FLOODS

What you should know when living in Utah

Floods, What You Should Know When Living in Utah

Floods, What You Should Know When Living in Utah provides helpful facts and tips designed to increase your flood awareness and make preparation easy. In this way, you can protect your home and loved ones before disaster strikes. The following information acts as a useful tool for all citizens throughout Utah, and will help you to better understand and prepare for your own unique flood risks. This brochure may also be used as a resource to avoid loss of life, property, loss of business, and damage to the environment that may otherwise result from flooding.

Did you know…

- Six inches of moving water is enough to knock you off your feet?
- One foot of water will float your vehicle, and two feet can wash it away?
- The number of landslides is increasing every year?
- As a homeowner, you are more likely to experience a flood than a fire over the span of a 30 year mortgage?
- Most homeowner policies don't cover floods – you need a separate policy to be fully protected?

What would you do…

- Would you know what to do if a flood were to strike in your area?
- How would you plan on reuniting with your children or family members if you were separated?
- How would you offset the costs of damage to your home?
- What would happen to your important documents and valuables?

These are the questions we need to be asking ourselves, because flooding in Utah is more common than you might think. Due to the state's unique mix of natural geography and urban development, chances are you and your community are at risk for experiencing flooding.

The good news is, you can do something about it! *Floods, What You Should Know When Living in Utah* provides you with simple tips that you can follow to protect yourself and your home before, during, and after a flood. This brochure will help you to better understand the common causes of flooding, recognize the signs of an impending flood or landslide, and prepare yourself with actions you can take to minimize your flooding risks. Additionally, it provides an overview of the programs currently in place to prevent damage to lives and property as a result of flooding, such as the National Flood Insurance Program (NFIP).

ACKNOWLEDGMENTS

This brochure was developed by the **Utah Floodplain and Stormwater Management Association (UFSMA) with assistance from**: Oldcastle Precast, Stormwater Coalition, The Utah Division of Emergency Management, US Army Corps of Engineers,

With Special Thanks to:
Randy Wahlen, Alan Taylor, Dustin Lewis, Dr. George Burbidge, Judy Watanabe, John Crofts and Scott Stoddard for development and distribution of this pamphlet.

Contacts:

State Floodplain Management office –
801-538-3332
http://des.utah.gov/flood

Utah Floodplain and Stormwater Management Association (UFSMA) – 801-538-3400
www.ufsma.org

National Flood Insurance Program -
FEMA 500 C Street, SW Washington, D.C. 20472
Phone: (202) 566-1600
nfip@dhs.gov
www.floodsmart.gov

To find an Agent for Flood Insurance call
1-800-720-1093

For more information on your local floodplain or stormwater management programs, contact your local planning or public works office.

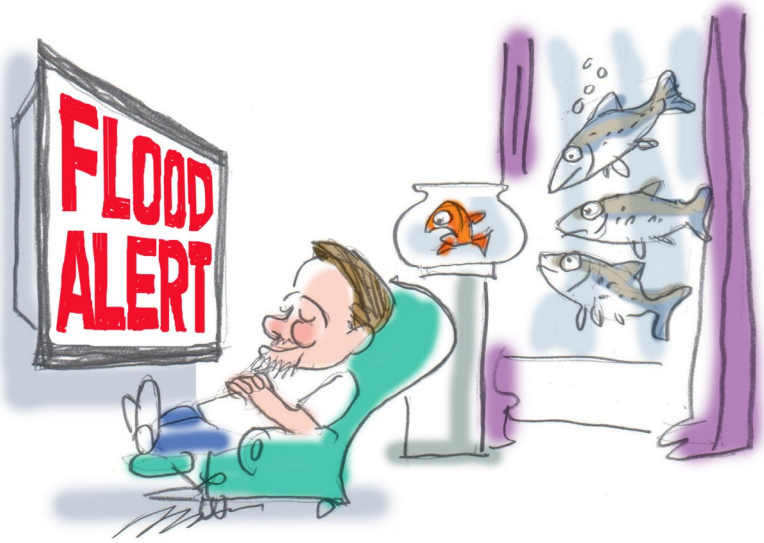
Special Thanks to Pat Bagley for Cartoons throughout this publication.
History of Floods Photo: Utah Historical Society

Flooding In Utah

Much of Utah is located in a desert climate and flooding may not seem like much of an issue for most people. However, each year there are several floods that occur around the state.

