Forest Service | Yes, with Fire Department |

Cedar Hills

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 0 | \$0 | 0.22 | 0.13 | 0.00 |
| Fire Risk High | 1,156 | \$363,034 | 0.18 | 3.34 | 0.00 |
| Fire Risk Moderate | 164 | \$51,781 | 0.00 | 0.08 | 0.00 |
| Flood 1% Yearly Probability | 0 | \$0 | 0.14 | 0.00 | 0.00 |
| Landslide | 100 | \$29,644 | 0.00 | 0.77 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Earthquake (Pre-1990 buildings) | 208 | \$59,572 | NA | NA | NA |

Statement of Vulnerabilities: Cedar Hills City lies on the Wasatch Front and within close proximity to the Wasatch fault line. The fault line runs north-south along the foothill interface. While no homes or development are immediately on the fault line, major culinary and irrigation water transmission lines do cross a known fault zone. Due to the potential hazard, the city has installed earthquake valving at the upper supply tanks and modified piping to include an upgraded supply line with locked joint pipe. Regarding wildland fire, many homes are in the Wildland Urban Interface. Cedar Hills is improving the access road that serves as a fire break and improving the codes for any development in the WUI.

| Action | Hazard | Priority | Timeline | Estimated Cost | Potential Funding | Responsibility |
|---|---------|----------|----------|----------------|-----------------------------------|----------------|
| Install secondary water metering | Drought | High | 2 yrs | 2.5 million | Bureau of Reclamation, Local Cash | Local Gov |
| Improve Wildland Urban Interface development standards with defensible space, roofing materials, etc. | Fire | High | 1yr | Staff time | Local Gov | Local Gov |

| | | | | | | |
|---|--------------|------|---------|------------|-----------------------------------|-----------|
| Encourage xeriscaping and Central Utah Water Conservancy District's localscapes | Drought/Fire | High | 1 yr | Staff time | Local Gov | Local Gov |
| Improve maintenance roads and Bonneville shoreline trail used as a firebreak and access points for fire response vehicles | Fire | High | Ongoing | 5k | Local Gov/American Fork Fire Dept | Local Gov |
| Clear ditches and remove dead vegetation | Flood, Fire | Mod | Ongoing | 15k | Local Gov | Local Gov |

| 2017 Strategy Update | | | | | | | |
|----------------------|--|----------|----------|---------|--------------------|-----------------------------|---------------------------------------|
| Hazard | Action | Priority | Timeline | Cost | Potential Funding | Responsibility | Completed? |
| Flooding | Storm Water/ Ditch System Cleaning | Medium | 2 years | TBD | Local Cash | Local Government | Yes, ongoing |
| Earthquake | Participate in Great Shakeout | High | 1 Year | N/A | Local Cash | Local Government | Yes |
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk | Medium | 1 year | Minimal | Local Cash, Grants | Local Government | No, in progress |
| Landslide | Update landslide mapping with UGS and USGS. | Medium | 2 years | TBD | Local Cash, Grant | Local Government, USGS, UGS | No, coordination efforts fell through |
| Drought | Identify drought assessment criteria. Notify residents of drought conditions. | Medium | 2 years | TBD | Local Cash | Local Government | Yes |

Central Utah Water Conservancy District

Due to the sensitive nature and complexity of CUWCD assets, they performed an independent risk analysis to create and prioritize the following mitigation strategies. Contact Blake Buehler of CUWCD for more information.

Vulnerabilities: The future development of the CUWCD water system will mainly be with a strong emphasis on water conservation, planning of needed additional regional water supply facilities, and incorporation of natural hazard mitigation. The District will also continue in its current efforts to address and incorporate natural hazard mitigation (i.e., seismic upgrades/standards, lightning protection, backup power, wildfire – both direct and indirect effects, etc.) into future design and

construction projects whether they are for new facilities or for capital replacement projects. The following proposal is to help fulfill said efforts.

| Priority | Mitigation Package: Facilities | BCR | Mitigation Description | Outside Contractor | In- House | CUWCD O&M | CUWCD CRP | CUWCD CIP | FEMA Grant | Timeline | Package Subtotal |
|----------|---|------|---------------------------|-----------------------|--------------|--------------|--------------|--------------|---------------|-----------|---------------------|
| 1 | Alpine Aqueduct Reach 1 Resiliency Project (Earthquake & Landslide): <i>Alpine Reach 1</i> | - | New Construction | X | | | X | | X | 1-3 Years | \$39.4 million |
| 2 | DACRWTP Pkg #1 (Tornado): <i>LOX & Vaporizers, Ozone Transformers, Substation</i> | >100 | Nonstructural Retrofit | X | | | X | | X | 1-3 Years | \$248,649 |
| 3 | DACRWTP Pkg #2 (Lightning): <i>Operations Bldg, Filter Bldg, FW & WWW Bldg, Rec Bldg, Pump Bldg</i> | >100 | Nonstructural Retrofit | X | | | X | | X | 1-3 Years | \$159,564 |
| 4 | DACRWTP Proj #3 (Earthquake): <i>15 MG Reservoir</i> | 14.8 | Structural Retrofit | X | | | X | | X | 1-3 Years | \$3,304,211 |
| 5 | Olmsted Proj #2 (Avalanche): <i>Olmsted Diversion</i> | >100 | Structural Retrofit | X | | | X | | X | 1-3 Years | \$231,088 |

| | | | | | | | | | | | |
|----|--|------|--------------------------|---|---|---|---|---|---|------------|-----------|
| 6 | CWP Pkg #1 (Earthquake): <i>Geneva Wells & Pony Express PS</i> | 22.9 | Nonstructural Retrofit | X | X | X | X | | X | 3-5 Years | \$2,210 |
| 7 | Alpine Pkg #1 (Earthquake): <i>Alpine Reach 3, North Branch Pipeline</i> | 3.3 | Nonstructural Retrofit | X | X | X | X | | X | 3-5 Years | \$21,329 |
| 9 | CWP Pkg #2 (Lightning): <i>Geneva Wells</i> | >100 | Nonstructural Retrofit | X | | | X | X | X | 3-5 Years | \$359,974 |
| 10 | CWP Pkg #3 (Lightning): <i>Pony Express PS</i> | 37.9 | Nonstructural Retrofit | X | | | X | X | X | 3-5 Years | \$716,408 |
| 14 | Olmsted Pkg #6 (Earthquake & Landslide): <i>Olmsted Diversion, Olmsted Bifurcation Reservoir</i> | - | Geological Investigation | X | | | X | | | 6-10 Years | \$80,212 |
| 15 | Diamond Fork Pkg #1 (Landslide): <i>Spanish Fork & Sixth Water Flow Control Structures, Sixth Water Aqueduct, Diamond Fork Pipeline</i> | - | Geological Investigation | X | | | X | | | 6-10 Years | \$505,952 |

| | | | | | | | | | | | |
|----|---|---|----------------------|---|---|---|---|--|--|------------|-----------|
| 17 | General Pipeline #1 - Stockpile Materials | - | Material Stockpiling | | X | X | X | | | 6-10 Years | \$755,950 |
| 18 | General Pipeline #2 - Training | - | Training | X | X | X | | | | 6-10 Years | \$19,538 |

Eagle Mountain

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Fire Risk High | 3,679 | \$919,235 | 4.10 | 7.22 | 0.00 |
| Fire Risk Moderate | 1,774 | \$388,039 | 2.54 | 9.57 | 0.00 |
| Flood 1% Yearly Probability | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.69 | 0.00 |
| Earthquake (Pre-1990 buildings) | 94 | \$54,568 | na | na | na |

Statement of Vulnerabilities: Eagle Mountain's primary concern is wildland fire and the large-scale evacuations it might trigger. The Kiowa Valley subdivision is particularly at risk due to single-lane roads leaving the subdivision and main thoroughfares (SR73, Pioneer Crossing, and Porter's Crossing) would be overwhelmed. More people recreating in the hills also increases fire likelihood. Eagle Mountain works with the Kern River Pipeline and others to maintain firebreak trails. Eagle Mountain is attracting a great deal of development throughout. Because most development is recent, buildings and infrastructure are largely up to seismic and fire code, but new residents require education on water conservation, firewise practices, and

evacuation plans. The city would like to attract businesses and a hospital, in particular, to become less dependent on other commercial areas of the county.

| Action | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---|-----------------|----------|----------|------------|---|---|
| Install backup generator at well house | All | High | 2-3 yrs | 300k | Local gov | Local gov |
| Upgrade backup generator at City Hall | All | High | 2 yrs | 200k | Local gov, grants | Local gov |
| Educate homeowners in WUI about firewise principles and notify at-risk residents | Fire | High | Ongoing | Minimal | Local gov | Local gov |
| Educate homeowners on good watering practices, how to reduce water use, and encourage xeriscaping | Drought | Mod | Ongoing | Staff time | Local gov | Local gov |
| Educate on earthquake preparedness, including Be Ready, CERT, yearly Shakeout drill, and monthly emergency meetings | Earthquake, All | Moderate | Ongoing | Staff time | Local gov | Local gov |
| Require multiple ways in/out of all new subdivisions | Fire, all | High | Ongoing | Minimal | Developer | Developer, Local gov |
| Maintain fire access roads that serve as Bike and OHV trails | Fire | Mod | Ongoing | Minimal | Local gov, OHV and Mountain Biking groups | Local gov, OHV and Mountain Biking groups |
| Maintain Kern River Pipeline firebreak and tree trimming | Fire, flood | Mod | Ongoing | None | Kern River Pipeline Co | Kern River Pipeline Co |

| | | | | | | |
|--|------------------|------|----------|------------|---|--|
| Achieve Firewise Community Status | Fire | Mod | 1-2 yrs | Staff time | Local gov | Local gov |
| Encourage hospital to be built in city limits | All | Mod | 5-10 yrs | Unknown | Intermountain Healthcare, MountainStar Healthcare | Private Healthcare organization, Local gov encouragement |
| Update Emergency Operations Plan with a focus on evacuation routes and inform citizens | Fire, Earthquake | High | 1 yrs | Staff time | Local gov | Local gov |

2017 Strategy Update

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | |
|------------|---|----------|----------|----------------|---------------------------|------------------------------|----------------------------------|
| Flooding | Join NFIP community/participation. | Medium | 1 year | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | No, no special flood hazard area |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local Cash, Grants | Local Government | No, all built after 1990 |
| Wildfire | Educate homeowners on FIREWISE practices. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes, ongoing |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Medium | 1 year | TBD | Local Cash, Grants | Local Government, UGS | Yes, ongoing for drought |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes, through CERT |

| | | | | | | | |
|-----------|---|------|---------|---------|--------------------|-----------------------------|--|
| | | | | | | | teams, Shakeout, Be Ready program, and monthly training meetings |
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk. | High | 1 year | Minimal | Local Cash, Grants | Local Government | Yes |
| Landslide | Coordinate and update landslide mapping within the area with UGS and USGS. | High | 3 years | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Efforts fell through |

Elk Ridge

| Loss Estimates | | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|--|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles | |
| Dam Failure | 0 | \$0 | 0.00 | 0.00 | 0.00 | |
| Fire Risk High | 582 | \$175,465 | 1.64 | 0.00 | 0.00 | |
| Fire Risk Moderate | 167 | \$46,436 | 0.17 | 0.14 | 0.00 | |
| Flood 1% Yearly Probability | 0 | \$0 | 0.00 | 0.00 | 0.00 | |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 | |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 | |
| Earthquake (Pre-1990 buildings) | 199 | \$44,625 | na | na | na | |

Statement of Vulnerabilities: Though a second evacuation road has been constructed since 2016, infrastructure is insufficient to handle a major disaster. As growth occurs developers will be required to install proper infrastructure, which should improve the overall situation. Loafer Canyon is a particular concern with its older roads and continual maintenance of debris basins.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---|-------------------|----------|----------|----------------------|----------------------------------|------------------------|
| Encourage water conservation through education & tiered water rates | Drought | Mod | Ongoing | Minimal | Local gov | Local gov |
| Complete seismic evaluation of City Hall and Pump Houses, get estimates for retrofiting | Earthquake | Mod | 1-2 yrs | TBD | Local gov | Local gov |
| Conduct yearly disaster drills | All | Mod | Ongoing | Staff time | Local gov | Local gov, Fire Dept |
| Construct new Canyon View road to provide another evacuation route | All | High | 1-2 yrs | TBD | Developers, Local gov | Developers, Local gov |
| Chipping program in Wildland Urban Interface | Fire | High | Ongoing | Volunteer-hour match | Local gov, citizens, Utah County | Local gov, Utah County |
| New Firetruck | Fire | Mod | 2-3 yrs | 1 million | Local gov | Local gov |
| Well-maintained trail on S side serving as firebreak road to be installed as development occurs | Fire, Debris Flow | Mod | 5-10 yrs | TBD | Developers, Local gov | Developers, Local gov |
| Fire Chief must sign off on all plans in WUI, including requirements for fire hydrant proximity, defensible space, and building materials | Fire | High | Ongoing | Staff time | Local gov | Local gov |

| | | | | | | |
|---|-----|------|---------|-------------|-----------------------|-----------------------|
| Geotechnical study required for all new development in hazard areas | All | High | Ongoing | Staff time | Developers | Developers, Local gov |
| Bury power lines, especially those that may cause fires | All | Mod | Ongoing | \$700k/mile | Local gov, developers | Local gov |

2017 Goals Strategies Update

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | Completed? |
|-----------------------|--|----------------|----------|----------------|---------------------------|------------------------------|---|
| Flooding/ Dam Failure | Promote NFIP participation. Promote educating our current residents on flooding risks. upgrade infrastructure | High | Ongoing | TBD | Local Cash, Grants | Local Government, FEMA, UDHS | No SFHA |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local Cash, Grants | Local Government | No, not enough staff time |
| Wildfire | Educate homeowners on FIREWISE practices. seek assistance for upgraded fire suppressing equipment | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA | Yes - education Upgraded equipment still needed |
| Landslide | Create infrastructure that will eliminate/prevent future erosion of the dugway. | Extremely high | 1 year | TBD | Local Cash, Grants | Local Government, UGS, FEMA | Yes, ongoing |
| Flooding/ Dam Failure | Update Flood mapping and provide to future residents and promote NFIP participation. Promote educating our current residents on flooding risks. upgrade infrastructure | High | 2 years | TBD | Local Cash, Grants | Local Government, FEMA, UDHS | No SFHA |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes, ongoing |

| | | | | | | | |
|----------|---|------|--------|---------|--------------------|------------------|-----|
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk. | High | 1 year | Minimal | Local Cash, Grants | Local Government | Yes |
|----------|---|------|--------|---------|--------------------|------------------|-----|

Fairfield

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Fire Risk High | 2 | \$728 | 0.69 | 0.00 | 0.00 |
| Fire Risk Moderate | 10 | \$1,217 | 1.28 | 0.00 | 0.00 |
| Flood 1% Yearly Probability | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 55 | \$11,249 | 3.25 | 0.00 | 0.00 |
| Earthquake (Pre-1990 buildings) | 36 | \$5,607 | na | na | na |

Statement of Vulnerabilities: Fairfield has only moderate liquefaction and fire risk and only a small handful of new buildings each year. The Utah County fire marshal approves any permits for new construction. There are no city buildings and neighbors look out for each other. The biggest problem is probably winter weather. The only real development pressure comes from land on the east side that property owners request be annexed into Eagle Mountain.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---------------------|--------|----------|----------|------|---------|----------------|
|---------------------|--------|----------|----------|------|---------|----------------|

| | | | | | | |
|---|---------------------|-----|---------|---------|------------------------|----------------------|
| Encourage residents to participate in Utah County's Emergency Notification System | All | Mod | Ongoing | Minimal | Local gov, Utah County | Local gov, Residents |
| Make sure neighbors know who has backup generators and trucks sufficient for snow removal | Winter weather, all | Mod | Ongoing | None | Local gov | Local gov |

| 2017 Strategy Update | | | | | | | |
|----------------------|--|----------|----------|---------|--------------------|-----------------------------|-----------------------|
| Hazard | Action | Priority | Timeline | Cost | Potential Funding | Responsibility | Completed? |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local Cash, Grants | Local Government | No critical buildings |
| All Hazards | Add texting to Emergency Notification System | Med | 1 year | Minimal | Local Cash | Local Government | Yes |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes |

Genola

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 1 | \$118 | 0.19 | 0.00 | 0.00 |
| Fire Risk High | 31 | \$6,571 | 0.74 | 0.05 | 0.06 |
| Fire Risk Moderate | 39 | \$7,973 | 0.41 | 0.00 | 0.00 |
| Flood 1% Yearly Probability | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 408 | \$92,407 | 7.11 | 0.00 | 0.00 |
| Earthquake (Pre-1990 buildings) | 214 | \$32,681 | na | na | na |

Statement of Vulnerabilities: Genola needs a second source of water to provide redundancy for drought and fire. Fires burn Goshen Hill on the East side of town almost every year, resulting in lower fuel loads and less intense fires. Since the town uses septic and propane, development pressure is limited.

| Mitigation Strategies | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---|---------------|----------|----------|------------|--------------------------------|------------------------|
| Fire Marshall must approve new development, including 1 hr fire resistant construction, appropriate landscaping & defensible space, sprinklers, and 2 ingress/egress routes | Fire | High | Ongoing | Staff time | Local gov | Local Fire Dept |
| New buildings must submit a geotechnical/soil feasibility study to the County to account for liquefaction and problem soils | Liquefaction | Mod | Ongoing | Staff time | Local gov, Developers | Local gov, Developers |
| Build a second well and water tank on north end of town | Drought, Fire | High | 2 yrs | 1 million | Local gov | Local gov |
| Educate homeowners in debris flow areas about risk during permitting process | Debris flow | Mod | Ongoing | Staff time | Local gov | Local gov |
| Bring gas lines to town so propane isn't the only source of heating | All | Mod | 5-10 yrs | TBD | Local gov, gas company, grants | Local gov |
| Work with Utah County to manage vegetation in high fire risk areas | Fire | Mod | Ongoing | 5k | Utah County, local gov | Utah County, local gov |

2017 Strategy Update

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | Completed? |
|--------|--------|----------|----------|----------------|---------------------------|-------------------|------------|
|--------|--------|----------|----------|----------------|---------------------------|-------------------|------------|

| | | | | | | | |
|------------|--|--------|---------|---------|--------------------|------------------------|----------------------------------|
| Earthquake | Upgrade City Office Building | High | 4 years | TBD | Local Cash, Grants | Local Government | Yes |
| Landslide | Educate homes in Landslide/ Debris Flow areas on risk | Med | Ongoing | Minimal | Local Cash | Local Government | Yes, ongoing |
| Flood | Adopt new FEMA flood plains, participate in NFIP | Med | 3 years | Minimal | Local Cash, FEMA | Local Government, FEMA | Yes |
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk | Medium | 3 years | Minimal | Local Cash, Grants | Local Government | No, not many houses in fire risk |
| Flood | Adopt new FEMA flood plains, participate in NFIP | Med | 3 years | Minimal | Local Cash, FEMA | Local Government, FEMA | Yes |

Goshen

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 63 | \$9,070 | 0.28 | 0.00 | 0.00 |
| Fire Risk High | 26 | \$3,816 | 0.02 | 0.04 | 0.00 |
| Fire Risk Moderate | 206 | \$28,384 | 0.07 | 0.11 | 0.00 |
| Flood 1% Yearly Probability | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 253 | \$33,989 | 1.19 | 0.00 | 0.00 |
| Earthquake (Pre-1990 buildings) | 241 | \$28,614 | na | na | na |

Statement of Vulnerabilities: Though the Fire Department was built post-1990 and the church was retrofitted in about 2010, many older homes are in the liquefaction area. We only build 2-3 homes a year, so we don't have development pressure on those problem soils. Reliance on septic tanks keep lot sizes large and limits potential growth.

| Mitigation Action | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|--|------------|----------|----------|-----------|---------|-----------------------|
| Support Fix-the-Bricks | Earthquake | Moderate | | 0 | FEMA | Utah County |
| Collect spring water and measure output | Drought | High | 1 year | 350k | CDBG | Local Gov |
| Bring natural gas to city | All | High | 2 years | 11 mil | State | State/Dominion Energy |
| New Water Tank and replace most distribution lines | Drought | High | 2 years | 4 million | USDA | USDA/Local Gov |
| Display hazard maps in city hall | All | Moderate | 1 year | 0 | NA | MAG/Local Gov |

| 2017 Strategy Update | | | | | | | |
|-----------------------|---|----------|----------|---------|--------------------|------------------------------|--|
| Hazard | Action | Priority | Timeline | Cost | Potential Funding | Responsibility | Completed? |
| Flooding/ Dam Failure | Promote NFIP participation. | High | 3 years | TBD | Local Cash, Grants | Local Government, FEMA, UDHS | No Special Flood Hazard Area |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | Minimal | Local Cash, Grants | Local Government | Not necessary, no critical facilities build pre 1990 |
| Wildfire | Educate homeowners on FIREWISE practices. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | No, very little fire risk in or immediately near Goshen. |
| Flooding/ Dam Failure | Update Flood and Inundation mapping and incorporate them into general plans and ordinances. | High | 2 years | TBD | Local Cash, Grants | Local Government, FEMA, UDHS | No SFHA |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government | Yes |

| | | | | | | | |
|----------|---|------|---------|---------|--------------------|------------------|--|
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk. | High | 2 years | Minimal | Local Cash, Grants | Local Government | No, very little fire risk in or immediately near Goshen. |
|----------|---|------|---------|---------|--------------------|------------------|--|

Highland

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 215 | \$97,681 | 0.99 | 0.42 | 0.00 |
| Fire Risk High | 2,028 | \$804,729 | 3.16 | 3.95 | 0.00 |
| Fire Risk Moderate | 1,361 | \$483,444 | 1.48 | 1.19 | 0.00 |
| Flood 1% Yearly Probability | 32 | \$14,448 | 0.37 | 0.43 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Earthquake (Pre-1990 buildings) | 1,012 | \$266,520 | na | na | na |

Statement of Vulnerabilities: Highland is particularly concerned about flooding and debris flow following fires. With more land developed, there are more impervious surfaces and increased runoff. This will continue with development pressure on Highland's agricultural and open space. The American Fork River and debris basin also need attention to mitigate flooding and fire.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---------------------|--------|----------|----------|------|---------|----------------|
|---------------------|--------|----------|----------|------|---------|----------------|

| | | | | | | |
|--|---------|------|---------|-----------------|----------------------------------|----------------------------------|
| Complete installation of secondary water meters | Drought | High | 4-5 yrs | Several million | Local gov, grants | Local gov |
| Upgrade debris basin structure | Flood | Mod | 1-2 yrs | 200k | Highland, American Fork & Alpine | Highland, American Fork & Alpine |
| Educate residents on disaster preparedness, in particular earthquakes and winter weather | All | Mod | Ongoing | Staff time | Local gov | Local gov |
| Cut native grasses in fire hazard areas of City owned property by July of each year. | Fire | Mod | Ongoing | 10k | Local gov | Local gov |

| 2017 Strategy Update | | | | | | | |
|----------------------|---|----------|----------|---------|--------------------|-----------------------------|--|
| Hazard | Action | Priority | Timeline | Cost | Potential Funding | Responsibility | Completed? |
| Wildfire | Educate homeowners on FIREWISE practices. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes, ongoing |
| Wildfire | Create maintenance plan to cut native grasses in fire hazard areas of City owned property by July of each year. | High | 1 year | Minimal | Local Cash | Local Government | Yes |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Med | Ongoing | Minimal | Local Cash, Grants | Local Government, UGS | Yes |
| Earthquake | Promote earthquake awareness and preparation. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, UGS, USGS | No, most development is post-1990 and relatively safe. |
| Drought | Educate Residents on water conservation practices. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes |

| | | | | | | | |
|-----------------------|---|------|---------|---------|--------------------|--|---------------------------------------|
| Extreme Temperatures | Educate property owners about freezing pipes. | Med | Ongoing | Minimal | Local Cash | Local Government | Yes |
| Severe Winter Weather | Educate residents on winter weather preparedness. | Med | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes |
| Multiple Hazards | Update Emergency Operations Plan | High | 2 years | Minimal | Local Cash, Grants | Local Government, Public Safety District | Yes |
| Flooding/ Dam Failure | Update Flood and Inundation mapping and incorporate them into general plans and ordinances. | High | 3 years | TBD | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Flooding/ Dam Failure | Maintain drainage ways. | Med | Ongoing | TBD | Local Cash | Local Government | Yes |
| Landslide | Coordinate and update landslide mapping within the area with UGS and USGS. | High | 3 years | TBD | Local Cash, Grants | Local Government, UGS, USGS | No, coordination efforts fell through |
| Landslide | Review Development standards for issues with hillside development. | Med | 2 years | Minimal | Local Cash | Local Government | No, deemed unnecessary |

Lehi

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 3,778 | \$934,606 | 5.94 | 12.15 | 6.09 |
| Fire Risk High | 6,245 | \$2,357,674 | 11.83 | 11.36 | 9.70 |
| Fire Risk Moderate | 3,830 | \$1,189,356 | 3.61 | 8.20 | 1.75 |
| Flood 1% Yearly Probability | 157 | \$35,459 | 1.01 | 1.39 | 0.71 |
| Landslide | 0 | \$0 | 0.00 | 0.06 | 0.08 |
| Liquefaction Moderate to High | 8,795 | \$2,177,717 | 11.70 | 35.31 | 7.28 |
| Earthquake (Pre-1990 buildings) | 2,867 | \$1,730,698 | na | na | na |

Statement of Vulnerabilities: Lehi faces development pressure along the northern the Wildland Urban Interface and near Jordan River. Flood Insurance Rate Maps around Utah Lake and Dry Creek are being updated, which will clarify where development can and shouldn't occur. Drought has strained Lehi's water resources, necessitating restrictions.

| Mitigation Action | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---|---------------------------|----------|----------|-----------------|----------------------------------|-------------------------------|
| Winter preparedness bulletins | Winter weather | Mod | Ongoing | Minimal | Local gov | Local gov |
| Repair and replace water distribution systems to control leakage and pressure problems, especially downtown | Drought | High | Ongoing | ?? (ross) | Local gov | Local gov, Fire Dept |
| Reduce water consumption, offer rebate programs for fixtures and equipment | Drought | Mod | Ongoing | Minimal | CUWCD, Local Gov | CUWCD, Local gov |
| Install secondary meters on 1/4 acre or greater properties | Drought | High | 1-3 yrs | 2k/installation | Local gov, Water Division grants | Local gov |
| Clear ditches and remove dead vegetation | Flood, Fire | Mod | Ongoing | ?? (ross) | Local gov | Local gov |
| Require developers to provide site-specific environmental information to identify possible on and off-site methods for mitigating impacts | Liquefaction, Flood, Fire | High | Ongoing | Minimal | Developers | Developers, Local gov |
| Work with FEMA and the Army Corps of Engineers to update FIRMs on Utah Lake and study choke points on Dry Creek | Flood | High | 1-2 | Staff time | FEMA | FEMA, Army Corps of Engineers |

| | | | | | | |
|---|----------------------------------|------|----------|------------|-----------------------|-----------------------|
| Consider a Critical Lands Overlay in the Wildland Urban Interface and some waterways | Fire, Flood | Mod | 1-2 yrs | Staff time | Local gov | Local gov |
| Encourage maintenance of existing vegetation and retain natural drainage, ie debris flow basins | Debris flow | Mod | Ongoing | Minimal | Local gov | Local gov |
| Bury power lines to prevent damage | Severe weather | High | Ongoing | ?? | Developers, Local gov | Developers, Local gov |
| Provide inspections and maintenance operations to prune trees throughout the city to prevent damage to homes, power, and other cables | Severe weather, Earthquake, Fire | Mod | Ongoing | ?? | Local gov | Local gov |
| Improve outflow of Dry Creek and rehab Dry Creek dam | Flood, Fire | High | 2 yrs | ?? | NRCS, BRIC, Local gov | NRCS, Local gov |
| Expand pipes under Lehi Elementary | Flood | Mod | ?? | ?? | Local gov | Local gov |
| Build a new city hall and library to seismic standards | Earthquake | Mod | 5-10 yrs | TBD | Local gov | Local gov |
| Develop trails along Traverse Mountain to connect to Draper, providing fire access and limiting development in WUI | Fire | Mod | 2-3 yrs | ?? | Local gov | Local gov |
| Consider a "Flip the Strip" program to reduce water use in parking strips | Drought | Mod | 2-3 yrs | TBD | Local gov, CUWCD | Local gov |
| Participate in the Utah Shakeout, provide community preparedness classes and maintain a Community Emergency Response Team | Earthquake, all | Mod | Ongoing | Minimal | Local gov | Local gov |

2017 Strategies Update

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | Result |
|----------------|---|----------|----------|----------------|--|-----------------------------------|--|
| Winter Weather | Winter preparedness bulletins | Med | Ongoing | Minimal | Local Government | Fire Department, Local Government | Yes |
| Drought | Repair water distribution systems to control leakage and pressure problems | High | Ongoing | Moderate | Local Government | Local Government | Yes |
| Drought | Reduce water consumption, offer rebate programs for fixtures and equipment | Med | Ongoing | Minimal | Local Government, Water Conservation Program | Water Conservation Program | Yes, rebates through CUWCD |
| Drought | Retrofit showers and toilets, increase meter efficiency and maintenance, promote leak detection and repair programs | Med | 4 years | Moderate | Local Government | Local Government | Yes, ongoing |
| Earthquake | Seismic Building Retrofitting Program | High | 4 years | TBD | FEMA's Project Impact | FEMA, Local Government | No, too difficult for city to administer |
| Flood | Manage activities affecting water and the land to prevent degradation and minimize risks to life and property | Med | Ongoing | Minimal | Local Government | Local Government | Yes, upgrading and maintaining ditches |
| Flood | Requiring developers to provide site-specific environmental information to identify possible on and off site methods for mitigating impacts | High | Ongoing | Minimal | Developers | Developers | Yes |
| Flood | Implement strategies for flood mitigation outlined in the City's Critical Areas Regulations | Med | Ongoing | TBD | Local Government | Local Government | Yes, flood ordinances were updated |

| | | | | | | | |
|-----------------------|---|------|---------|----------|------------------|------------------|-----|
| Landslide | Control development in sensitive areas through Hillside and Grading ordinance | High | Ongoing | Minimal | Local Government | Local Government | Yes |
| Landslide | Encourage maintenance of existing vegetation and retain natural drainage | Med | Ongoing | Minimal | Local Government | Local Government | Yes |
| Snow Storms | Bury power lines to prevent damage | High | 4 years | Moderate | Local Government | Local Government | Yes |
| Winter Weather & Fire | Provide inspections and maintenance operations to prune trees throughout the city to prevent damage to homes, power, TV and telephone lines | Med | Ongoing | TBD | Local Government | Local Government | Yes |

Lindon

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 1,512 | \$676,801 | 12.08 | 8.38 | 4.39 |
| Fire Risk High | 290 | \$206,955 | 0.81 | 5.28 | 2.26 |
| Fire Risk Moderate | 399 | \$145,370 | 1.10 | 2.54 | 0.12 |
| Flood 1% Yearly Probability | 27 | \$7,215 | 0.00 | 2.45 | 0.00 |
| Landslide | 8 | \$5,684 | 0.00 | 0.48 | 0.00 |
| Liquefaction Moderate to High | 869 | \$534,599 | 14.00 | 10.02 | 5.60 |
| Earthquake (Pre-1990 buildings) | 1,196 | \$568,465 | na | na | na |

Statement of Vulnerabilities: Lindon's chief concerns are wildland fire in the foothills and having adequate water infrastructure that could survive and earthquake. Lindon works with Utah County to educate residents, manage fuels, and maintain firebreak trails. There are a few homes that would benefit from seismic retrofits as well as the Canberra water tank. Development pressure is mostly toward the lake and every new building must mitigation for liquefaction.

| Mitigation Action | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|--|-----------------|----------|----------|------------|-----------------------|-------------------------------|
| Adopt new 2021 NFIP maps and update city code | Flood | Mod | 1 yr | Staff time | Local gov | Local Gov |
| Educate pre-1980 URM's of low-cost retrofits, like strapping water tanks, flexible pipes, etc. | Earthquake | Mod | Ongoing | Staff time | Local gov | Local Gov |
| Support bringing the Fix-the-Bricks program to Utah County | Earthquake | Mod | 1-2 yrs | Staff time | Local gov | Local Gov |
| Install secondary water meters on 2400 unmetered connections | Drought | Mod | 5-10 yrs | 4 million | Local gov | Local gov |
| Update stormwater management plan with PG to address PG discharge | Flood | Mod | 1-2 yrs | Staff time | Local gov | Lindon, Pleasant Grove cities |
| Educate homeowners in WUI about firewise principles | Fire | High | Ongoing | Staff time | Local gov | Local gov |
| Improve fire breaks adjacent for Forest Service land | Fire | Mod | Ongoing | 7.5k | Local gov | Local gov |
| Maintain ponds for Pleasant Grove to use in fire emergencies | Fire | Mod | Ongoing | 10k | Local gov | Local gov |
| Construct more debris flow basins | Flood | Low | 20 yrs | TBD | Local gov | Local gov |
| Study Canberra water tank for seismic soundness | Earthquake | Mod | 5-10 yrs | TBD | Local gov | Local gov |
| Install generators for booster station & wells | All, earthquake | High | 2 yrs | 430k | BRIC grant, local gov | Local gov |

| | | | | | | |
|--|-----------------------------|-----|---------|-------------|-----------|-----------|
| Construct additional well | Drought | Mod | 2 yrs | 1.5 million | Local gov | Local gov |
| Provide dumpsters for spring and fall yard waste | Fire | Mod | Ongoing | 500k | Local gov | Local gov |
| Encourage teleworking on poor air quality days | Air quality, Climate change | Mod | Ongoing | Staff time | Local gov | Local gov |

| 2017 Strategy Update | | | | | | | |
|-----------------------|---|----------|----------|----------|--------------------|------------------------------|------------|
| Hazard | Action | Priority | Timeline | Cost | Potential Funding | Responsibility | Completed? |
| Flooding/ Dam Failure | Promote NFIP participation. Ditch improvements. Annual dam inspections (Dry Canyon, Squaw Hollow) | High | Ongoing | Moderate | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Earthquake | Follow and apply current building codes adopted by City. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes |
| Wildfire | Educate homeowners on FIREWISE practices. Fire suppression required in homes on steep slopes. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes |
| Debris Flow | Construct / Install debris flow basins in inventoried hazard areas. | Medium | 5 years | High | Local Cash, Grants | Local Government, UGS | Yes |
| Flooding/ Dam Failure | Restrict development in hazard areas, maintain storm drainage facilities, update ordinances. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Earthquake | Promote earthquake awareness and preparation. Avoid hazard areas (faults), Canberra tank fault study. | High | 3 years | Moderate | Local Cash, Grants | Local Government, UGS, USGS | Yes |
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk. | High | 2 years | Minimal | Local Cash, Grants | Local Government | Yes |
| Debris Flow | Maintain debris flow basins. Monitor wildfire and landslide areas. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes |

Mapleton

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 5 | \$1,546 | 0.00 | 0.02 | 0.00 |
| Fire Risk High | 12 | \$4,766 | 0.81 | 8.30 | 0.00 |
| Fire Risk Moderate | 247 | \$243,027 | 0.79 | 9.48 | 0.00 |
| Flood 1% Yearly Probability | 6 | \$765 | 0.00 | 0.01 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.04 | 0.00 |
| Liquefaction Moderate to High | 2,901 | \$1,101,786 | 5.37 | 9.20 | 0.46 |
| Earthquake (Pre-1990 buildings) | 1,063 | \$424,672 | na | na | na |

Statement of Vulnerabilities: Mapleton lacks a stormwater outfall and cannot obtain a discharge permit for Hobble Creek due to Springville's high water table. The city relies on detention ponds and stormwater storage vaults, but high water accumulation events could result in flooding. The city is implementing innovating design and technology to better capture rain on-site, such as bioswales, rain gardens, and improved storage vaults. Maple Mountain has a high likelihood of catching fire, which could move into the WUI and cause secondary hazards such as flooding and mudslides.

| Action | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---|---------|----------|----------|---------|-----------|----------------|
| Educate residents on good watering practices and how to conserve during a drought | Drought | High | Ongoing | Minimal | Local gov | Local gov |
| Educate residents on wildfire mitigation, such as defensible space and roof materials | Fire | High | Ongoing | Minimal | Local gov | Local gov |

| | | | | | | |
|--|----------------|------|---------|-----------------------------|-------------|---------------------------|
| Participate in the yearly Shakeout drill | Earthquake | Mod | Ongoing | Minimal | Local gov | Local gov |
| Create a mountain biking trail along the fire break road to improve maintenance and access | Fire, Mudslide | Mod | 2-3 yrs | Included in new development | Developers | Local gov, Developers |
| Exchange density in other areas for development on hillside | Fire, Mudslide | High | Ongoing | 0 | Local gov | Local gov |
| Strengthen city code to require more fire-mitigating principles in WUI | Fire | Mod | 1-2 yrs | Staff time | Local gov | Local gov |
| Require development in the floodplain elevate homes | Flood | High | Ongoing | Minimal | Developers | Local gov, Developers |
| Create localscapes/xeriscape demonstration garden | Drought | Low | 2-4 yrs | TBD | Local gov | Local gov |
| Support bringing the Fix-the-Bricks program to Utah County | Earthquake | Mod | 2-5 yrs | Unknown | BRIC grants | Utah State or Utah County |

2017 Strategies Update

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding | Responsible Party | Completed? |
|-----------------------------|---|----------|----------|----------------|--------------------|------------------------------|------------|
| Flooding/ Dam Failure | Promote NFIP participation. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local Cash, Grants | Local Government | Yes |
| Wildfire | Educate homeowners on FIREWISE practices. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Medium | 1 year | TBD | Local Cash, Grants | Local Government, UGS | Yes |

| | | | | | | | |
|-----------------------------|---|------|---------|---------|-----------------------|------------------------------------|----------------------|
| Flooding/ Dam Failure | Update Flood and Inundation mapping and incorporate them into general plans and ordinances. | High | 2 years | TBD | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes |
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk. | High | 1 year | Minimal | Local Cash, Grants | Local Government | Yes |
| Landslide | Coordinate and update landslide mapping within the area with UGS and USGS. | High | 3 years | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes, Ether Hollow |

Nebo School District

Vulnerabilities: Nebo has a handful of older elementary schools that could be retrofitted or rebuilt to current seismic code. Nebo has already bonded to rebuild some of the larger schools. It is important that schools are prepared to serve as evacuation centers. Also, Turf fields are increasingly expensive and the quality of artificial grass makes a transition attractive. A great deal of development is occurring in Nebo School District and new schools are being built to accommodate it.

| Action | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---|------------|----------|----------------------|------------------|-----------------------------------|----------------------|
| Look for opportunities to retrofit or rebuild schools built before seismic code, including Spanish Fork and Payson Jr High, Santaquin, Goshen, Sage Creek, Cherry Creek, and Park Elementaries. | Earthquake | High | Ongoing | TBD | Nebo School District, BRIC grants | Nebo School District |
| Replace grass on sports fields with artificial turf in all 5 high schools | Drought | High | 2 yrs | 1 mil/field | Nebo School District | Nebo School District |
| Replace or build Spanish Fork, Payson, and Springville high schools up to current building code | Earthquake | High | 2024, 2025, and 2026 | Tens of millions | Nebo School District | Nebo School District |

| | | | | | | |
|---|-------|------|---------|----------------|-----------|----------------------|
| Ensure high schools have the capability to serve as evacuation centers, including emergency power and water | All | High | Ongoing | A few thousand | Nebo | Nebo School District |
| alem City has two canals that run through our city limits. We are concerned about breaches and the issues associated with that. We are also aware of the area and the risk of earthquakes, as we are on a major fault line. To the east of our city is the mountain range, knowing issues with fires and mudslides. | Flood | Mod | 1-2 yrs | Staff time | Local gov | Local gov |

Orem

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 1,492 | \$404,918 | 2.43 | 4.42 | 0.00 |
| Fire Risk High | 597 | \$291,838 | 4.35 | 12.34 | 4.34 |
| Fire Risk Moderate | 254 | \$74,252 | 0.27 | 0.05 | 2.10 |
| Flood 1% Yearly Probability | 11 | \$2,781 | 1.12 | 0.72 | 0.00 |
| Landslide | 21 | \$8,331 | 0.09 | 3.16 | 0.00 |
| Liquefaction Moderate to High | 3,019 | \$1,046,381 | 17.25 | 11.47 | 17.97 |
| Earthquake (Pre-1990 buildings) | 15,720 | \$3,947,009 | na | na | na |

Statement of Vulnerabilities: Orem's most pressing hazard is the potential for wildland fire along the east bench with associated secondary hazards such as mudslides. Though the gun range fire in 2020 cost 4 million, it could have done much more damage had circumstances been different. An earthquake would cause widespread damage to Orem. Orem is considering rebuilding the City Center, which does not meet current seismic requirements, in addition to ongoing citizen education and yearly drills. There are also critical facilities on the East Bench faultlines that would be disrupted in an earthquake, such as the Salt Lake Aqueduct and Central Utah Water lines. Orem is working with Central Utah to relocate their pipes to a safer location.

| Mitigation Action | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---|-------------------------|----------|----------|------------|-------------------|---------------------------|
| Relocating CUWCD's 10' water pipes on the east bench to avoid fault lines | Earthquake | Mod | | millions | CUWCD | CUWCD |
| Retrofit wastewater facilities on Carterville and Geneva to meet current building code | Flood | Mod | 2-5 yrs | 4 million | Local gov | Local gov |
| Require geotechnical studies for new construction in the foothills and in the Southwest annexation area | Landslide, Liquefaction | Mod | Ongoing | Minimal | Developer | Developer |
| Citywide yearly emergency drill, CERT team, staff participation in Shakeout drill | Earthquake | High | Ongoing | Minimal | Local gov | Local gov |
| Rebuild City Center to withstand major earthquake | Earthquake | Mod | 5-10 yrs | 23 million | Local Gov, grants | Local Gov |
| Encourage Fix-the-Bricks program serving Utah County | Earthquake | Mod | 1-2 yrs | TBD | BRIC grants | Utah State or Utah County |
| Firewise Education | Fire | High | Ongoing | Minimal | Local gov | Local gov/Fire Dept |
| Maintain fire break and remove vegetation along the east bench with a focus near the gun range | Fire | High | Ongoing | 2-3k | Local gov | Local gov |

| | | | | | | |
|---|---------|------|---------|-----------|------------------------|------------------------|
| Participate in County-led chipping program | Fire | Mod | 1-2 yrs | TBD | Local gov, Utah County | Local gov, Utah County |
| Exemplify good water use on city facilities during drought, ie xeriscaping, focus on trees and shrubs, watering turf grass at night | Drought | Mod | Ongoing | Minimal | Local gov | Local gov |
| Install water re-use facility for Sleepy Ridge golf course and Lakeside Sports Park | Drought | High | 3 yrs | 5 million | Local gov | Local gov |

2017 Strategy Update

| Hazard | Action | Priori ty | Timelin e | Estimat ed Cost | Potential Funding Sources | Responsible Party | Completed? |
|-----------------------------|---|--------------|--------------|--------------------|---------------------------------|------------------------------|----------------------------|
| Flooding/ Dam Failure | Promote NFIP participation. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes, ongoing |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local Cash, Grants | Local Government | Yes |
| Wildfire | Educate homeowners on FIREWISE practices. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes, ongoing |
| Landslide | Public education on correct watering practices and retaining measures in susceptible areas. | Med | 1 year | TBD | Local Cash, Grants | Local Government, UGS | Yes, in Hillside Ordinance |
| Flooding/ Dam Failure | Update Flood and Inundation mapping and incorporate them into general plans and ordinances | High | 2 years | TBD | Local Cash, Grants | Local Government | Yes |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes, Ongoing |

| | | | | | | | |
|-----------|---|------|---------|-------------|-----------------------|-----------------------------------|--------------------------|
| Wildfire | Promote FIREWISE landscaping to resident's living in vulnerable areas of the city | High | 1 year | Minima l | Local Cash, Grants | Local Government | Yes, Ongoing |
| Landslide | Coordinate and update landslide mapping within the area with UGS and USGS. | High | 3 years | Minima l | Local Cash, Grants | Local Government, UGS, USGS | No, efforts fell through |

Payson

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 1,057 | \$178,637 | 1.65 | 0.61 | 0.00 |
| Fire Risk High | 1,199 | \$275,117 | 2.68 | 2.47 | 0.95 |
| Fire Risk Moderate | 1,339 | \$246,738 | 1.94 | 1.43 | 2.23 |
| Flood 1% Yearly Probability | 330 | \$83,145 | 0.79 | 0.02 | 0.48 |
| Landslide | 0 | \$0 | 0.00 | 0.09 | 0.00 |
| Liquefaction Moderate to High | 2,487 | \$560,660 | 15.44 | 7.54 | 8.51 |
| Earthquake (Pre-1990 buildings) | 2,694 | \$562,128 | na | na | na |

Statement of Vulnerabilities: Payson City currently has two areas of the City that have been designated as flood plains by FEMA. When a new home or structure is requested to be constructed in one of the flood plain areas we require that the applicant meet certain requirements to be able to construct a building in the flood plain. Homes and structures were built before today's current standards existed and Payson City does all that it can in a large rainfall event to protect these structures from getting flooded. Payson City also has a few subdivisions that have only one evacuation route and due to the hillside development that they were constructed on this is a concern that we deal with if there ever is a need to evacuate. We also have one development that has an earthquake fault line running through it, with one existing home sitting directly on the fault

line. This has been addressed with the home owner but is a concern in a large earthquake. Also concerning is a high-pressure gas line that crosses the fault.

| Mitigation Action | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---|-----------------|----------|----------------------------------|-----------------|-----------------------|-----------------|
| Continue monthly preparedness meetings | All | Mod | Ongoing | Minimal | Local gov | Local gov |
| Promote the Utah Shakeout and share family preparedness booklet | Earthquake, All | Mod | Ongoing | 1k | Local gov | Local gov |
| Support Fix-the-Bricks expanding to Utah County | Earthquake | Mod | 4 yrs | TBD | Grants | TBD |
| Upgrade Water Treatment Plant and oxidation ditch | Drought, all | High | by 2024 | 23 million | Local gov | Local gov |
| Hire more personnel for Fire Marshall | Fire, all | High | 1-2 yrs | 80k | Local gov | Local gov |
| Protect water sources with regular chanel cleaning, silt fence | Fire, Flood | High | Ongoing | 10-15k | EWP/NRCS | NRCS, Local gov |
| Complete design phase for upsizing culverts in Dry Creek | Flood | Mod | 2 yrs design, 4 yrs to construct | TBD | NRCS, Local gov | NRCS, Local gov |
| Culvert cleaning in high snowpack years | Flood | Mod | Ongoing | Volunteer hours | Local gov, Volunteers | Local gov |
| Tiered water rate program | Drought | High | 1-2 yrs | Staff time | Local gov | Local gov |
| Install pressure irrigation pond | Drought, Flood | Mod | 5-10 yrs | TBD | Local gov, grants | Local gov |
| Install water tank | Drought, Fire | Mod | 3 yrs | 500k | Local gov | Local gov |
| Drill a new well | Drought | High | 1 yr | 1.5 million | Local gov | Local gov |
| Install water metering | Drought | High | 1 yr | 5.3 million | Local gov | Local gov |

| | | | | | | |
|---|------------|------|----------|-------------|--|------------------------|
| Any development in Wildland Urban Interface must have defensible space, clustered homes, etc. | Fire | High | Ongoing | Staff time | Local gov | Local gov |
| Highline Canal Retrofit | Earthquake | High | 5-10 yrs | 150 million | Pipeline Company | Pipeline Company |
| Participate in County Chipping Program | Fire | High | Ongoing | 30k | Local gov, Volunteers, State Fire program, Utah County | Local gov, Utah County |
| Participate in Utah County Emergency Notification System | All | Mod | Ongoing | 6k | Local gov | Local gov, Utah County |

| 2017 Strategy Update | | | | | | | |
|-----------------------|---|----------|----------|---------|--------------------|------------------------------|------------|
| Hazard | Action | Priority | Timeline | Cost | Potential Funding | Responsibility | Completed? |
| Flooding/ Dam Failure | Promote NFIP participation. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk. | High | 1 year | Minimal | Local Cash, Grants | Local Government | Yes |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Medium | 1 year | TBD | Local Cash, Grants | Local Government, UGS | Yes |

Pleasant Grove

| Loss Estimates | | | | | |
|----------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |

| | | | | | |
|---------------------------------|-------|-------------|------|------|------|
| Dam Failure | 5,915 | \$1,504,596 | 6.36 | 0.70 | 2.59 |
| Fire Risk High | 637 | \$170,120 | 0.19 | 2.54 | 0.01 |
| Fire Risk Moderate | 1,185 | \$389,306 | 0.49 | 0.31 | 0.03 |
| Flood 1% Yearly Probability | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Landslide | 24 | \$7,557 | 0.00 | 1.00 | 0.00 |
| Liquefaction Moderate to High | 3,437 | \$1,026,021 | 6.04 | 0.92 | 2.86 |
| Earthquake (Pre-1990 buildings) | 3,902 | \$904,610 | na | na | na |

Statement of Vulnerabilities: Pleasant Grove's main concerns are fire and drought. An uptick of recreational activity in the foothills makes fires more likely and an increasing population requires new sources/better use of water. Pleasant Grove has a varied stock of homes and some older properties could use earthquake retrofitting. There is development pressure in formerly agricultural land toward the lake. Slope requirements prohibit much more development in the foothills.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|--|-----------------|----------|----------|------------|-----------------------|-------------------------------|
| Adopt new 2021 NFIP maps and update city code | Flood | Mod | 1 yr | Staff time | Local gov | Local Gov |
| Support bringing the Fix-the-Bricks program to Utah County | Earthquake | Mod | 2 yrs | Staff time | Local gov | Local gov |
| Install generator for well pump | All, earthquake | Mod | 2-3 yrs | 300k | Local gov | Local gov |
| Require metering on all new development | Drought | Mod | Ongoing | None | Local gov, developers | Local gov, developers |
| Install water meter on all buildings | Drought | Mod | 5-10 yrs | millions | Local gov | Local gov |
| Update Stormwater Master Plan with Lindon | Flood | Mod | 1 yr | Staff time | Local gov | Lindon, Pleasant Grove cities |

| | | | | | | |
|--|---------|------|---------|-------------|------------------------|--|
| Implement chipping program | Fire | Mod | 1-2 yrs | 8k | Local gov, Utah County | Pleasant Grove |
| Maintain fire access roads | Fire | Mod | Ongoing | 10k | Local gov | PG Fire department, hillside property owners |
| Include firewise principles in WUI code | Fire | Mod | 1-2 yrs | Staff time | Local gov | Local gov |
| Construct new well | Drought | High | 2 yrs | 4.5 million | Local gov | Local gov |
| Provide dumpsters for spring and fall yard waste | Fire | Mod | Ongoing | 30k | Local gov | Local gov |

| 2017 Strategy Update | | | | | | | |
|----------------------|--|----------|----------|-----------|--|--|---|
| Hazard | Action | Priority | Timeline | Cost | Potential Funding | Responsibility | Completed? |
| Earthquake | Study on vulnerabilities of Critical Facilities | High | 3 years | \$20,000 | FEMA, Local Government | Local Government | No, mostly newer critical buildings |
| Fire | Install emergency generator to pump water for fire prevention. | High | 5 years | 1 million | FEMA, Local Government | Local Government | Not yet, limited resources |
| Dam Failure | Upgrade Battle Creek and Grove Creek dams to conform to seismic standards | High | 2 years | TBD | North Utah County Water Conservancy District | North Utah County Water Conservancy District | Upgraded Battle Creek, Grove Creek yet to come. |
| Drought | Public education on correct watering practices | High | Ongoing | Minimal | Local Government | Local Government | Yes |
| Earthquake | Promote earthquake awareness and preparation | High | Ongoing | Minimal | Local Government | Local Government | Yes |
| Landslide | Require geotechnical reports for proposed structures in landslide-prone areas, conform to Hillside ordinance | High | 3 years | Minimal | Local Government | Local Government | Yes |
| Flooding | Update storm water master plans to reduce flooding in developing areas | High | 3 years | Minimal | Local Government | Local Government | No, limited resources |

Provo

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 16,883 | \$5,531,865 | 36.42 | 41.71 | 32.05 |
| Fire Risk High | 652 | \$364,479 | 0.94 | 29.04 | 0.20 |
| Fire Risk Moderate | 227 | \$76,906 | 0.60 | 4.20 | 0.69 |
| Flood 1% Yearly Probability | 48 | \$23,058 | 0.47 | 9.80 | 0.25 |
| Landslide | 290 | \$108,752 | 0.00 | 4.46 | 0.00 |
| Liquefaction Moderate to High | 19,338 | \$6,140,581 | 40.33 | 48.54 | 49.49 |
| Earthquake (Pre-1990 buildings) | 15,358 | \$4,386,424 | na | na | na |

Statement of Vulnerabilities: Regarding drought, Provo's water distribution division utilizes dozens of local springs to supplement wells, such as Provo Canyon springs supplying water to the treatment facility. Some of the old lines lie below the Provo River Bed and current policy does not allow construction on the river to move and replace those lines for access. Provo needs enhanced water storage capacity for long-term droughts. Provo's position between Utah Lake and the Wasatch Mountain range create a challenge for large-scale evacuations, as does Provo River, the Union Pacific Rail Line, and Interstate 15. West of I-15, residents have limited routes for evacuation. There are 2 exits with underpasses and 3 other underpasses to the east side, all of which would bottleneck during a large evacuation. The Wasatch Fault is located on Provo's east bench. There are slow moving landslides occurring in neighborhoods that impact residents and infrastructure. These slides are being monitored by the Utah Geological Survey and there are considerations for planning. Provo Airport is a Part 139 FAA Certified airport. It is growing and will increase traffic and the need for emergency response. Vegetation between the airport and Utah Lake is difficult to manage.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|--|---------------------|----------|----------|------------|---|----------------------|
| Adopt a Conservation and Resilience section of the general plan that addresses emissions, wildland preservation and resiliency to disasters. | All, Climate Change | Mod | 1 yr | | Local gov | Local gov |
| Complete design for and construct/rehab levees around the Provo River and Provo Airport | Flood | High | 2-5 yrs | 50 million | Local Gov, BRIC and other grants | Local Gov, FEMA |
| Implement <i>Ready Set Go</i> program, including education on defensible space and a chipping program | Fire | High | Ongoing | 50k | Local Gov | Local Gov |
| WUI Program? See Chris email | Fire | | | | | |
| Encourage a statewide Fix-the-Bricks program | Earthquake | High | 1-2 yrs | minimal | FEMA, Utah State | FEMA, Utah State Gov |
| Continue with Aquifer Storage and Recovery, including a water treatment plant and infiltration in Rock Canyon | Drought | High | 1-2 yrs | 80 million | Local Gov, WIFIA, ARAP, BRIC, Water Smart program, Water Resources Board and Drinking Water Board State revolving loans | Local Gov |
| Deepen wells | Drought | High | 1-2 yrs | 300k | Local Gov | Local Gov |
| Tree Trimming | Severe weather, | High | Ongoing | ?? | Provo Power | Provo Power |

| | | | | | | |
|---|---------------------|------|---------|------------|--|---|
| | wind, earthquake | | | | | |
| Provo Delta Restoration Project | Flood | Mod | 3 yrs | 51 million | State of Utah, Western Area Power Administration, Central Utah Water Conservancy District, and federal appropriations. | CUWCD, US Dept of Interior, Utah Reclamation, Mitigation, and conservation commission, June Sucker Recovery Program |
| Hillside Management in Carterville, Grandview, and Slate Canyon areas | Fire | Mod | 1yr | ?? | Local Gov | Local Gov |
| Participate in the Provo River Levee Analysis and Mapping Process (LAMP) to identify potential improvements to levee system | Flood | High | 1 yr | Staff time | Local Gov, Grants | Local Gov |
| Replace vulnerable areas of large diameter pipe | Flood/Dam Failure | High | Ongoing | CIP | Local Cash | Local Gov |
| Replace city buildings to meet seismic code | Earthquake | High | 1 yr | 69 million | Local Cash, Grants | Local gov |

2017 Strategies Update

| Hazard | Action | Priority | Timeline | Cost | Potential Funds | Responsible Party | Completed? |
|-----------------------------|-----------------------------|----------|----------|---------|--------------------|------------------------------|-----------------------------|
| Flooding/ Dam Failure | Promote NFIP participation. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes/recertify every 5 years |

| | | | | | | | |
|-----------------------------|--|--------|----------------|-------------------|-----------------------|---------------------------------------|--|
| Flooding/ Dam Failure | Review existing ordinances related to flood plain hazards to identify needed revisions, if any. | High | 1 – 2 years | Minimal | Local Cash, Grants | Local Government | Yes |
| Flooding/ Dam Failure | Participate in the Provo River Levee Analysis and Mapping Process (LAMP) to identify potential improvements to levee system. | High | 3 years | TBD | Local Cash, Grants | Local Government, FEMA, Others? | Ongoing, almost complete |
| Flooding/ Dam Failure | Replace vulnerable areas of large diameter pipe. | High | 5 years | CIP | Local Cash | Local Government | Ongoing |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local Cash, Grants | Local Government | Yes |
| Wildfire | Educate homeowners on Ready Set Go practices. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Ongoing |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Medium | 1 year | TBD | Local Cash, Grants | Local Government, UGS | Yes, through new Hillside Ordinance |
| Landslide | Review existing ordinances related to slide area hazards to identify needed revisions, if any. | High | 1 2 years | Minimal | Local Cash, Grants | Local Government | Yes, through new Hillside Ordinance |
| Flooding/ Dam Failure | Participate in the Provo River Levee Analysis and Mapping Process (LAMP) to identify potential improvements to levee system. | High | 3 years | TBD | Local Cash, Grants | Local Government, FEMA | Yes |
| Flooding/ Dam Failure | Replace vulnerable areas of large diameter pipe. | High | 5 years | Identified in CIP | Local | Local Government | Yes/Ongoing |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes with CERT, Shakeout drill |
| Wildfire | Incorporate Ready Set Go landscaping requirements into local ordinances within areas at risk. | High | 1 year | Minimal | Local Cash, Grants | Local Government | Yes |
| Wildfire | Restrict use of fireworks at highly vulnerable areas. | High | 1 year | Minimal | Local Cash | Local Government | Yes |
| Landslide | Review existing ordinances related to slide area hazards to identify needed revisions, if any. | High | 1-2 years | Minimal | Local Cash, Grants | Local Government | Yes, with new Hillside Ordinance |

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|---------|--------------------------------|------|--------|---------|--------------------|------------------|-----|
| Drought | Promote water saving programs. | High | 1 year | Minimal | Local Cash, Grants | Local Government | Yes |
|---------|--------------------------------|------|--------|---------|--------------------|------------------|-----|

Salem

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Fire Risk High | 188 | \$41,205 | 0.04 | 1.02 | 0.00 |
| Fire Risk Moderate | 990 | \$255,991 | 0.58 | 0.78 | 0.00 |
| Flood 1% Yearly Probability | 17 | \$3,452 | 0.02 | 0.00 | 0.00 |
| Landslide | 27 | \$7,392 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 639 | \$167,356 | 2.61 | 2.06 | 0.00 |
| Earthquake (Pre-1990 buildings) | 886 | \$188,562 | na | na | na |

