Final Draft Plan

July 1, 2019

Pre-Disaster Mitigation Plan

Granite
SCHOOL DISTRICT

Q&A | ELEMENT A: PLANNING PROCESS | A1.

Q: Does the plan identify who represented each jurisdiction? (At a minimum, it must identify the jurisdiction represented and the person's position or title and agency within the jurisdiction.) (Requirement §201.6(c)(1))

A: See **Credits** below.

Credits

Special Thanks

Pre-Disaster Mitigation Planning Team:

Agency	*Name*	*Department*	*Position*
Granite School District	Donald Adams, Chair	Support Services	Assistant Superintendent
	Debbie Allen	Prevention & Student Placement	Secretary
	Keith Bradshaw	Risk & Property Management	Director
	Michael Douglas	School Accountability	Director
	Kurt Fisher	Construction Services	Fire Marshal
	David Garrett	Administration	Business Administrator
	Rex Goudy	Maintenance	Director
	Curt Hansen	Prevention & Student Placement	Director
	Ben Horsley	Communications	Director
	Doug Larson	Police & Legal Services	Director
	Alan Parrish	School Accountability	Director
	Diana Pennington	Support Services	Executive Secretary
	Randy Porter	Police	Chief of Police
	Cescilee Rall	Nursing	Nurse
	David Richards	Police	Sergeant
	Dale Roberts	Information Systems	Director
	Danny Stirland	School Accountability	Director
	Scott Winn	Safety & Compliance	Compliance Coordinator
Salt Lake County Emergency Management	Clint Mecham	Emergency Management	Emergency Manager, Battalion Chief

Acknowledgements

Granite School District Board of Education

- ✓ Karyn Winder, President
- ✓ Connie Burgess, Vice President
- ✓ Connie Anderson, Board Member
- ✓ Terry Bawden, Board Member
- ✓ Gayleen Gandy, Board Member
- ✓ Nicole McDermott, Board Member
- ✓ Karyn Winder, Board Member
- ✓ Todd Zenger, Board Member
- ✓ Carrie Johnson, Previous Board Member

Point of Contact

To request information or provide comments regarding this mitigation plan, please contact:

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Consulting Services

Centurion Solutions

- ✓ Project Manager: Douglas Jackson
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- ✓ Lead Research Analyst: Alex L. Fritzler
- ✓ HAZUS/GIS: Michael McDaniel

Mapping

The maps in this plan were provided by the Granite School District, Salt Lake County, State of Utah, Federal Emergency Management Agency (FEMA), or were acquired from public Internet sources. Care was taken in the creation of the maps contained in this Plan, however they are provided "as is". The Granite School District cannot accept any responsibility for any errors, omissions or positional accuracy, and therefore, there are no warranties that accompany these products (the maps). Although information from land surveys may have been used in the creation of these products, in no way does this product represent or constitute a land survey. Users are cautioned to field verify information on this product before making any decisions.

Mandated Content

In an effort to assist the readers and reviewers of this document, the jurisdiction has inserted "markers" emphasizing mandated content as identified in the Disaster Mitigation Act of 2000 (Public Law – 390). Following is a sample marker:

EXAMPLE

Q&A | ELEMENT A: PLANNING PROCESS | A1.

Q: Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))

A:

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Part I: PLANNING PROCESS

Introduction

The Pre-Disaster Mitigation Plan (Mitigation Plan) was prepared in response to Disaster Mitigation Act of 2000 (DMA 2000). DMA 2000 (also known as Public Law 106-390) requires state and local governments to prepare mitigation plans to document their mitigation planning process, and identify hazards, potential losses, mitigation needs, goals, and strategies. This type of planning supplements the District's comprehensive land use planning and emergency management planning programs. This document is Granite School District's first Mitigation Plan and ensures eligibility for Hazard Mitigation Grant Program (HMGP) funding.

DMA 2000 was designed to establish a national program for pre-disaster mitigation, streamline disaster relief at the federal and state levels, and control federal disaster assistance costs. Congress believed these requirements would produce the following benefits:

- ✓ Reduce loss of life and property, human suffering, economic disruption, and disaster costs.
- ✓ Prioritize hazard mitigation at the local level with increased emphasis on planning and public involvement, assessing risks, implementing loss reduction measures, and ensuring critical facilities/services survive a disaster.
- ✓ Promote education and economic incentives to form community-based partnerships and leverage non-federal resources to commit to and implement long-term hazard mitigation activities.

The following FEMA definitions are used throughout this plan (Source: FEMA, 2002, *Getting Started, Building Support for Mitigation Planning*, FEMA 386-1):

Hazard Mitigation – "Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards".

Planning – "The act or process of making or carrying out plans; specifically, the establishment of goals, policies, and procedures for a social or economic unit."

Planning Approach

This is the District's first planning attempt. In fact, this is one of the first school district and emergency management planning efforts along the Wasatch Front. Future efforts will require more detailed analysis. We recognize this is the first effort in a long journey. The four-step planning approach outlined in the FEMA publication, *Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies* (FEMA 386-3) was used to develop this plan:

- ✓ **Develop mitigation goals and objectives -** The risk assessment (hazard characteristics, inventory, and findings), along with municipal policy documents, were utilized to develop mitigation goals and objectives.
- ✓ **Identify and prioritize mitigation actions -** Based on the risk assessment, goals and objectives, existing literature/resources, and input from participating entities, mitigation activities were identified for each hazard. Activities were 1) qualitatively evaluated against

the goals and objectives, and other criteria; 2) identified as high, medium, or low priority; and 3) presented in a series of hazard-specific tables.

- ✓ **Prepare implementation strategy -** Generally, high priority activities are recommended for implementation first. However, based on community needs and goals, project costs, and available funding, some medium or low priority activities may be implemented before some high priority items.
- ✓ **Document mitigation planning process -** The mitigation planning process is documented throughout this plan.

State and Federal Partners in Hazard Mitigation

All mitigation is local and the primary responsibility for development and implementation of risk reduction strategies and policies lies with each local jurisdiction. Local jurisdictions, however, are not alone. Partners and resources exist at the regional, state and federal levels. Numerous Utah State agencies have a role in hazards and hazard mitigation.

Some of the key agencies include:

- ✓ Utah Department of Emergency Management (DEM) coordinates emergency management efforts among State agencies, in collaboration with federal and local government. These efforts include preparedness, response, recovery and mitigation.
- ✓ Utah Geological Survey (UGS), a division of the Utah Department of Natural Resources, provides timely scientific information about Utah's geologic environment, resources, and hazards.
- ✓ Utah Division of Forestry, Fire & State Lands is responsible for forest health, responding to wildland fires and managing sovereign lands in Utah.
- ✓ FEMA provides hazard mitigation guidance, resource materials, and educational materials to support implementation of the capitalized DMA 2000.
- ✓ United States Census Bureau (USCB) provides demographic data on the populations affected by natural disasters.
- ✓ United States Department of Agriculture (USDA) provides data on matters pertaining to land management.

Q&A | ELEMENT A: PLANNING PROCESS | A3.

Q: Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))

A: See **Stakeholders** below.

Stakeholders

A Pre-Disaster Mitigation Planning Team (Planning Team) consisting of representatives from Granite School District and Salt Lake County Emergency Management worked with the consultant to create the District's first Mitigation Plan. **The Planning Team served as the primary stakeholders throughout the planning process.**

As required by DMA 2000, the Planning Team involved the public and external agencies. The availability of the Second Draft Plan was announced and posted on the District's website in July 2018 during the plan writing phase. See "Planning Process – Solicit Input from District Employees, Taxpayers, and Patrons" for details.

The District's employees, taxpayers, and patrons served as secondary stakeholders with opportunity to contribute to the plan during the Plan Writing Phase.

Hazard Mitigation Legislation

Hazard Mitigation Grant Program

In 1974, Congress enacted the Robert T. Stafford Disaster Relief and Emergency Act, commonly referred to as the Stafford Act. In 1988, Congress established the Hazard Mitigation Grant Program (HMGP) via Section 404 of the Stafford Act. Regulations regarding HMGP implementation based on the DMA 2000 were initially changed by an Interim Final Rule (44 CFR Part 206, Subpart N) published in the Federal Register on February 26, 2002. A second Interim Final Rule was issued on October 1, 2002.

The HMGP helps states and local governments implement long-term hazard mitigation measures for natural hazards by providing federal funding following a federal disaster declaration. Eligible applicants include state and local agencies, Indian tribes or other tribal organizations, and certain nonprofit organizations.

In Utah, the HMGP is administered by the Utah Department of Emergency Management. Examples of typical HMGP projects include:

- ✓ Property acquisition and relocation projects
- ✓ Structural retrofitting to minimize damages from earthquake, flood, high winds, wildfire, or other natural hazards
- ✓ Elevation of flood-prone structures
- ✓ Vegetative management programs, such as:
    - Brush control and maintenance
    - Fuel break lines in shrubbery
    - Fire-resistant vegetation in potential wildland fire areas

Pre-Disaster Mitigation Program

The Pre-Disaster Mitigation Program (PDM) was authorized by §203 of the Stafford Act, 42 United States Code, as amended by §102 of the DMA 2000. Funding is provided through the National Pre-Disaster Mitigation Fund to help state and local governments (including tribal governments) implement cost-effective hazard mitigation activities that complement a comprehensive mitigation program.

In Fiscal Year 2009, two types of grants (planning and competitive) were offered under the PDM Program. Planning grants allocate funds to each state for Mitigation Plan development. Competitive grants distribute funds to states, local governments, and federally recognized Indian tribal governments via a competitive application process. FEMA reviews and ranks the submittals based on pre-determined criteria. The minimum eligibility requirements for competitive grants include participation in good standing in the National Flood Insurance Program (NFIP) and a FEMA-approved Mitigation Plan. (Source: http://www.fema.gov/fima/pdm.shtm)

Flood Mitigation Assistance Program

The Flood Mitigation Assistance (FMA) Program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101). Financial support is provided through the National Flood Insurance Fund to help states and communities implement measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP.

Three types of grants are available under FMA: planning, project, and technical assistance. Planning grants are available to states and communities to prepare Flood Mitigation Plans. NFIP-participating communities with approved Flood Mitigation Plans can apply for project grants to implement measures to reduce flood losses. Technical assistance grants in the amount of 10 percent of the project grant are available to the state for program administration. Communities that receive planning and/or project grants must participate in the NFIP. Examples of eligible projects include elevation, acquisition, and relocation of NFIP-insured structures. (Source: http://www.fema.gov/fima/fma.shtm)

Q&A | ELEMENT C. MITIGATION STRATEGY | C2

Q: Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))

A: See **NFIP Participation** below.

National Flood Insurance Program

Established in 1968, the NFIP provides federally-backed flood insurance to homeowners, renters, and businesses in communities that adopt and enforce floodplain management ordinances to reduce future flood damage.

NFIP Participation

The Granite School District is self-insured and therefore does not participate in the National Flood Insurance Program (NFIP). Furthermore, school districts do not regulate land development, so they play no role in encouraging or enforcing NFIP.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B4

Q: Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))

A: See **Repetitive Loss Properties** below.

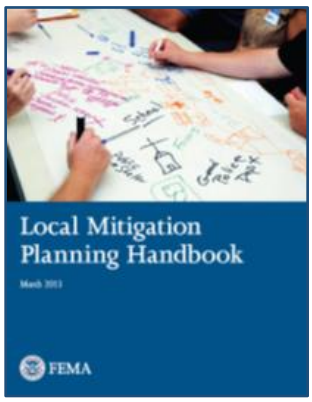
Repetitive Loss Properties

Repetitive Loss Properties (RLPs) are most susceptible to flood damages; therefore, they have been the focus of flood hazard mitigation programs. A repetitive loss property is one for which two or more claims of $1,000 or more have been paid by the National Flood Insurance Program (NFIP) within any given ten-year period. According to FEMA resources, there are no Repetitive Loss Properties (RLPs) within the Granite School District.

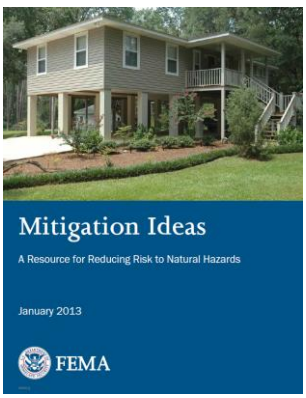
State and Federal Guidance in Hazard Mitigation

While local jurisdictions have primary responsibility for developing and implementing hazard mitigation strategies, they are not alone. Various state and federal partners and resources can help local agencies with mitigation planning.

The Mitigation Plan was prepared in accordance with the following regulations and guidance documents:



- ✓ DMA 2000 (Public Law 106-390, October 10, 2000)
- ✓ 44 CFR Parts 201 and 206, Mitigation Planning and Hazard Mitigation Grant Program, Interim Final Rule, October 1, 2002
- ✓ 44 CFR Parts 201 and 206, Mitigation Planning and Hazard Mitigation Grant Program, Interim Final Rule, February 26, 2002
- ✓ How-To Guide for Using HAZUS-MH for Risk Assessment, (FEMA 433), February 2004
- ✓ Mitigation Planning "How-to" Series (FEMA 386-1 through 9 available at: http://www.fema.gov/fima/planhowto.shtm)
- ✓ Getting Started: Building Support for Mitigation Planning (FEMA 386-1)
- ✓ Understanding Your Risks: Identifying Hazards and Estimating Losses (FEMA 386-2)
- ✓ Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies (FEMA 386-3)
- ✓ Bringing the Plan to Life: Implementing the Mitigation Plan (FEMA 386-4)
- ✓ Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5)
- ✓ Integrating Historic Property and Cultural Resource Considerations into Mitigation Planning (FEMA 386-6)
- ✓ Integrating Manmade Hazards into Mitigation Planning (FEMA 386-7)
- ✓ Multi-Jurisdictional Mitigation Planning (FEMA 386-8)



- ✓ Using the Mitigation Plan to Prepare Successful Mitigation Projects (FEMA 386-9)
- ✓ State and Local Plan Interim Criteria Under the DMA 2000, July 11, 2002, FEMA
- ✓ Mitigation Planning Workshop for Local Governments-Instructor Guide, July 2002, FEMA
- ✓ Report on Costs and Benefits of Natural Hazard Mitigation, Document #294, FEMA
- ✓ Local Mitigation Plan Review Guide (FEMA 2011)
- ✓ Local Mitigation Planning Handbook (FEMA 2013)
- ✓ Mitigation Ideas (FEMA 2013)

How is the Plan Organized?

The structure of the plan enables the reader to use a section of interest to them and allows the District to review and update sections when new data is available. The ease of incorporating new data into the plan will result in a Mitigation Plan that remains current and relevant.

Following is a description of each section of the plan:

Part I: Planning Process

Introduction

Describes the background and purpose of developing a mitigation plan.

Planning Process

Describes the mitigation planning process including: stakeholders and integration of existing data and plans.

Part II: Risk Assessment

District Profile

Summarizes the history, geography, demographics, and socioeconomics of the District.

Risk Assessment

This section provides information on hazard identification, vulnerability and risk associated with hazards in the District.

District-Specific Hazard Analysis

Describes the hazards posing a significant threat to the District including:

Earthquake | Flooding | Wildfire | Avalanche | Landslide | Severe Weather | Dam Failure | Drought | Hazardous Materials | Human-Caused | Utility-Related

Each District-Specific Hazard Analysis includes information on previous occurrences, local conditions, hazard assessment, and local impacts.

Part III: Mitigation Strategies

Mitigation Strategies

Documents the goals, District capabilities, and priority setting methods supporting the Plan. Also highlights the Mitigation Actions Matrix: 1) goals met; 2) identification, assignment, timing, and funding of mitigation activities; 3) benefit/cost/priorities; 4) impact on new construction; and 5) plan implementation method.

Plan Maintenance

Establishes tools and guidelines for maintaining and implementing the Mitigation Plan.

Part IV: Appendix

The plan appendices are designed to provide users of the Mitigation Plan with additional information to assist them in understanding the contents of the mitigation plan, and potential resources to assist them with implementation.

General Natural Hazard Overviews

Generalized subject matter information discussing the science and background associated with the identified natural hazards.

Attachments

FEMA Letter of Approval
Board of Education Staff Report
Board of Education Resolution
Planning Team sign-in sheets
Web postings and notices
References
Listing of Maps, Tables, and Figures

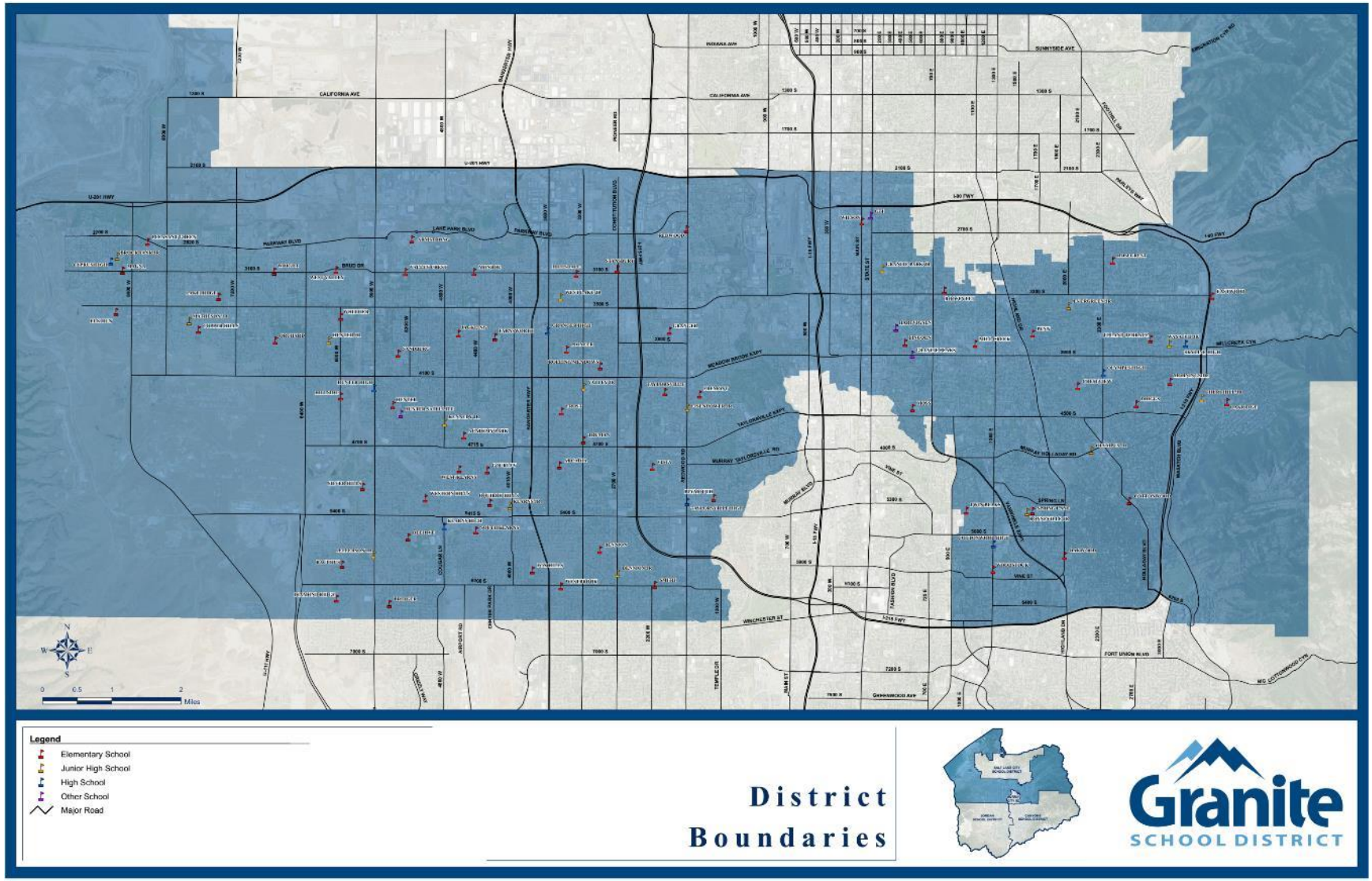
Plan Adoption and Approval

As per DMA 2000 and supporting Federal regulations, the Mitigation Plan is required to be adopted by the Board of Education and approved by FEMA. See the **Planning Process Section** for details.

Who Does the Mitigation Plan Affect?

This plan provides a framework for planning for natural and human-caused hazards. The resources and background information in the plan are applicable District-wide and to District-owned facilities outside of the District boundaries, and the goals and recommendations provide groundwork for local mitigation plans and partnerships. **Map: District Boundaries** shows the regional proximity of the District to its adjoining communities.

Map: District Boundaries
(Source: Granite School District)



Planning Process

Throughout the project, the District followed its traditional approach to developing policy documents which included preparation of a First Draft Plan by the consultant for review by the Planning Team. Next, following any necessary updates, a Second Draft Plan was shared with the general public and external agencies (jurisdictions served and adjoining special districts) during the plan writing phase. The general public (staff, parents, etc.) and external agencies served as the secondary stakeholders. Next, the comments gathered from the secondary stakeholders were incorporated into a Third Draft Plan ending the plan writing phase. The Third Draft Plan was submitted to the State and FEMA along with a request for Approval Pending Adoption.

Once comments were received by the State and FEMA, the Planning Team completed any mandated amendments to the Plan based on federal regulations. The Final Draft Plan was then posted on the District's website for an opportunity for all interested parties to view the document in advance of the Board of Education public meeting. Comments gathered were incorporated into a Board of Education staff report. Following adoption by the Board of Education, proof of the Plan's adoption was forwarded to FEMA along with a request for final approval. Once received, the final approval was added to the document and the Plan was deemed final.

The planning process described above is portrayed below in a timeline:

Q&A | ELEMENT A: PLANNING PROCESS | A1.

Q: Does the plan document the planning process, including how it was prepared (with a narrative description, meeting minutes, sign-in sheets, or another method)?

A: See **Plan Methodology and Planning Phases Timeline** below.

Q&A | ELEMENT A: PLANNING PROCESS | A3.

Q: Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))

A: See **Planning Phases Timeline** below.

Table: Planning Phases Timeline

PLANNING PHASES TIMELINE				
Plan Writing Phase (First & Second Draft Plan)	**Plan Review Phase (Third Draft Plan)**	**Plan Adoption Phase (Final Draft Plan)**	**Plan Approval Phase (Final Plan)**	**Plan Implementation Phase**
• Planning Team input – research, meetings, writing • Review of First Draft Plan • Incorporate input from the Planning Team into Second Draft Plan • Invite public and external agencies to review, comment, and contribute to the Second Draft Plan. • Incorporate input into the Third Draft Plan	• Third Draft Plan sent to State and FEMA for Approval Pending Adoption	• Incorporate any mandated revisions identified by State and FEMA into Final Draft Plan • Post notice for Board of Education public meeting to adopt the Plan • Incorporate input into the Board of Education staff report. • Post public notice of Board of Education meeting • Final Draft Plan distributed to Board of Education in advance of meeting • Present Final Draft Plan to the Board of Education • Board of Education Adopts Plan • Forward proof of adoption to FEMA	• Receive FEMA final approval • Incorporate FEMA approval into the Final Plan	• Conduct quarterly Planning Team meetings • Integrate mitigation action items into budget, and other funding and strategic documents

Plan Methodology

The Planning Team discussed knowledge of natural, technological, and human-caused hazards and past historical events, as well as planning and zoning codes, ordinances, and recent planning decisions.

The rest of this section describes the mitigation planning process including 1) Planning Team involvement, 2) public and external agency involvement, and 3) integration of existing data and plans.

Q&A | ELEMENT A: PLANNING PROCESS | A1.

Q: Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))

A: See **Table: Planning Team Involvement** and **Level of Participation** below.

Planning Team Involvement

The Planning Team consisted of representatives from Granite School District departments related to hazard mitigation processes. The Planning Team served as the primary stakeholders throughout the planning process. District non-Planning Team staff, parents, and other members of the community ("public") along with external agencies served as secondary stakeholders in the planning process. The Planning Team was responsible for the following tasks:

- ✓ Confirming planning goals
- ✓ Prepare timeline for plan update
- ✓ Ensure plan meets DMA 2000 requirements
- ✓ Organize and solicit involvement of public and external agencies
- ✓ Analyze existing data and reports
- ✓ Update hazard information
- ✓ Review HAZUS loss projection estimates
- ✓ Develop Mitigation Action Items
- ✓ Participate in Planning Team meetings and Board of Education public meeting
- ✓ Provide existing resources including maps and data

The Planning Team, with assistance from Centurion Solutions, identified and profiled hazards; determined hazard rankings; estimated potential exposure or losses; evaluated development trends and specific risks; and developed mitigation goals and action items.

Table: Planning Team Level of Participation

Name	Research and Writing of Plan	Planning Team Meeting 9/26/17	Planning Team Meeting 11/7/2017	Planning Team Meeting 1/16/2018	Planning Team Meeting 4/10/2018	Planning Team Comment on First Draft Plan	Review and input from public, and external agencies of the Second Draft Plan	Submit Third Draft Plan to State/FEMA for Approval Pending Adoption	Post Final Draft Plan in advance of Board of Education meeting to adopt Plan	Present Final Draft Plan to Board of Education at Public Meeting for Adoption	Submit Proof of Adoption to FEMA for Final Approval	Incorporate FEMA approval into Final Plan
Granite School District												
Donald Adams, Chair		X	X	X	X	X				X		
Debbie Allen		X										
Keith Bradshaw		X	X	X	X	X						
Michael Douglas		X		X								
Kurt Fisher		X	X									
David Garrett		X	X									
Rex Goudy		X	X	X	X	X						
Curt Hansen		X										
Ben Horsley			X	X	X	X	X					
John Lake					X							
Doug Larson		X	X									
Danny Stirland		X	X									
Alan Parrish		X	X									
Diana Pennington		X	X	X	X	X	X	X	X			
Randy Porter			X	X								
Cescilee Rall		X		X	X	X						
David Richards		X										
Dale Roberts		X	X									
Scott Winn			X	X	X	X						
Salt Lake County Emergency Management												

Name	Research and Writing of Plan	Planning Team Meeting 9/26/17	Planning Team Meeting 11/7/2017	Planning Team Meeting 1/16/2018	Planning Team Meeting 4/10/2018	Planning Team Comment on First Draft Plan	Review and input from public, and external agencies of the Second Draft Plan	Submit Third Draft Plan to State/FEMA for Approval Pending Adoption	Post Final Draft Plan in advance of Board of Education meeting to adopt Plan	Present Final Draft Plan to Board of Education at Public Meeting for Adoption	Submit Proof of Adoption to FEMA for Final Approval	Incorporate FEMA approval into Final Plan
Clint Mecham		X	X									
Centurion Solutions												
Doug Jackson		X		X								
Carolyn Harshman	X	X	X	X	X		X	X		X		
Alex Fritzler	X	X	X									

Table: Planning Team Timeline

	September 2017	October	November	December	January 2018	February	March	April	May	June	July	August	September	October	November	December	January 2019	February-June	July	August
Research and Writing of First Draft Plan	X	X	X	X	X	X	X													
Planning Team Meetings	X		X		X			X												
Planning Team Review and Comment on First Draft Plan								X	X	X	X									
Review and comment by public and external agencies on Second Draft Plan											X	X	X	X						
Submit Third Draft Plan to State/FEMA for Approval Pending Adoption																X				
Incorporate mandated amendments into Final Draft Plan																			X	
Post Final Draft Plan in advance of Board of Education meeting																			X	
Present Final Draft Plan to Board of Education at public meeting																				X
Submit Proof of Adoption to FEMA for Final Approval																				
Incorporate FEMA Approval into Final Plan																				

Q&A | ELEMENT A: PLANNING PROCESS | A2.

Q: Does the plan document an opportunity for neighboring communities, local, and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development, as well as other interested parties to be involved in the planning process? (Requirement §201.6(b)(2))

A: See **Solicit Input from District Employees, Taxpayers, and Patrons** below.

Q&A | ELEMENT A: PLANNING PROCESS | A3.

Q: Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))

A: See **Solicit Input from District Employees, Taxpayers, and Patrons** below.

Solicit Input from District Employees, Taxpayers, and Patrons

In order to comply with the DMA 2000 requirement for the plan to receive input from entities with authority to regulate development, the Planning Team included members licensed to understand and interpret the development regulations for the State of Utah – the entity responsible for establishing land and construction standards for schools and associated facilities. On the same topic, copies of the Second Draft Plan were distributed to each of the local government within the project area to ensure an absence of conflicts with any underlying development or regulatory controls.

In addition to the Planning Team, the secondary stakeholders also provided information, expertise, and other resources during plan writing phase. The secondary stakeholders included the District's employees (those not involved on the Planning Team), taxpayers (within the service area), and patrons (external agencies including jurisdictions).

Following review and input by the Planning Team of the First Draft Plan, a Second Draft Plan incorporating revisions was made available to the secondary stakeholders identified above. All gathered input from the secondary stakeholders was directed to the Chair of the Planning Team who reviewed the input and incorporated it as appropriate into the Third Draft Plan. Taxpayers were informed via a postcard with a link to the Second Draft Plan and a Survey Monkey to record input. In total, 77,000 cards were distributed on July 18, 2018, and 62 Survey Monkey responses received. Of the 62 Survey Monkey responses, none had any input for the Hazard Mitigation Plan.

Emails were sent to the following patrons with a link to the Second Draft Plan. No comments were received.

Patrons - Name, Agency, Job Title
Jeff Silvestrini, City of Millcreek, Mayor
John Geilmann, City of Millcreek, City Manager
Rita Lund, City of Millcreek, Public Information Officer
Ben McAdams, Salt Lake City, Mayor
Cheri Wood, City of South Salt Lake, Mayor
Ron Bigelow, West Valley City, Mayor
Robert Dahle, City of Holladay, Mayor

Gina Chamness, City of Holladay, City Manager
D. Blair Camp, City of Murray, Mayor
Kristie Steadman Overson, City of Taylorsville, Mayor
John Taylor, City of Taylorsville, City Manager
Tiffany Janzen, City of Taylorsville, Public Information Officer

Emails were sent to District employees. No comments were received.

The methods used to solicit input are identified in the Table below:

Table: Secondary Stakeholder Methods of Contact
(See Attachments – Web Postings for Postcard and Email)

Date Informed	Secondary Stakeholder Category	Method of Contact
July 18, 2018	Taxpayers (within District's service area)	Mailed Postcard
July 18, 2018	District Employees	Email via District's List Serve
September 14, 2018	Patrons	Email

Following receipt of FEMA's "Approval Pending Adoption" and in advance of the Board of Education public meeting, the Final Draft Plan was posted. Gathered comments during the posting period were noted in the Board of Education staff report and added to the Final Plan.

Q&A | ELEMENT C. MITIGATION STRATEGY | C1.

Q: Does the plan document each jurisdiction's existing authorities, policies, programs, and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3)

A: See **Capability Assessment – Existing Processes and Programs** below.

Capability Assessment – Existing Processes and Programs

The District will incorporate mitigation planning as an integral component of daily operations. This will be accomplished by the Planning Team working with their respective departments to integrate mitigation strategies into the planning documents and operational guidelines within the District. In addition to the Capability Assessment below, the Planning Team will strive to identify additional policies, programs, practices, and procedures that could be created or modified to address mitigation activities.

The District has a limited capacity this stage. The plan is a high-level look at hazard exposure. This process has allowed us to better understand what we should look at in the near future. The District has traditionally relied upon site-level administrators (principals) to handle emergencies in coordination with local first responders. This plan changes that paradigm as we look towards a wholistic response. Options will include more in-depth studies of our greatest threats/vulnerabilities as well as potential staffing of an emergency management position.