No matter where you live in the state, you may be at risk for flooding.

Photo Courtesy of Alan Taylor, JUB Engineering



By knowing what types of floods might occur near your home, you will be better prepared when floods occur.

Now is the time to evaluate your flood hazard risk and take the necessary steps to prepare for future hazards that will occur.

This booklet has been designed to help you learn some of the basics about flooding.

Photo Courtesy of Alan Taylor, JUB Engineering

What To Do Before a Flood

Know how to monitor the hazard. Stay tuned to NOAA Weather Radio or commercial radio or television.

Know what flood risks exist related to your location. Check with local authorities to find out if you are in a flood-prone or high-risk area.

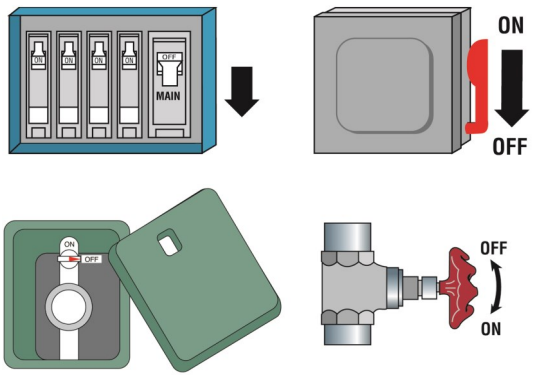
Consider purchasing flood insurance: Homeowner policies don't cover floods. You need a separate policy just for floods.

Consider options to protect your property:

- Document personal property with photos or video.
- Store the documentation and other valuable documents in a safe place away from your home.
- Install flood protection measures in and around your

Prepare a plan for your household:

- Be prepared to evacuate. Plan a safe retreat and have a meeting place in case you are separated.
- Choose an out-of-town contact for everyone to call to let them know where you are.
- Prepare and maintain 72-hour kits for each family member.
- Prepare and maintain an emergency kit for your car.
- Get to know your neighbors and discuss how you can help each other.
- Plan how to take care of pets. Emergency shelters may not allow pets.



Prepare to leave your home:

- If time allows, move valuables to highest inside part of your residence.
- If you can do so safely, turn off electricity, gas and water at main switches and valves.
- Know where the gas pilot lights are and how the heating/cooling system works.

What To Do During A Flood

Be aware of streams, drainage channels, canyons and other areas known to flood suddenly. Flash floods can occur in these areas with or without such typical warning signs as rain clouds or heavy rain.

If local authorities issue a flood watch, prepare to evacuate:

- Secure your home. If you have time, tie down or bring outdoor equipment and lawn furniture inside. Move essential items to upper floors.
- If instructed, turn off utilities at the main switches or valves. Disconnect electrical appliances. Do not touch electrical equipment if you are wet or standing in water.
- Fill the bathtub with water in case water becomes contaminated or unavailable. Before filling, sterilize the tub with a diluted bleach solution.

Photo Courtesy of Utah Division of Emergency Management

Do not walk through moving water. Six inches of moving water can knock you off of your feet. If you must walk in a flooded area, walk where the water is not moving. Use a stick to check the firmness of the ground in front of you.

Important Information

Turn Around, Don't Drown!

Do not drive into flooded areas. Six inches of water will reach the bottom of most passenger cars causing loss of control and possible stalling. A foot of water will float many vehicles. Two feet of water will wash away almost all vehicles. If floodwaters rise around your car, abandon the car and move to higher ground, if you can do so safely.

Many floods occur at night. Be especially careful when driving. If you are unsure if the road is passable, turn around and don't drown.

What To Do After A Flood

Avoid floodwaters and moving water. The water may be contaminated by oil, gasoline or raw sewage. The water may also be electrically charged from underground or downed power lines.

Photo Courtesy of Win Henderson / FEMA

Be aware where floodwaters have receded. Roads may have weakened and could collapse under the weight of a car.

Stay away from downed power lines and report them to the power company.

Stay away from designated disaster areas unless authorities ask for volunteers.

Return home only when authorities indicate it is safe. Stay out of buildings if surrounded by floodwaters. Use extreme caution when entering buildings. There may be hidden damage, particularly in foundations.