Statement of Vulnerabilities: Salem City has two canals that run through our city limits. We are concerned about breaches and the issues associated with that, especially post-earthquake flooding. We are keenly aware of the fire risk with resulting debris flow damage since the Bald Mountain fire. Many people are moving to and building in Salem. New homes are expected on the East side of town and we need codes that address hazards in the area and for developers to participate in mitigation projects such as water retention basins.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---------------------|--------|----------|----------|------|---------|----------------|
|---------------------|--------|----------|----------|------|---------|----------------|

| | | | | | | |
|--|--------------------|------|----------|-----------------------------|--|--|
| Pipe Salem Canal and build trail on top | Flood | High | 1-3 yrs | 60 million | CUWCD, Local Gov, MAG, Salem Canal Irrigation Company, Division of Water Resources | CUWCD, Salem City, Salem Canal Company |
| Build detention basin coming out of Loafer Canyon | Flood, Debris Flow | High | 3-4 yrs | 500k land, TBD construction | Salem, Elk Ridge, Woodland Hills, NRCS | Salem, Elk Ridge, Woodland Hills |
| Update codes and ordinances to guide development in hazard-prone areas | All | High | 1-2 yrs | Staff time | Local gov | Local gov |
| Build water retention basin at the base of Maple Canyon | Flood, Debris Flow | Mod | 3-4 yrs | TBD | Local gov, Developers | Local gov, Developers |
| Hire code enforcement officer | All | Mod | 1 yr | 50k/yr | Local gov | Local gov |
| Participate in Great Utah Shakeout and educate citizens on earthquake safety | Earthquake | Mod | Ongoing | Staff time | Local gov | Local gov |
| Green Waste dumpsters for Spring-Fall | Fire | Mod | Ongoing | 5k | Local gov | Local gov |
| Incentives for water-use reduction such as Flip-the-Strip, Localscapes, Smart Meters, etc. | Drought | Mod | Ongoing | Unknown | CUWCD | CUWCD, Local gov |
| Build independent Public Safety Building | Earthquake, All | High | 3-4 yrs | TBD | Local gov | Local gov |
| Construct new water tanks as development occurs | Drought, Fire | Mod | 5-10 yrs | TBD | Local gov, Developers | Local gov, Developers |

| | | | | | | |
|--|----------------|-----|-----------|----------------|---|-----------------------------------|
| Pipe Highline Canal | Flood, Drought | Mod | 10-15 yrs | TBD | Local gov, Highline Canal Company, grants | Local gov, Highline Canal Company |
| Require any new water retention basins to be entirely xeriscaped | Drought, Flood | Mod | Ongoing | Minimal | Developers | Developers |
| Educate citizens on emergency preparedness through City Calendar printed and shared with all homes | All | Mod | Ongoing | A few thousand | Local gov | Local gov |

| 2017 Strategy Update | | | | | | | |
|------------------------|---|----------|----------|---------|--------------------|---|--|
| Hazard | Action | Priority | Timeline | Cost | Potential Funding | Responsibility | Completed? |
| Flooding/ Dam Failure | Promote NFIP participation. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Flooding/ Canal Breach | Coordinate efforts with Salem Canal, Strawberry Highline Canal and bureau of reclamation | High | Ongoing | TBD | State and Federal | BOR, Salem Canal Highline Canal, local government | Ongoing |
| Earthquake | Inventory current critical facilities for seismic standards. | High | Ongoing | TBD | Local Cash, Grants | Local Government | In Progress, getting cost estimate for separate Public Safety building |
| Wildfire | Educate homeowners on FIREWISE practices. | Med | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes, Ongoing |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Med | Ongoing | TBD | Local Cash, Grants | Local Government, UGS | Yes, Ongoing |
| Flooding/ Dam Failure | Update Flood and Inundation mapping and incorporate them into general plans and ordinances. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |

| | | | | | | | |
|-----------------------|---|------|---------|---------|--------------------|---|-------------|
| Flooding/Canal Breach | Coordinate efforts with Salem Canal, Strawberry Highline Canal and bureau of reclamation | High | Ongoing | TBD | State and Federal | BOR, Salem Canal Highline Canal, local government | Ongoing |
| Earthquake | Promote earthquake awareness and preparation. | High | Ongoing | TBD | Local Cash, Grants | Local Government | Yes |
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk. | Med | Ongoing | Minimal | Local Cash, Grants | Local Government | In progress |
| Landslide | Coordinate and update landslide mapping within the area with UGS and USGS. | Med | Ongoing | TBD | Local Cash, Grants | Local Government, UGS | In progress |

Santaquin

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 1,718 | \$321,873 | 4.85 | 0.76 | 0.88 |
| Fire Risk High | 930 | \$208,811 | 1.85 | 4.62 | 1.16 |
| Fire Risk Moderate | 1,243 | \$257,246 | 2.27 | 2.25 | 1.08 |
| Flood 1% Yearly Probability | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Landslide | 57 | \$10,546 | 0.00 | 0.08 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.20 | 0.00 | 0.00 |
| Earthquake (Pre-1990 buildings) | 848 | \$143,262 | na | na | na |

Statement of Vulnerabilities: Santaquin faces several vulnerabilities due to local geology, proximity to wildlands, and past development policies. These vulnerabilities include homes which have been built along the eastern border of the town (US Forest Service boundary) which are at risk for wildfires, landslides, and debris flow impacts. These same homes are also built

in close proximity to a fault line. Santaquin has adopted hillside development standards to address future development in these areas. There is also a large quantity of hazardous materials that pass through Santaquin on the railroad and State Routes.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---|--------------------|----------|----------|----------------|--|--|
| Work with Utah County and NRCS to rebuild Santaquin Debris Flow Basin | Flood | High | 4 yrs | 20 million | NRCS, Utah County, Santaquin | NRCS, Utah County, Santaquin |
| Complete final design of 6 debris basins on the east bench currently threatening homes and a charter school | Debris flow, flood | Mod | 3-5 yrs | 9.1 million | NRCS | NRCS, Santaquin responsible for land acquisition |
| Install backup generators for Public Safety/Admin building | All | High | 2 yrs | 250k/generator | BRIC grants, Local gov | Local gov |
| Build new City Hall with Emergency Ops Center | All | High | 2-4 yrs | 6 million | Local gov | Local gov |
| Perform seismic study of pre-1990 water tanks and drinking-water wells | Earthquake | Mod | 2-4 yrs | \$25k | Local gov, BRIC grants | Local gov |
| Retrofit historic 1900s museum | Earthquake | Low | TBD | 6 million | Local gov | Local gov |
| Conduct yearly chipping program | Fire | Mod | Ongoing | \$15k | Utah County, Local gov, Forest Service | Utah County, Local gov, Forest Service |
| Review and adopt new IBC code for the WUI, including specification of WUI zones | Fire | High | 1 yr | Staff time | Local gov | Local gov |
| Fire Marshall must approve new development, including 1 hr fire | Fire | High | Ongoing | Staff time | Local gov | Local Fire Dept |

| | | | | | | |
|---|------------|------|----------|---------------|--------------------------|------------------------|
| resistant construction, appropriate landscaping & defensible space, sprinklers, and 2 ingress/egress routes | | | | | | |
| Allow and encourage xeriscaping | Drought | Mod | Ongoing | Staff time | Local gov | Local gov |
| Drill another drinking well | Drought | Mod | 20 yrs | \$1.5 million | Local gov | Local gov |
| Construct a second fire station with a ladder truck | Fire | Mod | 5-10 yrs | \$8 million | Local gov | Local gov |
| Educate homeowners on wildfire risk and home hardening by sharing literature | Fire | Mod | Ongoing | Minimal | Local gov | Local Fire Dept |
| Participate in the Shakeout Drill | Earthquake | Mod | Ongoing | Minimal | Local gov | Local gov |
| Continue to work with Summit Creek Management Group to construct runoff capture and recharge areas | Flood | High | Ongong | \$15k/yr | Local gov & Depevelopers | Local gov & Developers |

2017 Strategies Update

| Hazard | Action | Priorit y | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | Completed? |
|-----------------------------|--|--------------|----------|-------------------|---------------------------------|------------------------------------|--|
| Flooding/ Dam Failure | Promote NFIP participation. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | No Special Flood Hazard Area |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local Cash, Grants | Local Government | No, Few critical facilities build pre-2000 |
| Wildfire | Educate homeowners on FIREWISE practices. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes |

| | | | | | | | |
|--------------------------|--|------|---------|-------------|------------------------|------------------------------|------------------------------|
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Med | 1 year | TBD | Local Cash, Grants | Local Government, UGS | Yes, Ongoing |
| Flooding/ Dam Failure | Continue to work with Summit Creek Management Group to construct runoff capture and recharge areas | High | Ongoing | \$1,500,000 | Local, Private, Grants | Private Irrigation Company | Yes, Ongoing |
| Flooding/ Dam Failure | Update Flood and Inundation mapping and incorporate them into general plans and ordinances. | High | 2 years | TBD | Local Cash, Grants | Local Government, FEMA, UDHS | No Special Flood Hazard Area |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes, Ongoing |
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk. | High | 1 year | Minimal | Local Cash, Grants | Local Government | Yes, with Hillside Ordinance |
| Landslide | Coordinate and update landslide mapping within the area with UGS and USGS. | High | 3 years | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes, with NRCS |

Saratoga Springs

HAS THEIR OWN PLAN, INDEPENDENTLY CREATED AND ADOPTED

| Loss Estimates | | | | | |
|-----------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 237 | \$47,094 | 0.12 | 1.19 | 0.00 |
| Fire Risk High | 4,797 | \$1,259,118 | 3.81 | 13.19 | 0.00 |
| Fire Risk Moderate | 937 | \$235,667 | 2.28 | 6.90 | 0.00 |
| Flood 1% Yearly Probability | 10 | \$1,195 | 0.05 | 1.06 | 0.00 |

| | | | | | |
|---------------------------------|-------|-------------|-------|------|------|
| Landslide | 7 | \$1,521 | 0.00 | 0.03 | 0.00 |
| Liquefaction Moderate to High | 6,283 | \$1,633,749 | 19.98 | 7.81 | 0.00 |
| Earthquake (Pre-1990 buildings) | 127 | \$103,907 | na | na | na |

Statement of Vulnerabilities: Saratoga Springs' highest priority hazards are 1) Wildfire 2) Debris Flow and 3) Severe Storms. The recent Dump Fire and subsequent evacuations underscored the importance of fuel reduction and fire breaks to avoid large-scale evacuations on the few routes in and out of the city. There are several master-planned developments in progress throughout the city. These new developments will follow the most recent code and zoning requirements, making them relatively safe. The city works extensively to ensure adequate drainage and retention basins in new development.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|--|--------|----------|----------|---------|----------------------|----------------|
| Conduct fuel reduction projects on undeveloped lands adjacent to City boundaries, where such lands pose a wildfire hazard to the City. This will be done cooperatively with the BLM, DNR, and private land owners.boundaries | Fire | Mod | 1-2 yrs | 100,000 | BRIC, HMGP, FMA, DNR | Local gov |
| Construct fire breaks along or near certain boundaries of the City. This may be done in cooperation with trail development projects, | Fire | High | 4 yrs | 300000 | | |
| Reduce fuels on undeveloped lands that are in close proximity to City owned infrastructure, such as wells and pump stations. | Fire | High | 4 yrs | 100000 | BRIC, HMGP, DNR | Local gov |
| Conduct public education programs, in cooperation with other agencies, such as BLM and DNR to promote fire safe practices on public lands. | Fire | Mod | Ongoing | TBD | | |

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|--|-------------------|------|---------|---------|-----------------------|-----------|
| Perform a detailed hazard assessment of other potential debris flow areas | Debris Flow | High | 1 yr | 100,000 | | |
| Implement other debris flow hazard mitigation projects, if warranted by the hazard assessment | Debris Flow | Mod | 4 yrs | 1000000 | | |
| Consider further zoning restrictions as an alternative to debris flow mitigation projects | Debris Flow | Mod | 2 yrs | Minimal | Local gov | Local gov |
| Consider purchasing and installing additional emergency generators. These generators would be serve critical facilities | All, Flood | Mod | 1-2 yrs | 400,000 | PDN, HMGP | Local gov |
| Consider the installation of gravel drains at buried vaults, use of flexible piping (such as HDPE piping), SCDA upgrades, and earthquake-triggered shut-off valves around certain infrastructure | Earthquake, Flood | Mod | 4 yrs | Minimal | TBD | Local gov |
| Coordination of Water Savings Projects Occurs with Local and Regional Water Management Entities, including CUWCD and Local Canal Companies | Drought | Mod | Ongoing | Minimal | Local gov, CUWCD | Local gov |
| Installations of berms around low lying sewer lift stations or well pump houses | Flood | Mod | 4 yrs | 500,000 | BRIC, HMGP | Local gov |
| Construction of additional drainage culverts under transportation infrastructure | Flood | Mod | TBD | TBD | Local gov, UDOT | Local gov |
| As new culinary water storage tanks, pump stations, and well houses are built, the designs may integrate further seismic, fire, and flood protection into the buildings and equipment. • As new sources are developed, more stringent source protection plans can be integrated | All, Flood | High | 4 yrs | TBD | Local gov, developers | Local gov |

| | | | | | | |
|---|-------------------|-----|-------|-----|-----------|-----------|
| <p>to protect against specific hazards identified in the multi-hazard mitigation plan for the specific source locations.</p> <ul style="list-style-type: none"> • As new transmission lines are designed and constructed (in high hazard areas) mitigation measures may be incorporated into the design. An example would be transmission lines that will be servicing areas (that have been identify as high risk for wildfire) could have additional fire protection and flow capacity, and fire hydrants placed more frequently than in low hazard areas. | | | | | | |
| <p>System improvements near undeveloped areas of the town and near areas identified as high risk for wildfire can have fire protection uses designed into the system, such as the utilization of green strips and defensible space.</p> <ul style="list-style-type: none"> • Open channel ditches can be sized for flood control in high hazard flood areas. | Fire | Mod | 4 yrs | TBD | Local gov | Local gov |
| <p>Sewer Systems: As lift stations, pump stations, and wastewater treatment plants are improved, additional seismic, fire, and flood protections may be integrated to help protect against unforeseen natural disasters.</p> <ul style="list-style-type: none"> • As waste water systems are inspected and repairs are made in high risk areas, such as areas identified to have the potential for liquefaction, seismic protection factors may be incorporated as identified by the plan. | All, liquefaction | Mod | 5 yrs | TBD | Local gov | Local gov |

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|---|--------------------------|-----|-------|---------|------------|------------------|
| Storm Drains: Culverts in areas that are identified as debris flow basins can be sized appropriately to pass debris without clogging, or have protections placed on them to prevent damage from debris flow. • Open channel storm drain channels can be sized to help channel flood flows in areas identified as high hazard for floods. | Debris flow, flood | Mod | 6 yrs | TBD | Local gov | Local gov |
| Transportation: Culverts in areas that are identified as debris flow basins can be sized appropriately to pass debris without clogging, or have protections placed on them to prevent damage from debris flow. • Roads in areas identified as high hazard for wildfire can be designed and laid out as fire breaks. | Debris flow, flood, fire | Mod | 7 yrs | TBD | Local gov | Local gov |
| Berm construction at Lift Stations | Flood | Mod | 4 Yrs | 500,000 | BRIC, HMGP | Saratoga Springs |
| Design and construction of seismic retrofit measures for existing facilities | Earthquake | Mod | 2 yrs | 100,000 | PDN, HMGP | Saratoga Springs |
| Retrofit design and construction of vulnerable below grade utilities | Earthquake, all | Mod | 4 yrs | 1.5 mil | BRIC, HMGP | Saratoga Springs |
| Cooperation with other entities to construct canal lining or piping projects | Drought | Mod | 4 yrs | TBD | WS | Saratoga Springs |

| 2017 Strategy Update | | | | | | | |
|----------------------|--------|----------|----------|------|-------------------|----------------|------------|
| Hazard | Action | Priority | Timeline | Cost | Potential Funding | Responsibility | Completed? |

| | | | | | | | |
|------------|---|--------|---------|---------|--------------------|-----------------------------|--|
| Flooding | Promote NFIP participation | High | Ongoing | Minimal | Local cash, grants | Local Gov, FEMA, UDHS | Yes |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local cash, grants | Local gov | No, mostly new buildings |
| Wildfire | Educate homeowners on FIREWISE practices | High | Ongoing | Minimal | Local cash, grants | Local gov | Yes |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Medium | 1 yr | TBD | Local cash, grants | Local gov, UGS | Yes |
| Flooding | Update Flood and Innundation mapping and incorporate into general plans and ordinances | High | 2 yrs | TBD | Local cash, grants | Local gov, FEMA, UDHS | Partial: 1.5 of 3 detention basins built |
| Earthquake | Promote earthquake awareness and preparation | High | 1 yr | Minimal | Local cash, grants | Local gov, UGS, USGS | Partial: Info on website and social media, starting CERT |
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk | High | 1 yr | Minimal | Local cash, grants | Local gov | Yes |
| Landslide | Coordinate and update landslide mapping within the area with UGS and USGS. | High | 3 yrs | Minimal | Local cash, grants | Local government, UGS, USGS | Partial: Some hillside stabilized through construction efforts |

Spanish Fork

| Loss Estimates | | | | | |
|-----------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Fire Risk High | 503 | \$200,435 | 2.31 | 6.84 | 4.39 |
| Fire Risk Moderate | 1,304 | \$348,125 | 2.81 | 4.18 | 1.79 |
| Flood 1% Yearly Probability | 3 | \$380 | 0.00 | 0.09 | 0.01 |

| | | | | | |
|---------------------------------|-------|-------------|-------|-------|------|
| Landslide | 16 | \$3,669 | 0.00 | 0.33 | 0.00 |
| Liquefaction Moderate to High | 5,757 | \$1,490,565 | 25.55 | 26.03 | 9.25 |
| Earthquake (Pre-1990 buildings) | 3,585 | \$874,641 | na | na | na |

Statement of Vulnerabilities: We focus on homes surrounding Spanish Fork River. There is pressure to develop in the 100 yr floodplain where agricultural land is abundant. Our main waterline runs below the Crab Creek Slide, which will eventually move onto the line itself. Many older homes are located in high-liquefaction areas.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---|------------|----------|----------|----------------------|--|-----------------------|
| Chipping Program | Fire | Moderate | 3 years | 10k | Local Gov, County | Local Gov, County |
| Identify properties for LeRay McAllister Critical Land Preservation | Flood | Moderate | Ongoing | Staff time | LeRay McAllister Critical Land Conservation Fund | Local Gov |
| Support Fix-the-Bricks | Earthquake | Moderate | | 0 | FEMA | Utah County |
| Replace Library | Earthquake | High | 1 yr | TBD, several million | Local Gov | Local Gov |
| New Fire & EMS Station | All | High | 2 yr | Multiple millions | Tax raise | Local Gov |
| Stabilize at-risk sections of the riverbank | Flood | Mod | 5 yrs | 250k | NRCS Grant, Local Gov | Utah County/Local Gov |
| Water metering and online portal to view water use | Drought | Mod | Ongoing | Millions | Local Gov | Local Gov |
| Free Smart Controllers for private landscaping | Drought | Mod | Ongoing | 60/unit | Local Gov, CUWCD | Local Gov, CUWCD |
| Extensive river clearing in high-snowpack years | Flood | High | Ongoing | 10-15k | Local Gov | Local Gov |

| 2017 Strategy Update | | | | | | | |
|-----------------------|---|----------|----------|---------|-------------------|------------------|--------------|
| Hazard | Action | Priority | Timeline | Cost | Potential Funding | Responsibility | Completed? |
| Flooding | Remove debris from riverine areas | High | Ongoing | Minimal | Local Government | Local Government | Yes |
| Fire | Yearly Inspections from Fire Marshall, FIREWISE education | High | Yearly | Minimal | Local Government | Local Government | Yes |
| HAZMAT | Fire dept. HAZMAT certified | High | 1 Year | Minimal | Local Government | Local Government | Yes |
| Landslide | Public education on correct watering practices and retaining measures | Med | Ongoing | Minimal | Local Government | Local Government | Yes |
| Earthquake | Promote earthquake awareness and preparation through CERT, ShakeOut | Med | Ongoing | Minimal | Local Government | Local Government | Yes, ongoing |
| Landslide | Public education on correct watering practices and retaining measures | Med | Ongoing | Minimal | Local Government | Local Government | Yes |
| Flooding/ Dam Failure | Update Flood and Inundation mapping and incorporate them into general plans and ordinances. | Med | 2 years | Minimal | Local Government | Local Government | Yes |

Springville

| Loss Estimates | | | | | |
|-----------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 3,506 | \$801,793 | 7.65 | 10.36 | 4.58 |
| Fire Risk High | 260 | \$90,150 | 0.72 | 4.26 | 2.25 |
| Fire Risk Moderate | 656 | \$192,114 | 0.95 | 4.77 | 2.85 |
| Flood 1% Yearly Probability | 147 | \$33,075 | 0.00 | 5.93 | 0.05 |
| Landslide | 120 | \$25,047 | 0.17 | 0.58 | 0.00 |

| | | | | | |
|---------------------------------|-------|-------------|-------|-------|-------|
| Liquefaction Moderate to High | 5,757 | \$1,490,565 | 21.27 | 39.84 | 24.15 |
| Earthquake (Pre-1990 buildings) | 4,045 | \$1,013,790 | na | na | na |

With the promulgation of new FIRMs, 200+ homes now sit in the 100 yr floodplain due to potential for flooding caused by 2 Union Pacific Railroad bridges. We are pursuing various grants to build levees and dikes to protect those homes. The entire west side of our town (west of 400 west) is designated as a high liquefaction potential area. This is a high growth area and all new buildings are required to submit a geotechnical study and mitigate individual properties with large-spread footings, elevating buildings, and prohibiting basements where necessary.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|--|---------------------|----------|----------|------------|---------------------------------|-----------------------|
| Protect 200+ homes in the newly-designated floodplain by building levees and dikes in the Spring Creek Area | Flood | High | 4-5 yrs | 24 million | NRCS and BRIC grants, Local gov | Local Gov |
| Participate in the Utah Lake FIRM update | Flood | Mod | 2-3 yrs | Staff time | Local gov, FEMA | Local gov |
| Require development west of the freeway to elevate homes out of the floodplain and submit geotechnical studies | Flood, Liquefaction | High | Ongoing | Minimal | Developers | Local gov, Developers |
| Rebuild Springville High School to seismic standards | Earthquake | High | 5 yrs | 30 million | Nebo School District bonding | Local gov |
| Train new Emergency Coordinator | All | High | 1 yr | Staff time | Local gov | Local gov |
| Outfit more staff with short-wave radios | Earthquake | Mod | 1-2 yrs | ?? | Grants | Local gov |
| Educate developers and remodelers on low-cost seismic retrofits | Earthquake | Mod | 1 yr | Staff time | Local gov | Local gov |
| Educate residents on good watering practices and how to conserve during a drought | Drought | High | Ongoing | Minimal | Local gov | Local gov |

| | | | | | | |
|--|------------|------|----------|---------|-------------|---------------------------|
| Educate residents on wildfire mitigation, such as defensible space and proper roof materials | Fire | High | Ongoing | Minimal | Local gov | Local gov |
| Participate in the yearly Shakeout drill | Earthquake | Mod | Ongoing | Minimal | Local gov | Local gov |
| Retrofit 60" water pipe coming from Strawberry Reservoir | Earthquake | Mod | ?? | ?? | CUWCD, BRIC | CUWCD |
| Support bringing the Fix-the-Bricks program to Utah County | Earthquake | Mod | 2-5 yrs | Unknown | BRIC grants | Utah State or Utah County |
| Add joints to 24" penstock that brings water from Hobble Creek where it crosses the fault | Earthquake | Mod | 5-10 yrs | TBD | CUWCD | CUWCD |

2017 Strategies Update

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | Completed? |
|--------------------------|---|----------|----------|----------------|---------------------------|------------------------------|--------------|
| Flooding/ Dam Failure | Promote NFIP participation. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes, ongoing |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local Cash, Grants | Local Government | Yes |
| Wildfire | Educate homeowners on FIREWISE practices. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes, ongoing |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Medium | 2 years | TBD | Local Cash, Grants | Local Government, UGS | Yes, ongoing |

| | | | | | | | |
|--------------------------|---|------|---------|---------|--------------------|------------------------------|---------------|
| Flooding/ Dam Failure | Update NFIP 100-Year Flood Plain and Inundation mapping and incorporate them into general plans and ordinances. | High | 2 years | TBD | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes, Shakeout |
| Wildfire | Recommend FIREWISE landscaping practices to developments or homes within areas at risk. Educate new home owners of these practices. | High | 1 year | Minimal | Local Cash, Grants | Local Government | Yes |
| Landslide | Coordinate and update landslide mapping within the area with UGS and USGS. | High | 3 years | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes |

Vineyard

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 0 | \$0 | 0.29 | 2.89 | 0.00 |
| Fire Risk High | 303 | \$110,191 | 1.45 | 3.06 | 2.02 |
| Fire Risk Moderate | 184 | \$49,068 | 0.83 | 2.46 | 1.10 |
| Flood 1% Yearly Probability | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 2,418 | \$789,322 | 4.67 | 9.18 | 9.98 |
| Earthquake (Pre-1990 buildings) | 125 | \$123,886 | na | na | na |

Statement of Vulnerabilities: Although 90%+ of buildings were constructed after 2000, liquefaction would affect most of the town, potentially destabilizing the four sections of road that traverse the railroad and making evacuation difficult for residents on the developing west side of town. Critical infrastructure is built on piers that extend down to the bedrock, but homes depend on each builder's geotechnical survey. Previously fire-prone areas have been developed and no homes are located in the floodplain. Vineyard is home to many young families, first-time home buyers, and out-of-state landlords who are less familiar with the area or involved with town issues. Awareness and education, especially of evacuation plans, will need to be continuous.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---|------------|----------|----------|-------------|-----------------------------|-----------------------|
| Install grinders in 3 sewer lift stations | Flood | High | 3-5 yrs | 150k | NFIP, Local Gov | Local Gov |
| Develop evacuation plan and share with the public | All | High | 1 yr | Staff time | Local Gov | Local Gov |
| Bolster fund for replacement and updates of infrastructure via utility bill and impact fees | All | High | 1 yr | Staff time | Local Gov | Local Gov |
| Seismically retrofit Vineyard Connector bridge | Earthquake | Mod | 2-5 yrs | 200k | UDOT, Local Gov, BRIC grant | UDOT, Local Gov |
| Require geotechnical studies for large buildings and frontrunner station | Earthquake | High | Ongoing | \$2,000/lot | Developers, Local Gov | Developers, Local Gov |
| Construct a 6 million gallon water tank with pump station and future expansion | Drought | High | 2 yrs | 5 million | Local Gov | Local Gov |

2017 Strategy Update

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | Completed? |
|------------|--|----------|------------|----------------|------------------------------------|-----------------------|-----------------------|
| Earthquake | Build overpasses to be usable after earthquake. Overpasses | High | 5-10 years | \$10 million | Local Government, FEMA grants, MAG | Local Government, MAG | Partly, new Center St |

| | | | | | | | |
|--------------------------|--|------|------------|-------------------------|---|------------------------------|--|
| | are the main access across railroad. | | | | | | overpass is earthquake safe |
| Earthquake | Develop evacuation plan | High | 1-3 years | \$50,000 | Local Government | Local Government | Yes |
| All Hazards | Share disaster planning via city Social Media platforms | Med | Ongoing | Minimal | Local Government | Local Government | No, messaging for liquefaction is unusual |
| All Hazards | Maintain fund for timely replacement and updates of infrastructure via utility bill | High | Ongoing | \$4/household per month | Utility fees | Individual/ Local Government | No, but should happen next year |
| All Hazards | Interactive parcel map including hazard information | Med | 1 year | Minimal | Local Government | Local Government | No, doesn't make sense for liquefaction, geotechnical study already required |
| Earthquake | Build overpasses to be usable after earthquake. Overpasses are the main access across railroad. | High | 5-10 years | \$10 million | Local Government, FEMA grants, MAG | Local Government, MAG | Partly |
| Liquefaction | Geotechnical study in town center area for potential tall buildings and frontrunner station | High | 1-3 years | \$200,000 | Local Government, FEMA grants, developers | Local Government | Ongoing, city center buildings are new or not yet built |
| Earthquake/ Liquefaction | All building permits require geotechnical study including site visit to be in accordance with earthquake standards | High | Ongoing | \$2,000 per lot | Builder/ Individual | Builder/ Individual | Yes |
| Earthquake | Develop evacuation plan | High | 1-3 years | \$50,000 | Local Government | Local Government | Yes |
| All Hazards | Share disaster planning via city Social Media platforms | Med | Ongoing | Minimal | Local Government | Local Government | No |

| | | | | | | | |
|-------------|---|------|---------|-------------------------|------------------|------------------------------|---------------------------------|
| All Hazards | Maintain fund for timely replacement and updates of infrastructure via utility bill | High | Ongoing | \$4/household per month | Utility fees | Individual/ Local Government | No, should happen within a year |
| All Hazards | Interactive parcel map including hazard information | Med | 1 year | Minimal | Local Government | Local Government | Not practical |

Woodland Hills

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Fire Risk High | 398 | \$147,917 | 0.00 | 0.00 | 0.00 |
| Fire Risk Moderate | 11 | \$5,431 | 0.00 | 0.00 | 0.00 |
| Flood 1% Yearly Probability | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Landslide | 3 | \$869 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Earthquake (Pre-1990 buildings) | 81 | \$21,256 | na | na | na |

Statement of Vulnerabilities: Woodland Hills' chief concern is managing wildfire and having enough funding to unkeep current infrastructure. There are many homes in the WUI and limited roads for getting in and out of town. Evacuations in a recent nearby fire brought this reality to a point. Woodland Hills works with Utah County and others to educate homeowners, manage fuels, and plan response. If the city had more money it would bury powerlines, bring water lines up code, and purchase a firetruck. Lack of local sales tax and a desire to keep property taxes low means there is a limited budget devoted to maintenance. There is some development pressure in the hills and more in the canyon above Woodland Hills. Large lot requirements and wastewater requirements limit how much can be built.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding | Responsibility |
|---|----------------------|----------|----------|---------------------|----------------------------------|------------------------|
| Chipping program in Wildland Urban Interface | Fire | High | Ongoing | 50k/volunteer labor | Local gov, citizens, Utah County | Local gov, Utah County |
| New Firetruck | Fire | Mod | 2-3 yrs | 500k | Local gov | Local gov |
| Fire Chief must sign off on all plans in WUI, including requirements for fire hydrant proximity, defensible space, and building materials | Fire | High | Ongoing | Staff time | Local gov | Local gov |
| Construct avalanche basin above main water tank to reroute and protect tank and downhill homes | Avalanche | Mod | 3-5 yrs | 3 million | Local gov, BRIC and other grants | Local gov |
| Geotechnical study required for all new development in hazard areas | All | High | Ongoing | Staff time | Developers | Developers, Local gov |
| Replace 30% of water lines, bringing up to current seismic standards | Fire, Flood, Drought | High | 5 yrs | 3.2 million | Local bond | Local gov |
| Participate in Utah Shakeout | Earthquake | Mod | Yearly | Minimal | Local gov | Local gov |
| Week-long Fire Expo to educate residents on fire safety | Fire | High | Yearly | Minimal | Local gov | Local gov, Utah County |
| Create dipping ponds for helicopters to use in fire suppression | Fire | Mod | 2-3 yrs | TBD | Local gov, Utah County, grants | Local gov, Utah County |
| Bury power lines, especially those that may cause fires | All | Mod | Ongoing | \$700k/mile | Local gov, developers | Local gov |
| Create Watershed Operations Program | Flood, Drought, Fire | Mod | 2-5 yrs | TBD | Local gov | Local gov |

2017 Strategy Update

| Hazard | Action | Priority | Timeline | Cost | Potential Funding | Responsibility | Completed? |
|------------|---|----------|----------|---------|--------------------|-----------------------------|---------------------------------------|
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local Cash, Grants | Local Government | Partly, water lines being replaced. |
| Wildfire | Educate homeowners on FIREWISE practices. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Med | 1 year | TBD | Local Cash, Grants | Local Government, UGS | Yes |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Somewhat |
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk. | High | 1 year | Minimal | Local Cash, Grants | Local Government | Yes |
| Landslide | Coordinate and update landslide mapping within the area with UGS and USGS. | High | 3 years | Minimal | Local Cash, Grants | Local Government, UGS, USGS | No, coordination efforts fell through |

Contacts

See Part III: Process for a complete accounting of participation

| Position | Name | Phone | Email | Small Meeting | Group Meeting |
|-------------------------------------|---------------------|-------------------|--|---------------|---------------|
| Alpine | Shane Sorensen | 801-420-2962 | ssorensen@alpinecity.org | 6/17/2021 | Yes |
| American Fork Engineer | Scott Sensanbaugher | 801-763-3060 | ssensanbaugher@afcity.net | 6/14/2021 | Yes |
| American Fork Public Works/Engineer | Ben Hunter | 801.854.5930 | bhunter@afcity.net | 6/14/2021 | |
| Cedar Hills City Council | Mike Geddes | | mgeddes@cedarhills.org | | |
| Cedar Hills City Manager | Chandler Goodwin | | cgoodwin@cedarhills.org | 6/14/2021 | |
| Cedar Hills Emergency Manager | Laurie Petersen | 801-785-9668 x104 | lpetersen@cedarhills.org | | |
| Cedar Hills/AF Fire | Aaron Brems | 801-763-3045 | abrems@americanfork.gov | 6/14/2021 | |
| Eagle Mountain | Greg Stone | | gstone@emcity.org | 6/22/2021 | Yes |
| Eagle Mountain Engineer | Chris Trusty | | ctrusty@emcity.org | | Yes |
| Eagle Mountain Fire Chief | Embret Fossum | | efossum@UFA-SLCO.org | 6/22/2021 | |

Part 6 Utah County Damage Assessment and Mitigation

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|---------------------------------|-----------------|----------------|--|------------|-----|
| Eagle Mountain Planning | Tayler Jensen | (801) 789-6615 | tjensen@emcity.org | | |
| Eagle Mountain Primary | Jeff Weber | | jweber@emcity.org | 6/22/2021 | Yes |
| Elk Ridge City Manager | Royce | | royce@elkridgecity.org | 7/8/2021 | |
| Elk Ridge Fire Chief Primary | Seth Waite | | firechief@elkridgecity.org | | |
| Elk Ridge Public Works Director | David Gene | 801.423.2300 | davidj@elkridgecity.org | | |
| Fairfield | Chianne Barnson | 435-231-4027 | chybarnson_fairfieldtown@yahoo.com | | |
| Fairfield Mayor | Brad Gurney | 801-874-8386 | mayor@fairfieldtown.org | 12/17/2020 | |
| Genola | Chris Steele | 801-754-5300 | gcpw@rburst.com | | |
| Genola Planning & Zoning | | | genolapz@gmail.com | | |
| Genola Town Clerk | Lucinda Daily | 801.754.5300 | Genolaclerk@gmail.com | 7/29/2021 | Yes |
| Goshen | Steven Staheli | | goshentown@gmail.com | 6/9/2021 | |
| Highland Finance Director | Tyler Bahr | | | 6/17/2021 | |
| Highland Mayor | Rod Mann | | | | Yes |
| Highland Planning | Nathan Crane | 801-756-5751x3 | ncrane@highlandcity.org | 6/17/2021 | |
| Highland Planning | Joann | | joann@highlandcity.org | | |
| Highland Planning | Erin Wells | 801-772-4566 | erin@highlandcity.org | | |
| Lehi City Council | Paige Albrecht | | | | Yes |
| Lehi Emergency Management | Scott Debell | | sdabell@lehi-ut.gov | 7/7/2021 | Yes |

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| | | | | | |
|--|------------------|----------------|--|------------|-----|
| Committee director | | | | | |
| Lehi Emergency Management Committee director | Scott Sampson | 385-201-2268 | ssampson@lehi-ut.gov | 7/7/2021 | Yes |
| Lehi Engineering | Ross | | rdinsdale@lehi-ut.gov | 7/7/2021 | |
| Lehi Environmental Sustainability | Todd Munger | | tmunger@lehi-ut.gov | | Yes |
| Lehi Planning | Kim Struthers | 385-201-2521 | kstruthers@lehi-ut.gov | 7/7/2021 | Yes |
| Lehi Planning | Mike West | | | 7/7/2021 | Yes |
| Lehi Planning | | | | 7/26/2021 | |
| Lindon Administration (sedondary) | Adam Cowie | 801-785-5043 | acowie@lindoncity.org | 6/15/2021 | Yes |
| Lindon Emergency Manager (primary) | Kelly Johnson | | kjohnson@lindoncity.org | 6/15/2021 | Yes |
| Mapleton Planner | Brian Tucker | 801-806-9108 | btucker@mapleton.org | 6/30/2021 | Yes |
| Mapleton Public Works | Steven Lord | (801) 489-6253 | slord@mapleton.org | 6/30/2021 | |
| Mapleton Ready | Derek Haynie | (801) 491-1111 | derek@mapletonready.org | | |
| Mayor Cedar Fort | David Gustin | 801.768.2147 | mayor@cedarfort.town | 12/17/2020 | |
| Orem Emergency Manager | Heath Stevenson | 801-229-7146 | hmstevenson@oreem.org | 6/22/2021 | Yes |
| Orem Engineer | Sam Kelly | 801-229-7328 | srkelly@oreem.org | 6/22/2021 | |
| Payson | Jill Spencer | 801-465-5233 | jills@payson.org | 6/14/2021 | Yes |
| Payson | Travis Jockumsen | | travisj@payson.org | 6/14/2021 | Yes |

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|--------------------------------------|------------------|---------------------|--|-----------|-----|
| Payson Facilities Manager | Shane Spencer | 801.404.6473 | | 6/14/2021 | |
| Payson Fire Marshall | Scott Spencer | 801-465-5252 | scottss@payson.org | 6/14/2021 | |
| Pleasant Grove Community Development | Daniel Cardenas | | dcardenas@pgcity.org | | |
| Pleasant Grove Engineering | Marty Beaumont | 801-785-2941 | mbeaumont@pgcity.org | | Yes |
| Pleasant Grove Engineering | Aaron Wilson | | awilson@pgcity.org | 6/15/2021 | Yes |
| Pleasant Grove Fire Chief | Andrew Engermann | | aEngemann@pgcity.org | | |
| Provo | Melissa McNalley | | MMcNalley@provo.utah.gov | 6/10/2021 | |
| Provo Airport | Donavon Cheff | | | | Yes |
| Provo EM | Chris Blinzinger | 801-404-6368 | cblinzinger@provo.org | 6/10/2021 | Yes |
| Provo Planner | Robert Mills | 801-852-6407 | rmills@provo.org | 6/10/2021 | Yes |
| Provo Stormwater Engineer | Jared Penrod | | jpenrod@provo.org | 6/10/2021 | Yes |
| Salem | Bruce Ward | | brucew@salemcity.org | | |
| Salem | Greg Gurney | | ggurney@salemcity.org | | Yes |
| Santaquin | Jason Bond | 801-754-1011 ex 223 | jbond@santaquin.org | 7/26/2021 | Yes |
| Santaquin | Jon Lundell | | | | Yes |
| Santaquin EM | Chris Lindquist | (801)754-1940 | clindquist@santaquin.org | 7/26/2021 | Yes |
| Santaquin Engineer | Jason Lidet | | | 7/26/2021 | |

Part 6 Utah County Damage Assessment and Mitigation

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|-----------------------------------|----------------|----------------|--|-----------|-----|
| Santaquin Engineer | Norm Beagley | | | 7/26/2021 | Yes |
| Santaquin Fire Chief | Ryan Lind | (801)754-1940 | | 7/26/2021 | |
| Saratoga Fire | Spencer Kyle | 801-766-9793 | skyle@saratogaspringscity.com | | |
| Saratoga Planning | David Stroud | 801.766.9793x4 | dstroud@saratogaspringscity.com | | |
| Saratoga Springs Engineer | | 801-766-9793x5 | | | |
| Spanish Fork | Jered Johnson | 801-804-4575 | jjohnson@spanishfork.org | | |
| Spanish Fork | Travis Warren | | | 6/9/2021 | Yes |
| Spanish Fork Economic Development | Dave Anderson | 801-804-4586 | danderson@spanishfork.org | 6/9/2021 | Yes |
| Spanish Fork Emergency Manager | Trevor Sperry | 801.804.4768 | tsperry@spanishfork.org | 6/9/2021 | |
| Spanish Fork Floodplain Engineer | John Little | | jlittle@spanishfork.org | | |
| Spanish Fork Public Works | Chris Thompson | 801-804-4556 | cthompson@spanishfork.org | | |
| Spanish Fork Public Works | Marlo | | msmith@spanishfork.org | 6/9/2021 | |
| Springville EM | JoAnna Larsen | 801-635-5776 | em@springville.org | | Yes |
| Springville emergency prep mtgs | | | EM@springville.org | | |

Part 6 Utah County Damage Assessment and Mitigation

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|--|-----------------------------------|--------------|--|-----------|-----|
| Springville Engineer | Jeff Anderson | 801-491-2719 | janderson@springville.org | 6/30/2021 | |
| Springville Head Building Official-secondary | Jason Van Ausdal | 801-491-7832 | jvanausdal@springville.org | | |
| Springville Planner | Laura Thompson | | lthompson@springville.org | | |
| Vineyard | George Reid | | Georger@vineyardutah.org | 6/7/2021 | Yes |
| Vineyard Engineer | Nassim | | | 6/7/2021 | Yes |
| Vineyard Planner | Morgan Brimm | 385-248-7029 | morganb@vineyardutah.org | | |
| Vineyard Planner | Briam Perez | 385-329-1730 | briamp@vineyardutah.org | 6/7/2021 | |
| Vineyard Public Works | McDermott, Kinsli | 801-226-1929 | kinslim@vineyardutah.org | | |
| Woodland Hills | Corbett Stephens | 801-857-0788 | works@woodlandhills-ut.gov | 7/8/2021 | |
| Woodland Hills | Jodie Stones | 801-423-1962 | recorder@woodlandhills-ut.gov | | |
| Woodland Hills | Greg Northup | | fire@woodlandhills-ut.gov | | |
| Others | | | | | |
| WUI Coordinator | Dax Reid | 801-678-1655 | daxreid@utah.gov | 6/30/2021 | Yes |
| Utah County Fire Warden FFSL | Josh Berg | 385-254-8010 | jberg@utah.gov | 6/30/2021 | |
| County Commissioner | Bill Lee | | WilliamL@utahcounty.gov | | |
| | Thomas SAKIEVICH | | Thomas@utahcounty.gov | | |
| | | | AmeliaP@utahcounty.gov | | |
| Health Dept Emergency | Ryan Strabel | 801.851.7525 | ryanst@utahcounty.gov | 6/30/2021 | |

Part 6 Utah County Damage Assessment and Mitigation

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| | | | | | |
|---|-----------------------------|--------------|--|-----------|--|
| Response Coordinator | | | | | |
| BOR | Dale | | dthamilton@usbr.gov | | |
| Central Utah Water Conservancy District | Mike Whimpey | | mwhimpey@cuwcd.com | | |
| CUWCD | Blake Buehler | 801.226.7133 | blake@cuwcd.com | 12/8/2021 | |
| CUWCD | Chris Elison | | | 12/8/2021 | |
| CUWCD | Cort Lambson | | | 12/8/2021 | |
| CUWCD | KC Shaw | | | 12/8/2021 | |
| Alpine School District | Frank Pulley | | frankpulleyjr@alpinedistrict.org | | |
| Alpine School District | Kimberly Bird | | kbird@alpinedistrict.org | | |
| Alpine School District | Mike Browning | | mbrowning@alpinedistrict.org | | |
| Nebo Risk Management | Kathy Carling | 801-354-7474 | kathy.carling@nebo.edu | 7/20/2021 | |
| Utah Co. Emergency Manager | Peter Quittner | 801-404-6050 | peterq@utahcounty.gov | 6/30/2021 | |
| Utah County Emergency management | Allison Jester/Janeen Olson | | AllisonJ@utahcounty.gov | 6/30/2021 | |
| Provo Airport | Heather | 8018526715 | hrollins@provo.org | | |

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| | | | | | |
|--|--------------------------|--------------|-----------------------|-------------------------|--|
| Utah County Emergency Management | | | ryanst@utahcounty.gov | | |
| Utah County Temporary employees | Emily, Lindsey, James | | | 6/30/2021 | |
| Provo School District Facilities Director | Mark Wheeler | 801-374-4923 | | | |
| | | | | | |
| MAG's TAC | | | | Presented 7/26/2021 | |
| Utah County Emergency Manager Monthly Meeting | | | | Presented 10/26/2021 | |

Part 7 Wasatch County Profiles and Mitigation

Background

Area: 1,191 square miles; *county seat:* Heber City; *origin of county name:* from the Wasatch Mountains

Heber Valley, one of several back valleys in the Wasatch Mountains, is often called Utah's Switzerland because of the rugged beauty of Mount Timpanogos located to the west, its climate, and a large population of Swiss that settled in Midway. The county's highest peaks top 10,000 feet, and over half of the land is 7,500 feet above sea level. The climate zone, classified as undifferentiated highlands, offers cool summers and very cold winters. The average annual precipitation is about sixteen inches.

The county is divided into two watersheds--the Colorado and the Great Basin drainage systems. Because of its annual precipitation and its location between the Uinta and Wasatch mountains, Heber Valley has sufficient water. Flowing from the east are Daniels, Lake, and Center creeks. From the north and northeast is the Provo River. From the west Snake Creek drains a central portion of the Wasatch Mountains. Two additional sources of water are man-made: the Ontario Drain Tunnel west of Keetley drains many of the Park City mines, and the Weber/Provo diversion canal diverts water from the Weber across the Kamas prairie in Summit County to the Provo River in Wasatch County.

Prior to the 1850s, Heber Valley was an important summer hunting ground for the Timpanogos Utes living around Utah Lake. The first white men to visit the county were members of the Dominguez-Escalante expedition in 1776. They skirted Heber Valley, traveling down Diamond Fork to Spanish Fork Canyon and then into Utah Valley. Fifty years later fur trappers entered the county. In 1824 and 1825 Etienne Provost from Taos, New Mexico, trapped beaver in the Uinta and Wasatch mountains. About the same time, William Henry Ashley and members of his fur company from St. Louis also hunted and trapped for beaver in the county.

The first settlers came into Wasatch County from Utah Valley in the spring of 1859 and located a short distance north of present Heber City at the London or John McDonald

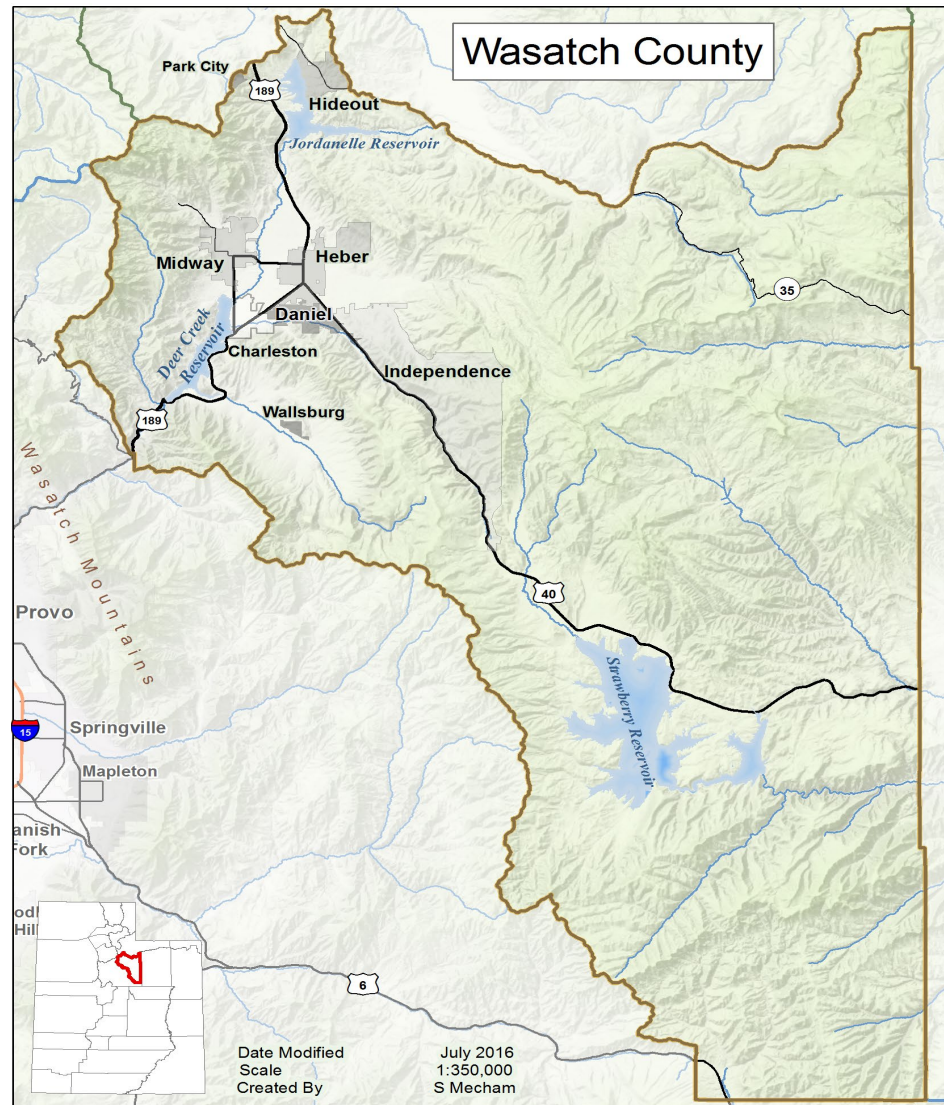
Part 7 Wasatch County

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Spring. That same year, Midway and Charleston were also settled. In 1862 the territorial legislature created Wasatch County, which then included all of the Uinta Basin. Wasatch in Ute means "mountain pass" or "low pass over high range." Heber City, named for Mormon Apostle Heber C. Kimball, was selected as the county seat.

The county produces hay, dairy products, sheep and cattle. During the early 1900s, after the Denver and Rio Grande Railroad completed a line into the county from Provo, Heber City became an important shipping terminal for wool and sheep. In 1922 the Union Pacific Railroad constructed a spur from Park City to the mines west of Keetley. Lead, zinc, and silver ore were shipped from these mines on this railroad spur. Today neither railroad line is in full operation, and other economic activities are more important to the county than transportation and mining.

Strawberry Reservoir (completed in the 1910s), Deer Creek Reservoir (completed in the 1940s), and Jordanelle Reservoir (completed in the 1990s), together with sparkling streams and beautiful mountain scenery, have made Wasatch a popular recreation area. (Source: Utah Historical Encyclopedia. Craig Fuller, Author)



Part 7 Wasatch County

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Economy

Wasatch County, though still largely rural in nature, has seen its economy grow, particularly as a destination for recreation. Heber City and Midway, the two largest cities in the county, have both seen a number of new developments add vitality and tax base to their communities.

Population

The following table shows historic and future projections for population:

| | 2020 Census | 2030 | 2040 | 2050 |
|----------------|-------------|---------|-----------|-----------|
| MAG Total | 712,471 | 960,578 | 1,197,730 | 1,429,516 |
| Summit County | 42,145 | 50,558 | 57,983 | 63,097 |
| Utah County | 636,235 | 861,852 | 1,080,082 | 1,297,515 |
| Wasatch County | 34,091 | 48,168 | 59,665 | 68,904 |

Select Area Wasatch County

Demographics Wasatch County

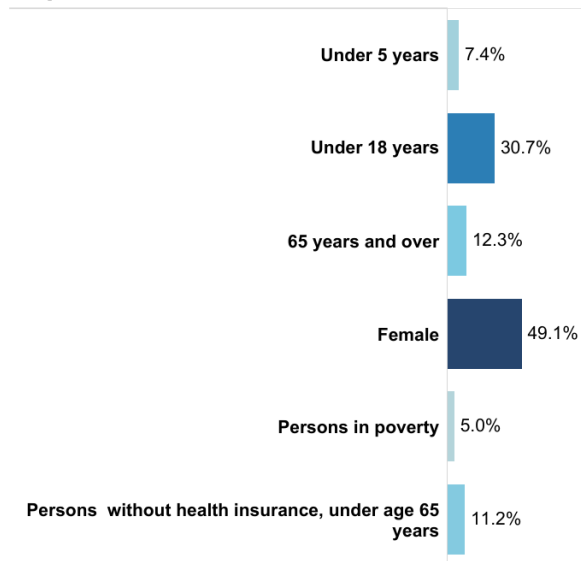
2019 Race and Ethnicity

In Wasatch County, about a third of residents are children under the age of 18, with 10% of the population over the age of 64. The average travel time to work is 24 minutes as many residents commuting to surrounding counties for jobs.



| | |
|--|-------|
| White, not Hispanic/Latino | 83.2% |
| Hispanic/Latino*** | 13.7% |
| Two or More Races | 1.7% |
| Asian | 1.0% |
| Black/African American | 0.8% |
| American Indian/Alaska Native | 0.7% |
| Native Hawaiian/Other Pacific Islander | 0.2% |

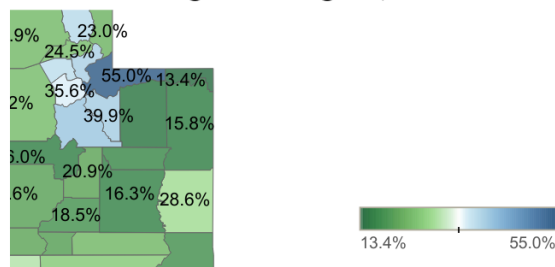
Population Shares, 2015-2019



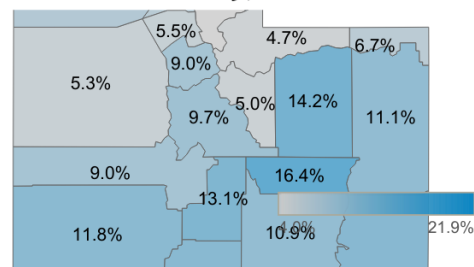
Other Facts

| | |
|--|---------|
| Households, 2015-2019 | 9,879 |
| Housing units, July 1, 2019 | 14,322 |
| Median value of owner-occupied housing units, 2015-2019 | 419,900 |
| Persons per household, 2015-2019 | 3 |
| Mean travel time to work (minutes), workers age 16 years+, 2015-2019 | 24 |
| Veterans, 2015-2019 | 1,019 |
| Veteran-owned firms, 2012 | 233 |
| Women-owned firms, 2012 | 940 |

Bachelor's Degree or Higher, 2015-2019*



Persons Below Poverty, 2019



Updated 7/13/2021 8:10:38 PM

* Population 25 years and older. ** Population 5 years and older. *** Hispanics/Latinos may be of any race; also included in applicable race category. **** Civilian Population 16 years and older.

Source: U.S. Census Bureau. For more information: <http://www.census.gov>

Hazards Compared

Hazard Matrix

| | | | | | |
|--------------------|---------------|-----------------|---------------------------|-------------------------|--------------|
| Probability | Highly Likely | Hail | Winter Weather, Avalanche | | |
| | Likely | | Drought, Lightning, Wind | | |
| | Possible | | Flood, Landslide | | |
| | Unlikely | | Tornado | Earthquake, Dam Failure | |
| | | Negligible | Limited | Critical | Catastrophic |
| | | Severity | | | |

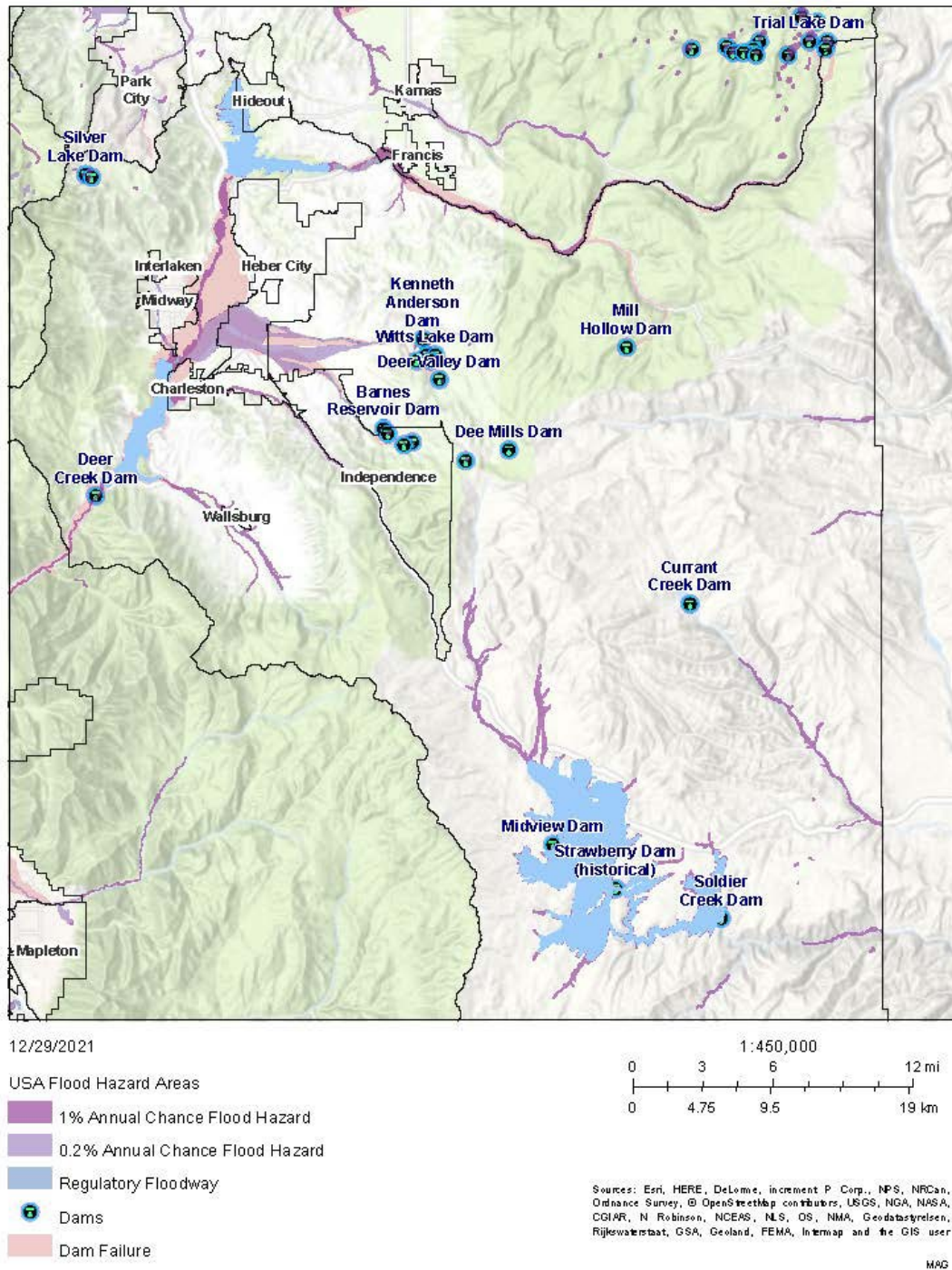
| Hazard | Years in Record | Yearly Probability | Deaths Annualized | Injuries Annualized | \$ Losses Annualized | Source |
|-------------------|-----------------|--------------------|-------------------|---------------------|----------------------|---|
| Avalanche | 23 | 161 | 1.8 | 0.7 | \$2,800 | NOAA |
| Drought, Moderate | 2018 | 10 | NA | NA | NA | National Integrated Drought Information System |
| Earthquake | 50 | 1 | NA | NA | \$548,000 | HAZUS Salt Lake City 7.0 Scenario |
| Floods | 24 | 25 | 0 | 0 | \$2,080 | NOAA/SHELDUS |
| Hail | 24 | 38 | 0 | 0 | \$274 | NOAA/SHELDUS |
| Landslides | 51 | 6 | 0 | 0 | \$735,211 | SHELDUS |
| Lightning | 24 | 13 | 0.04 | 0 | \$600 | NOAA |
| Wildfires | 6 | 300 | | | \$1,163,000 | FFSL and BLM with cost of fighting fire |
| Wind | 24 | 83 | 0 | 0.1 | \$9,200 | NOAA (High Wind, Strong Wind and Thunderstorm Wind) |

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| | | | | | | |
|--|----|-----|------|------|----------|--|
| Winter Weather | 24 | 158 | 0.44 | 2.16 | \$41,654 | NOAA (Blizzards/ Heavy Snow/Winter Storm/Winter Weather) |
| Tornadoes | 70 | 1 | 0 | 0 | \$0 | NOAA |
| Air Quality is unhealthy | 4 | 25 | | | | PurpleAir monitor, unhealthy for sensitive groups |
| *Probability: Total events/Years in record | | | | | | |

Flooding/Dam Failure

Flood Hazards in Wasatch County



Overview

Although Utah is considered a dry desert state, flooding does occur. Most floods have occurred either from snow melt or severe thunderstorms. Oftentimes flooding is increased by soils that are more impervious due to either wildfire or drying out. Floods occur on a regular basis in Wasatch County.