Table: Capability Assessment - Existing Processes and Programs

Process	Action	Implementation of Plan
Hazard Mitigation	Ensure representation on Planning Team include all departments responsible for the existing processes and programs identified in this table.	✓ *Planning Team's effectiveness in implementing Plan and creating a culture of mitigation* ✓ *Planning Team members become "ambassadors" in the various departments charged with influencing development, infrastructure, and future planning* ✓ *Involve Hazard Mitigation Planning Team in review of future construction projects to ensure consideration of threats posed by hazards (See Mitigation Actions Matrix)* ✓ *2017 Bond Measure*
Administrative	Departmental or organizational work plans, policies, and procedural changes	✓ *Superintendent's Office* ✓ *Support Services Department* ✓ *Planning & Boundaries Department* ✓ *Risk & Property Management Department* ✓ *Other departments as appropriate* ✓ *Continue training staff for all aspects of Emergency Management and ensure adequate staffing levels by cross-training staff for each identified capability/task*
Administrative	Other plans	✓ *Reference plan in future Emergency Operations Plan* ✓ *Address plan findings and incorporate mitigation activities*
Budgetary	Capital and operational budgets	✓ *Include line item mitigation measures in budget as appropriate*
Regulatory	Executive orders, ordinances, and other directives	✓ *State Building Code*
Funding	Traditional and nontraditional sources	✓ *Once plan is approved, seek authority to use bonds, loans, and taxes to finance projects* ✓ *Seek assistance from federal and state government, foundation, nonprofit, and private sources, such as Hazard Mitigation Grant Program*
Partnerships	Creative funding and initiatives	✓ *Community volunteers* ✓ *In-kind resources* ✓ *Public-private partnerships* ✓ *State support*
Partnerships	Advisory bodies and committees	✓ *Great Basin Coordination Center* ✓ *Safety Committee*

Q&A | ELEMENT A: PLANNING PROCESS | A4

Q: Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))

A: See **Use of Existing Data** below.

Use of Existing Data

The Planning Team gathered and reviewed existing data and plans during plan writing and specifically noted as "sources". Numerous electronic and hard copy documents were used to support the planning process:

Granite School District Website & Budget
www.graniteschools.org
Applicable Incorporation: District Profile section – history, location, demographics, and student data.

Salt Lake County Multi-Jurisdictional Multi-Hazard Mitigation Plan (2015)
www.slcgov.com
Applicable Incorporation: Information about hazards in the County contributed to the hazard-specific sections in the District's Mitigation Plan.

Utah Hazard Mitigation Plan (2014)
www.sites.google.com/a/utah.gov/utah/
Applicable Incorporation: Used to identify hazards posing greatest hazard to State.

HAZUS Maps and Reports
Created by Emergency Planning Consultants
Applicable Incorporation: Numerous HAZUS results have been included for several earthquake scenarios to determine specific risk to Granite School District.

FEMA "How To" Mitigation Series (386-1 to 386-9)
www.fema.gov/media
Applicable Incorporation: Mitigation Measures Categories and 4-Step Planning Process are quoted in the Executive Summary.

National Flood Insurance Program
www.fema.gov/national-flood-insurance-program
Applicable Incorporation: Used to confirm there are no repetitive loss properties within the District

Local Flood Insurance Rate Maps
www.msc.fema.gov
Applicable Incorporation: Provided by FEMA and included in Flood Hazard section.

Utah Department of Natural Resources - Wildfire Risk Assessment Portal
www.utahwildfirerisk.utah.gov
Applicable Incorporation: Wildland fire hazard mapping

U.S. Geological Survey (USGS)
www.usgs.gov
Applicable Incorporation: Earthquake records and statistics

Q&A | ELEMENT E: PLAN ADOPTION | E1

Q: Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))
A: See **Plan Adoption Process** below.

Plan Approval

Following review by Utah Department of Emergency Management, FEMA reviewed the Plan and on July 1, 2019 issued a notice of "Approval Pending Adoption".

After receive proof of the Board of Education's adoption of the Final Draft Plan, FEMA approved the Plan on _____. A copy of the FEMA Letter of Approval is in the **Appendix**.

Plan Adoption Process

Adoption of the plan by the local governing body demonstrates commitment to meeting mitigation goals and objectives. Governing body approval legitimizes the plan and authorizes responsible agencies to execute their responsibilities. The Board of Education must adopt the Mitigation Plan before the Plan can receive final approval by FEMA.

In preparation for the public meeting with the Board of Education, the Planning Team prepared a staff report including an overview of the Planning Process, Risk Assessment, Mitigation Goals, and Mitigation Actions. The staff presentation concluded with a summary of any input gathered during the posting period for the public meeting. The meeting participants were encouraged to present their views and make suggestions on possible mitigation actions.

The Board of Education heard the item on August 6, 2019. The Board of Education voted _____ to adopt the Mitigation Plan. The Resolution of adoption by the Board of Education is in the **Appendix**.

Part II: RISK ASSESSMENT

District Profile

Background and Geography

Granite School District operates 63 elementary schools, 16 junior high schools, 8 high schools, as well as other special schools and programs. In addition to its quality education programs for students in grades K through 12, the district offers a variety of adult and community education courses.

According to the District's website, the Granite School District is located immediately south of Salt Lake City. The district spans the Salt Lake Valley from the Wasatch Mountains on the east to the Oquirrh Mountains on the west. The district boundary encompasses 257 square miles and includes several urban and suburban communities.

When first created in 1904, the district had a population of about 15,000. Today, the district has an estimated population of 411,000. Out of that population, student enrollment for October 2017 is projected to be 67,465. The District overlaps 11 municipal boundaries. The complexity of coordinating with each entity's community planning and emergency management departments is formidable. While continual coordination and needs assessments must continue, the following list will denote with whom we intend to work with:

- Holladay City
  - Community Planning
  - Police Department (UPD)
  - Fire Department (UFA)
- Kearns
  - Community Planning
  - Police Department (UPD)
  - Fire Department (UFA)
- Magna
  - Community Planning
  - Police Department (UPD)
  - Fire Department (UFA)
- Mill Creek City
  - Community Planning
  - Police Department (UPD)
  - Fire Department (UFA)
- Murray City
  - Community Planning
  - Police Department
  - Fire Department
- Salt Lake County
  - Emergency Management
- South Salt Lake
  - Community Planning

    - Police Department
    - Fire Department
- State of Utah
    - Emergency Management
- Taylorsville City
    - Community Planning
    - Emergency Management
    - Police Department (UPD)
    - Fire Department (UFA)
- West Jordan
    - Community Planning
    - Police Department
    - Fire Department
- West Valley City
    - Community Planning
    - Police Department
    - Fire Department

Climate

According to the Salt Lake County Multi-Hazard Mitigation Plan (2015), the region experiences four distinct seasons. Both summer and winter are long, with hot, dry summers and cold, snowy winters. Spring is the wettest season, while summer is very dry.

The nearby Great Salt Lake is a significant contributor to precipitation in the County. The lake effect can help enhance rain from summer thunderstorms and produces lake-effect snow approximately 6 to 8 times per year, some of which can drop excessive snowfalls. It is estimated that about 10% of the annual precipitation in the County can be attributed to the lake effect. The region features large variations in temperatures between seasons. During summer, there are an average of 56 days per year with temperatures of at least 90 °F, 23 days of at least 95 °F, and 5 days of 100 °F. However, average daytime July humidity is only 22%.

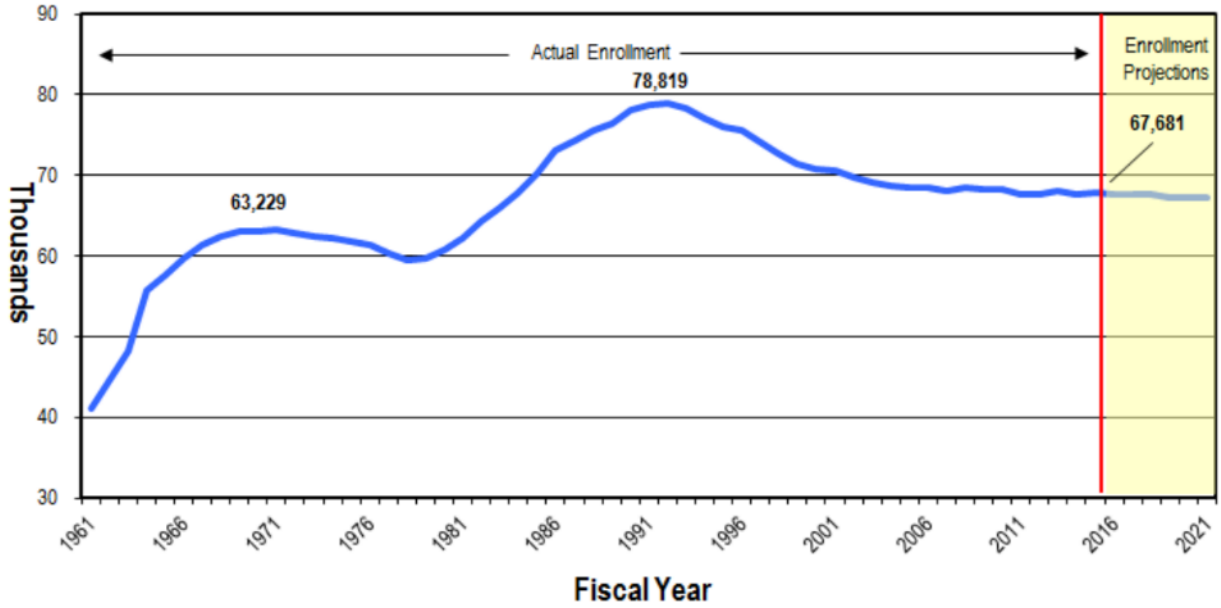
Winters are quite cold but rarely frigid. While there is an average of 127 days that drop to or below freezing, and 26 days with high temperatures that fail to rise above freezing, the region only averages 2.3 days at or below 0 °F.

Student Enrollment & Staff

With more than 67,000 students, Granite School District is the third largest district in Utah and is among the largest public school districts in the nation. The District is also one of Utah's largest employers, with more than 7,500 full and part-time employees.

According to the 2017-2018 Granite School District Annual Budget, the district's enrollment has been relatively flat for the last 5 years, with approximately 68,000 students each year. Granite's enrollment peaked in 1992-93 with 78,819 students and enrollment numbers went down every year until the fall of 2008 when enrollment increased by 317 students. Long-term projections indicate that the district should see flat enrollment numbers for fiscal years 2016 through 2021.

Figure: Student Enrollment
(Source: Granite School District 2017-2018 Annual Budget)



Facility Conditions

The District receives ongoing facility reports from independent engineers who assess every square foot of each school. From these assessments, each school is given a rating known as a Facility Condition Index (FCI). The chart below represents all school buildings in Granite School District distributed by their Facility Condition Index rating.

The average school facility in Granite School District needs renovations, remodels or repairs to more than 60% of the building's total square footage and systems. Based on expert analysis from outside engineers, the lifespan of the buildings in the District is 60 to 70 years. Currently, Granite School District has 44 schools that are more than 50 years old.

Earthquake Risk

Some schools, especially older facilities, are at risk of collapsing if a sizable earthquake were to hit the Wasatch Front. Most schools, even some newer facilities, need some form of seismic upgrade so that they are able to withstand the effects of a large earthquake. FCI scores do reflect structural needs. Generically higher FCI scores denote increased seismic vulnerabilities.

Figure: Facility Conditions
(Source: Granite School District Website)

20% of all facilities require repairs or renovations to over 85% of the building.

29% of all facilities require repairs or renovations to 75-85% of the building.

23% of all facilities require repairs or renovations to over 50-75% of the building.

28% of all facilities require repairs or renovations to over 0-50% of the building.

FCI: 85% or more

These schools have greater than 85% of their building needing repairs or renovations.

Elementary	Junior High	Senior High	Specialty Schools
Academy Park	Evergreen	Cyprus – Brockbank	
Arcadia	Kearns	Skyline	
Eastwood	Valley		
Farnsworth	West Lake STEM		
Lake Ridge			
Oakridge			
Oquirrh Hills			
Orchard			
Redwood			
Sandburg			
South Kearns			
Spring Lane			
Taylorsville			
Truman			
Vista			

Lake Ridge Elementary School

FCI: 75-85%

These schools have 75-85% of their building needing repairs or renovations.

Elementary	Junior High	Senior High	Specialty Schools
Bacchus	Bonneville	Cottonwood	Jones Center
Copper Hills	Granite Park	Cyprus	
Cottonwood	Kennedy		
Crestview			
Driggs			
Fox Hills			
Fremont			
Frost			
Gourley			
Hillsdale			
Hillside			
Lincoln			
Magna			
Morningside			
Moss			
Pioneer			
Plymouth			
Rosecrest			
Silver Hills			
Calvin Smith			
Twin Peaks			
Upland Terrace			
Valley Crest			
Western Hills			

Morningside Elementary School

FCI: 50-74%

These schools have 50-74% of their building needing repairs or renovations.

Elementary	Junior High	Senior High	Specialty Schools
Beehive	Bennion	Hunter	Granite Technical
Bennion	Churchill		
Bridger	Eisenhower		
Hunter	Hunter		
Jackling	Jefferson		
Mill Creek			
Monroe			
Pleasant Green			
Rolling Meadows			
Roosevelt			
Stansbury			

Roosevelt Elementary School

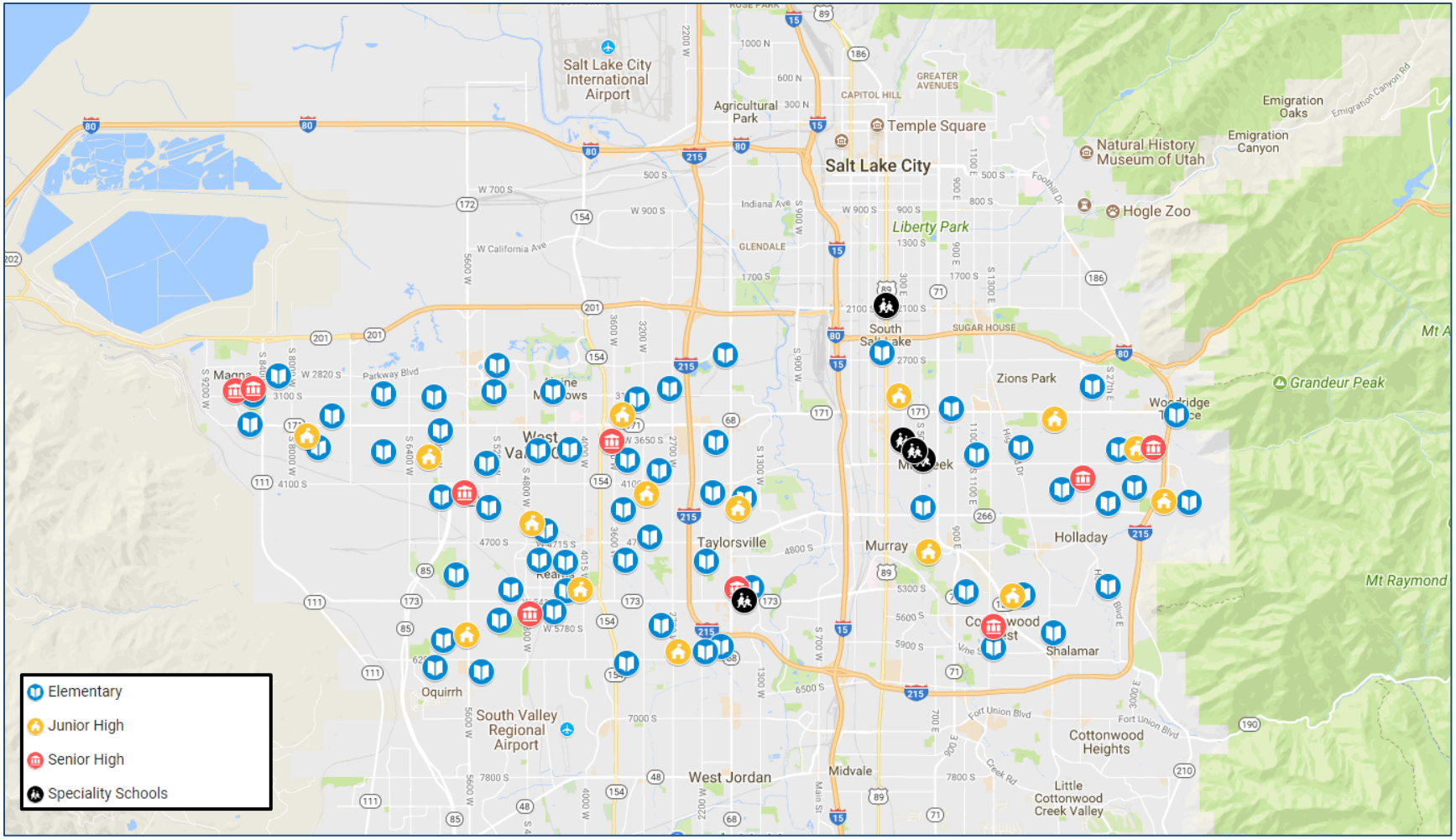
FCI: Less than 50%

These schools have less than 50% of their building needing repairs or renovations.

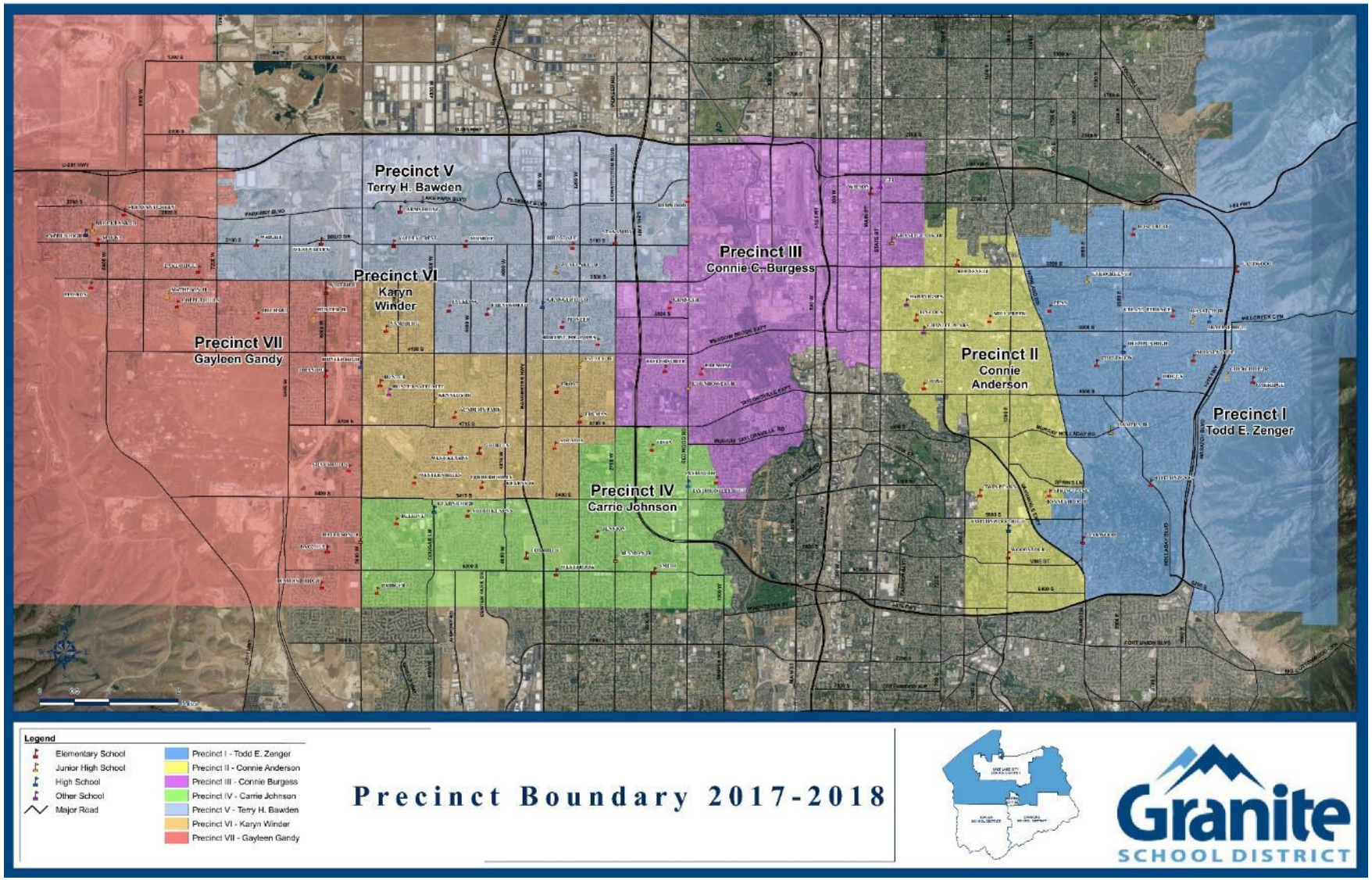
Elementary	Junior High	Senior High	Specialty Schools
Armstrong	Matheson	Granger	Granite Connection
Diamond Ridge	Olympus	Olympus	Hartvigsen
Elk Run	Wasatch		
Granger			
Oakwood			
William Penn			
West Valley			
Whittier			
Wilson			
Woodstock			
Wright			

Neil Armstrong Academy (Elementary School)

Map: School Locations
(Source: Google Maps)



Map: Precinct Boundaries 2017-218
(Source: Granite School District Website)



Risk Assessment

What is a Risk Assessment?

Conducting a risk assessment can provide information regarding: the location of hazards; the value of existing land and property in hazard locations; and an analysis of risk to life, property, and the environment that may result from natural hazard events. Specifically, the five levels of a risk assessment are as follows:

1. *Hazard Identification*
2. *Profiling Hazard Events*
3. *Vulnerability Assessment/Inventory of Existing Assets*
4. *Risk Analysis*
5. *Assessing Vulnerability/Analyzing Development Trends*

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1.

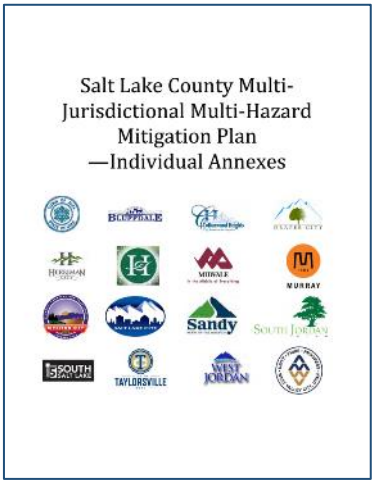
Q: Does the plan include a **description** of the type, location, and extent of all natural hazards that can affect each jurisdiction (s)? (Requirement §201.6(c)(2)(i))

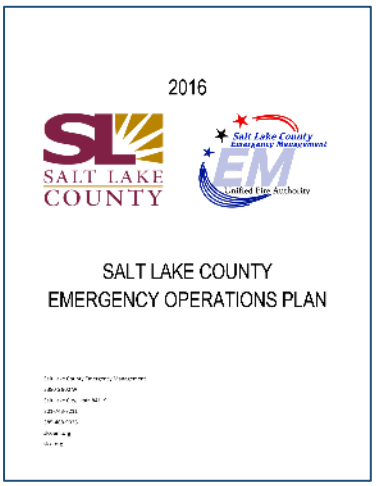
A: See **Hazard Identification** below.

1) Hazard Identification

This section is the description of the geographic extent, potential intensity, and the probability of occurrence of a given hazard. Maps are used in this plan to display hazard identification data. ***The Granite School District utilized the categorization of hazards as identified in Utah's State Hazard Mitigation Plan, including: earthquakes, floods, landslides, dam failure, wildfire, drought, severe weather, and other hazards (Radon, Problem Soils, Coronal Mass Ejections).***

Next, the Planning Team reviewed existing documents to determine which of these hazards posed the most significant threat to the District. In other words, which hazard would likely result in a local declaration of emergency.





The geographic extent of each of the identified hazards was identified by the Planning Team utilizing maps and data contained in the Salt Lake County Multi-Jurisdictional Mitigation Plan (2015), Salt Lake City's Hazard Mitigation Plan (2014), and Salt Lake County's Emergency Operations Plan (2016). Based on that analysis, the Planning Team identified Earthquake, Flooding, Wildfire, Avalanche, Landslide, Severe Weather, Dam Failure, Drought, Hazardous Materials, Human-Caused Events, and Utility-Related Events as the hazards posing the greatest threat. Next, utilizing the Calculated Priority Risk Index (CPRI) ranking technique, the Planning Team ranked the hazards according to probability, magnitude/severity, duration, and warning time.

Earthquake | Flooding | Wildfire | Avalanche | Landslide | Severe Weather | Dam Failure | Drought | Hazardous Materials | Human-Caused | Utility-Related

The hazard ranking system is described in **Table: Calculated Priority Risk Index**, while the actual ranking is shown in **Table: Calculated Priority Risk Index Ranking for Granite School District**.

Table: Calculated Priority Risk Index
(Source: Federal Emergency Management Agency)

CPRI Category	Degree of Risk			Assigned Weighting Factor
	Level ID	Description	Index Value	
Probability	Unlikely	Extremely rare with no documented history of occurrences or events. Annual probability of less than 1 in 1,000 years.	1	45%
	Possibly	Rare occurrences. Annual probability of between 1 in 100 years and 1 in 1,000 years.	2	
	Likely	Occasional occurrences with at least 2 or more documented historic events. Annual probability of between 1 in 10 years and 1 in 100 years.	3	
	Highly Likely	Frequent events with a well-documented history of occurrence. Annual probability of greater than 1 every year.	4	
Magnitude/ Severity	Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure. Injuries or illnesses are treatable with first aid and there are no deaths. Negligible loss of quality of life. Shut down of critical public facilities for less than 24 hours.	1	30%
	Limited	Slight property damage (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability, and there are no deaths. Moderate loss of quality of life. Shut down of critical public facilities for more than 1 day and less than 1 week.	2	
	Critical	Moderate property damage (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least 1 death. Shut down of critical public facilities for more than 1 week and less than 1 month.	3	
	Catastrophic	Severe property damage (greater than 50% of critical and non-critical facilities and infrastructure). Injuries and illnesses result in permanent disability and multiple deaths. Shut down of critical public facilities for more than 1 month.	4	
Warning Time	> 24 hours	Population will receive greater than 24 hours of warning.	1	15%
	12–24 hours	Population will receive between 12-24 hours of warning.	2	
	6-12 hours	Population will receive between 6-12 hours of warning.	3	
	< 6 hours	Population will receive less than 6 hours of warning.	4	
Duration	< 6 hours	Disaster event will last less than 6 hours	1	10%
	< 24 hours	Disaster event will last less than 6-24 hours	2	
	< 1 week	Disaster event will last between 24 hours and 1 week.	3	
	> 1 week	Disaster event will last more than 1 week	4	

Table: Calculated Priority Risk Index Ranking for Granite School District

Hazard	Probability	Weighted 45% (x.45)	Magnitude Severity	Weighted 30% (x.3)	Warning Time	Weighted 15% (x.15)	Duration	Weighted 10% (x.1)	CPRI Ranking
Earthquake – Wasatch Fault M7.1	3	1.35	4	1.2	4	0.6	1	0.1	**3.25**
Earthquake – Taylorsville Fault M6.5	3	1.35	4	1.2	4	0.6	1	0.1	**3.25**
Earthquake – Great Salt Lake Fault M6.9	3	1.35	3	0.9	4	0.6	1	0.1	**2.95**
Wildfire	3	1.35	2	0.6	4	0.6	3	0.3	**2.85**
Severe Weather	4	1.8	2	0.6	1	0.15	3	0.3	**2.85**
Drought	3	1.35	2	0.6	1	0.15	4	0.4	**2.50**
Hazardous Materials	1	0.45	3	0.9	4	0.6	3	0.3	**2.25**
Human-Caused Events	1	0.45	3	0.9	4	0.6	3	0.3	**2.25**
Utility-Related Events	1	0.45	3	0.9	4	0.6	3	0.3	**2.25**
Landslide	2	0.9	2	0.6	4	0.6	1	0.1	**2.20**
Flooding	2	0.9	2	0.6	2	0.3	3	0.3	**2.10**
Avalanche	1	0.45	1	0.3	1	0.15	1	0.1	**1.00**
Dam Failure	1	0.45	1	0.3	1	0.15	1	0.1	**1.00**

2) Profiling Hazard Events

This process describes the causes and characteristics of each hazard and what part of the District's facilities, infrastructure, and environment may be vulnerable to each specific hazard. A profile of each hazard discussed in this plan is provided in the District-Specific Risk Assessment. **Table: Vulnerability: Location, Extent, and Probability for Granite School District** indicates a generalized perspective of the District's vulnerability of the various hazards according to extent (or degree), location, and probability.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1.

Q: Does the plan include a description of the **type, location, and extent** of all natural hazards that can affect each jurisdiction (s)? (Requirement §201.6(c)(2)(i))

A: See **Table: Vulnerability: Location, Extent, and Probability for Granite School District** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on **previous occurrences** of hazard events and on the **probability** of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))

A: See **Table: Vulnerability: Location, Extent, and Probability for Granite School District** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3.

Q: Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's **vulnerability** for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Table: Vulnerability: Location, Extent, and Probability for Granite School District** below.

Table: Vulnerability: Location, Extent, and Probability for Granite School District

Hazard	Location (Where)	Extent (How Big an Event)	Probability (How Often) *	Most Recent Occurrence (within region)
Earthquake	Districtwide	The Working Group on Utah Earthquake Probabilities (WGUEP) has concluded that there is a 57% probability that an earthquake of M6.0 or greater will hit the Wasatch Front region within the next 50 years. *Note the District Profile which identifies the overall condition of each District school and their earthquake survivability.*	Likely	1992
Flooding	Largely along floodplains located in South Salt Lake City.	100- and 500-year floodplains.	Possibly	2011
Wildfire	Wildland Urban Interface (WUI) zones near the foothills and in forested areas.	Utah Wildfire Risk Assessment Portal indicates foothills and forested areas adjoining the District are categorized as "moderate-high"	Likely	2012

Hazard	Location (Where)	Extent (How Big an Event)	Probability (How Often) *	Most Recent Occurrence (within region)
Avalanche	Occur in localized areas in canyons and foothills, primarily in the canyons of the Wasatch Mountains. Potential to impact school bussing routes and emergency services in eastern portion of District.	Culvert blockages, bank erosion, landslides and avalanches all have the potential to close down the Town of Alta's only arterial connection with the rest of the county.	Unlikely	1998
Landslide	Great danger comes generally in canyon mouths and foothills and areas of recent wildfire activity.	Salt Lake County HMP identifies extent as "limited" in magnitude with an event lasting from hours to months.	Possibly	2013
Severe Weather	Occur in localized areas throughout District.	Nearly 24 inches of snow over a five-day period of time (1993).	Highly Likely	1993
Dam Failure	Dam locations are located throughout the District, high hazard dams are located in eastern portion of District	1,000-year flood events could occur with little or no warning. See Map: Dam Failure Hazards in the Dam Failure Hazards Section.	Unlikely	As per Salt Lake County HMP "no record found"
Drought	Districtwide	Salt Lake County HMP identifies extent as "critical" in magnitude with an event lasting from months to years. The region experiences varying levels of drought on an ongoing basis: mild drought every 2-5 years; moderate drought every 4-5 years; severe drought every 7-9 years.	Likely	2012-2018, Statewide Declaration in 2018
Hazardous Materials	Districtwide	Scope and scale very difficult to predict ranging for isolated to regional, minor to severe medical consequences, limited to extended exposure times.	Unlikely	Unknown
Human-Caused	Districtwide	Most likely event would be an active shooter event that could result in dozens of injuries and deaths.	Unlikely	Unknown
Utility-Related	Districtwide	Depending on the season, a utility emergency could be limited to inconvenience or range as high as life-threatening. Outages and spills could be	Unlikely	Unknown

Hazard	Location (Where)	Extent (How Big an Event)	Probability (How Often) *	Most Recent Occurrence (within region)
		isolated locations or entire sections of the project area.		
* Probability is defined as: Unlikely = 1:1,000 years, Possibly = 1:100-1:1,000 years, Likely = 1:10-1:100 years, Highly Likely = 1:1 year				

3) Vulnerability Assessment/Inventory of Existing Assets

A Vulnerability Assessment in its simplest form is a simultaneous look at the geographical location of hazards and an inventory of the underlying land uses (populations, structures, etc.). Facilities that provide critical and essential services following a major emergency are of particular concern because these locations house staff and equipment necessary to provide important public safety, emergency response, and/or disaster recovery functions.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3.

Q: Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's **vulnerability** for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Critical Facilities** below.

Critical Facilities

FEMA separates critical buildings and facilities into the five categories shown below based on their loss potential. All of the following elements are considered critical facilities:

Essential Facilities are essential to the health and welfare of the whole population and are especially important following hazard events. Essential facilities include hospitals and other medical facilities, police and fire stations, emergency operations centers and evacuation shelters, and schools.