Consider your family's health and safety needs:

- Wash hands frequently with soap and water if you come in contact with floodwaters.
- Throw away food that has come in contact with floodwaters.
- Listen for news reports to learn if the water supply is safe to drink.
- Listen to news reports for information about assistance for housing, food and clothes.
- Seek necessary medical care at the nearest medical facility.

Photo Courtesy of Butch DuCote / FEMA

Damaged sewage systems are serious hazards. Service damaged septic tanks, cesspools, pits, and leaching systems as soon as possible.

Contact your insurance agent.

- Take photos or videos of the damage.
- Separate damaged and undamaged items.
- Locate your financial records.
- Keep detailed records of cleanup costs.

Flash Floods

Flash floods are the most dangerous of all types of flooding and rank first as the cause of flood related deaths in the United States. **Any storm that generates a great amount of rainfall in a short time can generate a flash flood.**

Strong localized rainfall, or rapidly melting snow, can saturate the ground and the runoff can become a raging torrent as it follows riverbeds, ravines, ditches and canyons to lower ground. All **flash floods strike quickly and without much, if any, warning.**

Flash floods occur in all fifty states and are quite common here in Utah. Some of the most likely places where flash floods occur, include:

- Areas with steep slopes and large amounts of impervious surface;
- Narrow stream valleys and “slot canyons”; and,
- Areas where gutters and storm drains speed runoff.

Be aware when engaging in outdoor recreation activities that take you into desert and mountain areas with dry river beds, dry washes, and other low lying areas where the risk of flash floods can be significant.

Check local weather reports for the area and be aware of any potential flood watches or warnings that have been issued.

Other sources of flash flooding include:

- Dam breaks and failures;
- The release of ice jam flooding;
- The collapse of debris dams;
- Canal breaks; and,
- Failure of piped systems

Live stream gage information can be found at: http://ut.water.usgs.gov

Important Information

Be aware when engaging in outdoor recreation activities ...Check local weather reports for the area and be aware of any potential flood watches or warnings that have been issued.

Stream Bank and Overbank Flooding

Important Information

Flooding is not predictable – one never knows where the floodwaters will spread.

Most natural rivers and streams follow a channel that has been carved out over a long period of time. Generally these channels have the capacity to carry the flow of water from where it is collected in the watershed to the point where it discharges into another water body, such as a lake. Occasionally, **streams may collect more water than the channel can handle and the water is forced out over the banks of the stream**, temporarily inundating the adjacent lands.

Stream bank flooding may also occur when debris or ice accumulates in a stream channel and creates a debris dam, backing water up and forcing it out of the usual channel. Sometimes when fill is placed into the stream for development, the resulting material can cause a rise in the height of the stream which may result in over-bank flooding.

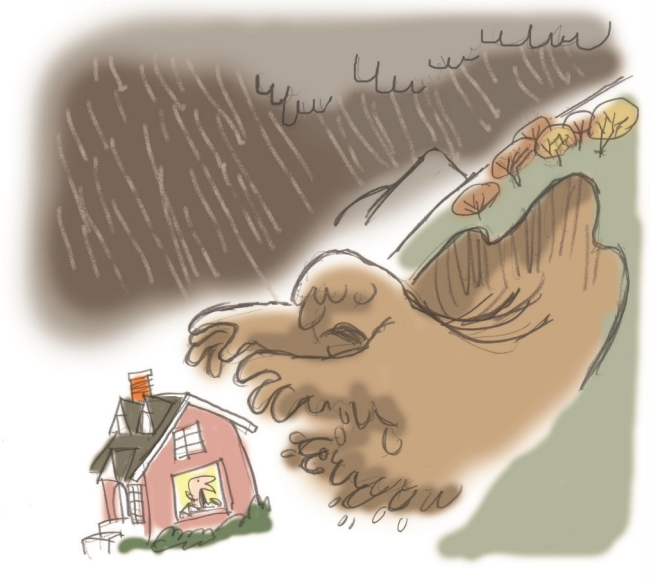
Alluvial Fan Flooding:

Photo Courtesy of Utah Division of Emergency Management

Alluvial fans are found throughout the state. They are composed of stream flow and/or debris flow sedimentary deposits. They are usually triangular or fan-shaped and located at the base of mountain fronts near the mouths of canyons or valleys. The fans "build-up" over long periods of time as rock and soil erode from the mountain watershed and are transported to the base of a valley where the slope flattens out, dropping sediment and rock over fan-shaped area.