Profile

| | |
|-----------------------------------|---|
| Frequency | Some flooding happens within Wasatch County on a regular basis. |
| Severity | Moderate |
| Location | Primarily along streams, rivers and along the shores of Deer Creek and Jordanelle Reservoirs. |
| Seasonal Pattern | Spring time due to snow melt. Isolated events throughout the year due to severe weather (microburst). |
| Duration | A few hours to a few weeks depending upon conditions |
| Speed of Onset | Sudden to 12 hours |
| Probability of Future Occurrences | High - for delineated floodplains there is a 1% chance of flooding in any given year. |

Development Trends

As development occurs on the bench areas of Heber Valley, along the shore of Deer Creek and Jordanelle Reservoirs, or along river and stream corridors more homes will be in danger of floods. Communities need to make developers and homeowners aware of the danger as well as contribute to mitigation actions. Cities should review every development to ensure that it is in compliance with NFIP guidelines.

The following table identifies the communities in Wasatch County with their NFIP Status.

| Jurisdiction | Floodplain | Map Date | Floodplain Admin |
|--------------|------------|----------|------------------|
| | | | |

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| | | | |
|-----------------|--|------|--|
| Charleston | Participating in NFIP See https://charlestantown.utah.gov/charleston-land-use-ordinances/ for flood-related ordinances | 2012 | Mayor Kozlowski |
| Hideout | Not participating in NFIP, doesn't have any 100-yr floodplain within city limits. Town Code does require building outside of 100-yr floodplains and floodways, open space requirements, and grading/drainage plans. See https://hideoututah.gov/wp-content/uploads/2018/07/Title-11-Zoning-Regulations.pdf for more information | | Mayor Rubin and Jan McCosh, Town Administrator |
| Midway City | Participating in NFIP, has a Flood Damage Prevention Ordinance as well as Midway City Floodplain Overlay zones and a Sensitive Lands Overlay Zone that provides additional protection for streambeds and other flood-prone areas (Chapter 16.14) Any residential construction within 50 feet of a delineated flood zone shall have the lowest floor elevated 18 inches above the base flood elevation as shown on the FIRM and no construction is allowed within 50 feet of a floodplain in large-scale subdivisions. | 2012 | Michael Henke, City Planning Administrator |
| Independence | Not participating in NFIP. Independence has 1 building in the 100-yr floodplain. | | n/a |
| Interlaken Town | No Special Flood Hazard Area | | n/a |
| Wallsburg | NOT participating in NFIP, has 4+ buildings in the floodplain as of 2012. City code acknowledges FEMA's Flood Insurance Study for Wallsburg and prohibits building in the floodway. Wallsburg also has a FloodwayCorridor map and requires a permit for building on Sensitive Lands, within 20 feet of a riparian area, or on any land with historic flooding. See https://wallsburg.org/wp-content/uploads/2017/10/Wallsburg-Code-Chap5.pdf for specifics. | 2012 | n/a |
| Heber City | Participating in NFIP, has a Flood Damage Prevention Ordinance as well as a Sensitive Lands Ordinance 17.34.010 Sensitive Lands | 2012 | Russel Funk, City Engineer |

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| | | | |
|----------------|--|------|----------------------------------|
| | <p>Development Prohibited. New subdivisions and new development shall avoid the following areas: Natural slopes over thirty percent (30%) grade; each lot must have a contiguous building area that is a minimum of five thousand (5,000) square feet at or below thirty percent (30%) natural grade; Avalanche tracks; Fault lines, scarps, landslides, rock-fall and mudflow areas; and Stream beds, canals, ditches, flood channels, areas of springs, seeps and surface water.</p> <p>Development Discouraged. The following hazard areas should be avoided by new subdivisions and new development and developer shall provide mitigation for such hazards when they apply. The city may require a notice of such hazard and required mitigation to future property owners in a development agreement, subdivision plat or other device. Alluvial-fan-flood debris flow, collapsible soils, and shrink-swell soils. Mitigation techniques shall follow the advisement of a qualified Geotechnical Engineer. Shallow ground-water. Mitigation techniques should include the installation of a foundation drain and sump pump, prohibition of basements, or the advisement of a qualified Geotechnical Engineer. 100 year flood zones. Mitigation techniques shall follow the procedures of Chapter 18.109 Flood Damage Prevention Ordinance. Culinary Water Source Protection. Mitigation techniques shall follow the advisement of the source delineation report, current engineering practice, and/or applicable state statutes.</p> | | |
| Daniel | Participating in NFIP and has a Flood Damage Prevention Ordinance specifying the duties of the floodplain administrator, permit procedures, general standards, subdivision standards, etc. See http://danielutah.org/code-and-ordinances/ | 2012 | Ryan Taylor, Town Engineer |
| Wasatch County | Participating in NFIP, has a Flood Damage Prevention section in its code covering Administration responsibilities, permits, standards for buildings and subdivisions, variances, flood prevention, etc. | 2012 | Doug Smith |

Assessing Vulnerability: Addressing Repetitive Loss Properties

There are no repetitive loss properties in Wasatch County (FEMA, 2021).

History

Significant Flooding Events

| <i>Location/Extent</i> | <i>Date</i> | <i>Fatalities</i> | <i>Damages</i> | <i>Source</i> | <i>Details</i> |
|---|-------------------------------|-------------------|----------------|---|--|
| Strawberry, upper Price, upper San Rafeal, Ogden, Weber, Provo, and Jordan Rivers; Blacksmith Fork, and Spanish Fork; upper Muddy and Chalk Creeks. | 04/28/1952 - 06/11/1952 | 2 | \$8.4 million | National Water Summary 1988-89- - Hydrologic Events and Floods and Droughts: U.S. Geological Survey Water-Supply Paper | Melting of snowpack having maximum-of-record water content for Apr. 1. Disaster declared. |
| Heber City | Feb-62 | 0 | Thousands | Wasatch Emergency Manager & Wasatch Newspaper | Warm weather and rain cause snowmelt, flooding on Heber Main St |
| Northern Utah, Deer Creek Dam | 01/29/1963 - 02/02/1963 | 1 | | Richardson, Peck and Green, "Heavy Precipitation Storm In Northern Utah January 29 to February 2, 1963" U.S. Weather Bureau | Record-breaking precipitation and runoff, damage in Heber valley and Daniels Canyon, RR tracks washed out S of Midway. Little Deer Creek Dam failed due to extensive foundation seepage. |

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| | | | | | |
|---|-------------------------------|-----|----------------|---|--|
| Lower Duchesne and Jordan Rivers and tributaries (including Spanish Fork)...Great Salt Lake and tributaries between Ogden and Salt Lake City. | 04/10/1983 - 06/25/1983 | 0 | \$621 million | National Water Summary 1988-89- - Hydrologic Events and Floods and Droughts: U.S. Geological Survey Water-Supply Paper | Rapid melting of snowpack having maximum-of-record water content for June 1. Disaster declared by President. |
| Beaver River; Red Butte Creek; Spanish Fork; Jordan River. | 04/17/1984 - 06/20/1984 | 1 | \$41 million | National Water Summary 1988-89- - Hydrologic Events and Floods and Droughts: U.S. Geological Survey Water-Supply Paper | Runoff from greater than average snowpack for Apr. 1 and spring precipitation. |
| Wasatch County | 2/12/1986 | 0.9 | \$74,866 | Spatial Hazard Event and Losses Database | Heavy rains and snow (SHELDUS divides the damages and fatalities by the number of counties involved, hence the 0.9 deaths) |
| Wasatch County | 8/1/2005 | | \$1,993,482.00 | | FEMA Disaster Declaration 1598 |
| Wallsburg | 8/22/2018 | 0 | 0 | NOAA | Heavy rain caused a large debris flow over the Dollar Ridge Fire burn scar. The nearby Strawberry River saw a peak flow of 2000 cfs. |

*FEMA has paid Heber, Midway, and Wasatch County a total of \$39,288.90 for 9 Flood Insurance claims since 1978

Dams

Although Wasatch County has had only one lethal dam failure event in 1963, it does have some high risk

dams. Each has its own Emergency Action Plan and is inspected regularly. See waterrights.utah.gov DamView for more information.

| Name | Miles to first downstream town | Town name |
|---|--------------------------------|--------------|
| Center Creek No 1 | 8 | Center Creek |
| Center Creek No 2 | 11 | Center Creek |
| Center Creek No 3 | 5 | Center Creek |
| Deer Valley | 10 | Heber City |
| Dutch Canyon Dam | 0 | Midway |
| Jones | 9 | Heber City |
| Lindsay Lower | 8 | Heber City |
| Mill Hollow | 15 | Woodland |
| Wasatch County Lake Creek Debris Basin | 4 | Heber City |
| Witt Lake | 8 | Heber City |

Mitigation

Strategies include:

Incorporate flood mitigation into local planning by developing a floodplain management plan, mitigating hazards during planning, establishing a “green infrastructure” program to link greenways, and obtaining easements for water retention and drainage

Form partnerships to support floodplain management such as a regional watershed council or citizen committee to discuss issues and recommend projects.

Limit or restrict development in floodplain areas by providing incentives to develop elsewhere, protecting buffers around water resources, limiting impervious surfaced within developed parcels, or prohibiting development in the floodplain.

Adopt and enforce building codes and development standards such as the International Building Code and increasing “freeboard” requirements aka the number feet above base flood elevation that new building must have.

Improve stormwater management planning by completing stormwater drainage studies and master plans, regulating development in upland areas to reduce runoff, and encouraging low impact development techniques.

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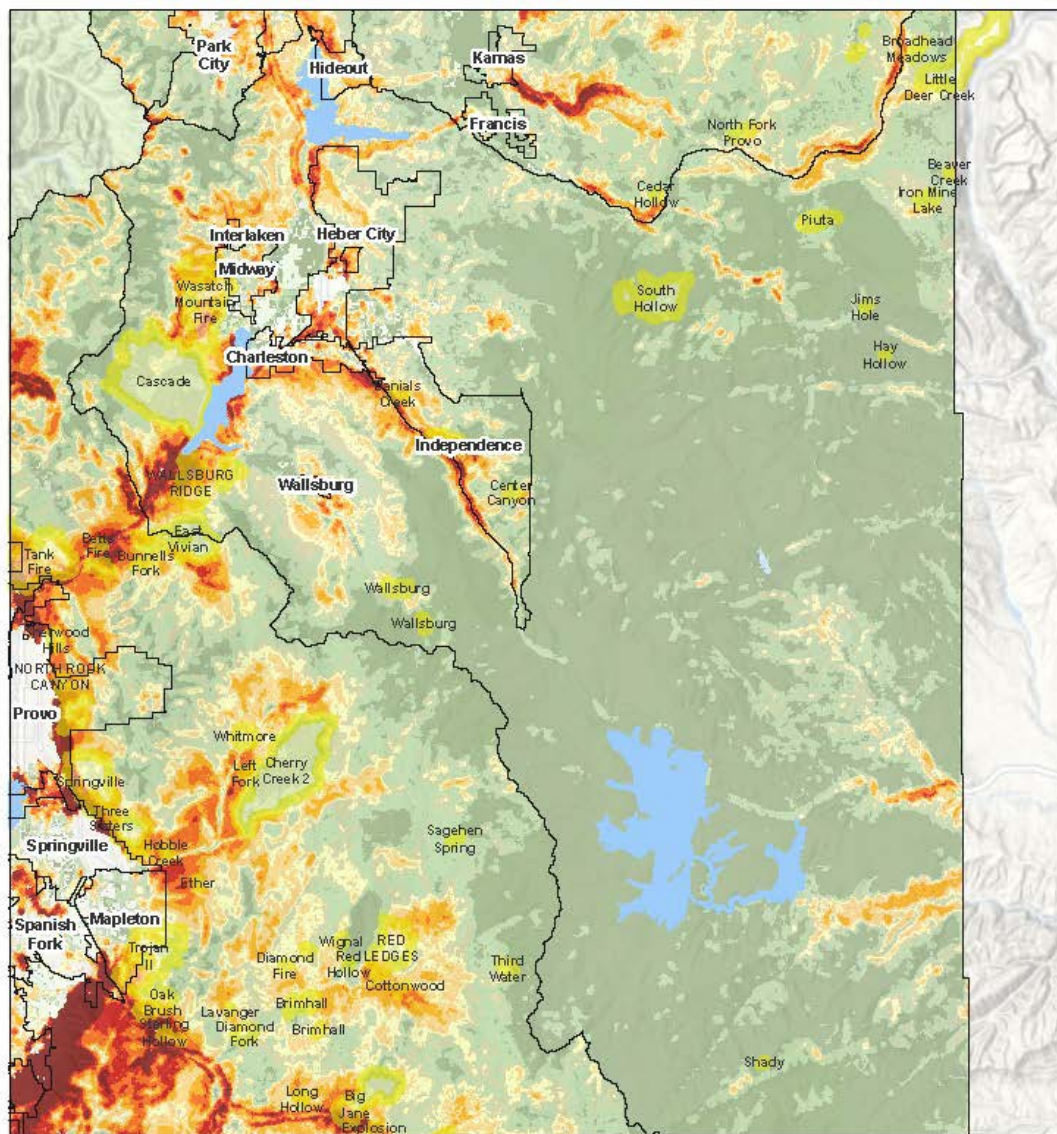
Adopt policies to reduce runoff such as more trees, on-site retention for stormwater and firefighting, and encouraging porous pavement and vegetation in parking areas.

Use natural systems such as preserving wetlands and riverbanks, restoring vegetation, acquire open space in targeted areas, and offer density bonuses to developers for leaving flood-prone areas vacant.

Protect and enhance infrastructure and critical facilities by elevating roads and bridges, floodproofing water treatment facilities, stabilizing shoulders and embankments, installing backup generators, expanding culverts, and require new critical facilities be built outside the floodplain.

Wildland Fire

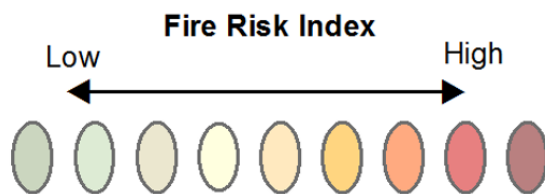
Fire Hazards in Wasatch County



12/29/2021

Pre-2015 Wildland Fires

1:500,000
0 3.25 6.5 13 mi
0 5 10 20 km



Sources: Esri, HERE, DeLorme, increment P. Corp., NPS, NRCAn, Ordnance Survey, © OpenStreetMap contributors, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodataspyseisen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user

MAG

Overview

Fire is a natural part of every ecosystem, but decades of wildland fire suppression during a historically cooler time period resulted in a buildup of fuels (vegetation) and development in wildfire-prone areas. With the 2010's megadrought, increased outdoor recreation, development pressure particularly along the Wasatch back (Wasatch and Summit counties), and climate change, the likelihood of damaging fire is increasing.

Though we have more assets in high-risk areas, the technology for early warning and fire-hardened homes has also advanced. This combined with better planning and enforcement can improve protection of assets already in place.

Profile

| | |
|-----------------------------------|---|
| Frequency | Multiple wildland fires occur in Wasatch County Every year. |
| Severity | Moderate |
| Location | Hillsides and mountainous areas, open grass and rangelands. |
| Seasonal Pattern | Summer and fall depending on weather conditions. |
| Duration | A few hours to a few weeks depending upon conditions |
| Speed of Onset | 1 to 48 hours |
| Probability of Future Occurrences | High Major Fires: 0.17 (300 acres and larger) All Fires: 0.33 (50 acres and larger) |

Development Trends

As development occurs on the bench areas of Wasatch County more homes will be in danger of wildfire. Communities need to make developers and homeowners aware of the danger. Cities should also require firebreaks and access roads along urban/wildland interfaces. Although development brings homes closer to areas of potential wildfire, it also brings water and access for firefighters closer to the urban fringe. Firewise community development principles, such as not storing firewood near homes, installing fire resistant roofing and cleaning debris from rain gutters will reduce potential losses.

History

Following are a few of the most significant since 2016. More than half of fires are human caused and even relatively small fires, if near critical facilities, can be quite costly. Fortunately, no lives have been lost and few structures destroyed in the past decade.

| Incident Name | Start Date | \$ Fighting Fire | Acres | Fire Cause | Specific Cause |
|----------------------|--------------------|-------------------------|--------------|-------------------|--------------------------|
| Upper Provo | July 31, 2020 | \$2,798,447 | 480 | Human | Default |
| Willow Creek | June 6, 2018 | \$816,531 | 1,301 | Natural | Lightning |
| Big Hollow | July 16, 2020 | \$611,385 | 438 | Human | Fire Arms Use |
| Saddle | May 12, 2020 | \$535,651 | 683 | Human | null |
| Red Ledge | July 9, 2016 | \$412,331 | 290 | Natural | Lightning |
| Deer Creek | July 11, 2018 | \$338,426 | 380 | Human | Exhaust/ Carbon Particle |
| Twin Peak | August 26, 2016 | \$302,382 | 40 | Natural | Lightning |
| Badger | June 29, 2016 | \$238,731 | 43 | Natural | Lightning |
| Beaver Canyon | June 24, 2017 | \$206,679 | 43 | Human | No Permit |
| Dry Hollow | October 5, 2020 | \$181,644 | 19 | Human | Default |
| Soldier Hollow | June 23, 2017 | \$144,541 | 28 | Undetermined | Other Small Equipment |
| Big Hollow | July 5, 2019 | \$135,448 | 77 | Human | Fire Arms Use |
| Deer Creek | September 14, 2019 | \$121,032 | 57 | Human | Uncontrolled/ Unattended |

The Wasatch Mountain Fire

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On August 24, 1990, the most devastating urban wildland interface wildfire to date occurred in Utah began just west of the Heber Valley and lasted for six days, burning nearly 3,000 acres until it was officially contained. The Wasatch Mountain Fire, as it is referred to now, killed two firefighters, destroyed 18 homes and cost the state approximately \$1.42 million in fire suppression. The overall losses were estimated to be about \$2 million. Following this wildfire, precautions were taken in Midway for flash flooding and the NRCS Emergency Watershed Protection Program (EWP) was implemented with emergency flash flood mitigation measures.

Due to this fire a grant was received to implement a Children's Wildfire Mitigation Awareness Program.

Communities At Risk

The following list consists of communities throughout Utah that have been determined by wildland fire officials to be at risk from wildland fire. The "Overall Score" represents the sum of multiple risk factors analyzed for each community. Examples of some risk factors are fire history, local vegetation, and firefighting capabilities. The Overall Score can range from 0 (No risk) to 12 (Extreme risk). This score allows Utah's fire prevention program officials to assess relative risk and create opportunities for communications with those communities on the list. Bolded communities are those with a Community Wildfire Preparedness Plan.

| Community Name | Overall Score | Community Name | Overall Score |
|-------------------------|---------------|-----------------------------------|---------------|
| Brighton Estates | 11 | Currant Creek | 9 |
| Cloud Rim | 11 | Jordanelle State Park Communities | 9 |
| Diamond Bar X | 11 | Pine Hollow | 9 |
| Heber Vally Camp | 11 | Wolf Creek Ranches | 9 |
| K&J Subdivision | 11 | 40 Dam Acres | 8 |
| Oak Haven | 11 | Bench Creek Ranches | 8 |
| Soapstone | 11 | Camp Piuta | 8 |
| Soldier Hollow | 11 | Daniels Summit | 8 |
| Soldier Summit | 11 | Hidout | 8 |
| Timberlakes | 11 | Independence | 8 |
| Tuhaye Subdivision | 11 | Soldier Creek | 8 |

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| | | | |
|-------------------------|----|---------------------|---|
| Big Hollow | 10 | Square Mtn Estates | 8 |
| Big Pole Estates | 10 | Walsburg | 8 |
| Deer Crest | 10 | Bryants Fork | 7 |
| Greenerhills | 10 | Canyon Meadows | 7 |
| Interlaken | 10 | Strawberry Valley | 7 |
| Lake Creek Farms | 10 | Heber City | 6 |
| Storm Haven | 10 | Midway | 6 |
| Swiss Mountain | 10 | Charleston | 4 |
| Alpine Meadows | 9 | | |

*Bolded Communities have developed a Community Wildfire Preparedness Plan with FFSL

Mitigation

Strategies include limiting development in the Wildland Urban Interface, fuel management, prescribed burns, hardening buildings against fire with appropriate shingles, vent covers to prevent embers entering home, maintaining an emergency water supply and appropriate water pressures, using appropriate plantings around homes, and much more. See wildfirerisk.org or FEMA's [Strategies handbook](#) for a more complete list.

The FFSL has also helped communities develop Community Fire Plans. According to the FFSL, the purpose of community fire planning is to:

- Empower communities to organize, plan, and take action on issues impacting community safety
- Enhance levels of fire resistance and protection to the community
- Identify the risks of wildland/urban interface fires in the area
- Identify strategies to reduce the risks to homes and businesses in the community during a wildfire

Landslide

Overview

Landslides are common natural hazards in Utah that often occur when the pull of gravity becomes greater than the cohesion of soil. Land movement can occur without warning and can result in destructive, costly outcomes. Various types of landslides in Utah are debris flows, slides, and rockfalls.

Steep slopes, mountainous terrain, rock types, and narrow, debris-choked canyons all contribute to our region's susceptibility to landslide hazards. Wildfire can remove stabilizing vegetation and increase landslide risk. Many hillslopes are prone to mass movement, particularly where development has taken place on existing landslides or where grading has modified a slope and reduced its stability. Therefore, historical landslides, prehistoric landslides, and steep slopes prone to mass movement must be thoroughly investigated prior to development activities, along with regional groundwater and landscape and other irrigation activities. Excessive irrigation can easily cause a neighbor near or on a slope to lose their home from a landslide by elevating the groundwater table.

Profile

| | |
|-----------------------------------|---|
| Frequency | Movement occurs nearly every year. |
| Severity | Moderate: several structures have been condemned. |
| Location | Along most benches and hillsides. |
| Seasonal Pattern | Spring when ground saturation is at its peak. |
| Duration | Minutes to years. |
| Speed of Onset | Seconds to days. |
| Probability of Future Occurrences | Specific data is unavailable. However, terrain and topography make the probability of future occurrences relatively high. |

Development Trends

As development continues on the foothills of the Heber Valley, more houses may be in danger of landslides. Increased analysis and geotechnical reports should become an integral part of the development and building process. An emphasis should also be put on ensuring proper drainage is developed. Reseeding wildfire areas, cuts and fills must also be a priority.

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Part of Wasatch County's success comes from the tourism sector, especially Wasatch Mountain State Park and surrounding resorts. Multi-million dollar homes are also located on slopes with picturesque views, with more on the way.

The Utah Interagency Technical Team (IAT) has worked with Wasatch County since 1999 due to extensive landslide complexes identified by the Utah Geological Survey in the Timber Lakes area and also in several mountain communities on the west side of the Heber Valley. In one such area of Timber Lakes, more than 200 homes are in a Landslide Study Area of the UGS. Thus, the UGS has completed "Landslide Investigation of Timber Lakes Estates, Wasatch County, Utah: Landslide Inventory and Preliminary Geotechnical-Engineering Slope Stability Analysis." These reports can be obtained from the UGS.

History

Landslide/Debris Flow

| Location | Date | Damages | Source |
|----------|------------|----------------|------------------|
| Wasatch | 12/27/1964 | \$500 | SHELDUS database |
| Wasatch | 1/1/1983 | \$8,603,666.52 | SHELDUS database |
| Wasatch | 1/1/1984 | \$1,471,256.97 | SHELDUS database |

**Spatial Hazard Event and Losses Database*

Note that only damaging events of a large magnitude are recorded by most databases

Mitigation

Nearly all recent landslides have occurred as reactivations of pre-existing landslides. Some strategies include:

Prohibit building on steep slopes, require thorough investigations and geotechnical studies for buildings in areas prone to landslides, and prevent over-irrigating. The use of very-low water xeriscape landscaping and/or smart irrigation controllers that adjust the amount of water applied to landscapes based on weather, plant/turf, and soil data, can significantly reduce the amount of excess water that percolates through the soil as groundwater and save money.

- Creating a plan to implement reinforcement measures in high-risk areas.

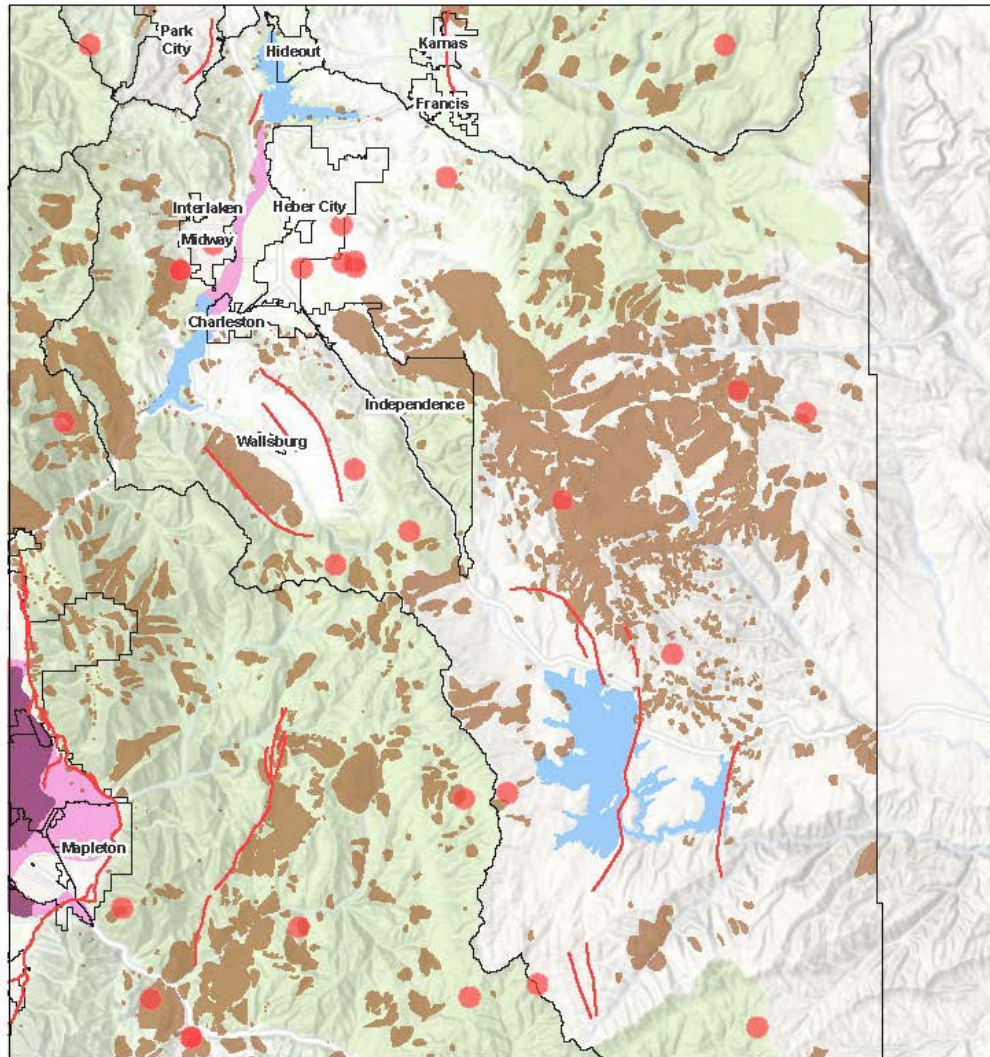
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- Defining steep slope/high-risk areas in land use and comprehensive plans and creating guidelines or restricting new development in those areas.
- Creating or increasing setback limits on parcels near high-risk areas.
- Locating utilities outside of landslide areas to decrease the risk of service disruption.
- Restricting or limiting industrial activity that would strip slopes of essential top soil.
- Incorporating economic development activity restrictions in high-risk areas.

See FEMA's [Strategies handbook](#) for a more complete list.

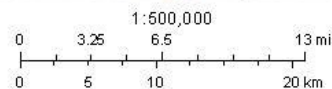
Earthquake

Earthquake Hazards in Wasatch County



12/29/2021

- Earthquake Faults
- Historic Earthquakes
- Landslide
- Liquefaction
 - Moderate
 - High



Sources: Esri, HERE, DeLorme, Incent P. Corp., NPS, NRCAn, Ordnance Survey, © OpenStreetMap contributors, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatasys, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user

MAG

Overview

Earthquakes occur when tectonic plates suddenly release tension built up over decades of strain. The Wasatch Fault has a strong earthquake about every 300 years and we are "due"

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for another. While some scenic homes are built directly on a fault, the way a building is constructed and the stability of soils underneath are a large factor in its resilience. Pre-1990's brick homes are usually unreinforced and very brittle, posing a great risk to occupants during a quake.

Development Trends

Due to Wasatch County's populated areas being mostly outside of the Wasatch Fault zone the severity of a potential earthquake is thought to be lower. Recent development trends have been to build on steeper slopes and benches which can lessen the potential for liquefaction but increase susceptibility to earthquake triggered landslides. Ultimately, new construction in the area equals more structures that are susceptible to earthquakes. Each construction project should be thoroughly reviewed for resistance to ground shaking and other earthquake related hazards.

Profile

| | |
|-----------------------------------|---|
| Frequency | Low -Events above 3.0 on the Richter scale are rare. Minor events (below 3.0) occur every month, but generally aren't felt. |
| Severity | High (up to 5.0) |
| Location | Multiple faults throughout the county particularly around Wallsburg. |
| Seasonal Pattern | None |
| Duration | 1 to 6 minutes excluding aftershocks. |
| Speed of Onset | Seconds |
| Probability of Future Occurrences | 93% probability that an earthquake Magnitude 5 or higher will occur somewhere along the Wasatch Front in the next 50 years, though effects would be diminished in Wasatch County. |
| Losses | \$538,000 annualized |

Development Trends

As development occurs in Wasatch County, more buildings and people will be in danger from earthquakes. However, newer buildings will be built to better standards, which will

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actually rate of damage. It is interesting to note that when most residential structures are engineered, out of the three categories of design criteria; seismic zone, wind shear and snow load; the design criteria for wind shear over-rules the other criteria.

History

There have been few events of note in recorded history within Wasatch County, but a 2020 event in Magna, Salt Lake County, gave the state a glimpse of what could happen. The State of Utah has also put a few earthquake scenarios through its HAZUS software, yielding loss estimates and maps of potential damages on the Wasatch Front.

Magna Earthquake: Days after the US shutdown to slow the COVID 19 pandemic, a 5.7 earthquake struck Magna township in Salt Lake County. The most noticable damages occurred in multi-story building such as the brick façade of a large commercial building, but several mobile homes were condemned and the Utah Department of Public Safety estimates \$70-100 million in public structure and infrastructure damage. Fortunately, no one was injured or killed and the public facilities were insured.

Recorded Earthquakes magnitude 3.0 or greater since 1950: Wasatch County

Earthquakes

| Location | Magnitude | Date |
|--|-----------|------------|
| 12 miles northeast of Strawberry Reservoir | 3.9 | 8/17/1963 |
| Near Heber | 3.8 | 10/1/1972 |
| Near Heber | 3.2 | 10/2/1972 |
| Near Heber | 3 | 12/24/1972 |
| Deer Creek Reservoir | 3.4 | 8/5/1973 |
| South of Heber | 3.4 | 8/19/1973 |
| W of Hanna, Wasatch County | 3.2 | 4/9/1988 |
| SE of Wallsburg, Wasatch County | 3.2 | 7/19/1999 |
| E of Heber, Wasatch County | 3 | 12/10/2000 |

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| | | |
|---|-----|------------|
| Near Currant Creek Peak, Wasatch County | 3 | 11/17/2003 |
| Near Strawberry Reservoir, Wasatch County | 3.5 | 6/11/2006 |
| 5km S of Francis, Wasatch County | 3.2 | 3/14/2014 |
| 15 km E of Independence | 3.7 | 6/9/2021 |

**United States Geologic Survey Earthquake Archives*

Mitigation

Strategies include restricting building on known fault lines or steep slopes, requiring geotechnical studies for buildings on problem soils, retrofitting critical infrastructure, educating homeowners on retrofitting options and securing items to the wall, requiring large/reinforced foundations or piers in liquefaction areas, and many more. See **Utah Earthquake Safety** or FEMA's **Strategies Handbook** for more details.

Severe Weather

Overview

Wasatch County's mountainous terrain makes it particularly susceptible to Winter Weather. Add to the topography those who seek snowy slopes for recreation and disaster can ensue, as seen in the table below. Avalanches, typically a voluntary risk, have caused the most deaths in Wasatch County. Winter Weather has caused the most injuries and property damage while Wind is responsible for the most crop damages of any type of severe weather. Wasatch County government actively emphasizes household accountability and preparation as individuals from less rural settings move into the area.

Development Trends

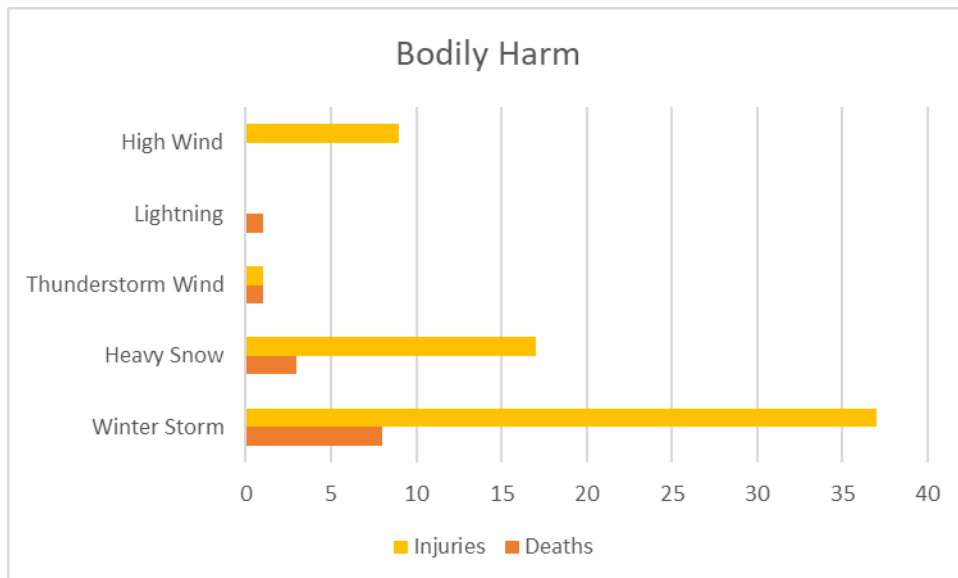
Rapid growth, particularly in the recreation sector, likely means more people will put themselves at risk for avalanches and it will take time for those migrating from less snowy areas to get used to travelling in the winter conditions.

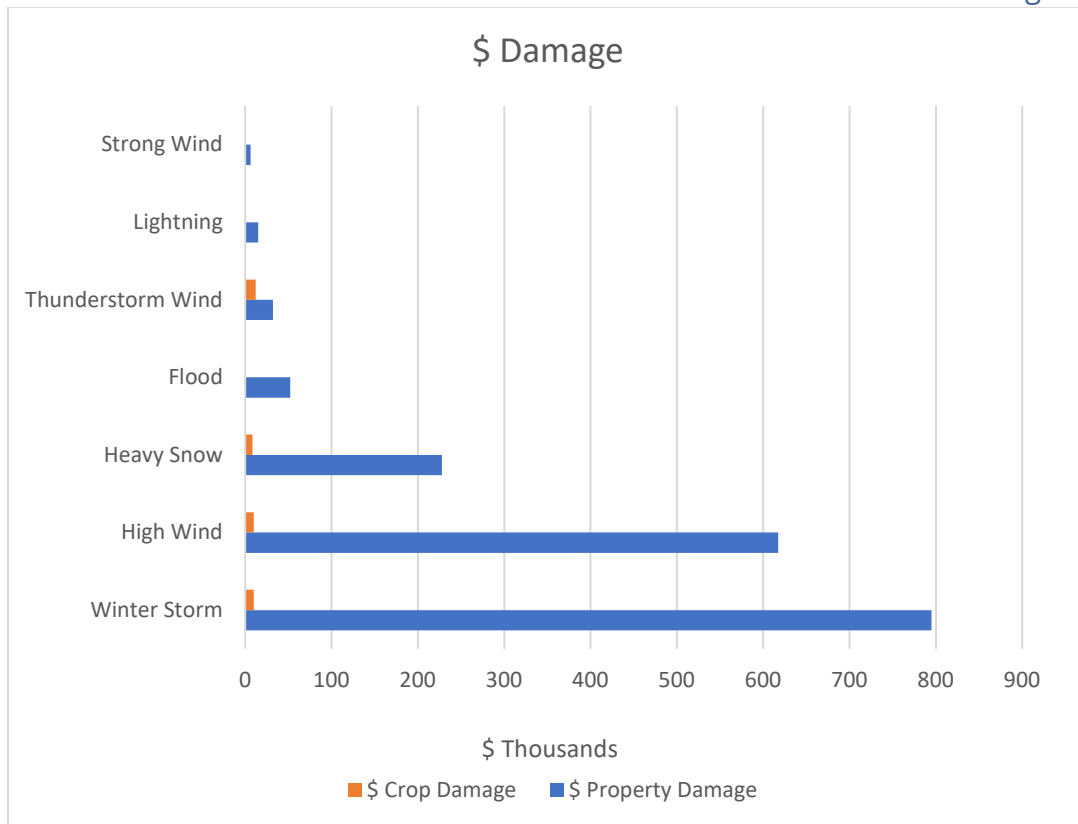
Profile

| | |
|-----------------------------------|---|
| Frequency | Frequent Multiple events happen each year. |
| Severity | Moderate |
| Location | Region wide with some locations more frequent due to geography. |
| Seasonal Pattern | All year depending upon the type of event. |
| Duration | Seconds to Days |
| Speed of Onset | Immediate |
| Probability of Future Occurrences | Highly probable. Winter Weather and Avalanche have the highest probability of occurrence of all weather hazards facing Utah County. |

History

| Row Labels | Deaths | Injuries | \$ Property Damage | \$ Crop Damage |
|--------------------|-----------|-----------|--------------------|----------------|
| Blizzard | 0 | 0 | 0 | 0 |
| Cold/wind Chill | 0 | 0 | 0 | 0 |
| Flash Flood | 0 | 0 | 0 | 0 |
| Flood | 0 | 0 | 52000 | 0 |
| Hail | 0 | 0 | 0 | 0 |
| Heavy Snow | 3 | 17 | 227750 | 8600 |
| High Wind | 0 | 9 | 617600 | 10000 |
| Lightning | 1 | 0 | 15000 | 0 |
| Strong Wind | 0 | 0 | 6200 | 0 |
| Thunderstorm | | | | |
| Wind | 1 | 1 | 32000 | 12000 |
| Winter Storm | 8 | 37 | 795000 | 10000 |
| Winter Weather | 0 | 0 | 0 | 0 |
| Grand Total | 13 | 64 | 1745550 | 40600 |



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Mitigation

For buildings: Adopt and enforce building codes related to roof snow loads and wind speeds. Require CO monitors.

For Infrastructure: Install redundancies in power lines, lightning protection and surge protection on critical infrastructure, and snow sheds over roadways.

For everyone: Educate homeowners on protecting water pipes during cold weather and travelling safely. Encourage participation in emergency alerts.

See FEMA's [Strategies handbook](#) for a more complete list.

Damage Assessment and Mitigation

Overview

Listed below are the damage assessments for each of the participating jurisdictions followed by an update of the community's mitigation strategies from the 2017 plan, after which are the strategies the community wishes to pursue in the course of this plan. Damage assessments were calculated using the methodologies mentioned in the Methods section. Strategies were developed by each community with assistance from MAG as requested. The subsequent county and city strategies reflect the advancement of local and regional goals and continue the community's vision for the security and prosperity of the region. These goals include:

- Reducing the impact of natural hazards on life, property, and preserving the environment
- Minimizing damage to infrastructure and services and protecting their ability to respond
- Preventing potential hazards from affecting area or mitigating its effects
- Increasing public awareness, capabilities and experience
- Ensuring the safety of citizens and visitors
- Enabling cooperation between citizens and emergency and public services
- Maintaining cooperation with, and adherence to, FEMA guidelines
- Developing zoning and other plans that decrease development in hazardous areas

The guiding factor in prioritizing mitigation strategies for local communities was the principle that mitigation should provide the ***greatest amount of good to the greatest number of people, after considering resources, staffing, and other constraints***. Probability of occurrence, past events, and damage estimates compiled during the risk assessment in this plan were heavily considered. Overall, each community individually considered their own capabilities, staffing, and resources as they prioritized their own mitigation strategies.

Wasatch County

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 3,457 | \$1,010,273 | 10.11 | 1.83 | 12.91 |
| Fire Risk High | 1,885 | \$889,640 | 16.93 | 14.65 | 6.04 |
| Fire Risk Moderate | 3,779 | \$1,589,447 | 45.44 | 30.36 | 4.94 |
| Flood 1% Yearly Probability | 123 | \$33,693 | 4.67 | 2.87 | 1.43 |
| Landslide | 1,165 | \$376,379 | 1.83 | 12.28 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Earthquake (Pre-1990 buildings) | 2,036 | \$506,405 | na | na | na |

Vulnerabilities: Wasatch County faces significant wildfire risk, especially with mountainous terrain that makes firefighting difficult. The secondary effects of fire, such as debris flows, clog channels and have the potential to cause flooding. The Dollar Ridge fire in 2018 required extensive and expensive work on Strawberry Reservoir.

The county is also concerned about hazardous materials being trucked through population centers.

| Mitigation Strategy | Hazard | Priority | Timeline | Estimated Cost | Potential Funding | Responsible Party |
|--|-------------|----------|----------|----------------|-----------------------|--------------------------------|
| Adopt 2021 NFIP maps and update ordinances | Flood | High | 1 yr | Staff time | Local Gov | Local Gov |
| Lake Creek evacuation road/fire break at Timber Lakes | Fire, All | High | 3 yrs | 1 million | Local Gov | Local Gov |
| Dollar Ridge Emergency Watershed Protection - Strawberry Reservoir erosion mitigation, bank armoring, debris removal | Flood, Fire | High | 1 yr | 6 million | Wasatch and Deuschane | Wasatch and Deuschane counties |

| | | | | | | |
|--|-----------------------------|-----|----------|---------------|---|---|
| | | | | | counties, NRCT grant | |
| Reduce auto dependency by providing Transit and Paratransit | Climate Change, Air Quality | Mod | Ongoing | | Local Gov, State grants | Local gov |
| Chipping and tree trimming program focusing on NE county | Fire | Mod | Ongoing | 300k | BRIC, Local Gov | State Wildland Urban Interface Coordinator, Local Gov |
| Educate homeowners on proper burn techniques and when burning is permitted | Fire | Mod | Ongoing | Staff time | BRIC, Local Gov | State Wildland Urban Interface Coordinator, Local Gov |
| Disaster education through social media | Drought, all | Mod | Ongoing | Staff time | Local Gov | Local Gov |
| Flood controls for Lake Creek and Center Creek flood channels | Flood | Mod | 5-10 yrs | 44 million | Heber, Wasatch, Independence, Grants | Heber, Wasatch, and Independence |
| Monitor air quality and discuss in County Air Quality Committee | Climate Change, Air Quality | Mod | Ongoing | \$200/monitor | Wasatch County Health Department, cities and towns, MAG | Local gov |

2017 Update

Protecting Current Residents and Structures (Wasatch County)

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | |
|---|--|----------|----------|----------------|---------------------------|-------------------|-----------------|
| Flooding/ Dam Failure | Reinforce stream and canal banks & remove debris to prevent flooding | High | 2 years | TBD | Local Cash, Grants | Local Government | Yes and Ongoing |
| Earthquake, Flood, Fire, Severe Weather | Education | Med | Ongoing | Minimal | Local Cash | Local Government | Yes and ongoing |
| Flood | Encourage NFIP Participation | High | Ongoing | Minimal | Local Cash | Local Government | Yes and ongoing |

Protecting Future Residents and Structures

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | |
|----------|--|----------|----------|----------------|---------------------------|-------------------|-----|
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk | Medium | 1 year | Minimal | Local Cash, Grants | Local Government | Yes |
| Floods | Prohibit building in the floodplain or manipulating floodplain without consent | High | Ongoing | Minimal | Local Cash | Local Government | Yes |

Central Utah Water Conservancy District

Due to the sensitive nature and complexity of CUWCD assets, they performed an independent risk analysis to create and prioritize the following mitigation strategies. Contact Blake Buehler of CUWCD for more information.

Vulnerabilities: The future development of the CUWCD water system will mainly be with a strong emphasis on water conservation, planning of needed additional regional water supply facilities, and incorporation of natural hazard mitigation. The District will also continue in its current efforts to address and incorporate natural hazard mitigation (i.e., seismic upgrades/standards, lightning protection, backup power, wildfire – both direct and indirect effects, etc.) into future design and construction projects whether they are for new facilities or for capital replacement projects. The following proposal is to help fulfill said efforts.

| Priority (out of 18) | Mitigation Package: Facilities | BCR | Mitigation Description | Outside Contractor | In- House | CUWCD O&M | CUWCD CRP | CUWCD CIP | FEMA Grant | Timeline | Cost |
|----------------------------|---|-------|---|-----------------------|--------------|--------------|--------------|--------------|---------------|---------------|-----------|
| 8 | Strawberry Pkg #2 (Lightning): <i>Current Creek Dam</i> | 9.1 | Nonstructural Retrofit | X | | | X | | | 6-10 Years | \$49,311 |
| 11 | Strawberry Pkg #4 (Lightning): <i>Vat Diversion</i> | 10.2 | Nonstructural Retrofit | X | | | X | | X | 6-10 Years | \$43,613 |
| 12 | WCWEP Proj #1 (Earthquake): <i>Office Bldg & Maintenance Bldg</i> | 0.01 | Structural & Nonstructural Retrofit | X | | | X | | | 6-10 Years | \$228,774 |
| 13 | Strawberry Pkg #5 (Earthquake): <i>Currant Tunnel, Vat Diversion</i> | 0.003 | Nonstructural Retrofit | X | X | X | | | | 6-10 Years | \$12,328 |
| 16 | Strawberry Pkg #6 (Landslide): <i>Currant, Stillwater, & Vat Tunnels</i> | - | Geological Investigation | X | | | X | | | 6-10 Years | \$262,187 |
| 17 | General Pipeline #1 - Stockpile Materials | - | Material Stockpiling | | X | X | X | | | 6-10 Years | \$755,950 |

| | | | | | | | | | | | |
|----|--------------------------------|---|----------|---|---|---|--|--|--|------------|----------|
| 18 | General Pipeline #2 - Training | - | Training | X | X | X | | | | 6-10 Years | \$19,538 |
|----|--------------------------------|---|----------|---|---|---|--|--|--|------------|----------|

Charleston

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 142 | \$54,666 | 2.37 | 0.00 | 0.00 |
| Fire Risk High | 7 | \$3,221 | 0.16 | 0.00 | 0.00 |
| Fire Risk Moderate | 58 | \$15,830 | 1.17 | 0.00 | 0.00 |
| Flood 1% Yearly Probability | 27 | \$6,923 | 0.49 | 0.00 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Earthquake (Pre-1990 buildings) | 157 | \$58,373 | na | na | na |

Statement of Vulnerabilities: Charleston is concerned about fire in the south part of town and hopes to direct development along the I-89 corridor rather than in those hazard-prone areas.

| Mitigation Strategy | Hazard | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party |
|---|--------|----------|----------|----------------|---------------------------|---------------------------|
| Work with Wasatch County to adopt enhanced fire ordinances, especially during the fire season | Fire | High | Yearly | Staff time | Local gov | Local gov, Wasatch County |

| | | | | | | |
|---|-------------|------|------------|------------|-------------------|--------------------------|
| Adopt Flood Insurance Rate Maps as FEMA updates them and incorporate into codes and ordinances | Flood | High | As updated | Staff time | Local gov | Local gov, FEMA |
| Work with Gravel quarry to divert floods from quarry and property through yearly culvert cleaning | Flood | High | Ongoing | None | Gravel Quarry | Local gov, Gravel Quarry |
| Encourage development along the I-89 corridor rather than in fire-prone southern Charleston | Fire | High | Ongoing | Staff time | Local gov | Local gov |
| Remove vegetation around Daniel's Creek Bridge | Flood | Mod | Ongoing | 2-5k | Local gov | Local gov |
| Consider a Wildland Urban Interface code | Fire | Mod | 1-2 yrs | Staff time | Local gov | Local gov |
| Look into backup generator for City Hall | All | Mod | 1-2 yrs | TBD | Local gov, Grants | Local gov |
| Post fire and flood maps in Town Hall | Fire, Flood | Mod | 1 yr | Staff time | Local gov | Local gov, MAG |
| Trim trees along major roads | Fire | Mod | Ongoing | 2-5k | Local gov | Local gov |

2017 Update

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | |
|-----------------------|---|----------|----------|----------------|---------------------------|---|--------------|
| Flooding/ Dam Failure | Remove vegetation around Daniels Creek Bridge | High | 2 years | TBD | Local Cash, UTA | Local Government, UTA | Yes, ongoing |
| Flooding/ Dam Failure | Work with Gravel quarry to divert floods from quarry and property | High | 2 years | TBD | Local Cash, Gravel Quarry | Local Government, Gravel Quarry, Daniel Creek Tributary | Yes, ongoing |

Protecting Future Residents and Structures

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | |
|-----------------------|---|----------|----------|----------------|---------------------------|---|-----|
| Flooding/ Dam Failure | Remove vegetation around Daniels Creek Bridge | High | 2 years | TBD | Local Cash, UTA | Local Government, UTA | Yes |
| Flooding/ Dam Failure | Work with Gravel quarry to divert floods from quarry and property | High | 2 years | TBD | Local Cash, Gravel Quarry | Local Government, Gravel Quarry, Daniel Creek Tributary | Yes |

Daniel

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Fire Risk High | 49 | \$8,930 | 0.37 | 0.00 | 0.00 |
| Fire Risk Moderate | 67 | \$17,433 | 0.49 | 0.00 | 0.00 |
| Flood 1% Yearly Probability | 17 | \$5,262 | 0.00 | 0.00 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Earthquake (Pre-1990 buildings) | 287 | \$74,764 | na | na | na |

Statement of Vulnerabilities: The recent Storms Haven annexation has brought 50+ residents into city boundaries. That subdivision has no fire protection and needs a new water tank and expanded culverts. The city works closely with Wasatch County and Central Utah Water Conservancy District to plan for fire protection and improved water systems. There is also development pressure in the 100 yr floodplain, particularly from out-of-town buyers who don't realize they cannot build in the floodplain.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding Source | Responsible Party |
|---|---------------------------|----------|----------|-------------|--------------------------|---------------------------------------|
| Work with CUWCD to expand water tank for annexed Stormhaven | Fire, Drought | High | 2-5 yrs | 3.5 million | CUWCD, Local gov, grants | CUWCD, Local gov |
| Expand culverts and implement erosion control along Daniel Creek in the Stormhave section | Flood | High | 1-3 yrs | TBD | Local cash, grants | Local gov |
| Rebuild bridge at Big Hollow Road | Flood | High | 4 yrs | 50k | Local cash, grants | Wasatch County, Local gov |
| Create early-warning system for Daniel residents independent of County system | All | High | 1-2 yrs | Staff time | Local gov | Local gov |
| New development must elevate structures above base flood level | Flood | High | Ongoing | 0 | Developers | Developers, Local gov |
| Utah County Fire Chief must sign off that any development in Wildland Urban Interface meets requirements such as defensible space, distance to fire hydrants, interior fire suppression, etc. | Fire | High | Ongoing | Staff time | Developers, Local gov | Developers, Local gov, Wasatch County |
| Examine existing water tank for seismic soundness, build new tank | Earthquake, Fire, Drought | High | 2-5 yrs | TBD | Local gov | Local gov |
| Build wellhouse to move instrumentation inside | All | Mod | 2-5 yrs | 500k | Local gov, grants | Local gov |

| | | | | | | |
|--|-----------------------------|-----|----------|------------------------|---------------------------|-----------------------|
| 5 acre/lot minimum in town, 160 acres/lot on hillside due to lack of wastewater system | Fire | Mod | Ongoing | 0 | Local gov | Local gov |
| Install sewer system that ties into Twin Creeks line 2 miles away | All | Mod | 5-10 yrs | \$5 million | Local gov, bonds, grants | Local gov |
| New development is required to turn water shares over to city | Drought | Mod | Ongoing | 0 | Developers, Local gov | Developers, Local gov |
| Ensure that realtors have informed buyers when they purchase land in the 100 yr floodplain | Flood | Mod | Ongoing | 0 | Local gov | Local gov |
| Maintain open space and farming areas, allow urban farming | Climate Change, Air Quality | Mod | Ongoing | Depends on parcel cost | Local gov, Farming grants | Local gov |

2017 Update

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party |
|----------------------------|--|----------|----------|----------------|---------------------------|-------------------------|
| Fire/Landslide | Work with CUWCD to expand water tank, plant vegetation to prevent erosion on nearby slopes | High | 2 years | TBD | Local Cash | Local Government, CUWCD |
| Flooding/ Dam Failure | Expand culverts and implement erosion control along Daniel Creek | High | 2 years | TBD | Local Cash, Grants | Local Government |
| Severe Weather, Landslides | Move instrumentation inside and underground | Med | 4 years | TBD | Local Cash | Local Government |
| Flooding | Rebuild bridge at Big Hollow Rd | High | 4 years | \$33,000 | Local Cash | Local Government |

| | | | | | | |
|----------------------------|--|------|---------|-----|--------------------|-------------------------|
| Flooding | Maintain/Reinforce Canals | High | Ongoing | TBD | Local Cash | Local Government |
| Severe Weather, Landslides | Move instrumentation inside and underground | Med | 4 years | TBD | Local Cash | Local Government |
| Flooding/ Dam Failure | Expand culverts and implement erosion control along Daniel Creek | High | 2 years | TBD | Local Cash, Grants | Local Government |
| Fire/Landslide | Work with CUWCD to expand water tank, plant vegetation to prevent erosion on nearby slopes | High | 2 years | TBD | Local Cash | Local Government, CUWCD |

Heber City

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 2,240 | \$581,598 | 3.04 | 3.45 | 0.56 |
| Fire Risk High | 502 | \$158,801 | 1.73 | 0.36 | 0.09 |
| Fire Risk Moderate | 789 | \$274,785 | 1.17 | 1.41 | 1.59 |
| Flood 1% Yearly Probability | 5 | \$960 | 0.07 | 0.23 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Earthquake (Pre-1990 buildings) | 1,615 | \$380,464 | na | na | na |

Statement of Vulnerabilities: Heber city is concerned about future annexations in fire and landslide-prone areas.

| Mitigation Strategy | Hazard | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party |
|---------------------|--------|----------|----------|----------------|---------------------------|-------------------|
|---------------------|--------|----------|----------|----------------|---------------------------|-------------------|

| | | | | | | |
|--|-----------------------------|------|----------|-------------------|--------------------------------------|----------------------------------|
| No-burn days during fire and inversion seasons | Climate Change, Air Quality | High | Ongoing | Staff time | Local gov | Local gov |
| Adopt 2021 NFIP maps and update ordinances | Flood | High | 1 yr | Staff time | Local Gov | Local Gov |
| Adopt sensitive lands overlay | Landslide, Fire, Flood | High | 1 yr | Staff time | Local Gov | Local Gov |
| Sensitive Lands ordinance | All | High | 1 yr | Minimal | Local Gov | Local Gov |
| Re-route truck traffic away from Main St | Hazardous Materials spill | High | 5-10 yrs | TBD, EIS underway | UDOT, Local Gov | UDOT, Local Gov |
| Lawn requirements, allow more xeriscaping | Drought, all | Mod | 2018 | Staff time | Local Gov | Local Gov |
| Tree trimming | Flood, Fire | Mod | Ongoing | | Local Gov | Public Works |
| Flood controls for Lake Creek and Center Creek flood channels | Flood | Mod | 5-10 yrs | 43 million | Heber, Wasatch, Independence, Grants | Heber, Wasatch, and Independence |
| Education, including Ready program event on Main St, Red Ledges outreach | All | Mod | Ongoing | Minimal | Local Gov | Local Gov |
| Education through Social Media | Drought, all | Mod | Ongoing | Staff time | Local Gov | Local Gov |

2017 Update

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding | Responsible Party | Completed? |
|--------------------------|---|----------|----------|----------------|--------------------|------------------------------|-----------------------|
| Flooding/ Dam Failure | Promote NFIP participation. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Flooding/ Dam Failure | Improve and construct drainage and flood control infrastructure. | High | Ongoing | TBD | Local Cash, Grants | CUP, Local Government | Yes |
| Earthquake | Inventory and upgrade public buildings and critical facilities for seismic standards. | High | 3 years | TBD | Grants | FEMA | No - cost prohibitive |

| | | | | | | | |
|--------------------------|---|--------|---------|---------|--------------------|------------------------------|-------------------------|
| Wildfire | Educate homeowners on FIREWISE practices. | Medium | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Medium | 1 year | TBD | Local Cash, Grants | Local Government, UGS | Yes |
| All | Promote the Community Emergency Response Team (CERT) | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes |
| Flooding/ Dam Failure | Promote NFIP participation. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Flooding/ Dam Failure | Improve and construct drainage and flood control infrastructure. | Medium | Ongoing | TBD | Local Cash, Grants | CUP, Local Government | Yes, ongoing |
| Earthquake | Promote earthquake awareness and preparation. | Medium | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes |
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk. | Medium | 1 year | Minimal | Local Cash, Grants | Local Government | Yes |
| Landslide | Adopt ordinances that avoid development of areas prone to landslides. | Medium | Ongoing | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes, hillside ordinance |
| All | Promote Community Emergency Response Team (CERT) | High | Ongoing | Minimal | Local Cash, Grants | Local Government | Yes |

Hideout

| Loss Estimates | | | | | |
|--------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Fire Risk High | 47 | \$31,752 | 1.10 | 1.61 | 0.00 |
| Fire Risk Moderate | 141 | \$74,516 | 1.54 | 0.93 | 0.00 |

| | | | | | |
|-------------------------------|---|-----|------|------|------|
| Flood 1% Yearly Probability | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |

Statement of Vulnerabilities: Hideout's largest risk is wildfire and we do not currently have mitigating zoning or building codes in place. We need to adopt better requirements to prevent the spread of wildland fire and educate existing residents on firewise practices.

| Mitigation Strategy | Hazard | Priority | Timeline | Estimated Cost | Potential Funding | Responsible Party |
|---|------------------------|----------|----------|----------------|---------------------------|---------------------------|
| Educate homeowners on firewise practices such as having defensible space | Fire | High | Ongoing | Staff time | Local gov, Wasatch County | Local gov, Wasatch County |
| Update code to protect against wildfire in new development, including multiple evacuation routes, defensible space, fire-resistant building materials, etc. | Fire | High | 1-2 yrs | Staff time | Local gov | Local gov |
| Participate in an emergency notification system such as Summit County's Code Red Alerts | All | High | 1-2 yrs | TBD | Local gov | Local gov, Summit County |
| Require geotechnical studies for new construction | Landslide | Mod | Ongoing | Staff time | Local gov, Developers | Local gov, Developers |
| Assess town and HOA landscaping requirements to permit more xeriscaping without allowing noxious weeds | Drought, Noxious weeds | Mod | 1-2 yrs | Staff time | Local gov | Local gov |
| Study water and sewer systems for deficiencies and determine if/where backup generators are needed | Flood, all | Mod | 1-2 yrs | 5-10k | Local gov | Local gov |
| Work with Summit County to determine if there are slopes where a wildfire might trigger debris flows | Debris Flow | Mod | 2-3 yrs | TBD | Local gov, | |
| Completing an inventory of locations where critical facilities, other buildings, and infrastructure are | Landslide/ Earthquake | Moderate | 1-2 yrs | 5-10k | Local gov | Local gov |

| | | | | | | |
|---|--|--|--|--|--|--|
| vulnerable to landslides and determine any action required. | | | | | | |
|---|--|--|--|--|--|--|

2017 Update

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | Completed? |
|------------|---|----------|----------|----------------|---------------------------|----------------------------|---|
| Seismic | Inventory current critical facilities for seismic standards. | High | 2 years | TBD | Local Cash, Grants | Local Government | Not necessary. Almost everything built after 2000 |
| Wildfire | Educate homeowners on FIREWISE practices. | Medium | Ongoing | Minimal | Local Cash, Grants | Local Government | No, lack of staff to initiate |
| Landslide | Completing an inventory of locations where critical facilities, other buildings, and infrastructure are vulnerable to landslides and determine any action required. | Med | 2 years | TBD | Local Cash, Grants | Local Government, UGS | Partly complete, will finish with Infrastructure committee and TO engineering |
| Earthquake | Evaluate necessity to implement additional building codes for Promote earthquake awareness and preparation. | High | 2 years | Minimal | Local Cash, Grants | Fire Department, UGS, USGS | Not necessary, most of town and all critical facilities built after 2000 |
| Wildfire | Implement Wildfire Urban Construction ordinance. | High | 1 year | Minimal | Local Cash, Grants | Local Government | Not yet, lack of staff |

| | | | | | | | |
|-----------|--|-----|---------|-------------|-----------------------|-------------------------|--|
| Landslide | Determine if current vulnerable areas dictate a need to implement additional town ordinances or building codes based on planned buildings or facilities. | Med | 3 years | Minima l | Local Cash, Grants | Local Governme nt | Not yet, working on firewise ordinances |
|-----------|--|-----|---------|-------------|-----------------------|-------------------------|--|

Independence

| Loss Estimates | | | | | |
|-------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 17 | \$2,608 | 0.20 | 0.00 | 0.00 |
| Fire Risk High | 0 | \$0 | 1.70 | 0.00 | 0.00 |
| Fire Risk Moderate | 9 | \$1,659 | 1.80 | 0.00 | 0.00 |
| Flood 1% Yearly Probability | 1 | \$80 | 0.10 | 0.00 | 0.00 |
| Landslide | 18 | \$11,075 | 0.60 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |

Statement of Vulnerabilities: Independence would like to pave the main road leading to the National Forest and keep it open year-round for fire management and recreation. Preserving open space and limiting development in the wildland-urban interface are very important for mitigating fires and keeping the natural beauty and recreation opportunities that make Independence an attractive place to live. Clustering development along main roads is part of this effort. Independence does not currently have a water system, sewer system, or critical facilities. It will be important to plan for these as development occurs to ensure sufficient quality water.

| Mitigation Strategy | Hazard | Priority | Timeline | Estimated Cost | Potential Funding | Responsible Party |
|---|--------|----------|----------|----------------|-------------------|-------------------|
| Rewrite codes and ordinances to include sensitive lands, hillsides, | All | High | 2-3 yrs | Staff time | Local gov | Local gov |

| | | | | | | |
|---|------------|------|------------|------------|--------------------------------------|----------------------------------|
| ridgelines, and wildland-urban interfaces | | | | | | |
| Work with Wasatch County to adopt enhanced fire ordinances, especially during the fire season | Fire | High | Yearly | Staff time | Local gov | Local gov, Wasatch County |
| Adopt Flood Insurance Rate Maps as FEMA updates them and incorporate into codes and ordinances | Flood | High | As updated | Staff time | Local gov | Local gov, FEMA |
| Flood controls for Lake Creek and Center Creek flood channels | Flood | Mod | 5-10 yrs | 45 million | Heber, Wasatch, Independence, Grants | Heber, Wasatch, and Independence |
| Pave main road to national forest and open year-round | Fire, All | Mod | 2-3 yrs | TBD | Local gov | Local gov |
| Trim trees along major roads | Fire | Mod | Ongoing | 10k/yr | Local gov | Local gov |
| Cluster development to preserve open space | Fire | Mod | Ongoing | Staff time | Local gov | Local gov |
| Plan for city-owned water and sewer system as development occurs or work with adjacent special service districts to do so | Drought | Mod | Ongoing | Staff time | Local gov | Local gov |
| Work with youth groups on fire mitigation activities | Fire | Mod | Ongoing | Staff time | Local gov | Local gov |
| Educate residents on low-cost retrofit options when they come in for remodelling permits | Earthquake | Mod | Ongoing | Staff time | Local gov | Local gov |
| | | | | | | |

2017 Update

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding | Responsible Party | Completed? |
|--------|---|----------|----------|----------------|-------------------|-------------------|--------------|
| Fire | Partner with youth organizations to establish zones for fire safety | High | 1 year | Minimal | Local Government | Local Government | Yes |
| Fire | Tree trimming/clearing project | High | 1 year | Minimal | Local Government | Local Government | Yes, ongoing |

Protecting Future Residents and Structures

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | |
|----------|--|----------|----------|----------------|---------------------------|-------------------|------------------|
| Flooding | Encourage NFIP participation, follow FEMA recommended floodplain ordinance | High | 1 year | Minimal | Local Government | Local Government | Yes |
| Fire | Adopt Wildland Fire Urban Interface Code | Med | 1 year | Minimal | Local Government | Local Government | No - in progress |

Interlaken

| Loss Estimates | | | | | |
|----------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Fire Risk High | 13 | \$6,038 | 0.00 | 0.00 | 0.00 |

| | | | | | |
|-------------------------------|----|----------|------|------|------|
| Fire Risk Moderate | 99 | \$22,124 | 0.00 | 0.00 | 0.00 |
| Flood 1% Yearly Probability | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |

Statement of Vulnerabilities: Interlaken has had several close calls with fire in the past decade. There is currently only 1 road in and out of town, but developers will be required to build 3-4 more routes with subdivisions in the near future. Interlaken would also like a robust emergency notification system including a siren. The town's topography amplifies sound and past fires have started close enough to town that quick notification is essential.