Transportation Systems include airways – airports, heliports; highways – bridges, tunnels, roadbeds, overpasses, transfer centers; railways – trackage, tunnels, bridges, rail yards, depots; and waterways – canals, locks, seaports, ferries, harbors, drydocks, piers.

Lifeline Utility Systems such as potable water, wastewater, oil, natural gas, electric power and communication systems.

High Potential Loss Facilities are facilities that would have a high loss associated with them, such as nuclear power plants, dams, and military installations.

Hazardous Material Facilities include facilities housing industrial/hazardous materials, such as corrosives, explosives, flammable materials, radioactive materials, and toxins.

Table: Critical Facilities Vulnerable to Hazards illustrates the name of the District's critical facilities and the hazards with potential to impact (based on location). Each facility was plotted on each of the hazard maps in order to accurately determine vulnerability.

Table: Critical Facilities Vulnerable to Hazards

Name and Type	Address	Earthquake	Flooding	Wildfire	Avalanche	Landslide	Severe Weather	Dam Failure	Drought	Hazardous Materials	Human-Caused	Utility-Related
Academy Park Elementary	4580 West Westpoint Drive (4575 S)	X	X				X		X	X	X	X
Arcadia Elementary	3461 West 4850 South	X					X		X	X	X	X
Armstrong Academy Elementary	5194 West Highbury Park Way	X	X	X			X		X	X	X	X
Thomas W. Bacchus Elementary	5925 South 5975 West	X		X			X		X	X	X	X
Beehive Elementary	5655 South 5220 West	X					X		X	X	X	X
Bennion Junior High	6055 South 2700 West	X	X				X		X	X	X	X
Bennion Elementary	5775 South Sierra Grande Drive (2940 W)	X	X				X		X	X	X	X
Bonneville Junior High	5330 South Gurene Drive (1650 East)	X	X				X		X	X	X	X
Jim Bridger Elementary	5368 West Cyclamen Way (6300 S)	X					X		X	X	X	X
Churchill Junior High	3450 East Oakview Drive (4275 S)	X		X		X	X		X	X	X	X
Copper Hills Elementary	7635 West 3715 South	X	X	X			X		X	X	X	X
Cottonwood Elementary	5205 South Holladay Boulevard (2600 E)	X		X		X	X	X	X	X	X	X

Name and Type	Address	Earthquake	Flooding	Wildfire	Avalanche	Landslide	Severe Weather	Dam Failure	Drought	Hazardous Materials	Human-Caused	Utility-Related
Cottonwood Senior High	5715 South 1300 East	X	X				X		X	X	X	X
Crestview Elementary	2100 East Lincoln Lane (4350 S)	X					X		X	X	X	X
Cyprus Senior High	8623 West 3000 South	X	X	X			X		X	X	X	X
Cyprus - Brockbank Campus Senior High	2935 South 8560 West	X	X	X			X		X	X	X	X
Diamond Ridge Elementary	6034 West Mill Valley Lane (6365 S)	X		X			X		X	X	X	X
Howard R. Driggs Elementary	4340 South 2700 East	X		X			X		X	X	X	X
Eastwood Elementary	3305 South Wasatch Boulevard (3560 East)	X		X		X	X		X	X	X	X
Eisenhower Junior High	4351 South Redwood Road (1700 W)	X	X				X		X	X	X	X
Elk Run Elementary	3550 South Helen Drive	X	X	X			X		X	X	X	X
Evergreen Junior High	3401 South 2000 East	X					X		X	X	X	X
Philo T. Farnsworth Elementary	3751 South 4225 West	X					X		X	X	X	X
Fox Hills Elementary	3775 West 6020 South	X					X		X	X	X	X

Name and Type	Address	Earthquake	Flooding	Wildfire	Avalanche	Landslide	Severe Weather	Dam Failure	Drought	Hazardous Materials	Human-Caused	Utility-Related
John C. Fremont Elementary	4249 South Atherton Drive (1425 W)	X	X				X		X	X	X	X
Robert Frost Elementary	3444 West 4400 South	X					X		X	X	X	X
David Gourley Elementary	4905 South 4300 West	X					X		X	X	X	X
Granger Senior High	3580 South 3600 West	X					X		X	X	X	X
Granger Elementary	3700 South 1950 West	X	X				X		X	X	X	X
Granite Connection Senior High	501 East 3900 South	X					X		X	X	X	X
Granite Park Junior High	3031 South 200 East	X	X				X	X	X	X	X	X
Granite Peaks Specialty School	501 East 3900 South	X	X				X	X	X	X	X	X
Granite Technical Institute Specialty School	2500 South State Street (100 E)	X					X		X	X	X	X
Granite Transition Services Specialty School	382 East Baird Avenue (3605 S)	X	X				X	X	X	X	X	X
Hartvigsen School Specialty School	1510 West 5400 South	X					X		X	X	X	X
Hillsdale Elementary	3275 West 3100 South	X	X				X		X	X	X	X

Name and Type	Address	Earthquake	Flooding	Wildfire	Avalanche	Landslide	Severe Weather	Dam Failure	Drought	Hazardous Materials	Human-Caused	Utility-Related
Hillside Elementary	4283 South 6000 West	X		X			X		X	X	X	X
Hunter Senior High	4200 South 5600 West	X	X	X			X		X	X	X	X
Hunter Elementary	4351 South 5400 West	X	X				X		X	X	X	X
Hunter Junior High	6131 West 3785 South	X					X		X	X	X	X
Jackling Elementary	3760 South 4610 West	X					X		X	X	X	X
Thomas Jefferson Junior High	5850 South 5600 West	X	X	X			X		X	X	X	X
Kearns Junior High	4040 West Sam's Boulevard (5305 S)	X					X		X	X	X	X
Kearns Senior High	5525 South Cougar Lane (4800 W)	X					X		X	X	X	X
John F. Kennedy Junior High	4495 South 4800 West	X	X				X		X	X	X	X
Lake Ridge Elementary	7400 West 3400 South	X		X			X		X	X	X	X
Lincoln Elementary	450 East 3700 South	X					X		X	X	X	X
Magna Elementary	8500 West 3100 South	X	X	X			X		X	X	X	X

Name and Type	Address	Earthquake	Flooding	Wildfire	Avalanche	Landslide	Severe Weather	Dam Failure	Drought	Hazardous Materials	Human-Caused	Utility-Related
Scott M. Matheson Junior High	3650 South Montclair Street (7730 W)	X	X	X			X		X	X	X	X
Mill Creek Elementary	3761 South 1100 East	X					X		X	X	X	X
Monroe Elementary	4450 West 3100 South	X	X	X			X		X	X	X	X
Morningside Elementary	4170 South 3000 East	X		X			X		X	X	X	X
James E. Moss Elementary	4399 South 500 East	X					X	X	X	X	X	X
Oakridge Elementary	4325 South Jupiter Drive (3755 E)	X		X		X	X		X	X	X	X
Oakwood Elementary	5815 South Highland Drive (1900 E)	X	X				X		X	X	X	X
Olympus Junior High	2217 East 4800 South	X	X				X	X	X	X	X	X
Olympus Senior High	4055 South 2300 East	X					X		X	X	X	X
Oquirrh Hills Elementary	5241 South 4280 West	X					X		X	X	X	X
Douglas T. Orchard Elementary	6744 West 3800 South	X					X		X	X	X	X
William Penn Elementary	1670 East Siggard Drive (3705 S)	X					X		X	X	X	X
Pioneer Elementary	3860 South 3380 West	X					X		X	X	X	X

Name and Type	Address	Earthquake	Flooding	Wildfire	Avalanche	Landslide	Severe Weather	Dam Failure	Drought	Hazardous Materials	Human-Caused	Utility-Related
Pleasant Green Elementary	8201 West 2700 South	X	X	X			X		X	X	X	X
Plymouth Elementary	5220 South 1470 West	X					X		X	X	X	X
Preschool Specialty School	2500 South State Street (100 E)	X					X	X	X	X	X	X
Redwood Elementary	2650 South Redwood Road (1700 W)	X	X				X		X	X	X	X
Rolling Meadows Elementary	2950 West Whitehall Drive (3985 S)	X					X		X	X	X	X
Roosevelt Elementary	3225 South 800 East	X	X				X	X	X	X	X	X
Rosecrest Elementary	2420 East Fisher Lane (2935 S)	X					X	X	X	X	X	X
Carl Sandburg Elementary	3900 South 5325 West	X					X		X	X	X	X
Silver Hills Elementary	5770 West 5100 South	X		X			X		X	X	X	X
Skyline Senior High	3251 East 3760 South	X		X			X		X	X	X	X
Smith, Calvin Elementary	2150 West 6200 South	X	X				X		X	X	X	X
South Kearns Elementary	4430 West 5570 South	X					X		X	X	X	X
Spring Lane Elementary	5315 South 1700 East	X	X				X		X	X	X	X

Name and Type	Address	Earthquake	Flooding	Wildfire	Avalanche	Landslide	Severe Weather	Dam Failure	Drought	Hazardous Materials	Human-Caused	Utility-Related
Stansbury Elementary	3050 South 2700 West	X	X				X		X	X	X	X
Taylorsville Elementary	2010 West 4230 South	X	X				X		X	X	X	X
Taylorsville Senior High	5225 S Redwood Road (1700 W)	X					X		X	X	X	X
Harry S. Truman Elementary	4639 South 3200 West	X					X		X	X	X	X
Twin Peaks Elementary	5325 South 1045 East	X	X				X		X	X	X	X
Upland Terrace Elementary	3700 South 2860 East	X					X		X	X	X	X
Valley Junior High	4195 South 3200 West	X					X		X	X	X	X
Valley Crest Elementary	5240 West 3100 South	X	X	X			X		X	X	X	X
Vista Elementary	4925 South 2200 West	X	X				X		X	X	X	X
Wasatch Junior High	3750 South 3100 East	X					X		X	X	X	X
West Kearns Elementary	4900 South 4620 West	X					X		X	X	X	X
West Lake STEM Junior High	3400 South 3450 West	X	X				X		X	X	X	X
West Valley Elementary	6049 West Brud Drive (3100 S)	X		X			X		X	X	X	X

Name and Type	Address	Earthquake	Flooding	Wildfire	Avalanche	Landslide	Severe Weather	Dam Failure	Drought	Hazardous Materials	Human-Caused	Utility-Related
Westbrook Elementary	3451 West 6200 South	X					X		X	X	X	X
Western Hills Elementary	5190 S Heath Avenue (5030 W)	X					X		X	X	X	X
Whittier Elementary	3585 South 6000 West	X					X		X	X	X	X
Woodrow Wilson Elementary	2567 S Main Street (1 E)	X					X	X	X	X	X	X
Woodstock Elementary	6015 South 1300 East	X	X				X		X	X	X	X
Gerald L. Wright Elementary	6760 West 3100 South	X		X			X		X	X	X	X
YESS Program Specialty School	450 East 3700 South	X	X				X	X	X	X	X	X

4) Risk Analysis

Estimating potential losses involves assessing the damage, injuries, and financial costs likely to be sustained in a geographic area over a given period of time. This level of analysis involves using mathematical models. The two measurable components of risk analysis are magnitude of the harm that may result and the likelihood of the harm occurring. Describing vulnerability in terms of dollar losses provides the District and the state with a common framework in which to measure the effects of hazards on assets. For each hazard where data was available, quantitative estimates for potential losses have been included in the hazard assessment. Data was not available to make vulnerability determinations in terms of dollar losses for all of the identified hazards. The **Mitigation Actions Matrix** includes an action item to conduct such an assessment in the future.

5) Assessing Vulnerability/ Analyzing Development Trends

This step provides a general description of District facilities and contents in relation to the identified hazards so that mitigation options can be considered in future planning decisions. This Mitigation Plan provides comprehensive description of the character of the Granite School District in the **District Profile Section**. This description includes the geography and environment, population and student enrollment, and District facility conditions. Analyzing these components of the Granite School District can help in identifying potential problem areas and can serve as a guide for incorporating the goals and ideas contained in this mitigation plan into other District development plans.

Hazard assessments are subject to the availability of hazard-specific data. Gathering data for a hazard assessment requires a commitment of resources on the part of participating organizations and agencies. Each hazard-specific section of the plan includes a section on hazard identification using data and information from District, County, state, or federal sources.

Regardless of the data available for hazard assessments, there are numerous strategies the District can take to reduce risk. These strategies are described in the action items detailed in the Mitigation Actions Matrix in the **Mitigation Strategies Section**. Mitigation strategies can further reduce disruption to critical services, reduce the risk to human life, and alleviate damage to personal and public property and infrastructure.

Earthquake Hazards

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on **previous occurrences** of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Previous Occurrences of Earthquakes in the Granite School District** below.

Previous Occurrences of Earthquakes in the Granite School District

According to the Salt Lake City Hazard Mitigation Plan (2014), significant earthquakes have occurred in Salt Lake County within the last 60 years.

In 1962, a 5.2 magnitude quake jolted the Magna area. As the quake shuddered its way across Salt Lake Valley, schools in the Salt Lake including Granite School District were evacuated. When the tremor subsided, most went back to class after an inspection of the buildings. Total damage to schools in the Granite School District was a little over $1,000 (~$8,000 in 2018 dollars).

In 1992, a magnitude 4.2 earthquake shook the southern portion of Salt Lake County. Fortunately, the District did not incur any damages from this earthquake.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1.

Q: Does the plan include a **description** of the type, location, and extent of all natural hazards that can affect each jurisdiction (s)? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on previous occurrences of hazard events and on the **probability** of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below. The District has conducted preliminary assessments on all facilities. Building retrofits will be prioritized based upon worst needs first.

Local Conditions

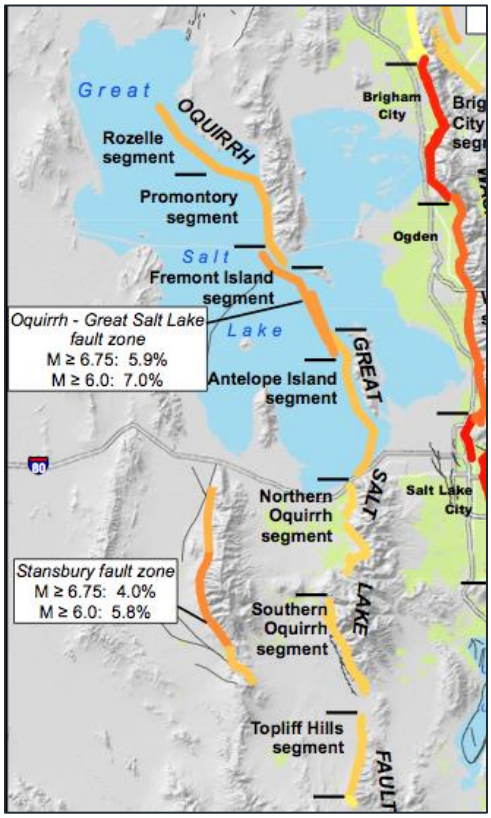
According to the Salt Lake County Multi-Jurisdictional Multi-Hazard Mitigation Plan (2015), Utah experiences approximately 700 earthquakes each year, and approximately six of those have a magnitude 3.0 or greater. On average, a moderate, potentially damaging earthquake (magnitude 5.5 to 6.5) occurs every 10 years. The history of seismic activity in Utah and along the Wasatch Front suggests that it is not a matter of "if" but when an earthquake will occur. Earthquakes that could affect the District would most likely originate from the Wasatch, Great Salt Lake, or the West

Valley (Taylorsville section) fault zones. These faults are close enough in proximity or expected to generate strong enough shaking that could significantly impact the District.

Wasatch Fault Zone

The Wasatch fault zone extends about 240 miles along the Wasatch Front from Malad City, Idaho, on the north to Fayette, Utah, on the south. The fault is divided into 10 segments based on various geologic criteria. Geologic evidence indicates that the five central segments between Brigham City and Nephi are the most active. These five segments (Brigham City, Weber, Salt Lake City, Provo, and Nephi) coincide with the most densely populated part of Utah.

Even though no large earthquakes have ruptured the Wasatch fault in the 163 years since Mormon settlers first arrived in Utah, abundant geologic evidence shows that the central Wasatch fault has generated more than two dozen large (~M7.0) earthquakes in the recent geological past. An earthquake of this size is a serious threat to the citizens of Utah and has the potential to be extremely destructive. Seismic activity on the Wasatch Fault is expected to have a maximum magnitude of 7.5.

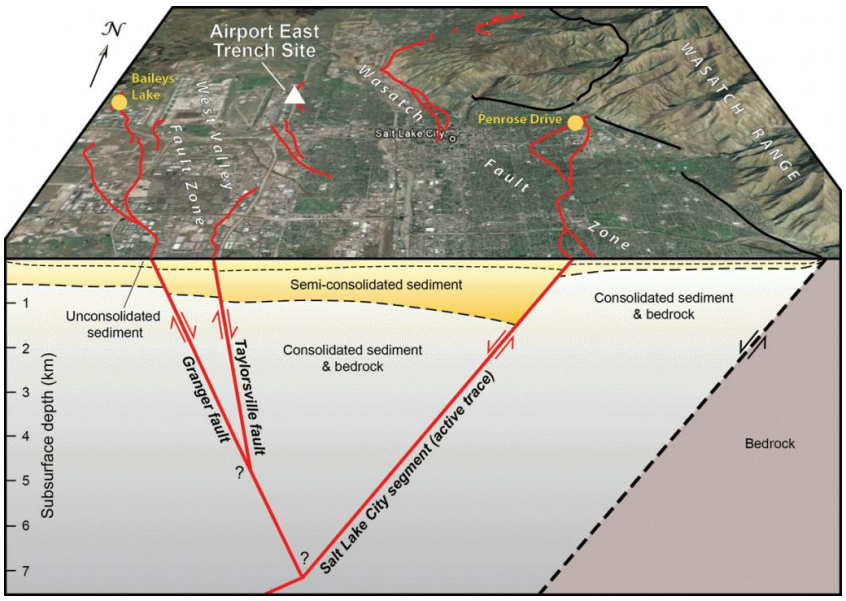


Great Salt Lake Fault Zone

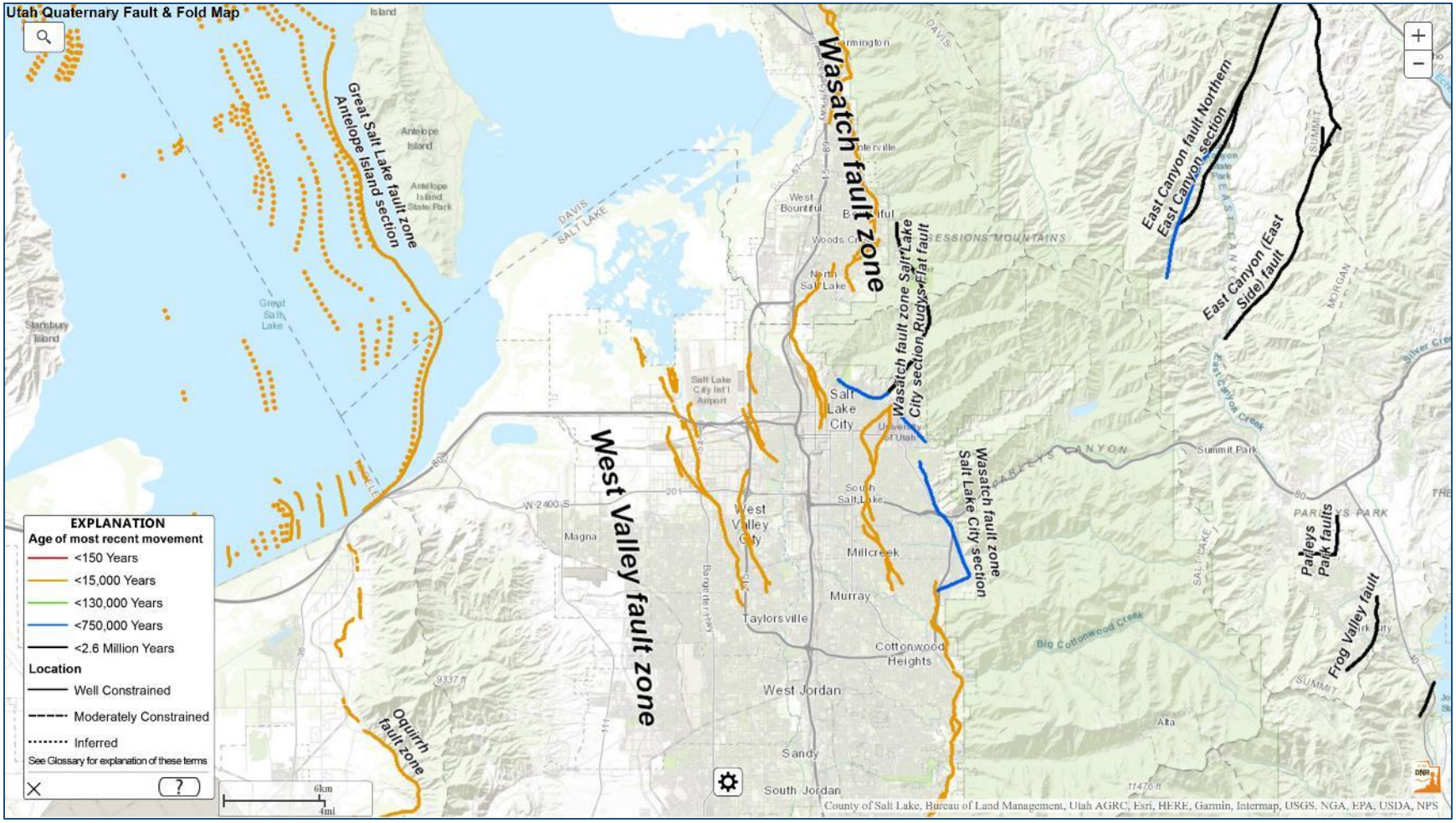
The Great Salt Lake fault zone extends from the northern tip of the Great Salt Lake to the southern tip. The fault is divided into four segments: the Rozelle segment, Promontory segment, Fremont Island segment, and Antelope Island segment. Seismic activity on the Great Salt Lake Fault is expected to have a maximum magnitude of 6.9.

West Valley Fault Zone

The West Valley fault zone is the lesser known of the two major faults that run through the Salt Lake Valley (the other is the Salt Lake City segment of the Wasatch fault zone). The Salt Lake City segment has been well studied, but much less is known about the West Valley fault zone. The West Valley fault zone consists of two, subparallel main traces, known as the Granger fault (western trace) and Taylorsville fault (eastern trace). Like the Wasatch fault zone, the West Valley fault zone shows evidence of recurrent movement in the geologically recent past (i.e., the past 10,000 years). Seismic activity on the West Valley fault zone is expected to have a maximum magnitude of 6.5.



Map: Regional Faults
(Source: Utah Geological Survey)



Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3.

Q: Is there a description of each identified hazard's **impact** on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Impact of Earthquakes in the Granite School District** below.

Impact of Earthquakes in the Granite School District

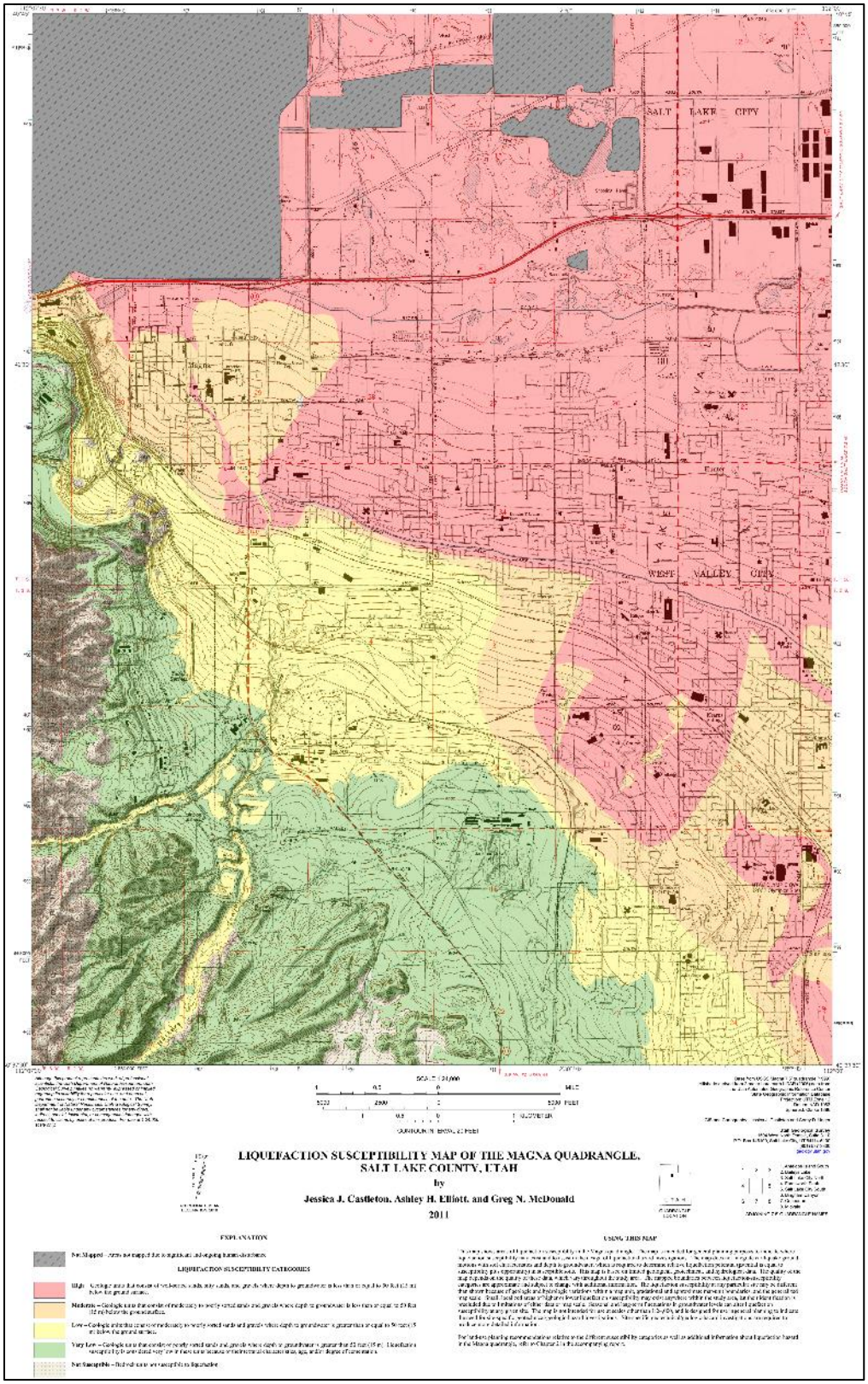
Based on the risk assessment, it is evident that earthquakes will continue to have potentially devastating impacts to certain areas of the District. Impacts that are not quantified, but can be anticipated in future events, include:

- ✓ Injury and loss of life;
- ✓ Commercial and residential structural damage;
- ✓ Disruption of and damage to public infrastructure;
- ✓ Secondary hazards including fire, landslide, rock falls, avalanche, flooding (including broken water mains and building connections), hazardous material release, transportation and infrastructure disruptions, essential service disruptions (communications, utilities);
- ✓ Public health hazard from "Coccidioidomycosis" which is a mammalian fungal disease which can cause a community-acquired pneumonia.
- ✓ Damage to roads/bridges resulting in loss of mobility;
- ✓ Significant economic impact
- ✓ Negative impact on commercial and residential property values; and
- ✓ Significant disruption to students and teachers as temporary facilities and relocations would likely be needed.

Liquefaction

Liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking or other events. Liquefaction occurs in saturated soils, which are soils in which the space between individual soil particles is completely filled with water. This water exerts a pressure on the soil particles that influences how tightly the particles themselves are pressed together. Prior to an earthquake, the water pressure is relatively low. However, earthquake shaking can cause the water pressure to increase to the point where the soil particles can readily move with respect to each other. Because liquefaction only occurs in saturated soil, its effects are most commonly observed in low lying areas. Typically, liquefaction is associated with shallow groundwater, which is less than 50 feet beneath the earth's surface. According to the Salt Lake City Hazard Mitigation Plan (2014), the District is located atop the ancient Lake Bonneville lakebed, which is made up of unconsolidated sandy soils. Much of the valley is also subject to shallow ground water and a relatively high earthquake threat.

Map: Liquefaction Susceptibility
(Source: Utah Geological Survey – www.geology.utah.gov)



Exposure

The data in this section was generated using the HAZUS-MH program for earthquakes. Once the location and size of a hypothetical earthquake are identified, HAZUS-MH estimates the intensity of the ground shaking, the number of buildings damaged, the number of casualties, the amount of damage to transportation systems and utilities, the number of people displaced from their homes, and the estimated cost of repair and clean up.

Transportation and Utility Lifeline Inventory

Within HAZUS, the lifeline inventory is divided between transportation and utility lifeline systems. Transportation systems include highways, railways, light rail, bus, ports, ferry and airports. Utility systems include potable water, wastewater, natural gas, crude & refined oil, electric power and communications.

Casualties

HAZUS estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows:

- ✓ **Severity Level 1:** Injuries will require medical attention, but hospitalization is not needed.
- ✓ **Severity Level 2:** Injuries will require hospitalization but are not considered life-threatening
- ✓ **Severity Level 3:** Injuries will require hospitalization and can become life threatening if not promptly treated.
- ✓ **Severity Level 4:** Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Building-Related Losses

Building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

HAZUS Earthquake Event Summary Results

Great Salt Lake Fault M6.9 Earthquake Scenario

Building Damage

Table: Expected Building Damage Great Salt Lake Fault M.6.9

Damage Extent	None	Slight	Moderate	Extensive	Complete
Total	**98,172**	**11,875**	**3,398**	**509**	**59**

Transportation and Utility Lifeline Damage

Table: Expected Utility System Pipeline Damage – Great Salt Lake Fault M.6.9

System	Total Pipelines (Length km)	Number of Leaks	Number of Breaks
Potable Water	15,015	228	57
Waste Water	9,009	163	41
Natural Gas	6,006	47	12
Oil	0	0	0

Table: Potable Water and Electric Power System Performance – Great Salt Lake Fault M.6.9

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	**131,327**	0	0	0	0	0
Electric Power		0	0	0	0	0

Shelter Requirement

HAZUS estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 196 households to be displaced due to the earthquake. Of these, 145 people (out of a total population of 404,346) will seek temporary shelter in public shelters.

Casualties

The table below represents a summary of casualties estimated for the Great Salt Lake Fault M.6.9 earthquake scenario.

Table: Casualty Estimates – Great Salt Lake Fault M.6.9

Time	Level 1	Level 2	Level 3	Level 4
2 AM	90	12	1	2
2 PM	146	25	3	5
5 PM	109	19	4	4

*

Level 1: Injuries will require medical attention but hospitalization is not needed.

Level 2: Will require hospitalization but are not considered life-threatening.

Level 3: Will require hospitalization and can become life threatening if not promptly treated.

Level 4: Victims are killed by earthquake.