These gently sloping landforms can create a flood hazard for those who choose to develop there, due to:

- Unpredictable flow paths and the potential for the channel to move across the fan during the flood;
- High velocity of floodwaters (15 to 30 feet per second);
- Sediment and debris deposited by floodwaters (15 –20 feet in some cases);
- Erosion and scour; and,
- Debris flows / mudflows.



Debris Flow & Mud Slides

Debris and mud flows are rivers of rock, earth, and other debris saturated with water. They develop when water rapidly accumulates in the ground during heavy rainfall or rapid snowmelt, changing the earth into a flowing river of mud or "slurry". They can flow rapidly, striking with little or no warning at avalanche speeds. They can travel far from their source, growing in size as they pick up trees, boulders, cars, etc.

Take Protective Measures Before a Landslide or Debris Flow:

- Do not build near steep slopes, close to mountain edges, near drainage ways, or natural erosion valleys.
- Get a ground assessment of your property.
- Consult an appropriate professional expert for advice on corrective measures.
- Minimize home hazards by having flexible pipe fittings installed to avoid gas or water leaks.

Recognize Landslide Warning Signs:

- Changes occur in your landscape such as land movement, small slides, flows, or progressively leaning trees.
- Doors or windows stick or jam for the first time.
- New cracks appear in plaster, tile, brick, or foundations.
- Outside walls, walks, or stairs begin pulling away from the building.
- Slowly developing, widening cracks appear on the ground or on paved areas.
- Underground utility lines break.
- Bulging ground appears at the base of a slope.
- Water breaks through the ground surface in new locations.
- Fences, retaining walls, utility poles, or trees tilt or move.
- A faint rumbling sound that increases in volume is noticeable as the landslide nears. Unusual sounds, such as trees cracking or boulders knocking together, might indicate moving debris.

Important Information

Landslides occur in all 50 states - it is estimated that they cause between 25 and 50 deaths each year in the U.S. and thousands more in vulnerable areas around the globe. The number of landslides in the United States is expected to increase.

Important Information

The chances of floods and debris flows increase significantly for several years following a wildfire.

Debris Flow & Mud Slides

The following are guidelines for what you should do if a landslide or debris flow occurs:

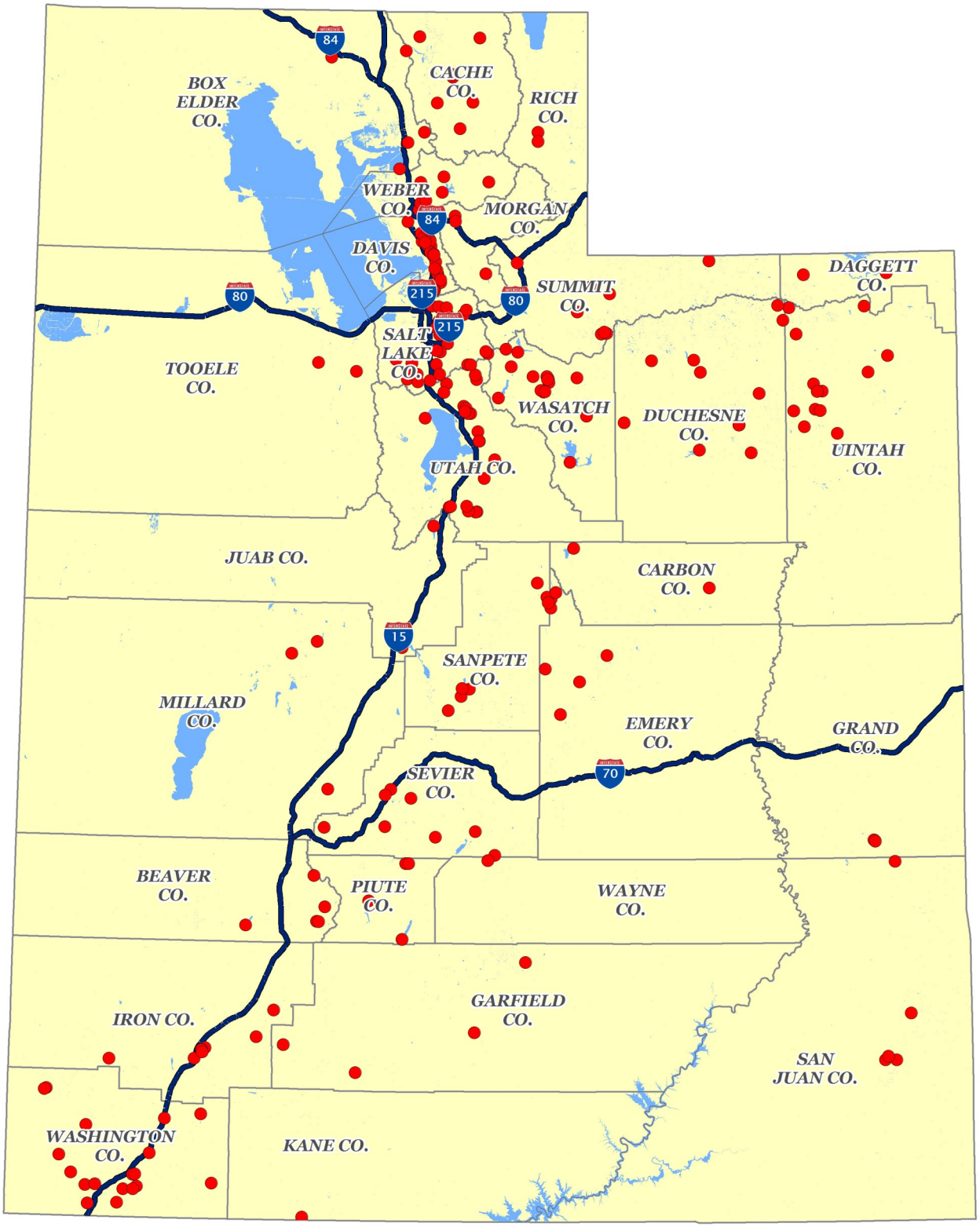
- Move away from the path of a landslide or debris flow as quickly as possible.
- Curl into a tight ball and protect your head if escape is not possible.

The following are guidelines for the period following a landslide:

- Stay away from the slide area. There may be danger of additional slides.
- Check for injured and trapped persons near the slide, without entering the direct slide area. Direct rescuers to their locations.
- Watch for associated dangers such as broken electrical, water, gas, and sewage lines and damaged roadways and railways.
- Re-seed damaged ground as soon as possible since erosion caused by loss of ground cover can lead to flash flooding and additional landslides in the near future.
- Seek advice from a geotechnical expert for evaluating landslide hazards or designing corrective techniques to reduce landslide risk.

Photo Courtesy of US Forest Service

High Hazard Dams In Utah



Prepared by:
The Utah Division of Emergency Management

Data Sources: Utah Division of Water Rights, Utah Automated Geographic Reference Center and U.S. Census Bureau