Interlaken has ongoing vegetation removal, firewise code, and other requirements that should mitigate fire.

| Mitigation Strategy | Hazard | Priority | Timeline | Cost | Funding source | Responsible Party |
|--|-----------|----------|----------|-----------------------------|---------------------------|---------------------------|
| Remove green waste | Fire | High | Biannual | 6k and ~200 volunteer hours | Wasatch County, Local gov | Wasatch County, Local gov |
| No open fires at any time, sprinklers required in new construction and remodels | Fire | High | Ongoing | 0 | Interlaken | Interlaken |
| Maintain calling tree as well as participate in Wasatch County's emergency notification system | All | High | Ongoing | 0 | Interlaken | Interlaken |
| Require sufficient roads for evacuation with new development | Fire, All | High | 2-4 yrs | 0 | Developers | Developers |
| Sensitive lands overlay requires geotech survey for >25% slope | Landslide | Mod | Ongoing | 0 | Interlaken, Developer | Interlaken, Developer |
| 1/2 acre lot minimum with 30' setback puts fewer homes in WUI | Fire | Mod | Ongoing | 0 | Interlaken | Interlaken |

| | | | | | | |
|--|------------|-----|---------|------------|-------------------|------------|
| Require annexed land to come with water rights sufficient for development | Drought | Mod | Ongoing | 0 | Interlaken | Interlaken |
| New construction must submit landscaping without large turf areas | Drought | Mod | Ongoing | 0 | Interlaken | Interlaken |
| Maintain firewise community status | Fire | Mod | Ongoing | Staff Time | Interlaken | Interlaken |
| Purchase a siren loud enough for entire town to hear | All | Mod | 1-2 yrs | 5k | Local gov, Grants | Local gov |
| Assign block captains and town officials to manage traffic in the event of an evacuation | Earthquake | Mod | Ongoing | 0 | Local gov | Local gov |
| Update 2002 Emergency Response Plan | All | Mod | 1-2 yrs | TBD | Interlaken | Interlaken |

2017 Update

| Action | Hazard | Priority | Timeline | Estimated Cost | Potential Funding | Responsible Party | Completed? |
|--|-----------|----------|----------|----------------|-------------------|-----------------------------|---|
| Develop an emergency response plan for wildfires | Wildfire | High | 1 year | Minimal | Local Cash | Local Government, residents | No, but did become a Firewise community |
| Incorporate FIREWISE landscaping recommendations into local ordinances in applicable areas | Wildfire | Medium | 1 year | Minimal | Local Cash | Local Government | Yes |
| Require slope stability analyses for susceptible areas in local land use codes | Landslide | Medium | 1 year | Minimal | Local Cash | Local Government | Yes |

Midway

| Loss Estimates | | | | | |
|----------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |

| | | | | | |
|---------------------------------|-------|-----------|------|------|------|
| Dam Failure | 362 | \$120,354 | 1.29 | 0.46 | 0.00 |
| Fire Risk High | 238 | \$71,769 | 0.27 | 0.09 | 0.00 |
| Fire Risk Moderate | 1,075 | \$307,450 | 0.98 | 0.47 | 0.00 |
| Flood 1% Yearly Probability | 10 | \$885,791 | 0.08 | 0.12 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Earthquake (Pre-1990 buildings) | 720 | \$167,393 | na | na | na |

Statement of Vulnerabilities: Wildland Fire is Midway's biggest vulnerability. Though Midway has few homes in high risk areas, cabins in Wasatch County land nearby are cause for concern. Midway monitors water tanks on County land for use in fire suppression. There are 300-400 homes on the west side that need a second access route.

There is canyon flooding not identified in the NFIP. Midway is working to upgrade roads and culverts to mitigate impacts.

Midway has several older buildings that could be destroyed in an earthquake, including the Town Hall and Community Center.

| Mitigation Strategy | Hazard | Priority | Timeline | Estimated Cost | Funding Source | Responsible Party |
|--|------------|----------|----------|----------------|----------------|-------------------|
| Promote NFIP participation | Flood | High | Ongoing | minimal | Local gov | Local gov |
| Enforce floodplain ordinance that requires a 50' setback from new development | Flood | High | Ongoing | Staff time | Local gov | Local gov |
| Complete Seismic evaluation of the Town Hall, Community Center, and generators | Earthquake | High | 1-2 yrs | TBD | Midway City | Midway City |
| Fire district must approve site plans, requiring defensible space, appropriate plantings and construction materials in new development | Fire | High | Ongoing | Staff time | Midway city | Midway City |

| | | | | | | |
|--|-------------------------------|------|-----------------|------------|---|---|
| Install secondary water meters on springs and wells to monitor input and new development | Drought | High | 1-2 yrs/ongoing | Unknown | Midway Irrigation company (private company), developers | Irrigation company, developers |
| Create and maintain backcountry trails that can serve as fire access roads in Wasatch Mountain State Park and new hillside development | Fire | Mod | 5 | TBD | Wasatch Mountain State Park, Wasatch County, Midway, Developers, grants | Wasatch Mountain State Park, Wasatch County, Midway, Developers, grants |
| Participate in Shakeout and yearly County Disaster Drills | Earthquake, all | Mod | Yearly | Minimal | Midway City | Midway City, Wasatch County |
| Carbon date well water to find regeneration rate | Drought | Mod | 1 yr | 133,000 | Midway City | Midway City |
| Require that new subdivisions give secondary water rights to Midway City | Drought | Mod | Ongoing | 0 | Midway City | Midway City |
| Educate residents on localscapes | Drought, Fire, Climate Change | Mod | Ongoing | Staff time | Midway City | Midway City |

2017 Update

| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding Sources | Responsible Party | Completed? | If not, why not? |
|--------------------------|---|----------|----------|----------------|---------------------------|------------------------------|------------|---------------------------|
| Flooding/ Dam Failure | Promote NFIP participation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | No | Lack of information |
| Earthquake | Inventory current critical facilities, esp. City Hall, for seismic standards. | High | 2 years | TBD | Local Cash, Grants | Local Government | No | Talked about, in progress |

| | | | | | | | | |
|--------------------------|---|------|---------|---------|--------------------|------------------------------|----|---------------------------------------|
| Wildfire | Educate homeowners on FIREWISE practices by passing out information on 24 July. | High | Ongoing | Minimal | Local Cash, Grants | Local Government | No | Lack of information |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Low | Ongoing | TBD | Local Cash, Grants | Local Government, UGS | No | Limited staff |
| Flooding/ Dam Failure | Update Flood and Inundation mapping and incorporate them into general plans and ordinances. | High | 2 years | TBD | Local Cash, Grants | Local Government, FEMA, UDHS | No | Maps updated, need to be incorporated |
| Earthquake | Promote earthquake awareness and preparation by providing information at 24 July activities. | Med | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | No | Need more information |

Wallsburg

| Loss Estimates | | | | | |
|---------------------------------|-------------|----------------------------|------------------|--------------------|----------------|
| Hazard | # Buildings | Building value (thousands) | Major Road Miles | Transmission Miles | Railroad Miles |
| Dam Failure | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Fire Risk High | 42 | \$6,276 | 0.25 | 0.00 | 0.00 |
| Fire Risk Moderate | 31 | \$3,590 | 0.51 | 0.00 | 0.00 |
| Flood 1% Yearly Probability | 4 | \$701 | 0.00 | 0.00 | 0.00 |
| Landslide | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Liquefaction Moderate to High | 0 | \$0 | 0.00 | 0.00 | 0.00 |
| Earthquake (Pre-1990 buildings) | 96 | \$11,519 | na | na | na |

Vulnerabilities: Wallsburg's most pressing concern is constructing a new water tank to with necessary connections to serve current and future residents. The old tank leaks and will not be sufficient for coming development. We have a water management plan underway that will identify infrastructure needs for culinary water and stormwater management.

The second biggest concern is having a safe, well-functioning Town Hall. The current building isn't up to seismic safety standards, is oversized, lacks a backup generator, and isn't energy efficient. A well-constructed, right-sized building will enable ongoing town functioning and serve as an evacuation site in the event of a disaster.

The few structures located in the 100 yr floodplain are aware of their risk and have insurance when applicable. Wallsburg also has a park on a section of floodplain, protecting it from future development.

Because Wallsburg is surrounded by well-kept fields, Wildland Fire is not as great a priority as it is in the rest of the county. We will look into adopting some for fire-resistant homes.

| Mitigation Strategy | Hazard | Priority | Timeline | Estimated Cost | Funding | Responsibly |
|---|-----------------|----------|----------|----------------|--|-------------|
| Install a new water tank and connecting pipes for current and future residents | Drought | High | 1-3 yrs | 2-3 million | ARPA, CDBG, Rural Water Users grants or loans with Local match | Local gov |
| Complete water management plan | Flood, Drought | High | 1 yr | 30k | Local gov | Local gov |
| Get an engineers estimate on the cost to retrofit Town Hall for seismic safety and/or remodel entirely for improved emergency efficiency and improved functionality | Earthquake, All | Mod | 3-5 yrs | TBD | Local gov | Local gov |
| Consider adopting codes and ordinances similar to Wasatch County for improved fire resiliency ie. no shingle roofs, defensible space, etc. | Fire | Mod | 1-2 yrs | Staff time | Local gov | Local gov |

| Prohibit building on slopes >30% and require additional mitigation for proposed buildings on steep slopes | | Landslide | Mod | Ongoing | Staff time | Local gov | Local gov |
|---|---|-----------|----------|----------------|--------------------|-------------------------------|--|
| Provide dumpsters for bulk waste | | Fire | Mod | Ongoing | 10k | Local gov | Local gov |
| 2017 Update | | | | | | | |
| Hazard | Action | Priority | Timeline | Estimated Cost | Potential Funding | Responsible Party | |
| Flooding/ Dam Failure | Promote NFIP participation. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Earthquake | Inventory current critical facilities for seismic standards. | High | 3 years | TBD | Local Cash, Grants | Local Government | Partly, as part of Town Hall reroofing project |
| Wildfire | Educate homeowners on FIREWISE practices. | High | Ongoing | Minimal | Local Cash, Grants | Local Government, County Fire | Yes |
| Landslide | Public education on and correct watering practices and retaining measures in susceptible areas. | Med | 1 year | TBD | Local Cash, Grants | Local Government, UGS | Yes |
| Flooding/ Dam Failure | Update Flood and Inundation mapping and incorporate them into general plans and ordinances. | High | 2 years | TBD | Local Cash, Grants | Local Government, FEMA, UDHS | Yes |
| Earthquake | Promote earthquake awareness and preparation. | High | 1 year | Minimal | Local Cash, Grants | Local Government, UGS, USGS | Yes |
| Wildfire | Incorporate FIREWISE landscaping requirements into local ordinances within areas at risk. | High | 1 year | Minimal | Local Cash, Grants | Local Government | No, fire not a high priority |

| | | | | | | | |
|-----------|--|------|---------|---------|--------------------|-----------------------------|--------------------------|
| Landslide | Coordinate and update landslide mapping within the area with UGS and USGS. | High | 3 years | Minimal | Local Cash, Grants | Local Government, UGS, USGS | No, efforts fell through |
|-----------|--|------|---------|---------|--------------------|-----------------------------|--------------------------|

Contacts and Participation

See Part III: Process for a complete accounting of participation

| Position | Name | Phone | Email |
|-----------------------------|------------------|--------------|--------------------------------|
| Emergency Manager | Kathryn McMullin | 801-718-4628 | kmcmullin@summitcounty.org |
| Summit County Planner | Ray Milliner | 435-336-3118 | rmilliner@summitcounty.org |
| Summit Co Fire Marshall | Mike Owens | 435-940-2520 | mowens@pcfd.org |
| Summit Co Public Works | Derrick Radke | 435-336-3970 | dradke@summitcounty.org |
| Henefer Planner | Robert Richins | 435-336-5365 | henefertown@allwest.net |
| Henefer Mayor | Kay Richins | 801.599.8003 | henefermayor@gmail.com |
| Park City Emergency Manager | Kathryn McMullin | 435-615-5185 | kmcmullin@summitcounty.org |
| Park City Planner | | | |
| Coalville Mayor | Trevor Johnson | 435-336-5981 | mayor@coalvillecity.org |
| Coalville | Niki Sargent | 435.659.6941 | niki.sargent@coalvillecity.org |

| | | | |
|--------------------------------|----------------|--------------------|--|
| Coalville Public Works | Zane Deweese | 435-336-5980 | zane.deweese@coalvillecity.org |
| Coalville Public Works | Kyle Clark | | |
| Coalville Wastewater Treatment | Sam Adams | | |
| Oakley | | 435-783-5734 | oakley@oakleycity.com |
| Oakley Planner | Stephanie | | stephanie@oakleycity.com |
| Oakley | Amy Rydalch | | amy@oakleycity.com |
| Oakley City | Kelly Kimber | | kelly@oakleycity.com |
| Francis/Kamas | Scott Kettle | 435-654-2226 | skettle@horrocks.com |
| | | cell: 801-360-9735 | |
| Francis Public Works | | 435-783-6236 | lthomas@francisutah.org |
| Francis Planner | Katie Henneuse | 435-783-6236 | khenneuse@francisutah.org |
| WUI Coordinator | Travis Wright | 385-505-4030 | tdwright@utah.gov |
| Park City Fire District | Ashley Lewis | | |
| North Summit Fire District | Ian Nelson | | |
| FFSL /County Fire Warden | Bryce Boyer | | |
| N Summit School District | Kristy | | kbraithwaite@nsummit.org |

| | | | |
|---|--------------|--|--------------------------|
| S Summit School District | Kip Bigelow | | kbigelow@ssummit.org |
| S Summit School District | Kathy Carr | | kathy.carr@ssummit.org |
| S Summit School District Superintendent | Greg Maughan | | greg.maughan@ssummit.org |

Part 8 Adoption and Maintenance

Plan Adoption

Example Resolution

RESOLUTION NO. _____

A RESOLUTION ADOPTING THE MOUNTAINLAND ASSOCIATION OF GOVERNMENTS PRE-DISASTER HAZARD MITIGATION PLAN AS REQUIRED BY THE FEDERAL DISASTER MITIGATION AND COST REDUCTION ACT OF 2000.

WHEREAS, President William J. Clinton signed H.R. 707, the *Disaster Mitigation and Cost Reduction Act of 2000*, into law on October 30, 2000.

WHEREAS, the Disaster Mitigation Act of 2000 requires all jurisdictions to be covered by a Pre-Disaster Hazard Mitigation Plan to be eligible for Federal Emergency Management Agency pre-disaster funds,

WHEREAS, Mountainland Association of Governments (MAG) has been contracted by the State of Utah to prepare a Pre-Disaster Mitigation Plan covering all of the jurisdictions in the MAG Area, and

WHEREAS, the MAG Executive Council approved MAG Staff to write the plan on October 25, 2018, and

WHEREAS, _____ City is within the MAG Area, and

WHEREAS, the _____ City Council is concerned about mitigating potential losses from natural disasters before they occur, and

WHEREAS, the plan identifies potential hazards, potential losses and potential mitigation measures to limit losses, and

WHEREAS, the _____ City Council has determined that it would be in the best interest of the community as a whole to adopt the Pre-Disaster Hazard Mitigation Plan as it pertains to the City, therefore

BE IT RESOLVED BY THE _____ CITY COUNCIL THAT:

The attached "Mountainland Association of Governments Pre-Disaster Mitigation Plan" be adopted to meet the requirements of the Disaster Mitigation and Cost Reduction Act of 2000.

This Resolution shall be effective on the date it is adopted.

DATED this _____ day of _____, 2022.

Community Adoption Status

| Community | No Action | Completed / Not yet adopted | Completed and adopted |
|----------------|-----------|--------------------------------|-----------------------|
| Alpine | | | |
| American Fork | | | |
| Cedar Fort | | | |
| Cedar Hills | | | |
| Charleston | | | |
| Coalville | | | |
| Daniels | | | |
| Eagle Mountain | | | |
| Elk Ridge | | | |
| Fairfield | | | |
| Francis | | | |
| Genola | | | |
| Goshen | | | |
| Heber | | | |
| Henefer | | | |
| Hideout | | | |
| Highland | | | |
| Independence | | | |
| Interlaken | | | |
| Kamas | | | |
| Lehi | | | |
| Lindon | | | |

| | | | |
|---------------------|--|--|--|
| Mapleton | | | |
| Midway | | | |
| Oakley | | | |
| Orem | | | |
| Park City | | | |
| Payson | | | |
| Pleasant Grove | | | |
| Provo | | | |
| Salem | | | |
| Santaquin | | | |
| Saratoga Springs | | | |
| Spanish Fork | | | |
| Springville | | | |
| Summit County | | | |
| Utah County | | | |
| Vineyard | | | |
| Wallsburg | | | |
| Wasatch County | | | |
| Woodland Hills | | | |

Plan Maintenance

Monitoring, Evaluating and Updating the Plan

MAG will keep the plan available on its website and feature the Risk maps and a place to comment on the Pre-Disaster Mitigation landing page. MAG will also feature hazard maps at its annual Open House, where each city presents its long-range plan.

Biennial Reporting

Every 2 years MAG will contact each jurisdiction to see how the mitigation strategies are progressing and if the plan needs to be modified. The results will be shared with the Executive Council. Look forward to learning about our progress in 2024 and 2026.

Revisions and Updates

Periodic revisions and updates of the Plan are required to ensure that the goals and objectives for the MAG Region are kept current. More importantly, revisions may be necessary to ensure the Plan is in full compliance with Federal regulations and State statutes. This portion of the Plan outlines the procedures for completing such revisions and updates.

Five (5) Year Plan Review

Every 5 years MAG will conduct a comprehensive update of the Plan, accounting for development, changes in vulnerability, and new mitigation capabilities. Typically, the same process that was used to create the original plan will be used to prepare the update.

Plan Amendments

An amendment can be initiated by the Executive Council, either at its own initiative or upon the recommendation of the Executive Director, Community Development Director, Mayor of an affected community or the State Department of Emergency Services and Homeland Security. New requirements, information, needs, or errors in the original plan could trigger an amendment. All entities affected by an amendment (city, school district, water district, etc.) will be informed of the amendment and given an opportunity to comment. The proposed amendment will also be posted on MAG's website for public comment.

In determining whether to recommend approval or denial of a Plan amendment request, the Executive Council should consider the following:

- There are errors or omissions made in the identification of issues or needs during the preparation of the Plan; and/or
- New issues or needs have been identified which were not adequately addressed in the Plan; and/or
- There has been a change in information, data or assumptions from those on which the Plan was based.
- The nature or magnitude of risks has changed.

- There are implementation problems, such as technical, political, legal or coordination issues with other agencies.

Upon receiving the recommendation of the Executive Director or his/her designee, the Executive Council will hold a public hearing. The Executive Council will review the recommendation (including the factors listed above) and any oral or written comments received at the public hearing. Following that review, the Executive Council will take one of the following actions:

1. Adopt the proposed amendment as presented.
2. Adopt the proposed amendment with modifications.
3. Refer the amendment request back to the Executive Director for further consideration.
4. Defer the amendment request for further consideration and/or hearing.
5. Reject the amendment request.

Implementation through Existing Programs

Process

Incorporating the risk analysis and strategies from this plan into General, Capital Improvement, Water Management Plans, etc. will strengthen all plans. It is the responsibility of elected representatives to make those changes at the recommendation of their staff, but MAG will provide resources and be available to collaborate with those groups.

Administrative

Project administration is purely a function of project size and complexity, for given jurisdictions within the planning area. Jurisdictions have self-funded or received state and federal funding for numerous projects in the past. The larger the project the more

administration resources are needed. Local jurisdictions with current staff could administer small projects or request county or state assistance. Larger projects would most likely still be managed “in-house” but would require additional staff be hired and may request state technical assistance.

Funding Sources

Although all mitigation techniques will likely save money by avoiding losses, many projects are costly to implement. The MAG jurisdictions will continue to seek outside funding assistance for mitigation projects in both the pre- and post-disaster environment. This portion of the Plan identifies the primary Federal and State grant programs for MAG jurisdictions to consider, and also briefly discusses local and non-governmental funding sources.

Federal

The following federal grant programs have been identified as funding sources which specifically target hazard mitigation projects:

Title: Building Resilient Infrastructure and Communities

Agency: FEMA

Building Resilient Infrastructure and Communities (BRIC) will support states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency.

75% Federal share with 25% local match; 90% Federal 10% local match for "small and impoverished communities"

Title: Flood Mitigation Assistance Program

Agency: Federal Emergency Management Agency

FEMA's Flood Mitigation Assistance program (FMA) provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes and other structures insurable under the National Flood Insurance Program (NFIP). FMA was created as part of the National Flood Insurance Reform Act of 1994 (42 USC 4101) with the goal of reducing or eliminating claims under the NFIP.

FMA is a pre-disaster grant program, and is available to states on an annual basis. This funding is available for mitigation planning and implementation of mitigation measures only, and is based upon a 75% Federal share/25% non-Federal share. States administer the FMA program and are responsible for selecting projects for funding from the applications submitted by all communities within the state. The state then forwards selected applications to FEMA for an eligibility determination. Although individuals cannot apply directly for FMA funds, their local government may submit an application on their behalf.

Title: Hazard Mitigation Grant Program

Agency: Federal Emergency Management Agency

The Hazard Mitigation Grant Program (HMGP) was created in November 1988 through Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. The HMGP assists states and local communities in implementing long-term mitigation measures following a Presidential disaster declaration.

To meet these objectives, FEMA can fund up to 75% of the eligible costs of each project. The state or local cost-share match does not need to be cash; in-kind services or materials may also be used. With the passage of the Hazard Mitigation and Relocation Assistance Act of 1993, federal funding under the HMGP is now based on 15% of the federal funds spent on the Public and Individual Assistance programs (minus administrative expenses) for each disaster.

The HMGP can be used to fund projects to protect either public or private property, so long as the projects in question fit within the state and local governments overall mitigation strategy for the disaster area, and comply with program guidelines. Examples of projects

that may be funded include the acquisition or relocation of structures from hazard-prone areas, the retrofitting of existing structures to protect them from future damages; and the development of state or local standards designed to protect buildings from future damages.

Eligibility for funding under the HMGP is limited to state and local governments, certain private nonprofit organizations or institutions that serve a public function, Indian tribes and authorized tribal organizations. These organizations must apply for HMPG project funding on behalf of their citizens. In turn, applicants must work through their state, since the state is responsible for setting priorities for funding and administering the program.

Title: Public Assistance (Infrastructure) Program, Section 406

Agency: Federal Emergency Management Agency

FEMA's Public Assistance Program, through Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, provides funding to local governments following a Presidential Disaster Declaration for mitigation measures in conjunction with the repair of damaged public facilities and infrastructure. The mitigation measures must be related to eligible disaster related damages and must directly reduce the potential for future, similar disaster damages to the eligible facility. These opportunities usually present themselves during the repair/replacement efforts.

Proposed projects must be approved by FEMA prior to funding. They will be evaluated for cost effectiveness, technical feasibility and compliance with statutory, regulatory and executive order requirements. In addition, the evaluation must ensure that the mitigation measures do not negatively impact a facility's operation or risk from another hazard.

Public facilities are operated by state and local governments, Indian tribes or authorized tribal organizations and include:

- Roads, bridges & culverts
- Draining & irrigation channels
- Schools, city halls & other buildings
- Water, power & sanitary systems
- Airports & parks

Private nonprofit organizations are groups that own or operate facilities that provide services otherwise performed by a government agency and include, but are not limited to the following:

- Universities and other schools
- Hospitals & clinics
- Volunteer fire & ambulance
- Power cooperatives & other utilities
- Custodial care & retirement facilities
- Museums & community centers

Title: Natural Resource Conservation Grants

Agency: US Department of Agriculture

The USDA administers Natural Resource Conservation grants and provides crop insurance. The Federal crop insurance program is designed to provide a robust and reliable farm safety net, regardless of the size and scope of natural disasters. USDA's Risk Management Agency (RMA) works closely with Approved Insurance Providers (AIPs), who sell and service the policies that producers purchase, to ensure efficient loss adjustment and prompt claims payments, even in times of major disasters.

Title: SBA Disaster Assistance Program

Agency: US Small Business Administration

The SBA Disaster Assistance Program provides low-interest loans to businesses following a Presidential disaster declaration. The loans target businesses to repair or replace uninsured disaster damages to property owned by the business, including real estate, machinery and equipment, inventory and supplies. Businesses of any size are eligible, along with non-profit organizations.

SBA loans can be utilized by their recipients to incorporate mitigation techniques into the repair and restoration of their business.

STATE PROGRAMS

Title: Emergency Management Performance Grants

Agency: Utah Department of Emergency Management

The EMPG program provides federal grants to states to assist state, local, territorial and tribal governments in preparing for all hazards. This grant is available to all counties, cities, tribes, and public institutions of higher learning that have an emergency management program and a paid part-time or full-time emergency manager. The grant provides financial assistance and technical expertise. EMPG provides funds to supplement pre-established local emergency management programs in building capabilities to implement the [National Preparedness System](#) and support the National Preparedness Goal.

Title: Community Impact Board

Agency: Utah Department of Workforce Services

Utah's Community Development Office builds local capacity to help communities become self-reliant, self-determined and prepared for the future. Programs managed by the office work closely together to provide funding for infrastructure alongside tools and resources to help communities with coordination, training, research and analysis, planning and technical assistance.

The Office provides Community Impact Board grants and Community Development Block Grants.

Title: Historic Building Certification

Agency: Utah State Historic Preservation Office

The Certified Local Government (CLG) program is designed to promote historic preservation at the local level. This is a federal program through the National Park Service and administered by the Utah State Historic Preservation Office (SHPO). Qualified local governments become "certified" and thereby qualify to receive matching grants from the SHPO.

Title: Board of Water Resources

Agency: Utah Division of Natural Resources

The [Board of Water Resources](#) appropriates funds to improve safety and water efficiency, develop new water projects, and refurbish aging infrastructure. Private or public water service providers can apply. Low-interest rates and repayment terms tailored to the project area's affordability guidelines are available for qualifying projects. To be eligible for funding, a project cannot be routine operation and maintenance, cannot be sponsored by a developer or an individual/family and cannot be for a domestic water system where less than half of the residents live in the service area year-round. All other water projects will be considered for funding.

LOCAL

Local governments depend upon local property taxes as their primary source of revenue. These taxes are typically used to finance services that must be available and delivered on a routine and regular basis to the general public. If local budgets allow, these funds are used to match Federal or State grant programs when required for large-scale projects.

Title: Community Development Block Grants

Agency: US Department of Housing and Urban Development

The community Development Block Grant (CDBG) program provides grants to local governments for community and economic development projects that primarily benefit low- and moderate-income people. The CDBG program also provides grants for post-disaster hazard mitigation and recovery following a Presidential disaster declaration. Funds can be used for activities such as acquisition, rehabilitation or reconstruction of damaged properties and facilities and for the redevelopment of disaster areas.

Title: Various

Agency: County Fire Departments

County fire departments are involved in outreach and education, enforcing fire-related laws, approving plans, and conducting mitigation efforts such as controlled burns and fuel thinning.

See your county's fire department for program information and how to match funding for projects.

Title: Transportation Improvement Program

Agency: Mountainland Association of Governments

MAG plans for and funds transportation-related projects that could include evacuation routes, seismic upgrades for structures, and fire break trails.

MAG also facilitates other projects that require coordination across boundaries and provides land-use planning and other assistance for smaller localities.

NON-GOVERNMENTAL

Another potential source of revenue for implementing local mitigation projects are monetary contributions from non-governmental organizations, such as private sector companies, churches, charities, community relief funds, the Red Cross, hospitals, Land Trusts and other non-profit organizations.

Continued Public Involvement

Throughout the planning process, public involvement has been and will be critical to the development of the Plan and its updates. On a yearly basis the plan will be profiled at MAG's Annual Open Houses, which are held in the fall of every year. There are typically 400 to 500 local citizens who attend the Open Houses. The plan will also be available on the MAG website to provide additional opportunities for public participation and comment.

Mountainland Association of Governments staff has been designated by its Executive Council as the lead agency in preparing and submitting the Mountainland Pre-Disaster Hazard Mitigation Plan, which includes coverage for all incorporated cities and counties within the three county region, i.e. Summit, Utah and Wasatch Counties. The strategy of the Association of Governments in preparing the plan is to use available resources and manpower in the most efficient and cost effective manner to allow our cities and counties continued access to data, technical planning assistance and FEMA eligibility. In addition, the AOG will reach out to non-profits, public agencies, special needs organizations, groups and individuals in allowing them input and access to the plan. With limited resources, however, it becomes difficult to both identify and to individually contact the broad range of

potential clients that may stand to benefit from the plan. This being the case, we have established the following course of action:

STEP 1. The AOG will publicly advertise all hearings, requests for input and meetings directly related to the Pre-Disaster Hazard Mitigation Plan process. Executive Council meetings where plan items are discussed and where actions are taken will not receive special notifications as they are already advertised according to set standards. All interested parties are welcome and invited to attend such meetings and hearings as they are public and open to all. Advertisement will be done according to the pattern set in previous years, i.e. the AOG will advertise each hearing and request for input at least seven days (7) in advance of the activity and will publish notices of the event in the Provo Herald, the Wasatch Wave and the Summit County Bee. The notices will advertise both the hearing and the means of providing input outside the hearing if an interested person is unable to attend.

STEP 2. The AOG has offered additional help to participating jurisdictions depending on their desires, whether it be hosting a booth at a local event, presenting to City Council, or preparing educational materials.

STEP 3. Comments, both oral and written, will be solicited and accepted from any interested party. Comments, as far as possible, will be included in the final draft of the Hazard Mitigation Plan; however, the AOG reserves the right to limit comments that are excessively long due to the size of the Plan.

STEP 4. Specific to risk assessment and hazard mitigation, needs analysis, and capital investment strategies, the AOG will make initial contact and solicitation for input from each incorporated jurisdiction within the region. All input is voluntary. Staff time and resources do not allow personal contact with other agencies or groups, however, comments and strategies are welcomed as input to the planning process from any party via regular mail, FAX, e-mail, phone call, etc. In addition, every public jurisdiction advertises and conducts public hearings on their planning, budget, etc. where most of these mitigation projects are initiated. Input can be received from these prime sources by the region as well.

STEP 5. The final draft of the Hazard Mitigation Plan will be presented to the Mountainland Executive Council at its regularly scheduled monthly meeting for adoption

and approval. Executive Council policies on adoption or approval of items will be in force and adhered to. This document is intended to be flexible and in constant change so comments can be taken at any time of the year for consideration and inclusion in the next update. Additionally, after FEMA approval of the Plan, the Plan will be promulgated for each local jurisdiction for adoption by resolution.

STEP 6. The following policies will guide AOG staff in making access and input to the Hazard Mitigation Plan as open and convenient as possible:

A. Participation: All citizens of the region are encouraged to participate in the planning process, especially those who may reside within identified hazard areas. The AOG will take whatever actions possible to accommodate special needs of individuals including the impaired, non-English speaking, persons of limited mobility, etc.

B. Access to Meetings: Adequate and timely notification to all area residents will be given as outlined above to all hearings, forums, and public meetings.

C. Access to Information: Citizens, public jurisdictions, agencies and other interested parties will have the opportunity to receive information and submit comments on any aspect of the Hazard Mitigation Plan, and/or any other documents prepared for distribution by the Association of Governments that may be adopted as part of the plan by reference. The AOG may charge a nominal fee for printing of documents that are longer than three pages.

D. Technical Assistance: Residents as well as local jurisdictions may request assistance in accessing the program and interpretation of mitigation projects. AOG staff will assist to the extent practical, however, limited staff time and resources may prohibit staff from giving all the assistance requested. The AOG will be the sole determiner of the amount of assistance given all requests.

E. Public Hearings: The AOG will plan and hold public hearings at the request of participating organizations according to the following priorities: 1- Hearings will be conveniently timed for people who might benefit most from Mitigation programs, 2- Hearings will be accessible to people with disabilities (accommodations must be requested

in advance according to previously established policy), and 3- Hearings will be adequately publicized. Hearings may be held for a number of purposes or functions including to: a- identify and profile hazards, b-develop mitigation strategies, and c-review plan goals, performance, and future plans.

Part 9 Resources and Capabilities

Capabilities

What follows is a description of the organizational, technical and political capacity of the Mountainland Region to implement hazard mitigation strategies and goals. The best plan will do nothing to improve hazard mitigation efforts in the region without sufficient implementation capacity and capability; particularly local level capacity (town, city and county government). The purpose of this section is to analyze gaps and potential capability weaknesses for local level jurisdictions in the region.

Local Organizational and Technical Capability

Not all communities in the MAG region have full time professional staff. In many cases a limited tax base means that hiring full time professional staff in the smaller cities and towns is financially unobtainable. Often these smaller communities rely on local volunteers or elected and appointed officials to perform many of the tasks normally handled by professional staff. It's not uncommon to have a volunteer city council person or planning commissioner assigned the task of emergency management, grant writing or long-range planning. Professional staff at MAG (and each of the three counties to some degree) help provide some technical and planning assistance to these smaller communities. This regional assistance is often limited by staffing capacity and funding. As funding allows, some communities are able to contract for professional services from private consultants.

Each jurisdiction's technical and staffing capabilities are described in their **Community Capabilities Assessment** in the **Appendix**.

| State and Regional Hazard Mitigation Resources MAG District | |
|--|---|
| Agency/Group | Description |
| Utah Division of Emergency Management | Training, technical assistance and funding. |

| | |
|--|--|
| Utah League of Cities and Towns | Training, technical assistance and planning assistance |
| Utah Geologic Survey | Technical assistance, plan review |
| Mountainland Association of Governments | Technical assistance, plan review, GIS and Community Development Block Grants. |
| Local Health Departments | Emergency preparedness and response. Homeland security planning. |
| Local Chapters of the American Red Cross | Training, emergency preparedness and response. |
| Utah Association of Conservation Districts | Technical assistance and planning assistance. |

Policy and Program Capability

All thirty-six jurisdictions in the MAG Region have an adopted General Plan. Most Plans have a Flood Damage Prevention Ordinance.

The state of Utah maintains a philosophy of local responsibility for hazard mitigation. State agencies still provide an integrated network of support, services, and resources for hazard mitigation activities. As demonstrated during past disasters, these agencies are well organized in their delivery and coordination of services. The following is a review of State departments with disaster responsibilities describing their existing and planned mitigation programs.

An evaluation of the laws, regulations, authorities, policies, and programs used in Utah to mitigate hazards demonstrate that they work exceptionally well, as evidenced by the massive amount of mitigation accomplished in Utah, the few numbers of disasters, and the limited nature of those emergencies that do occur. According to the Utah SHMT, the only changes that could be considered by the Legislature might be ones that parallel the Federal Disaster Mitigation Act of 2000, which would integrate pre-disaster mitigation considerations into the code of various state agencies.

Resources

Utah Division of Emergency Management

For Associated state laws see “Authority” in this plan’s Introduction.

Capabilities of DESHS Hazard Mitigation Program

Prepare, implement, and maintain programs and plans to provide for preventions and minimization of injury and damage caused by disasters.

Identify areas particularly vulnerable to disasters.

Coordinate hazard mitigation and other preventive and preparedness measures designed to eliminate or reduce disasters.

Assist local officials in designing local emergency actions plans.

Coordinate federal, state, and local emergency activities.

Coordinate emergency operations plans with emergency plans of the federal government.

Through the State Hazard Mitigation Program, the following occurs:

- Provides a state coordinator for hazard mitigation, the State Hazard Mitigation Officer.
- Provides a central location of the coordination of state hazard mitigation activities.
- Provides coordination for the Federal Pre-Disaster Mitigation Program.
- Provide for coordination of Project Impact.
- Provide coordination for Comprehensive Multi-hazard Mitigation Plan development, implementation, and monitoring.
- Provide for interagency coordination
- Provide development of procedures for grant administration and project evaluation.
- Provide State Hazard Mitigation Team assistance to local governments.
- Provide for development of specific hazard mitigation plans, such as drought and wildfire.
- Provide for local hazard and risk analysis.
- Provide for development of SHMT mitigation recommendations following disasters.

Utah Department of Agriculture

The Utah Department of Agriculture administers programs serving the state's large agricultural sector. The department's response role during and after a disaster period has been to coordinate damage reports for funding needs and provide loan and recovery program information and assistance to disaster victims. This service is provided for flood, drought, insect infestation, fire, livestock disease, and frost.

Assistance During Drought Disasters:

A damage reporting network coordinated through the existing County Emergency Board was established during the drought disaster of 1996. Each county agent assembled damage reports in his area and transmitted them through a computer network based at Utah State University. The individual damage reports from each county were recapped in the Department of Agriculture and formed the basis of documentation for an appeal to the legislature for additional funds to mitigate the damage.

Loans Handbook

The department has prepared a handbook listing the types of loans available for flood damage to agriculture, the funding requirements, and application procedures. This includes loans from both state and federal sources. There are three loan programs operated by the agriculture department, all of which can be used for flood damage: 1) Rural Rehabilitation Loan Program (federally funded and operated by the state); 2) Agriculture Resource Development Loan Program (state funded); and 3) Emergency Loan Program (state funded).

Soil Conservation Program

The Department of Agriculture also administers the ongoing Soil Conservation Program. In each of the state's thirty-nine soil conservation districts, three unpaid, elected supervisors offer technical assistance and consultation on watershed protection. The state offers limited technical and planning assistance through a staff member. The program works cooperatively with the federal Soil Conservation Service which provides most of the technical assistance. The ongoing program is not regulatory, but is directed at improved water use and soil conservation.

Disaster Easements:

Because of the similarity between past events the department is now working on a permanent hazard mitigation concept known as "Disaster Easements", which may have widespread agreements with irrigation companies, water districts, or water users associations for the purpose of routing flood water through town.

Monitoring Ground Water Quality:

The Department also monitors groundwater quality of private individuals' wells and springs throughout the State.

Non-Point Source Pollution:

The Department's Non-Point Source Pollution Program focuses on flood prevention through reduction of erosion, vegetating streams, and restoring "natural stream structure" The Department also monitors drought conditions, which are a precursor to wildfire.

Department of Community and Economic Development

Community Impact Board

The Utah Permanent Community Impact Fund Board provides loans and/or grants to state agencies and sub-divisions of the state, which may be socially or economically impacted by mineral resource development of federal lands.

Permanent Community Impact Fund:

The Permanent Community Impact Fund provides loans and/or grants to state agencies and subdivisions of the state, which are or may be socially or economically impacted, directly or indirectly, by mineral resource development on federal lands.

Under the Federal Mineral Lease Act of 1920, leaseholders on public land make royalty payments to the federal government for the development and production of non-metalliferous minerals. In Utah, the primary source of these royalties is the commercial production of fossil fuels on federal land held by the U.S. Forest Service and the Bureau of Land Management. Since the enactment of the Minerals Lease Act of 1920, a portion of these royalty payments, called mineral lease payments, have been returned to the state in an effort to help mitigate the local impact of energy and mineral developments on federal lands.

Funding Options:

The Board has the option of funding projects with loans and/or grants. The Board's preferred financing mechanism is an interest-bearing loan.

Loan Requirements:

In providing financial assistance in the form of a loan, the Board may purchase an applicant's bonds only if the bonds are accompanied by legal opinion of recognized

municipal bond counsel to the effect that the bonds are legal and binding under applicable Utah Law.

The Board may purchase either a taxable or tax-exempt bond. The board may purchase taxable bonds if it determines, after evaluating all relevant circumstances, including the applicant's ability to pay, that the purchase of the taxable bonds is in the best interest of the state and the applicant.

Grants

Grants may be provided only when the other financing mechanisms cannot be utilized, where no reasonable method of repayment can be identified, or in emergency situations regarding public health and/or safety.

Community Development Block Grant:

The Community Development Block Grant, or CDBG program, provides funding from the federal government's Department of Housing and Urban Development or HUD, to small cities and counties in the State of Utah.

Utah Division of State History

The Utah State Historical Society, Utah's Division of State History, was founded in 1897 on the 50th anniversary of the first settlement in the Salt Lake Valley by the Mormon Pioneers. The Society became a state agency in 1917, now housed in the historic Rio Grande Depot since 1980. The Division stimulates archaeological research, study; oversees the protection and orderly development of sites; collects and preserves specimens; administers site surveys; keeps excavation records; encourages and supports the preservation of historic and pre-historic sites and publishes antiquities records. The Division also issues archaeological permits and consults with agencies and individuals doing archaeological work.

Preserving and Sharing Utah's Past

The mission of the State Division of History is "preserving and sharing Utah's past for the present and the future."

State Historical Preservation Officer (SHPO)

The SHPO administers the Section 106 process (national Historic Preservation Act) in Utah. The SHPO also serves on the Utah State Hazard Mitigation Team, providing guidance on historical and cultural preservation regulations.

Historic properties include districts, buildings, structures, objects, landscapes, archeological sites, and traditional cultural properties that are included in, or eligible for inclusion in, the National Register of Historic Places. These properties are not just “old buildings” or “well-known historic sites, but places important in local, state, or national history. Facilities as diverse as bridges and water treatment plants may be considered historic.

Utah Geological Survey (UGS)

The Utah Geologic and Mineral Survey is the principal state agency concerned with geologic hazards. Through years of study, the UGS has developed considerable information on Utah’s geologic hazards. When geologic events occur or threaten to occur, the UGS is consulted by other state agencies, local governments, and private organizations for assistance in defining the threat from natural hazards. The UGS works in partnership with other agencies, such as DESHS, in relating the threats from natural hazard to the communities at risk.

Functions:

The functions of the UGS include the following:

- Evaluation of individual geological hazards;
- Participation on local government and state agency technical teams;
- Prediction of the performance on individual slides once they began to move;
- Coordination and awareness of research efforts undertaken by other agencies;
- Provide information on status of individual geologic hazards;
- Reconnaissance reports on status of hazards statewide;
- Advise Division of Water Rights on geologic hazards associated with dam sites; and
- Provide geologic information for use during planning of remedial actions.

Laws/authorities/policies of the Utah Geological Survey for conducting mitigation

Utah Code Annotated Chapter 73 Geological and Mineral Survey Section 68-73-6 Objectives of Survey

(e) Determine and investigate areas of geologic and topographic hazards that could affect the safety of, or cause economic loss to, the citizens of this state; (f) assist local and state government agencies in their planning, zoning, and building regulations functions by

publishing maps, delineating appropriately wide special earthquake risk areas, and, at the request of state agencies, review the siting of critical facilities:

Utah State Office of Education (USOE) Rule R277-455 Standards and Procedures for building plan review

R277-455-4 Criteria for Approval

To receive approval of a proposed building site, the local school district must certify that:

Staff of the Utah Geologic Survey have reviewed and recommended approval of the geologic hazards report provided by the school district's geotechnical consultant.

Division of Water Resources

Mitigation Functions

The Division's role of planning, funding and constructing water projects serves as both active and passive hazard mitigation against drought and flood situations throughout the state. The various State water plans contain brief summaries of flood threat and risk for each drainage.

The Division is one of seven agencies in the State Department of Natural Resources. The eight member Water Resources Board, appointed by the governor, administers three state water conservation and development funds. They are:

Revolving Construction fund – This fund started in 1947 with 1 million legislative appropriation to help construct irrigation projects, wells and rural culinary water systems. Additional appropriations have been added to this fund.

Conservation and Development Fund – This fund was created in 1978 with the sale of 25 million in general obligations bonds. Money was added to this fund with bond sales in 1980 and 1983. The C & D Fund generally helps sponsor and finance larger multi-purpose dams and water systems.

Cities Water Loan Fund – Established with an initial legislative appropriation of 2 million dollars in 1974, and with continued appropriations, this fund provides financing to help construct new culinary water projects for cities, towns, improvement districts, and special service districts.

Construction Funds: In addition to overseeing these three construction funds, the Division also manages the State funds appropriated each year for renovation and reconstruction of unsafe dams. As the funding arm of the state for water resource projects the Division works closely with Water Rights, the Regulatory arm of the state charged with jurisdiction over all private and state owned dams.

Water Resource Planning: The Division is also charged with the general water resource planning for the state. The State Water Plan is a process that is coordinated to evaluate existing water resources in the state, determine water-related issues that should be confronted and recommend how and by whom issues can be resolved. The plan identifies programs and practices of state and federal agencies, water user groups and environmental interests and describes the state's current, future, and long-term water related needs. The plan is continually updated using current hydrologic databases, river basin simulations, water supply and demand models and water related land use inventories. Revisions reflect the latest water conservation and development options concerning water rights, water transfers, population, zoning, and many other complex issues for the next 50 years in the state's major river basins.

Utah Division of Forestry, Fire, and State Lands

The Division of Forestry, Fire & State Lands utilizes the principles of stewardship and ecosystem management to assist non-federal landowners in management of their natural resources. The agency provides wildland fire protection for non-federal landowners commensurate with risk; and optimizes the benefits from ecosystem based, multiple-use management of resources held in the public trust. Wildfires are managed from six area offices 1) Bear River Office, 2) Northeast Area, 3) Wasatch Front Area, 4) Central Area, 5) Southwest Area, and 5) Southeast Area.

The Division operates under the authority of the Utah Code Annotated 65-A-3-1 through 10.

The Flame-n-Go's (pronounced Flamingoes): In 1978 the Division of Forestry, Fire, and State Lands and the Utah State Prison signed a cooperative agreement establishing Utah's first volunteer, inmate wildland fire hand-crew. The inmates named themselves the "Flame-N-Go's" and designed a logo that has become well known in the wildland fire fighting community.

All Flame-N-Go's are carefully screened for the program. They must complete rigorous training and sign a yearly contract committing themselves to preserving Utah's natural resources and building responsible lives.

The Flame-N-Go's are divided into three crews, each of which can respond to fires anywhere in the United States. A twenty-man type II handline crew is the backbone of the group, responding to each assignment with all tools and equipment needed to do battle on the fireline. An Engine Strike Team, (five fire engines, outfitted with men and equipment) is ready to respond when needed as an Engine Strike Team or a Type II Handline Crew. The

Hotshot crew is trained to tackle the most dangerous fires in the most rugged terrain. All crews during peak fire season are on 24-hour call to respond within an hour's notice. These crews respond to an average of 50 fires per year and typically spend 45,000 hours fighting fires each season. At least one Division of Forestry, Fire, and State Lands supervisor and two Department of Corrections staff accompany each crew.

Each year, Flame-N-Go's are put through at least 80 hours of extensive training including classroom work and practical field exercises. Safety, individual, and team skills, and professionalism are stressed.

National Fire Plan: The Division administers the State responsibilities of the National fire Plan, a current emphasis of the U.S. Congress, which also addresses hazard and risk analysis and hazard mitigation.

Living With Fire Committee: The Division works in partnership with the U.S. Forest Service, Bureau of Land Management, and various other entities tasked with suppressing wildland fires on the "Living With Fire" program promoting wildland fire mitigation.

Utah Division of State Parks and Recreation

The goal of the Division of Parks and Recreation is to enhance the quality of life for residents and visitors of our state through parks, people, and programs. They are responsible for protecting, preserving, and managing many of Utah's natural and heritage resources.

Hazard and Risk Analyses: The Division develops hazard and risk analyses for the State Parks as part of the park resource management plans. The Utah Division of Emergency Management produced one analysis for Snow Canyon State Park in Washington County.

Non-Motorized Trail Program: The Recreational Trails Act of 1991 charged Utah State Parks and Recreation with coordinating the development of a statewide network of non-motorized trails. The Non-Motorized Trail program makes state and federal funds available on a 50/50 matching basis to any federal, state, or local government agency, or special improvement district for the planning, acquisition, and development of recreational trails.

Grants from State Parks Boards: The council advises the Division of Parks and Recreation on non-motorized trail matters, reviews requests for matching grant fiscal assistance, rates and ranks proposed trail projects and along with State Park's staff provides recommendations for funding to the State Parks Board.

Riverway Enhancement Program: In 1986, the Utah Legislature passed a bill which established the Riverway Enhancement Program. The program makes state funds

available on a 50/50 matching basis to state agencies, counties, cities, towns, and/or special improvement districts for property acquisition and/or development for recreation, flood control, conservation, and wildlife management, along rivers and streams that are impacted by high density populations or are prone to flooding. Public outdoor recreation should be the primary focus of the project.

Utah Division of Water Rights

The Division of Water Rights is the state agency that regulates appropriation and distribution of water in the State of Utah. It is an office of public record. The Utah State Engineer's Office was created in 1897. The State Engineer's Office is the chief water rights administrative officer. A complete "water code" was enacted in 1903 and was revised and reenacted in 1919. This law, with succeeding complete reenactments of State statutes, and as amended, is presently in force mostly as *Utah Code, Title 73*. In 1963, the name was changed from State Engineer's office to the Division of Water Rights.

All water in Utah is public property. A water right is a right to the use of water based upon 1) quantity, 2) source, 3) priority date, 4) nature of use, 5) point of diversion, and 6) physically putting water to beneficial use.

Regulate Dams: The State engineer has the authority to regulate dams for the purpose of protecting public safety. Dams are classified according to hazard, size, and use. The dam inventory gives the identification, location, construction parameters, and the operation and maintenance history of the dams in Utah.

Stream Alterations Program: The Utah state Engineer's Office administers a Stream alterations program with the purpose of regulation activities affecting the bed or banks of natural streams. The State Engineer's working definition of a natural stream is any natural waterway in the state, which has flows of sufficient duration to develop a characteristic ecosystem distinguishing it from the surrounding environments. Any individual planning an activity that will affect a natural stream must first obtain a Stream Alterations Permit from this office.

Most proposals reviewed by the State, are covered by General Permit 40, which authorizes the state to have its Stream Alteration Permit fulfill the requirements of Section 404 of the Clean Water Act for most activities. General permit 40 does not apply in some instances and a U.S. Army Corps of Engineers Individual Permit is required. Projects requiring this additional permit include those involving wetlands, threatened or endangered species, properties listed on the National Historic Register, stream relocation, or the pushing of streambed material against a stream bank.

Dam Safety Program: The Dam Safety Section of the Division of Water Rights was established under Chapters 73-5a 101 thru 73-5a 702 including chapters 73-2-22 for Flood Control and the Chapter 63-30-10 Waiver of Immunity of the Utah Code and Rules R655-10 thru R655-12-6A. The program basically has jurisdiction over all private and state owned dams in the state during design, construction, operation, and decommissioning. This involved periodic inspections according to hazard classifications, inventory maintenance, design, and construction approval and systematic upgrade of all the high hazard structures to current dam safety Minimum Standards and creation of Emergency Action Plans for High Hazard dams. Since 1991, detailed dam reviews have been undertaken by the staff and by private consulting firms. Since 1995, the State Legislature has provided 3-4 million dollars per year to finance 50 % of the instrumentation, investigations, and design and 80 to 90 % of the construction costs of retrofitting and upgrading deficient dams, starting with the worst dams in the most hazardous locations.

The impetus for this dam safety program has been in reaction to dam failures, both in Utah and in other states, including the Teton Dam in Idaho and the Trial Lake Dam in Summit County and the Quail Creek Dam near St. George Utah. Since the establishment of our Minimum Standards program we have fostered the repair of dozens of dams and have not had a catastrophic failure since.

Future recommendations include continuation of the funding for dam upgrades for all the high hazard dams, and then the moderate hazard dams, continued annual inspections for maintenance items and dangerous deficiencies, upgrading EAP, and hazard assessment to reflect downstream development. Inclusion of the scanned design drawings and inundation maps from the EAP studies is being considered for our web page for public information and emergency access. Possible expansion of the program to cover canals and dikes has been considered.

Utah Division of Wildlife Resources

It is the mission of the Utah Division of Wildlife Resources to serve people of Utah as trustee and guardian of the State's wildlife. Regulates hunting, fishing and trapping, and promotes recreational, educational, scientific and aesthetic enjoyment of wildlife.

Wildlife Habitats and Hazards: Wildlife species and/or their habitats are frequently exposed to hazards. These may be either natural or human influenced (i.e. drought, flood, fire, wind, snow, wetland drainage, water diversions, hazardous material spills, improper/illegal chemical use, earthquake, and other land or water construction/development). Impact resulting either directly or indirectly, from individuals or an accumulation of several hazards, may cause but not be limited to: decreased water supply, stream/lake

channel/basin morphology change, riparian/upland vegetation loss or degradation, and impairment of water quality. These in turn have a varying influence, in the extreme causing death or at a minimum temporary stress, on wildlife populations and their habitats. Hazards mentioned may affect a fairly large geographic area or be very localized in nature.

While the Division of Wildlife Resources (DWR) is charged with the management of wildlife, they do not have regulatory authority over water appropriations, water quality, development, or land management; except as allowed or occurring on properties they own. Therefore, when hazards occur, outside DWR property, DWR is limited to be a participating influence only through comments to the other regulatory agencies or individuals.