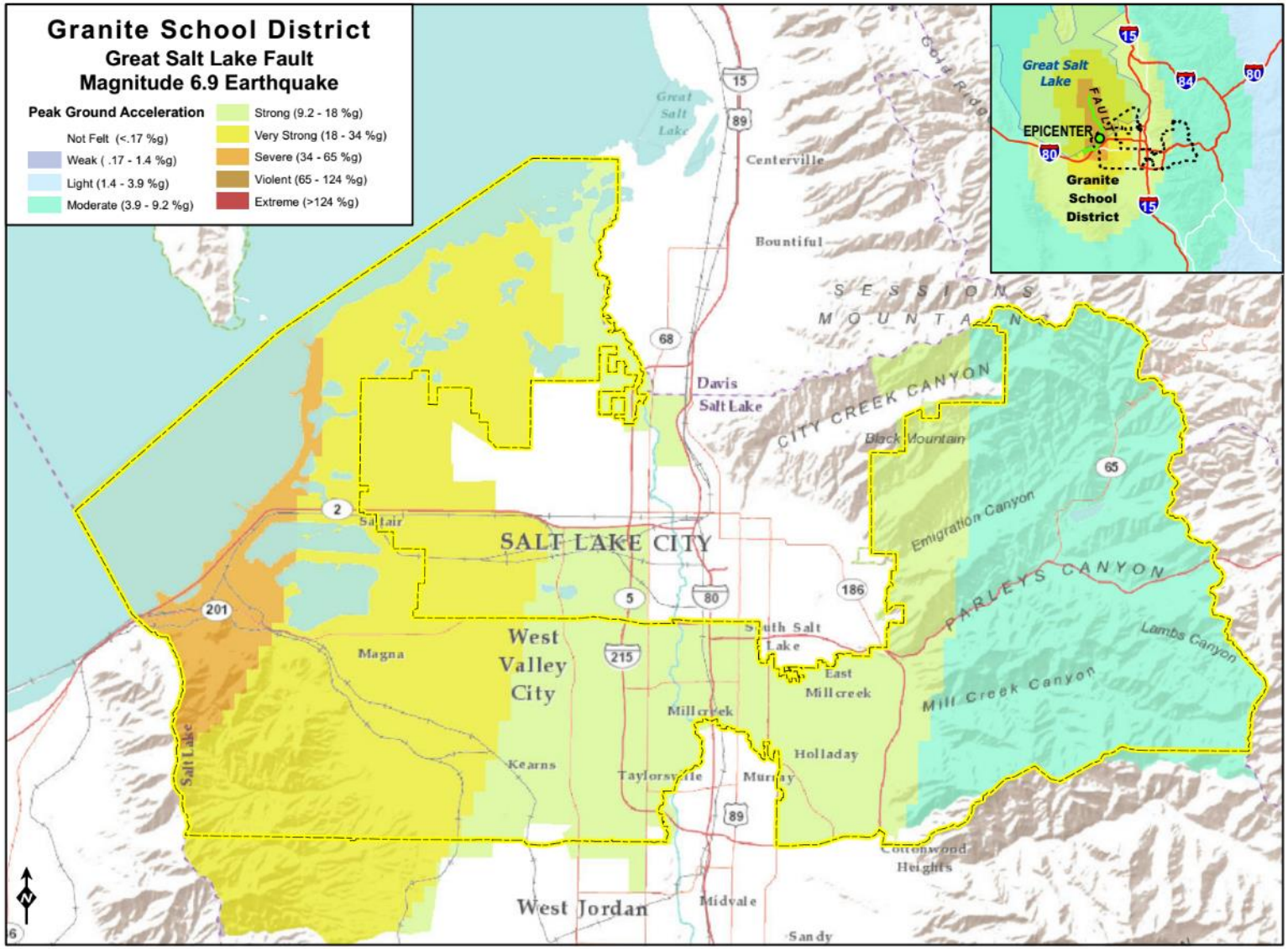
Economic Losses

The total economic loss estimated for the Great Salt Lake Fault M.6.9 earthquake scenario is **$509.17 million dollars** which includes building and lifeline related losses based on the region's available inventory. The following tables provide more detailed information about these losses.

Table: Economic Losses ($ Dollars) – Great Salt Lake Fault M.6.9

Category	Estimated Loss ($)
Income	$73,133,700
Capital Stock	$400,411,200
Transportation Systems	$6,811,200
Utility Systems	$28,808,800
TOTAL	**$509,164,900**

Map: Shake Intensity Map – Great Salt Lake Fault M.6.9
(Source: Carolyn Harshman - Emergency Planning Consultants)



Taylorsville M6.5 Earthquake Scenario

Building Damage

Table: Expected Building Damage Taylorsville M6.5

Damage Extent	None	Slight	Moderate	Extensive	Complete
Total	**62,659**	**30,693**	**15,467**	**4,064**	**1,130**

Transportation and Utility Lifeline Damage

Table: Expected Utility System Pipeline Damage – Taylorsville M6.5

System	Total Pipelines (Length km)	Number of Leaks	Number of Breaks
Potable Water	15,015	1,487	372
Waste Water	9,009	1,065	266
Natural Gas	6,006	306	76
Oil	0	0	0

Table: Potable Water and Electric Power System Performance – Taylorsville M6.5

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	**131,327**	5,567	3,717	1,115	0	0
Electric Power		18,557	10,726	3,964	697	27

Shelter Requirement

HAZUS estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 2,933 households to be displaced due to the earthquake. Of these, 2,140 people (out of a total population of 404,346) will seek temporary shelter in public shelters.

Casualties

The table below represents a summary of casualties estimated for the Taylorsville M6.5 earthquake scenario.

Table: Casualty Estimates – Taylorsville M6.5

Time	Level 1	Level 2	Level 3	Level 4
2 AM	686	142	17	32
2 PM	1,158	287	45	83
5 PM	870	231	77	65

*

Level 1: Injuries will require medical attention but hospitalization is not needed.

Level 2: Will require hospitalization but are not considered life-threatening.

Level 3: Will require hospitalization and can become life threatening if not promptly treated.

Level 4: Victims are killed by earthquake.

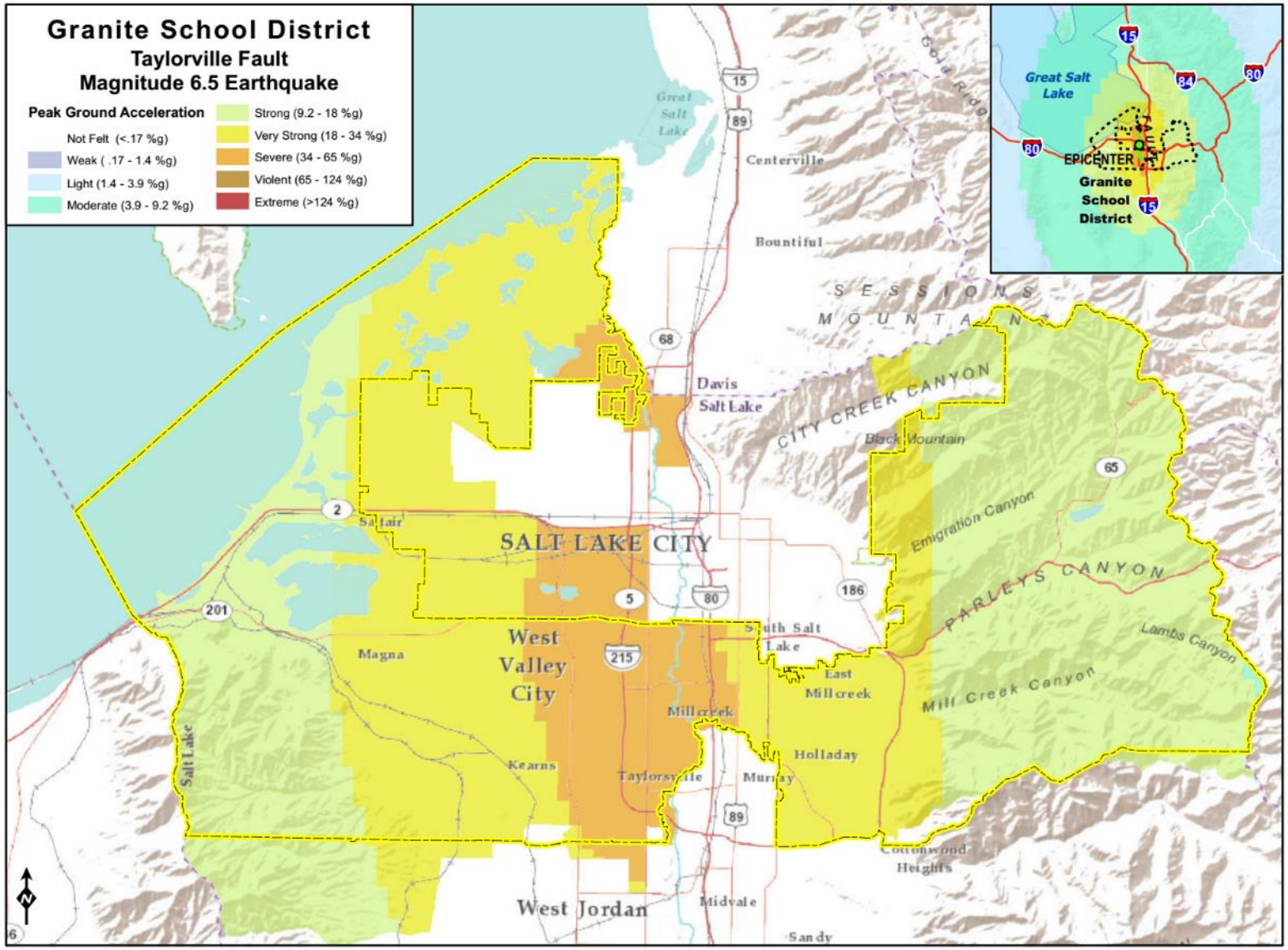
Economic Losses

The total economic loss estimated for the Taylorsville M6.5 earthquake scenario is **$3.3 Billion dollars** which includes building and lifeline related losses based on the region's available inventory. The following tables provide more detailed information about these losses.

Table: Economic Losses ($ Dollars) – Taylorsville M6.5

Category	Estimated Loss ($)
Income	$533,287,300
Capital Stock	$2,606,897,600
Transportation Systems	$56,256,600
Utility Systems	$115,112,000
TOTAL	**$3,311,553,500**

Map: Shake Intensity Map – Taylorsville M6.5
(Source: Carolyn Harshman - Emergency Planning Consultants)



Wasatch Fault M7.1 Earthquake Scenario

Building Damage

Table: Expected Building Damage Wasatch Fault M7.1

Damage Extent	None	Slight	Moderate	Extensive	Complete
Total	**60,570**	**30,450**	**16,873**	**4,584**	**1,537**

Transportation and Utility Lifeline Damage

Table: Expected Utility System Pipeline Damage – Wasatch Fault M7.1

System	Total Pipelines (Length km)	Number of Leaks	Number of Breaks
Potable Water	15,015	2,076	519
Waste Water	9,009	1,488	372
Natural Gas	6,006	427	107
Oil	0	0	0

Table: Potable Water and Electric Power System Performance – Wasatch Fault M7.1

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	**131,327**	12,550	9,978	5,463	0	0
Electric Power		25,544	15,047	5,733	1,032	37

Shelter Requirement

HAZUS estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 4,356 households to be displaced due to the earthquake. Of these, 2,734 people (out of a total population of 404,346) will seek temporary shelter in public shelters.

Casualties

The table below represents a summary of casualties estimated for the Wasatch Fault M7.1 earthquake scenario.

Table: Casualty Estimates – Wasatch Fault M7.1

Time	Level 1	Level 2	Level 3	Level 4
2 AM	835	191	25	49
2 PM	1,561	417	68	127
5 PM	1,131	326	116	97

*

Level 1: Injuries will require medical attention but hospitalization is not needed.

Level 2: Will require hospitalization but are not considered life-threatening.

Level 3: Will require hospitalization and can become life threatening if not promptly treated.

Level 4: Victims are killed by earthquake.

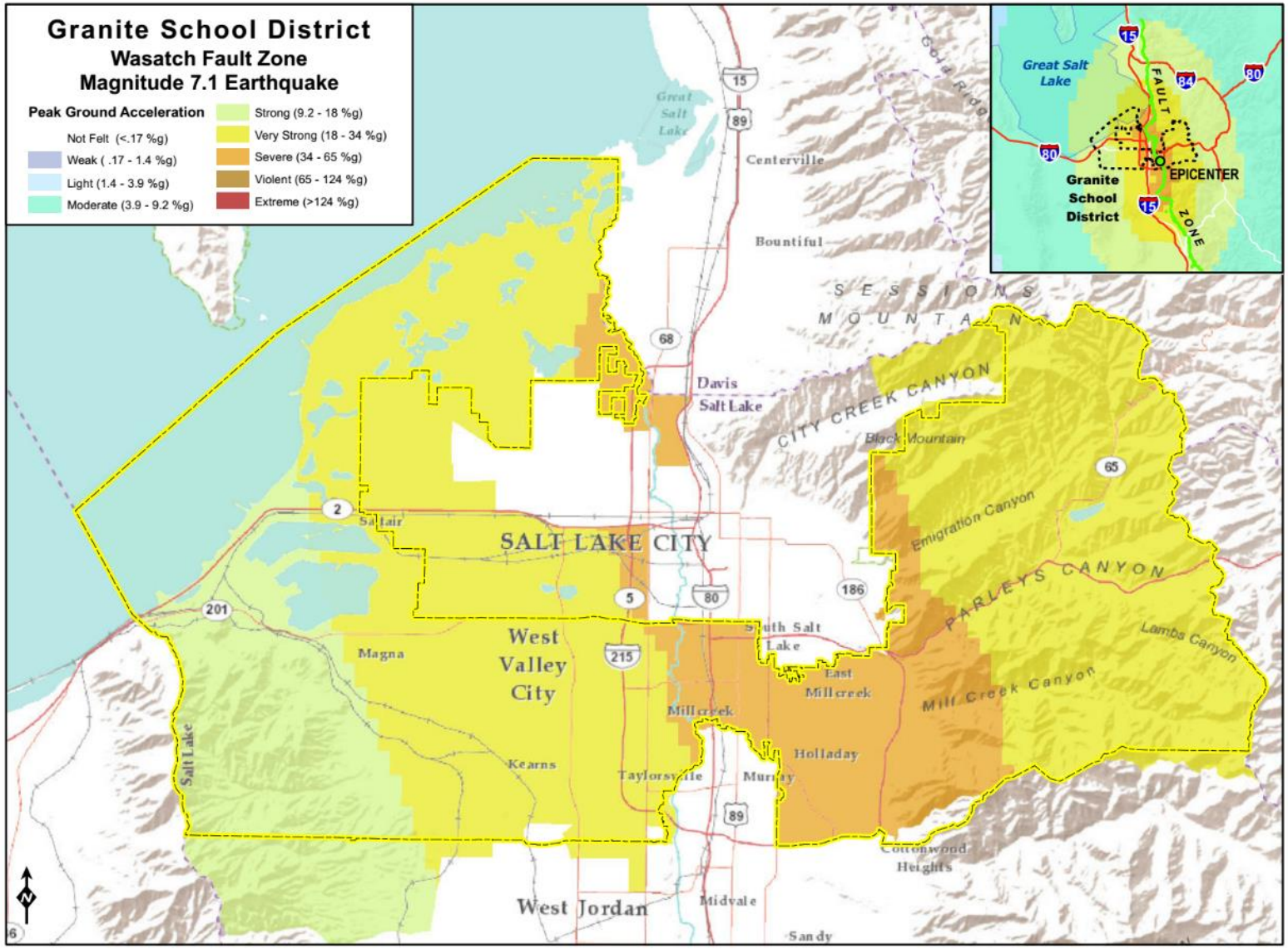
Economic Losses

The total economic loss estimated for the Wasatch Fault M7.1 earthquake scenario is **$3.96 Billion dollars** which includes building and lifeline related losses based on the region's available inventory. The following tables provide more detailed information about these losses.

Table: Economic Losses ($ Dollars) – Wasatch Fault M7.1

Category	Estimated Loss ($)
Income	$666,738,400
Capital Stock	$3,119,459,500
Transportation Systems	$71,017,300
Utility Systems	$105,890,500
TOTAL	**$3,963,105,700**

Map: Shake Intensity Map – Wasatch Fault M7.1
(Source: Carolyn Harshman - Emergency Planning Consultants)



Flood Hazards

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on **previous occurrences** of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Previous Occurrences of Flooding in the Granite School District** below.

Previous Occurrences of Flooding in the Granite School District

The following flood events are of notable significance that have impacted the Granite School District service area.

2011: Large snowpack meant larger resulting spring runoff flows

2010: Spring snowmelt combined with heavy rains caused several streams to overtop banks

1988: State Street flooding

1987: Great Salt Lake reached its all-time maximum water level (4,212 feet)

1983: Large snowpack was coupled with a rain-on-snow event

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1.

Q: Does the plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction (s)? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on previous occurrences of hazard events and on the **probability** of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3.

Q: Is there a description of each identified hazard's overall **vulnerability** (structures, systems, populations, or other community assets defined by the community that are identified as being susceptible to damage and loss from hazard events) for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Local Conditions** below.

Local Conditions

Although located in a semi-arid region, Salt Lake City is subject to flash flooding due to heavy rainfall and rapid snowmelt. The Federal Emergency Management Agency (FEMA) has rated floodplains along the Jordan River and its tributaries for expected flood heights and areas susceptible to 100-year flood-frequency inundation. Significant flood mitigation measures were implemented following the major floods of 1983-84 that greatly reduced the flood threat to Salt Lake City. Of the many causes for flooding Salt Lake City's most likely event is from post-fire debris flow flooding. Enhanced runoff conditions from a fire-damaged watershed can result in debris flow flooding. As fires burn, they destroy vegetation and leave soils in a hydrophobic state, resulting in greater peak flows.

Snowmelt Floods

These are caused by rapid spring snowmelt of mountain snowpack. Most times, intense spring rainfall assists the flood scenario, causing additional rapid river rises. These events can last for weeks during the spring (generally April-June). More damage is occurring over the years as a result of increased development near the riverbanks of mountain streams. Snowmelt risk is greatest when snowpack is at or above normal and/or accompanied by an abrupt warming trend.

Flash Floods

These are caused by intense thunderstorms and resultant intense rainfall. Intense rainfall may fall on areas of sparse vegetation, steep slopes, and impervious surfaces, and is then channeled into smaller waterways or conduits. Once the large volume of runoff begins to accumulate across the basin, it typically increases in volume and speed in a short time. Events are often short-lived, but very dangerous for those caught in a confined area, such as a canyon, during the time of the flood. Flash flooding has caused 32 fatalities in Utah since 1950 (NOAA, Know Your Risk). Areas of localized flooding may occur in urban areas not associated with existing waterways. Rain from high intensity thunderstorms may accumulate in low lying areas with no outlet or where storm drains have become overwhelmed.

Long-term Rainfall Events

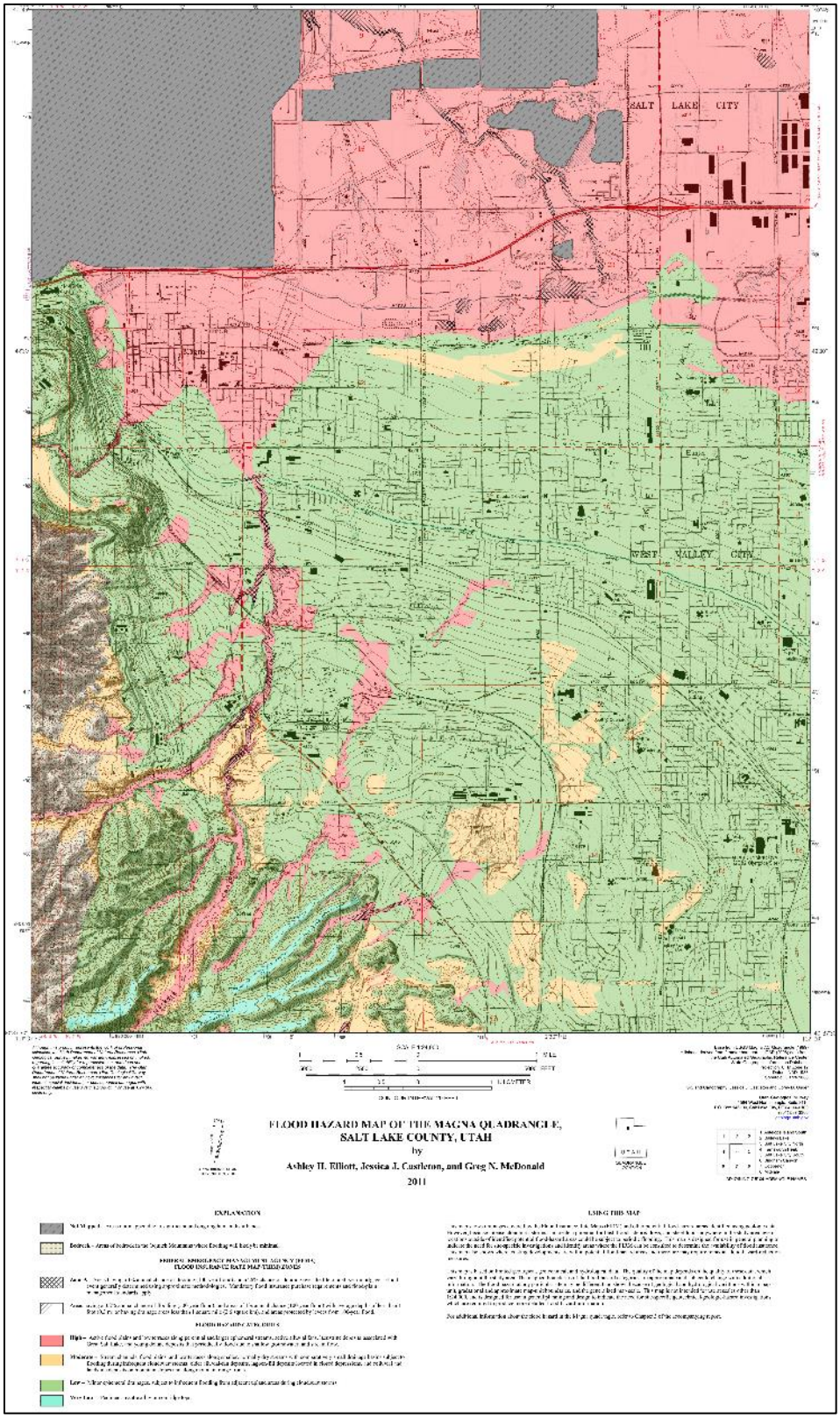
These rain events occur mostly in the fall or winter months and are produced by large synoptic weather systems originating out of the south, southwest, or west that produce rainfall for an extended period. Some melting of snow may occur as a result of the rainfall.

National Flood Insurance Program

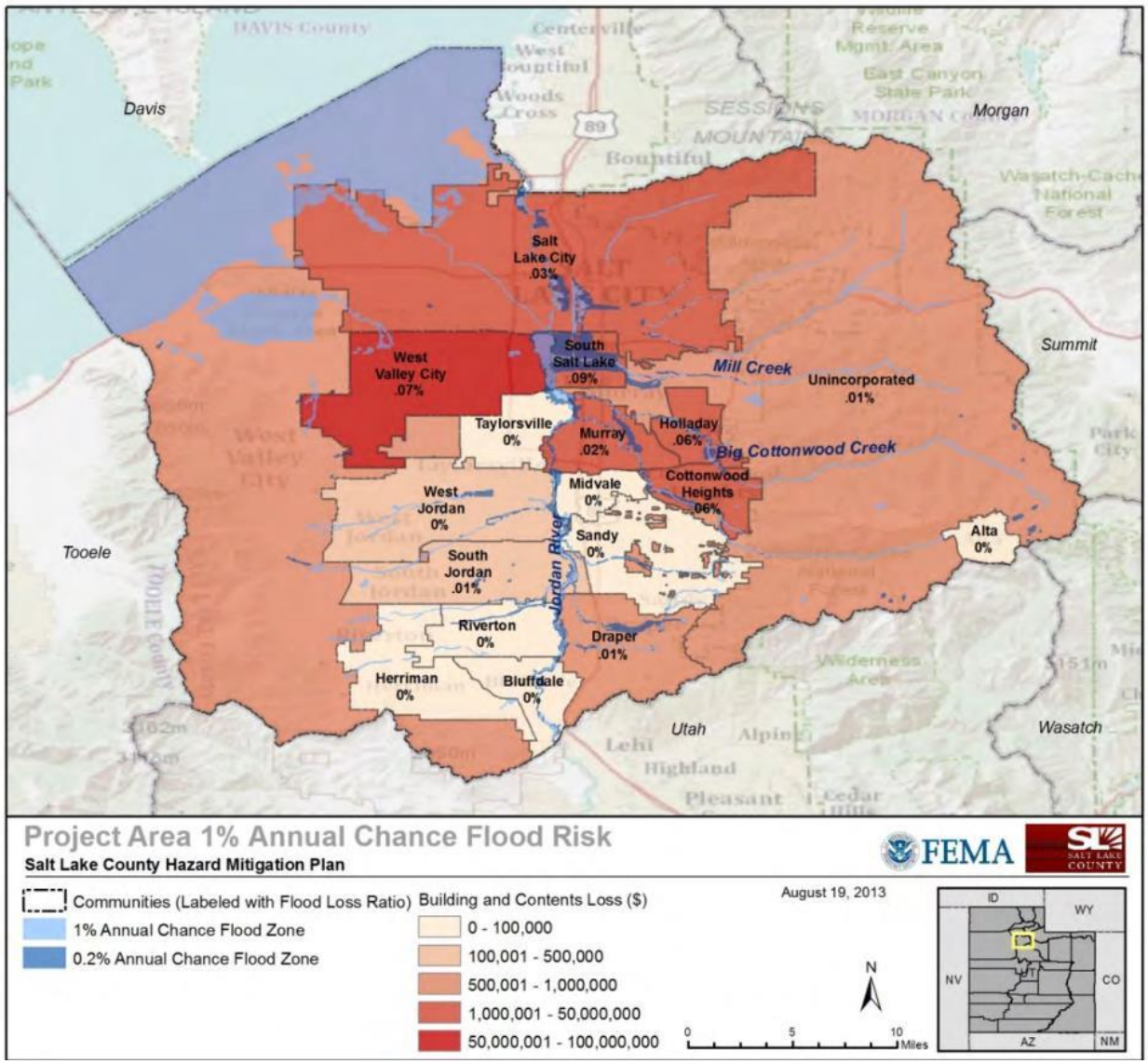
The Granite School District is self-insured and therefore does not participate in the National Flood Insurance Program (NFIP).

Salt Lake County, both the Unincorporated area and all of the municipal jurisdictions participate in the National Flood Insurance Program (NFIP). Created by Congress in 1968, the NFIP makes flood insurance available in communities that enact minimum floodplain management rules consistent with the Code of Federal Regulations §60.3.

Map: Flood Insurance Rate Map
(Source: FEMA Flood Map Service Center)



Map: Flood Risk Probability
(Source: Salt Lake County Hazard Mitigation Plan - 2015)



Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3.

Q: Is there a description of each identified hazard's **impact** on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Impact of Flooding in the Granite School District** below.

Impact of Flooding in the Granite School District

Floods and their impacts vary by location and severity of any given flood event, and likely only affect certain areas of the District during specific times. Based on the risk assessment, it is evident that floods will continue to have devastating impact to certain areas of the District.

Impact that is not quantified, but anticipated in future events includes:

- ✓ Injury and loss of life;
- ✓ Commercial and residential structural damage;
- ✓ Disruption of and damage to public infrastructure;
- ✓ Saturation of land and property;
- ✓ Erosion;
- ✓ Deposition of mud and debris;
- ✓ Secondary hazards include raw sewage, health risks (e.g. mold, mildew), electrical fires, gas spills;
- ✓ Damage to roads/bridges resulting in loss of mobility;
- ✓ Significant economic impact;
- ✓ Negative impact on commercial and residential property values; and
- ✓ Significant disruption to students and teachers as temporary facilities and relocations would likely be needed.

Wildfire Hazards

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on **previous occurrences** of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Previous Occurrences of Wildfire in the Granite School District** below.

Previous Occurrences of Wildfire in the Granite School District

Fortunately, there have been no wildfire outbreaks within the boundaries of the District. However, bordering areas are highly prone to wildfires and, therefore, the District is exposed to a threat from wildfires starting in the wildland-urban interface and foothills.

Photo: Milford Flat Fire, 2007
Source: AP Photo/The Salt Lake Tribune, Chris Detrick

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1.

Q: Does the plan include a **description** of the type, location, and extent of all natural hazards that can affect each jurisdiction (s)? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

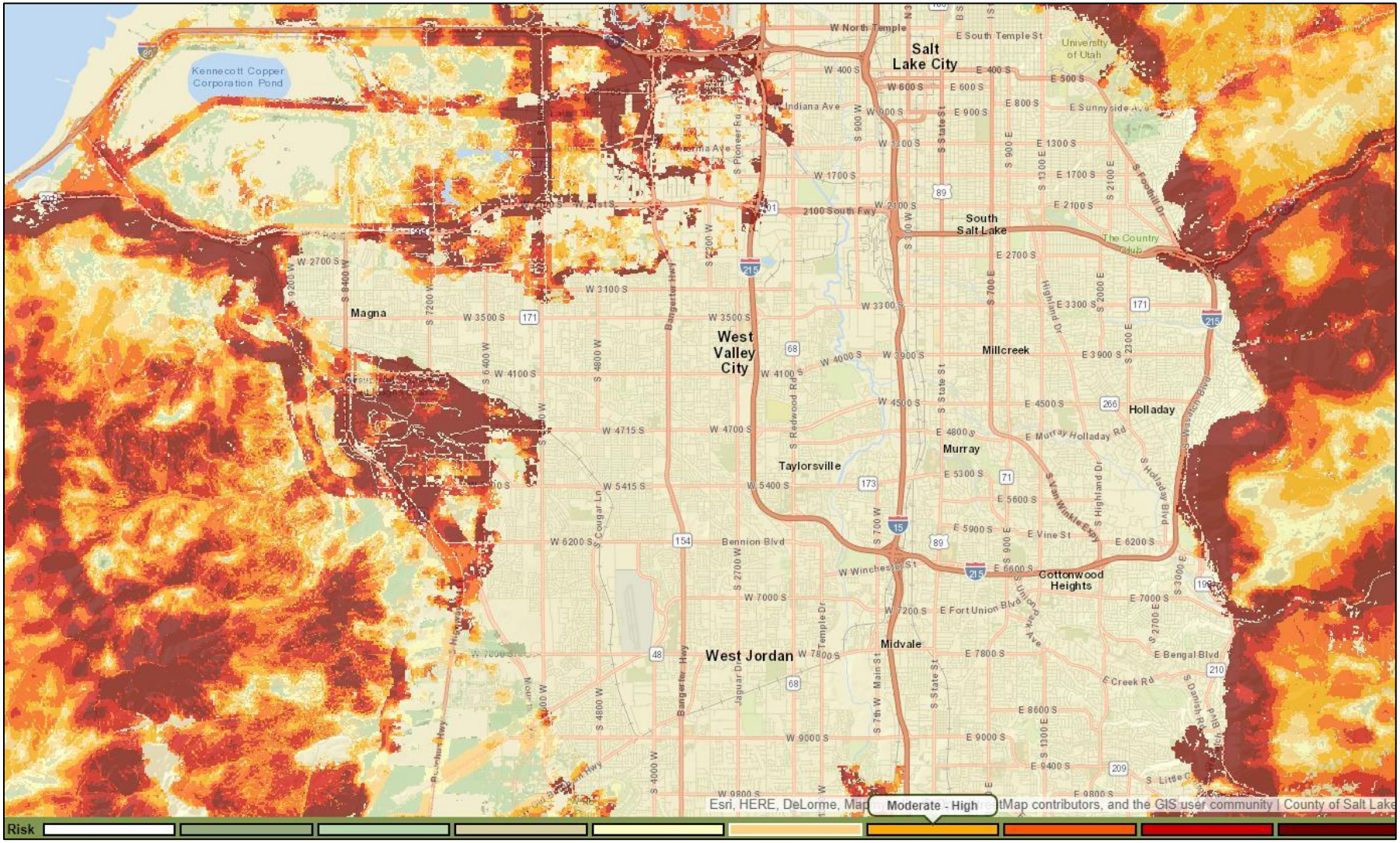
Q: Does the plan include information on previous occurrences of hazard events and on the **probability** of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Local Conditions

The portions of the District that could experience significant amount of destruction due to a wildland fire includes the foothills and the bench areas on or near the Wasatch Range. These wildland-urban interface areas are threatened most because of the amount of forested lands and the increasing population growth spreading into the foothills. Another concern is vegetation type in these areas such as sagebrush, mountain scrub oak, cheat grass, pinion and juniper trees, and rural and riparian vegetation. Sagebrush and mountain shrub burn hot and fast, spreads easily and is found throughout the county. During prime burning conditions (hot, dry and windy) the pinion juniper class will burn.

Map: Wildfire Risk shows the majority of the District closest to the foothills is considered to be at special risk to wildfires.

Map: Wildfire Risk
(Source: Utah Wildfire Risk Assessment Portal)



Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3.

Q: Is there a description of each identified hazard's **impact** on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Impact of Wildfire in the Granite School District** below.