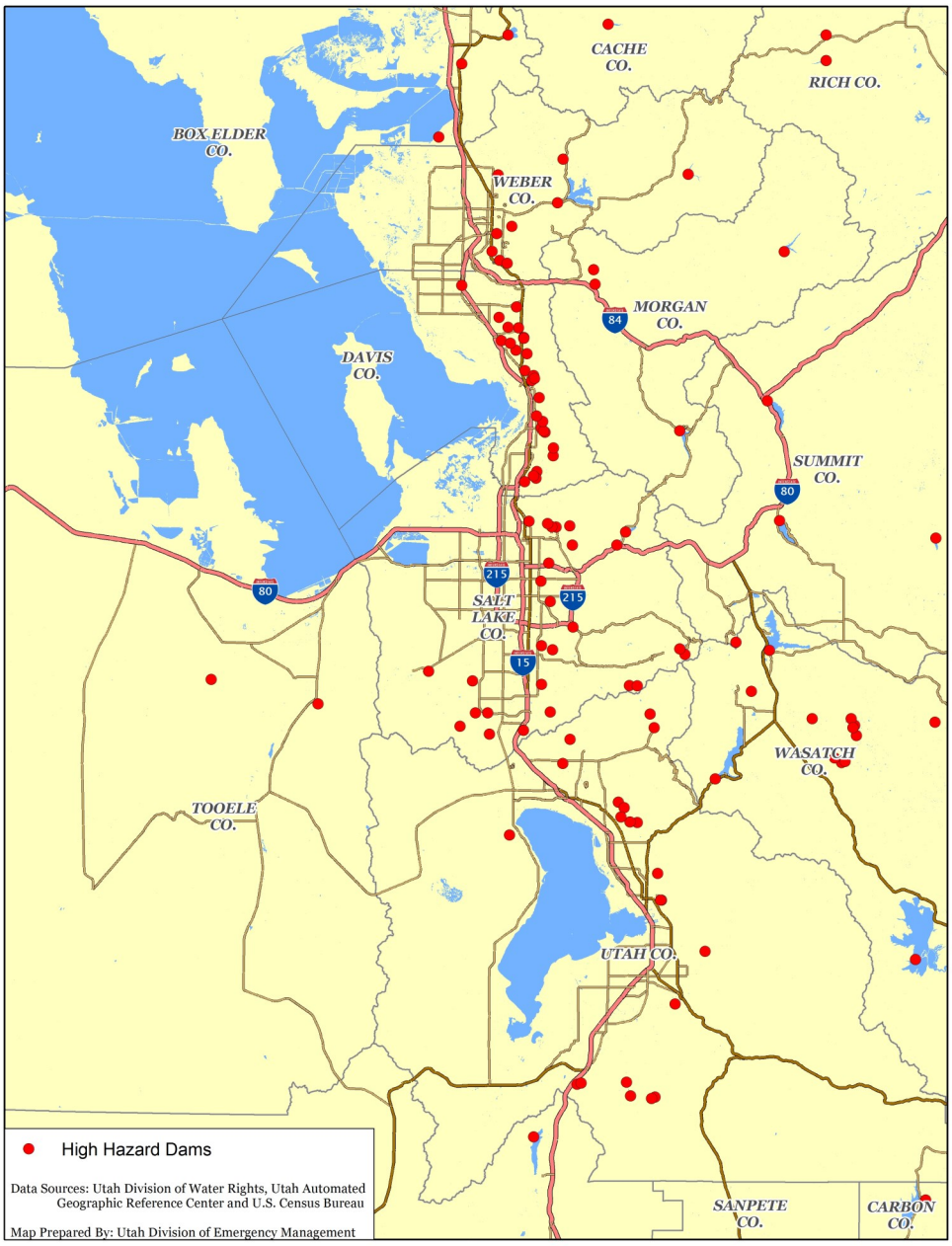
Legend:

High Hazard Dams
Rivers and Streams
Freeways

Wasatch Front High Hazard Dams

The State of Utah's Dam Safety program was established to protect the public against the possibilities and consequences of dam failures. There are nearly 300 "high hazard" dams statewide, with almost 100 along the Wasatch Front.

High hazard dams are not always large reservoirs. Some detention ponds or debris basins are also classified as high hazard because their failure would put downstream homeowner property and lives at risk. More information on the location of high hazard dams is available at:



Pre 1960

July 4, 1884
Flooding on the Colorado River, greater than the 100 year event, occurred due to rapid snowmelt combined with rainfall.

April 13, 1923
Tributaries to Great Salt Lake between Ogden and Salt Lake City were flooded due to intense thunderstorms. There were seven deaths and damage was estimated at $3 million.

April 28, 1952
Flooding on Strawberry, upper Price, upper San Rafael, Ogden, Weber, Provo, and Jordan Rivers; Blacksmith Fork, and Spanish Fork; upper Muddy and Chalk Creeks at Coalville was caused by melting of maximum-of-record snowpack for April 1. Flooding was severe in central and north-central Utah and a flood disaster was declared. Two lives were lost in boating accidents on the swollen Ogden River. Flood damage was $8.4 million, of which $1.9 million was in Salt Lake City.

1960/70

June 16, 1963.
Ashley Creek and other streams between Manila and Vernal and west of Manila flooded due to three days of intense rainfall on thick snowpack above 9,200 feet. Seven died during the flooding and damage was $814,000.