DWR management of wildlife is carried out largely through regulation of taking control, disturbance and/or possession of wildlife, and introduction or movement of species. However, there are numerous non-regulatory means (i.e. conservation agreements, memorandum of understanding, contract, lease agreements, cooperative agreements, and technical assistance) by which DWR interacts with other agencies, groups and individuals, to have an influence on wildlife and/or their habitat.

Hazard Areas of Commentary Interaction

While not being able to control/regulate many of the elements necessary for the benefit of wildlife; DWR provides technical comments for the maintenance, protection, and enhancement of wildlife and/or habitats for various value reasons. It is too extensive list all the areas of comment; however, the following are examples of fairly frequent concern:

- Stream Channel Alteration Permit Applications
- Water Rights Filings
- Energy and Mineral Exploration and Extraction Applications
- Federal Agency land management plans
- Wastewater Discharge Permit Applications
- Hydroelectric plant licensing or regimenting
- Urban and rural development project planning
- Utility transmission line style and locations
- Wetland alteration
- Federal land management planning
- Highway constructions

The Utah Division of Drinking Water

The Division of Drinking Water's Mission Statement is to "protect the public against waterborne health risks through assistance, education, and oversight". The Division acts as the administrative arm of the Utah Drinking Water Board. It implements the rules, which they adopt. As such, it is engaged in a variety of activities related to the design and operation of Utah's public drinking water system. The Utah Drinking Water Board is an 11-person board appointed by the Governor. It is empowered by Title 19, Chapter 4 of the Utah Code to adopt rules governing the design, operations, and maintenance of Utah's "public drinking water system".

Safe Drinking Water Act: There is a Federal Safe Drinking Water Act which applies to all public drinking water systems in the country. The U.S. Environmental Protection Agency (EPA) has given Utah "primacy" for enforcing the federal act within its boundaries. To qualify for this Utah's laws and rules governing public drinking water systems must be at least as strict as the federal law.

Sanitary Surveys: The Division performs sanitary surveys on the water systems, which is a compliance action that identifies system deficiencies.

Emergency Response Plans: The Division of Drinking Water requires water utilities to prepare emergency response plans under the State Safe Drinking Water Act, Utah Code Section 19-4. The Division operates according to DDW Rules: R309 gives them authority to administer actions: R309-301 through R309-104 and R309-113, R309-150, R309-301, and R309-211.

Utah Division of Solid and Hazardous Waste

The Tier II Chemical Inventory report, required by the Federal Emergency Planning and community Right-to-Know Act, requires facilities to submit lists of hazardous chemicals present on site. These reports are computerized and the information is provided to local emergency planning committees, the general public, and others for contingency planning purposes. To implement the Federal law, the State operates under Utah State Code, Section 63-5-5. The Division of Solid and Hazardous Waste requires that hazardous waste treatment storage and disposal facilities prepare an emergency response plan as required by regulations authorized by the State Solid and Hazardous Waste Act, Utah Code Section 19-6.

Other Agency programs are regulatory in nature requiring proper use or disposal of hazardous substances or pollutants. For example the Division of Solid and Hazardous Waste regulates the disposal of hazardous waste, the Division of Radiation Control

regulates the proper usage and disposal of radioactive materials. As such there is a threat mitigation nature to these programs.

Utah Division of Water Quality

The Utah Division of Water Quality protects, maintains, and enhances the quality of Utah's surface and underground water for appropriate beneficial uses; the Division of Water Quality regulates discharge of pollutants into surface water, and protects the public health through eliminating and preventing water related health hazards which can occur as a result of improper disposal of human, animal, or industrial wastes while giving reasonable consideration to the economic impact.

Water Quality Fund and Wastewater Treatment Project Fund: The Division Manages the Water Quality Revolving Fund that can be used by local governments for water quality projects and a Wastewater Treatment Project Fund.

Abating Watershed Pollution: Federal and State regulations charge the Division with "preventing, controlling, and abating" watershed pollution. Other state and local agencies have similar responsibilities. The Watershed Approach forms partnerships with these groups to pool resources and increase the effectiveness of existing programs. For each watershed management unit, a watershed plan will be prepared. The watershed plan addresses management actions at several spatial scales ranging from those that encompass a watershed management unit to specific sites that are tailored to specific environmental conditions. Ground water hydrologic basins and eco-region areas encompassed within the units will also be delineated.

State Revolving Fund Program: In 1987, Congress replaced the Construction Grants Program with the State Revolving Fund Program. Rather than provide direct grants to communities, the federal government provides each state with a series of grants, then each state contributes a 20 percent state match. Grants from the federal government are combined with state funds in the Water Quality Project Assistance Program (WQPAP) and are used to capitalize a perpetual source of funds to finance water quality construction control activities at below market interest rates. Projects eligible for WQPAP financing include such traditional activities as construction of wastewater treatment plants and sewers. The program also will finance non-traditional water quality-related activities such as agricultural runoff control, landfill closures, contaminated industrial property (Brownfield) remediation, stream bank restoration, and wellhead protection.

Part 10 Methods

Hazard Profile Methodology

Each hazard profile relied on the following criteria to create meaningful comparisons between hazards.

Standards from FEMA IS 235: Emergency Planning Course

Potential magnitude (Percentage of the community that can be affected):

Catastrophic: More than 50%

Critical: 25 to 50%

Limited: 10 to 25%

Negligible: Less than 10%

Frequency of Occurrence

Highly likely: Near 100% probability in next year

Likely: 10 -100% probability in next year, or at least one chance in next 10 years.

Possible: 1 - 10% probability in next year, or at least one chance in next 100 years.

Unlikely: Less than 1% probability in next 100 years

Standards we modified to fit our region

Severity (our definition) per incident

Catastrophic: Many lives, a great deal of property

Critical: Multiple lives lost, but mostly property loss.

Limited: Some property loss, less than 3 lives lost.

Negligible: Some property, no life lost.

Mitigation Prioritization

The guiding factor in prioritizing mitigation strategies for local communities was the principle that mitigation should provide the ***greatest amount of good to the greatest number of people, after considering resources, staffing, and other constraints.*** Probability

of occurrence, past events, and damage estimates compiled during the risk assessment in this plan were heavily considered. Overall, each community individually considered their own capabilities, staffing, and resources as they prioritized their own mitigation strategies.

Hazard Selection and Analysis

Identified Hazards

Numerous hazards face the Mountainland region; everything from grasshopper infestation to solar flares. In the interest of creating a plan that is a resource instead of a burden, MAG selected natural hazards whose impact is significant according to the history of the region. Hazards were identified through input from city officials, researching past disasters and Geographic Information System (GIS) data. The table below indicates several hazards, their main source of information, and why each was selected or not selected for this Hazard Mitigation Plan.

| Hazard | Map Availability | Reasons Selected | Sources |
|---------------|--|--|--|
| Flood | Yes | <ul style="list-style-type: none"> • Most Frequent Hazard • Historically Highest Cost • Readily available data • Successful Mitigation | FEMA Floodplain maps & HAZUS software |
| Wildland Fire | Yes | <ul style="list-style-type: none"> • Historic Data • Current Development Patterns Increase likelihood • Potential Loss of Life • 90% Human Caused | West Wide Wildfire Assessment, US Forest Service, Bureau of Land Management, Utah Division of Forestry, Fire & State Lands |
| Earthquake | Yes | <ul style="list-style-type: none"> • High Potential Impacts • Public Awareness • Need for Preparation • Possible High Cost | United States Geological Survey (USGS), University of Utah, HAZUS Provo-Orem Scenario |
| Drought | Daily maps available, but scale and variability are inappropriate for county-level maps. | <ul style="list-style-type: none"> • High Potential • Public Awareness • Historic Data • Current Condition • Growing Population Increases demands • Successful mitigation through planning | US Drought Monitor, Utah Division of Water Resources, National Integrated Drought Information System |

| | | | |
|---|--|--|---|
| Mass Movement (Landslide & Debris Flow) | Yes | <ul style="list-style-type: none"> • Review of Past Disasters • High Cost of Homes in Areas at Risk • Often Triggered by Other Hazards | Utah Geological Survey |
| Avalanche | Coordinates Available | <ul style="list-style-type: none"> • Public Awareness • Relatively High Death Count in Every County | National Oceanographic and Atmospheric Administration (NOAA), Utah Avalanche Center |
| Severe Weather | Scale and variability are inappropriate for county-level maps. | <ul style="list-style-type: none"> • High Frequency • Public Awareness • Successful Mitigation • Historic Data | National Oceanographic and Atmospheric Administration (NOAA) |
| Dam Failure | Yes | <ul style="list-style-type: none"> • High Potential Impacts • Public Awareness • Need for Preparation • Possible High Cost | Utah Division of Water Rights, Army Corps of Engineers |
| Infestation | Yes | <ul style="list-style-type: none"> • Historic Data • Public Awareness • State Database | Utah Extension Office, US Department of Agriculture |
| Radon Gas | Yes, but varies greatly | <ul style="list-style-type: none"> • Public Awareness • Second Leading Cause of Cancer | Utah Department of Air Quality |
| Air Quality and Climate Change | Yet, but not appropriate at a city level | <ul style="list-style-type: none"> • High profile • Air Quality affects all residents | Kem C Gardner Policy Institute |
| Tornado | Coordinates available | <ul style="list-style-type: none"> • Historic Data • Because there is nothing above an F1 (up to 112 mph winds), only cursory information provided • Weather events often unsuitable for mapping due to large geographic extent | National Oceanographic and Atmospheric Administration (NOAA) |
| Volcano | Yes | <p>NOT SELECTED FOR ANALYSIS</p> <ul style="list-style-type: none"> • No eruptions in Mountainland counties in written history • Little mitigation possible for Supervolcano eruptions such as Yellowstone | United States Geological Survey (USGS) |
| Terrorism | No | <p>NOT SELECTED FOR ANALYSIS</p> <ul style="list-style-type: none"> • Not suitable for this Plan, which will be public knowledge • Cities, Police Departments, and Emergency Managers have independent plans with specific objectives | Utah Department of Public Safety |

| | | | |
|--------------------------|----|---|--|
| Infectious Disease | No | NOT SELECTED FOR ANALYSIS • Not a Natural (non-human cause) Hazard • City Emergency Managers have independent plans | Center for Disease Control (CDC) |
| Hazardous Material Spill | No | NOT SELECTED FOR ANALYSIS • Not a Natural (non-human cause) Hazard • City Emergency Managers have independent plans | City and County Emergency Managers |
| Solar Flare | No | NOT SELECTED FOR ANALYSIS • Little prevention/ pre-disaster mitigation possible other than education • More appropriate for Disaster Response | National Oceanographic and Atmospheric Administration (NOAA) Space Weather Prediction Center |

Links to GIS Data used in this Plan

| Data Type | Original Layer | SOURCE | LINK | DATE ACCESSED/ CREATED |
|------------------------|-------------------------------------|--|---|------------------------------|
| <i>Natural Hazards</i> | | | | |
| Wildfire Area | BLM Utah Fire Perimeter (Polygons) | BLM, 2018 | https://www.blm.gov/basic/programs-gis-utah-data-management-fire | 12/1/2019 |
| Wildfire Locations | Wildfire History 1980-2016 (Points) | Federal Wildland Fire Occurrence Data, USGS | https://wildfire.cr.usgs.gov/firehistory/data.html | 12/1/2019 |
| Wildfire Potential | Wildfire Potential | USFS, 2018 | https://www.fs.usda.gov/rds/archive/catalog/RDS-2015-0046-2 | 7/7/1905 |
| Liquefaction Potential | Utah State University 1994 Study | Liquefaction Potential Map for Central Utah Complete Technical Report, UGS, 1994 | https://digitallibrary.utah.gov/awweb/main.jsp?flag=collection&smd=1&cl=all_lib&lb_document_id=37305&tm=1558538200102 | 12/1/2019 |
| Dams | Dams | Utah Division of Water Resources, 2017 | https://drive.google.com/drive/folders/0ByStjVZ7c7mNmZwYjN4ZFZpaFE | 12/1/2019 |
| Earthquake Epicenter | Earthquake Locations 1850-2018 | University of Utah | http://quake.utah.edu/regional-info/earthquake-catalogs | 12/31/2019 |
| Dam Inundation | Dams | Utah Division of Water Rights | https://opendata.gis.utah.gov/datasets/utahDNR::daminundation | |
| Faults | Quaternary Faults | UGS, 2019 | https://gis.utah.gov/data/geoscience/quaternary-faults/ | 3/2/2020 |

| | | | | |
|--------------------------------------|------------------------------------|-----------------|---|------------|
| Landslide Susceptibility | Landslide Susceptibility | UGS, 2007 | https://geology.utah.gov/hazards/info/maps/#tab-id-6 | 3/2/2020 |
| Jordanelle Dam Failure | US Geological Survey 1991 | UGS, 1991 | | |
| <i>Facilities and Infrastructure</i> | | | | |
| Airports | Airports | Utah AGRC, 2018 | https://gis.utah.gov/data/transportation/air/ | 12/14/2018 |
| Bridges | UDOT Structures | UDOT, 2018 | https://data-uplan.opendata.arcgis.com/datasets/f128fb58ce9f4e68bb06b27d46572109_0 | 12/14/2018 |
| Culverts | UDOT Structures | UDOT, 2018 | https://data-uplan.opendata.arcgis.com/datasets/f128fb58ce9f4e68bb06b27d46572109_0 | 12/14/2018 |
| Electrical Transmission Lines | Electrical Transmission Lines | HIFLD, 2018 | https://hifld-geoplatform.opendata.arcgis.com/datasets/electric-power-transmission-lines | 5/2/2018 |
| EMS Facilities | EMS | Utah AGRC, 2013 | https://gis.utah.gov/data/health/health-care-facilities/ | 12/14/2018 |
| Emergency Operations Center (EOC) | Local Emergency Operations Centers | HIFLD, 2018 | https://hifld-geoplatform.opendata.arcgis.com/datasets/local-emergency-operations-centers-eoc | 5/16/2019 |
| Emergency Site | National Shelter System Facilities | HIFLD, 2018 | https://hifld-geoplatform.opendata.arcgis.com/datasets/national-shelter-system-facilities | 5/16/2019 |
| Fire Stations | Fire Stations | Utah AGRC, 2013 | https://gis.utah.gov/data/society/public-safety/ | 12/14/2018 |
| Health Care Facilities | Health Care Facilities | Utah AGRC, 2017 | https://gis.utah.gov/data/health/health-care-facilities/ | 12/14/2018 |
| Interstate | Roads | Utah AGRC, 2019 | https://gis.utah.gov/data/transportation/roads-system/ | 5/3/2019 |
| Law Enforcement Station | Law Enforcement | Utah AGRC, 2013 | https://gis.utah.gov/data/society/public-safety/ | 12/14/2018 |
| Major Local Road | Roads | Utah AGRC, 2019 | https://gis.utah.gov/data/transportation/roads-system/ | 5/3/2019 |
| Railroad | Railroads | Utah AGRC, 2017 | https://gis.utah.gov/data/transportation/railroads/ | 5/17/2019 |

| | | | | |
|-----------|-----------------|-----------------|---|------------|
| Schools | Schools | Utah AGRC, 2017 | https://gis.utah.gov/data/society/schools-libraries/ | 12/14/2018 |
| Underpass | UDOT Structures | UDOT, 2018 | https://data-uplan.opendata.arcgis.com/datasets/f128fb58ce9f4e68bb06b27d46572109_0 | 12/14/2018 |

MAG collected data and compiled research on nine hazards: dam failure, earthquake, infestation, flooding, landslide, severe weather, drought, and wildfire. Research materials came from a variety of agencies including DES, AGRC, USGS, USACE, UGS, UFFSL, county GIS, city GIS, County Assessors, and County Emergency Managers. Historical data used to define historic disasters was researched through local newspapers, interviewing staff, local knowledge derived through committee meetings, historic state publications, Utah Museum of Natural History, and recent and historic scientific documents and studies.

Vulnerability Methodology

Geographic Information Systems (GIS) were used as the basic analysis tool to complete the hazard analysis for this plan. The goal of the vulnerability study is to estimate the number of structures and infrastructure vulnerable to each hazard and assign a dollar value to this built environment. For most hazards a comparison was made between digital hazard data and the Regional Inventory.

Regional Inventory

In order to determine the possible extent of damage caused by potential events, a regional inventory was developed. This regional inventory is a compilation of residential, commercial, and critical facilities, their locations and their values. In addition, future development was identified and included in the analysis using general plans and demographic projections.

Residential and Commercial Buildings- Parcel, assessor, and building permit data from each of the three counties were analyzed and added to determine current numbers, locations, and values of housing units.

Critical Facilities* – GIS data, local knowledge and parcel data were used to identify Critical Facilities within the region. Critical Facilities for the purpose of this plan are defined as Schools, Fire, Police, Hospitals, and Emergency Operation Centers.

*It was determined by the planning committee that critical infrastructure facilities such as water, sewer and power structures be left out of this plan in order to minimize their vulnerability to outside threats (terrorism). Most of the jurisdictions have been advised by security experts to limit the public exposure of these facilities. Since MAG often shares data, it did not offer to do any analysis that would require housing sensitive data on its servers.

All the analysis takes place within the spatial context of a GIS. With the information available in spatial form, it is a simple task to overlay the natural hazards with the regional inventory to extract the desired information. However, some of the hazards identified are not isolated to specific locations within the region or spatial data is unavailable and are therefore discussed at a regional level.

In terms of hazard mapping presentation in this document, simple, letter size maps were created for each city to provide a graphical illustration of location. Larger maps can be plotted out upon request. A web based data manipulation and maps application was also created as a planning tool, to allow interested persons within Utah, Wasatch and Summit Counties in Utah select a certain jurisdiction and view the various hazards on maps as well as the assessment data. The application has been available on the Mountainland AOG Website since the creation of the data.

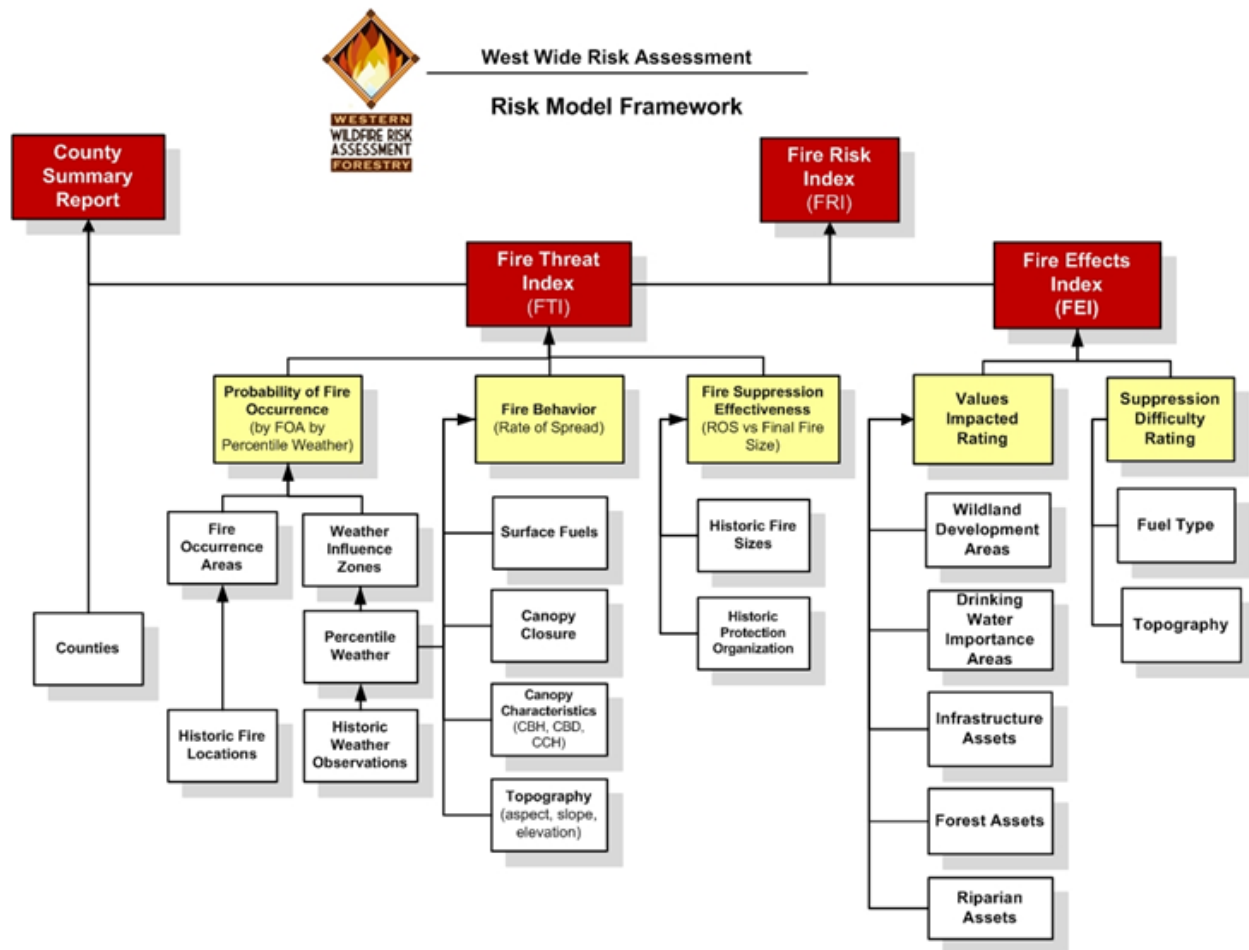
This information should not take the place of accurate field verified mapping from which ordinances need to be based off of. Owners of critical facilities should, and in most cases do, have detailed pre-hazard mitigation plans for their specific facilities.

Processing Hazard Layers

Fire

The Bureau of Land Management and Forest Service provided locations, both area and point, of historic fires from 1918-2014. All variations of the data since the 2014 analysis have used the 2014 baseline conditions (vegetation, elevation, etc.). The Fire Threat Index was created by an in-depth assessment by the Council of Western State Foresters and the Western Forestry Leadership Coalition. It is derived from the Fire Threat Index (likelihood of an acre burning) and the Fire Effects Index (potential losses). The online map shows the fine Fire Risk Index, combining both Fire Effects (potential losses) and Fire Threat (likelihood of an acre burning). When determining the buildings at risk, however, only the Fire Threat Index was used in

order to focus on the assets the city is responsible for and not those of the Forest Service, BLM, gas company, etc.



The categories for the Fire Indices are relative to the risk and effects in each county. Being an index, the final numbers do not represent a concrete value but are rather used to categorize the land into percentages of risk, as seen in the table following.

Fire Index Breakdown

| | Category | % Range | Cat. % |
|--|----------|---------------|--------|
| | 1 | 0 - 32.9% | 32.9% |
| | 2 | 33.0 - 63.5% | 30.5% |
| | 3 | 63.5% - 70.0% | 6.5% |
| | 4 | 70.0 - 77.5% | 7.5% |

Lowest 70%

| | | | |
|--|---|---------------|------|
| | 5 | 77.5 - 85.5% | 8.0% |
| | 6 | 85.5 - 92.5% | 7.0% |
| | 7 | 92.5 - 96.5% | 4.0% |
| | 8 | 96.5 - 98.5% | 2.0% |
| | 9 | 98.5 - 100.0% | 1.5% |

Highest 30%
used to
determine at
risk buildings

The findings of any calculation using the Fire Risk Index at a home-by-home scale are not to be used in creating a plan for that individual home. The Fire Indices have a 30-meter resolution best suited for local plans, not household ones.

These are the steps we took to manipulate the data to our needs.

Using the Fire Threat Index and Fire Risk Index

- 1) Import Utah-specific symbology from WWA, and apply it to classified values.
- 2) Using the Reclassify Raster tool, change the index values to values 1-9
- 3) Use the Raster to Polygon tool in order to overlay the data on the regional inventory to produce loss estimates
- 4) For better map display, use a low-pass filter to eliminate salt-and-pepper

Flood

MAG used FEMA's FIRMS, many of which have been updated since the 2017 plan, to determine areas at risk. As with other hazards, MAG intersected the 1% annual chance floodplain shapefiles downloaded from FEMA with building values to create a risk estimate.

Dams

The U.S. Army Corps of Engineers provided dam information for all Federal dams in Summit, Utah and Wasatch counties. Utah Division of Water Rights includes a Dam Inventory consisting of dam points, hazard level, first downstream town, and notes from the latest inspections. Utah Division of Water Rights also has shapefiles of some dam inundation extents. Both were used wherever possible. Jordanelle and Deer Creek dam failure extents come from a 1994 study by the Bureau of Reclamation. There exist 2012 maps showing extent and depth, but these are carefully kept by the Bureau of Reclamation for safety purposes. The BoR is reviewing its sharing policies and MAG hopes to use more recent data in the next plan update.

The primary purpose of the inundation maps is for warning and evacuation in the event of a dam failure or a large reservoir release. Values chosen to approximate physical characteristics such as dam failure breach parameters, channel roughness coefficients, etc., are based on assumptions and are used to produce best estimates of the downstream inundation. Thus, actual inundation, were it to occur, could be greater or less than that indicated on the inundation maps.

Deer Creek/Jordanelle Dam Study

For this study, the results of the one dimensional National Weather Service (NWS) DAMBRK model performed by the Denver Office was used to obtain the dam break flows from both Jordanelle Dam to Deer Creek Dam and from Deer Creek Dam to the mouth of Provo Canyon. However, the terrain beyond the mouth of Provo canyon is an alluvial fan, which unlike the narrow confined canyon, is a broad, flat plain. A two dimensional model is more appropriate for this type of terrain. It provides a more accurate depiction of the topography and allows for the water to spread and follow multiple drainage paths. The modeling tools used for the Orem/Provo areas utilized the Danish Hydraulic Institute's MIKE 21 two-dimensional hydrodynamic flow model. MIKE 21 is a 2-D finite difference model that simulates unsteady 2-D flows in (vertically homogeneous) fluids using the Saint Venant equations. ARCINFO GIS software is used as both a pre and post processor for the MIKE 21 model. Data used for the Deer Creek Dam models came from 7.5 minute, 10-meter resolution, digital elevation models (DEM) prepared by Land Info Inc., of Aurora, Colorado. The 10-meter data was then resampled at 30-meter cell size for use in the MIKE 21 models. The 10-meter elevation data appeared to be satisfactory for this study however for a more detailed study of the metropolitan area a better resolution of elevation data is recommended.

Landslides

All counties include a simple landslide-susceptibility map consisting of all slopes 30% and over. Additional datasets from the Utah Geological Survey show areas of past landslides, debris flow, and alluvial-fan deposition in the Holocene epoch (everything since Earth's last "ice age"). As with other hazard methodologies, the simple and effective spatial methodology was to overlay these data sets with the regional inventory within GIS to produce loss estimates.

Earthquake

Building construction seems to be the biggest factor in whether or not a building is destroyed during an earthquake. Since builders were not aware of earthquakes along the Wasatch Front until the 1970s and appropriate codes were not fully implemented until about 1990, we determined \$ building losses by calculating the building values (improvement values) for all buildings constructed before 1990. HAZUS model runs from the state aggregate at county, not city, level.

Building Analysis Methodology

Each county provided parcel data with building and tax information. Parcels were determined to be either Residential, Commercial, Industrial, Educational, Public, Religious, or Null (parcels without buildings). Next, a manual sampling comparing satellite data was performed to find areas of misclassification. Not every parcel was checked because going through tens of thousands of parcels was not feasible for this project.

After checking for accuracy, the parcel polygons were converted to points. I then looked at the parcel points (heretofore called building points) with the hazard layers and moved building points on the edges of any hazard to the buildings which they represented while editing any points I found to be in error (ie: an agricultural building misclassified as residential). At this point I was confident that most building points were classified correctly and located with their respective hazard areas.

Identifying Buildings at Risk

To determine the number of buildings at risk, MAG selected all buildings within a city's boundary then intersected those with each hazard. MAG ran a report for each city's hazard with the improvement value of the parcel, aka the building value without the land, and the acreage, meaning the acreage of the parcel on which the at-risk building sets. Some hazards were straightforward, but others required a categorical intersection with the building points.

Central Utah Water Conservancy District

Potential Losses Methodology

The potential losses to CUWCD and its customers from a natural hazard event were determined for each of the critical facilities/assets using predicted damage states. The two components used to account for the potential loss at each facility were: 1) estimated physical damage to CUWCD assets, 2) estimated loss of water service function.

The baseline damage state for each facility/asset was determined from the identified risks/hazards in the 'Potential Economic Loss Hazards Events (2021)' table. The table below provides a summary of the general damage state definitions and associated expected damage and range of estimated physical loss values.

General Damage State Definitions

| Damage State | Expected Damage | Estimated Loss |
|-----------------|---|----------------|
| None | No damage | 0% |
| Light | Architectural damage, light and easily repairable; minimal disruption of use; meets Immediate Occupancy performance criteria | 5% |
| Light-Moderate | Limited damage with some localized structural damage potentially leading to short-term business/operational interruption | 15% |
| Moderate | Substantial structural damage, but with minimal potential for localized collapse; structure likely to be closed/inoperable until critical repairs are completed; meets Life Safety performance criteria | 30% |
| Moderate-Severe | Severe structural damage, possibly including partial collapse and critical economic loss; structure likely to be closed/inoperable for an extended period | 50% |
| Severe | Severe structural damage leading to partial or total structural collapse and major economic loss; repair may not be feasible or economically reasonable | 70% |
| Complete | Catastrophic damage and complete loss or failure | 100% |

Avoided loss-of-function impacts (i.e., economic impacts of loss of water service) were determined in accordance with the FEMA BCA standard utility loss of service values and Sections 6.3 and 6.4.2 of FEMA's *What is a Benefit? (2001)* document. The economic impacts of loss of water service are estimated based on three levels of loss of service: 1) complete loss of potable water service, 2) potable water service that is 'unsafe for drinking', and 3) complete loss of secondary water service.

Part 11 Appendix

Contacts and Participation

| Position | Name | Phone | Email | Small Meeting | Group Meeting |
|---------------------------------|------------------|--------------|--|---------------|---------------|
| Summit County Emergency Manager | Kathryn McMullin | 801-718-4628 | kmcmullin@summitcounty.org | | Yes |
| Summit County Planner | Ray Milliner | 435-336-3118 | rmilliner@summitcounty.org | 18 August | |
| Summit Co Fire Marshall | Mike Owens | 435-940-2520 | mowens@pcfd.org | | |
| Summit Co Public Works | Derrick Radke | 435-336-3970 | dradke@summitcounty.org | | Yes |
| Summit Co Manager's Office | Janna Young | | | | Yes |
| Summit Co | Glenn Wright | | | | Yes |
| Summit Co Environmental Health | Spencer Smith | | | | Yes |
| Henefer Planner | Robert Richins | 435-336-5365 | henefertown@allwest.net | | |
| Henefer Mayor | Kay Richins | 801.599.8003 | henefermayor@gmail.com | Aug 11 | |
| Park City Emergency Manager | Kathryn McMullin | 435-615-5185 | kmcmullin@summitcounty.org | | |
| Park City Planner | | | | | |
| Coalville Mayor | Trevor Johnson | 435-336-5981 | mayor@coalvillecity.org | | |
| Coalville | Niki Sargent | 435.659.6941 | niki.sargent@coalvillecity.org | | |
| Coalville Public Works | Zane Deweese | 435-336-5980 | zane.deweese@coalvillecity.org | | |
| Coalville Public Works | Kyle Clark | | | Oct 28 | Yes |
| Coalville Wastewater Treatment | Sam Adams | | | Oct 28 | Yes |
| Oakley | | 435-783-5734 | oakley@oakleycity.com | | |
| Oakley Planner | Stephanie | | stephanie@oakleycity.com | | |
| Oakley | Amy Rydalch | | amy@oakleycity.com | Aug 16? | |
| Oakley City | Kelly Kimber | | kelly@oakleycity.com | | Yes |

| | | | | | |
|---|----------------|--------------------|---------------------------|---------|-----|
| Francis/Kamas | Scott Kettle | 435-654-2226 | skettle@horrocks.com | June 14 | Yes |
| | | cell: 801-360-9735 | | | |
| Francis Public Works | | 435-783-6236 | lthomas@francisutah.org | June 14 | |
| Francis Planner | Katie Henneuse | 435-783-6236 | khenneuse@francisutah.org | June 14 | Yes |
| | | | | | |
| WUI Coordinator | Travis Wright | 385-505-4030 | tdwright@utah.gov | | |
| Park City Fire District | Ashley Lewis | | | | Yes |
| North Summit Fire District | Ian Nelson | | | | Yes |
| FFSL /County Fire Warden | Bryce Boyer | | | | Yes |
| N Summit School District | Kristy | | kbraithwaite@nsummit.org | | |
| S Summit School District | Kip Bigelow | | kbigelow@ssummit.org | 19 July | Yes |
| S Summit School District | Kathy Carr | | kathy.carr@ssummit.org | 19 July | Yes |
| S Summit School District Superintendent | Greg Maughan | | greg.maughan@ssummit.org | | |

| Utah County Contacts for Hazard Mitigation Plan | | | | | |
|---|----------------|----------------|---------------------------------|---------------|---------------|
| Position | Name | Phone | Email | Small Meeting | Group Meeting |
| Northern | | | | | |
| Mayor Cedar Fort | David Gustin | 801.768.2147 | mayor@cedarfort.town | 12/17/2020 | |
| Alpine | Shane Sorensen | 801-420-2962 | ssorensen@alpinecity.org | 6/17/2021 | Yes |
| Saratoga Fire | Spencer Kyle | 801-766-9793 | skyle@saratogaspringscity.com | | |
| Saratoga Planning | David Stroud | 801.766.9793x4 | dstroud@saratogaspringscity.com | | |
| Saratoga Springs Engineer | | 801-766-9793x5 | | | |

| | | | | | |
|--|---------------------|-------------------|--|-----------|-----|
| Lehi Engineering | Ross | | rdinsdale@lehi-ut.gov | 7/7/2021 | |
| Lehi Planning | Kim Struthers | 385-201-2521 | kstruthers@lehi-ut.gov | 7/7/2021 | Yes |
| Lehi Emergency Management Committee director | Scott Debell | | sdabell@lehi-ut.gov | 7/7/2021 | Yes |
| Lehi Emergency Management Committee director | Scott Sampson | 385-201-2268 | ssampson@lehi-ut.gov | 7/7/2021 | Yes |
| Lehi Planning | Mike West | | | 7/7/2021 | Yes |
| Lehi Environmental Sustainability | Todd Munger | | tmenger@lehi-ut.gov | | Yes |
| Lehi Planning | | | | 7/26/2021 | |
| Lehi City Council | Paige Albrecht | | | | Yes |
| Cedar Hills Emergency Manager | Laurie Petersen | 801-785-9668 x104 | lpetersen@cedarhills.org | | |
| Cedar Hills City Manager | Chandler Goodwin | | cgoodwin@cedarhills.org | 6/14/2021 | |
| Cedar Hills/AF Fire | Aaron Brems | 801-763-3045 | abrems@americanfork.gov | 6/14/2021 | |
| Cedar Hills City Council | Mike Geddes | | mgeddes@cedarhills.org | | |
| American Fork Public Works/Engineer | Ben Hunter | 801.854.5930 | bhunter@afcity.net | 6/14/2021 | |
| American Fork Engineer | Scott Sensanbaugher | 801-763-3060 | ssensanbaugher@afcity.net | 6/14/2021 | Yes |
| Fairfield | Chianne Barnson | 435-231-4027 | chybarnson_fairfieldtown@yahoo.com | | |

| | | | | | |
|-----------------------------------|------------------|----------------|--|------------|-----|
| Fairfield Mayor | Brad Gurney | 801-874-8386 | mayor@fairfieldtown.org | 12/17/2020 | |
| Eagle Mountain Primary | Jeff Weber | | JWeber@emcity.org | 6/22/2021 | Yes |
| Eagle Mountain | Greg Stone | | gstone@emcity.org | 6/22/2021 | Yes |
| Eagle Mountain Fire Chief | Embret Fossum | | efossum@UFA-SLCO.org | 6/22/2021 | |
| Eagle Mountain Engineer | Chris Trusty | | ctrusty@emcity.org | | Yes |
| Eagle Mountain Planning | Tayler Jensen | (801) 789-6615 | tjensen@emcity.org | | |
| Highland Planning | Nathan Crane | 801-756-5751x3 | ncrane@highlandcity.org | 6/17/2021 | |
| Highland Planning | Joann | | joann@highlandcity.org | | |
| Highland Planning | Erin Wells | 801-772-4566 | erin@highlandcity.org | | |
| Highland Finance Director | Tyler Bahr | | | 6/17/2021 | |
| Highland Mayor | Rod Mann | | | | Yes |
| Central | | | | | |
| Orem Engineer | Sam Kelly | 801-229-7328 | srkelly@orem.org | 6/22/2021 | |
| Orem Emergency Manager | Heath Stevenson | 801-229-7146 | hmstevenson@orem.org | 6/22/2021 | Yes |
| Provo EM | Chris Blinzinger | 801-404-6368 | cblinzinger@provo.org | 6/10/2021 | Yes |
| Provo Stormwater Engineer | Jared Penrod | | jpenrod@provo.org | 6/10/2021 | Yes |
| Provo Airport | Donavon Cheff | | | | Yes |
| Provo | Melissa McNalley | | MMcNalley@provo.utah.gov | 6/10/2021 | |
| Provo Planner | Robert Mills | 801-852-6407 | rmills@provo.org | 6/10/2021 | Yes |
| Lindon Administration (secondary) | Adam Cowie | 801-785-5043 | acowie@lindoncity.org | 6/15/2021 | Yes |

| | | | | | |
|------------------------------------|-----------------------------------|----------------|--|-----------|-----|
| Lindon Emergency Manager (primary) | Kelly Johnson | | kjohnson@lindoncity.org | 6/15/2021 | Yes |
| Vineyard | George Reid | | Georger@vineyardutah.org | 6/7/2021 | Yes |
| Vineyard Public Works | McDermott, Kinsli | 801-226-1929 | kinslim@vineyardutah.org | | |
| Vineyard Planner | Morgan Brimm | 385-248-7029 | morganb@vineyardutah.org | | |
| Vineyard Planner | Briam Perez | 385-329-1730 | briamp@vineyardutah.org | 6/7/2021 | |
| Vineyard Engineer | Nassim | | | 6/7/2021 | Yes |
| Spanish Fork Economic Development | Dave Anderson | 801-804-4586 | danderson@spanishfork.org | 6/9/2021 | Yes |
| Spanish Fork Public Works | Chris Thompson | 801-804-4556 | cthompson@spanishfork.org | | |
| Spanish Fork Public Works | Marlo | | msmith@spanishfork.org | 6/9/2021 | |
| Spanish Fork Emergency Manager | Trevor Sperry | 801.804.4768 | tsperry@spanishfork.org | 6/9/2021 | |
| Spanish Fork | Jered Johnson | 801-804-4575 | jjohnson@spanishfork.org | | |
| Spanish Fork Floodplain Engineer | John Little | | jlittle@spanishfork.org | | |
| Spanish Fork | Travis Warren | | | 6/9/2021 | Yes |
| Mapleton Planner | Brian Tucker | 801-806-9108 | btucker@mapleton.org | 6/30/2021 | Yes |
| Mapleton Ready | Derek Haynie | (801) 491-1111 | derek@mapletonready.org | | |
| Mapleton Public Works | Steven Lord | (801) 489-6253 | slord@mapleton.org | 6/30/2021 | |
| Springville Engineer | Jeff Anderson | 801-491-2719 | janderson@springville.org | 6/30/2021 | |

| | | | | | |
|--|------------------|--------------|--|-----------|-----|
| Springville emergency prep mtgs | | | EM@springville.org | | |
| Springville Planner | Laura Thompson | | lthompson@springville.org | | |
| Springville Head Building Official-secondary | Jason Van Ausdal | 801-491-7832 | jvanausdal@springville.org | | |
| Springville EM | JoAnna Larsen | 801-635-5776 | em@springville.org | | Yes |
| Pleasant Grove Community Development | Daniel Cardenas | | dcardenas@pgcity.org | | |
| PG Engineering | Marty Beaumont | 801-785-2941 | mbeaumont@pgcity.org | | Yes |
| PG Fire Chief | Andrew Engermann | | aEngemann@pgcity.org | | |
| PG Engineering | Aaron Wilson | | awilson@pgcity.org | 6/15/2021 | Yes |
| | | | | | |
| Southern | | | | | |
| Goshen | Steven Staheli | | goshentown@gmail.com | 6/9/2021 | |
| Salem | Bruce Ward | | brucew@salemcity.org | | |
| Salem | Greg Gurney | | ggurney@salemcity.org | | Yes |
| Payson Fire Marshall | Scott Spencer | 801-465-5252 | scotts@payson.org | 6/14/2021 | |
| Payson Facilities Manager | Shane Spencer | 801.404.6473 | | 6/14/2021 | |
| Payson | Jill Spencer | 801-465-5233 | jills@payson.org | 6/14/2021 | Yes |
| Payson | Travis Jockumsen | | travisj@payson.org | 6/14/2021 | Yes |

| | | | | | |
|---------------------------------|------------------|---------------------|--|-----------|-----|
| Santaquin | Jason Bond | 801-754-1011 ex 223 | jbond@santaquin.org | 7/26/2021 | Yes |
| Santaquin EM | Chris Lindquist | (801)754-1940 | clindquist@santaquin.org | 7/26/2021 | Yes |
| Santaquin Fire Chief | Ryan Lind | (801)754-1940 | | 7/26/2021 | |
| Santaquin Engineer | Jason Lidet | | | 7/26/2021 | |
| Santaquin Engineer | Norm Beagley | | | 7/26/2021 | Yes |
| Santaquin | Jon Lundell | | | | Yes |
| Genola | Chris Steele | 801-754-5300 | gcpw@rburst.com | | |
| Genola Planning & Zoning | | | genolapz@gmail.com | | |
| Genola Town Clerk | Lucinda Daily | 801.754.5300 | Genolaclerk@gmail.com | 7/29/2021 | Yes |
| Elk Ridge Public Works Director | David Gene | 801.423.2300 | davidj@elkridgecity.org | | |
| Elk Ridge Fire Chief Primary | Seth Waite | | firechief@elkridgecity.org | | |
| Elk Ridge City Manager | Royce | | royce@elkridgecity.org | 7/8/2021 | |
| Woodland Hills | Corbett Stephens | 801-857-0788 | works@woodlandhills-ut.gov | 7/8/2021 | |
| Woodland Hills | Jodie Stones | 801-423-1962 | recorder@woodlandhills-ut.gov | | |
| | Greg Northup | | fire@woodlandhills-ut.gov | | |
| Others | | | | | |
| WUI Coordinator | Dax Reid | 801-678-1655 | daxreid@utah.gov | 6/30/2021 | Yes |
| Utah County Fire Warden FFSL | Josh Berg | 385-254-8010 | jberg@utah.gov | 6/30/2021 | |
| County Commissioner | Bill Lee | | WilliamL@utahcounty.gov | | |

| | | | | | |
|---|-----------------------------------|--------------|--|-----------|--|
| | Thomas SAKIEVICH | | Thomas@utahcounty.gov | | |
| | | | AmeliaP@utahcounty.gov | | |
| Health Dept Emergency Response Coordinator | Ryan Strabel | 801.851.7525 | ryanst@utahcounty.gov | 6/30/2021 | |
| BOR | Dale | | dthamilton@usbr.gov | | |
| CUWCD | Mike Whimpey | | mwhimpey@cuwcd.com | | |
| Alpine School District | Frank Pulley | | frankpulleyjr@alpinedistrict.org | | |
| | Kimberly Bird | | kbird@alpinedistrict.org | | |
| | Mike Browning | | mbrowning@alpinedistrict.org | | |
| Nebo Risk Management | Kathy Carling | 801-354-7474 | kathy.carling@nebo.edu | 7/20/2021 | |
| Utah Co. Emergency Manager | Peter Quittner | 801-404-6050 | peterq@utahcounty.gov | 6/30/2021 | |
| Utah County Emergency management | Allison Jester/Janeen Olson | | AllisonJ@utahcounty.gov | 6/30/2021 | |
| Provo Airport | Heather | 8018526715 | hrollins@provo.org | | |
| Utah County Emergency Management | | | ryanst@utahcounty.gov | | |
| Utah County Temporary employees | Emily, Lindsey, James | | | 6/30/2021 | |

| | | | | | |
|---|---------------|--------------|--|----------------------|--|
| Provo School District Facilities Director | Mark Wheeler | 801-374-4923 | | | |
| | | | | | |
| MAG's TAC | | | | Presented 7/26/2021 | |
| Utah County Emergency Manager Monthly Meeting | | | | Presented 10/26/2021 | |
| Central Utah Water Conservancy District | Mike Whimpey | | mwhimpey@cuwcd.com | | |
| CUWCD | Blake Buehler | 801.226.7133 | blake@cuwcd.com | 12/8/2021 | |
| CUWCD | Chris Elison | | | 12/8/2021 | |
| CUWCD | Cort Lambson | | | 12/8/2021 | |
| CUWCD | KC Shaw | | | 12/8/2021 | |
| | | | | | |

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|---|-----------------|--------------|-----------------|-------------|-----------------------|----------------------------------|
| Wasatch Contacts for Hazard Mitigation Plan | | | | | | |
| | | | | | | |
| Position | Name | Phone | Email | | 1st Small Mtgs | Draft Presentation Oct 13 |
| Central Utah Water Conservancy District | Derek Burton | | derek@cuwcd.com | 5 May email | | 13 Oct |
| Central Utah Water GIS | David Pritchett | | dave@cuwcd.com | 5 May email | | |

| | | | | | | |
|------------------------------|----------------------|--------------|--|--------------|-----------|--------|
| Charleston Mayor | Brenda Kozlowski | | mayorkozlowski@gmail.com | 5 May email | 8/25/2021 | |
| CUWCD | Roger Pearson | | | | | 13 Oct |
| Daniel | Eric Bunker | 435-647-6086 | ericbunker@danielutah.org | 5 May email | 7/7/2021 | |
| Daniel Councilmember | Mary Duggin | | | | | 13 Oct |
| FEMA | Daniel Webb | | | | | 13 Oct |
| Heber City | Brad Mumford | | bmumford@heberut.gov | 5 May email | | |
| Heber City Administrator | Matt Brower | | | | | 13 Oct |
| Heber City EM | Lt. Jeremy Nelson | 435-657-7915 | jnelson@heberut.gov | 5 May email | 6/15/2021 | |
| Heber City Mayor | Keleen Potter | | | | | 13 Oct |
| Heber City Planner | Jamie Baron | 435-657-7914 | jbaron@heberut.gov | 5 May email | 6/15/2021 | 13 Oct |
| Heber City Planning Director | Tony Kohler | 435-657-7900 | tkohler@heberut.gov | 5 May email | | 13 Oct |
| Hideout | Jamie? | | jmccosh@hideoututah.gov | 5 May email | | |
| Hideout | Lynnette Shindurling | 435-659-4739 | alutes@hideoututah.gov | 12 May email | 8/4/2021 | |
| Independence | Jodi Hoffman | | jhoffman@xmission.com | 5 May email | | |
| Independence | Lauren Boldger | | independenceut@gmail.com | 5 May email | 8/25/2021 | 13 Oct |
| Interlaken Clerk | Bart Smith | 206-851-2053 | interlakenclerk@gmail.com | 5 May email | 8/27/2021 | |

| | | | | | | |
|----------------------------------|--------------------|-----------------|----------------------------|--------------|-----------|--------|
| Interlaken Engineer | | | APays@TO-Engineers.com | 5 May email | | |
| Interlaken Mayor | Greg Harrigan | 435-714-0909 | interlaken.mayor@gmail.com | 5 May email | 8/27/2021 | |
| Midway | Michael Henke | 435-654-3223 x4 | mhenke@midwaycityut.org | 5 May email | 7/7/2021 | |
| Midway Councilmember | Luke Robinson | | | | | 13 Oct |
| Midway Councilmember | Steve Dougherty | | | | | 13 Oct |
| Wallsburg | Rylee Allen | | rylee_b@hotmail.com | 5 May email | | |
| Wallsburg | Celeni Richins | 435-654-8608 | celenirichins@gmail.com | 5 May email | 8/23/2021 | |
| Wasatch Co GIS | Ivan Spencer | 435-657-3194 | ispencer@wasatch.utah.gov | 5 May email | 6/15/2021 | |
| Wasatch County | Lewis Hastings | 435-657-3262 | lhastings@wasatch.utah.gov | 5 May email | | 13 Oct |
| Wasatch County Councilmember | Kendall Crittenden | | | | | 13 Oct |
| Wasatch County Emergency Manager | Jeremy Hales | (435) 657-3544 | EM@wasatch.utah.gov | 5 May email | 6/15/2021 | |
| Wasatch County School District | Shawn Kelly | 435.654.0280 | shawn.kelly@wasatch.edu | July 13 call | | |
| Wasatch County Sheriff's Office | Jeremy Hales | 435-657-1098 | jhales@wasatch.utah.gov | 5 May email | | |
| WUI Coordinator | Travis Wright | 385-505-4030 | tdwright@utah.gov | 5 May email | | |

| Other Contacts | Name | Cell | Email | Emailed all in Nov '19 | Type of Involvement |
|--|--------------------|--------------|--|------------------------------|--|
| State Mitigation Specialist | Eric Martineau | 801-946-4022 | emartineau@utah.gov | | |
| Central Utah Water Conservancy District | Mike Whimpey | | mwhimpey@cuwcd.com | Sep 27 email | Hosted Central Utah County Mitigation meeting |
| Wasatch County Fire District | | 435-940-9636 | admin@wasatchcountyfiredistrict.com | | |
| North Utah County Water Conservancy District | John Jacobs | 801-756-7039 | john.nucwcd@gmail.com | | |
| Weber Basin Water Conservancy District | Sherrie Mobley | 801-771-1677 | smobley@weberbasin.com | | |
| Kamas Valley Conservation District | Wendell Stenbridge | 435-783-2595 | | | |
| FFSL- Wasatch & Summit | Ken Ludwig | | kenludwig@utah.gov | | |
| Roads | Richard Nielsen | 801-851-8601 | richardjn@utahcounty.gov | | |
| Utah Floodplains Manager (previous) | Kathy Holder | 801-538-3332 | kcholder@utah.gov | | |
| Utah Floodplains Manager (current) | Angelia Crowther | | acrowther@utah.gov | | Provided NFIP and other floodplain information |
| Alpine School District Risk Manager | Kim Walker | 801-610-8085 | kwalker@alpinedistrict.org | | |
| Nebo School District Risk Manager | Kathy Carling | 801.354.7433 | kathy.carling@nebo.edu | | |
| Provo School District Facilities Director | Mark Wheeler | 801-374-4923 | markwh@provo.edu | 5 May email | |

| | | | | | |
|--|------------------|--------------|-------------------------------------|----------------------|---|
| Park City Fire District | Ashley Lewis | | | | Attended Summit County Draft Presentation Meeting |
| Wasatch School District | Jill | 435-654-0280 | | | |
| Duchesne County Emergency Manager | Mike Lefler | 435-738-1184 | mlefler@duchesne.utah.gov | | |
| Tooele County Emergency Management | Bucky Whitehouse | 435-833-8100 | bwhitehouse@tciem.org | | |
| Salt Lake County Emergency Services | | 385-468-7092 | emergencyserv@slco.org | | |
| Morgan County Emergency Services | Ian Nelson | 801-845-4048 | lnelson@morgan-county.net | | |
| Juab Planning & Zoning | | 435-623-3400 | glenng@co.juab.ut.us | | |
| Uinta Wyoming Emergency Management | Kim West | 307-783-0327 | | | |
| Sweetwater Wyoming Emergency Management | Judy Roderick | 307-922-5370 | roderickj@sweet.wy.us | | |
| Sanpete/ Central Utah Public Health Emergency Response | Zacharia Kearney | | ZKearney@utah.gov | | |
| Provo Airport | | 8018526715 | | 4 June phone message | Joined Provo's small group meeting |
| Rocky Mountain Power Electric Safety | | | publicsafety@rockymountainpower.net | 4 June email | Spoke at Utah County Emergency Manager's Meeting |

| | | | | | |
|---|-----------------------|------------|--|----------------------|--|
| RMP Tree Pruning | | | vegetationmgmtpacor@pacificorp.com | 4 June email | |
| UTA Emergency Manager | | 8017433882 | Sheldon Shaw | 4 June phone message | |
| Chief Mecham | 801-743-7103 | | | | |
| Captain Keith Bevan | 801-743-7143 | | | | |
| Structural Engineers Association of Utah | | | Dallin.Pedersen@bhbengineers.com | | Presented at Springville Contractor meeting on Seismicly Sound Buildings |
| Structural Engineers Association of Utah | | | Chris.Hofheins@bhbengineers.com | | Presented at Springville Contractor meeting on Seismicly Sound Buildings |
| FEMA Mitigation Specialist-Field Integration Team | (303) 513-4415 (cell) | | brandon.webb2@fema.dhs.gov | | Spoke at Draft Luncheons |
| UVU Risk Management | | | | | Attended Utah County Emergency Manager's Meeting |
| BYU Risk Management | | | | | Attended Utah County Emergency Manager's Meeting |

Code Examples

Air Quality

8.06.010 Purpose And Scope for Heber City

1. PURPOSE: In order to protect Heber City's citizens and their health, safety and welfare, this ordinance incorporates the Envision 2050 General Plan ideas on "Clean Air: Options for Residential and Business Land Uses" (pg. 32). It incorporates air quality solutions in the "Utah Roadmap: Positive Solutions on Climate and Air Quality" and "Utah Climate and Clean Air Compact" developed and adopted in 2020 for Utah. Heber City is known nationally and internationally for its incomparable mountain views with beautiful open space and agricultural vistas, its pristine environmental quality, and its clean air. Yet Heber City faces unique geographic features that lead to inversions, degraded air quality, other environmental concerns, as well as growth pressures. This ordinance will maintain the citizens' commitment to protecting the health of their families, school children, and protecting the quality of our natural environment. The Heber City Council will adopt an air quality slogan as desired. Initially the city slogan is: "I Care About Heber Air."
2. SCOPE: The City Manager and other administrators are responsible for establishing programs to implement this policy at their respective departments and locations. The City will establish an Energy Management Steering Committee to ensure best practices are evaluated and implemented for all City owned and operated facilities. Such Committee can develop annual Energy Management Plans for city departments and help administer this ordinance.

8.06.030 Anti-Idling

1. City anti-idling signage shall include the current city slogan. When businesses with drive-thru's or other idling/pick-up/delivery areas renew their annual business license such business will receive the initial set of anti-idling signage and install it in areas to be approved by the Planning Office, unless the private property owner:
 1. Has a private business posts a sign provided by or acceptable to the city informing its customers and the public of the city's time limit for idling vehicle engines.
 2. Or already has anti-idling signage previously installed with current city slogan.
- B. Drivers while operating a vehicle within city limits should not idle vehicles, except for the following kinds of idling:
1. Idling while stopped:
 - a. For an official traffic control device; b. For an official traffic control signal; c. At the direction of a police officer;

2. Idling as needed to operate heaters or air conditioners where the temperature is below thirty-two degrees Fahrenheit (32°F) or above ninety degrees Fahrenheit (90°F), as measured at the Heber City Airport or determined by the National Weather Service, for the health or safety of a driver or passenger, including service animals.
3. Idling for the minimum amount of time required for the operation of defrosters or other equipment to clear the windshield and windows to provide unobstructed views and ensure visibility while driving.
4. Idling as needed for emergency vehicles to operate equipment.
5. Idling as needed to ascertain that a vehicle is in safe operating condition and equipped as required by all provisions of law, and that all equipment is in good working order, either as part of the daily vehicle inspection, or as otherwise needed.
6. Idling as needed for testing, servicing, repairing, installation, maintenance, or diagnostic purposes.
7. Idling for the period recommended by the manufacturer to warm up or cool down a turbocharged heavy-duty vehicle.
8. Idling as needed to operate auxiliary equipment for which the vehicle was primarily designed or equipped, other than transporting goods, such as: operating a transportation refrigeration unit (TRU), lift, crane, pump, drill, hoist, ready mixed equipment, except a heater or air conditioner.
9. Idling as needed to operate a lift or other piece of equipment designed to ensure safe loading and unloading of goods or people.
10. Idling to recharge a battery or other energy storage unit of a hybrid electric vehicle.
11. Idling as needed for vehicles that house K-9 or other service animals.
12. Idling by on duty police officers as necessary for the performance of their official duties.

8.06.040 Open Wood Burning Stoves And Fireplaces

No open wood burning stoves or open wood burning fireplaces are allowed within new development. EPA certified wood burning stoves/devices, and wood burning,

natural gas, or propane fire pits & devices are allowed within residential, commercial, mixed-use, or industrial development.

8.06.050 Air Quality Monitoring

A. City or its designees will install and maintain IOT air monitors. City website will provide links to IOT air quality monitoring websites. Actual locations will be determined with collaboration between the Wasatch County Health Department and City.

8.06.060 Electric Vehicle Charging Stations

A. In annexation agreements, Master Development agreements, or zone changes the City Council may negotiate for EV-Ready Outlets or Level 1 chargers to be included in garages for condominiums, townhouses, duplexes, and single-family homes to allow for charging of hybrid and electric vehicles.

B. In annexation agreements, Master Development agreements, or zone changes the City Council may negotiate for Level 2 charging stations within mixed use or residential parking garages at a potential rate of 1 for every 8 units.

C. In annexation agreements, Master Development agreements, or zone changes the City Council may negotiate for two or more Level 2 charging stations for every 100 stalls. For park & ride or central transportation areas, the City may negotiate for Level 3 charging stations.

D. Minimum Parking Requirements. An electric vehicle charging station space may be included in the calculation for minimum required parking spaces that are required pursuant to other provisions of the code.

E. Location and Design Criteria.

Where provided, parking for electric vehicle charging purposes is required to include the following:

Clearance. Charging station equipment mounted on pedestals, light posts, bollards, or other devices shall be a minimum of twenty-four inches clear from the face of curb.

Charging Station Equipment. Charging station outlets and connector devices shall be no less than thirty-six inches or no higher than forty-eight inches from the top of surface where mounted, and shall contain a retraction device and/or a place to hang permanent cords and connectors sufficiently above the ground or paved surface.

Charging Station Equipment Protection. When the electric vehicle charging station space is perpendicular or at an angle to curb face and charging equipment, adequate equipment protection, such as wheel stops or concrete-filled steel bollards, shall be used.

Location. Placement of a single electric vehicle charging station is preferred at the beginning or end stall on a block face.

Signage. Each charging station space shall be posted with signage indicating the space is only for electric vehicle charging purposes. Days and hours of operations shall be included if time limits or tow away provisions are to be enforced. Signage shall include: A phone number or other contact information shall be provided on the charging station equipment for reporting when the equipment is not functioning, or other problems are encountered.

F. Location and Design Criteria.

Maintenance. Charging station equipment shall be maintained in all respects, including the functioning of the charging equipment. Damaged or unusable EV Chargers should be repaired as soon as possible.

Electricity Charges. When payment is required charging station owners should ensure that such payments can be made using an established national network with NFC (near-field communication technology) payments. For DC charging, in addition, the EVSE should provide a card reader to accept credit card payments. Actual EV charges should be comparable to average regional EV charges.

Accessibility. Where charging station equipment is provided within an adjacent pedestrian circulation area, such as a sidewalk or accessible route to the building entrance, the charging equipment shall be located so as not to interfere with accessibility requirements for sidewalks, trails, other parking stalls. In new development, the EV charging parking stalls will be next to handicapped parking stalls.

Lighting. Where charging station equipment is installed, adequate site lighting is required for use of charging station during nighttime hours per dark sky compliance standards.