Impact of Wildfire in the Granite School District

Wildfires and their impact vary by location and severity of any given wildfire event and will likely impact only certain areas of the District during specific times. Based on the risk assessment, it is evident that wildfires will have a potentially devastating impact to certain areas of the District.

Impact that is not quantified, but anticipated in future events includes:

- ✓ Injury and loss of life;
- ✓ Commercial and residential structural damage;
- ✓ Disruption of and damage to public infrastructure;
- ✓ Secondary health hazards e.g. mold and mildew
- ✓ Damage to roads/bridges resulting in loss of mobility;
- ✓ Significant economic impact;
- ✓ Negative impact on commercial and residential property values;
- ✓ Removal of vegetation that protects soil from excessive rainfall and resulting runoff;
- ✓ Damages soil by making the soil hydrophobic (water repellent;
- ✓ Secondary hazards include landslides, debris flows/flash floods, erosion, increase in traffic accidents, air pollution;
- ✓ Significant disruption to students and teachers as temporary facilities and relocations would likely be needed.

Avalanche Hazards

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on **previous occurrences** of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Previous Occurrences of Avalanches in the Granite School District** below.

Previous Occurrences of Avalanches in the Granite School District

Although Avalanches have impacted neighboring regions, the Granite School District has not been directly impacted by an avalanche event.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1.

Q: Does the plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction (s)? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

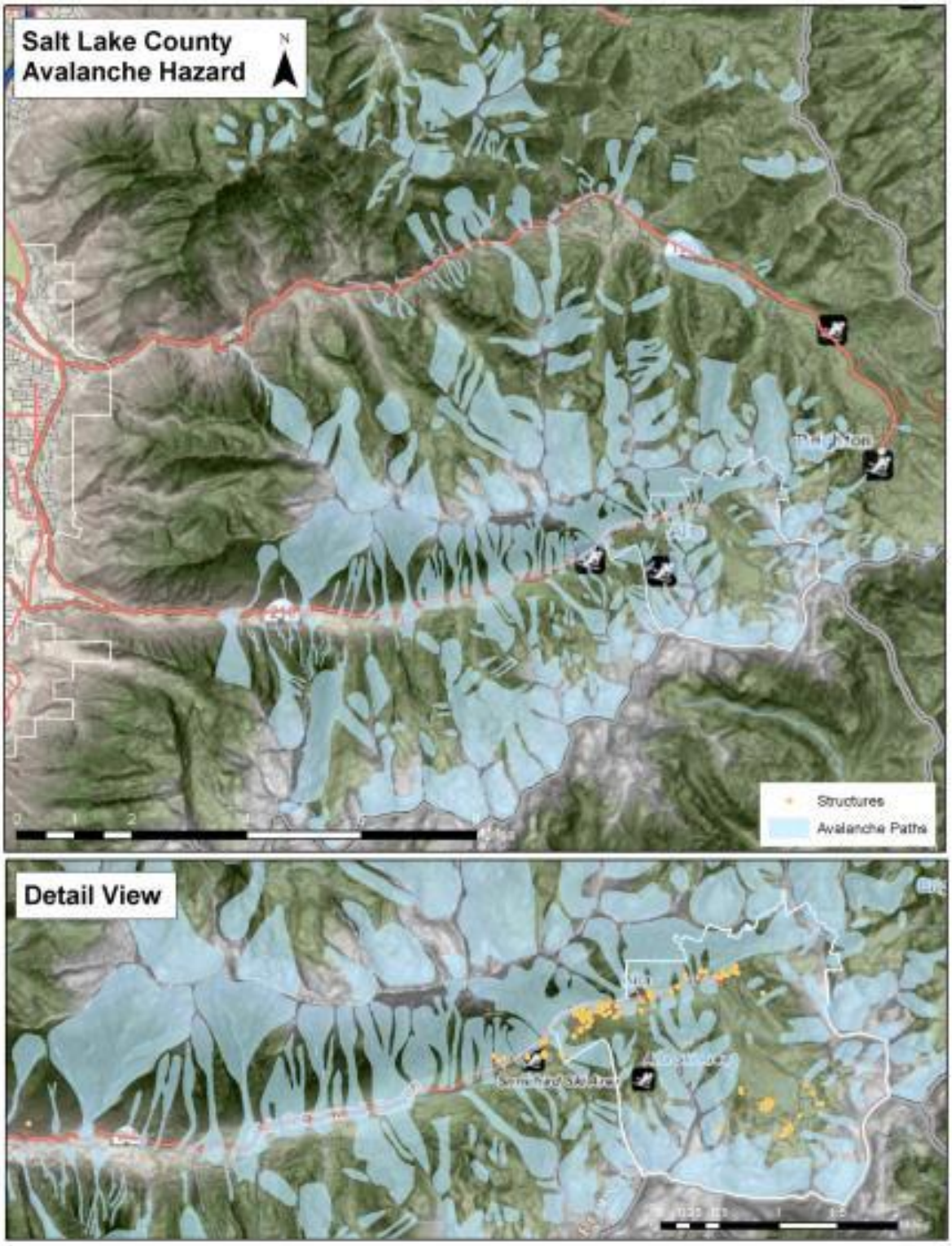
Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on previous occurrences of hazard events and on the **probability** of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

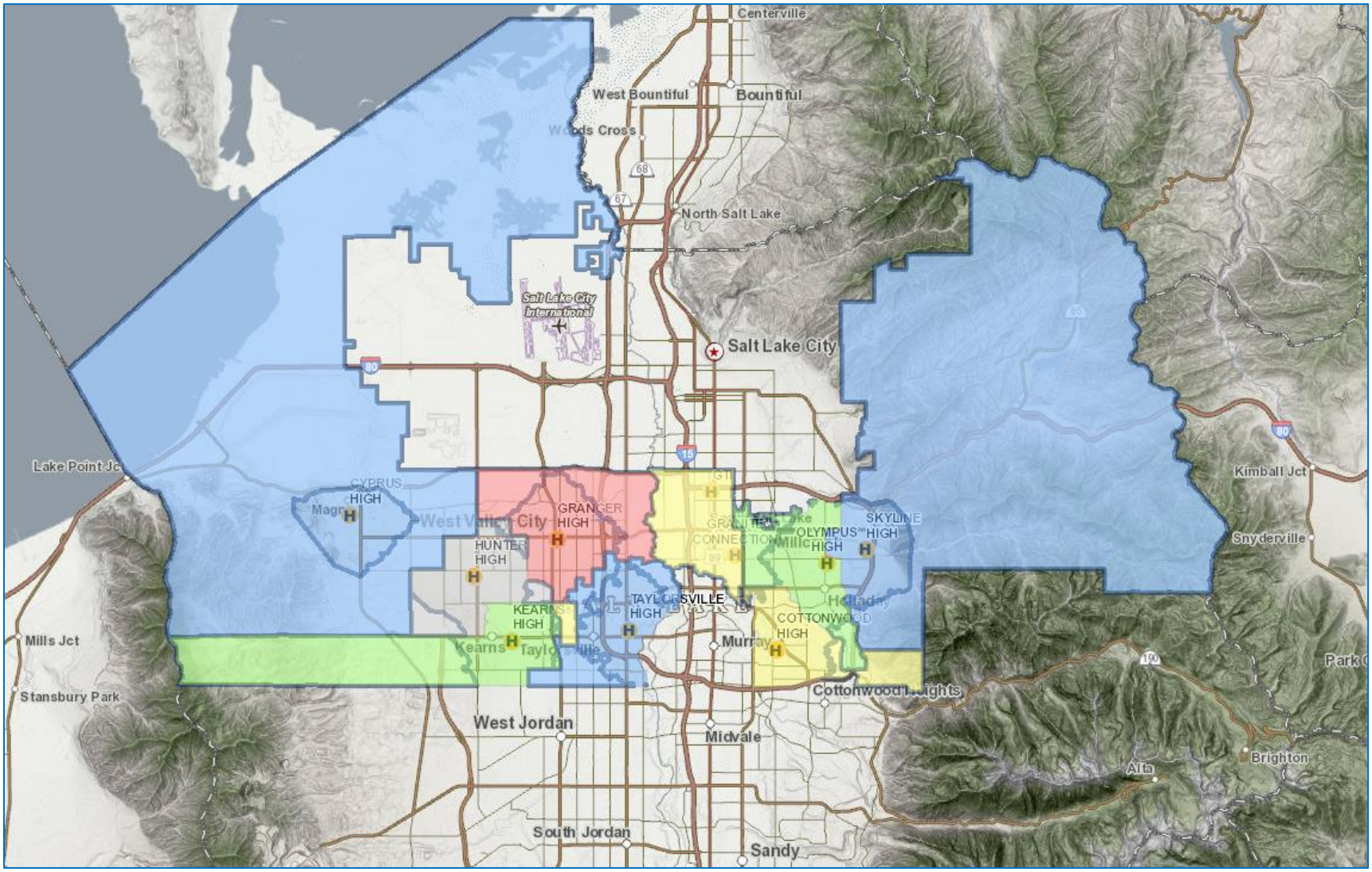
Local Conditions

The **Map: Avalanche Hazards** identifies areas on the eastern side of Granite School District that are considered at highest risk for Avalanches. Although no school locations are located within the avalanche hazard zone, the district has bus routes that extend east on I-80 into areas of high avalanche risk.

Map: Avalanche Hazards
(Source: Salt Lake County Multi-Jurisdictional Multi-Hazard Mitigation Plan, 2015)



Map: Bus Eligibility Locations
(Source: Granite School District)



Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3.

Q: Is there a description of each identified hazard's **impact** on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Impact of Avalanches in the Granite School District** below.

Impacts of Avalanches in the Granite School District

Based on the risk assessment, it is evident that Avalanches continue to have potentially devastating impact to certain areas of the District.

Impacts that is not quantified, but can be anticipated in future events, include:

- ✓ Injury and loss of life;
- ✓ Commercial and residential structural damage;
- ✓ Disruption of and damage to public infrastructure (including communications);
- ✓ Damage and blockage of roads, bridges, and streams;
- ✓ Significant economic impact;
- ✓ Negative impact on commercial and residential property values;
- ✓ Traffic restrictions and limited access to and from canyon communities;
- ✓ Significant disruption to bussing of students to and from impacted area.

Landslide Hazards

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on **previous occurrences** of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Previous Occurrences of Landslides in the Granite School District** below.

Previous Occurrences of Landslides in the Granite School District

Although landslides have impacted areas north of Salt Lake City, the Granite School District has not been directly impacted by a landslide event.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1.

Q: Does the plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction (s)? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on **previous occurrences** of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Local Conditions

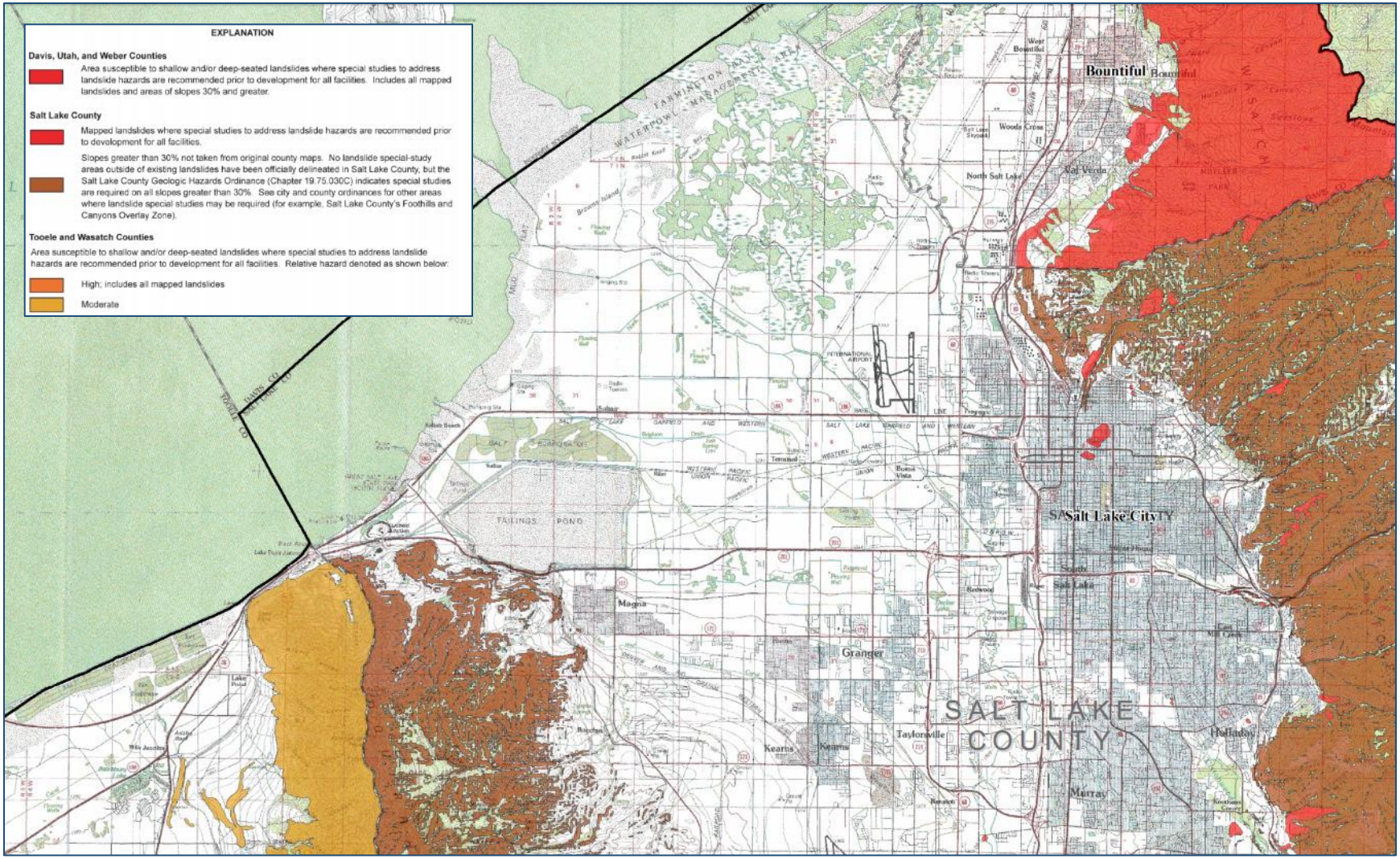
Landslides are most common in the foothills along the base of the Wasatch Mountain Range from wet climatic conditions. As urbanization spreads into geologically unstable areas the risk to life and property increases.

There are portions of hillside within the District that would be susceptible to landslides as a result of various events such as long periods of rain, exposed hillside as a result of a fire, or earthquake. The **Map: Landslide Hazards** identifies areas in the Granite School District that are considered at highest risk for landslides.

1983-1984

During the unusually wet springs of 1983 and 1984, numerous landslides in the Wasatch Range resulted in debris flows and floods that caused extensive damage to urban areas north of Salt Lake City. Similar failures occurred in canyons adjacent to Salt Lake City, but none reached developed areas.

Map: Landslide Hazards
(Source: Salt Lake County Multi-Jurisdictional Multi-Hazard Mitigation Plan - 2015)



Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3.

Q: Is there a description of each identified hazard's **impact** on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Impact of Landslides in the Granite School District** below.

Impacts of Landslides in the Granite School District

Based on the risk assessment, it is evident that landslides continue to have potentially devastating impact to certain areas of the District.

Impacts that is not quantified, but can be anticipated in future events, include:

- ✓ Injury and loss of life;
- ✓ Commercial and residential structural damage;
- ✓ Disruption of and damage to public infrastructure;
- ✓ Damage to roads/bridges resulting in loss of mobility;
- ✓ Significant economic impact;
- ✓ Negative impact on commercial and residential property values;
- ✓ Greatest damage from rock falls has been to roads, railroads, and above-ground pipelines;
- ✓ Greatest damage from debris flows has been to buildings, bridges, roads, railroads, and pipelines;
- ✓ Secondary hazards include flooding (natural dams) and increase in traffic accidents;
- ✓ Significant disruption to students and teachers as temporary transportation, facilities, and relocations would likely be needed.

Severe Weather Hazards

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on **previous occurrences** of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Previous Occurrences of Severe Weather in the Granite School District** below.

Previous Occurrences of Severe Weather in the Granite School District

Severe weather poses a significant risk to life and property in the Granite School District by creating conditions that disrupt essential systems such as public utilities, telecommunications, and transportation routes.

According to the Planning Team, the most damaging severe weather event occurred in January 1993. A record 23.3 inches of snow fell between a five-day span from Jan 6-10 in Salt Lake City, shutting down government offices, school districts and businesses. The National Guard was called in to help shovel, plow and haul snow. A total of 8 million dollars was spent on snow removal alone. The District spent $9,500 to clear District-owned properties covered with more than 2 inches of snow.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1.

Q: Does the plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction (s)? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on previous occurrences of hazard events and on the **probability** of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Local Conditions

Heavy Precipitation

Heavy amounts of precipitation from rain or snow can result in flash flood events. The Wasatch Front has been susceptible to these types of storms because of close proximity to the mountain ranges. Major winter storms can produce five to ten times the amount of snow in the mountains than in the valley locations. Heavy snow can cause a secondary hazard in avalanches.

Much of the region's development has occurred on old alluvial fans from the canyon mouths. During heavy rain events, water and debris collect on these same alluvial fans, damaging residential, commercial property and infrastructure.

Tornado

A tornado is a “violently rotating column of air extending from a thunderstorm to the ground”. Some tornadoes can have wind speeds greater than 250 mph with damage zone 50 miles long and greater than a mile wide. Although they are less common, an average of 3 tornadoes per year occurs in Utah. Examples are the Salt Lake City tornado in 1999 and the Manti tornado in 2002. Most tornadoes in Utah typically have winds less than 110 mph (F2 or smaller), and no wider than 60 feet and are on the ground no longer than a few minutes.

Historically, atmospheric conditions have not been favorable for tornado development in Utah due to a dry climate and mountainous terrain. Utah is one of the lowest ranked in the nation for incidences of tornadoes with only one F2 or stronger tornado every seven years. Utah averages about two tornados per year, which typically occur between May and August.

Despite this fact, interactions of the relatively cool air of the Great Salt Lake and relatively warm air of urban areas could create situations more favorable for tornado development. This phenomenon possibly contributed to the formation of the August 1999 Salt Lake City tornado. The $170 million in damages caused by this tornado make it the costliest disaster in Salt Lake County history.

Lightning

Lightning has claimed 65 lives in Utah since 1950, more than any other severe weather-related hazard. Lightning is also the primary cause of wildland fires in Utah, which could cause casualties or be disruptive to the economy.

High Winds

High winds can occur with or without the presence of a storm and are unpredictable. The District has experienced high winds in the past and can expect future events.

Straight line winds produced by thunderstorms are any winds not associated with the rotation of a tornado. Straight line winds are responsible for most thunderstorm wind damage, and speeds can exceed 125 mph.

Utah has also experienced down slope wind events, which occur when wind generated as a deep layer of air is forced over a barrier. Winds accelerate down mountain slopes and generate high winds in a wave region formed at the base of the terrain. Canyon winds can bring wind gusts greater than 100 mph through the canyon mouths into the populated areas of the Wasatch Front.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3.

Q: Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Impact of Severe Weather in the Granite School District** below.

Impacts of Severe Weather in the Granite School District

Based on the risk assessment, it is evident that severe weather will continue to have potentially devastating impact to certain areas of the District.

Impacts that is not quantified, but can be anticipated in future events, include:

- ✓ Injury and loss of life;
- ✓ Commercial and residential structural damage;
- ✓ Disruption of and damage to public infrastructure;
- ✓ Secondary Health hazards e.g. mold and mildew;
- ✓ Damage to roads/bridges resulting in loss of mobility;
- ✓ Significant economic impact upon the District;
- ✓ Negative impact on commercial and residential property values;
- ✓ Secondary hazards include wildfires and flooding;
- ✓ Significant disruption to students and teachers as temporary facilities and relocations would likely be needed.

Dam Failure Hazards

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on **previous occurrences** of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Previous Occurrences of Dam Failure in the Granite School District** below.

Previous Occurrences of Dam Failure in the Granite School District

The Granite School District has not been affected by a release/failure of any of the dam facilities identified in **Table: Dams Near Granite School District**.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1.

Q: Does the plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction (s)? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on previous occurrences of hazard events and on the **probability** of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Local Conditions

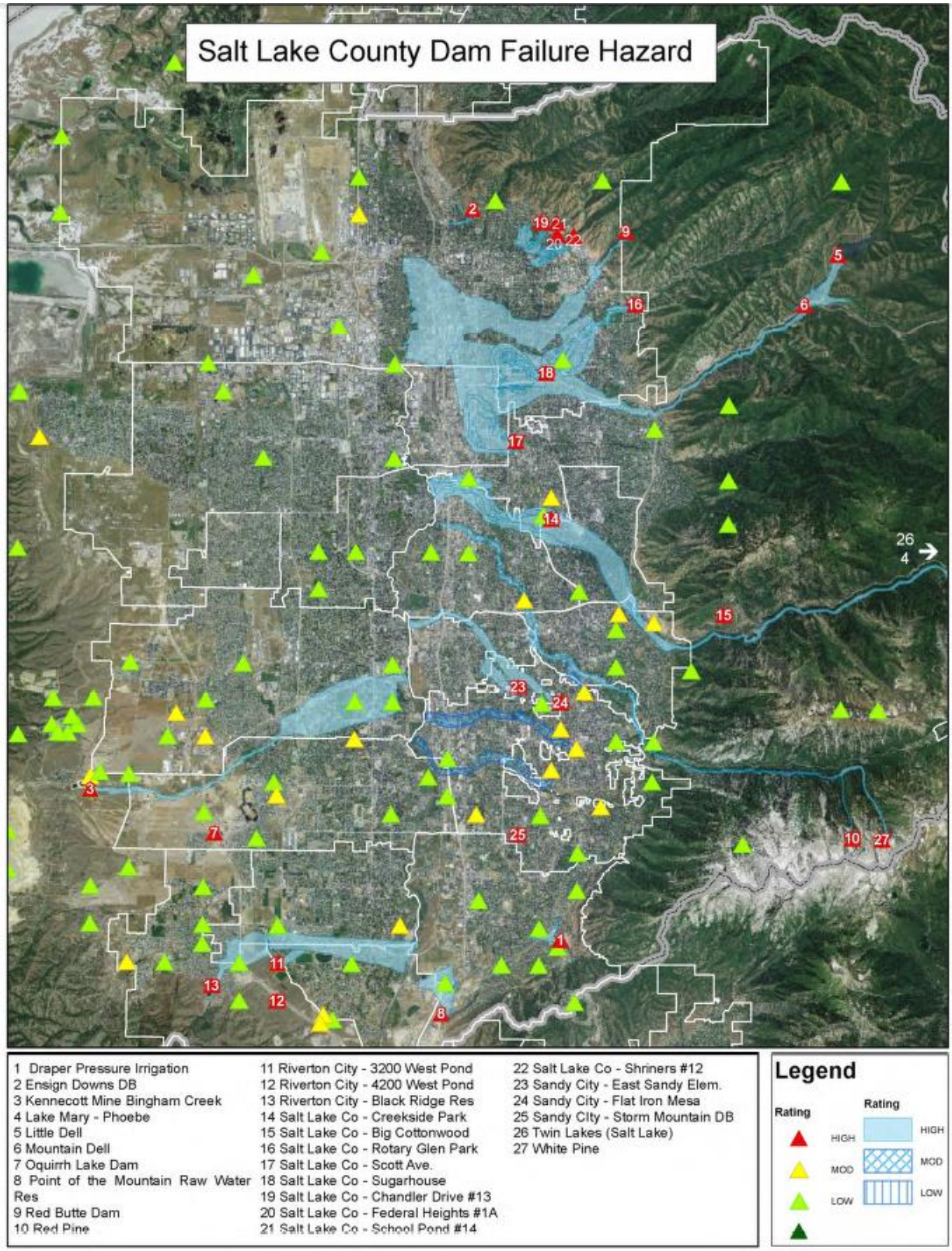
Loss of life and damage to structures, roads, and utilities may result from a dam failure. Economic losses also result from a lowered tax base and lack of utility profits. Because dam failure has severe consequences, FEMA requires that all dam owners develop Emergency Action Plans (EAP) for warning, evacuation, and post-flood actions. Although there may be coordination with county officials in the development of the EAP, the responsibility for developing potential flood inundation maps and facilitation of emergency response is the responsibility of the dam owner.

High Risk Dam Locations

According to the 2015 Salt Lake County Multi-Jurisdictional Multi-Hazard Mitigation Plan, the following dams have the highest risk of impacting the Granite School District. **Map: Dam Failure Hazards** below shows the potential water inundation impact zones from a potential dam failure of various dams in Salt Lake County, including the six listed below.

- Little Dell
- Mountain Dell
- Salt Lake Co – Creekside Park
- Salt Lake Co – Rotary Glen Park
- Salt Lake Co – Scott Ave.
- Salt Lake Co – Sugarhouse

Map: Dam Failure Hazards
(Source: Salt Lake County Multi-Jurisdictional Multi-Hazard Mitigation Plan - 2015)



Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3.

Q: Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Impact of Dam Failure in the Granite School District** below.

Impacts of Dam Failure in the Granite School District

Based on the risk assessment, it is evident that dam failures will continue to have potentially devastating impacts to certain areas of the District.

Impacts that are not quantified, but can be anticipated in future events, include:

- ✓ Injury and loss of life;
- ✓ Commercial and residential structural damage;
- ✓ Disruption of and damage to public infrastructure;
- ✓ Secondary health hazards e.g. mold and mildew;
- ✓ Damage to roads/bridges resulting in loss of mobility;
- ✓ Significant economic impact;
- ✓ Negative impact on commercial and residential property values;
- ✓ Flooding;
- ✓ Silting;
- ✓ Loss of water resources;
- ✓ Loss of property;
- ✓ Secondary hazards include raw sewage and associated health risks, electrical fires, gas spills;
- ✓ Significant disruption to students and teachers as temporary transportation routes, facilities, and relocations are needed.

Drought Hazards

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on **previous occurrences** of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Previous Occurrences of Drought in the Granite School District** below.

Previous Occurrences of Drought in the Granite School District

Fortunately, there is no history of severe drought (e.g. schools with restricted hours, emergency water distribution to District, residents, etc.) within the District. However, Utah is the second driest state in the nation. Drought dramatically affects this area because of the lack of water for agriculture and industry, which limits economic activity, irrigation and culinary uses. The severity of the drought results in depletion of agriculture lands and deterioration of soils. In the Wasatch Front region, the risk of drought is high.

The District views drought through the lens of how it may impact our daily activities and our ability to educate students. While regional drought is a concern for agriculture, municipal operations, etc., the District is primarily concerned with the delivery of culinary water. To the best of our knowledge, the Salt Lake Valley has not undergone culinary water restrictions. In general, the state of Utah uses between 3-6% of all water resources for culinary delivery. Over 80% is consumed by agriculture. The remainder is used for industrial, residential irrigation, and commercial uses. Given the prioritization of culinary consumption during protracted drought conditions, we do not anticipate there being operational disruptions at the District. We will anticipate some irrigation restrictions on playing fields, athletic fields, and general landscaping.

A 2015 article published by the Salt Lake Tribune article titled: "Salt Lake County schools trying to cut water use, bills" talks about water use of the county's school districts during this recent drought (this article was published in 2015, which is part of the current drought). Donald Adams, Assistant Superintendent – Support Services (and Planning Team Chair) was interviewed for the article. The article mentions that Granite School District is the largest school district in the county and used around 778 million gallons of water in 2014. Its water use is characterized as "high on total gallons but low on a per-acre basis." Donald stated that approximately 86% of the District's school are on automated sprinklers and that those sprinkler systems have rain gauges. The District also checks for leaks and faulty equipment regularly. The District was doing what it could to be "frugal" with its water use, which especially applies during the drought. The article in its entirety can be found here: https://archive.sltrib.com/article.php?id=2754202&itype=CMSID

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1.

Q: Does the plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction (s)? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on previous occurrences of hazard events and on the **probability** of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))

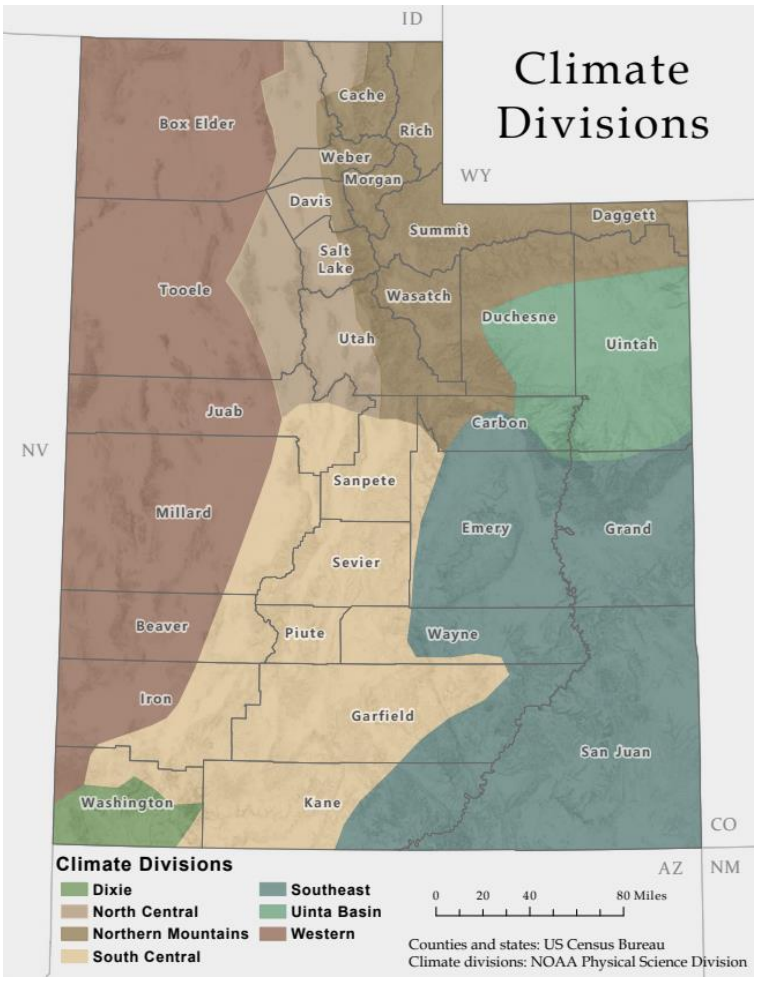
A: See **Local Conditions** below.

Local Conditions

The District can have large variance in temperature and precipitation from season to season. High heat and low precipitation as seen in the past can cause a shortage of water to the District, residents, and businesses in the area.

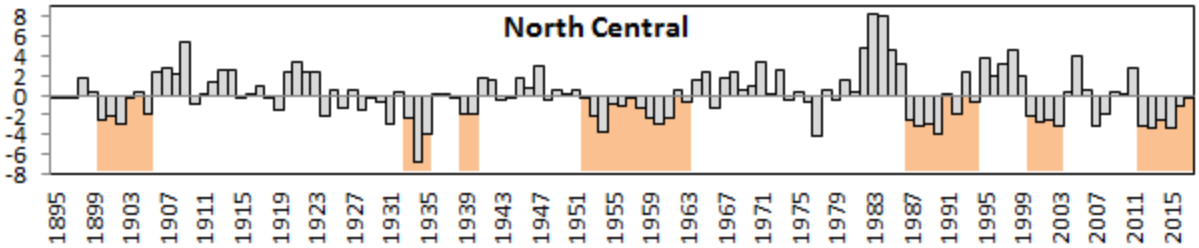
Although the drought has more significantly impacted surface waters and other agencies that use water for agriculture, the Granite School District is still affected by the drought, primarily due to reduced reliability of imported water.

Utah Climate Divisions
(Source: 2019 Utah State Hazard Mitigation Plan)



The Granite School District is within the boundaries of the North Central Climate Division of Utah. According to the State of Utah 2019 HMP, the North Central Climate Division has experienced 7 major multi-year droughts since 1895. The 7 major multi-year droughts include: 1900-1905, 1933-1936, 1939-1940, 1952-1963, 1987-1994, 2000-2003, and 2012- 2018. The current drought included some of the hottest and driest years on record. The recent drought conditions reached a threshold that triggered the State's statutory responsibility to convene Utah's Drought Review and Reporting Committee, which gathered on Sept. 10, 2018. On October 15, 2018 Governor Herbert issued an executive order declaring a State of Emergency due to statewide drought conditions.