Dec 6-7, 1966
Virgin and Santa Clara Rivers flooded from four days of light to intense rainfall of as much as 12 inches. Damage was $1.4 million.

Aug 1-2, 1968
Flooding occurred along the Cottonwood Wash and other nearby tributaries to San Juan River from intense thunderstorms following 11 days of rainfall.

Sept 5-7, 1970
San Juan River and tributaries from McElmo Creek to Chinle Creek flooded from record breaking rainfall. Two deaths occurred and damage was estimated at $700,000.

Aug 27, 1972
Vernon Creek flooded from locally intense thunderstorms.

1980/90

Apr. 10- June 25, 1983.
Lower Duchesne and Jordan Rivers and tributaries (including Spanish Fork); upper Price, Bear, Sevier, and San Pitch Rivers; Chalk, East Canyon, Trout, and George Creeks; Great Salt Lake and tributaries between Ogden and Salt Lake City flooded due to rapid melting of snowpack having maximum-of-record water content for June 1. A disaster was declared by the President with damage at $621 million.

Apr. 17- June 20, 1984.
The White, upper Price, and Fremont Rivers; lower Bear and Sevier Rivers and tributaries; Beaver River; Red Butte Creek; Spanish Fork; Jordan River flooded from runoff from greater than average snowpack for Apr. 1. The damage was estimated at $41 million.

May 22, 1984 Runoff in Sevier River from Nov. 1982 through June 1984 exceeded upstream reservoir capacity; about 1.5 million acre-feet of water conveyed to Sevier Lake. On May 22, 1984, Sevier Lake reported to be as much as 35 feet deep after being nearly dry since about 1880.

1980/90

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2000/05

January 10, 2005
Several weeks of high precipitation, culminating in large storms resulted in significant flooding along the Santa Clara and Virgin Rivers. Approximately 30 homes were damaged from flooding. Total damage was estimated at $300 million dollars. Ash Creek, normally dry and three feet wide was a raging torrent 300 feet wide in places. A fatality related to a man and his wife being trapped in their vehicle by floodwaters happened near Quail Creek Reservoir. A Presidential Disaster Declaration was declared February 1, 2005.

April - June 2005
Frequent rainfall events, warm spring temperatures, and abundant snowpack melting at accelerated rates resulted in significant flooding. Total damages resulting from the flooding and landslide incidents are estimated to be over 2.9 million dollars. A Presidential Disaster Declaration was declared in nine Utah counties and two Indian Reservations.

2006/10

July 11, 2009
A portion of a hillside in Logan, Utah gave way, obstructing an irrigation canal. The obstruction sent tons of water and debris cascading into a neighborhood below. Three people were killed when their home was destroyed and eight other homes were seriously damaged.

June 2010
Water and debris flow from springtime snowmelt and precipitation caused an estimated nearly $1 million in damages to public and private property in multiple jurisdictions throughout the state.

December 2010
Winter storms from four December days brought 16.4 inches of rainfall and 15.3 inches of snow resulting in flooding of parts of Southern Utah. The flooding damaged homes, bridges, roads, utility systems, parks, trails and other public facilities. Estimated damage was $6 million and a Presidential Disaster Declaration was declared.

2011/13

April - July 2011
In August of 2011, a Presidential Disaster Declaration was declared as a result of flooding. Public assistance was sought for 18 counties and 1 Indian reservation. Estimated damage from the flooding was $12.7 million. The cause of the widespread flooding include a record breaking snowpack in certain areas, heavy spring rains and warm temperatures in the summer that led to extreme runoff into rivers and streams.

September 12, 2012
The Laub Reservoir Dam, located west of St. George, broke, inundating neighborhoods in Santa Clara, Ivins, and St. George. A total of 66 homes, 18 businesses, and numerous roads, sidewalks, sewer lines and golf courses were damaged. There was an estimated $3.9 million dollars' worth of damage to infrastructure.

URBAN/RESIDENTIAL STORMWATER

Most urban areas have stormwater collection systems. These systems are intended to collect and route stormwater through the area to minimize the risk of flooding. These systems typically consist of:

Photo Courtesy of George Burbidge

- Stormwater inlets (catch basins);
- Stormwater pipes;
- Open ditches and canals;
- Stormwater detention basins; and,
- Debris Basins.