8.06.070 Radon Air

The City encourages property owners to complete radon testing in all commercial, industrial, mixed-use, and residential development. The City also encourages radon mitigation design in all developments. The City and the Wasatch County Health

Department can provide radon mitigation design, radon risk maps and health facts, availability on radon test kits, and radon engineering guidelines to building permit applicants.

8.06.080 Fugitive Dust

City will require dust control measures for any development or other activity which includes the sifting of dirt or rocks, or any other nuisance or pollution dust-generating activities by requiring the use of daily watering using water trucks, tarping, fencing, etc. See City Code 8.04.030.17 & 17.38.080.I.

8.06.090 Other Air Quality Initiatives

- A. The City can encourage new HOA CC&R's to use electric based landscaping and snow removal equipment instead of combustion-based engine equipment.
- B. City can show business locations of Tier 3 (or higher) gasoline businesses on city website.
- C. The City can promote the County Air Quality Website on city website and promote other information regarding air quality; such as smog ratings of vehicles, a city air quality toolbox, etc.
- D. The City can identify and negotiate Park & ride lots for future mass transit & other transportation needs in future annexations or Master Development Agreements, etc.
- E. The City can conduct emissions inventories to identify point sources of city vehicle, industry, and other area sources. The City can ensure City vehicles use Tier 3 or higher gasolines and create a Zero Emission Vehicle Program, thus lowering pollution emissions.
- F. The City can set city goals to reduce city-generated CO2 emissions according to 2030 and 2050 goals in The Utah Roadmap standards, pg. 10.
- G. The City can conduct energy audits for city buildings and set goals on how to make city buildings achieve 'net zero' ratings. The City can promote energy efficiency within development and redevelopments.
- H. The City can allow solar farming on city buildings or city property or join interlocal or public/private partnerships for solar farming. The City can promote geothermal and solar options for city and citizen use.
- I. The City can recognize business and private buildings within Heber City that meet or use energy efficient requirements, such as energy star, LEED requirements, etc.

The City can specifically negotiate for 'net zero' and/or LEED standards buildings in new development.

J. The City can encourage the use of evergreen trees and plants on private property because such trees and plants provide the highest filtration of particulates.

Flood Damage Prevention

FLOOD DAMAGE PREVENTION

Sections:

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[9.20.020 Purpose.](#)

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[9.20.120 Specific standards.](#)

[9.20.130 Floodways.](#)

[9.20.140 Violation – Penalty.](#)

9.20.010 Findings of fact.

(A) The flood hazard areas of Syracuse City are subject to periodic inundation which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, and extraordinary public expenditures for flood protection and relief, all of which adversely affect the public health, safety and general welfare.

(B) These flood losses are created by the cumulative effect of obstructions in floodplains which cause an increase in flood heights and velocities, and by the occupancy of flood hazard areas by uses vulnerable to floods and hazardous to other lands because they are

inadequately elevated, floodproofed or otherwise protected from flood damage. [Ord. 07-17 § 1 (Exh. A); Code 1971 § 9-4-010.]

9.20.020 Purpose.

It is the purpose of this chapter to promote the public health, safety, and general welfare of the residents of Syracuse, Utah, and to minimize public and private losses due to flood conditions in specific areas by provisions designed:

- (A) To protect human life and health;
- (B) To minimize expenditure of public money for costly flood control projects;
- (C) To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- (D) To minimize prolonged business interruptions;
- (E) To minimize damage to the public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, and streets and bridges located in special flood hazard areas;
- (F) To help maintain a stable tax base by providing for the second use and development of special flood hazard areas so as to minimize future flood blight areas;
- (G) To ensure that potential buyers are notified that property is in a special flood hazard area; and
- (H) To ensure that those who occupy a special flood hazard area assume responsibility for their actions. [Ord. 07-17 § 1 (Exh. A); Code 1971 § 9-4-020.]

9.20.030 Methods for reducing flood losses.

In order to accomplish its purposes, this chapter includes methods and provisions for:

- (A) Restricting or prohibiting uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in excessive increases in erosion or flood heights or velocities;
- (B) Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- (C) Controlling the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of channel flood waters;
- (D) Controlling filling, grading, dredging, and other development which may increase flood damage; and

(E) Preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards to other lands. [Ord. 07-17 § 1 (Exh. A); Code 1971 § 9-4-030.]

9.20.040 Definitions.

Unless specifically defined below, words or phrases used in this chapter shall be interpreted so as to give them the meaning they have in common usage and to give this chapter its most reasonable application.

“Alluvial fan flooding” means flooding occurring on the surface of an alluvial fan or similar landform which originates at the apex and is characterized by high velocity flows; active processes of erosion, sediment transport, and deposition; and unpredictable flow paths.

“Apex” means a point on an alluvial fan or similar land form below which the flow path of the major stream that formed the fan becomes unpredictable and alluvial fan flooding can occur.

“Appurtenant structure” means a structure which is located on the same parcel of property as the principal structure and the use of which is incidental to the use of the principal structure. Appurtenant structures should constitute a minimal investment, may not be used for human habitation, and be designed to have minimal flood damage potential. Examples of appurtenant structures are detached garages, carports, storage sheds, pole barns and hay sheds.

“Area of shallow flooding” means a designated AH, AO, or VO zone with a one percent or greater annual chance of flooding to an average depth of one to three feet where a clearly defined channel does not exist, where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

“Base flood” means the flood having a one percent chance of being equaled or exceeded in any given year.

“Base flood elevation” means the computed elevation to which floodwater is anticipated to rise during the base flood. Base flood elevations (BFEs) are shown on flood insurance rate maps (FIRMs) and on the flood profiles.

“Basement” means any area of the building having its floor subgrade (below ground level) on all sides.

“Breakaway wall” means a wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces without causing damage to the elevated portion of the building or the supporting foundation system.

“Critical feature” means an integral and readily identifiable part of a flood protection system, without which the flood protection provided by the entire system would be compromised.

“Development” means any manmade change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials located within the special flood hazard area.

“Elevated building” means:

(1) A nonbasement building which is:

(a) Built, in the case of a building in Zones A1 – 30, AE, A, A99, AO, AH, B, C, X, and D, to have the top of the elevated floor, or in the case of a building in Zones V1 – 30, VE, or V, to have the bottom of the lowest horizontal structure member of the elevated floor elevated above the ground level by means of pilings, columns (posts and piers), or shear walls parallel to the floor of the water; and

(b) Adequately anchored so as not to impair the structural integrity of the building during a flood of up to the magnitude of the base flood.

(2) In the case of Zones A1 – 30, AE, A, A99, AO, AH, B, C, X, and D, “elevated building” also includes a building elevated by means of fill or solid foundation perimeter walls with openings sufficient to facilitate the unimpeded movement of flood waters.

“Existing construction” means, for the purposes of determining rates, structures for which the “start of construction” commenced before the effective date of the FIRM or before January 1, 1975, for FIRMs effective before that date. “Existing construction” may also be referred to as “existing structures.”

“Existing manufactured home park or subdivision” means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the ordinance codified in this chapter.

“Expansion to existing manufactured home park or subdivision” means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

“Flood” or “flooding” means a general and temporary condition of partial or complete inundation of normally dry land areas from:

- (1) The overflow of inland or tidal waters;
- (2) The unusual and rapid accumulation or runoff of surface waters from any source; or
- (3) Mudslides (i.e., mudflows) which are proximately caused by flooding as defined in subsection (2) of this definition and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.

“Flood elevation study” means an examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudslide (i.e., mudflow) and/or flood-related erosion hazards.

“Flood insurance rate map (FIRM)” means the official map on which the Federal Emergency Management Agency has delineated both special flood hazard areas and the risk premium zones applicable to the City.

“Flood insurance study” means the official report provided by the Federal Emergency Management Agency that includes flood profiles, the flood boundary floodway map, and the water surface elevation of the base flood.

“Flood protection system” means those physical structural works for which funds have been authorized, appropriated, and expended and which have been constructed specifically to modify flooding in order to reduce the extent of the area within a community subject to a “special flood hazard” and the extent of the depths of associated flooding. Such a system typically includes hurricane tidal barriers, dams, reservoirs, levees or dikes. These specialized flood modifying works are those constructed in conformance with sound engineering standards.

“Floodplain” or “floodprone area” means any land area susceptible to being inundated by water from any source (see definition of “flooding”).

“Floodplain management” means the operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works and floodplain management regulations.

“Floodplain management regulations” means any state law or City ordinance, including Syracuse City zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances such as this floodplain ordinance, etc., which provide standards for the purpose of flood damage prevention and reduction.

“Floodproofing” means any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.

“Floodway” means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

“Functionally dependent use” means a use which cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, but does not include long-term storage or related manufacturing facilities.

“Highest adjacent grade” means the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

“Historic structure” means any structure that is:

- (1) Listed individually in the National Register of Historic Places (a listing maintained by the Department of the Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;
- (2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
- (3) Individually listed on the state register as promulgated by the Utah Division of State History; or
- (4) Individually listed on a local inventory or historic places in communities with historic preservation programs that have been certified either: (a) by an approved state program as determined by the Secretary of the Interior; or (b) directly by the Secretary of the Interior in states without approved programs.

“Hydrodynamic loads” means forces imposed on structures by flood waters due to the impact of moving water on the upstream side of the structure, drag along its sides, and eddies or negative pressures on its downstream side.

“Hydrostatic loads” means loads or pressures resulting from the static mass of water at any point of floodwater contact with a structure. They are equal in all directions and always act perpendicular to the surface on which they are applied.

“Levee” means a manmade structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding.

“Levee system” means a flood protection system which consists of a levee, or levees, and associated structures, such as closure and drainage devices, which are constructed and operated in accordance with sound engineering practices.

“Lowest floor” means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage, in an area other than a basement area, is not considered a building’s lowest floor; provided, that such enclosure is not built so as to render the structure in violation of the applicable nonelevation design requirements of Section 60.3 of the National Flood Insurance Program Regulations.

“Manufactured home” means a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term “manufactured home” does not include a “recreational vehicle.”

“Manufactured home park or subdivision” means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

“Mean sea level” means, for purposes of the National Flood Insurance Program, the North American Vertical Datum (NAVD) of 1988 or other datum, to which base flood elevations shown on a community’s flood insurance rate map are referenced.

“New construction” means, for purposes of determining insurance rates, structures for which the “start of construction” commenced on or after the effective date of the City’s initial FIRM, or after December 31, 1974, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, “new construction” means structures for which the “start of construction” commenced on or after the effective date of the ordinance codified in this chapter, and includes any subsequent improvements to such structures.

“New manufactured home park or subdivision” means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after the effective date of the ordinance codified in this chapter.

“Recreational vehicle” means a vehicle which is: (1) built on a single chassis; (2) 400 square feet or less when measured at the largest horizontal projections; (3) designed to be self-propelled or permanently towable by a light duty truck; and (4) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

“Regulatory floodway” means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

“Special flood hazard area” means the land in the floodplain subject to a one percent or greater chance of flooding in any given year.

“Start of construction” includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement or other improvement was within 180 days of the permit date. The “actual start” means the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading or filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the “actual start of construction” means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

“Structure” means a walled and roofed building, including gas or liquid storage tank, that is principally above ground, as well as a manufactured home.

“Substantial damage” means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

“Substantial improvement” means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the “start of construction” of the improvement. This term includes structures which have incurred “substantial damage,” regardless of the actual repair work performed. The term does not, however, include either:

- (1) Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local Code Enforcement Official and which are the minimum necessary to assure safe living conditions; or
- (2) Any alteration of a “historic structure”; provided, that the alteration will not preclude the structure’s continued designation as a “historic structure.”

“Variance” means a grant of relief from the requirements of this chapter which permits construction in a manner that would otherwise be prohibited by this chapter in accordance with Section 60.6 of the National Flood Insurance Program Regulations.

“Violation” means failure to comply with any of the terms and conditions of this chapter.

“Water surface elevation” means the height, in relation to the North American Vertical Datum (NAVD) of 1988 (or other datum, where specified), of floods of various magnitudes and frequencies in the floodplains of coastal or riverine areas. [Ord. 07-17 § 1 (Exh. A); Code 1971 § 9-4-040.]

9.20.050 General provisions.

(A) Lands to Which This Chapter Applies. This chapter shall apply to all special flood hazard areas within the jurisdiction of Syracuse City.

(B) Basis for Establishing the Special Flood Hazard Areas. The special flood hazard areas identified by the Federal Emergency Management Agency in a scientific and engineering report entitled “The Flood Insurance Study for the City of Syracuse,” dated June 18, 2007, with an accompanying flood insurance rate map (FIRM), is hereby adopted by reference and declared to be a part of this chapter. The flood insurance study and FIRM are available for inspection at the City offices located at 1979 West 1900 South, Syracuse, Utah, 84075.

(C) Compliance. No structure or land shall hereafter be constructed, located, extended, converted, or altered unless the modification fully complies with the terms of this chapter and other applicable regulations.

(D) Abrogation and Greater Restrictions. This chapter is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this chapter and another ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

(E) Interpretation. In the interpretation and application of this chapter, all provisions shall be:

- (1) Considered as minimum requirements;
- (2) Liberally construed in favor of the governing body; and
- (3) Deemed neither to limit nor repeal any other powers granted under state statutes.

(F) Warning and Disclaimer of Liability. The degree of flood protection required by this chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by manmade or natural causes. This chapter does not imply that land outside the special flood hazard areas or uses permitted within such areas will be free

from flooding or flood damages. This chapter shall not create liability on the part of Syracuse City or any officer or employee thereof, or the Federal Emergency Management Agency for any flood damages that result in reliance on this chapter or any administrative decision lawfully made thereunder. [Ord. 21-30 § 1 (Exh. A); Ord. 07-17 § 1 (Exh. A); Code 1971 § 9-4-050.]

9.20.060 Designation of the Public Works Director.

The Public Works Director or his or her designee (hereinafter referred to as the “Public Works Director”) is hereby appointed to administer and implement the provisions of this chapter and relevant provisions of [44](#) C.F.R. (National Flood Insurance Program Regulations) pertaining to floodplain management, and performing all other duties as provided herein. [Ord. 07-17 § 1 (Exh. A); Code 1971 § 9-4-060.]

9.20.070 Duties and responsibilities of the Public Works Director.

Duties of the Public Works Director shall include, but are not limited to, the following:

(A) Permit Review.

(1) Review and approve or deny all applications for floodplain development permits required by this chapter.

(2) Review all development permits to determine that the permit requirements of this chapter have been satisfied.

(3) Review all development permits to determine that all necessary permits have been obtained from those federal, state, or local governmental agencies from which prior approval is required (including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, [33](#) U.S.C. [1334](#)).

(4) Review all development permits to determine whether proposed building sites, including the placement of manufactured homes, will be reasonably safe from flooding.

(5) Review all development permits to determine if the proposed development is located in the floodway. Except as provided in SCC [9.20.130](#), no development shall be permitted within a floodway.

(B) Use of Other Base Flood Data. When base flood elevation data has not been provided in accordance with SCC [9.20.050](#)(B), Basis for Establishing the Special Flood Hazard Areas, the Public Works Director shall obtain, review, and reasonably utilize any base flood elevation data available from a federal, state, or other source as criteria for requiring that new construction, substantial improvements, or other development is administered in accordance with SCC [9.20.120](#), Specific standards.

(C) Information to Be Obtained and Maintained.

(1) Obtain and record the actual elevation (in relation to mean sea level) of the lowest floor (including basement) of all new or substantially improved structures, and whether or not the structure contains a basement; provided, that in any V1 – 30, VE, and V Zones, the actual elevation to be obtained and recorded is that of the bottom of the lowest structural member of the floor (excluding piling and columns) of all new or substantially improved structures, and whether or not the structure contains a basement.

(2) For all new or substantially improved floodproofed structures:

(a) Verify and record the actual elevation (in relation to mean sea level) to which the structure has been floodproofed.

(b) Maintain the floodproofing certifications required in SCC [9.20.080](#).

(3) Maintain for public inspection all records pertaining to the provisions of this chapter.

(D) Alteration of Watercourses.

(1) Notify adjacent communities, the Utah State Division of Water Rights, and the Utah State Division of Water Resources prior to any alteration or relocation of a watercourse, and submit copies of such notification to the Federal Emergency Management Agency.

(2) Assure that the flood carrying capacity within the altered or relocated portion of any watercourse is maintained.

(E) Interpretation of FIRM Boundaries. Make interpretations where needed, as to the exact location of the boundaries of the special flood hazard areas (for example, where there appears to be a conflict between a mapped boundary and actual field conditions). The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in SCC [9.20.090](#).

(F) Construction When No Regulatory Floodway Has Been Designated. When a regulatory floodway has not been designated, the Public Works Director must require that no new construction, substantial improvements, or other development (including fill) shall be permitted within Zones A1 – 30 and AE on the community's FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

(G) Application for Conditional FIRM Revision. The Public Works Director shall review applications for conditional FIRM revisions in accordance with SCC [9.20.130](#), Floodways. [Ord. 07-17 § 1 (Exh. A); Code 1971 § 9-4-070.]

9.20.080 Permit procedures.

A floodplain development permit ("permit") shall be obtained before construction or development begins within any special flood hazard area established in SCC [9.20.050\(B\)](#). Application for a permit shall be made on forms furnished by the City and may include, but not be limited to, plans in duplicate drawn to scale showing the nature, location, dimensions, and elevations of the area in question; existing or proposed structures, fill, storage of materials, drainage facilities; and the location of the foregoing. The Public Works Director may require certification of any of these requirements by a professional engineer, architect, or surveyor as he or she deems necessary.

(A) Specific Requirements. The applicant must provide the following information:

- (1) The elevation in relation to the mean sea level of the lowest floor (including the basement) of all new and substantially improved structures;
- (2) The elevation in relation to the mean sea level to which any nonresidential structure shall be floodproofed;
- (3) Certification by a registered professional engineer or architect that the nonresidential floodproofed structure shall meet the floodproofing criteria of this chapter; and
- (4) A description of the extent to which any watercourse or natural drainage will be altered or relocated as a result of the proposed development.

(B) Approval or Denial. Approval or denial of a permit by the Public Works Director shall be based on the provisions and intent of this chapter and the following relevant factors:

- (1) The danger to life and property due to flooding or erosion damage;
- (2) The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
- (3) The danger that materials may be swept onto other lands to the injury of others;
- (4) The compatibility of the proposed use with existing and anticipated development;
- (5) The safety of access to the property in times of flood for ordinary and emergency vehicles;
- (6) The costs of providing governmental services during and after flood conditions including maintenance and repair of streets and bridges, and public utilities and facilities such as sewer, gas, electrical and water systems;
- (7) The expected heights, velocity, duration, rate of rise and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site;
- (8) The necessity to the facility of a waterfront location, where applicable;

(9) The availability of alternative locations, not subject to flooding or erosion damage, for the proposed use;

(10) The relationship of the proposed use to the comprehensive plan and floodplain management plan for that area; and

(11) The importance of the services provided by the proposed facility to the community. [Ord. 07-17 § 1 (Exh. A); Code 1971 § 9-4-080.]

9.20.090 Appeal procedure.

(A) Any person adversely affected by a final decision of the Public Works Director made in the administration or interpretation of this chapter may, within the time provided herein, appeal that decision to the City Council by alleging that there is error in any such final order requirement, decision, or determination made by the Public Works Director in the administration or interpretation of this chapter. Appeals filed hereunder shall be in writing and shall be filed with the City Recorder within 30 days of the decision which is appealed. The appeal shall include any required City appeal forms and shall set forth, at a minimum: the name, address and telephone number of the appellant; the decision being appealed; the grounds for appeal; and a description of the alleged error in the decision or determination of the Public Works Director. Only decisions of the Public Works Director applying this chapter may be appealed to the City Council as provided herein. Appeals may not be used to waive or modify the terms or requirements of this chapter.

(B) After the appeal application is deemed complete, the City Recorder shall schedule the matter to be heard by the City Council. Prior to the appeal hearing, the City Recorder shall transmit all papers constituting the record of the decision or action being appealed to the City Council and the appellant. The City Council shall review the record of the decision or action of the Public Works Director and provide the appellant an opportunity to be heard regarding the appeal. In reviewing the appeal, the City Council shall consider and review all relevant technical evaluations and the specific factors set forth in SCC [9.20.080\(B\)](#). The City Council shall decide the matter in accordance with the standard of review set forth in subsection (C) of this section.

(C) The City Council may affirm or reverse the decision of the Public Works Director, in whole or in part, or may remand the administrative decision to the Public Works Director. The City Council is also authorized to impose additional conditions as part of its determination of the appeal as necessary to conform with the purposes and intent of this chapter. The City Council shall review the administrative decision of the Public Works Director for correctness in determining whether there is substantial evidence in the record to support the order, decision, or determination. The appellant shall have the burden of proving that an error has been made. The City Council shall issue a written decision.

(D) A record of all appeals shall be maintained by the City in accordance with the Utah Government Records Access and Management Act, Section [63G-2-101](#), et seq., Utah Code Annotated 1953, as amended. [Ord. 21-30 § 1 (Exh. A); Ord. 07-17 § 1 (Exh. A); Code 1971 § 9-4-090.]

9.20.100 Variance procedure.

(A) The Syracuse City Council is hereby designated to hear and decide requests for variances from the requirements of this chapter.

(B) The applicant shall have the right to a hearing before the Syracuse City Council on the question of whether or not the request for the variance fulfills the variance requirements of this chapter. The City Council shall render a decision denying the variance, granting the variance, or granting the variance with conditions.

(C) Those aggrieved by the decision of the Syracuse City Council may appeal such decision to the court of competent jurisdiction.

(D) The City shall maintain a record of all variance actions, including justification for their issuance, and report such variances issued in its annual or biennial report submitted to the Public Works Director. The Public Works Director shall report any variances to the Federal Emergency Management Agency upon request.

(E) In passing upon applications for a variance, the City Council shall consider all technical evaluations, those specific factors established in SCC [9.20.080](#)(B), the intent and purpose of this chapter, and the following conditions:

(1) Due to the dangers caused by flooding to human life and property and the costs and hardship caused thereby, only under limited circumstances may variances be granted in Syracuse City. Variances shall only be issued upon:

(a) A showing of good and sufficient cause;

(b) A determination that failure to grant the variance would result in exceptional hardship to the applicant; and

(c) A determination that the granting of a variance will not result in increased flood heights, additional threats to human life and public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

(2) Variances may be issued for the repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure. Variances may be issued for the

reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places or the State Inventory of Historic Places, without regard to the procedures set forth in the remainder of this chapter.

(3) Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.

(4) Variances shall only be issued when a determination has been made that the variance is the minimum necessary, considering the flood hazard, to afford relief.

(5) Variances issued for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use may only be granted provided the structure or other development is protected by methods that minimize flood damage during the base flood and create no additional threats to public safety.

(6) Any applicant to whom a variance is granted shall be given written notice that the issuance of a variance to construct a structure below the base flood level will result in increased risk to life and property and an increase in premium rates for flood insurance, which may be substantial and will be commensurate with the risk of construction below the base flood level. Insurance rates may amount up to as high as \$25.00 for \$100.00 of insurance coverage. This notice shall be maintained with a record of all variance actions as required in subsection (D) of this section.

(7) All variances shall include a condition that the applicant sign an assumption of risk and waiver of liability agreement, in a form acceptable to the City, absolving Syracuse City of any and all liability in the event flood damage occurs to that portion of a structure for which the variance is granted. This agreement shall be recorded in the office of the Davis County recorder, shall run with the land, and shall be binding upon all future owners thereof.

(F) The Syracuse City Council may attach such conditions to the granting of variances as it deems necessary and which fulfill the criteria of the variance provisions of this chapter. [Ord. 07-17 § 1 (Exh. A); Code 1971 § 9-4-100.]

9.20.110 General standards.

In all special flood hazard areas the following standards are required:

(A) Construction Materials and Methods.

(1) All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

(2) All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.

(3) All new construction and substantial improvements shall be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

(B) Anchoring. All new construction and substantial improvements shall be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure and capable of resisting the hydrostatic and hydrodynamic loads, including the effects of buoyancy.

(C) Utilities.

(1) All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.

(2) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharge from the systems into flood waters.

(3) On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

(D) Subdivision Proposals.

(1) All subdivision proposals (including proposals for manufactured home parks and subdivisions) shall be consistent with the need to minimize flood damage in accordance with the purposes and intent of this chapter.

(2) All subdivision proposals (including proposals for manufactured home parks and subdivisions) shall meet the permit requirements of SCC [9.20.080](#) and all applicable provisions of this section and SCC [9.20.120](#).

(3) All subdivision proposals (including proposals for manufactured home parks and subdivisions) shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize or eliminate flood damage.

(4) All subdivision proposals (including proposals for manufactured home parks and subdivisions) shall have adequate drainage provided to reduce exposure to flood hazards.

(5) Base flood elevation data shall be provided for subdivision proposals and other proposed development (including proposals for manufactured home parks and subdivisions) which contain at least 50 lots or five acres (whichever is less), if not otherwise provided by SCC [9.20.050](#)(B), Basis for Establishing the Special Flood Hazard Areas, or

SCC [9.20.070](#)(B), Use of Other Base Flood Data. [Ord. 07-17 § 1 (Exh. A); Code 1971 § 9-4-110.]

9.20.120 Specific standards.

In all special flood hazard areas where base flood elevation data has been provided as set forth in SCC [9.20.050](#)(B), Basis for Establishing Special Flood Hazard Areas, or SCC [9.20.070](#)(B), Use of Other Base Flood Data, the following provisions are required:

(A) Residential Construction.

(1) New construction and substantial improvement of any residential structure shall have the lowest floor (including basement) elevated to or above the base flood elevation, with certification provided to the Administrator by a registered professional engineer, architect, or land surveyor.

(2) Require within any AO Zone on the City's FIRM that all new construction and substantial improvements of residential structures have the lowest floor (including basement) elevated above the highest adjacent grade at least as high as the depth number specified in feet on the City's FIRM (at least two feet if no depth number is specified).

(3) Require adequate drainage paths around structures on slopes, to guide flood waters around and away from proposed structures within Zones AH and AO.

(B) Nonresidential Construction.

(1) New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall either have the lowest floor (including basement) elevated to or above the level of the base flood elevation; or, together with attendant utility and sanitary facilities, shall:

(a) Be floodproofed so that below the base flood elevation the structure is watertight with walls substantially impermeable to the passage of water;

(b) Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and

(c) Be certified by a registered professional engineer or land surveyor that the design and methods of construction are in accordance with accepted standards of practice for meeting the provisions of this subsection. Such certifications shall be provided to the Public Works Director and include the specific elevation (in relation to mean sea level) to which such structures are floodproofed.

(2) Require within any AO Zone on the City's FIRM that all new construction and substantial improvements of nonresidential structures: (a) have the lowest floor (including basement) elevated above the highest adjacent grade at least as high as the depth number specified in

feet on the City's FIRM (at least two feet if no depth number is specified) or (b) together with attendant utility and sanitary facilities, be completely floodproofed to that level to meet the floodproofing standard specified in subsection (B)(1)(a) and (b) of this section.

(3) Require adequate drainage paths around structures on slopes, to guide flood waters around and away from proposed structures within Zones AH and AO.

(C) Openings in Enclosures Below the Lowest Floor. For all new construction and substantial improvements, fully enclosed areas below the lowest floor that are usable solely for parking of vehicles, building access, or storage in an area other than a basement, and which are subject to flooding, shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:

(1) A minimum of two openings having a total net area of not less than one square inch for every foot of enclosed area subject to flooding shall be provided;

(2) The bottom of all openings shall be no higher than one foot above grade; and

(3) Openings may be equipped with screens, louvers, valves, or other coverings or devices; provided, that they permit the automatic entry and exit of floodwaters.

(D) Manufactured Homes.

(1) All manufactured homes to be placed within Zone A must be elevated and anchored to resist flotation, collapse or lateral movement and capable of resisting the hydrostatic and hydrodynamic loads. Methods of anchoring may include, but are not limited to, use of over the top or frame ties to ground anchors. This requirement is in addition to applicable state and local anchoring requirements for resisting wind forces. Specific requirements may be:

(a) Over the top ties be provided at each of the four corners of the manufactured home, with two additional ties per side at intermediate locations, with manufactured homes less than 50 feet long requiring one additional tie per side;

(b) Frame ties be provided at each corner of the home with five additional ties per side at intermediate points, with manufactured homes less than 50 feet long requiring four additional ties per side;

(c) All components of the anchoring system be capable of carrying a force of 4,800 pounds; and

(d) Any additions to the manufactured home be similarly anchored.

(2) All manufactured homes or those to be substantially improved which are proposed to be located on sites (a) outside of a manufactured home park or subdivision, (b) in a new

manufactured home park or subdivision, (c) in an expansion to an existing manufactured home park or subdivision, or (d) in an existing manufactured home park or subdivision on which a manufactured home has incurred “substantial damage” as the result of a flood, shall meet the following requirements:

(a) Within Zones A1 – 30, AH, and AE, such manufactured homes must be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to or above the base flood elevation and be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement;

(b) Within Zones A1 – 30, AH and AE, such manufactured homes to be placed or substantially improved on sites in existing manufactured home parks or subdivisions that are not subject to the provisions in subsection (D)(2)(a) of this section must be elevated so that either:

(i) The lowest floor of the manufactured home is at or above the base flood elevation; or

(ii) The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade and is securely anchored to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

(E) Recreational Vehicles.

(1) Recreational vehicles placed on sites within Zones A1 – 30, AH, and AE must either: (a) be on the site for fewer than 180 consecutive days, (b) be fully licensed and ready for highway use, or (c) meet the permit requirements of SCC [9.20.080](#) and the elevation and anchoring requirements for resisting wind forces of subsection (D)(2)(a) of this section.

(2) A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions. [Ord. 07-17 § 1 (Exh. A); Code 1971 § 9-4-120.]

9.20.130 Floodways.

Located within special flood hazard areas established in SCC [9.20.050](#)(B) are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of flood waters which carry debris, potential projectiles, and erosion potential, encroachments, including fill, new construction, substantial improvements and other development are prohibited unless the following requirements are met:

(A) Certification by a registered professional engineer or land surveyor is provided demonstrating through hydrologic and hydraulic analyses, performed in accordance with standard engineering practice, that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.

(B) All fill, new construction, and substantial improvements, or other development shall comply with all applicable flood hazard reduction provisions of SCC [9.20.110](#) and [9.20.120](#).

(C) The Public Works Director may permit encroachments within the adopted regulatory floodway that would result in an increase in base flood elevations, provided the Public Works Director has applied for and been granted a conditional FIRM and floodway revision through FEMA, under the provisions of [44](#) CFR Chapter 1, Section [65.12](#), of the National Flood Insurance Regulations. [Ord. 07-17 § 1 (Exh. A); Code 1971 § 9-4-130.]

9.20.140 Violation – Penalty.

Any person, firm or corporation, whether as principal, agent, employee or otherwise, violating or causing or permitting the violation of any of the provisions of this chapter shall be guilty of a Class B misdemeanor, and upon conviction thereof shall be punishable by a fine, or by imprisonment in the Davis County jail, or by both as provided by law. Such person, firm, or corporation shall be deemed to be guilty of a separate offense for each day during which any portion of any violation of this chapter is committed, continued, or permitted by such person, firm, or corporation, and shall be punishable as herein provided. [Ord. 07-17 § 1 (Exh. A); Code 1971 § 9-4-140.]

Capabilities Assessments

| Location | Do you have any maps, documents, or plans related to hazards? | Describe building, zoning, ordinances, or other tools to address natural hazards and/or regulate construction in hazard-prone areas | Does your community have the following administrative and technical capabilities? | Which education or outreach programs exist that could be used to implement mitigation activities and communicate hazard-related information? | Should any of these capabilities be expanded or improved to reduce risk? |
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| | Maps and Plans | Codes and Ordinances | Admin and Technical | Education and Outreach | Ways to Improve |
|--------------------|---|---|--|---|--|
| Alpine | Flood maps, Lone Peak Emergency Response doc, CIP and stormwater plans, geologic maps showing potential areas or debris flow, landslide and rockfall areas; and fault maps. | Hillside Protection and Wildland Urban Interface ordinances, floodplain ordinance, current building codes. Require studies to verify if potential hazards are really there and to what extent for new developments. If hazards are present, our code requires mitigation measures to be designed and installed. We also require acknowledgement by homeowners, prior to obtaining a building permit, that they are building in an area with potential hazards, especially in areas where development occurred prior to the City having a sensitive lands ordinance. | Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission, Contract with Lone Peak, Emergency Manger works with Fire Chief | Ongoing public education or information program | I think our staffing is adequate. |
| American Fork City | Yes. We have the FIRM maps and we keep them updated. | Sensitive Lands Ordinance, Stormwater Management and Discharge Control Ordinance, floodplain management ordinances | Emergency Manager, Community Planner, Warning systems/services, Hazard Data and Information, Maintenance | Ongoing public education or information program | We always could use more resources, but we are routinely |

| | Maps and Plans | Codes and Ordinances | Admin and Technical | Education and Outreach | Ways to Improve |
|---|--|--|---|--|---|
| | | | programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission, Public Information Officer | | adding new staff and capabilities. |
| Cedar Fort | no | zoning ordinances limiting construction on steep slopes and in mountain foothills | Community Planner, Warning systems/services, Maintenance programs to reduce risk ,Mutual Aid Agreements, Civil Engineer, Planning Commission | | sure |
| Cedar Hills | Maps locating natural fault lines and flood hazard areas | Hillside development is regulated to require geotechnical studies, slope stability studies, and zoning ordinances dictate slopes for cut and fill areas. | Community Planner, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Civil Engineer, Planning Commission | Ongoing public education or information program | I operate as the Emergency Manager, but need to coordinate with American Fork Fire and Rescue on EM efforts in the Cedar Hills community. |
| Central Utah Water Conservancy District | Yes; available upon request | We work with cities and counties to address water quality and infrastructure concerns within hazard-prone areas | Emergency Manager, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Civil Engineer, GIS Coordinator, Communications (SCADA), operations and maintenance staff | Ongoing public education or information program , Public-private partnership initiatives | |
| Charleston | Flood maps adopted, CIP, wildland protection | Hillside ordinance, follow FEMA floodplain regulations | Emergency Manager, Warning systems/services, Maintenance programs to reduce risk ,Chief Building Official, Civil Engineer, | | Yes, as Charleston grows |

| | Maps and Plans | Codes and Ordinances | Admin and Technical | Education and Outreach | Ways to Improve |
|----------------|--|---|--|--|--|
| | | | Planning Commission, Wasatch county - warning systems & emergency management | | |
| Coalville | Culinary Water Master Plan, general plan: Parks, Open Space and Environment section | Building codes related to fire and steep slopes, open space preservation goals especially in hazardous areas, flood hazard reduction code, sensitive lands ordinance preventing building within 100' of floodplain. | Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Floodplain Administrator, Civil Engineer, Planning Commission | Ongoing public education or information program | |
| Daniel | Yes, fire, FIRM, geological (faults, landslide, slope) | 160 acres/lot in fire-prone areas, 100 yr floodplain new development must elevate structures, Wasatch County Fire must sign off on all homes in WUI | Emergency Manager, Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission, Warning systems, Emergency Manager with County | County-wide CERT, educational flyers with water bill, website has newsletter | Emergency notification text system for Daniel, not just through the County |
| Eagle Mountain | Hazard Maps through GIS department available on website, part of emergency operations plan, Stormwater management plan | Multiple ingress/egress in subdivisions, roofing materials, some defensible space, geotech reports for development on hillsides | Emergency Manager, Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission, Volunteer preparedness committee | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program , Community Wildfire Protection Plan | No |
| Elk Ridge | Work with County and MAG | WUI ordinance | Community Planner, Warning systems/services, Hazard Data | Citizen or non-profit organizations focused on | No |

| | Maps and Plans | Codes and Ordinances | Admin and Technical | Education and Outreach | Ways to Improve |
|--------------|--|--|--|--|---|
| | | | and Information, Maintenance programs to reduce risk ,Civil Engineer, Planning Commission, County Emergency Manager, hire building official, County GIS | environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program | |
| Fairfield | no | zoning ordinances limiting construction on steep slopes and foothills | Community Planner, Warning systems/services, Maintenance programs to reduce risk ,Mutual Aid Agreements, Civil Engineer, Planning Commission | | |
| Francis City | In our General Plan, we have an earthquake map, fire risk index, past fires map and flood map. | Our city code address building in flood hazards and other sensitive lands. | Community Planner, Civil Engineer, Planning Commission | Ongoing public education or information program | Not right now. Potentially as the city grows. |
| Genola | NFIP maps | Geotechnical and soils studies for new development, Critical lands overlay, JUB does hydraulic analysis for culinary water | Emergency Manager, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, Planning Commission, MAG helps with General Plan, JUB & Franson does engineering, part of regional fire dept, agreement with Santaquin for police | Ongoing public education or information program , Natural disaster or safety related school programs | No |
| Goshen | No | | Warning systems/services, Maintenance programs to reduce risk ,Planning Commission, Fire Chief, Hazard date from MAG | | No |

| | Maps and Plans | Codes and Ordinances | Admin and Technical | Education and Outreach | Ways to Improve |
|------------|---|--|---|--|---|
| Heber City | Wasatch County Personal Emergency Preparedness Pamphlet | Hillside overlay, sensitive lands, floodplain (buildings must be above base flood level), wildfire ordinance | Emergency Manager, Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator through the county, Planning Commission | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program , Firewise Communities certification, Public-private partnership initiatives | In-house GIS, more staff for wildfire maintenance monitoring |
| Henefer | Gas line mapping and evacuation plan, lots of local knowledge on Dominion Energy, Capital Improvements Plan | Multiple ingress/egress, State building codes, no new buildings in the floodplain, newly subdivided land must have grinders on sewer system Plan | Emergency Manager, Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission, Councilmember is EM, Summit warning system and HAM radios, some hazard data for gas lines | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program , May be a firewise community | Need to bolster emergency preparedness |
| Hideout | No | Geotechnical studies in proposed annexation area, NFIP requirements, State building codes | Community Planner, Chief Building Official, Civil Engineer, GIS Coordinator, Planning Commission | | Need to be part of Summit County's emergency alert system, getting a Public Works director, update code for fire mitigation |
| Highland | FIRM, general plan includes | Building regulations, some environmentally sensitive lands, | Community Planner, Warning systems/services, Hazard Data | Ongoing public education or information program , | |

| | Maps and Plans | Codes and Ordinances | Admin and Technical | Education and Outreach | Ways to Improve |
|--------------|--|---|---|--|--------------------------------------|
| | environmentally sensitive lands, Emergency Operations Plan (Long Peak), Stormwater mangement, dam safety plan (debris basin), CWPP (Lone Peak) | FIRMS, natural drainage requirements | and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission, Work with Lone Peak for emergency operations, esp. fire | Natural disaster or safety related school programs | |
| Independence | Wildland Urban Interface map, flood maps | WUI ordinance, revamping code in 1-3 yrs | Warning systems/services, Maintenance programs to reduce risk ,Mutual Aid Agreements, Planning Commission, Town administrator, clerk and mayor, County Sheriff and Fire | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc. | As development occurs |
| Interlaken | Slope study map that highlights sensitive slope areas, Emergency Response Plan from 2002 | Fire standards for new construction remodels, geotech studies required for slopes | Warning systems/services, Maintenance programs to reduce risk ,Mutual Aid Agreements, Civil Engineer, Planning Commission, Interlocal agreement with Wasatch County Fire, contract with TO engineering | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program , Firewise Communities certification | Improve warning system with siren |
| Kamas | Yes, in our General Plan we have a fire risk and historic fire map. Also a potential landslide map. | We have a sensitive land overlay zone. | Community Planner, Civil Engineer, Planning Commission | | Not at this time |
| Lehi City | Flood Map, General plan environmentally sensitive areas. Debris Management Plan, | Ordinances, International Building Code, Urban wild land interface. Overlay zones | Emergency Manager, Community Planner, Warning systems/services, Hazard Data and Information, Maintenance | Citizen or non-profit organizations focused on environmental protection, emergency prep, access | Mutual aid agreements to be renewed, |

| | Maps and Plans | Codes and Ordinances | Admin and Technical | Education and Outreach | Ways to Improve |
|-------------|--|--|---|--|---|
| | | | programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission | and functional needs populations, etc., Ongoing public education or information program , Natural disaster or safety related school programs, Public-private partnership initiatives | Additional Staff, Maintenance, |
| Lindon City | Yes. Environmental features map for sensitive areas (3 identified) with fault lines, conserved wetlands, flood zones, and streams. Ordinances, listed below. EOP describing potential hazards that could affect Lindon City with Appendices including FEMA HAZUS models, Utah quarternary fault and fold map (USGS), moderate and high hazard dams with quarternary fault overlay, Tier II Hazardous Materials, emergency declaration and evacuation orders, and zoning maps. Adopted the FEMA | Established Sensitive Area Districts Ordinance; Flood hazard area standards (raising lowest floor level above flood plain); steep slope ordinance regulates building and grading on steep slope areas; seismic & wind load building code standards for structures. | Emergency Manager, Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission, Board of Adjustments Commission, Historic Preservation Commission | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program , Natural disaster or safety related school programs, CERT, Block Captain System | I think we're doing well in terms of personnel. Perhaps we could look at additional wildland fire hazard risk reduction strategies. |

| | Maps and Plans | Codes and Ordinances | Admin and Technical | Education and Outreach | Ways to Improve |
|----------------------|---|---|---|--|--------------------------------|
| | FIRM maps as part of our ordinances; | | | | |
| Mapleton City | No | Flood plain ordinance | Community Planner, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, Planning Commission | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program | |
| Midway | We have a chapter in our General Plan devoted to sensitive land and protection of those areas. Included in the chapter are several sensitive land maps that include slope, wetlands, FEMA flood zones, ridgelines, etc. The Midway Land Use ordinance also protects sensitive land. | The Midway Land Use ordinance also protects sensitive land including slopes, wetlands, FEMA flood zones, etc. | Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Chief Building Official, Floodplain Administrator, Civil Engineer, Planning Commission | | This will need to be assessed. |
| Nebo School District | Emergency Plans, Sheltering Plans, Evacuation Plan | Schools have higher standard for building | Emergency Manager, Warning systems/services, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, State Risk of Utah insures buildings, School Board | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Natural disaster or safety related school programs | No |

| | Maps and Plans | Codes and Ordinances | Admin and Technical | Education and Outreach | Ways to Improve |
|---------------------------------|---|---|--|--|------------------------------|
| Oakley | Sensitive lands, water usage, and geological maps available on website and in plan. | Sensitive lands, State building codes, fire marshal approve site plans in sensitive areas, engineering review | Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program | A specific emergency manager |
| Orem | Emergency Management Plan, City Communication Plan, Fire Risk Maps, Flood Maps from Dam Break, MAG maps | Hillside ordinance | Emergency Manager, Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program , Natural disaster or safety related school programs, Firewise Communities certification, Public-private partnership initiatives | No |
| Park City Municipal Corporation | Yes - Comprehensive Emergency Management Plan (CEMP), Community Wildfire Protection Plan, multiple GIS products, NFIP flood zone maps | Adopting a wildland-urban interface code in order to create home hardening/fire resistant communities. | Emergency Manager, Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program , Natural disaster or safety related school programs, Firewise Communities certification, Public-private partnership initiatives | |

| | Maps and Plans | Codes and Ordinances | Admin and Technical | Education and Outreach | Ways to Improve |
|----------------|--|--|--|---|---|
| Payson | FEMA maps on Payson website, GIS person can find maps on county GIS system | Wildland Urban Interface area, geotechnical reports required for development, city informs developers of mapped hazards, floodplain maps, international building codes, a sensitive lands ordinances and hillside development to interact with the native landscape and help buffer between the two as well as flood plain requirements. | Emergency Manager, Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program , Education upon request for schools, clubs, church, etc. | All could be expanded, especially hiring a Fire Marshal |
| Pleasant Grove | NO | WE HAVE A HILLSIDE ORDINANCE ADDRESSING SENSITIVE LANDS PRONE TO GEOLOGICAL HAZARDS. | Emergency Manager, Community Planner, Maintenance programs to reduce risk ,Civil Engineer, Planning Commission | | WORKING ON GETTING A MUTUAL AID AGREEMENT |
| Provo City | FEMA FIRMS; Slide-prone areas & known fault zones shown on our GIS | Ordinances/guidelines for flood zones, fault zones, debris-prone areas along frontal canyons, and sensitive lands. | Emergency Manager, Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission | Ongoing public education or information program , Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Public-private partnership initiatives | Yes - plan to create levee/river maintenance plan this year |
| Salem | Watershed operations plan, Emergency Operations Plan in progress | Slope and floodplain ordinances, but all should be updated and improved | Emergency Manager, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program , | Code enforcement officer |

| | Maps and Plans | Codes and Ordinances | Admin and Technical | Education and Outreach | Ways to Improve |
|------------------------------|---|--|--|--|--|
| | | | | Natural disaster or safety related school programs | |
| Santaquin City | Yes. Plans from EWP NRCS work performed. Also, Supplemental Environmental Assessment Plans for east bench of Santaquin and in the lower area of Santaquin Canyon. | Hillside overlay zones, wetland area restrictions, etc. | Emergency Manager, Community Planner, Hazard Data and Information, Mutual Aid Agreements, Chief Building Official, Civil Engineer, GIS Coordinator, Planning Commission | Ongoing public education or information program | Yes. |
| Saratoga Springs | yes, GIS | Flood and Grading Ordianances | Hazard Data and Information, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission | | Yes the Emergency Manager needs to be a full time position |
| South Summit school district | Emergency Response Plan | Follow ordinances in each jurisdiction, also State Board of Education standards. | Warning systems/services, Maintenance programs to reduce risk ,Chief Building Official, School Board, mutual aid with YMCA and others, ie for evacuation center | Ongoing public education or information program , Natural disaster or safety related school programs | Better define emergency manager's responsibilities |
| Spanish Fork | Yes | Flood and Fire zoning, current building codes for seismic, etc. | Emergency Manager, Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program , Natural disaster or safety related school programs | |

| | Maps and Plans | Codes and Ordinances | Admin and Technical | Education and Outreach | Ways to Improve |
|------------------|---|---|--|--|---|
| Springville City | NFIP Maps are being updated and final maps will be adopted in June 2020. 280 structures are entering the floodplain with this update. We have fault lines, high liquefaction areas, high potential for debris and land slides and the FEMA flood plain on layers on our City GIS Map. | Hill Side Overlay prevents development on slopes greater than 25%. Floodplain development ordinance. | Emergency Manager, Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program , Natural disaster or safety related school programs | |
| Summit County | Engineering dept posts hazard maps (such as floodplain maps) online as does GIS dept. Summit County Emergency Management Plan, Summit County Community Wildland Preparedness Plan 2019, UFFSL UWRAP Wildland Fire Reports - https://wildfirerisk.utah.gov | Follow the IBC, Critical lands regulations, wildland urban interface requirements, Fire dept. and sewer advisory committees must approve site plans. Fire sprinkler & building material requirements Summit County Development Codes: https://www.summitcounty.org/828/Development-Codes | Emergency Manager, Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program , Natural disaster or safety related school programs, Firewise Communities certification, Public-private partnership initiatives | Strengthen WUI Codes, increase Community Involvement. Everything is dependent on resources. |
| Utah County | EWP, CWPP, EOP (not yet promulgated), Watershed Operations, various evacuation plans. | Require defensible space, etc. for new construction, | Emergency Manager, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Floodplain | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs | No |

| | Maps and Plans | Codes and Ordinances | Admin and Technical | Education and Outreach | Ways to Improve |
|----------------|--|---|---|--|--|
| | | | Administrator, Civil Engineer, GIS Coordinator, Planning Commission | populations, etc., Ongoing public education or information program , Firewise Communities certification | |
| Vineyard | Draft evacuation plan (Chris) | Comply with state building code, 90+% of building less than 10 yrs old | Emergency Manager, Community Planner, Warning systems/services, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission, Mutual aid w/Orem, County warning system | Ongoing public education or information program , Jr. Building Inspectors program | Amplification of Emergency Manager position & GIS, strengthen maintenance and prevention program |
| Wallsburg | CIP | Can't build on slopes >30%, slope management. Follow Wasatch County's requirements for slope. | Floodplain Administrator, Civil Engineer, Planning Commission, Wasatch Co: Emergency Manager, GIS Coordinator, Warning System MAG: Community Planner | | Educate planning commission on building requirements |
| Wasatch County | CWPP (community wildland protection program), Emergency Action Plan, | Hillside ordinance, floodplain, | Emergency Manager, Community Planner, Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Floodplain Administrator, Civil Engineer, GIS Coordinator, Planning Commission | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program , Firewise Communities certification, Public-private partnership initiatives | |

| | Maps and Plans | Codes and Ordinances | Admin and Technical | Education and Outreach | Ways to Improve |
|----------------|---|---|---|--|------------------------------|
| Woodland Hills | Yes, Geostrata hazard maps used in all new construction | WUI, require geotechnical studies, required fire permits, fire hydrant ordinance for new construction | Warning systems/services, Hazard Data and Information, Maintenance programs to reduce risk ,Mutual Aid Agreements, Chief Building Official, Civil Engineer, Planning Commission, LEI engineering contracted for planning & engineering, County EM & GIS | Citizen or non-profit organizations focused on environmental protection, emergency prep, access and functional needs populations, etc., Ongoing public education or information program , Natural disaster or safety related school programs, Firewise Communities certification | Yes, fire dept needs more \$ |

RESOLUTION NO. 2022-R-02**A RESOLUTION OF THE TOWN OF HIDEOUT
ADOPTING THE 2022 MAG Pre-Disaster Mitigation Plan**

WHEREAS the Town of Hideout ("Hideout") Town Council ("Council") recognizes the threat that natural hazards pose to people and property within Hideout; and

WHEREAS Hideout has participated in the creation of a multi-hazard mitigation plan, hereby known as the 2022 MAG Pre-Disaster Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the 2022 MAG Pre-Disaster Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Hideout from the impacts of future hazards and disasters; and

WHEREAS adoption by the Council demonstrates their commitment to hazard mitigation and achieving the goals outlined in the 2022 MAG Pre-Disaster Mitigation Plan.

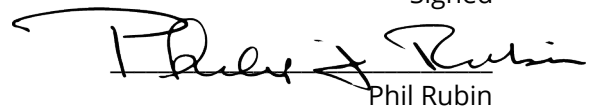
NOW THEREFORE, BE IT RESOLVED BY THE TOWN OF HIDEOUT, UTAH, THAT:

Pursuant to Hideout Municipal Code 1.10.060, the Hideout Town Council adopts the 2022 MAG Pre-Disaster Mitigation Plan.

This resolution shall be effective on the date it is adopted.

DATED this 10th day of March, 2022.

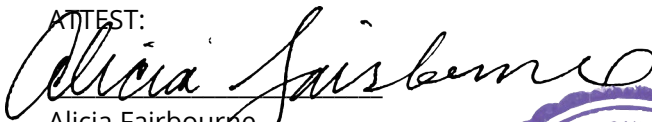
Signed



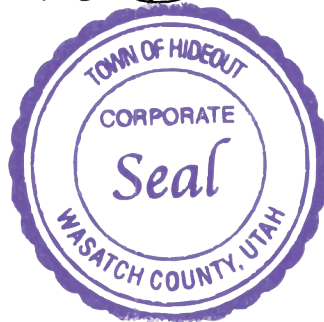
Phil Rubin

Mayor, Town of Hideout

ATTEST:



Alicia Fairbourne
Town Clerk





10420 N. Jordanelle Blvd. Heber City, UT 84032
435-940-9636

International Wildland Urban Interface Code

DEFENSIBLE SPACE

603.1 Objective. Provisions of this section are intended to modify the fuel load in areas adjacent to structures to create a *defensible space*.

Development and maintenance of a defensible space are critical to the survivability of a structure during a wildland fire. The defensible space is an area where the natural vegetation is modified either through thinning and maintenance or removal. The removal does not necessarily mean it is bare dirt. An asphalt or gravel driveway creates a space that is usable, but also creates a buffer to the wildfire as it approaches the structure. A similar buffer can be created by mowing or removing some of the vegetation.

603.2 Fuel modification. Buildings or structures, constructed in compliance with the conforming *defensible space* category of Table 503.1, shall comply with the *fuel modification* distances contained in Table 603.2. For all other purposes the fuel modification distance shall be not less than 30 feet (9144 mm) or to the lot line, whichever is less. Distances specified in Table 603.2 shall be measured on a horizontal plane from the perimeter or projection of the building or structure as shown in Figure 603.2. Distances specified in Table 603.2 are allowed to be increased by the *code official* because of a site-specific analysis based on local conditions and the *fire protection plan*.

The intent of fuel modification is to create a defensible space so that an approaching wildland fire cannot easily move through the defensible space and ignite the structure. The defensible space also provides fire fighters an area to set up hose lines between the structure and the approaching fire. A continuous path of fuel will carry the fire right up to the structure. Reducing the density of brush and undergrowth is necessary to reduce the intensity of the fire, reduce flame lengths and reduce radiant heat.

603.2.2 Trees. Trees are allowed within the *defensible space*, provided that the horizontal distance between crowns of adjacent trees and crowns of trees and structures, overhead electrical facilities or unmodified fuel is not less than 10 feet

It is not the intent for the defensible space to be void of vegetation; the vegetation must be thinned and maintained. Trees are allowed within the defensible space, but they are to be removed or trimmed to provide a clear separation of 10 feet from the tree crown to other trees and to the structure.

603.2.3 Ground cover. Deadwood and litter shall be regularly removed from trees. Where ornamental vegetative fuels or cultivated ground cover, such as green grass, ivy, succulents or similar plants are used as ground cover, they are allowed to be within the designated *defensible space*, provided that they do not form a means of transmitting fire from the native growth to any structure.

Dead material is easily ignited. This would include any dead branches that have not yet fallen, pine needles, leaves and any other combustible material. These dead materials, even pine needles, can carry fire to a structure

604.1 General. Defensible spaces required by Section 603 shall be maintained in accordance with Section 604.

After a defensible space has been established in accordance with Section 603, it must then be maintained for the life of the building.

WASATCH FIRE DISTRICT

10420 N. Jordanelle Blvd. Heber City, UT 84032
435-940-9636

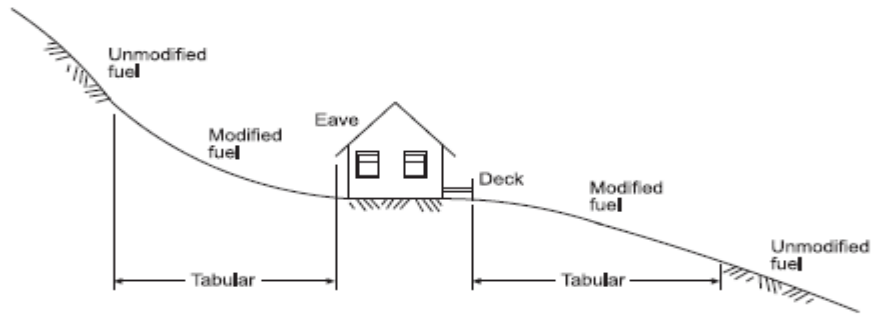
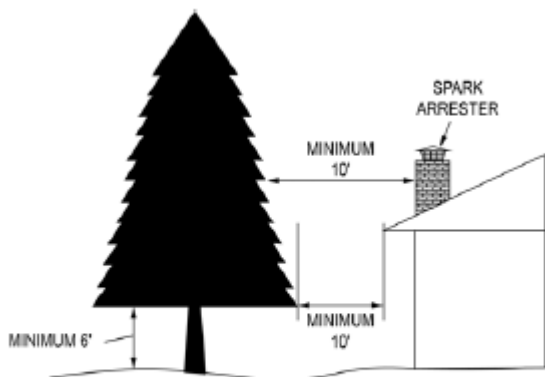


FIGURE 603.2
MEASUREMENTS OF FUEL MODIFICATION DISTANCE



Commentary Figure 603.2.2
10-FOOT SEPARATION BETWEEN TREE CROWNS AND STRUCTURES



Commentary Figure 604.4.1
TREES MUST BE TRIMMED AND MAINTAINED

TABLE 603.2
REQUIRED DEFENSIBLE SPACE

| WILDLAND-URBAN INTERFACE AREA | FUEL MODIFICATION DISTANCE (feet) ^a |
|----------------------------------|--|
| Moderate hazard | 30 |
| High hazard | 50 |
| Extreme hazard | 100 |

For SI: 1 foot = 304.8 mm.

a. Distances are allowed to be increased due to site-specific analysis based on local conditions and the fire protection plan.



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435-940-9636

Ignition Resistant Construction

FIRE HAZARD SEVERITY

502.1 General. The fire hazard severity of building sites for buildings hereafter constructed, modified, or relocated into *wildland-urban interface areas* shall be established in accordance with Table 502.1. See also Appendix C.

❖ This section and the accompanying table classify the level of fire hazard based on the following criteria: These three criteria determine the fire hazard severity for the site. It should be noted that two properties, one on each side of the street, could result in different fire hazard severity because the slope is different, or vegetation is modified on one property and not the other. See Commentary Figure 502.1. Appendix C provides an alternative to the application of Table 502.1. If Appendix C is adopted, it replaces Table 502.1 with a slightly different methodology of classifying fire hazard severity. The decision to use Appendix C is up to each jurisdiction and, if desired, Appendix C must be specifically referenced in the adopting ordinance

- **CLASS 1 IGNITION-RESISTANT CONSTRUCTION**

504.1 General. Class 1 ignition-resistant construction shall be in accordance with Sections 504.2 through 504.11.

Section 504 establishes the provisions for Class 1 ignition-resistant construction and identifies the specific building components that must meet the ignition-resistance criteria specified in Section 503.2. Class 1 ignition-resistant construction is the highest level of fire protection required in the code. This level of protection is designed to withstand an onslaught of flame and embers presenting an extreme fire hazard.

- **CLASS 2 IGNITION-RESISTANT CONSTRUCTION**

505.1 General. Class 2 ignition-resistant construction shall be in accordance with Sections 505.2 through 505.11.

Section 505 establishes the provisions for Class 2 ignition-resistant construction and identifies the specific building components that must meet ignition-resistance criteria. Class 2 ignition-resistant construction is the next step down in the level of fire protection in the code. Class 2 ignition-resistant construction is designed to protect against a lesser magnitude of fire impact than Class 1 ignition-resistant construction. This level of protection is designed to withstand an onslaught of flame and embers presenting a high fire

- **CLASS 3 IGNITION-RESISTANT CONSTRUCTION**

506.1 General. Class 3 ignition-resistant construction shall be in accordance with Sections 506.2 through 506.4.

Section 506 establishes the provisions for Class 3 ignition-resistant construction and identifies the specific building components that must meet ignition-resistance criteria. Class 3 ignition-resistant construction is the minimum level of fire protection in the code. This level of protection is designed to withstand an onslaught of flame and embers presenting a moderate fire hazard.

Vegetation management plans shall be submitted to the *code official* for review and approval as part of the plans required for a permit.

For a vegetation management plan to be considered as a long-term improvement on the natural vegetative growth, it must be approved. The vegetation management plan is submitted to the code official for approval. This submittal must occur at the time the construction plans are submitted if it is intended to modify the fuel classification utilized in Table 502.1.

CHAPTER 1 ADMINISTRATION

SECTION 101 GENERAL

101.1 Title. These regulations shall be known as the Wildland-Urban Interface Code of Wasatch County, hereinafter referred to as “this code.”

101.2 Scope. The provisions of this code shall apply to the construction, alteration, movement, repair, maintenance and use of any building, structure or premises within the wildland-urban interface areas in this jurisdiction.

Buildings or conditions in existence at the time of the adoption of this code are allowed to have their use or occupancy continued, if such condition, use or occupancy was legal at the time of the adoption of this code, provided such continued use does not constitute a distinct danger to life or property.