The following Palmer Drought Severity Index (PDSI) graph of the North Central Climate Division (includes the District), shows the major multi-year droughts of the region from 1895-2017. The left side shows the PDSI value. The orange areas indicate the years of a major multi-year drought. A major drought was categorized as two consecutive years where the annual average PDSI values were less than or equal to -1.0. The drought was terminated when there were two consecutive years where the annual average PDSI value was greater than -0.5.



Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3.

Q: Is there a description of each identified hazard's **impact** on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Impact of Drought in the Granite School District** below.

Impacts of Drought in the Granite School District

Based on the risk assessment, it is evident that drought events continue to have potentially devastating impacts to certain areas of the District.

Impacts that are not quantified, but can be anticipated in future events, include:

- ✓ Injury and loss of life;
- ✓ Disruption of and damage to public infrastructure;
- ✓ Significant economic, social, and environmental impacts;
- ✓ Negative impact on commercial and residential property values;
- ✓ Agricultural community most heavily impacted;
- ✓ Secondary hazards include wildfire, dust storms, and air quality;
- ✓ Uncontrolled fires and associated injuries and damage.

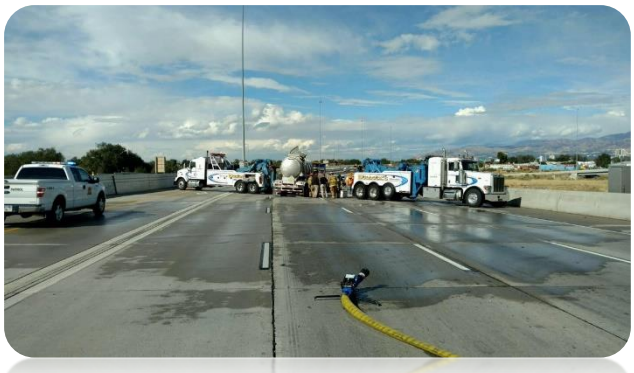
Hazardous Material Events

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on **previous occurrences** of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))

A: See **Previous Occurrence of Hazardous Material Events in the Granite School District** below.

Previous Occurrence of Hazardous Material Events in the Granite School District



Fortunately, the District's facilities have no history of a large-scale life-threatening hazardous material event.

However, emergency responders in Salt Lake County have continually recognized the need for hazardous materials emergency response and coordination capabilities. This is prompted by an increasing number of incidents, both locally and nationally, involving hazardous materials. Various hazardous materials are stored onsite at District facilities, nearby buildings, and transported along nearby roads and railways.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1.

Q: Does the plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction (s)? (Requirement §201.6(c)(2)(i))

A: See **Local Conditions** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on previous occurrences of hazard events and on the **probability** of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))

A: See **Local Conditions** below.

Local Conditions

Chemicals, petroleum products, explosives, radiological materials and other hazardous materials are commonly used and transported in and through Salt Lake County and the District. The use of improvised explosive devices in crimes is on the increase each year in the United States. Domestic terrorism conducted by Animal Rights and Environment groups is occurring in the intermountain west and in Utah.

The District has a number of major highways: I-15, I-215, I-80, US-89, SR-201, SR- 154, SR-68, which pose threats for potential hazardous incidents and accidents. Additionally, there are three

major rail lines that traverse the Salt Lake County, carrying both freight and passengers, creating unique hazmat scenarios. Salt Lake County is home to the Salt Lake International Airport and the South Valley Regional Airport. The Salt Lake International Airport (in 2015) was the 25th busiest airport in the United States, also carrying both passengers and freight. Multiple pipelines also wind through Salt Lake County, carrying different hazardous materials.

Also, industry throughout the county is making technological changes that include an ever-increasing number of sophisticated hazardous materials processes. Transportation through Salt Lake County of hazardous materials by rail, highway, air, and pipeline present a totally different situation when an accidental release occurs.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3.

Q: Is there a description of each identified hazard's **impact** on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Impact of Hazardous Material Events in the Granite School District** below.

Impacts of Hazardous Material Events in the Granite School District

Based on the risk assessment, it is evident that hazardous material events continue to have potentially devastating impacts to certain areas of the District.

Impacts that are not quantified, but can be anticipated in future events, include:

- ✓ Potential for fires and explosions;
- ✓ Disruption of transportation systems;
- ✓ Destruction of utilities and other public services;
- ✓ Damage to public infrastructure and facilities;
- ✓ Residential displacement, including evacuations;
- ✓ Individuals trapped and injured in unsafe conditions;
- ✓ Health issues related to discharges or releases;
- ✓ Need for emergency food, shelter, and medical care;
- ✓ Economic impacts, both short and long-term;
- ✓ Water pollution and quality degradation.

Human-Caused Events

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on **previous occurrences** of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Previous Occurrences of Human-Caused Events in the Granite School District** below.

Previous Occurrences of Human-Caused Events in the Granite School District

The Granite School District has no history of any serious life-threatening human-caused hazard events.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1.

Q: Does the plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction (s)? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on previous occurrences of hazard events and on the **probability** of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Local Conditions

Terrorism

Terrorism is the use of force or violence against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion or ransom. Terrorists often use threats to create fear among the public, to try to convince citizens that their government is powerless to prevent terrorism, and to get immediate publicity for their causes. The Federal Bureau of Investigation (FBI) categorizes terrorism in the United States as one of two types: domestic terrorism or international terrorism.

> ***Domestic Terrorism*** *- involves groups or individuals whose terrorist activities are directed at elements of our government or population without foreign direction.*
>
> ***International Terrorism*** *- involves groups or individuals whose terrorist activities are foreign- based and/or directed by countries or groups outside the United States or whose activities transcend national boundaries.*

A terrorist attack can take several forms, depending on the technological means available to the terrorist, the nature of the political issue motivating the attack, and the points of weakness of the terrorist's target. Bombings are the most frequently used terrorist method in the United States.

Other possibilities include an attack at transportation facilities, an attack against utilities, other public services or an incident involving chemical or biological agents.

Cyber Terrorism

Cyber terrorism is the act of Internet terrorism in terrorist activities, including acts of deliberate, large-scale disruption of computer networks, especially of personal computers attached to the Internet, by the means of tools such as computer viruses. Cyber terrorism can be also defined as the intentional use of computer, networks, and public internet to cause destruction and harm for personal objectives.

Active Shooter

There are no reported events of an active shooter in Granite School District; however, several schools throughout the United States have witnessed tragic active shooting incidents in recent years. On February 14, 2018, seventeen students and staff at Marjory Stoneman Douglas High School in Parkland, Florida were fatally shot and seventeen others were wounded, making the shooting one of the deadliest school massacres in the United States, surpassing the Columbine High School massacre as the worst high school shooting in the United States.

The Sandy Hook Elementary School shooting on December 14, 2012 was the result of an active shooter. In this incident, a single man shot and killed 20 children and six staff at the school. Additionally, on February 14, 2018 a 19-year old gunman killed 17 students and injured 17 others at Douglas High School in Parkland, FL.

An active shooter event could occur at any place, any time. Local law enforcement will generally be the first responder and should maintain trained personnel to handle these situations.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3.

Q: Is there a description of each identified hazard's **impact** on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Impact of Human-Caused Events in the Granite School District** below.

Impacts of Human-Caused Events in the Granite School District

Based on the risk assessment, it is evident that Human-Caused events continue to have potentially devastating impacts to certain areas of the District.

Impacts that are not quantified, but can be anticipated in future events, include:

- ✓ Injury and loss of life;
- ✓ Disruption of and damage to public infrastructure;
- ✓ Secondary fires and explosions;
- ✓ Economic impacts (jobs, sales, tax revenue) upon the community;
- ✓ Significant demands on emergency services.

Utility-Related Events

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on **previous occurrences** of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Previous Occurrences of Utility-Related Events in the Granite School District** below.

Previous Occurrences of Utility-Related Events in the Granite School District

The District was most recently impacted by a power outage due to high winds on November 27, 2017 that impacted 10 of the District's school in the Holladay/Millcreek area.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B1.

Q: Does the plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction (s)? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B2.

Q: Does the plan include information on previous occurrences of hazard events and on the **probability** of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
A: See **Local Conditions** below.

Local Conditions

Power Failure

Power failure is defined as any interruption or loss of electrical service caused by disruption of power transmission caused by accident, sabotage, natural hazards, or equipment failure (also referred to as a loss of power or power outage). A significant power failure is defined as any incident of a long duration, which would require the involvement of the local and/or State emergency management organizations to coordinate provision of food, water, heating, cooling, and shelter. Power failures in Utah are usually localized and are usually the result of a natural hazard event involving high winds or ice storms. Electricity throughout the District is provided by Rocky Mountain Power, part of PacifiCorp.

Drought/Water Shortages

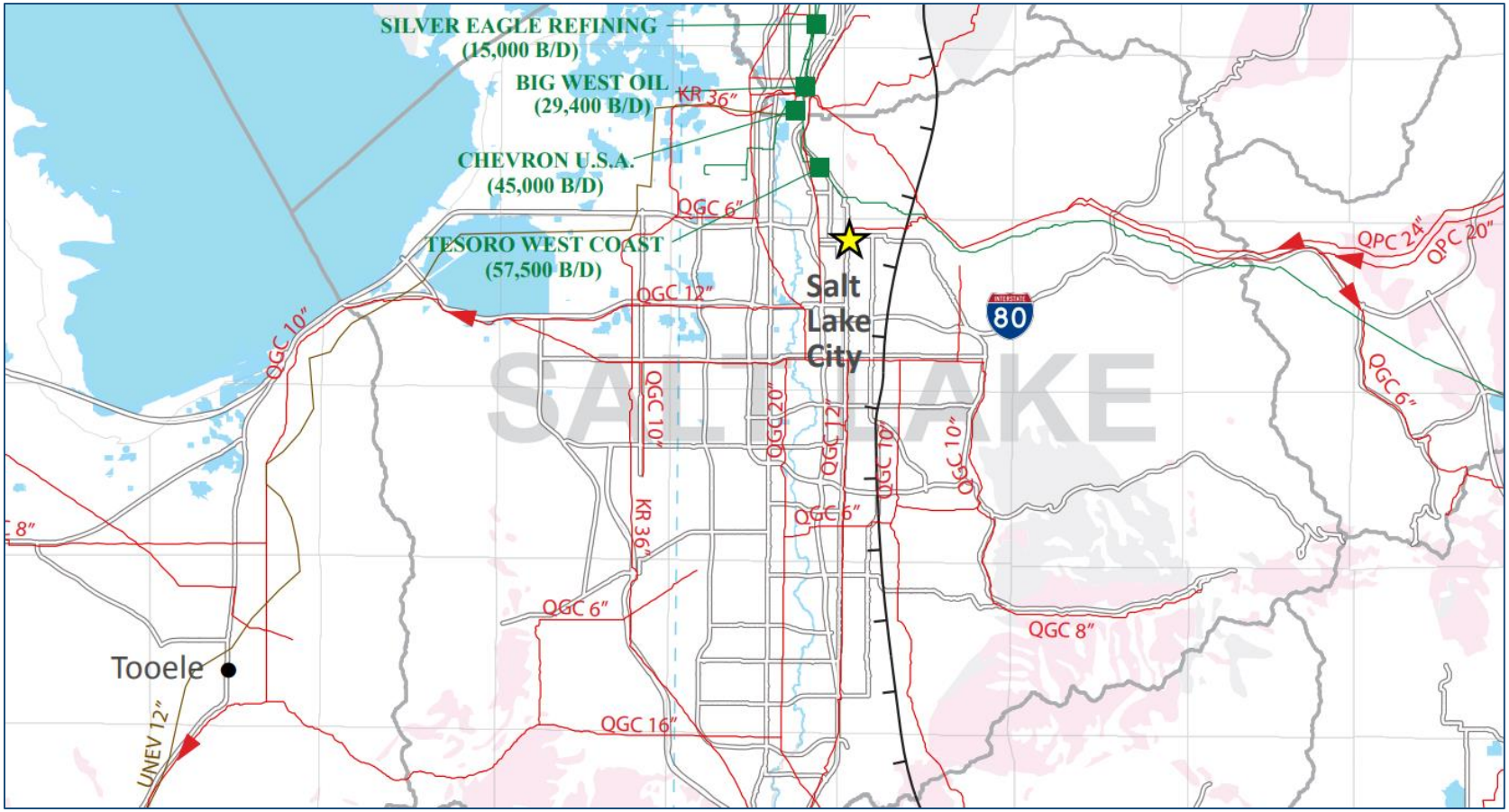
According to the Utah Hazard Mitigation Plan (2014), Utah is the second driest state in the nation. Despite experiencing significantly less precipitation than the rest of the United States, Utah has one of the highest water usage rates in the nation. According to the Utah State University Center for Water Efficient Landscaping, Utahns consume 269 gallons of water per capita per day. The national average is only 179 gallons per capita per day. Droughts may create water shortages throughout the District, and cause strains on water availability to homes and local businesses.

Water is provided to the District by Granger Hunter, Jordan Valley, Salt Lake Metro Water, Kearns Improvement District, and Magna.

Natural Gas Pipelines

There are several major natural gas pipelines that traverse the District as shown on **Map: Natural Gas Pipelines**. While pipelines are often thought of as presenting risks to communities, natural hazards can impact the integrity of pipelines. According to the U.S. Department of Transportation, although natural hazards are cited as the cause in fewer than ten percent (10%) of pipeline incidents, the failure of a large-diameter, high-pressure natural gas or hazardous liquid transmission pipeline during an earthquake can significantly complicate a communities' ability to respond and recover from the event. Natural gas is supplied to the District by Questar Gas Company.

Map: Natural Gas Pipelines
(Source: Utah Geological Survey)



NNOG 16" Crude oil

QPC 20" Natural gas

CHEVPL 16" Carbon dioxide

EP 16" Natural gas processing plant or refinery products

Q&A | ELEMENT B: HAZARD IDENTIFICATION AND RISK ASSESSMENT | B3.

Q: Is there a description of each identified hazard's **impact** on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Impact of Utility-Related Events in the Granite School District** below.

Impacts of Utility-Related Events in the Granite School District

Based on the risk assessment, it is evident that Utility-Related events will continue to have potentially devastating impacts to certain areas of the District.

Impacts that are not quantified, but can be anticipated in future events, include:

- ✓ Injury and loss of life;
- ✓ Disruption of and damage to public infrastructure;
- ✓ Significant economic impact;
- ✓ Negative impact on commercial and residential property values.

PART III: MITIGATION STRATEGIES

Mitigation Strategies

Overview of Mitigation Strategy

As the cost of damage from natural disasters continues to increase nationwide, the Granite School District recognizes the importance of identifying effective ways to reduce vulnerability to disasters. Mitigation Plans assist communities in reducing risk from natural hazards by identifying resources, information and strategies for risk reduction, while helping to guide and coordinate mitigation activities throughout the District.

The plan provides a set of action items to reduce risk from natural hazards through education and outreach programs, and to foster the development of partnerships. Further, the plan provides for the implementation of preventative activities, including programs that restrict and control development in areas subject to damage from natural hazards.

The resources and information within the Mitigation Plan:

1. Establish a basis for coordination and collaboration among agencies and the public in the Granite School District;
2. Identify and prioritize future mitigation projects; and
3. Assist in meeting the requirements of federal assistance programs

Mitigation Measure Categories

Following is FEMA's list of mitigation categories. The activities identified by the Planning Team are consistent with the six broad categories of mitigation actions outlined in FEMA publication 386-3 *Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies*.

- ✓ **Prevention:** Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations.
- ✓ **Property Protection:** Actions that involve modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- ✓ **Public Education and Awareness:** Actions to inform and educate citizens, property owners, and elected officials about hazards and potential ways to mitigate them.

  Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- ✓ **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses preserve or restore the functions of natural systems. Examples include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

- ✓ **Emergency Services:** Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities.
- ✓ **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, levees, floodwalls, retaining walls, and safe rooms.

Q&A | ELEMENT C. MITIGATION STRATEGY | C3

Q: Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))

A: See **Goals** below.

Goals

The Planning Team developed mitigation goals to avoid or reduce long-term vulnerabilities to hazards. These general principles clarify desired outcomes.

The goals are based on the risk assessment and Planning Team input and represents a long-term vision for hazard reduction or enhanced mitigation capabilities. They are compatible with community needs and goals expressed in other planning documents prepared by the District.

Each goal is supported by mitigation action items. The Planning Team developed these action items through its knowledge of the local area, risk assessment, review of past efforts, identification of mitigation activities, and qualitative analysis.

The five mitigation goals and descriptions are listed below.

FEMA defines **Goals** as general guidelines that explain what you want to achieve. They are usually broad policy-type statements, long-term, and represent global visions.

FEMA defines **Mitigation Activities** as specific actions that help you achieve your goals and objectives.

Protect Life and Property

Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural, human-caused, and technological hazards.

Improve hazard assessment information to make recommendations for avoiding new development in high hazard areas and encouraging preventative measures for existing development in areas vulnerable to natural, human-caused, and technological hazards.

Enhance Public Awareness

Develop and implement education and outreach programs to increase public awareness of the risks associated with natural, human-caused, and technological hazards.

Provide information on tools; partnership opportunities, and funding resources to assist in implementing mitigation activities.

Preserve Natural Systems

Support management and land use planning practices with hazard mitigation to protect life.

Preserve, rehabilitate, and enhance natural systems to serve hazard mitigation functions.

Encourage Partnerships and Implementation

Strengthen communication and coordinate participation with public agencies, citizens, non-profit organizations, business, and industry to support implementation.

Encourage leadership within the District and public organizations to prioritize and implement local and regional hazard mitigation activities.

Strengthen Emergency Services

Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.

Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.

Coordinate and integrate hazard mitigation activities where appropriate, with emergency operations plans and procedures.

The Planning Team also developed hazard-specific mitigation goals, which appear in the **Mitigation Strategies Section**.

How are the Mitigation Action Items Organized?

The action items are a listing of activities in which District agencies and citizens can be engaged to reduce risk. Each action item includes an estimate of the timeline for implementation.

The action items are organized within the following **Mitigation Actions Matrix**, which lists all of the multi-hazard (actions that reduce risks for more than one specific hazard) and hazard-specific action items included in the mitigation plan. Data collection and research and the public participation process resulted in the development of these action items. The Matrix includes the following information for each action item:

Q&A | ELEMENT C. MITIGATION STRATEGY | C6.

Q: Does the plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))

A: See **Funding Source** below.

Funding Source

The action items can be funded through a variety of sources, possibly including operating budget/general fund, development fees, Community Development Block Grant (CDBG), Hazard Mitigation Grant Program (HMGP), other Grants, private funding, bonds, and other funding opportunities.

Coordinating Agency

The Mitigation Actions Matrix assigns primary responsibility for each of the action items. The hierarchies of the assignments vary – some are positions, others are departments, and other committees. The primary responsibility for implementing the action items falls to the entity shown as the "Coordinating Agency". The coordinating agency is the agency with regulatory responsibility to address hazards, or that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring, and evaluation. Coordinating agencies may include local, County, or regional agencies that are capable of or responsible for implementing activities and programs.

Timeline

The Mitigation Plan is in effect for a period of 5 years at which time a FEMA-mandated update will be funded, scheduled, and completed. Each of the action items is assigned a timeline (months, years) within the 5-year span of the Plan however it's perfectly acceptable for long-range action items like capital improvements to run well beyond the 5-year life of the Plan. Also note that many action items indicate "ongoing" which indicates it is a continuing practice of the District and that it will continue into the future.

Plan Goals Addressed

The plan goals addressed by each action item are included as a way to monitor and evaluate how well the mitigation plan is achieving its goals once implementation begins.

The plan goals are organized into the following five areas:

- ✓ Protect Life and Property
- ✓ Enhance Public Awareness
- ✓ Preserve Natural Systems
- ✓ Encourage Partnerships and Implementation
- ✓ Strengthen Emergency Services

Building and Infrastructure

This addresses the issue of whether or not a particular action item results in the reduction of the effects of hazards on new and existing buildings and infrastructure.

Q&A | ELEMENT C. MITIGATION STRATEGY | C6.

Q: Does the plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))

A: See **Planning Mechanism** below.

Planning Mechanism

It's important that each action item be implemented. Perhaps the best way to ensure implementation is through integration with one or many of the District's existing "planning mechanisms" including the General Fund, Grants, and Bonds. Opportunities for integration will be simple and easy in cases where the action item is already compatible with the content of the planning mechanism. The District does not have a Capital Improvement Program, which could play an important role in ensuring implementation of the Mitigation Actions Matrix.

Grants come from a wide variety of sources – some annually and other triggered by events like disasters. Whatever the source, the District uses the General Fund to identify successful grants as funding sources. Bond measures voted in by a majority of the voters are also administered through the General Fund.

Q&A | ELEMENT C. MITIGATION STRATEGY | C5.

Q: Does the plan identify the position, office, department, or agency responsible for implementing and administering the action/project, potential funding sources and expected timeframes for completion? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))

A: See **Benefit/Cost Ratings** below.

Benefit/Cost Ratings

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

Cost ratings were defined as follows:

> **High:** Existing jurisdictional funding will not cover the cost of the action item so other sources of revenue would be required.
>
> **Medium:** The action item could be funded through existing jurisdictional funding but would require budget modifications.

Low: The action item could be funded under existing jurisdictional funding.

Benefit ratings were defined as follows:

High: The action item will provide short-term and long-term impacts on the reduction of risk exposure to life and property.

Medium: The action item will have long-term impacts on the reduction of risk exposure to life and property.

Low: The action item will have only short-term impacts on the reduction of risk exposure to life and property.

Q&A | ELEMENT C. MITIGATION STRATEGY | C5.

Q: Does the plan identify the position, office, department, or agency responsible for implementing and administering the action/project, potential funding sources and expected timeframes for completion? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))

A: See **Priority Rating** below.

Priority Rating

Going beyond rating "benefit and cost", the Planning Team adopted the following process for rating the "priority" of each mitigation action item. Designations of "High", "Medium", and "Low" priority have been assigned to each action item using the following criteria:

Does the Action:

- ☐ solve the problem?
- ☐ address Vulnerability Assessment?
- ☐ reduce the exposure or vulnerability to the highest priority hazard?
- ☐ address multiple hazards?
- ☐ benefits equal or exceed costs?
- ☐ implement a goal, policy, or project identified in the Capital Improvement Plan?

Can the Action:

- ☐ be implemented with existing funds?
- ☐ be implemented by existing state or federal grant programs?
- ☐ be completed within the 5-year life cycle of the HMP?
- ☐ be implemented with currently available technologies?

Will the Action:

- ☐ be accepted by the community?
- ☐ be supported by community leaders?
- ☐ adversely impact segments of the population or neighborhoods?
- ☐ require a change in local ordinances or zoning laws?
- ☐ positive or neutral impact on the environment?
- ☐ comply with all local, state and federal environmental laws and regulations?

Is there:

- ☐ sufficient staffing to undertake the project?
- ☐ existing authority to undertake the project?

As mitigation action items were updated or written the Planning Team, representatives were provided worksheets for each of their assigned action items. Answers to the criteria above determined the priority according to the following scale.

- 1-6 = Low priority
- 7-12 = Medium priority
- 13-18 = High priority

Q&A | ELEMENT C. MITIGATION STRATEGY | C1.

Q: Does the plan document each jurisdiction's existing authorities, policies, programs, and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3)

A: See **Mitigation Actions Matrix** below.

Q&A | ELEMENT C. MITIGATION STRATEGY | C3.

Q: Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))

A: See **Mitigation Actions Matrix** below.

Q&A | ELEMENT C. MITIGATION STRATEGY | C4.

Q: Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))

A: See **Mitigation Actions Matrix** below.

Q&A | ELEMENT C. MITIGATION STRATEGY | C5.

Q: Does the plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))

A: See **Mitigation Actions Matrix** below.

Q&A | ELEMENT C. MITIGATION STRATEGY | C5.

Q: Does the plan identify the position, office, department, or agency responsible for implementing and administering the action/project, potential funding sources and expected timeframes for completion? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))

A: See **Mitigation Actions Matrix** below.

Q&A | ELEMENT C. MITIGATION STRATEGY | C6.

Q: Does the plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))

A: See **Mitigation Actions Matrix** below.

Mitigation Actions Matrix

Following is **Table: Mitigation Actions Matrix** which identifies the existing and future mitigation activities developed by the Planning Team.

Table: Mitigation Actions Matrix

Item Identifier	Mitigation Action Item	Coordinating Agency	Timeline	**Goal**: Protect Life and Property	**Goal**: Public Awareness	**Goal**: Natural Systems	**Goal**: Emergency Services	**Goal:** Partnerships and Implementation	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Funding Source:** GF- General Fund, GR-Grant	**Planning Mechanism:** GF-General Fund, GR-Grant	**Benefit:** L-Low, M-Medium, H-High	**Cost:** L-Low, M-Medium, H-High	**Priority:** L-Low, M-Medium, H-High
Multi-Hazard Action Items														
MH-1	Test electrical power mains. Locate gas, electrical and water on map.	Gas Co, Water Jurisdiction, Maintenance	Ongoing	X	X		X		Y	GF	GF	M	L	M
MH-2	Fund and hire a consultant to complete a Continuity of Operations Plan.	Supervisor Office, Asst. Superintendent	1-2 years	X			X	X		GR	GR	M	H	H
MH-3	Provide public education to community describing all types of hazards, methods for preventing damages resulting from hazardous conditions, and how to respond when a hazard threatens.	Communications	Ongoing	X	X					GF	GF	L	L	H
MH-4	Emergency response personnel need to be trained and plan for various contingencies and	Support Services	1-3 years	X			X	X		GR, GF	GR, GF	L	M	M

Item Identifier	Mitigation Action Item	Coordinating Agency	Timeline	**Goal**: Protect Life and Property	**Goal**: Public Awareness	**Goal**: Natural Systems	**Goal**: Emergency Services	**Goal:** Partnerships and Implementation	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Funding Source:** GF- General Fund, GR-Grant	**Planning Mechanism:** GF-General Fund, GR-Grant	**Benefit:** L-Low, M-Medium, H-High	**Cost:** L-Low, M-Medium, H-High	**Priority:** L-Low, M-Medium, H-High
	response activities, such as evacuation, traffic control, search, and rescue.													
MH-5	Encourage parents and staff to prepare themselves by understanding their local hazards, stocking up with necessary items, and planning for how family members should respond if any of a number of possible emergency or disaster events strike.	Police, HR	1-5 years	X	X					GF	GF	H	L	M
MH-6	Ensure adequacy of emergency communications by coordinating with local HAM Operators.	Police	1 year	X	X		X	X	Y	GF	GF	H	L	H
MH-7	Develop an Emergency Response Plan template for use by each campus and facility.	Police	1-2 years	X	X		X	X	Y	GR	GR	H	L	H
MH-8	Protect buildings and infrastructure by using new technology to create or increase structural stability.	Support Services	Ongoing	X	X	X	X	X	Y	GF, GR	GF, GR	H	L	H
MH-9	Inventory existing back-up power capabilities. Ensure heating and air conditioning systems are included in the assessment.	Maintenance	1-5 years				X	X	Y	GF	GF	M	L	M
MH-10	Retrofit schools and facilities with secondary heat fuel(s).	Support Services	1-5 years	X	X	X	X	X	Y	GR	GR	H	M	H

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MH-11	To protect against water shortage from damage, drought, or frozen pipes, stockpile bottled water cache for deliver and/or storage at schools and facilities.	Foods	1 year	X	X	X	X	X		GF, GR	GF, GR	H	L	H
MH-12	Adopt and enforce building code and development standards.	Support Services	Ongoing	X		X		X	Y	GF	GF	H	L	H
Earthquake Action Items														
EQ-1	Address non-structural hazards. Activities that can reduce the risk of injury and damage include: anchoring tall bookcases and file cabinets, installing latches on drawers and cabinet doors, restraining desktop computers and appliances, using flexible connections on gas and water lines, mounting framed pictures and mirrors securely, and anchoring and bracing propane tanks and gas cylinders.	Compliance, Maintenance	1-3 years	X	X			X	Y	GF	GF	H	H	H
EQ-2	Identification and securing critical lifeline systems including water, sewer, electricity, and gas.	Construction & Engineering	1-10 years	X				X	Y	GR	GR	H	H	H
EQ-3	Investigate additional earthquake insurance.	Risk Management	1 year	X					Y	GF	GF	L	L	L

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EQ-4	Ensure all retrofit projects for public buildings and critical facilities includes anchoring roof-mounted heating, ventilation, and air conditioning units.	Support Services, Maintenance	1-10 years	X	X	X	X	X	Y	GR	GR	H	M	M
EQ-5	Adopt and enforce updated building codes in order to reduce earthquake damage risk.	Support Services, Maintenance	1-10 years	X	X	X	X	X	Y	GR	GR	H	M	M
EQ-6	Protect critical facilities and infrastructure from future seismic events by conducting seismic retrofitting for critical public facilities most at risk to earthquakes. Also, by requiring bracing of generators and elevators.	Support Services, Maintenance	1-10 years	X	X	X	X	X	Y	GR	GR	H	M	M
EQ-7	Protect critical facilities and infrastructure from future seismic events by requiring bracing of generators and elevators.	Support Services, Maintenance	1-10 years	X	X	X	X	X	Y	GR	GR	H	M	M
EQ-8	Protect critical facilities and infrastructure from future seismic events by installing shutoff valves and emergency connector hoses where water mains cross fault lines.	Support Services, Maintenance	1-10 years	X	X	X	X	X	Y	GR	GR	H	M	M
EQ-9	Conduct inspections of building safety by establishing a school survey to procedure and guidance document to inventory structural and	Support Services, Maintenance	1-10 years	X	X	X	X	X	Y	GR	GR	H	M	M

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	non-structural hazards in and around school buildings.													
Flood Action Items														
FLD-1	Elevate utilities or other mechanical devices above expected flood levels.	Maintenance	1-5 years	X		X			Y	GF	GF	M	M	M
FLD-2	Require building design standards and enforcement include that structures be elevated or floodproofed.	Support Services	1-5 years	X					Y	GF	GF	M	M	M
FLD-3	Investigate purchase of flood insurance.	Risk Management	1 years	X					Y	GF	GF	M	M	M
FLD-4	Mitigate storm drainage systems by installing, re-routing, or increasing the capacity of the system.	Maintenance, Support Services	1-5 years	X					Y	GF	GF	M	M	M
FLD-5	Purchase backup generators for pumping and lift stations in sanitary sewer systems, along with other measures.	Maintenance	1-5 years	X					Y	GF	GF	M	M	M
FLD-6	Install basement backflow prevention through check valves, sump pumps, and backflow prevention devices in buildings.	Maintenance	1-5 years	X					Y	GF	GF	M	M	M
FLD-7	Restrict development in designated floodplains	Support Services	Ongoing	X		X	X	X	Y	GF	GF	H	L	H

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FLD-8	Conduct regular maintenance for drainage systems and flood control structures.	Maintenance	Ongoing	X		X		X	Y	GF	GF	H	M	M
FLD-9	Improve flood risk assessment.	Support Services	Ongoing	X	X	X	X	X	Y	GF	GF	M	L	H
FLD-10	Preserve floodplains as open spaces.	Support Services	5-10 years	X	X	X	X	X	Y	GR	GR	M	M	L
FLD-11	Construct flood control measures	Support Services	1-3 years	X	X	X	X	X	Y	GR	GR	H	H	M
Wildfire Action Items														
WF-1	Ensure use of non-combustible roof covering, fire safe construction, and defensible space practices.	Support Services	1-2 years	X	X	X	X	X	Y	GF	GF	M	M	L
WF-2	Promote and participate in neighborhood wildfire safety coalitions to plan how neighborhoods can work together to prevent a wildfire.	PTA, Accountability	1-2 years	X	X	X	X	X	Y	GF	GF	M	M	L
WF-3	Ensure that structures are surrounded by defensible space or buffer zones. Buffer zones are manageable areas, generally 30 to 100 feet and cleared of combustible materials.	Maintenance	Ongoing	X	X	X	X	X	Y	GF	GF	M	M	L