Buildings or structures moved into or within the jurisdiction shall comply with the provisions of this code for new buildings or structures.

101.3 Objective. The objective of this code is to establish minimum regulations consistent with nationally recognized good practice for the safeguarding of life and property. Regulations in this code are intended to mitigate the risk to life and structures from intrusion of fire from wildland fire exposures and fire exposures from adjacent structures and to mitigate structure fires from spreading to wildland fuels.

The unrestricted use of property in wildland-urban interface areas is a potential threat to life and property from fire and resulting erosion. Safeguards to prevent the occurrence of fires and to provide adequate fire-protection facilities to control the spread of fire in wildland-urban interface areas shall be in accordance with this code.

This code shall supplement the jurisdiction’s building and fire codes, if such codes have been adopted, to provide for special regulations to mitigate the fire- and life-safety hazards of the wildland-urban interface areas.

101.4 Retroactivity. The provisions of the code shall apply to conditions arising after the adoption thereof, conditions not legally in existence at the adoption of this code, to conditions which, in the opinion of the code official, constitute a distinct hazard to life or property.

101.5 Additions or alterations.

Additions or alterations may be made to any building or structure without requiring the existing building or structure to comply with all of the requirements of this code, provided the addition or alteration conforms to that required for a new building or structure.

Exception: Provisions of this code that specifically apply to existing conditions are retroactive. See Sections 601.1 and Appendix A.

Additions or alterations shall not be made to an existing building or structure that will cause the existing building or

structure to be in violation of any of the provisions of this code nor shall such additions or alterations cause the existing building or structure to become unsafe. An unsafe condition shall be deemed to have been created if an addition or alteration will cause the existing building or structure to become structurally unsafe or overloaded; will not provide adequate access in compliance with the provisions of this code or will obstruct existing exits or access; will create a fire hazard; will reduce required fire resistance or will otherwise create conditions dangerous to human life.

101.6 Maintenance. All buildings, structures, landscape materials, vegetation, defensible space or other devices or safeguards required by this code shall be maintained in conformance to the code edition under which installed. The owner or the owner’s designated agent shall be responsible for the maintenance of buildings, structures, landscape materials and vegetation.

SECTION 102 AUTHORITY OF THE CODE OFFICIAL

102.1 Powers and duties of the code official. The code official is hereby authorized to administer and enforce this code, or designated sections thereof, and all ordinances of the jurisdiction pertaining to designated wildland-urban interface areas. For such purposes, the code official shall have the powers of a law enforcement officer.

102.2 Interpretations, rules and regulations. The code official shall have the power to render interpretations of this code and to adopt and enforce rules and supplemental regulations to clarify the application of its provisions. Such interpretations, rules and regulations shall be in conformance to the intent and purpose of this code.

A copy of such rules and regulations shall be filed with the clerk of the jurisdiction and shall be in effect immediately thereafter. Additional copies shall be available for distribution to the public.

102.3 Liability of the code official. The code official charged with the enforcement of this code, acting in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered personally liable for damages that may accrue to persons or property as a result of an act or by reason of an act or omission in the discharge of such duties. A suit brought against the code official or employee because of such act or omission performed by the code official or employee in the enforcement of any provision of such codes or other pertinent laws or ordinances implemented through the enforcement of this code or enforced by the code enforcement agency shall be defended by this jurisdiction until final termination of such proceedings, and any judgment resulting therefrom shall be assumed by this jurisdiction. The code enforcement agency or its parent jurisdiction shall not be held as assuming any liability by reason of the inspections authorized by this code or any permits or certificates issued under this code.

102.4 Other agencies. When requested to do so by the code official, other officials of this jurisdiction shall assist and cooperate with the code official in the discharge of the duties required by this code.

SECTION 103 COMPLIANCE ALTERNATIVES

103.1 Practical difficulties. When there are practical difficulties involved in carrying out the provisions of this code, the code official is authorized to grant modifications for individual cases on application in writing by the owner or a duly authorized representative. The code official shall first find that a special individual reason makes enforcement of the strict letter of this code impractical, the modification is in conformance to the intent and purpose of this code, and the modification does not lessen any fire protection requirements or any degree of structural integrity. The details of any action granting modifications shall be recorded and entered into the files of the code enforcement agency.

If the code official determines that difficult terrain, danger of erosion or other unusual circumstances make strict compliance with the vegetation control provisions of the code detrimental to safety or impractical, enforcement thereof may be suspended, provided that reasonable alternative measures are taken.

103.2 Technical assistance. To determine the acceptability of technologies, processes, products, facilities, materials and uses attending the design, operation or use of a building or premises subject to the inspection of the code official, the code official is authorized to require the owner or the person in possession or control of the building or premises to provide, without charge to the jurisdiction, a technical opinion and report. The opinion and report shall be prepared by a qualified engineer, specialist, laboratory or fire safety specialty organization acceptable to the code official and the owner and shall analyze the fire safety of the design, operation or use of the building or premises, the facilities and appurtenances situated thereon and fuel management for purposes of establishing fire hazard severity to recommend necessary changes.

103.3 Alternative materials or methods. The code official, in concurrence with approval from the building official and fire chief, is authorized to approve alternative materials or methods, provided that the code official finds that the proposed design, use or operation satisfactorily complies with the intent of this code and that the alternative is, for the purpose intended, at least equivalent to the level of quality, strength, effectiveness, fire resistance, durability and safety prescribed by this code. Approvals under the authority herein contained shall be subject to the approval of the building official whenever the alternate material or method involves matters regulated by the International Building Code.

The code official shall require that sufficient evidence or proof be submitted to substantiate any claims that may be made regarding its use. The details of any action granting

approval of an alternate shall be recorded and entered files of the code enforcement agency.

SECTION 104 APPEALS

104.1 General. To determine the suitability of alternative materials and methods and to provide for reasonable interpretations of the provisions of this code, there shall be and hereby is created a board of appeals consisting of five members who are qualified by experience and training to pass judgment on pertinent matters. The code official, building official and fire chief shall be ex officio members, and the code official shall act as secretary of the board. The board of appeals shall be appointed by the legislative body and shall hold office at their discretion. The board shall adopt reasonable rules and regulations for conducting its investigations and shall render decisions and findings in writing to the code official, with a duplicate copy to the applicant.

104.2 Limitations of authority. The board of appeals shall not have authority relative to interpretation of the administrative provisions of this code and shall not have authority to waive requirements of this code.

SECTION 105 PERMITS

105.1 General. When not otherwise provided in the requirements of the building or fire code, permits are required in accordance with Section 105.

105.2 Permits required. Unless otherwise exempted, no building or structure regulated by this code shall be erected, constructed, altered, repaired, moved, removed, converted, demolished, or changed in use or occupancy unless a separate permit for each building or structure has first been obtained from the code official.

When required by the code official, a permit shall be obtained for the following activities, operations, practices or functions within an wildland-urban interface area:

1. Automobile wrecking yard.
2. Candles and open flames in assembly areas.
3. Explosives or blasting agents.
4. Fireworks.
5. Flammable or combustible liquids.
6. Hazardous materials.
7. Liquefied petroleum gases.
8. Lumberyards.
9. Motor vehicle fuel-dispensing stations.
10. Open burning.
11. Pyrotechnical special effects material.
12. Tents, canopies and temporary membrane structures.

13. Tire storage.
14. Welding and cutting operations.
15. Other activities as determined by the code official.

105.3 Work exempt from permit. Unless otherwise provided in the requirements of the International Building Code or International Fire Code, a permit shall not be required for the following:

1. One-story detached accessory buildings used as tool and storage sheds, playhouses and similar uses, provided the floor area does not exceed 120 square feet (11.15 m²) and the structure is located more than 50 feet (15 240 mm) from the nearest adjacent structure.
2. Fences not over 6 feet (1829 mm) high. Exemption from the permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction.

The code official is authorized to stipulate conditions for permits. Permits shall not be issued when public safety would be at risk, as determined by the code official.

105.4 Permit application. To obtain a permit, the applicant shall first file an application therefor in writing on a form furnished by the code enforcement agency for that purpose. Every such application shall:

1. Identify and describe the work, activity, operation, practice or function to be covered by the permit for which application is made.
2. Describe the land on which the proposed work, activity, operation, practice or function is to be done by legal description, street address or similar description that will readily identify and definitely locate the proposed building, work, activity, operation, practice or function.
3. Indicate the use or occupancy for which the proposed work, activity, operation, practice or function is intended.
4. Be accompanied by plans, diagrams, computation and specifications and other data as required in Section 106 of this code.
5. State the valuation of any new building or structure or any addition, remodeling or alteration to an existing building.
6. Be signed by the applicant or the applicant's authorized agent.
7. Give such other data and information as may be required by the code official.

105.5 Permit approval. Before a permit is issued, the code official, or an authorized representative, shall review and approve all permitted uses, occupancies or structures. Where laws or regulations are enforceable by other agencies or

departments, a joint approval shall be obtained from all agencies or departments concerned.

105.6 Permit issuance. The application, plans, specifications and other data filed by an applicant for a permit shall be reviewed by the code official. If the code official finds that the work described in an application for a permit and the plan, specifications and other data filed therewith conform to the requirements of this code, the code official is allowed to issue a permit to the applicant.

When the code official issues the permit, the code official shall endorse in writing or stamp the plans and specifications APPROVED. Such approved plans and specifications shall not be changed, modified or altered without authorization from the code official, and all work regulated by this code shall be done in accordance with the approved plans.

105.7 Validity of permit. The issuance or granting of a permit or approval of plans, specifications and computations shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinance of the jurisdiction. Permits presuming to give authority to violate or conceal the provisions of this code or other ordinances of the jurisdiction shall not be valid.

105.8 Expiration. Every permit issued by the code official under the provisions of this code shall expire by limitation and become null and void if the building, use or work authorized by such permit is not commenced within 180 days from the date of such permit, or if the building, use or work authorized by such permit is suspended or abandoned at any time after the work is commenced for a period of 180 days.

Any permittee holding an unexpired permit may apply for an extension of the time within which work may commence under that permit when the permittee is unable to commence work within the time required by this section for good and satisfactory reasons. The code official may extend the time for action by the permittee for a period not exceeding 180 days on written request by the permittee showing that circumstances beyond the control of the permittee have prevented action from being taken. No permit shall be extended more than once.

105.9 Retention of permits. Permits shall at all times be kept on the premises designated therein and shall at all times be subject to inspection by the code official or other authorized representative.

105.10 Revocation of permits. Permits issued under this code may be suspended or revoked when it is determined by the code official that:

1. It is used by a person other than the person to whom the permit was issued.
2. It is used for a location other than that for which the permit was issued.
3. Any of the conditions or limitations set forth in the permit have been violated.

4. The permittee fails, refuses or neglects to comply with any order or notice duly served on him under the provisions of this code within the time provided therein.
5. There has been any false statement or misrepresentation as to material fact in the application or plans on which the permit or application was made.
6. When the permit is issued in error or in violation of any other ordinance, regulations or provisions of this code.

The code official is allowed to, in writing, suspend or revoke a permit issued under the provisions of this code whenever the permit is issued in error or on the basis of incorrect information supplied, or in violation of any ordinance or regulation or any of the provisions of this code.

SECTION 106 PLANS AND SPECIFICATIONS

106.1 General. Plans, engineering calculations, diagrams and other data shall be submitted in at least two sets with each application for a permit. When such plans are not prepared by an architect or engineer, the code official may require the applicant submitting such plans or other data to demonstrate that state law does not require that the plans be prepared by a licensed architect or engineer. The code official may require plans, computations and specifications to be prepared and designed by an architect or engineer licensed by the state to practice as such even if not required by state law.

Exception: Submission of plans, calculations, construction inspection requirements and other data, if it is found that the nature of the work applied for is such that reviewing of plans is not necessary to obtain compliance with this code.

106.2 Information on plans and specifications. Plans and specifications shall be drawn to scale upon substantial paper or cloth and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in detail that it will conform to the provisions of this code and all relevant laws, ordinances, rules and regulations.

106.3 Site plan. In addition to the requirements for plans in the International Building Code, site plans shall include topography, width and percent of grade of access roads, landscape and vegetation details, locations of structures or building envelopes, existing or proposed overhead utilities, occupancy classification of buildings, types of ignition-resistant construction of buildings, structures and their appendages, roof classification of buildings, and site water supply systems.

106.4 Vegetation management plans. When utilized by the permit applicant pursuant to Section 502, vegetation management plans shall be prepared and shall be submitted to the code official for review and approval as part of the plans required for a permit. See Appendix B.

106.5 Fire protection plan. When required by the code official pursuant to Section 405, a fire protection plan shall be prepared and shall be submitted to the code official for review and approved as a part of the plans required for a permit.

106.6 Other data and substantiation. When required by the code official, the plans and specifications shall include classification of fuel loading, fuel model light, medium or heavy, and substantiating data to verify classification of fire-resistive vegetation.

106.7 Vicinity plan. In addition to the requirements for site plans, plans shall include details regarding the vicinity within 300 feet (91 440 mm) of property lines, including other structures, slope, vegetation, fuel breaks, water supply systems and access roads.

106.8 Retention of plans. One set of approved plans, specifications and computations shall be retained by the code official for a period of not less than 90 days from date of completion of the work covered therein; and one set of approved plans and specifications shall be returned to the applicant, and said set shall be kept on the site of the building, use or work at all times during which the work authorized thereby is in progress.

SECTION 107 INSPECTION AND ENFORCEMENT

107.1 Inspection.

107.1.1 General. All construction or work for which a permit is required by this code shall be subject to inspection by the code official and all such construction or work shall remain accessible and exposed for inspection purposes until approved by the code official.

It shall be the duty of the permit applicant to cause the work to remain accessible and exposed for inspection purposes. Neither the code official nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the jurisdiction shall not be valid.

A survey of the lot may be required by the code official to verify that the mitigation features are provided and the building or structure is located in accordance with the approved plans.

107.1.2 Authority to inspect. The code official shall inspect, as often as necessary, buildings and premises, including such other hazards or appliances designated by the code official for the purpose of ascertaining and causing to be corrected any conditions that could reasonably be expected to cause fire or contribute to its spread, or any violation of the purpose of this code and of any other law or standard affecting fire safety.

107.1.3 Reinspections. To determine compliance with this code, the code official may cause a structure to be reinspected. A fee may be assessed for each inspection or reinspection when such portion of work for which inspection is called is not complete or when corrections called for are not made.

Reinspection fees may be assessed when the approved plans are not readily available to the inspector, for failure to provide access on the date for which inspection is requested or for deviating from plans requiring the approval of the code official.

To obtain a reinspection, the applicant shall pay the reinspection fee as set forth in the fee schedule adopted by the jurisdiction. When reinspection fees have been assessed, no additional inspection of the work will be performed until the required fees have been paid.

107.2 Enforcement.

107.2.1 Authorization to issue corrective orders and notices. When the code official finds any building or premises that are in violation of this code, the code official is authorized to issue corrective orders and notices.

107.2.2 Service of orders and notices. Orders and notices authorized or required by this code shall be given or served on the owner, operator, occupant or other person responsible for the condition or violation either by verbal notification, personal service, or delivering the same to, and leaving it with, a person of suitable age and discretion on the premises; or, if no such person is found on the premises, by affixing a copy thereof in a conspicuous place on the door to the entrance of said premises and by mailing a copy thereof to such person by registered or certified mail to the person's last known address.

Orders or notices that are given verbally shall be confirmed by service in writing as herein provided.

107.3 Right of entry. Whenever necessary to make an inspection to enforce any of the provisions of this code, or whenever the code official has reasonable cause to believe that there exists in any building or on any premises any condition that makes such building or premises unsafe, the code official is authorized to enter such building or premises at all reasonable times to inspect the same or to perform any duty authorized by this code, provided that if such building or premises is occupied, the code official shall first present proper credentials and request entry; and if such building or premises is unoccupied, the code official shall first make a reasonable effort to locate the owner or other persons having charge or control of the building or premises and request entry.

If such entry is refused, the code official shall have recourse to every remedy provided by law to secure entry. Owners, occupants or any other persons having charge, care or control of any building or premises, shall, after proper request is made as herein provided, promptly permit entry therein by the code official for the purpose of inspection and examination pursuant to this code.

107.4 Compliance with orders and notices.

107.4.1 General compliance. Orders and notices issued or served as provided by this code shall be complied with by the owner, operator, occupant or other person responsible for the condition or violation to which the corrective order or notice pertains.

If the building or premises is not occupied, such corrective orders or notices shall be complied with by the owner.

107.4.2 Compliance with tags. A building or premises shall not be used when in violation of this code as noted on a tag affixed in accordance with Section 107.4.1.

107.4.3 Removal and destruction of signs and tags. A sign or tag posted or affixed by the code official shall not be mutilated, destroyed or removed without authorization by the code official.

107.4.4 Citations. Persons operating or maintaining an occupancy, premises or vehicle subject to this code who allow a hazard to exist or fail to take immediate action to abate a hazard on such occupancy, premises or vehicle when ordered or notified to do so by the code official shall be guilty of a misdemeanor.

107.4.5 Unsafe conditions. Buildings, structures or premises that constitute a fire hazard or are otherwise dangerous to human life, or which in relation to existing use constitute a hazard to safety or health or public welfare, by reason of inadequate maintenance, dilapidation, obsolescence, fire hazard, disaster damage or abandonment as specified in this code or any other ordinance, are unsafe conditions. Unsafe buildings or structures shall not be used. Unsafe buildings are hereby declared to be public nuisances and shall be abated by repair, rehabilitation, demolition or removal, pursuant to applicable state and local laws and codes.

SECTION 108 CERTIFICATE OF COMPLETION

108.1 General. No building, structure or premises shall be used or occupied, and no change in the existing occupancy classification of a building, structure, premise or portion thereof shall be made until the code official has issued a certificate of completion therefor as provided herein. The certificate of occupancy shall not be issued until the certificate of completion indicating that the project is in compliance with this code has been issued by the code official.

108.2 Certificate of occupancy. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other pertinent laws and ordinances of the jurisdiction. Certificates presuming to give authority to violate or cancel the provisions of this code or other laws or ordinances of the jurisdiction shall not be valid.

CHAPTER 2 DEFINITIONS

SECTION 201 GENERAL

201.1 Scope. Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

201.2 Interchangeability. Words stated in the present tense include the future; words stated in the masculine gender include the feminine and neuter, and the singular number includes the plural and the plural the singular.

201.3 Terms defined in other codes. Where terms are not defined in this code and are defined in other International Codes, such terms shall have the meanings ascribed to them as in those codes.

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have their ordinarily accepted meanings such as the context implies.

SECTION 202 DEFINITIONS

ACCESSORY STRUCTURE. A building or structure used to shelter or support any material, equipment, chattel or occupancy other than a habitable building.

APPROVED. Approval by the code official as the result of review, investigation or tests conducted by the code official or by reason of accepted principles or tests by national authorities, or technical or scientific organizations.

BRUSH, TALL. Arbor-like varieties of brush species and/or short varieties of broad-leaf trees that grow in compact groups or clumps. These groups or clumps reach heights of 4 to 20 feet. In Utah, this includes primary varieties of oak, maples, chokecherry, serviceberry, and mahogany, but may also include other species.

BRUSH, SHORT. Low growing species that reach heights of 1 to 3 feet. Sagebrush, snowberry, and rabbit brush are some varieties.

BUILDING. Any structure used or intended for supporting or sheltering any use or occupancy.

BUILDING OFFICIAL. The officer or other designated authority charged with the administration and enforcement of the International Building Code, or the building official's duly authorized representative.

CERTIFICATE OF COMPLETION. Written documentation that the project or work for which a permit was issued has been completed in conformance with requirements of this code.

CODE OFFICIAL. The official designated by the jurisdiction to interpret and enforce this code, or the code official's authorized representative.

DEFENSIBLE SPACE. An area either natural or man-made, where material capable of allowing a fire to spread unchecked has been treated, cleared or modified to slow the rate and intensity of an advancing wildfire and to create an area for fire suppression operations to occur.

DRIVEWAY. A vehicular ingress and egress route that serves no more than two buildings or structures, not including accessory structures, or more than five dwelling units.

FIRE AREA. The floor area, in square feet (square meters), used to determine the adequate water supply.

FIRE CHIEF. The chief officer or the chief officer's authorized representative of the fire department serving the jurisdiction.

FIRE PROTECTION PLAN. A document prepared for a specific project or development proposed for the wildland-urban interface area. It describes ways to minimize and mitigate the fire problems created by the project or development, with the purpose of reducing impact on the community's fire protection delivery system.

FIRE WEATHER. Weather conditions favorable to the ignition and rapid spread of fire. In wildfires, this generally includes high temperatures combined with strong winds and low humidity.

FIRE-RESISTANCE-RATED CONSTRUCTION. The use of materials and systems in the design and construction of a building or structure to safeguard against the spread of fire within a building or structure and the spread of fire to or from buildings or structures to the wildland-urban interface area.

FLAME SPREAD RATING. As used herein refers to rating obtained according to tests conducted as specified by a nationally recognized standard.

FUEL BREAK. An area, strategically located for fighting anticipated fires, where the native vegetation has been permanently modified or replaced so that fires burning into it can be more easily controlled. Fuel breaks divide fire-prone areas into smaller areas for easier fire control and to provide access for fire fighting.

FUEL, HEAVY. Vegetation consisting of round wood 3 inches (76 mm) or larger in diameter. The amount of fuel (vegetation) would be 6 tons per acre or greater.

FUEL, LIGHT. Vegetation consisting of round wood less than ¼ inch (6.4 mm) in diameter. The amount of fuel (vegetation) would be ½ ton to 2 tons per acre.

FUEL, MEDIUM. Vegetation consisting of round wood ¼ to 3 inches (6.4 mm to 76 mm) in diameter. The amount of fuel (vegetation) would be 2 to 6 tons per acre.

FUEL MODIFICATION. A method of modifying fuel load by reducing the amount of nonfire-resistive vegetation or altering the type of vegetation to reduce the fuel load.

FUEL MOSAIC. A fuel modification system that provides for the creation of islands and irregular boundaries to reduce the visual and ecological impact of fuel modification.

FUEL-LOADING. The oven-dry weight of fuels in a given area, usually expressed in pounds per acre (lb/a) (kg/ha). Fuel loading may be referenced to fuel size or timelag categories, and may include surface fuels or total fuels.

GREEN BELT. A fuel break designated for a use other than fire protection.

HAZARDOUS MATERIALS. As defined in the International Fire Code.

HEAVY TIMBER CONSTRUCTION. As described in the International Building Code.

LEGISLATIVE BODY. The governing body of the political jurisdiction administering this code.

LOG WALL CONSTRUCTION. A type of construction in which exterior walls are constructed of solid wood members and where the smallest horizontal dimension of each solid wood member is at least 6 inches (152 mm).

MULTILAYERED GLAZED PANELS. Window or door assemblies that consist of two or more independently glazed panels installed parallel to each other, having a sealed air gap in between, within a frame designed to fill completely the window or door opening in which the assembly is intended to be installed.

NONCOMBUSTIBLE. As applied to building construction material means a material that, in the form in which it is used, is either one of the following:

1. Material of which no part will ignite and burn when subjected to fire. Any material conforming to ASTM E 136 shall be considered noncombustible within the meaning of this section.
2. Material having a structural base of noncombustible material as defined in Item 1 above, with a surfacing material not over 1/8 inch (3.2 mm) thick, which has a flame spread rating of 50 or less. Flame spread rating as used herein refers to rating obtained according to tests conducted as specified in ASTM E 84.

“Noncombustible” does not apply to surface finish materials. Material required to be noncombustible for reduced clearances to flues, heating appliances or other sources of high temperature shall refer to material conforming to Item 1. No material shall be classed as noncombustible that is subject to increase in combustibility or flame spread rating, beyond the limits herein established, through the effects of age, moisture or other atmospheric condition.

NONCOMBUSTIBLE ROOF COVERING. One of the following:

1. Cement shingles or sheets.

2. Exposed concrete slab roof.
3. Ferrous or copper shingles or sheets.
4. Slate shingles.
5. Clay or concrete roofing tile.
6. Approved roof covering of noncombustible material.

SLOPE. The variation of terrain from the horizontal; the number of feet (meters) rise or fall per 100 feet (30 480 mm) measured horizontally, expressed as a percentage.

STRUCTURE. That which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some manner.

TREE CROWN. The primary and secondary branches growing out from the main stem, together with twigs and foliage.

UNENCLOSED ACCESSORY STRUCTURE. An accessory structure without a complete exterior wall system enclosing the area under roof or floor above.

WILDFIRE. An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

WILDLAND. An area in which development is essentially nonexistent, except for roads, railroads, power lines and similar facilities.

WILDLAND-URBAN INTERFACE. The line, area, or zone where structures or other human development (including critical infrastructure that if destroyed would result in hardship to communities) meet or intermingle with undeveloped wildland or vegetative fuel.

CHAPTER 3 WILDLAND-URBAN INTERFACE AREAS

SECTION 301

WILDLAND-URBAN INTERFACE AREA DESIGNATIONS

301.1 Declaration. The legislative body shall declare the wildland-urban interface areas within the jurisdiction. The wildland-urban interface areas shall be based on the maps created in accordance with section 302.

301.2 Mapping. In cooperation, the code official and the Division of Forestry, Fire and State Lands (FFSL) wildfire representative, will create or review Wildland-Urban Interface Area maps, to be recorded and filed with the clerk of the jurisdiction. These areas shall become effective immediately thereafter.

301.3 Review of wildland-urban interface areas. The code official and the FFSL wildfire representative shall reevaluate and recommend modification to the wildland-urban interface areas in accordance with Section 302.1 on a three-year basis or more frequently as deemed necessary by the legislative body.

CHAPTER 4 WILDLAND-URBAN INTERFACE AREA REQUIREMENTS

SECTION 401 GENERAL

401.1 Scope. Wildland-urban interface areas shall be provided with emergency vehicle access and water supply in accordance with this chapter.

401.2 Objective. The objective of this chapter is to establish the minimum requirements for emergency vehicle access and water supply for buildings and structures located in the wildland-urban interface areas.

401.3 General safety precautions. General safety precautions shall be in accordance with this chapter. See also Appendix A.

SECTION 402 APPLICABILITY

402.1 Subdivisions. Subdivisions shall comply with Sections 402.1.1 and 402.1.2.

402.1.1 Access. New subdivisions, as determined by this jurisdiction, shall be provided with fire apparatus access roads in accordance with the International Fire Code and access requirements in accordance with Section 403.

402.1.2 Water supply. New subdivisions as determined by this jurisdiction shall be provided with water supply in accordance with Section 404.

402.2 Individual structures. Individual structures shall comply with Sections 402.2.1 and 402.2.2.

402.2.1 Access.

Individual structures hereafter constructed or relocated into or within wildland-urban interface areas shall be provided with fire apparatus access in accordance with the International Fire Code and driveways in accordance with Section 403.2. Marking of fire protection equipment shall be provided in accordance with Section 403.5 and address markers shall be provided in accordance with Section 403.6.

402.2.2 Water supply.

Individual structures hereafter constructed or relocated into or within wildland-urban interface areas shall be provided with a conforming water supply in accordance with Section 404.

Exceptions:

1. Structures constructed to meet the requirements for the class of ignition-resistant construction specified in Table 503.1 for a nonconforming water supply.
2. Buildings containing only private garages, carports, sheds and agricultural buildings with a floor area of not more than 600 square feet (56 m²).

402.3 Existing conditions. Existing buildings shall be provided with address markers in accordance with Section 403.6. Existing roads and fire protection equipment shall be provided with markings in accordance with Sections 403.4 and 403.5, respectively.

SECTION 403 ACCESS

403.1 Restricted access. Where emergency vehicle access is restricted because of secured access roads or driveways or where immediate access is necessary for life-saving or fire-fighting purposes, the code official is authorized to require a key box to be installed in an accessible location. The key box shall be of a type approved by the code official and shall contain keys to gain necessary access as required by the code official.

403.2 Driveways. Driveways shall be provided when any portion of an exterior wall of the first story of a building is located more than 150 feet (45 720 mm) from a fire apparatus access road. Driveways shall provide a minimum unobstructed width of 20 feet (3658 mm) and a minimum unobstructed height of 13 feet 6 inches (4115 mm). Driveways in excess of 150 feet (45 720 mm) in length shall be provided with turnarounds.

A driveway shall not serve in excess of five dwelling units.

Driveway turnarounds shall have inside turning radii of not less than 30 feet (9144 mm) and outside turning radii of not less than 45 feet (13 716 mm). Driveways that connect with a road or roads at more than one point may be considered as having a turnaround if all changes of direction meet the radii requirements for driveway turnarounds.

Vehicle load limits shall be posted at both entrances to bridges on driveways and private roads. Design loads for bridges shall be established by the code official.

403.3 Fire apparatus access road. When required, fire apparatus access roads shall be all-weather roads with a minimum width of 20 feet (6096 mm) and a clear height of 13 feet 6 inches (4115 mm); shall be designed to accommodate the loads and turning radii for fire apparatus; and have a gradient negotiable by the specific fire apparatus normally used at that location within the jurisdiction. Dead-end roads in excess of 150 feet (45 720 mm) in length shall be provided with turnarounds as approved by the code official. An all-weather road surface shall be any surface material acceptable to the code official that would normally allow the passage of emergency service vehicles to protect structures and wildlands within the jurisdiction.

403.4 Marking of roads. Approved signs or other approved notices shall be provided and maintained for access roads and driveways to identify such roads and prohibit the obstruction thereof or both.

All road identification signs and supports shall be of noncombustible materials. Signs shall have minimum 4-inch-high (102 mm) reflective letters with ½ inch (12.7 mm) stroke on a contrasting 6-inch-high (152 mm) sign. Road identification signage shall be mounted at a height of 7 feet (2134 mm) from the road surface to the bottom of the sign.

403.5 Marking of fire protection equipment. Fire protection equipment and fire hydrants shall be clearly identified in a manner approved by the code official to prevent obstruction.

403.6 Address markers. All buildings shall have a permanently posted address, which shall be placed at each driveway entrance and be visible from both directions of travel along the road. In all cases, the address shall be posted at the beginning of construction and shall be maintained thereafter, and the address shall be visible and legible from the road on which the address is located.

Address signs along one-way roads shall be visible from both the intended direction of travel and the opposite direction.

Where multiple addresses are required at a single driveway, they shall be mounted on a single post, and additional signs shall be posted at locations where driveways divide.

Where a roadway provides access solely to a single commercial or industrial business, the address sign shall be placed at the nearest road intersection providing access to that site.

403.7 Grade. The gradient for fire apparatus access roads and driveways shall not exceed the maximum approved by the code official. It will be up to the code official to ascertain the standard based on local fire equipment. The grade shall not exceed 12 percent.

SECTION 404 WATER SUPPLY

404.1 General. When provided in order to qualify as a conforming water supply for the purpose of Table 503.1, an approved water source shall have an adequate water supply for the use of the fire protection service to protect buildings and structures from exterior fire sources or to suppress structure fires within the wildland-urban interface area of the jurisdiction in accordance with this section.

404.2 Water sources. The point at which a water source is available for use shall be located not more than 1,000 feet (305 m) from the building and be approved by the code official. The distance shall be measured along an unobstructed line of travel.

Water sources shall comply with the following:

1. Man-made water sources shall have a minimum usable water volume as determined by the adequate water supply needs in accordance with Section 404.5. This water source shall be equipped with an approved hydrant. The water level of the water source shall be maintained by rainfall, water pumped from a well, water hauled by a tanker, or by seasonal high water of a stream or river. The design, construction, location,

water level maintenance, access, and access maintenance of man-made water sources shall be approved by the code official.

2. Natural water sources shall have a minimum annual water level or flow sufficient to meet the adequate water supply needs in accordance with Section 404.5. This water level or flow shall not be rendered unusable because of freezing. This water source shall have an approved draft site with an approved hydrant. Adequate water flow and rights for access to the water source shall be ensured in a form acceptable to the code official.

404.3 Draft sites. Approved draft sites shall be provided at all natural water sources intended for use as fire protection for compliance with this code. The design, construction, location, access and access maintenance of draft sites shall be approved by the code official.

The pumper access point shall be either an emergency vehicle access area alongside a conforming access road or an approved driveway no longer than 150 feet (45 720 mm). Pumper access points and access driveways shall be designed and constructed in accordance with all codes and ordinances enforced by this jurisdiction. Pumper access points shall not require the pumper apparatus to obstruct a road or driveway.

404.4 Hydrants. All hydrants shall be designed and constructed in accordance with nationally recognized standards. The location and access shall be approved by the code official.

404.5 Adequate water supply. Adequate water supply shall be determined for purposes of initial attack and flame front control as follows:

1. One- and two-family dwellings. The required water supply for one- and two-family dwellings having a fire area that does not exceed 3,600 square feet (334 m²) shall be 1,000 gallons per minute (63.1 L/s) for a minimum duration of 30 minutes. The required water supply for one- and two-family dwellings having a fire area in excess of 3,600 square feet (334 m²) shall be 1,500 gallons per minute (95 L/s) for a minimum duration of two hours.

Exception: A reduction in required flow rate of 50 percent, as approved by the code official, is allowed when the building is provided with an approved automatic sprinkler system.

2. Buildings other than one- and two-family dwellings. The water supply required for buildings other than one- and two-family dwellings shall be as approved by the code official but shall not be less than 1,500 gallons per minute (95 L/s) for a duration of two hours.

Exception: A reduction in required flow rate of up to 75 percent, as approved by the code official, is allowed when the building is provided with an approved automatic sprinkler

system. The resulting water supply shall not be less than 1,500 gallons per minute (94.6 L/s).

404.6 Fire department. The water system required by this code can only be considered conforming for purposes of determining the level of ignition-resistant construction. (See Table 503.1)

404.7 Obstructions. Access to all water sources required by this code shall be unobstructed at all times. The code official shall not be deterred or hindered from gaining immediate access to water source equipment, fire protection equipment or hydrants.

404.8 Identification. Water sources, draft sites, hydrants and fire protection equipment shall be clearly identified in a manner approved by the code official to identify location and to prevent obstruction by parking and other obstructions.

404.9 Testing and maintenance. Water sources, draft sites, hydrants and other fire protection equipment required by this code shall be subject to periodic tests as required by the fire code official. The fire code official shall establish a periodic testing schedule. Costs are to be covered by the water provider. All such equipment installed under the provisions of this code shall be maintained in an operative condition at all times and shall be repaired or replaced where defective. Additions, repairs, alterations and servicing of such fire protection equipment and resources shall be in accordance with approved standards. Mains and appurtenances shall be installed in accordance with R309 Environmental Quality, Drinking Water Rules of the State of Utah and with standards as established by the Wasatch County and its special service districts.

404.10 Reliability. Water supply reliability shall comply with Sections 404.10.1 through 404.10.3.

404.10.1 Objective. The objective of this section is to increase the reliability of water supplies by reducing the exposure of vegetative fuels to electrically powered systems.

404.10.2 Clearance of fuel. Defensible space shall be provided around water tank structures, water supply pumps and pump houses in accordance with Section 603.

404.10.3 Standby power. Stationary water supply facilities within the wildland-urban interface area dependent on electrical power supplied by power grid to meet adequate water supply demands shall provide functional standby power systems in accordance with the current "National Electrical Code" to ensure that an uninterrupted water supply is maintained. The standby power source shall be capable of providing power for a minimum of two hours.

Exceptions:

1. When approved by the code official, a standby power supply is not required where the primary power service to the stationary water supply facility is underground or there is an onsite generator.

2. A standby power supply is not required where the stationary water supply facility serves no more than one single-family dwelling.

Item # 2.

SECTION 405 FIRE PROTECTION PLAN

405.1 Purpose. The plan is to provide a basis to determine overall compliance with this code, for determination of Ignition Resistant Construction (IRC) (see Table 503.1) and for determining the need for alternative material and methods.

405.2 General. When required by the code official, a fire protection plan shall be prepared.

405.3 Content. The plan shall be based upon a site-specific wildfire risk assessment that includes considerations of location, topography, aspect, flammable vegetation, climatic conditions and fire history. The plan shall address water supply, access, building ignition and fire-resistance factors, fire protection systems and equipment, defensible space and vegetation management.

405.4 Cost. The cost of fire protection plan preparation and review shall be the responsibility of the applicant.

405.5 Plan retention. The fire protection plan shall be retained by the code official.

CHAPTER 5 SPECIAL BUILDING CONSTRUCTION REGULATIONS

SECTION 501 GENERAL

501.1 Scope. Buildings and structures shall be constructed in accordance with the International Building Code and this code.

Exceptions:

1. Accessory structures not exceeding 120 square feet (11 m²) in floor area when located at least 50 feet (15 240 mm) from buildings containing habitable spaces.
2. Agricultural buildings at least 50 feet (15 240 mm) from buildings containing habitable spaces.

501.2 Objective. The objective of this chapter is to establish minimum standards to locate, design and construct buildings and structures or portions thereof for the protection of life and property, to resist damage from wildfires, and to mitigate building and structure fires from spreading to wildland fuels. The minimum standards set forth in this chapter vary with the critical fire weather, slope and fuel type to provide increased protection, above the requirements set forth in the International Building Code, from the various levels of hazards.

SECTION 502 FIRE HAZARD SEVERITY

502.1 General. The fire hazard severity of building sites for all buildings hereafter constructed, modified or relocated into wildland-urban interface areas shall be established in accordance with Appendix C.

502.2 Fire hazard severity reduction. The fire hazard severity is allowed to be reduced by implementing a vegetation management plan in accordance with Appendix B.

SECTION 503 IGNITION-RESISTANT CONSTRUCTION

503.1 General. Buildings and structures hereafter constructed, modified or relocated into or within wildland-urban interface areas shall meet the construction requirements in accordance with Table 503.1. Class 1, Class 2 or Class 3 ignition-resistant construction shall be in accordance with Sections 504, 505 and 506, respectively.

SECTION 504 CLASS 1 IGNITION-RESISTANT CONSTRUCTION

504.1 General. Class 1 ignition-resistant construction shall be in accordance with Sections 504.2 through 504.11

504.2 Roof covering. Roofs shall have a Class A roof covering or a Class A roof assembly. For roof coverings where the profile allows a space between the roof covering and roof decking, the space at the eave ends shall be firestopped to preclude entry of flames or embers.

504.3 Protection of eaves. Eaves and soffits shall be protected on the exposed underside by materials approved for a minimum of 1-hour fire-resistance-rated construction,

**TABLE 503.1
IGNITION-RESISTANT CONSTRUCTION ^a**

| DEFENSIBLE SPACE ^c | FIRE HAZARD SEVERITY | | | | | |
|-------------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|
| | Moderate Hazard | | High Hazard | | Extreme Hazard | |
| | Water Supply ^b | | Water Supply ^b | | Water Supply ^b | |
| | Conforming ^d | Nonconforming ^e | Conforming ^d | Nonconforming ^e | Conforming ^d | Nonconforming ^e |
| Nonconforming | IR 2 | IR 1 | IR 1 | IR 1 N.C. | IR 1 N.C. | Not Permitted |
| Conforming | IR 3 | IR 2 | IR 2 | IR 1 | IR 1 | IR 1 N.C. |
| 1.5 x Conforming | Not Required | IR 3 | IR 3 | IR 2 | IR 2 | IR 1 |

- a. Access shall be in accordance with Section 402.
- b. Subdivisions shall have a conforming water supply in accordance with Section 402.1.
IR 1 = Ignition-resistant construction in accordance with Section 504
IR 2 = Ignition-resistant construction in accordance with Section 505.
IR 3 = Ignition-resistant construction in accordance with Section 506.
N.C. = Exterior walls shall have a fire-resistance rating of not less than 1-hour and the exterior surfaces of such walls shall be noncombustible. Usage of log wall construction is allowed.
- c. Conformance based on Section 603.
- d. Conformance based on Section 404.
- e. A nonconforming water supply is any water system or source that does not comply with Section 404, including situations where there is no water supply for structure protection or fire suppression.

2-inch (51 mm) nominal dimension lumber, or 1-inch (25.4 mm) nominal fire-retardant-treated lumber or ¾-inch (19 mm) nominal fire-retardant-treated plywood, identified for exterior use and meeting the requirements of Section 2303.2 of the International Building Code. Fascias are required and shall be protected on the backside by materials approved for a minimum of 1-hour fire-resistance-rated construction or 2-inch (51 mm) nominal dimension lumber.

504.4 Gutters and downspouts. Gutters and downspouts shall be constructed of noncombustible material.

504.5 Exterior walls. Exterior walls of buildings or structures shall be constructed with materials approved for a minimum of 1-hour fire-resistance-rated construction on the exterior side or constructed with approved noncombustible materials.

Exception: Heavy timber or log wall construction.

Such material shall extend from the top of the foundation to the underside of the roof sheathing.

504.6 Unenclosed underfloor protection. Buildings or structures shall have all underfloor areas enclosed to the ground with exterior walls in accordance with Section 504.5.

Exception: Complete enclosure may be omitted where the underside of all exposed floors and all exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber construction.

504.7 Appendages and projections. Unenclosed accessory structures attached to buildings with habitable spaces and projections, such as decks, shall be a minimum of 1-hour fire-resistance-rated construction, heavy timber construction or constructed of approved noncombustible materials or fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the International Building Code.

When the attached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 504.5.

504.8 Exterior glazing. Exterior windows, window walls and glazed doors, windows within exterior doors, and skylights shall be tempered glass, multilayered glazed panels, glass block or have a fire protection rating of not less than 20 minutes.

504.9 Exterior doors. Exterior doors shall be approved noncombustible construction, solid core wood not less than 1¾ inches thick (45 mm), or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section 504.8.

Exception: Vehicle access doors.

504.10 Vents. Attic ventilation openings, foundation or underfloor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches (0.0929 m²) each. Such vents shall be covered

with noncombustible corrosion-resistant mesh with openings not to exceed ¼ inch (6.4 mm), or shall be designed and approved to prevent flame or ember penetration into the structure.

Attic ventilation openings shall not be located in soffits, in eave overhangs, between rafters at eaves, or in other overhang areas. Gable end and dormer vents shall be located at least 10 feet (3048 mm) from property lines. Underfloor ventilation openings shall be located as close to grade as practical.

504.11 Detached accessory structures. Detached accessory structures located less than 50 feet (15 240 mm) from a building containing habitable space shall have exterior walls constructed with materials approved for a minimum of 1-hour fire-resistance-rated construction, heavy timber, log wall construction or constructed with approved noncombustible materials on the exterior side.

When the detached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 504.5 or underfloor protection in accordance with Section 504.6.

Exception: The enclosure may be omitted where the underside of all exposed floors and all exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy-timber construction.

See Section 504.2 for roof requirements.

SECTION 505 CLASS 2 IGNITION-RESISTANT CONSTRUCTION

505.1 General. Class 2 ignition-resistant construction shall be in accordance with Sections 505.2 through 505.11.

505.2 Roof covering. Roofs shall have at least a Class A roof covering, Class B roof assembly or an approved noncombustible roof covering. For roof coverings where the profile allows a space between the roof covering and roof decking, the space at the eave ends shall be firestopped to preclude entry of flames or embers.

505.3 Protection of eaves. Combustible eaves, fascias and soffits shall be enclosed with solid materials with a minimum thickness of ¾ inch (19 mm). No exposed rafter tails shall be permitted unless constructed of heavy timber materials.

505.4 Gutters and downspouts. Gutters and downspouts shall be constructed of noncombustible material.

505.5 Exterior walls. Exterior walls of buildings or structures shall be constructed with materials approved for a minimum of 1-hour fire-resistance-rated construction on the exterior side or constructed with approved noncombustible materials.

Exception: Heavy timber or log wall construction.

Such material shall extend from the top of the foundation to the underside of the roof sheathing.

505.6 Unenclosed underfloor protection. Buildings or structures shall have all underfloor areas enclosed to the ground, with exterior walls in accordance with Section 505.5.

Exception: Complete enclosure may be omitted where the underside of all exposed floors and all exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber construction.

505.7 Appendages and projections. Unenclosed accessory structures attached to buildings with habitable spaces and projections, such as decks, shall be a minimum of 1-hour fire-resistance-rated construction, heavy timber construction or constructed of approved noncombustible materials or fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the International Building Code.

When the attached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 505.5.

505.8 Exterior glazing. Exterior windows, window walls and glazed doors, windows within exterior doors, and skylights shall be tempered glass, multilayered glazed panels, glass block or have a fire-protection rating of not less than 20 minutes.

505.9 Exterior doors. Exterior doors shall be approved noncombustible construction, solid core wood not less than 1¾-inches thick (45 mm), or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section 505.8.

Exception: Vehicle access doors.

505.10 Vents. Attic ventilation openings, foundation or underfloor vents or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches (0.0929 m²) each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed ¼ inch (6.4 mm) or shall be designed and approved to prevent flame or ember penetration into the structure.

Attic ventilation openings shall not be located in soffits, in eave overhangs, between rafters at eaves, or in other overhang areas. Gable end and dormer vents shall be located at least 10 feet (3048 mm) from property lines. Underfloor ventilation openings shall be located as close to grade as practical.

505.11 Detached accessory structures. Detached accessory structures located less than 50 feet (15 240 mm) from a building containing habitable space shall have exterior walls constructed with materials approved for a minimum of 1-hour fire-resistance-rated construction, heavy

timber, log wall construction, or constructed with approved noncombustible material on the exterior side.

When the detached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 505.5 or underfloor protection in accordance with Section 505.6.

Exception: The enclosure may be omitted where the underside of all exposed floors and all exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy-timber construction.

See Section 505.2 for roof requirements.

SECTION 506 CLASS 3 IGNITION-RESISTANT CONSTRUCTION

506.1 General. Class 3 ignition-resistant construction shall be in accordance with Sections 506.2 through 506.4.

506.2 Roof covering. Roofs shall have at least a Class A roof covering, Class C roof assembly or an approved noncombustible roof covering. For roof coverings where the profile allows a space between the roof covering and roof decking, the space at the eave ends shall be firestopped to preclude entry of flames or embers.

506.3 Unenclosed underfloor protection. Buildings or structures shall have all underfloor areas enclosed to the ground with exterior walls.

Exception: Complete enclosure may be omitted where the underside of all exposed floors and all exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber construction.

506.4 Vents. Attic ventilation openings, soffit vents, foundation or underfloor vents or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches (0.0929 m²) each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed ¼ inch (6.4 mm).

SECTION 507 REPLACEMENT OR REPAIR OF ROOF COVERINGS

507.1 General. The roof covering on buildings or structures in existence prior to the adoption of this code that are replaced or have 25 percent or more replaced in a 12-month period shall be replaced with a roof covering required for new construction based on the type of ignition-resistant construction specified in accordance with Section 503.

CHAPTER 6 FIRE PROTECTION REQUIREMENTS

SECTION 601 GENERAL

601.1 Scope. The provisions of this chapter establish general requirements for new and existing buildings, structures and premises located within wildland-urban interface areas.

601.2 Objective. The objective of this chapter is to establish minimum requirements to mitigate the risk to life and property from wildland fire exposures, exposures from adjacent structures and to mitigate structure fires from spreading to wildland fuels.

SECTION 602 AUTOMATIC SPRINKLER SYSTEMS

602.1 General. An approved automatic sprinkler system shall be installed in all occupancies in new buildings required to meet the requirements for Class 1 ignition-resistant construction in Chapter 5. The installation of the automatic sprinkler systems shall be in accordance with nationally recognized standards.

SECTION 603 DEFENSIBLE SPACE

603.1 Objective. Provisions of this section are intended to modify the fuel load in areas adjacent to structures to create a defensible space.

603.2 Fuel modification. In order to qualify as a conforming defensible space for individual buildings or structures on a property, fuel modification shall be provided within a distance from buildings or structures as specified in Table 603.2. For all other purposes, the fuel modification distance shall not be less than 30 feet (91 467 mm) or to the property line, whichever is less. Distances specified in Table 603.2 shall be measured on a horizontal plane from the perimeter or projection of the building or structure as

shown in Figure 603.2. Distances specified in Table 603.2 may be modified by the code official because of a site-specific analysis based on local conditions and the fire protection plan.

Persons owning, leasing, controlling, operating or maintaining buildings or structures requiring defensible spaces are responsible for modifying or removing nonfire-resistive vegetation on the property owned, leased or controlled by said person.

Trees are allowed within the defensible space, provided the horizontal distance between crowns of adjacent overhead electrical facilities or unmodified fuel is not less than 10 feet (3048 mm). Deadwood and litter shall be regularly removed from trees.

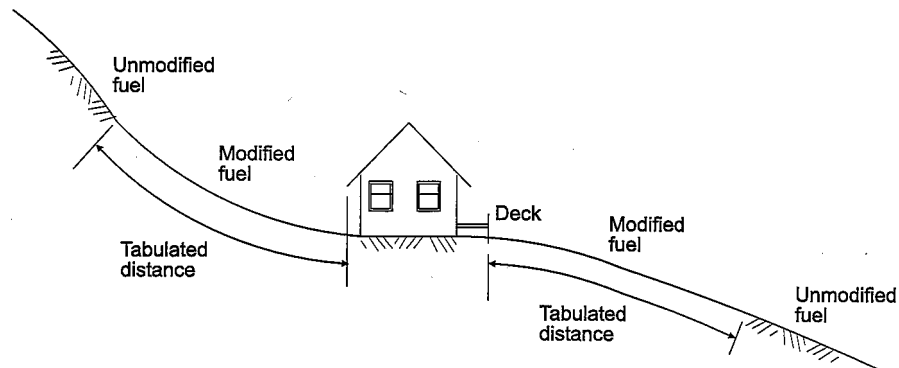
Where ornamental vegetative fuels or cultivated ground cover, such as green grass, ivy, succulents or similar plants are used as ground cover, they are allowed to be within the designated defensible space, provided they do not form a means of transmitting fire from the native growth to any structure.

**TABLE 603.2
REQUIRED DEFENSIBLE SPACE**

| WILDLAND-URBAN INTERFACE AREA | FUEL MODIFICATION DISTANCE (feet) ^a |
|----------------------------------|---|
| Moderate hazard | 30 |
| High hazard | 50 |
| Extreme hazard | 100 |

For SI: 1 foot = 304.8 mm.

a. Distances are allowed to be increased due to site-specific analysis based on local conditions and the fire protection plan.



**FIGURE 603.2
MEASUREMENTS OF FUEL MODIFICATION DISTANCE**

SECTION 604 MAINTENANCE OF DEFENSIBLE SPACE

604.1 General. Defensible spaces required by Section 603 shall be maintained in accordance with Section 604.

604.2 Modified area. Nonfire-resistive vegetation or growth shall be kept clear of buildings or structures, in accordance with Section 603, in such a manner as to provide a clear area for fire suppression operations.

604.3 Responsibility. Persons owning, leasing, controlling, operating or maintaining buildings or structures are responsible for maintenance of defensible spaces. Maintenance of the defensible space shall include modifying or removing nonfire-resistive vegetation and keeping leaves, needles and other dead vegetative material regularly removed from roofs of buildings and structures.

604.4 Trees. Tree crowns extending to within 10 feet (3048 mm) of any structure shall be pruned to maintain a minimum horizontal clearance of 10 feet (3048 mm). Tree crowns within the defensible space shall be pruned to remove limbs located less than 6 feet (1829 mm) above the ground surface adjacent to the trees.

Portions of tree crowns that extend within 10 feet (3048 mm) of the outlet of a chimney shall be pruned to maintain a minimum horizontal clearance of 10 feet (3048 mm).

Deadwood and litter shall be regularly removed from trees.

SECTION 605 SPARK ARRESTERS

605.1 General. Chimneys serving fireplaces, barbecues, incinerators or decorative heating appliances in which solid or liquid fuel is used, shall be provided with a spark arrester.

Spark arresters shall be constructed of woven or welded screening of 12 USA standard gage wire (0.1046 inch) (2.66 mm) having openings not exceeding ½ inch (12.7 mm).

605.2 Net free area. The net free area of the spark arrester shall not be less than four times the net free area of the outlet of the chimney.

SECTION 606 LIQUEFIED PETROLEUM GAS INSTALLATIONS

606.1 General. The storage of liquefied petroleum gas (LP-gas) and the installation and maintenance of pertinent equipment shall be in accordance with the International Fire Code or, in the absence thereof, recognized standards.

606.2 Location of containers.

LP-gas containers shall be located within the defensible space in accordance with the International Fire Code.

SECTION 607 STORAGE OF FIREWOOD AND COMBUSTIBLE MATERIALS

607.1 General. Firewood and combustible material shall not be stored in unenclosed spaces beneath buildings or structures, or on decks or under eaves, canopies or other projections or overhangs. When required by the code official, storage of firewood and combustible material stored in the defensible space shall be located a minimum of 20 feet (6096 mm) from structures and separated from the crown of trees by a minimum horizontal distance of 15 feet (4572 mm).

607.2 Storage for off-site use. Firewood and combustible materials not for consumption on the premises shall be stored so as to not pose a hazard. See Appendix A.

Item # 2.

APPENDIX A GENERAL REQUIREMENTS

The provisions contained in this appendix are optional.

SECTION A101 GENERAL

A101.1 Scope. The provisions of this appendix establish general requirements applicable to new and existing properties located within wildland-urban interface areas.

A101.2 Objective. The objective of this appendix is to provide necessary fire-protection measures to reduce the threat of wildfire in an wildland-urban interface area and improve the capability of controlling such fires.

SECTION A102 VEGETATION CONTROL

A102.1 General. Vegetation control shall comply with Sections A102.2 through A102.4.

A102.2 Clearance of brush or vegetative growth from roadways. The code official is authorized to require areas within 10 feet (3048 mm) on each side of portions of fire apparatus access roads and driveways to be cleared of nonfire-resistive vegetation growth.

Exception: Single specimens of trees, ornamental vegetative fuels or cultivated ground cover, such as green grass, ivy, succulents or similar plants used as ground cover, provided they do not form a means of readily transmitting fire.

A102.3 Clearance of brush and vegetative growth from electrical transmission and distribution lines.

A102.3.1 General.

Clearance of brush and vegetative growth from electrical transmission and distribution lines shall be in accordance with Section A102.3.

Exception: Section A102.3 does not authorize persons not having legal right of entry to enter on or damage the property of others without consent of the owner.

A102.3.2 Support clearance. Persons owning, controlling, operating or maintaining electrical transmission or distribution lines shall have an approved program in place that identifies poles or towers with equipment and hardware types that have a history of becoming an ignition source, and provides a combustible free space consisting of a clearing of not less than 10 feet (3048 mm) in each direction from the outer circumference of such pole or tower during such periods of time as designated by the code official.

Exception: Lines used exclusively as telephone, telegraph, messenger call, alarm transmission or other lines classed as communication circuits by a public utility.

A102.3.3 Electrical distribution and transmission line clearances.

A102.3.3.1 General. Clearances between vegetation and electrical lines shall be in accordance with Section A102.3.3.

A102.3.3.2 Trimming clearance. At the time of trimming, clearances not less than those established by Table A102.3.3.2 shall be provided. The radial clearances shown below are minimum clearances that shall be established, at time of trimming, between the vegetation and the energized conductors and associated live parts.

Exception: The code official is authorized to establish minimum clearances different than those specified by Table A102.3.3.2 when evidence substantiating such other clearances is submitted to and approved by the code official.

**TABLE A102.3.3.2
MINIMUM CLEARANCES BETWEEN VEGETATION
AND ELECTRICAL LINES AT TIME OF TRIMMING**

| LINE VOLTAGE | MINIMUM RADIAL CLEARANCE FROM CONDUCTOR (feet) |
|-----------------|--|
| 2,400-72,000 | 4 |
| 72,001-110,000 | 6 |
| 110,001-300,000 | 10 |
| 300,001 or more | 15 |

For SI: 1 foot = 304.8 mm.

A102.3.3.3 Minimum clearance to be maintained. Clearances not less than those established by Table A102.3.3.3 shall be maintained during such periods of time as designated by the code official. The site-specific clearance achieved, at time of pruning, shall vary based on species growth rates, the utility company-specific trim cycle, the potential line sway due to wind, line sag due to electrical loading and ambient temperature and the tree's location in proximity to the high voltage lines.

Exception: The code official is authorized to establish minimum clearances different than those specified by Table A102.3.3.3 when evidence substantiating such other clearances is submitted to and approved by the code official.

TABLE A102.3.3.3
MINIMUM CLEARANCES BETWEEN VEGETATION
AND ELECTRICAL LINES TO BE MAINTAINED

| LINE VOLTAGE | MINIMUM CLEARANCE (inches) |
|-----------------|-------------------------------|
| 750-35,000 | 6 |
| 35,001-60,000 | 12 |
| 60,001-115,000 | 19 |
| 115,001-230,000 | 30.5 |
| 230,001-500,000 | 115 |

For SI: 1 inch = 25.4 mm.

A102.3.3.4 Electrical power line emergencies. During emergencies, the utility shall perform the required work to the extent necessary to clear the hazard. An emergency can include situations such as trees falling into power lines, or trees in violation of Table A102.3.3.3.

A102.4 Correction of condition. The code official is authorized to give notice to the owner of the property on which conditions regulated by Section A102 exist to correct such conditions. If the owner fails to correct such conditions, the legislative body of the jurisdiction is authorized to cause the same to be done and make the expense of such correction a lien on the property where such condition exists.

SECTION A103 ACCESS RESTRICTIONS

A103.1 Restricted entry to public lands. The code official is authorized to determine and publicly announce when wildland-urban interface areas shall be closed to entry and when such areas shall again be opened to entry. Entry on and occupation of wildland-urban interface areas, except public roadways, inhabited areas or established trails and campsites that have not been closed during such time when the wildland-urban interface area is closed to entry, is prohibited.

Exceptions:

1. Residents and owners of private property within wildland-urban interface areas and their invitees and guests going to or being on their lands.
2. Entry, in the course of duty, by peace or police officers, and other duly authorized public officers, members of a fire department and members of the Wildland Firefighting Service.

A103.2 Trespassing on posted private property.

A103.2.1 General. When the code official determines that a specific area within an wildland-urban interface area presents an exceptional and continuing fire danger because of the density of natural growth, difficulty of terrain, proximity to structures or accessibility to the public, such areas shall be restricted or closed until changed conditions warrant termination of such restriction or closure. Such areas shall be posted in accordance with Section A103.2.2.

A103.2.2 Signs. Approved signs prohibiting entry by unauthorized persons and referring to this code shall be placed on every closed area.

A103.2.3 Trespassing. Entering and remaining within areas closed and posted is prohibited.

Exception: Owners and occupiers of private or public property within closed and posted areas; their guests or invitees; authorized persons engaged in the operation and maintenance of necessary utilities such as electrical power, gas, telephone, water and sewer; and local, state and federal public officers and their authorized agents acting in the course of duty.

A103.3 Use of fire roads and defensible space.

Motorcycles, motor scooters and motor vehicles shall not be driven or parked on, and trespassing is prohibited on, fire roads or defensible space beyond the point where travel is restricted by a cable, gate or sign, without the permission of the property owners. Vehicles shall not be parked in a manner that obstructs the entrance to a fire road or defensible space.

Exception: Public officers acting within their scope of duty.

Radio and television aerials, guy wires thereto, and other obstructions shall not be installed or maintained on fire roads or defensible spaces, unless located 16 feet (4877 mm) or more above such fire road or defensible space.

A103.4 Use of motorcycles, motor scooters, ultralight aircraft and motor vehicles. Motorcycles, motor scooters, ultralight aircraft and motor vehicles shall not be operated within wildland-urban interface areas, without a permit by the code official, except on clearly established public or private roads. Permission from the property owner shall be presented when requesting a permit.

A103.5 Tampering with locks, barricades, signs and address markers. Locks, barricades, seals, cables, signs and address markers installed within wildland-urban interface areas, by or under the control of the code official, shall not be tampered with, mutilated, destroyed or removed.

Gates, doors, barriers and locks installed by or under the control of the code official shall not be unlocked.

SECTION A104 IGNITION SOURCE CONTROL

A104.1 General. Ignition sources shall be in accordance with Section A104.

A104.2 Objective. Regulations in this section are intended to provide the minimum requirements to prevent the occurrence of wildfires.

A104.3 Clearance from ignition sources. Clearance between ignition sources and grass, brush or other combustible materials shall be maintained a minimum of 30 feet (9144 mm).

A104.4 Smoking. When required by the code official, signs shall be posted stating NO SMOKING. No person shall

smoke within 15 feet (4572 mm) of combustible materials or nonfire-resistive vegetation.

Exception: Places of habitation or in the boundaries of established smoking areas or campsites as designated by the code official.

A104.5 Equipment and devices generating heat, sparks or open flames. Equipment and devices generating heat, sparks or open flames capable of igniting nearby combustibles shall not be used in wildland-urban interface areas without a permit from the code official.

Exception: Use of approved equipment in habited premises or designated campsites that are a minimum of 30 feet (9144 mm) from grass-, grain-, brush- or forest-covered areas.

A104.6 Fireworks. Fireworks shall not be used or possessed in wildland-urban interface areas.

Exception: Fireworks allowed by the code official under permit in accordance with the International Fire Code when not prohibited by applicable local or state laws, ordinances and regulations.

The code official is authorized to seize, take, remove or cause to be removed fireworks in violation of this section.

A104.7 Outdoor fires.

A104.7.1 General. No person shall build, ignite or maintain any outdoor fire of any kind for any purpose in or on any wildland-urban interface area, except by the authority of a written permit from the code official.

Exception: Outdoor fires within inhabited premises or designated campsites where such fires are in a permanent barbecue, portable barbecue, outdoor fireplace, incinerator or grill and are a minimum of 30 feet (9144 mm) from any combustible material or nonfire-resistive vegetation.

A104.7.2 Permits. Permits shall incorporate such terms and conditions that will reasonably safeguard public safety and property. Outdoor fires shall not be built, ignited or maintained in or on hazardous fire areas under the following conditions:

1. When high winds are blowing,
2. When a person 17 years old or over is not present at all times to watch and tend such fire, or
3. When a public announcement is made that open burning is prohibited.

A104.7.3 Restrictions. No person shall use a permanent barbecue, portable barbecue, outdoor fireplace or grill for the disposal of rubbish, trash or combustible waste material.

A104.8 Incinerators, outdoor fireplaces, permanent barbecues and grills. Incinerators, outdoor fireplaces, permanent barbecues and grills shall not be built, installed or maintained in wildland-urban interface areas without approval of the code official.

Incinerators, outdoor fireplaces, permanent barbecues and grills shall be maintained in good repair and in a safe condition at all times. Openings in such appliances shall be provided with an approved spark arrestor, screen or door.

Exception: When approved by the code official, unprotected openings in barbecues and grills necessary for proper functioning.

A104.9 Reckless behavior. The code official is authorized to stop any actions of a person or persons if the official determines that the action is reckless and could result in an ignition of fire or spread of fire.

A104.10 Planting vegetation under or adjacent to energized electrical lines. No vegetation shall be planted under or adjacent to energized power lines that, at maturity, shall grow within 10 feet (3048 mm) of the energized conductors.

SECTION A105 CONTROL OF STORAGE

A105.1 General. In addition to the requirements of the International Fire Code, storage and use of the materials shall be in accordance with Section A105.

A105.2 Hazardous materials. Hazardous materials in excess of 10 gallons (37.8 L) of liquid, 200 cubic feet (5.66 m³) of gas, or 10 pounds (4.54 kg) of solids require a permit and shall comply with nationally recognized standards for storage and use.

A105.3 Explosives. Explosives shall not be possessed, kept, stored, sold, offered for sale, given away, used, discharged, transported or disposed of within wildland-urban interface areas, except by permit from the code official.

A105.4 Combustible materials.

A105.4.1 General. Outside storage of combustible materials such as, but not limited to, wood, rubber tires, building materials or paper products shall comply with the other applicable sections of this code and this section.

A105.4.2 Individual piles. Individual piles shall not exceed 5,000 square feet (465 m²) of contiguous area. Piles shall not exceed 50,000 cubic feet (1416 m³) in volume or 10 feet (3048 mm) in height.

A105.4.3 Separation. A clear space of at least 40 feet (12 192 mm) shall be provided between piles. The clear space shall not contain combustible material or nonfire-resistive vegetation.

SECTION A106 DUMPING

A106.1 Waste material. Waste material shall not be placed, deposited or dumped in wildland-urban interface areas, or in, on or along trails, roadways or highways or against structures in wildland-urban interface areas.

Exception: Approved public and approved private dumping areas.

A106.2 Ashes and coals. Ashes and coals shall not be placed, deposited or dumped in or on wildland-urban interface areas.

Exceptions:

1. In the hearth of an established fire pit, camp stove or fireplace.
2. In a noncombustible container with a tightfitting lid, which is kept or maintained in a safe location not less than 10 feet (3048 mm) from nonfire-resistive vegetation or structures.
3. Where such ashes or coals are buried and covered with 1 foot (305 mm) of mineral earth not less than 25 feet (7620 mm) from nonfire-resistive vegetation or structures.

**SECTION A107
PROTECTION OF PUMPS AND
WATER STORAGE FACILITIES**

A107.1 General. The reliability of the water supply shall be in accordance with Section A107.

A107.2 Objective. The intent of this section is to increase the reliability of water storage and pumping facilities and to protect such systems against loss from intrusion by fire.

A107.3 Fuel modification area. Water storage and pumping facilities shall be provided with a defensible space of not less than 30 feet (9144 mm) clear of nonfire-resistive vegetation or growth around and adjacent to such facilities.

Persons owning, controlling, operating or maintaining water storage and pumping systems requiring this defensible space are responsible for clearing and removing nonfire-resistive vegetation and maintaining the defensible space on the property owned, leased or controlled by said person.

A107.4 Trees. Portions of trees that extend to within 30 feet (9144 mm) of combustible portions of water storage and pumping facilities shall be removed.

A107.5 Protection of electrical power supplies. When electrical pumps are used to provide the required water supply, such pumps shall be connected to a standby power source to automatically maintain electrical power in the event of power loss. The standby power source shall be capable of providing power for a minimum of two hours in accordance with the ICC Electrical Code.

Exception: A standby power source is not required where the primary power service to pumps are underground and approved by the code official.

**SECTION A108
LAND USE LIMITATIONS**

A108.1 General. Temporary fairs, carnivals, public exhibitions and similar uses must comply with all other provisions of this code in addition to enhanced ingress and egress requirements.

A108.2 Objective. The increased public use of land or structures in wildland-urban interface areas also increases

the potential threat to life safety. The provisions of this section are intended to reduce that threat.

A108.3 Permits. Temporary fairs, carnivals, public exhibitions or similar uses shall not be allowed in a designated wildland-urban interface area, except by permit from the code official.

Permits shall incorporate such terms and conditions that will reasonably safeguard public safety and property.

A108.4 Access roadways. In addition to the requirements in Section 403, access roadways shall be a minimum of 24 feet (7315 mm) wide and posted NO PARKING. Two access roadways shall be provided to serve the permitted use area.

When required by the code official to facilitate emergency operations, approved emergency vehicle operating areas shall be provided.

**SECTION A109
REFERENCED STANDARDS**

IFC-2006 International Fire Code A104.6, A105.1

APPENDIX B

VEGETATION MANAGEMENT PLAN

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

SECTION B101

GENERAL

B101.1 Scope. Vegetation management plans shall be submitted to the code official for review and approval as part of the plans required for a permit.

B101.2 Plan content. Vegetation management plans shall describe all actions that will be taken to prevent a fire from being carried toward or away from the building. A vegetation management plan shall include at least the following information:

1. A copy of the site plan.
2. Methods and timetables for controlling, changing or modifying areas on the property. Elements of the plan shall include removal of slash, snags, vegetation that may grow into overhead electrical lines, other ground fuels, ladder fuels and dead trees, and the thinning of live trees.
3. A plan for maintaining the proposed fuel-reduction measures.

B101.3 Fuel modification. To be considered a fuel modification for purposes of this code, continuous maintenance of the clearance is required.

APPENDIX C
FIRE HAZARD SEVERITY FORM

Item # 2.

This appendix is to be used to determine the fire hazard severity.

Owner Name: _____ Building Address: _____

A. Subdivision Design (Fire District)

1. Ingress/Egress

Two or more primary roads 1_____
One road 10_____
One-lane road in, one-lane road out 15_____

2. Width of Primary Road

20 feet or more 1_____
Less than 20 feet 5_____

3. Accessibility

Road grade 5% or less 1_____
Road grade 5-10% 5_____
Road grade greater than 10% 10_____

4. Secondary Road Terminus

Loop roads, cul-de-sacs with an outside turning radius of 45 feet or greater 1_____
Cul-de-sac turnaround 5_____
Dead-end roads 200 feet or less in length 8_____
Dead-end roads greater than 200 feet in length 10_____

5. Street Signs

Present and approved 0_____
Present but unapproved 3_____
Not present 5_____

B. Vegetation (IUWIC Definitions)

1. Fuel Types (within the defensible space)

Surface Lawn/noncombustible 1_____
Grass/short brush 5_____
Scattered dead/down woody material 10_____
Abundant dead/down wood material 15_____
Overstory
Deciduous trees (except tall brush) 3_____
Mixed deciduous trees and tall brush 10_____
Clumped/scattered conifers and/or tall brush 15_____
Contiguous conifer and/or tall brush 20_____

2. Defensible Space (Lot Specific)

70% or more of lots completed 1_____
30% or more of lots completed 10_____
Less than 30% of lots completed 20_____

C. Topography

Located on flat, base of hill or setback at crest of hill 1_____
On slope with 0-20% grade 5_____
On slope with 21-30% grade 10_____
On slope with 31% grade or greater 15_____
At crest of hill with unmitigated vegetation below 20_____

D. Roofing Material

Class A Fire Rated 1_____
Class B Fire Rated 5_____
Class C Fire Rated 10_____
Non-rated 20_____

E. Fire Protection—Water Source

1000 GPM hydrant within 600 feet 1_____
Hydrant farther than 600 feet or draft site 5_____
Approved water source 20 min or less round trip 10_____
Approved water source farther than 20 min, and 45 min or less round trip 15_____
Approved water source farther than 45 min round trip 20_____

F. Siding and Decking

Noncombustible siding/deck 1_____
Combustible side/no deck 5_____
Noncombustible siding/combustible deck 10_____
Combustible siding and deck 15_____

G. Utilities (gas and/or electrical)

All underground utilities 1_____
One underground, one aboveground 3_____
All aboveground 5_____

Total for Subdivision or Site

0

Moderate Hazard 50-75
High Hazard 76-100
Extreme Hazard 101+

Fire District Approval _____

Approval Date & Stamp _____

TOWN OF HIDEOUT

ORDINANCE #2021 – O-_____

AN ORDINANCE ADOPTING TITLE 10 CHAPTER 10.05 UTAH WILDLAND-URBAN INTERFACE
CODE

WHEREAS, the Town of Hideout Town Council (“Council”) wished to promote the health, safety and welfare of those who live in properties in the Town of Hideout; and,

WHEREAS, the entire Town of Hideout (Town) is within a Wildland-Urban Interface area; and,

WHEREAS, wildfire risk is an issue for the properties in the Town;

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL OF HIDEOUT, UTAH, THAT:

SECTION I: Adopted. The following Chapter is hereby adopted.

10.05.01 The 2006 Utah Wildland-Urban Interface Code

The 2006 Utah Wildland-Urban Interface Code, as adopted by the State of Utah and published by the International Code Council is hereby adopted along with Appendix A and Appendix B. Appendix C is amended and adopted as per the attached Appendix C.

10.05.02 Land Subject To Utah Wildland-Urban Interface Code

All the lands within the town limits of the Town of Hideout are designated by the Utah Division of Forestry, Fire and State Lands as Wildland-Urban Interface.

Section II: Effective Date. This Ordinance shall take effect upon publication.

PASSED AND ADOPTED by the Town Council of Hideout, Utah, this ____ day of _____ in the year 2022.

TOWN OF HIDEOUT

Phil Rubin, Mayor

ATTEST:

Alicia Fairbourne, Town Clerk

From: [REDACTED]
To: [hideoututah](#)
Subject: Questions regarding new fire code adoption
Date: Tuesday, March 8, 2022 9:11:45 PM

To whom it may concern,

I received a document regarding the potential adoption of a new fire code. Given this could potentially be adopted in 2 days it seems difficult to become fully informed on the matter receiving the information on the night of the 8th. How will these new codes be applied to homes currently under construction? I have 2 homes under construction in the Soaring Hawk subdivision. My permits were issued based on the current code at the time of application. Would these potentially newly adopted codes be enforced on homes I am currently building or are they grandfathered into the code at the time my permits were approved. I have only had time to skim this, but it looks like this s change may require the homes to have fire sprinklers? Is this accurate? Thanks for your assistance.

Thanks,

Joel Johnson
Associate Broker, ABR, SFR, CDPE
KW Westfield Keller Williams Real Estate

[REDACTED]
[REDACTED] Cell

Each Keller Williams office is an independently owned and operated franchise of Keller Williams Realty International and is an Equal Opportunity Employer and supports the Fair Housing Act. All information provided, is obtained from various sources and has not been, and will not be, verified by broker or MLS. All information should be independently reviewed and verified for accuracy.

WARNING – FRAUDULENT FUNDING INSTRUCTIONS

Online banking fraud is on the rise. If you receive an email containing WIRE TRANSFER INSTRUCTIONS call your Realtor or the title company who's contact information you know is reliable immediately to verify the information prior to sending funds.

From: [REDACTED]
To: [REDACTED]; [hideoututah](#)
Subject: Re: Notice of Possible Wildland Urban Interface Code and Appendix C Adoption
Date: Thursday, March 10, 2022 8:07:05 AM

Good morning Alicia,

I think the highlighted statement below that this compliance with the Wildland Urban Interface Code applies to new construcion and additions is misleading as Chapter 6 and Appendix A apply to both new and existing property and structures. I believe this misrepresentation may have diminished the public's interest in this topic and therefore diminished feedback and/or attendance at tonight's Town Council meeting.

Sincerely,
Bret Rutter, Hideout Resident

From: [REDACTED]
To: [Alicia Fairbourne](#)
Subject: Fw: Coments re: Wildland/Urban Interface Code and its Appendix C
Date: Thursday, March 10, 2022 8:06:17 PM

From: Bret Rutter
Sent: Thursday, March 10, 2022 8:00 PM
To: Town of Hideout <hideoututah@hideoututah.gov>; Phil Rubin <mayor@hideoututah.gov>
Subject: Coments re: Wildland/Urban Interface Code and its Appendix C

I am particularly concerned about the Section 603 that would require fuel modification at a minimum of 30' from any building or structure and could be up to 100' (or the lot line if such distance is less than required defensible space in Table 603.2). Section 604 describes what must be done to vegetation in this "defensible space" and includes in Section 604.3 the removal of "nonfire-resistive vegetation" but I've not been able to find a definition of such term in the proposed Code. Additionally, Section 604.4 states that in this defensible space you must not have any trees within 10' of each other or any structure and must remove all limbs within 6' of the adjacent ground within this defensible space. From my observations most trees are less than 20' in height and removing all limbs within 6' of the ground would likely kill most trees, especially those being planed around newly constructed homes.

While I am an advocate of helping to reduce risk of wildfires, if adopted this will significantly alter the look and feel of Hideout, especially Glistening Ridge where most homes are within 30' of the lot line in many areas and will result in significantly reduced privacy between homes.

For an overview, I have significant concerns over the following sections of the proposed Code and I plan to raise these at tonight's Town Council meeting:

- 101.4 - Concern about last portion that states it can be applied retroactive to conditions which in the opinion of the code official constitute a distinct hazard to life or property. This doesn't provide for exemption for pre-approved structures.
- 403.6 - Has Town Council considered what address markers will look like and has coordination with the DRC and HOAs been considered. Also, if placed at driveway entrance I'm concerned about continual damage by Town snow plowing and being rendered useless during winter when snow at driveway entrances piles up. Should be an exemption for clearly visible during day or night address markings on structures.
- Chapter 5 - Currently I believe Hideout Canyon DRC and related restrictions limit use of cement siding products and require natural materials. Has Town Council considered and coordinated with HOAs on this matter?
- 601.1 - Concern about application of this section to pre-approved landscape plans in the building permit process that were approved with less than the required defensible

space and I feel exemptions should be made for such pre-approved building permits.

- 604.4 - Effectively eliminates all trees within defensible space as most trees in Hideout within defensible space are not more than 15' tall and removing limbs for the first 6' will likely kill many such trees.
- A102.2 - Remove most vegetation on either side of driveways making what was a 20' wide path now 40' wide as DRC in Hideout Canyon doesn't allow many ornamental plantings as they require mostly native grasses and plantings
- A103.4 - Should be limited to combustion engine as there are some that are battery powered that I don't think pose a risk and eBikes are not clearly identified but some could consider them motor scooters or motorcycles under various definitions of such vehicles.
- A104.7.1 (exception) - Does "within" include on decks, porches, etc. or only indoors? This appears to prohibit outdoor gas barbeques, charcoal grills, gas or other firepits, etc.
- A104.7.2(1) - What is defined as "high winds"?
- A104.8 - There are several residences with permanent outdoor fireplaces and barbecues and grills and this section is retroactive to existing conditions. How will the Town manage the approval of these?
- A104.8 (exception) - How will the Code Official address the numerous existing barbecues and grills?

I look forward to seeing the Town Council address these points specifically through revision of the Code prior to adoption. Although the Wasatch County Fire Department representative indicated that they don't enforce some items I expressed concern about, however words have meaning and I feel very strongly that the Town Council should only adopt a Code that is written as intended.

-Bret Rutter

HIDEOUT, UTAH POLICY STATEMENT: ESTABLISHING PUBLIC INFRASTRUCTURE DISTRICTS

The magnitude of local and regional infrastructure needed in the new development areas and in redevelopment areas of Hideout, Utah (the “Town”) requires that a broad range of financing tools be available to finance that infrastructure. This policy statement addresses the criteria under which the Town will consider applications for proposed Public Infrastructure Districts (the “District”). Compliance with these criteria shall not obligate the Town to approve formation of the District. The Governing Document will be subject to approval by the Town in both form and substance. The criteria are intended to serve as guidelines for the review of letters of intent and Governing Documents.

The policy statement has three sections:

- 1. Process for applying including fees charged**
- 2. The Town’s decision-making criteria**
- 3. Governing Document requirements**

I. Process and Fees

Any proposed Public Infrastructure District will be considered in relation to the best interests of the Town. Such interests include using the most appropriate financing mechanism for the type and magnitude of the improvements to be financed and appropriate governance mechanism. If through the review process, a Public Infrastructure District is determined to be the most appropriate mechanism, the process, the criteria, and requirements provided herein will apply, unless otherwise waived by the Town.

A. Petition and Letter of intent to form a Public Infrastructure District

The applicant shall submit (1) a petition meeting the requirements outlined in Utah Code Title 17B, Chapter 1, Part 2 as modified by 17D-4-201 and (2) a letter of intent containing the following information in summary form. The petition and letter will be used by staff to make a preliminary determination about the appropriateness of a District and must be submitted prior to submittal of a draft Governing Document. A positive staff response to the Letter of Intent does not assure approval of the Governing Document. The petition shall also be submitted concurrently with the clerk of the Town for certification.

Letter of Intent contents:

1. Description of District (or Districts) area including size, location, area context (significant natural and man-made features, major public improvements, adjacent development), development history, and proposed development;
2. Summary of needed infrastructure, services and facilities:
 - a. Currently expected development scenario;

- b. Required local and regional infrastructure and facilities for such development;
 - c. Regional and local infrastructure the proposed District is to provide;
 - d. Estimated construction costs for the proposed District improvements;
 - e. General description of phasing of construction based on development projections; and
 - f. A sample plan of finance depicting the possible sources and uses of funds for the District.
- 3. Proposed timeline for District creation.
- 4. Provide the following financial plan information:
 - a. Proforma financial overview of total costs and total revenues from all revenue sources;
 - b. An example plan of finance showing a proposal of how the proposed financing might take place, recognizing that the actual financing terms and structure will be approved by the board of trustees of the District (the “Board”) within the parameters of this Governing Document;
 - c. Anticipated maximum or fixed maximum mill levy required to meet debt service of the District;
 - d. Analysis of proposed mill levies in light of outstanding debt and mill levies of other taxing entities affecting the area;
 - e. Comparison of the mill levies of similar taxing entities in the area;
 - f. Proposed operating budgets for the District’s first three years of existence; and
 - g. Any other forms of public financing and assistance being sought, including assessment areas.
- 5. Acknowledgement that a consent must be signed prior to the hearing date for the governing document by all property owners and registered voters, if any, within the proposed District boundaries approving of the creation of the proposed District and consenting to the issuance of debt in an amount sufficient for the proposed plan of financing.
- 6. Disclosure of any conflicts of interest between the applicant and the officers and employees of the Town.
- 7. Copies of signed engagement letters between the applicant and applicable consultants and legal counsel retained by the Town and/or the proposed District whereby applicant agrees to pay fees related to the review of the application and governing document. The Town currently engages Gilmore & Bell, P.C., Salt Lake City, Utah as its counsel for matters relating to Public Infrastructure Districts. A draft of the engagement letter with Gilmore & Bell is attached as

Exhibit A hereto.

B. Review Process

1. The Economic Development Committee (“EDC”) is a Town committee that advises the Mayor, Town Council and other policy-makers about district issues. The EDC will review the petition and letter of intent utilizing these criteria to determine whether or not to direct the applicant to proceed with preparation of a draft Governing Document for submittal. Conceptual approval does not assure approval of the governing document.

C. Governing Document

1. If the concept for the District as contained in the letter of intent is approved, the applicant shall submit a draft Governing Document to the Town’s Management Office. Unless the Town approves otherwise in advance, such Governing Document shall be initiated from the Model Governing on file with the Town. The applicant’s draft shall include a clean draft and a redline showing all changes from the Model Governing Document.
2. The draft Governing Document will be reviewed by the EDC for compliance with the criteria and requirements contained herein. The EDC will discuss with appropriate policy-makers issues that arise during this drafting period to have such issues resolved.
3. The final Governing Document will be forwarded to Town Council for action through the standard Town and statutory processes.

D. Fees

No request to create a Public Infrastructure District shall proceed until the fees set forth herein are provided for. All checks are to be made payable to the Town and sent to Town Hall.

1. Letter of Intent: A Letter of Intent is to be submitted to the Town Administrator’s Office and a fee (as listed in the Town’s Fee Schedule) shall be paid at the time of submittal of the Letter to cover the cost of staff review.
2. If the applicant proceeds to the submittal of a Governing Document an application fee (as listed in the Town’s Fee Schedule) shall be submitted concurrent with the draft Governing Document.
3. Other Expenses: In the event the costs of review exceed the application fee, the applicant for a District shall pay all reasonable internal, consultant, legal, and other fees and expenses incurred by the Town in the process of reviewing the draft Governing Document prior to adoption, documents related to a bond issue and other such fees and expenses as may be necessary to interface with such District. All such fees and expenses shall be paid within 30 days of receipt of an invoice for these additional fees and expenses.
4. In the event the applicant proposes to create more than one Public Infrastructure District with respect to the same project, the Town may modify the above fees to account for overlapping work in the review and creation of such Districts.

II. Criteria for Evaluating Proposed Public Infrastructure Districts

A. Public Benefit

Formation of a District bestows certain benefits on the District's proponents and is expected to provide public benefit consistent with the Creating Entities policy goals. Components of public benefit to be considered may include:

1. Resulting development that is consistent with the Town's General Plan and all applicable supplements;
2. Provision of and/or contribution to needed regional and sub-regional infrastructure;
3. Resulting development that contributes to diversifying and solidifying the Town's property or sales tax bases;
4. Resulting development preserves viewsheds, green space, and unique topography beyond baseline Town requirements; improves recycling efforts; installs community-minded open spaces including parks and trails; and promotes conservation and preservation practices to protect the local environment in excess of baseline Town requirements;
5. Resulting development promotes a mix of residential and commercial uses appropriate for the community;
6. Resulting development provides for moderate income housing;
7. Resulting development increases the livability of the Town by encouraging appropriate commercial uses to serve resident needs; enhances public gathering spaces and community connectivity; and/or encourages commercial uses that are financially beneficial to the Town to improve resident quality of life and generates revenues to expand and maintain public infrastructure;
8. Provision of public pedestrian, bicyclist, and motor vehicle facilities; improves quantity and quality of trails in the area; increases frequency of transit services to nearby cities; addresses user and wildlife safety concerns related to SR-248;
9. Enhancement and expansion of current utilities to account for current and future population growth; prioritization of the maintenance, mapping, and improvement of existing infrastructure; or improves student commute time;
10. Allows for well-planned, fiscally responsible annexations based on the Town's development needs;
11. Residential development which provides amenities and enhancements beyond baseline Town requirements;

12. Sustainable design including multimodal transportation, water conserving landscape design, thoughtful development phasing, green building design, and formation of and participation in transportation management programs; and
13. High quality site and building design, including street connectivity, multimodal street design, durable construction materials, and pedestrian-friendly building design.

B. Evaluation Criteria

These criteria provide thresholds for consideration. Compliance with some or all of these criteria is desired; however, alternative approaches may be considered.

1. Districts should not include land that is already included within the boundaries of another public infrastructure district without express provision in an adopted Governing Document. In such cases, the relationship with the existing or proposed districts must be addressed in the Governing Document., including any inclusion area concept and how ultimate district boundaries will be determined.
2. A District planning to levy more than ___ mills of tax in the District for repayment of limited tax bonds will not be considered without sufficient justification as to why additional mills are necessary and reasonable for the development. [TOWN COUNCIL TO ADVISE]
3. There must be a demonstrated public benefit directly resulting from the creation of the District and its undertakings as described in the Governing Document.

C. Evaluation of Applicant

The following criteria relating to the applicant and the development will be considered:

1. Historical performance of the applicant (within and outside of the Town);
2. The current proposed plan of finance of the District;
3. The current development plans relationship to the master plans of the Town; and
4. The regional or overall benefits to the Town from the proposed plan of finance.

III. Governing Document Requirements

In addition to statutory requirements, a Governing Document memorializes the understandings between the District and the Town, as well as the considerations that compelled the Town to authorize the formation of the District. The Governing Document for the proposed District shall contain and will be reviewed for compliance with the following policies and requirements.

A. District Description

1. Description of District area including size, location, area context (significant natural and man-made features, major public improvements, adjacent development), development

history, and proposed development scenario (land uses by type and intensity and general urban design character);

2. Description of the public benefit resulting from the creation of the District and its undertakings;
3. Description of proposed development within the boundaries of the proposed District including general distribution of land uses;
4. If the District boundaries overlap with another district, an explanation of the relationship between the districts and outline of any plans to utilize an inclusion area or multi-district structuring;
5. Itemization and description of all needed infrastructure (both regional and local) and facilities in the District's area;
6. Estimated construction costs of such infrastructure;
7. General description of phasing of construction based on development projections and phasing;
8. Description of the ultimate ownership and provision for the ongoing operating and maintenance costs for infrastructure.
9. Description of any proposed divisions and an annexation/withdrawal process as appropriate.
10. Proposed governance plan, including Board structure and to transition from appointed Board to elected Board.

B. Requirements and Expectations

1. The planned ownership of the Improvements, including any relationship with an existing statutory district must be addressed in the Governing Document.
2. All debt issued by the District for which a tax is pledged to pay the debt service shall meet the requirements of all applicable statutes.
3. Land, easements or improvements to be conveyed or dedicated to the Town and any other local government entity shall be conveyed in accordance with the related standards at no cost to the Town.
4. All public infrastructure within the District which will be connected to and owned by another public entity shall be subject to all design and inspection requirements and other standards of such public entity.

5. The District shall not pledge as security any land, assets or funds to be transferred to the Town.
6. The District shall be subject to Town zoning, subdivision, building codes, and all other applicable Town ordinances and regulations. Approval of the Governing Document shall not bind the Town to approve other matters which the District or developer may request.
7. The District shall pay all fees and expenses as provided in the Governing Document.
8. The District may not double tax, whether by mill levy, assessment, impact fees, or any combination thereof; any end user for the costs of Improvements.

C. Disclosure and Reporting Requirements

Disclosure of the existence of the District to property owners and potential property owners within the District is important and the following actions to be taken by each District shall be included in the Governing Document.

1. Within 30 days after the formation of the District, the Board shall record a notice with the county recorder:
 - a. Containing a description of the boundaries of the District and inclusion area as applicable;
 - b. Stating that a copy of the Governing Document is on file at the office of the Town;
 - c. Stating that the District may finance and repay infrastructure and other improvements through the levy of a property tax;
 - d. Stating the maximum rate that the District may levy; and
 - e. If applicable, stating that the debt may convert to general obligation debt and outlining the provisions relating to conversion.
2. Applicant, homebuilders, commercial developers, and commercial lessors, as applicable, shall be required to disclose the following information to initial resident homeowners, renters, commercial property owners, and/or commercial tenants:
 - a. All of the information required under (1)(b) above;
 - b. A disclosure outlining the impact of any applicable property tax, in substantially the following form:

“Under the maximum property tax rate of the District, a primary residence valued at \$[insert average anticipated residential property value] would have an **additional annual property tax of \$_____** for the duration of the District’s Bonds. A business property valued at \$[insert average anticipated commercial property value] would have an **additional annual property tax of \$_____** for the duration of the District’s Bonds.”

- c. Such disclosures shall be contained on a separate colored page of the applicable closing or lease documents and shall require a signature of such end user acknowledging the foregoing.
- 3. At least annually following the formation of the District, the District shall notify (by mail, e-mail, or posting to the District's website) property owners in the District of the existence of the District and of the next scheduled meeting of the Board of the District. Such meeting shall occur at least 30 days and not more than 60 days following the date of the notice. Such notification shall include names and addresses of the Board of Directors and officers, the address, telephone and fax numbers, and e-mail address of the District, and shall include reference to the existence of a District file maintained by the Town as described below.
- 4. The District shall provide the following information to the Town Administrator's Office on an annual basis, and the District shall create and maintain a file for public review of the following information.
 - a. Annual District budget;
 - b. Annual financial statements of the District, audited if required by Statute or bond covenant;
 - c. Total debt authorized and total debt issued and presently planned debt issuances;
 - d. Names and terms of Board members and officers and progress towards milestones required for transition to elected Board;
 - e. A copy of the language required to be disclosed (2)(b) above;
 - f. Rules and regulations of the District regarding bidding, conflict of interest, contracting, and other governance matters, if changed;
 - g. List of current interlocal agreements, if changed (to be delivered to the Town upon request);
 - h. List of all current contracts for services or construction (to be delivered to the Town upon request);
 - i. Official statements of current outstanding bonded indebtedness, if not previously received by the Town;
 - j. Current approved Governing Document, if changed; and
 - k. District Office contact information.
- 5. The following shall be considered significant changes to the Governing Document, thereby requiring approval by the Town:

- a. Exclusion or inclusion of property without Governing Document and Statute required approvals;
- b. Change in the maximum mill levy;
- c. Consolidation with any other district; and
- d. Change in the dissolution date.

Submittal Instructions

Annual Financial Information: Submit one copy of each of the annual financial information, as described in Section III.C. above to:

Town Administrator
10860 No. Hideout Trail
Hideout, UT 84036

All other documents: Submit letters of intent, draft Governing Documents, and all other documents (with the required number of copies) to:

Economic Development Committee
10860 No. Hideout Trail
Hideout, UT 84036

With a copy of the petition to:

Town Clerk
10860 No. Hideout Trail
Hideout, UT 84036

Further Information: For additional information please contact the Town's Manager's Office at the address or telephone number shown below.

Jan McCosh, Town Administrator
10860 No. Hideout Trail
Hideout, UT 84036
Phone: (435) 776-6066
Email: jmccosh@hideoututah.gov

Exhibit A
Draft Engagement Letter

[Date]

Hideout, Utah
[Address]

Re: Engagement as Special Counsel for Hideout, Utah

This will record the terms of our engagement as special counsel for the Hideout, Utah (the “Town”) in analyzing and exploring the use of a public infrastructure district (“PID”) at the discretion of the Town to assist _____ (the “Developer”) in the development of _____ within the Town (the “Development”).

Our services as special counsel will include educating the Town and the Developer on PIDs and how they may be utilized in the Development and the preparation, negotiation, and review of any documents required for the formation of a PID. Our engagement is at the will of the Town and will terminate at the end of the review processes described herein.

While it is difficult to predict the complexity of such process, our fee for services provided as special counsel will be at a discounted blended hourly rate of \$____/hour, plus reimbursement for out of pocket costs. Fees will be billed monthly and are subject to review by the Developer. A \$____ retainer fee is due from the Developer at this time. Under no circumstances shall the Town be liable for fees hereunder. The entire fee is payable by the Developer and is not contingent upon the formation of any PID. The creation of any Districts shall be at the discretion of the Town, and the entering into of this agreement in no way guarantees that any Districts will be formed or bonds issued for the Developer or the Development. If the review process is abandoned or deferred beyond a reasonable period, such as 3 months, we will negotiate a reasonable fee for the work undertaken to that point with the Developer, based on the circumstances.

The Town is our client in this engagement and we are not representing the Developer. [The Developer is represented by its own counsel, _____.] We note that we do expect to be bond and disclosure counsel (as applicable) for any PID(s) ultimately created at the Town’s discretion.

If these terms are acceptable, please sign and return a copy of this letter. We look forward to working with you.

Sincerely,

GILMORE & BELL, P.C.

AGREED AND ACCEPTED:

HIDEOUT, UTAH

By: _____

Title: _____

Date: _____

_____, DEVELOPER

By: _____

Title: _____

Date: _____

Note: Gilmore & Bell, P.C. may be contacted at the below information:

Randall Larsen

Direct: 801.258.2722 / Mobile: 801.541.1108

rlarsen@gilmorebell.com

Aaron Wade

Direct: 801.258.2730 / Mobile: 801.652.6278

awade@gilmorebell.com

GilmoreBell.com

| District(s) | Creating Entity | Type | Max Mill Levy |
|---------------------------|------------------------|---------------------|----------------------|
| Medical School Campus | Provo | Commercial/ Medical | 0.015 |
| Red Bridge Nos. 1-3 | Payson | Mixed Use | 0.010 |
| Black Desert | Ivins | Mixed Use/ Resort | 0.010 |
| MIDA Mountain Village | MIDA | Ski Area/ Resort | 0.020 |
| MIDA Golf & Equestrian | MIDA | Resort | 0.020 |
| Wasatch Peaks Ranch | Morgan Co. | Residential/ Resort | 0.010 |
| Jordanelle Ridge Nos. 1-5 | Heber City | Residential | 0.005 |
| Gateway at Sand Hollow | Hurricane | Mixed Use | 0.005 |
| Coral Junction | Hurricane | Commercial | 0.010 |
| ROAM Nos. 1 & 2 | Morgan Co. | Mixed Use | 0.006 |
| Pine View Nos. 1-6 | Toquerville | Residential | 0.010 |
| Jepson Canyon Nos. 1-3 | Apple Valley | Mixed Use/ Resort | 0.010 |
| Presidents Park | Grantsville | Residential | 0.005 |

NOTE: The above table is for informational purposes only. The maximum mill levy of any PID is at the discretion of the Creating Entity, subject to a statutory maximum mill levy of 0.015 (0.020 for PIDs created by MIDA). Further, a PID may ultimately issue bonds with a lower (but not higher) mill levy than the maximum, for example a PID with a maximum mill levy of 0.010 may ultimately issue bonds secured by a pledge of 0.007 mills.

TOWN OF HIDEOUT FEE & RATE RESOLUTION #2022-R-03

(Repealing and Replacing Resolution #2021-R-08 dated September 9, 2021)

A RESOLUTION REPEALING AND REPLACING THE FEE SCHEDULE INCLUDING CHANGES TO WATER METER FEES, BUSINESS LICENSES, AND PUBLIC INFRASTRUCTURE DISTRICT.

WHEREAS, the Hideout Town Council ("Council") has the authority to set fees and fines for activities and operations within the Town; and

WHEREAS, the Council finds it necessary to amend fees for water meter installations, business licenses, and for public infrastructure district applications.

NOW, THEREFORE, BE IT RESOLVED by the Town Council of Hideout Town, State of Utah, as follows:

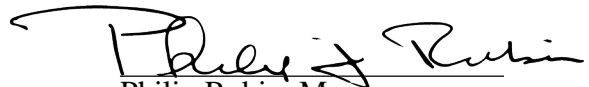
The Fee Schedule(s) as adopted by any previous Resolutions or Ordinances and that are updated or contained in this Resolution are hereby repealed and in its place this Resolution is adopted establishing the fees for various Town services, permits and processes as attached in Exhibit A. All other parts, sections, regulations or fees of any Resolutions or Ordinances other than those modified or included in this Resolution shall remain in full force and effect.

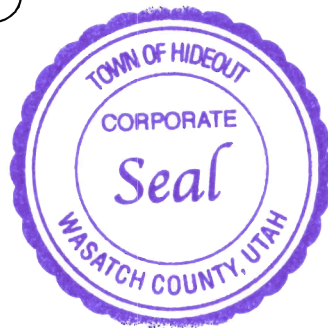
Passed and adopted by the Town Council of Hideout, Utah this 10th day of March, 2022.

THE TOWN OF HIDEOUT

ATTEST

Alicia Fairbourne, Town Clerk


Philip Rubin, Mayor



TOWN OF HIDEOUT
FEES AND RATES SCHEDULE

Resolution 2021
Updated 03/10/2022

Item # 5.

Section 1.1
Building Permit Application Fees

Residential

| | |
|--|---|
| Building Fees (Based on Total Construction Value using 150% of IBC table 1) <i>The values per square foot are reflective of the February 2019 Building Valuation Data.</i> | .75 of 1% of Total Construction Value |
| Plan Review Fee | 65% of Building Fee |
| Fire Sprinkler Review/Inspection Fee (where applicable) | \$370.00 |
| Construction Sign Fee | \$200.00 |
| Sewer Connection Fee | \$400.00 |
| Grubbing and Grading Fee | \$250.00 |
| Excavation Fee | \$500.00 - \$1 for each additional square foot of excavation - \$500 minimum fee per excavation w/asphalt cut (up to 25 square feet) - \$3 for each additional square foot of asphalt cut - Noxious Weeds on Active Construction Site - \$125 minimum fee up to ½ acre plus \$125 for each additional ½ acre |
| Water Connection Fee (plus cost of meter and insulation) | \$985.00 |
| JSSD Sewer Impact Fee: Parcel 1 (West side of SR 248) | See JSSD |
| Parcel 2 (East side of SR 248) | See JSSD |
| JSSD Water Impact Fee (Parcel 1 - West side of SR 248) | See JSSD |
| State Surcharge | 1% of Building Fee |
| Roadway Construction Fee | \$500 |
| Town Impact Fee (by subdivision) | See Section 10 |

Commercial

| | |
|--|---------------------------------------|
| Building Fees | .75 of 1% of Total Construction Value |
| Plan Review Fee | 65% of Building Fee |
| Fire Sprinkler Review/Inspection Fee (where applicable) | \$370.00 |
| Construction Sign Fee | \$200.00 |
| Sewer Connection Fee | \$400.00 |
| Grubbing and Grading Fee | \$250.00 |
| Excavation | \$400.00 |
| Water Connection Fee | \$950.00 |
| Water Re-Connection Fee (plus cost of meter) | \$150.00 |
| Utility Property Owner Change Fee (plus cost of meter) | \$20.00 |
| JSSD Sewer Impact Fee: Parcel 1 (West side of SR 248) | See JSSD |
| Parcel 2 (East side of SR 248) | See JSSD |
| JSSD Water Impact Fee (Parcel 1 - West side of SR 248) | See JSSD |
| State Surcharge | 1% of Building Fee |
| Roadway Construction Fee | \$500 |

Remodel Building Permit Fees

| | |
|--------------------|---|
| Application Fee | \$200.00 |
| Administrative Fee | 10% of Town Engineer estimated fees for plan review and inspections |
| State Surcharge | 1% of Town Engineer estimated fees for plan review and inspections |

TOWN OF HIDEOUT
FEES AND RATES SCHEDULE

Resolution 2022
Updated 03/10/2022

Item # 5.

Section 1.2
Planning Fees

1.2.1 Development Fees

| | |
|---|---|
| Concept Review | Application Fee: \$1,000 Escrow Fee: \$2,500 (with a minimum required balance of \$500) Meetings: One (1) Planning Commission Meeting |
| Preliminary Subdivision (Residential) - Minor (5 Lots or Fewer) | Application Fee: \$3,750 + \$100/acre <i>*Preliminary Review not required if Applicant wishes to proceed directly to Final Review</i> Escrow Fee: \$10,000 (with a minimum required balance of \$2,500) Meetings: Two (2) Planning Commission Meetings and Two (2) Town Council Meetings |
| Preliminary Subdivision (Residential) - Major (6 Lots or More) | Application Fee: \$5,500 + \$100/acre Escrow Fee: \$15,000 (with a minimum required balance of \$5,000) Meetings: Two (2) Planning Commission Meetings and Two (2) Town Council Meetings |
| Preliminary Subdivision (Commercial/Other) | Application Fee: \$2,750 + \$750/acre Escrow Fee: \$10,000 (with a minimum required balance of \$2,500) Meetings: Two (2) Planning Commission Meetings and Two (2) Town Council Meetings |
| Final Subdivision (Residential) - Minor (5 Lots or Fewer) | \$2,000 + \$100/acre if Preliminary Subdivision review complete; OR \$5,000 + \$100/acre if Preliminary Review not completed Escrow Fee: \$10,000 (with a minimum required balance of \$2,500) Meetings: Two (2) Planning Commission Meetings and Two (2) Town Council Meetings |
| Final Subdivision (Residential) - Major (6 Lots or More) | Application Fee: \$5,000 + \$100/acre Escrow Fee: \$15,000 (with a minimum required balance of \$5,000) Meetings: Two (2) Planning Commission Meetings and Two (2) Town Council Meetings |
| Final Subdivision (Commercial/Other) | Application Fee: \$3,000 + \$750/acre Escrow Fee: \$10,000 (with a minimum required balance of \$2,500) Meetings: Two (2) Planning Commission Meetings and Two (2) Town Council Meetings |
| Plat Amendment and Lot Combination | Application Fee: \$1,250 Escrow Fee: \$5,000 (with a minimum required balance of \$1,000) Meetings: One (1) Planning Commission Meeting and One (1) Town Council Meeting |
| Revised Development Plans | Application Fee: \$1,500 Escrow Fee: \$5,000 (with a minimum required balance of \$1,000) Meetings: One (1) Planning Commission Meeting |

TOWN OF HIDEOUT
FEES AND RATES SCHEDULE

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| | |
|------------------------------|--|
| Subdivision Construction Fee | 5% of construction costs (must be paid prior to commencement of any construction activity) |
|------------------------------|--|

1.2.2 Conditional Use Permit

| | |
|------------------------|--|
| Conditional Use Permit | Application Fee: \$1,500 Escrow Fee: \$2,500 (with a minimum required balance of \$500) Meetings: One (1) Planning Commission Meeting and One (1) Town Council Meeting |
|------------------------|--|

1.2.3 Temporary Use Permit

| | |
|----------------------|------------------------|
| Temporary Use Permit | Application Fee: \$750 |
|----------------------|------------------------|

1.2.4 General Plan Amendment

| | |
|-----------------|---|
| Per Application | Application Fee: \$2,500 Escrow Fee: \$5,000 (with a minimum required balance of \$1,000) Meetings: Two (2) Planning Commission Meetings and One (1) Town Council Meeting |
|-----------------|---|

1.2.5 Zone Change Application

| | |
|-------------|---|
| Zone Change | Application Fee: \$3,000 + \$50/acre Escrow Fee: \$5,000 (with a minimum required balance of \$1,000) Meetings: Two (2) Planning Commission Meetings and One (1) Town Council Meeting |
|-------------|---|

1.2.6 Annexations

| | |
|--|---|
| Pre-Application | Application Fee: \$3,000 Escrow Fee: \$10,000 (with a minimum required balance of \$2,500) Meetings: Two (2) Planning Commission Meetings and Two (2) Town Council Meetings |
| Annexation Areas Exceeding 40 Acres (deposit submitted upon certification of completeness of pre-application and prior to filing annexation petition. When the deposit is depleted, the applicant shall submit another equivalent deposit for the continued review. All unused deposited funds will be reimbursed to the applicant upon completion of the annexation and agreements) | Application Fee: \$7,500 Escrow Fee: \$15,000 (with a minimum required balance of \$5,000) Meetings: Two (2) Planning Commission Meetings and Two (2) Town Council Meetings |
| Annexation Areas Less Than 40 Acres (deposit submitted upon certification of completeness of pre-application and prior to filing annexation petition. When the deposit is depleted, the applicant shall submit another equivalent deposit for the continued review. All unused deposited funds will be reimbursed to the applicant upon completion of the annexation and agreements) | Application Fee: \$5,000 Escrow Fee: \$10,000 (with a minimum required balance of \$2,500) Meetings: Two (2) Planning Commission Meetings and Two (2) Town Council Meetings |
| Annexation Fiscal Impact Analysis plus actual cost of Town-approved consultant fee if greater than initial fee | Fee: \$3,500 |
| Modification to Annexation Agreement | Application Fee: \$2,000 Escrow Fee: \$10,000 (with a minimum required balance of \$2,500) Meetings: One (1) Planning Commission Meetings and Two (2) Town Council Meetings |

TOWN OF HIDEOUT
FEES AND RATES SCHEDULE

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Item # 5.

1.2.7 Sign Review Fees

| | |
|---|------------------------|
| Master Sign Plan Review | Application Fee: \$500 |
| Individual Signs or Sign Plans or Minor Amendment to Existing | Application Fee: \$350 |
| Individual Signs when a Master Sign Plan has been Approved | Application Fee: \$250 |
| Temporary Signs | Application Fee: \$150 |

1.2.8 Special Meetings

| | |
|---------------------|---|
| Special Meeting Fee | Fee: \$1,000 (in addition to all other applicable fees) |
|---------------------|---|

1.2.9 General Land Use, Variance and Appeal Fees

| | |
|------------------------------|--|
| Variance | Application Fee: \$1,500 Escrow Fee: \$2,500 (with a minimum required balance of \$500) Meetings: One (1) Meeting with the Administrative Law Judge (ALJ) |
| Appeal of Final Action | Application Fee: \$1,000 Escrow Fee: \$2,000 (with a minimum required balance of \$500) Meetings: One (1) Meeting with the Administrative Law Judge (ALJ), Town Council or Planning Commission |
| General Land Use Application | Application Fee: \$1,000 Escrow Fee: \$2,000 (with a minimum required balance of \$500) Meetings: One (1) Meeting with Town Council or Planning Commission |

* Fees and Rates Schedule: All review work by the Town's consultants will be halted when an escrow account falls below the minimum balance as defined for each specific review process until the escrow account is replenished to a minimum of 75% of the originally required escrow amount.

** Each additional meeting (either Planning Commission or Town Council) will require an additional fee of \$2,500 and must be paid at least two weeks prior to the scheduled meeting.

*** These fees are in addition to any requested Special Meetings (which have a fee of \$1,000/meeting).

1.3 Subdivision Construction Review and Inspection Fees

| | |
|---|--|
| Subdivision construction permit | \$5,000.00 |
| Cash (or equal) Bond requirement | 100% of approved engineers estimate plus 10% contingency |
| Inspection and quality assurance reviews | 5% of approved engineers estimate |
| Cash bonds can be reduced for work completed when requested by the developer with a maximum frequency of 1 reduction per quarter. 10% of the construction bond will be retained for 12 months AFTER FINAL ACCEPTANCE of the project as a warranty bond. | |

1.4 Public Infrastructure District

| | |
|----------------------------|-----------------|
| <u>PID Application Fee</u> | <u>\$500.00</u> |
|----------------------------|-----------------|

TOWN OF HIDEOUT
FEES AND RATES SCHEDULE

Resolution 2021
Updated 03/10/2022

Item # 5.

Section 2
Business License, Beer and Liquor License

| | |
|--|----------|
| License Application Fee | \$75.00 |
| Home Occupation Business Application-Administrative Fee | \$75.00 |
| Annual License Administration Fee | \$75.00 |
| On Premises Beer Retail License Application/Annual Fee | \$75.00 |
| Restaurant Liquor License Application/Annual Fee | \$300.00 |
| Limited Restaurant Liquor License Application/Annual Fee | \$300.00 |
| On Premises Banquet License Application/Annual Fee | \$350.00 |
| Private Club Liquor License Application/Annual Fee | \$350.00 |
| Application and Annual Regulatory Business License Fee (Restaurants, Food Service, Taverns, Nightly Rental) | \$175.00 |
| Sexually Oriented business License Application/Annual Fee | \$300 |

Section 3
Rental of Town Facilities

3.1 Town Hall Building

| | |
|---|----------|
| Hideout resident usage per day or any fractional part thereof | \$100.00 |
| Non-resident usage | \$500.00 |
| <i>Note: renter will be charged actual cost for cleaning after usage.</i> | |

3.2 Fee Reduction or Waiver

Use of facilities for non-profit, public service clubs or organizations may have all or part of their associated rental fees waived by the Town.

Section 4
GRAMA Fees (Government Records Access and Management Act)

4.1 Copies Made at Town Facility

| | |
|-------------------------|--|
| 8-1/2 x 11 copies | \$.30 per page (double-sided charged as two pages) |
| 8-1/2 x 14 copies | \$.45 per page (double-sided charged as two pages) |
| Other media duplication | At cost |
| Professional time | At cost in accordance with Utah State Code |

4.2 Copies in Excess of 50 Pages

The Town reserves the right to send the documents out to be copied and the requester shall pay the actual cost to copy the documents, including any fee charged for pickup and delivery of the documents.

4.3 Compiling Documents

| | |
|--|---|
| Records Request | (Utah Code §63-2-203) An hourly charge may not exceed the salary of the lowest paid employee who, in the discretion of the custodian of records, has the necessary skill and training to perform the request. No charge may be made for the first quarter hour of staff time. |
| In a form other than that maintained by the Town | \$50.00 per request or \$20.00 per employee hour required to compile the record, whichever is greater. |

TOWN OF HIDEOUT
FEES AND RATES SCHEDULE

Resolution 2021-01
Updated 03/10/2022

Item # 5.

Section 5
Penalties and Fees for Non-Compliance with Town Ordinances and Code
including Building Code and Water System and Sewer System Violations

5.1 Penalty Fees: Code Violations

| | |
|---|----------|
| Daily Fee for Each Cited Violation (Catch all) | \$200.00 |
| Non-Moving Vehicle Violations | \$100 |
| Parking Violations | \$50 |
| Unauthorized Dumping or Littering | \$500 |
| Building/Construction Without a Permit | \$500 |
| Occupancy without a Certificate of Occupancy | \$500 |
| Non-Conforming Landscaping | \$100 |
| Unauthorized Connection to Town Water System | \$1,000 |
| Fees will continue to accrue after each Notice of Violation until the referenced violation is corrected. If fines remain unpaid, the Town may assess late fees, issue a stop work order, or revoke any applicable permit. | |

Section 6
Water Fees

6.1 Developer Reservations

| | |
|--|--|
| Stand-by Fee (platted lots without homes) | \$207.00 per lot annually |
| Stand-by Fee (platted lots with accepted water infrastructure) | \$238.00 per lot annually |
| Water Reservation Fees | \$160.00 per Hideout Unit (HU) defined as a planned Hideout lot. |

6.2 Water Connection Fees

| | |
|--|----------------------------|
| Administrative Fee | \$75.00 |
| 1" Water Meter, Installation, and Inspection Fee | \$3000 |
| 1 - 1 ½" Water Meter, Installation, and Inspection Fee | \$985.00 \$4500 |
| 2" Water Meter, Installation, and Inspection Fee | \$5000 |
| Water Re-Connection Fee (plus cost of meter) | \$150.00 |
| Utility Property Owner Transfer Fee | \$20.00 |

a. Monthly Water Metered Service

i. Residential

| | |
|--------------|--------------------------------------|
| Base Rate | \$91.25 for the first 10,000 gallons |
| Next 10,000 | \$11.00 per 1,000 |
| Next 10,000 | \$13.25 per 1,000 |
| Next 20,000 | \$14.63 per 1,000 |
| Next 20,000 | \$16.13 per 1,000 |
| Next 20,000 | \$17.75 per 1,000 |
| Next 20,000 | \$19.63 per 1,000 |
| Over 110,000 | \$21.63 per 1,000 |

ii. Multifamily

| | |
|--------------|---------------------------------------|
| Base rate | \$175.00 for the first 10,000 gallons |
| Next 20,000 | \$19.25 per 1,000 |
| Next 20,000 | \$21.25 per 1,000 |
| Next 20,000 | \$23.38 per 1,000 |
| Next 20,000 | \$25.75 per 1,000 |
| Next 20,000 | \$28.38 per 1,000 |
| Next 30,000 | \$31.25 per 1,000 |
| Over 140,000 | \$34.38 per 1,000 |

TOWN OF HIDEOUT
FEES AND RATES SCHEDULE

Resolution 2022
Updated 03/10/2022

Item # 5.

iii. Parks/Irrigation

| | |
|--------------|---------------------------------|
| 0 Usage | \$0.00 |
| First 10,000 | \$91.25 for 1 to 10,000 gallons |
| Next 20,000 | \$10.13 per 1,000 |
| Next 20,000 | \$11.25 per 1,000 |
| Next 20,000 | \$12.38 per 1,000 |
| Next 20,000 | \$13.63 per 1,000 |
| Next 20,000 | \$15.00 per 1,000 |
| Next 30,000 | \$16.50 per 1,000 |
| Over 140,000 | \$18.25 per 1,000 |

b. Hideout Irrigation

| | |
|--------------------|---|
| Outlaw Golf Course | JSSD annual bill plus 10% for administration and maintenance for the infrastructure |
|--------------------|---|

c. Water Reconnection Fee

| | |
|--|----------|
| Due to non-payment or failure to maintain backflow, etc. | \$150.00 |
|--|----------|

d. Extension of Water Services Policy

Any project or applicant or developer, whether an individual unit or multiple unit or subdivision, that requires connection to the Town water system, shall be required to pay all the costs of any extensions or facilities necessary to achieve a connection that meets the Town Council's standards or specifications in force at the time. This may include not only the capital cost of the project, but any Town costs associated with plan approval, engineering and inspection work, exclusive to the extension.

After final inspection of the improvements or extension(s), the applicant or developer must provide title and easements to the systems, free and clear of any encumbrances to the Town, to operate as a public system by the Town. A one-year warranty will be required on the system from the date of acceptance.

e. Construction use of Water Before Meter Installation

| | |
|----------------------------|---|
| Deposit for 1 - 1 ½" Meter | \$1,850.00 (\$350.00 is non-refundable) |
| Usage Fee/1000 gallons | \$7.30 |

f. JSSD Water Impact Fee

| | |
|--|----------|
| JSSD Water Impact Fee (Parcel 1 - West side of SR 248) | See JSSD |
|--|----------|

Section 7
Sewer Fees

7.1 JSSD Sewer Impact Fees

| | |
|---|----------|
| Bonded (Parcel 2 - East side of SR 248) | See JSSD |
| Unbonded (Parcel 1 - West side of SR 248) | See JSSD |

7.2 Sewer Connection Fees

| | |
|-------------------------------|-----------------------------|
| Connection and Inspection Fee | Included in Application Fee |
| Administrative Connection Fee | \$40.00 |

7.3 Monthly Sewer Fees

| | |
|------------------------------------|---------|
| Per residential or commercial unit | \$28.60 |
|------------------------------------|---------|

TOWN OF HIDEOUT
FEES AND RATES SCHEDULE

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Item # 5.

7.5 Extension of Sewer Services Policy

Any project or applicant or developer, whether an individual unit or a multiple unit or subdivision, that requires connection to the Town sewer system, shall be required to pay all of the costs of any extensions or facilities necessary to achieve a connection that meets the Town Council's standards or specifications in force at the time. This may include not only the capital costs of the project, but any Town costs associated with plan approval, engineering and inspection work, exclusive to the extension.

After final inspection of the improvements or extension(s), the applicant or developer must provide title and easements to the systems, free and clear of any encumbrances to the Town, to be operated as a public system by the Town. A one-year warranty will be required on the system from the date of acceptance.

Section 8
Account Late Fees

| | |
|------------------|------------------------------|
| Overdue Accounts | 1.5% monthly interest charge |
|------------------|------------------------------|

Section 9
Storm Drain Fee

9.1 Monthly Storm Drain Fee

| | |
|--------------------|--------|
| Per Billable Meter | \$6.00 |
|--------------------|--------|

Section 10
Town Impact Fees

| Subdivision | Water | Roads | Storm Drain | Sewer | Total Impact Fee |
|---------------------------------|---------|---------|-------------|---------|------------------|
| ADA LLC | \$1,445 | \$5,215 | \$0 | \$1,330 | \$7,990 |
| Apartments at Deer Mountain | \$0 | \$5,215 | \$0 | \$0 | \$5,215 |
| Deer Springs (tentative) | \$0 | \$5,215 | \$0 | \$0 | \$5,215 |
| Deer Waters | \$0 | \$5,215 | \$0 | \$0 | \$5,215 |
| Forevermore | \$1,445 | \$5,215 | \$6,665 | \$1,330 | \$14,655 |
| Glistening Ridge | \$1,445 | \$5,215 | \$6,665 | \$1,330 | \$14,655 |
| Golden Eagle | \$0 | \$5,215 | \$0 | \$1,330 | \$6,545 |
| KLAIM | \$0 | \$5,215 | \$0 | \$0 | \$5,215 |
| New Town Center | \$1,445 | \$5,215 | \$4,315 | \$1,330 | \$12,305 |
| Overlook Village | \$1,445 | \$5,215 | \$4,315 | \$1,330 | \$12,305 |
| Perch (The Settlement) | \$1,445 | \$5,215 | \$4,315 | \$1,330 | \$12,305 |
| Plumb | \$1,445 | \$5,215 | \$4,315 | \$1,330 | \$12,305 |
| Reflection Lane | \$0 | \$5,215 | \$4,315 | \$1,330 | \$10,860 |
| Reflection Ridge | \$0 | \$5,215 | \$4,315 | \$1,330 | \$10,860 |
| Ross Creek Entrance | \$0 | \$5,215 | \$0 | \$0 | \$5,215 |
| Rustler | \$1,445 | \$5,215 | \$6,665 | \$1,330 | \$14,655 |
| Salzman | \$1,445 | \$5,215 | \$0 | \$1,330 | \$7,990 |
| Shoreline Phase I | \$1,445 | \$5,215 | \$0 | \$1,330 | \$7,990 |
| Shoreline Phase II | \$1,445 | \$5,215 | \$0 | \$1,330 | \$7,990 |
| Shoreline Remaining (tentative) | \$1,445 | \$5,215 | \$0 | \$1,330 | \$7,990 |
| Silver Sky | \$1,445 | \$5,215 | \$4,315 | \$1,355 | \$12,330 |
| Soaring Hawk | \$0 | \$5,215 | \$0 | \$1,355 | \$6,570 |
| Sunrise | \$1,445 | \$5,215 | \$0 | \$1,330 | \$7,990 |
| Van Den Akker | \$0 | \$5,215 | \$0 | \$0 | \$5,215 |
| Venturi | \$1,445 | \$5,215 | \$4,315 | \$1,330 | \$12,305 |
| Woolf | \$0 | \$5,215 | \$0 | \$1,355 | \$6,570 |