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WF-4	Maintain fuel management techniques such as pruning and clearing dead vegetation, selective logging, keeping grass short, planting fire-resistant vegetation, and creating fuel/fire breaks, i.e., areas where the spread of wildfires will be slowed or stopped by the removal of fuels.	Maintenance, Accountability	Ongoing	X	X	X	X	X	Y	GF	GF	M	M	L
WF-5	Maintain clear driveways accessible to emergency vehicles and fire equipment.	Maintenance	Ongoing	X	X	X	X	X	Y	GF	GF	M	M	L
WF-6	Safely store necessary flammable materials, including machine fuels. Approved safety cans should be used for storing gasoline, oily rags and other flammable materials.	Maintenance, Safety	Ongoing	X	X	X	X	X	Y	GF	GF	M	M	L
WF-7	Maintain smoke detectors and fire extinguishers at school sites.	Safety	Ongoing	X	X	X	X	X	Y	GF	GF	M	M	L
WF-8	Establish effective communication about fire watches and fire warnings.	Communications	Ongoing	X	X	X	X	X	Y	GF	GF	M	M	L
WF-10	Instructed employees on proper evacuation procedures, taking a Disaster Supplies Kit; and choosing a route away from fire hazards.	Accountability, Safety	Ongoing	X	X	X	X	X	Y	GF	GF	M	M	L

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WF-11	Fire emergency telephone numbers should be posted at every telephone. Plan alternate escape routes away from school locations.	Accountability, Safety	Ongoing	X	X	X	X	X	Y	GF	GF	M	M	L
WF-12	Construct and retrofit structures using new Wildland Urban-Interface Code.	Support Services	1-5 years	X	X	X	X	X	Y	GF	GF	H	L	H
WF-13	Map and assess vulnerability to wildfire with GIS mapping.	Support Services	1-5 years	X	X	X	X	X	Y	GF, GR	GF, GR	H	L	H
Avalanche Action Items														
AV-1	Train bus drivers on avalanche safety and awareness for routes located near mountains.	Transportation	1-2 years	X						GF	GF	L	L	L
AV-2	Should future structures be located in or near active avalanche zones, buildings shall be located outside of designated avalanche pathways. Site work such as fields and parking lots may be allowed in avalanche zones.	Architecture and Construction	10-20 years	X		X			Y	GR, GF	GR, GF	H	H	M
Landslide Action Items														
LS-1	Enhance construction standards, including minimum foundation requirements, in landslide-prone areas.	Architecture and Construction	1-5 years	X	X			X	Y	GF	GF	M	M	M

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LS-2	Should future structures be located in or near active or identifiable landslide zones, buildings shall be located outside of designated pathways. Site work such as fields and parking lots may be allowed in landslide zones.	Architecture and Construction	10-20 years	X		X			Y	GR, GF	GF	H	H	M
High Wind Action Items														
HW-1	Tie down and secure loose items, tables, bleachers, etc.	Maintenance	Ongoing	X					Y	GF	GF	M	M	M
HW-2	Protect power lines and infrastructure through regular maintenance and upkeep by establishing standards for all utilities regarding tree pruning around lines.	Maintenance	Ongoing	X		X	X	X	Y	GF	GF	M	L	M
Severe Weather Action Items														
SW-1	Train bus drivers on driving during thunderstorms and lightning.	Transportation	1-2 years	X						GF	GF	L	L	L
SW-2	Install surge protection on critical electronic equipment. Lightning protection devices and methods, such as lightning rods and grounding, can be installed on the District's	Support Services	Ongoing	X					Y	GF	GF	M	M	M

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	communications infrastructure and other critical facilities.													
SW-3	Strengthen roofing systems to withstand snow/ice loads.	Facilities, Engineering	10 years	X					Y	GR	GR	H	H	H
SW-4	Retrofit public buildings to withstand snow loads and prevent roof collapse.	Support Services	Ongoing	X	X	X	X	X	Y	GF, GR	GF, GR	H	M	H
SW-5	Purchase additional snow plowing equipment from 35 to 70 units.	Maintenance	5 years	X			X			GF	GF	M	M	H
SW-6	Include safety strategies for severe weather in driver education classes and materials.	Accountability	1-2 years	X			X			GF	GF	H	L	H
SW-7	Educate students, staff, and parents of the dangers of extreme heat and cold and the steps they can take to protect themselves when extreme temperatures occur.	Support Services	1 year	X			X			GF	GF	H	L	H
SW-8	Protect critical facilities and equipment from lightning damage by installing lightning protection devices and methods, such as lightning rods and grounding, on communications infrastructure and other critical facilities. Also, by installing and	Support Services, Maintenance	1-5 years	X			X		Y	GR	GR	M	M	M

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	maintaining surge protection on critical electronic equipment.													
Dam Failure Action Items														
DM-1	Ensure existing and new construction are not located in area subject to dam inundation.	Support Services	Ongoing	X			X	X	Y	GR	GR	M	H	L
DM-2	Maintain communications with Salt Lake County Office of Emergency Services regarding condition and water levels of dams impacting District properties.	Support Services	Ongoing	X		X	X	X		GF	GF	H	L	L
Drought Action Items														
DR-1	Install low-flow water saving faucets and toilets.	Maintenance	1-10 years		X	X			Y	GF, GR	GF, GR	M	M	H
DR-2	Install moisture sensors or remote irrigation controllers at all District schools and facilities.	Maintenance	1-10 years		X	X			Y	GF, GR	GF, GR	M	M	H
DR-3	Assess vulnerability to drought risk by identifying available water supplies. Including inventory of district owned water rights and development potential.	Support Services	1-10 years	X			X			GF	GF	L	M	L

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DR-4	Monitor drought conditions by establishing a regular schedule to monitor and report conditions on at least a monthly basis.	Maintenance	Ongoing	X			X			GF	GF	L	M	L
DR-5	Monitor water supply by regularly checking for leaks to minimize water supply losses.	Maintenance	Ongoing	X			X			GF	GF	L	M	L
DR-6	Plan for drought by establish an irrigation time/scheduling program or process to ensure all landscaping receives adequate watering. Through incremental timing, each area will be irrigated at different times so that the water is not all consumed at one time. Spacing usage may also help with recharge of the groundwater.	Maintenance	Ongoing	X			X			GF	GF	L	M	L
DR-7	Retrofit water supply systems by designing water delivery systems to accommodate drought events. Also, develop new or upgraded existing water delivery systems to eliminate breaks and leaks.	Maintenance	1-20 years	X			X			GF	GF	L	M	L
Hazardous Materials Action Items														

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HM-1	Require training in and compliance with all safety procedures and systems related to the storage, transport, use, and disposal of hazardous materials.	Safety	Ongoing	X	X		X	X		GF	GF	H	M	H
HM-2	Determine evacuation and containment plans in the event of a hazardous materials event.	Safety	Ongoing	X			X	X		GF	GF	H	M	H
Human-Caused Hazard Action Items														
HC-1	Develop a thorough District risk and threat assessment that identifies potential vulnerabilities and targets for terrorism/WMD attack.	Safety, Police	Ongoing	X			X	X	Y	GR	GR	H	M	M
HC-2	Consistently use computer data back-up systems and anti-virus software, and cyber-terrorism.	IS Department	Ongoing	X				X	Y	GF	GF	M	M	M
HC-3	Continue a system for reporting information that can be used to prevent human-caused attacks.	Police	Ongoing	X	X		X			GF	GF	L	L	L
HC-4	Establish programs for law enforcement and emergency responder training, planning, and preparedness for terrorist/WMD attacks.	Police	Ongoing	X	X		X	X		GF	GF	M	L	M

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HC-5	Establish school safety and violence prevention programs.	Police	Ongoing	X	X		X	X		GF	GF	M	L	M
Utility-Related Hazard Action Items														
UR-1	Purchase additional backup generators for power failure events.	Support Services	1-5 years	X			X	X	Y	GR	GR	M	M	M
UR-2	Prepare emergency power plan including inventory of devices requiring electricity following a major emergency.	Architecture and Construction	1-5 years	X			X		Y	GR	GF, GR	M	M	M

Plan Maintenance

The plan maintenance process includes a schedule for monitoring and evaluating the Plan annually and producing a plan update every five years. This section describes how the District will integrate public participation throughout the plan maintenance process.

Q&A | ELEMENT A: PLANNING PROCESS | A6.

Q: Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))
A: See **Method and Scheduling of Plan Implementation** below.

Method and Scheduling of Plan Implementation

The Planning Team that was involved in research and writing of the Plan will also be responsible for implementation. The Planning Team will be led by the Chair of the Planning Team (Assistant Superintendent of Support Services) and will be referred to as the "Local Mitigation Officer". Following is the five-year schedule for monitoring implementation, evaluating, and updating the plan.

	Year 1	Year 2	Year 3	Year 4	Year 5
Monitoring	X	X	X	X	X
Evaluating					X
Internal Planning Team Evaluation	X	X	X	X	X
State and FEMA Evaluation					X
Updating					X

Q&A | ELEMENT C. MITIGATION STRATEGY | C5.

Q: Does the plan identify the position, office, department, or agency responsible for implementing and administering the action/project, potential funding sources and expected timeframes for completion? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))
A: See **Mitigation Actions Matrix** below.

Monitoring Implementation

Plan Adoption

Adoption of the Mitigation Plan by the District's governing body is one of the prime requirements for approval of the plan. Once the plan is completed, the Board of Education will be responsible for adopting the Mitigation Plan. The governing body has the responsibility and authority to promote sound public policy regarding hazards. The governing body will have the authority to periodically update the plan as it is revised to meet changes in the hazard risks and exposures in the District. The approved Mitigation Plan will be significant in the future growth and development of the District.

The Board of Education will be responsible for adopting the Mitigation Plan. This governing body has the authority to promote sound public policy regarding hazards. Once the plan has been

adopted, the Local Mitigation Officer (Assistant Superintendent – Support Services) will be responsible for submitting it to the Utah State Division of Emergency Management (DEM). DEM will then submit the plan to the Federal Emergency Management Agency (FEMA) for review and approval. This review will address the requirements set forth in 44 C.F.R. Section 201.6 (Local Mitigation Plans). Upon final approval by FEMA, Granite School District will gain eligibility for Hazard Mitigation Grant Program funds.

Local Mitigation Officer

Under the direction of the Local Mitigation Officer, the Planning Team will take responsibility for plan maintenance and implementation. The Local Mitigation Officer will facilitate the Planning Team meetings and will assign tasks such as updating and presenting the Plan to the members of the Planning Team. Plan implementation and evaluation will be a shared responsibility among all of the Planning Team members. The Local Mitigation Officer will coordinate with District leadership to ensure funding for 5-year updates to Plan as required by FEMA.

The Planning Team will be responsible for coordinating implementation of plan action items and undertaking the formal review process. The Local Mitigation Officer will be authorized to make changes in assignments to the current Planning Team.

The Planning Team will meet on a quarterly basis to review the status of the mitigation action items. Meeting dates will be scheduled once the final Planning Team has been established. These meetings will provide an opportunity to discuss the progress of the action items and maintain the partnerships that are essential for the sustainability of the mitigation plan.

Q&A | ELEMENT C. MITIGATION STRATEGY | C6.

Q: Does the plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))

A: See **Implementation through Existing Program** below.

Implementation through Existing Programs

The Granite School District addresses statewide planning goals and legislative requirements through its General Fund and State of Utah Building and Safety Codes. The Mitigation Plan provides a series of recommendations - many of which are closely related to the goals and objectives of existing planning and infrastructure programs. The Granite School District will implement recommended mitigation action items through existing programs and procedures.

The Granite School District Support Services Department is responsible for adhering to the State of Utah's Building and Safety Codes. In addition, the Planning Team will work with other agencies at the state level to review, develop and ensure Building and Safety Codes are adequate to mitigate or present damage by hazards. This is to ensure that life-safety criteria are met for new construction.

Some of the goals and action items in the Mitigation Plan will be achieved through activities recommended in the CIP. Various District departments develop the CIP and review it on an annual basis. Upon annual review of the CIP, the Planning Team will work with the District departments to identify areas that the Mitigation Plan action items are consistent with CIP goals and integrate them where appropriate.

As indicated in the **Mitigation Actions Matrix**, several action items have been added to ensure implementation through other existing planning mechanisms. Also, the **Table: Capability Assessment: Existing Processes and Programs** identifies the need to maintain balance and diversify the Hazard Mitigation Planning Team to accomplish an efficient and effective implementation of the Plan. The 2018 Plan's success will be ensured by the following:

- Diversity of Planning Team membership
- Quarterly implementation meetings and reporting
- Including Planning Team in review of development projects

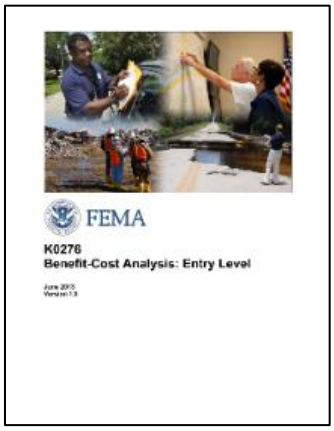
Upon FEMA approval, the Planning Team will begin the process of incorporating existing planning mechanisms at the District level. The meetings of the Planning Team will provide an opportunity for Planning Team members to report back on the progress made on the integration of mitigation planning elements into District planning documents and procedures.

Economic Analysis of Mitigation Projects

FEMA's approach to identify the costs and benefits associated with hazard mitigation strategies, measures, or projects fall into two general categories: benefit/cost analysis and cost-effectiveness analysis.

Conducting benefit/cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later.

Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating hazards can provide decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects.



Given federal funding, the Planning Team will use a FEMA-approved benefit/cost analysis approach to identify and prioritize mitigation action items. For other projects and funding sources, the Planning Team will use other approaches to understand the costs and benefits of each action item and develop a prioritized list.

The "benefit", "cost", and overall "priority" of each mitigation action item was included in the Mitigation Actions Matrix located in Part III: Mitigation Strategies. A more technical assessment will be required in the event grant funding is pursued through the Hazard Mitigation Grant Program. FEMA Benefit-Cost Analysis Guidelines are discussed below.

FEMA Benefit-Cost Analysis Guidelines

The Stafford Act authorizes the President to establish a program to provide technical and financial assistance to state and local governments to assist in the implementation of hazard mitigation measures that are cost effective and designed to substantially reduce injuries, loss of life, hardship, or the risk of future damage and destruction of property. To evaluate proposed hazard mitigation projects prior to funding FEMA requires a Benefit-Cost Analysis (BCA) to validate cost effectiveness. BCA is the method by which the future benefits of a mitigation project are estimated

and compared to its cost. The end result is a benefit-cost ratio (BCR), which is derived from a project's total net benefits divided by its total project cost. The BCR is a numerical expression of the cost effectiveness of a project. A project is considered to be cost effective when the BCR is 1.0 or greater, indicating the benefits of a prospective hazard mitigation project are sufficient to justify the costs.

Although the preparation of a BCA is a technical process, FEMA has developed software, written materials, and training to support the effort and assist with estimating the expected future benefits over the useful life of a retrofit project. It is imperative to conduct a BCA early in the project development process to ensure the likelihood of meeting the cost-effective eligibility requirement in the Stafford Act.

The BCA program consists of guidelines, methodologies and software modules for a range of major natural hazards including:

- ✓ Flood (Riverine, Coastal Zone A, Coastal Zone V)
- ✓ Hurricane Wind
- ✓ Hurricane Safe Room
- ✓ Damage-Frequency Assessment
- ✓ Tornado Safe Room
- ✓ Earthquake
- ✓ Wildfire

The BCA program provides up to date program data, up to date default and standard values, user manuals and training. Overall, the program makes it easier for users and evaluators to conduct and review BCAs and to address multiple buildings and hazards in a single BCA module run.

Q&A | ELEMENT A: PLANNING PROCESS | A6.

Q: Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))

A: See **Monitoring the Plan** below.

Monitoring the Plan

Under the direction of the Local Mitigation Officer, the Planning Team will take responsibility for plan maintenance and implementation. Quarterly meetings will be established to ensure the identified mitigation action items are being accomplished. On the fifth year of the planning cycle, the Planning Team will meet to evaluate the effectiveness of the planning process and to update the overall content of the Plan. The Local Mitigation Officer will coordinate with District leadership to ensure funding for 5-year updates to Plan as required by FEMA.

The Planning Team will be responsible for coordinating implementation of plan by monitoring the progress of the mitigation action items and documenting progress notes for each item. It will be up to the Local Mitigation Officer to hold either a live meeting versus tasking the coordinating agencies with status updates on their own assigned mitigation action items. The monitoring meetings will take place no less than quarterly. These meetings will provide an opportunity to discuss the progress of the action items and maintain the partnerships that are essential for the sustainability of the mitigation plan. See the **Quarterly Implementation Report** discussed below which will be a valuable tool for the Planning Team to measure the success of the Hazard

Mitigation Plan. The focus of the quarterly meetings will be on the progress and changes to the Mitigation Action Items.

Quarterly Implementation Report

The Quarterly Implementation Report is the same as the Mitigation Action Matrix but with a column added to the far right to track the quarterly status of each Action Item. Upon approval and adoption of the Plan, the entire Quarterly Implementation Report will be added to the Appendix of the Plan. Following is a view of the Quarterly Implementation Report:

Quarterly Implementation Report

Item Identifier	Mitigation Action Item	Coordinating Agency	Timeline	**Goal**: Protect Life and Property	**Goal**: Public Awareness	**Goal**: Natural Systems	**Goal**: Emergency Services	**Goal**: Partnerships and Implementation	**Buildings & Infrastructure**: Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Funding Source: GF- General Fund, GR-Grant**	**Planning Mechanism: GF-General Fund, GR-Grant**	**Benefit: L-Low, M-Medium, H-High**	**Cost: L-Low, M-Medium, H-High**	**Priority: L-Low, M-Medium, H-High**
Multi-Hazard Action Items														
MH-1	Test electrical power mains. Locate gas, electrical and water on map.	Gas Co, Water Jurisdiction, Maintenance	1 Year	X	X		X		Y	GF	GF	M	L	M
MH-2	Fund and hire a consultant to complete a Continuity of Operations Plan.	Supervisor Office, Asst. Superintendent	1-2 years	X			X	X	N	GR	GR	M	H	H

An equally part of the monitoring process is the need to maintain a strategic planning process which needs to include funding and organizational support. In that light, at least one year in advance of the FEMA-mandated 5-year submission of an update, the Local Mitigation Officer will convene the Planning Team to discuss funding and timing of the update planning process.

On the fifth year of the planning cycles, the Planning Team will broaden its scope to include discussions and research on all of the sections within the Plan with particular attention given go goal achievement and public participation.

Q&A | ELEMENT A: PLANNING PROCESS | A6.

Q: Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))
A: See **Evaluating and Updating the Plan** below.

Evaluating and Updating the Plan

Formal Update Process

The Mitigation Plan will be monitored on a quarterly basis to determine the effectiveness of mitigation action items and to reflect changes in land development or programs that may affect

mitigation actions or their priorities. The evaluation process includes a firm schedule and timeline, and identifies the agencies and organizations participating in plan evaluation. The Local Mitigation Officer or designee will be responsible for contacting the Planning Team members and organizing the quarterly meeting. Planning Team members will also be responsible for participating in the formal update to the Plan every fifth year of the planning cycle.

The Planning Team will review the goals and mitigation action items to determine their relevance to changing situations in the District, as well as changes in State or Federal policy, and to ensure they are addressing current and expected conditions. The Planning Team will also review the Plan's **Risk Assessment** portion of the Plan to determine if this information should be updated or modified, given any new available data. The **coordinating agencies** responsible for the various action items will report on the status of their projects, including the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised. Amending will be made to the Mitigation Actions Matrix and other sections in the Plan as deemed necessary by the Planning Team.

Q&A | ELEMENT A: PLANNING PROCESS | A5.

Q: Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))

A: See **Continued Public Involvement** below.

Continued Public Involvement

The Granite School District is dedicated to involving the public directly in the continual review and updates to the Mitigation Plan. Copies of the plan will be catalogued and made available at the District Office. The existence and location of these copies will be publicized in District newsletters and on the District website. This site will also contain an email address and phone number where people can direct their comments and concerns. A public meeting will also be held after each evaluation or when deemed necessary by the Planning Team. The meetings will provide the public a forum in which they can express their concerns, opinions, or ideas about the Plan.

The Local Mitigation Officer will be responsible for using District resources to publicize the annual public meetings and maintain public involvement through the public access channel, web page, and newspapers.

PART IV: APPENDIX

General Natural Hazard Overviews

Earthquake Hazards

Measuring and Describing Earthquakes

An earthquake is a sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of the Earth's tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. They usually occur without warning and, after just a few seconds, can cause massive damage and extensive casualties. Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure. Ground motion is the vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter. Soft soils can further amplify ground motions. The severity of these effects is dependent on the amount of energy released from the fault or epicenter. One way to express an earthquake's severity is to compare its acceleration to the normal acceleration due to gravity. The acceleration due to gravity is often called "g". A ground motion with a peak ground acceleration of 100%g is very severe. Peak Ground Acceleration (PGA) is a measure of the strength of ground motion. PGA is used to project the risk of damage from future earthquakes by showing earthquake ground motions that have a specified probability (10%, 5%, or 2%) of being exceeded in 50 years. These ground motion values are used for reference in construction design for earthquake resistance. The ground motion values can also be used to assess relative hazard between sites, when making economic and safety decisions.

When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter.

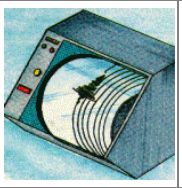
Another tool used to describe earthquake intensity is the Magnitude Scale. The Magnitude Scale is sometimes referred to as the Richter Scale. The two are similar but not exactly the same. The Magnitude Scale was devised as a means of rating earthquake strength and is an indirect measure of seismic energy released. The Scale is logarithmic with each one-point increase corresponding to a 10-fold increase in the amplitude of the seismic shock waves generated by the earthquake. In terms of actual energy released, however, each one-point increase on the Richter scale corresponds to about a 32-fold increase in energy released. Therefore, a Magnitude 7 (M7) earthquake is 100 times (10 X 10) more powerful than a M5 earthquake and releases 1,024 times (32 X 32) the energy.

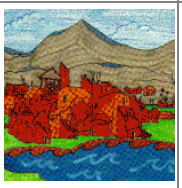
An earthquake generates different types of seismic shock waves that travel outward from the focus or point of rupture on a fault. Seismic waves that travel through the earth's crust are called body waves and are divided into primary (P) and secondary (S) waves. Because P waves move faster (1.7 times) than S waves, they arrive at the seismograph first. By measuring the time delay between arrival of the P and S waves and knowing the distance to the epicenter, seismologists can compute the magnitude for the earthquake.

The duration of an earthquake is related to its magnitude but not in a perfectly strict sense. There are two ways to think about the duration of an earthquake. The first is the length of time it takes for the fault to rupture and the second is the length of time shaking is felt at any given point (e.g. when someone says "I felt it shake for 10 seconds" they are making a statement about the duration of shaking). (Source: www.usgs.gov)

The Modified Mercalli Scale (MMI) is another means for rating earthquakes, but one that attempts to quantify intensity of ground shaking. Intensity under this scale is a function of distance from the epicenter (the closer to the epicenter the greater the intensity), ground acceleration, duration of ground shaking, and degree of structural damage. The Modified Mercalli Intensity Scale below rates the level of severity of an earthquake by the amount of damage and perceived shaking.

Table: Modified Mercalli Intensity Scale

	MMI Value	Description of Shaking Severity	Summary Damage Description Used on 1995 Maps	Full Description
	I			Not Felt
	II			Felt by persons at rest, on upper floors, or favorably placed.
	III			Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.
	IV			Hanging objects swing. Vibration like passing of heavy trucks; or sensation of a jolt like a heavy ball striking the walls. Standing motorcars rock. Windows, dishes, doors rattle. In the upper range of IV, wooden walls and frame creak.
	V	Light	Pictures Move	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clock stop, start, change rate.

	MMI Value	Description of Shaking Severity	Summary Damage Description Used on 1995 Maps	Full Description
	VI	Moderate	Objects Fall	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Knickknacks, books, etc., off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry D cracked.
	VII	Strong	Nonstructural Damage	Difficult to stand. Noticed by drivers of motorcars. Hanging objects quiver. Furniture broken. Damage to masonry, including cracks. Weak chimneys broken at roofline. Fall of plaster, loose bricks, stones, tiles, cornices. Some cracks in masonry C. Small slides and caving in along sand or gravel banks. Concrete irrigation ditches damaged.
	VIII	Very Strong	Moderate Damage	Steering of motorcars affected. Damage to masonry C, partial collapse. Some damage to masonry B; none to masonry A. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, and elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Cracks in wet ground and on steep slopes.
	IX	Violent	Heavy damage	General panic. Damage to masonry buildings ranges from collapse to serious damage unless modern design. Wood-frame structures rack, and, if not bolted, shifted off foundations. Underground pipes broken.
	X	Very Violent	Extreme Damage	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land.
	XI			Rails bent greatly. Underground pipelines completely out of services.
	XII			Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into air.

Earthquake Related Hazards

Ground shaking, landslides, liquefaction, and amplification are the specific hazards associated with earthquakes. The severity of these hazards depends on several factors, including soil and slope conditions, proximity to the fault, earthquake magnitude, and the type of earthquake.

Ground Shaking

Ground shaking is the motion felt on the earth's surface caused by seismic waves generated by the earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter (where the earthquake originates). Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock.

Seismic activity along nearby or more distant fault zones are likely to cause ground shaking within the District limits.

Earthquake-Induced Landslide Potential

Generally, these types of failures consist of rock falls, disrupted soil slides, rock slides, soil lateral spreads, soil slumps, soil block slides, and soil avalanches. Areas having the potential for earthquake-induced landslides generally occur in areas of previous landslide movement, or where local topographic, geological, geotechnical, and subsurface water conditions indicate a potential for permanent ground displacements.

Liquefaction

Liquefaction occurs when ground shaking causes wet granular soils to change from a solid state to a liquid state. This results in the loss of soil strength and the soil's ability to support weight. Buildings and their occupants are at risk when the ground can no longer support these structures. Liquefaction generally occurs during significant earthquake activity, and structures located on soils such as silt or sand may experience significant damage during an earthquake due to the instability of structural foundations and the moving earth.

Flood Hazards

Flood Terminology

Floodplain

A floodplain is a land area adjacent to a river, stream, lake, estuary, or other water body that is subject to flooding. This area, if left undisturbed, acts to store excess flood water. The floodplain is made up of two sections: the floodway and the flood fringe.

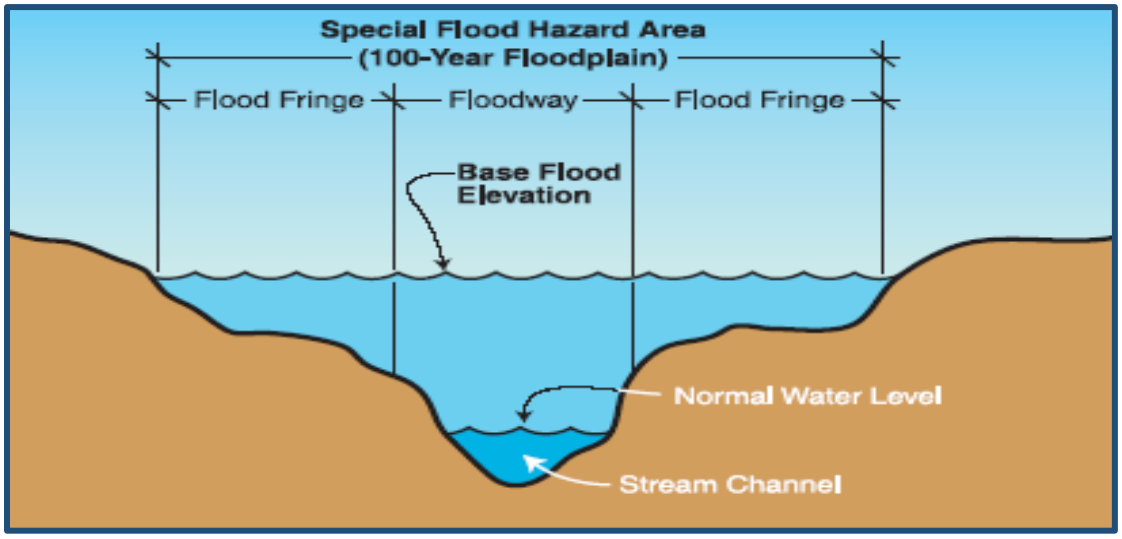
100-Year Flood

The 100-year flooding event is the flood having a one percent chance of being equaled or exceeded in magnitude in any given year. Contrary to popular belief, it is not a flood occurring once every 100 years. The 100-year floodplain is the area adjoining a river, stream, or watercourse covered by water in the event of a 100-year flood. Schematic: Floodplain and Floodway shows the relationship of the floodplain and the floodway.

The 100-year flooding event is the flood having a 1% chance of being equaled or exceeded in magnitude in any given year.

Contrary to popular belief, it is not a flood occurring once every 100 years.

Figure: Floodplain and Floodway
(Source: FEMA How-To-Guide Assessing Hazards)



Floodway

The floodway is one of two main sections that make up the floodplain. Floodways are defined for regulatory purposes. Unlike floodplains, floodways do not reflect a recognizable geologic feature. For NFIP purposes, floodways are defined as the channel of a river or stream, and the overbank areas adjacent to the channel. The floodway carries the bulk of the flood water downstream and is usually the area where water velocities and forces are the greatest. NFIP regulations require that the floodway be kept open and free from development or other structures that would obstruct or divert flood flows onto other properties.

Base Flood Elevation (BFE)

The term "Base Flood Elevation" refers to the elevation (normally measured in feet above sea level) that the base flood is expected to reach. Base flood elevations can be set at levels other than the 100-year flood. Some communities use higher frequency flood events as their base flood elevation for certain activities, while using lower frequency events for others. For example, for the purpose of storm water management, a 25-year flood event might serve as the base flood elevation; while the 500-year flood event serves as base flood elevation for the tie down of mobile homes. The regulations of the NFIP focus on development in the 100-year floodplain.

Types of Flooding

Urban Flooding

As land is converted from fields or woodlands to roads and parking lots, it loses its ability to absorb rainfall. Urbanization of a watershed changes the hydrologic systems of the basin. Heavy rainfall collects and flows faster on impervious concrete and asphalt surfaces. The water moves from the clouds, to the ground, and into streams at a much faster rate in urban areas. Adding these elements to the hydrological systems can result in flood waters that rise very rapidly and peak with violent force.

Riverine Flooding

Riverine flooding is the overbank flooding of rivers and streams. The natural processes of riverine flooding add sediment and nutrients to fertile floodplain areas. Flooding in large river systems typically results from large-scale weather systems that generate prolonged rainfall over a wide geographic area, causing flooding in hundreds of smaller streams, which then drain into the major rivers. Shallow area flooding is a special type of riverine flooding. FEMA defines shallow flood hazards as areas that are inundated by the 100-year flood with flood depths of only one to three feet. These areas are generally flooded by low velocity sheet flows of water.

Definitions of FEMA Flood Zone Designations

Flood zones are geographic areas that the FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area.

Moderate to Low Risk Areas

In communities that participate in the NFIP, flood insurance is available to all property owners and renters in these zones:

ZONE	DESCRIPTION
B and X (shaded)	Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. B Zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.
C and X (unshaded)	Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage problems that don't warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.

High Risk Areas

In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all of these zones:

ZONE	DESCRIPTION
A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.
AE	The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.
A1-30	These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a BFE (old format).
AH	Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
AO	River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
AR	Areas with a temporarily increased flood risk due to the building or restoration of a flood control system (such as a levee or a dam). Mandatory flood insurance purchase requirements will apply, but rates will not exceed the rates for unnumbered A zones if the structure is built or restored in compliance with Zone AR floodplain management regulations.
A99	Areas with a 1% annual chance of flooding that will be protected by a Federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones.

Undetermined Risk Areas

ZONE	DESCRIPTION
D	Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.

Wildfire Hazards

Definition

A wildfire is an uncontrolled fire spreading through vegetative fuels and exposing or possibly consuming structures. They often begin unnoticed and spread quickly. Naturally occurring and non-native species of grasses, brush, and trees fuel wildfires. A wildland fire is a wildfire in an area in which development is essentially nonexistent, except for roads, railroads, power lines and similar facilities. A 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.

People start more than 80 percent of wildfires, usually as debris burns, arson, or carelessness. Lightning strikes are the next leading cause of wildfires. Wildfire behavior is based on three primary factors: fuel, topography, and weather. The type, and amount of fuel, as well as its burning qualities and level of moisture affect wildfire potential and behavior. The continuity of fuels, expressed in both horizontal and vertical components is also a determinant of wildfire potential and behavior. Topography is important because it affects the movement of air (and thus the fire) over the ground surface. The slope and shape of terrain can change the speed at which the fire travels, and the ability of firefighters to reach and extinguish the fire. Weather affects the probability of wildfire and has a significant effect on its behavior. Temperature, humidity and wind (both short and long term) affect the severity and duration of wildfires.

Wildfire Threat

In urban areas, the effectiveness of fire protection efforts is based upon several factors, including the age of structures, efficiency of circulation routes that ultimately affect response times and availability of water resources to combat fires. In wildland areas, taking the proper precautions, such as the use of fire resistant building materials, a pro-active fire prevention inspection program, and the development of defensible space around structures where combustible vegetation is controlled, can protect developed lands from fires and, therefore, reduce the potential loss of life and property.

Wildfire Characteristics

There are three categories of wildland/urban interface fire: The classic wildland/urban interface exists where well-defined urban and suburban development presses up against open expanses of wildland areas; the mixed wildland/urban interface is characterized by isolated homes, subdivisions, and small communities situated predominantly in wildland settings. The occluded wildland/urban interface exists where islands of wildland vegetation occur inside a largely urbanized area. Certain conditions must be present for significant interface fires to occur. The most common conditions include: hot, dry and windy weather; the inability of fire protection forces to contain or suppress the fire; the occurrence of multiple fires that overwhelm committed resources; and a large fuel load (dense vegetation). Once a fire has started, several conditions influence its behavior, including fuel topography, weather, drought, and development.

The Interface

One challenge Utah faces regarding the wildfire hazard is from the increasing number of houses being built on the urban/wildland interface. Every year the growing population expands further into the hills and mountains, including forest lands. The increased "interface" between urban/suburban areas, and the open spaces created by this expansion, produces a significant increase in threats to life and property from fires, and pushes existing fire protection systems beyond original or current design and capability. Property owners in the interface are not aware of the problems and fire hazards or risks on their own property. Furthermore, human activities increase the incidence of fire ignition and potential damage.

Fuel

Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is classified by volume and by type. Volume is described in terms of "fuel loading," or the amount of available vegetative fuel.

An important element in understanding the danger of wildfire is the availability of diverse fuels in the landscape, such as natural vegetation, manmade structures and combustible materials. A house surrounded by brushy growth rather than cleared space allows for greater continuity of fuel and increases the fire's ability to spread. After decades of fire suppression "dog-hair" thickets have accumulated, which enable high intensity fires to flare and spread rapidly.

Topography

Topography influences the movement of air, thereby directing a fire course. For example, if the percentage of uphill slope doubles, the rate of spread in wildfire will likely double. Gulches and canyons can funnel air and act as chimneys, which intensify fire behavior and cause the fire to spread faster. Solar heating of dry, south-facing slopes produces up slope drafts that can complicate fire behavior. Unfortunately, hillsides with hazardous topographic characteristics are also desirable residential areas in many communities. This underscores the need for wildfire hazard mitigation and increased education and outreach to homeowners living in interface areas.

Weather

Weather patterns combined with certain geographic locations can create a favorable climate for wildfire activity. Areas where annual precipitation is less than 30 inches per year are extremely fire susceptible.

Drought

Recent concerns about the effects of climate change, particularly drought, are contributing to concerns about wildfire vulnerability. The term 'drought' is applied to a period in which an unusual scarcity of rain causes a serious hydrological imbalance. Unusually dry winters, or significantly less rainfall than normal, can lead to relatively drier conditions and leave reservoirs and water tables lower. Drought leads to problems with irrigation and contributes to additional fires, or increased difficulty in fighting fires.

Avalanche Hazards

Definition

An avalanche is a mass of snow, often mixed with ice and debris which travels down mountain sides, destroying all in its path.

Avalanches occur due to any of the following triggers: overloading, temperature, slope angle, snow pack conditions, and vibration. Overloading is an important trigger; the weight of the snow increases until it overcomes cohesion to the snow pack underneath. Temperature has an effect on the cohesion of snow; a rise in temperature weakens the bonds creating weakness, whilst a fall in temperature increases the brittleness and tension of a slab. Slope angle is important as most avalanches occur on slopes between 25 and 40 degrees, although avalanches have been noted on slopes as gentle as 15 degrees and as steep as 60 degrees. Snow pack conditions is a significant factor as the layers below the upper snow cannot be seen and it is difficult to assess whether the slope is likely to fail. Vibration is a physical trigger cause by thunder, a gunshot, by explosions or other loud noises such as shouting. Earthquakes can start avalanches, as well as noise from heavy machinery.

Hazard Characteristics

There are three main types of avalanche:

Powder avalanche

Often start from a single point and accumulates snow as it moves down the slope forming a snowball effect. This type is most common following heavy snowfall of one inch per hour or more and often on a smooth surface such as after rain or frost. Without the cohesion with the snow layer underneath the snow is too heavy to settle. This type of avalanche can travel between 62 and 186 miles per hour.

Slab avalanche

Most common type of winter avalanche due to the buildup of fresh snow. A slab is a compact snow surface layer that can detach from a weaker snow layer underneath. The slab slips forward as a whole block or breaks into pieces.

Wet avalanche

Often occurs after a warm spell or during the spring thaw. Snow becomes heavier as it begins to turn into water. Occurs frequently and are generally small and generally easier to predict than the other types.

Landslide Hazards

Definition

A landslide is defined as, the movement of a mass of rock, debris, or earth movement down a slope. Landslides are a type of "mass wasting" which denotes any down slope movement of soil and rock under the direct influence of gravity. The term "landslide" encompasses events such as rock falls, topples, slides, spreads, and flows.

Landslides are initiated by rainfall, earthquakes, volcanic activity, changes in groundwater, disturbance and change of a slope by human-caused construction activities, or any combination of these factors. Landslides also occur underwater, causing tidal waves and damage to coastal areas. These landslides are called submarine landslides."

The size of a landslide usually depends on the geology and the initial cause of the landslide. Landslides vary greatly in their volume of rock and soil, the length, width, and depth of the area affected, frequency of occurrence, and speed of movement. Some characteristics that determine the type of landslide are slope of the hillside, moisture content, and the nature of the underlying materials. Landslides are given different names, depending on the type of failure, and their composition and characteristics.

Slides move in contact with the underlying surface. These movements include rotational slides where sliding material moves along a curved surface and translational slides where movement occurs along a flat surface. These slides are generally slow moving and can be deep. Slumps are small rotational slides that are generally shallow. Slow-moving landslides occur on relatively gentle slopes and cause significant property damage but are far less likely to result in serious injuries than rapidly moving landslides.

What is a Debris Flow?

A debris or mud flow is a river of rock, earth and other materials, including vegetation that is saturated with water. This high percentage of water gives the debris flow a very rapid rate of movement down a slope. Debris flows move with speeds greater than 20 miles per hour, and often move much faster. This high rate of speed makes debris flows extremely dangerous to people and property in its path.

Hazard Characteristics

Areas Particularly Susceptible to Landslides

Locations at risk from landslides or debris flows include areas with one or more of the following conditions:

- ✓ On or close to steep hills
- ✓ Steep road-cuts or excavations
- ✓ Existing landslides or places of known historic landslides (such sites often have tilted power lines, trees tilted in various directions, cracks in the ground, and irregular-surfaced ground)
- ✓ Steep areas where surface runoff is channeled, such as below culverts, V-shaped valleys, canyon bottoms, and steep stream channels
- ✓ Fan-shaped areas of sediment and boulder accumulation at the outlets of canyons

- ✓ Canyon areas below hillside and mountains that recently (within 1-6 years) were subjected to a wildland fire

Excavation and Grading

Slope excavation is common in the development of home sites or roads on sloping terrain. Grading these slopes results in slopes that are steeper than the pre-existing natural slopes. Since slope steepness is a major factor in landslides, these steeper slopes are at an increased risk for landslides.

The added weight of fill placed on slopes also results in an increased landslide hazard. Small landslides are fairly common along roads, in either the road cut or the road fill. Landslides occurring below new construction sites are indicators of the potential impacts stemming from excavation.

Drainage and Groundwater Alterations

Water flowing through or above ground, is often the trigger for landslides. Any activity that increases the amount of water flowing into landslide-prone slopes increases landslide hazards. Broken or leaking water or sewer lines can be especially problematic, as does water retention facilities that direct water onto slopes. However, even lawn irrigation in landslide prone locations results in damaging landslides. Ineffective storm water management and excess runoff also cause erosion and increase the risk of landslide hazards. Drainage is affected, naturally by the geology and topography of an area. Development that results in an increase in impervious surface impairs the ability of the land to absorb water and redirects water to other areas. Channels, streams, ponding, and erosion on slopes indicate potential slope problems.

Road and driveway drains, gutters, downspouts, and other constructed drainage facilities concentrates and accelerates flow. Ground saturation and concentrated velocity flow are major causes of slope problems and triggers landslides.

Changes in Vegetation

Removing vegetation from very steep slopes increases landslide hazards. Areas that experience wildfire and land clearing for development may have long periods of increased landslide hazard. Also, certain types of ground cover require constant watering to remain green. Changing away from native ground cover plants increases the risk of landslide.

Severe Weather Hazards

Tornadoes

Tornadoes are spawned when there is warm, moist air near the ground, cool air aloft, and winds that speed up and change direction. An obstruction, such as a house, in the path of the wind causes it to change direction. This change increases pressure on parts of the house, and the combination of increased pressures and fluctuating wind speeds creates stresses that frequently cause structural failures.

In order to measure the intensity and wind strength of a tornado, Dr. T. Theodore Fujita developed the Fujita Tornado Damage Scale. This scale compares the estimated wind velocity with the corresponding amount of suspected damage. The scale measures six classifications of tornadoes with increasing magnitude from an "F0" tornado to a "F6+" tornado.

Table: Fujita Tornado Damage Scale
(Source: NOAA Storm Prediction Center)

Scale	Wind Estimated (mph)	Typical Damage
F0	< 73	Light damage. Some damage to chimneys and TV antennas; breaks twigs off trees; pushes over shallow-rooted trees.
F1	73-112	Moderate damage. Peels surface off roofs; windows broken; light trailer houses pushed or overturned; some trees uprooted or snapped; moving automobiles pushed off the road. 74 mph is the beginning of hurricane wind speed.
F2	113-157	Considerable damage. Roofs torn off frame houses leaving strong upright walls; weak buildings in rural areas demolished; trailer houses destroyed; large trees snapped or uprooted; railroad boxcars pushed over; light object missiles generated; cars blown off highway.
F3	158-206	Severe damage. Roofs and some walls torn off frame houses; some rural buildings completely demolished; trains overturned; steel-framed hangar-warehouse-type structures torn; cars lifted off the ground; most trees in a forest uprooted snapped, or leveled.
F4	207-260	Devastating damage. Whole frame houses leveled, leaving piles of debris; steel structures badly damaged; trees debarked by small flying debris; cars and trains thrown some distances or rolled considerable distances; large missiles generated.
F5	261-318	Incredible damage. Whole frame houses tossed off foundations; steel-reinforced concrete structures badly damaged; automobile-sized missiles generated; trees debarked; incredible phenomena can occur.
F6-F12	319 to sonic	Inconceivable damage. Should a tornado with the maximum wind speed in excess of F5 occur, the extent and types of damage may not be conceived. A number of missiles such as iceboxes, water heaters, storage tanks, automobiles, etc. will create serious secondary damage on structures.

Microbursts

Unlike tornados, microbursts are strong, damaging winds which strike the ground and often give the impression a tornado has struck. They frequently occur during intense thunderstorms. The origin of a microburst is downward moving air from a thunderstorm's core. But unlike a tornado, they affect only a rather small area. University of Chicago storm researcher Dr. Ted Fujita first coined the term "downburst" to describe strong, downdraft winds flowing out of a thunderstorm cell that he believed were responsible for the crash of Eastern Airlines Flight 66 in June of 1975.

A downburst is a straight-direction surface wind in excess of 39 mph caused by a small-scale, strong downdraft from the base of convective thundershowers and thunderstorms. In later investigations into the phenomena he defined two sub-categories of downbursts: the larger macrobursts and small microbursts.

Macrobursts are downbursts with winds up to 117 mph which spread across a path greater than 2.5 miles wide at the surface and which last from five to 30 minutes. The microburst, on the other hand is confined to an even smaller area, less than 2.5 miles in diameter from the initial point of downdraft impact. An intense microburst can result in damaging winds near 270 km/hr (170 mph) and often last for less than five minutes.

Downbursts of all sizes descend from the upper regions of severe thunderstorms when the air accelerates downward through either exceptionally strong evaporative cooling or by very heavy rain which drags dry air down with it. When the rapidly descending air strikes the ground, it spreads outward in all directions, like a fast-running faucet stream hitting the sink bottom.

When the microburst wind hits an object on the ground such as a house, garage or tree, it can flatten the buildings, and strip limbs and branches from the tree. After striking the ground, the powerful outward running gust can wreak further havoc along its path. Damage associated with a microburst is often mistaken for the work of a tornado, particularly directly under the microburst. However, damage patterns away from the impact area are characteristic of straight-line winds rather than the twisted pattern of tornado damage."

Tornados, like those that occur every year in the Midwest and Southeast parts of the United States, are a rare phenomenon in most of Utah, with most tornado-like activity coming from micro-bursts.

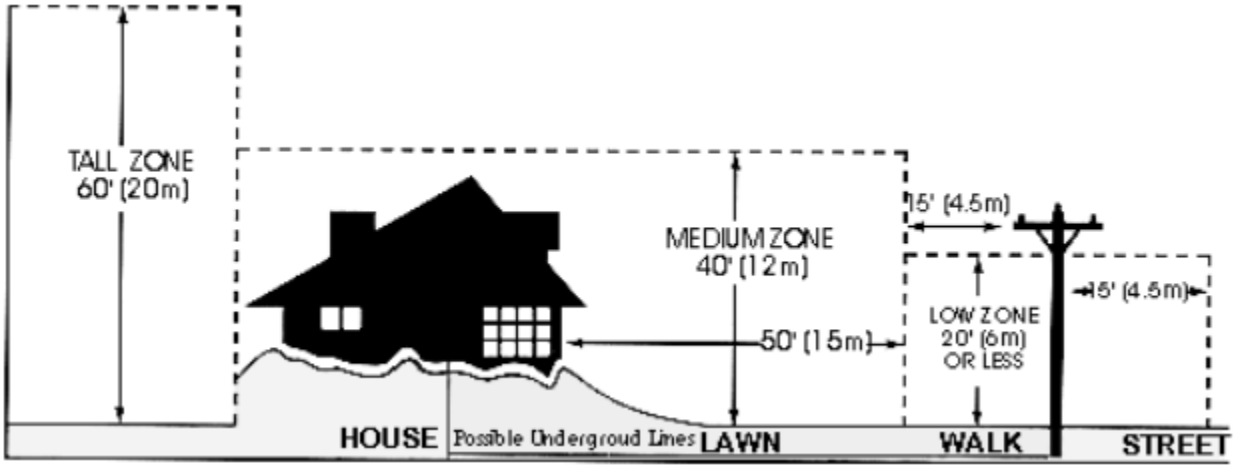
High Winds

Based on the history of the region, high winds events can be expected across widespread areas of the region. Both residential and commercial structures with weak reinforcement are susceptible to damage. Wind pressure creates a direct and frontal assault on a structure, pushing walls, doors, and windows inward. Conversely, passing currents creates lift suction forces that pull building components and surfaces outward. With extreme wind forces, the roof or entire building can fail causing considerable damage.

Debris carried along by extreme winds can directly contribute to loss of life and indirectly to the failure of protective building envelopes, siding, or walls. When severe winds strike a community, downed trees, power lines, and damaged property can be major hindrances to emergency response and disaster recovery.

Utilities

Historically, falling trees are the major cause of power outages in the region. For example, tree limbs breaking in winds of only 45 mph can be thrown over 75 feet, overhead power lines are damaged, even in relatively minor high wind events. Falling trees bring electric power lines down to the pavement, creating the possibility of lethal electric shock.



Infrastructure

High winds damage buildings, power lines, and other property, and infrastructure, due to falling trees and branches. During wet winters, saturated soils cause trees to become less stable and more vulnerable to uprooting from high winds.

Dam Failure Hazards

Definition

Dams are man-made structures built for a variety of uses including flood protection, power, agriculture, water supply, and recreation. When dams are constructed for flood protection, they usually are engineered to withstand a flood with a computed risk of occurrence. For example, a dam may be designed to contain a flood at a location on a stream that has a certain probability of occurring in any one year. If a larger flood occurs, then that structure will be overtopped. Overtopping is the primary cause of earthen dam failure in the United States.

Failed dams can create floods that are catastrophic to life and property as a result of the tremendous energy of the released water. A catastrophic dam failure could easily overwhelm local response capabilities and require mass evacuations to save lives. Dams typically are constructed of earth, rock, concrete, or mine tailings. Two factors that influence the potential severity of a full or partial dam failure are the amount of water impounded and the density, type, and value of development and infrastructure located downstream.

Dam failures can result from any one or a combination of the following causes:

- ✓ Prolonged periods of rainfall and flooding, resulting in excess overtopping flows
- ✓ Earthquake
- ✓ Inadequate spillway capacity, resulting in excess overtopping flows
- ✓ Internal erosion caused by embankment or foundation leakage or piping
- ✓ Improper design
- ✓ Improper maintenance
- ✓ Negligent operation
- ✓ Failure of upstream dams on the same waterway

Governmental assistance could be required and continued for an extended period. These efforts are required to remove debris and clear roadways, demolish unsafe structures, assist in reestablishing public services and utilities, and provide continuing care and welfare for the affected population including, as required, temporary housing for displaced persons.

Drought Hazards

Definition

Drought is defined as a deficiency of precipitation over an extended period of time, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. Drought should be considered relative to some long-term average condition of balance between precipitation and evapotranspiration (i.e., evaporation + transpiration) in a particular area, a condition often perceived as "normal". It is also related to the timing (e.g., principal season of occurrence, delays in the start of the rainy season, occurrence of rains in relation to principal crop growth stages) and the effectiveness of the rains (e.g., rainfall intensity, number of rainfall events). Other climatic factors such as high temperature, high winds, and low relative humidity are often associated with it in many regions of the world and can significantly aggravate its severity. Drought should not be viewed as merely a physical phenomenon or natural event. Its impacts on society result from the interplay between a natural event (less precipitation than expected resulting from natural climatic variability) and the demand people place on water supply. Human beings often exacerbate the impact of drought. Recent droughts in both developing and developed countries and the resulting economic and environmental impacts and personal hardships have underscored the vulnerability of all societies to this "natural" hazard.

Many governmental utilities, the National Oceanic and Atmospheric Administration (NOAA) as well as academic institutions such as the University of Nebraska-Lincoln's National Drought Mitigation Center and the National Drought Mitigation Center, generally agree that there is no clear definition of drought. Drought is highly variable depending on location.

Drought is a gradual phenomenon. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Most natural disasters, such as floods or forest fires, occur relatively rapidly and afford little time for preparing for disaster response. Droughts occur slowly, over a multiyear period. There is no universal definition of when a drought begins or ends.

Hazard Characteristics

Types of Drought

There are four different ways that drought can be defined:
(1) Meteorological - a measure of departure of precipitation from normal. Due to climatic differences what is considered a drought in one location may not be a drought in another location.
(2) Agricultural - refers to a situation when the amount of moisture in the soil no longer meets the needs of a particular crop.
(3) Hydrological - occurs when surface and subsurface water supplies are below normal.
(4) Socioeconomic - refers to the situation that occurs when physical water shortage begins to affect people.

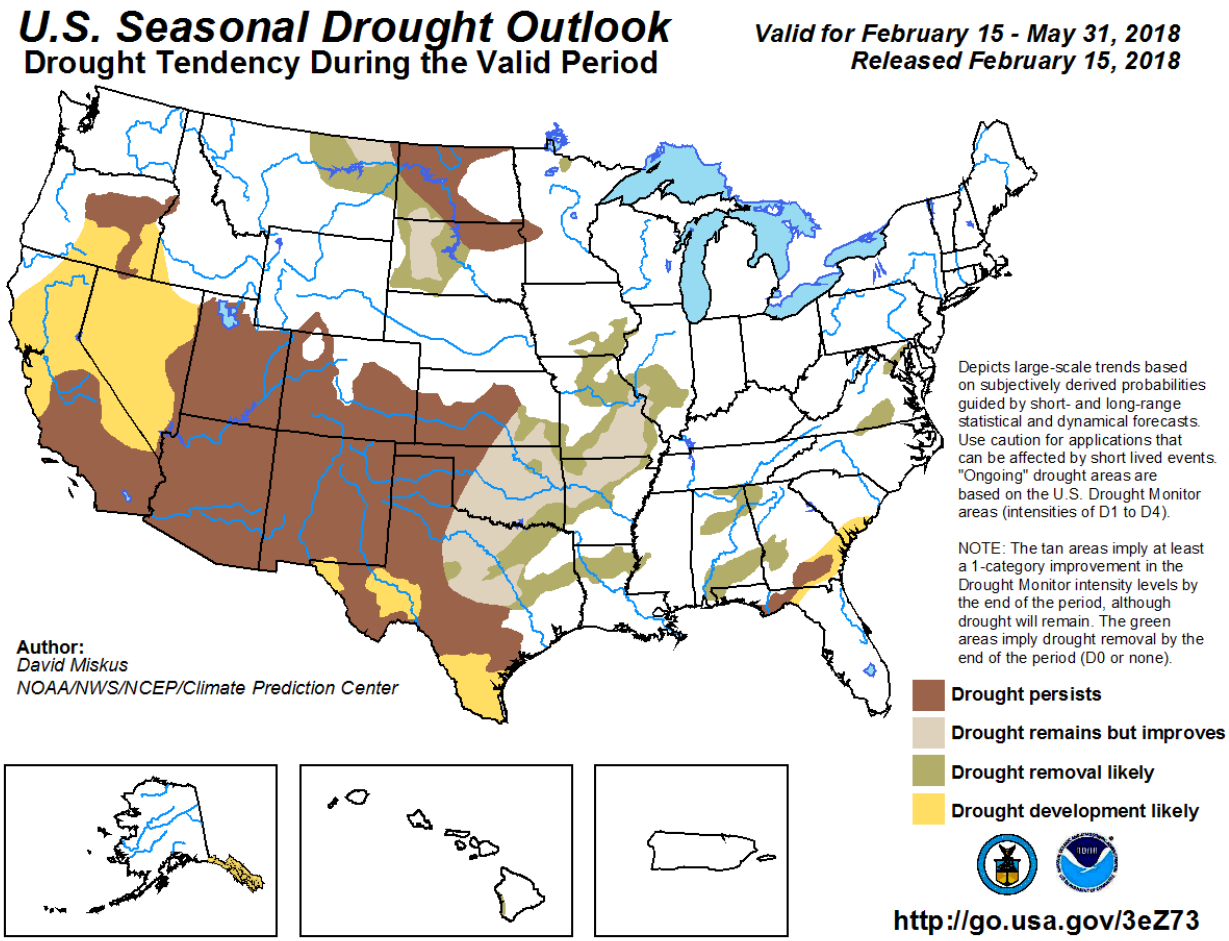
Palmer Drought Severity Index

Of the many varied indexes used to measure drought, the "Palmer Drought Severity Index" (PDSI) is the most commonly used drought index in the United States. Developed by meteorologist Wayne Palmer, the PDSI is used to measure dryness based on recent temperature compared to the amount of precipitation. It utilizes a number range, 0 as normal, drought shown in terms of

minus numbers, and wetness shown in positive numbers. The PDSI is most effective at analyzing long-range drought forecasts or predications. Thus, the PDSI is very effective at evaluation trends in the severity and frequency of prolonged periods of drought, and conversely wet weather. The National Oceanic and Atmospheric Administration (NOAA) publish weekly Palmer maps, which are also used by other scientists to analyze the long-term trends associated with global warming and how this has affected drought conditions.

The following map is the most current snapshot of drought conditions across the U.S. It is provided by NOAA's Climate Prediction Center.

Map: U.S. Seasonal Drought Outlook
(Source: NOAA Climate Prediction Center)



Attachments

FEMA Letter of Approval

Board of Education Staff Report

Board of Education Resolution

Planning Team Sign-In Sheets

Granite School District
Hazard Mitigation Plan
Planning Team Meeting #1
September 26, 2017

Name	Department
CAROLYN HARSHMAN	CONSULTANT
Doug Jackson	Centurion Solutions
Alex Fritzler	Consultant
CLINT S. MECHAM	SLC EM / OFA
Danny Stirland	School Accountability
Alan Farrier	" "
Cescilee Ball	NURSING
DAVID GARRETT	BUSINESS ADMINISTRATOR
DAVID RICHARDS	Police
Will Hanson	Prevention & Student Placem
Debbie Allen	Prevention & Student Placement
Kieth Bradshaw	Property & Safety
KURT FISHER	CONSTRUCTION SERVICES

Granite School District
Hazard Mitigation Plan
Planning Team Meeting #1
September 26, 2017

Name	Department
Rex Goudy	Maintenance Services
Jack Hurst	Info System
DONALD ADAMS	SUPPORT SERV.
Diana Pennington	Support Services
Doug Larson	Policy & Legal Services
Michael Douglas	School Accountability

Granite School District
Hazard Mitigation Plan
Planning Team Meeting #2
November 7, 2017

Name	Department
CAROLYN HARSHMAN	EMERGENCY PLANNING CONSULTANTS
Diana Pennington	Support Services & Policy & Legal
Ben Horsley	Communications
Rex Goudy	Maintenance
Kieth Bradshaw	Property & Safety
SCOTT WINN	SAFETY & COMPLIANCE
KURT FISHER	CONST. SEVICES
Doug Larson	Policy Legal Services.
Dale Kohler	IS
CLENT MEEHAM	SLC E.M.
DAVID GARRETT	BUSINESS ADMIN
Alan Berrier	School Accountability
Danny Stirland	school Accountability

Granite School District
Hazard Mitigation Plan
Planning Team Meeting #2
November 7, 2017

Name	Department
Randy Porter	Police Dept.

Granite School District
Hazard Mitigation Plan
Planning Team Meeting #3
January 16, 2018

Name	Department
CAROLYN HARSHMAN	EMERGENCY PLANNING CONSULTANTS
Randy Porter	Police Dept.
Cescilee Rall	NURSING
Rex Goudy	Maintenance
Scott Winn	"
Kieth Bradshaw	Property & Safety
Diana Pennington	Support Services
DONALD ADAMS	SUPPORT SERV.
BEN HORSLEY	COMMUNICATIONS
Mike Douglas	Elementary Director

Granite School District
Hazard Mitigation Plan
Planning Team Meeting #4
April 10, 2018

Name	Department
CAROLYN HARSHMAN	EMERGENCY PLANNING CONSULTANTS
Diana Pennington	Support Services
Scott Winn	Compliance
Cescilee Rall	NURSING
Kieth Bradshaw	Property & Safety
Rex Goudy	Maintenance & Custodial Services
JOHN LAKE	POLICE
BEN HORSLEY	Communication
DON ADAMS	Support Services

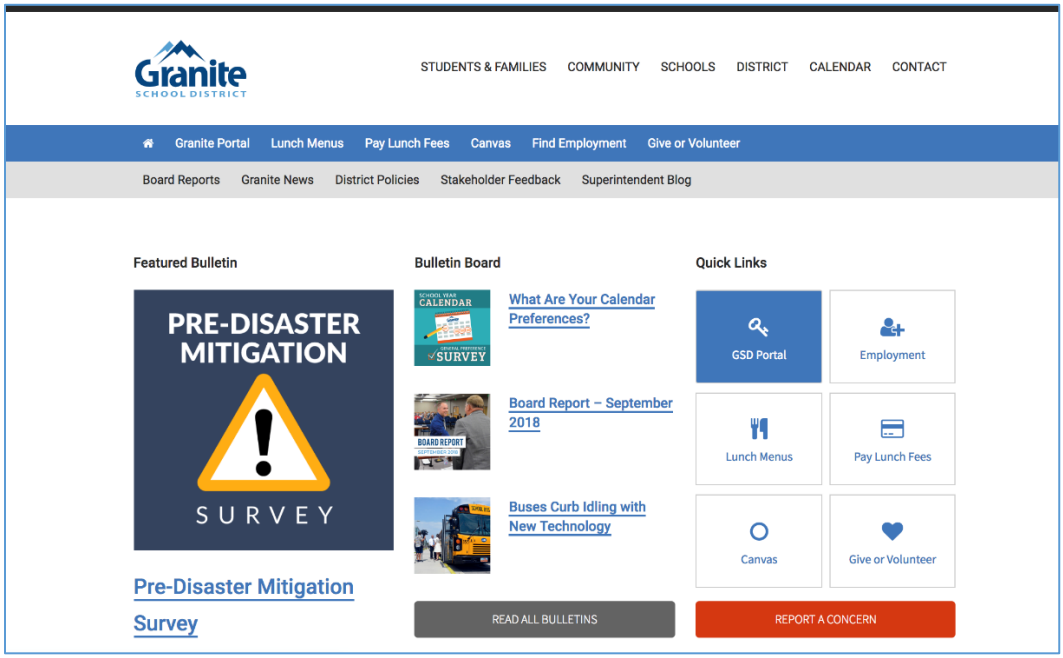
Web Postings and Notices

Postcard Announcing Opportunity for Input

(Note: Mailed to 77,000+ homes on July 18, 2018 to taxpayers and patrons)

Website Posting of Survey Monkey

(Note: On District's Landing Page to Direct to Survey Monkey from July 18-October 31, 2018)



Survey Monkey – Sample Response

(Note: Survey Monkey was sent to all tax payers, patrons, and employees of the Granite School District)

Pre Disaster Mitigation SurveyMonkey

#1

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Tuesday, July 10, 2018 4:12:20 PM
Last Modified:	Tuesday, July 10, 2018 4:13:07 PM
Time Spent:	00:00:47
IP Address:	65.130.146.70

Page 1: GRANITE SCHOOL DISTRICT PRE-DISASTER MITIGATION

Q1 What is your affiliation with Granite School District or the Community? You may check more than one box.	**I am a tax payer in Granite School District** , **I am a patron of Granite School District** , **I am an employee of Granite School District**
Q2 Our Pre-Disaster Mitigation Plan is available on our main page at Graniteschools.orgDid you read the plan?	**Yes**
Q3 Give us your feedback concerning our Pre-Disaster Mitigation Plan. Please be specific to which numbered section your comment or feedback applies to.	**Respondent skipped this question**

Survey Monkey Posting to Employees

(*Note: Email was sent to employees directing them to an intranet with the Survey Monkey*)

What is Proficiency-Based Grading?	Granite Schools	—	—	Published 2018/08/22	12488
Pre-Disaster Mitigation Survey	Granite Schools	—	—	Published 2018/08/01	12429
SAGE Proficiency Reports on Parent Portal	Granite Schools	—	—	Published 2018/08/09	12461
Board Report – August 2018	Granite Schools	—	—	Published 2018/08/09	12497

Email to Patrons sent on September 14, 2018

From: Williams, Darla J
Sent: Monday, October 8, 2018 8:28 AM
To: kseppich@mtoid.org; grandpapeay@msn.com; lobkb973@hotmail.com
Cc: Pennington, Diana <dpennington@graniteschools.org>
Subject: Granite School District Pre-Disaster Mitigation Plan

Good Afternoon,

Granite School District is seeking input on our Pre-Disaster Mitigation Plan. You can find our plan on our website at graniteschools.org.

After reviewing our plan, please take a moment to complete this short survey. The survey will close on October 31, 2018.

https://www.surveymonkey.com/r/predisaster

Thank you for your time,

Benjamin Horsley

Director, Communications & Community Outreach

Granite School District

(385) 646-4420, Cell (801) 698-5335

Fax (385) 646-4194