These systems are generally designed to follow a stormwater master plan that identifies how stormwater is managed in an area. New developments are typically required to construct stormwater systems that will meet the requirements of the stormwater master plan. In spite of the planning and design efforts to keep flooding to a minimum, **flooding can still happen**.

Factors that influence urban/residential flooding –

In Utah, most development originated around natural streams or water bodies that provided a convenient source of water. It is common for natural drainages to flow through the larger urban area.

Flooding in urban and residential areas can be influenced by any one or a combination of the following:

Photo Courtesy of George Burbidge

- Natural creeks or channels overtopping their banks;
- Undersized stormwater collection/conveyance systems;
- Debris and sediment reducing or blocking system capacity;
- Development constructed in drainage channels or floodplains;
- Increase in impervious surfaces due to development;
- Irrigation channels located adjacent to and above development; and,
- Water main breaks or ruptures.

Stormwater - What Can You Do?

There are a few things that you can do as a citizen to help ensure proper planning and operation of your local storm drain and flood control system. These may include:

Photo Courtesy of George Burbidge

- **Be observant !!!** As you travel around your neighborhood, take note of the conditions of the drainage devices (gutters, storm drain grates, channel grates, and channel bottoms);
- If flooding occurs in your neighborhood, take note of anything unusual that may be contributing to the flooding. **Report the flooding and possible causes to the local governing agency;** and,
- Keep debris from accumulating in the storm drain system by keeping your gutters and storm drain inlets clean.

Contacts or sources for help –

- City, County, or other governing agency;
- State of Utah, Division of Emergency Management;
- National Flood Insurance Program (NFIP), administered by the Federal Emergency Management Agency (FEMA); and
- Professional Engineering Consultant with stormwater drainage experience.

Photo Courtesy of Utah Division of Emergency Management

WE ALL LIVE DOWN STREAM

(Stormwater Pollution Prevention)

Salt Lake County Stormwater Coalition

Did you know that stormwater systems are <u>not</u> treated?

Any pollutants entering our stormwater systems are carried to our streams and lakes where we fish and swim. Polluted runoff can harm wildlife and habitats.

WHY DO WE NEED CLEAN WATER?

Maintaining our water resources is important, especially in a desert climate like Utah. Clean water is essential to every aspect of life including:

- Maintaining the quality of local water resources;
- Improving economic growth and prosperity;
- Preserving aquatic resources;
- Maintaining the quality of secondary/irrigation water; and,
- Preserving the general health of the community.

WHAT CAN YOU DO TO HELP?

At Home – Many household products are **toxic**. Do not dump them in the storm drain or in the trashcan.

- Purchase products labeled "non-toxic";
- Use kitty litter to absorb hazardous spills; and
- Use hazardous waste collection or disposal facilities for disposing of toxic household products.

Car Care – Automobiles contain many substances that can harm the environment, such as gasoline, oil, antifreeze, and other fluids. They are toxic to fish and wildlife living downstream.

- Maintain your car regularly to prevent leaks;
- Use rags or drip pans under your car if you have leaks or are doing engine work;
- Use water and cleaners sparingly. Use biodegradable products when washing your car;
- Use a hose with a shutoff nozzle to save water;
- Use commercial carwashes that recycle water; and

We All Live Down Stream

(Stormwater Pollution Prevention)

In your yard – Fertilizers and pesticides can harm aquatic life and destroy habitat. Improper application and inefficient irrigation practices are sources for polluted runoff. To help prevent stormwater pollution:

- Use alternative pest control methods such as beneficial insects and insecticidal soaps;
- Store fertilizers and pesticides in a safe place and dispose of unwanted materials at a Hazardous Waste facility;
- Use recommended amounts to avoid leakage into storm drains;
- Do not fertilize or spray pesticides if rain is predicted;
- Control spillage of fertilizer and pesticides;
- Do not over water your lawn;
- Use water conservation measures when watering your lawn;
- Landscape with drought tolerant plants as much as possible; and,
- Sweep up leaves and trash rather than hosing it into the street.

Dispose of debris in your garbage can or curbside pickup.

Pet Care – Animal wastes are full of bacteria that can be washed into the stormwater systems.

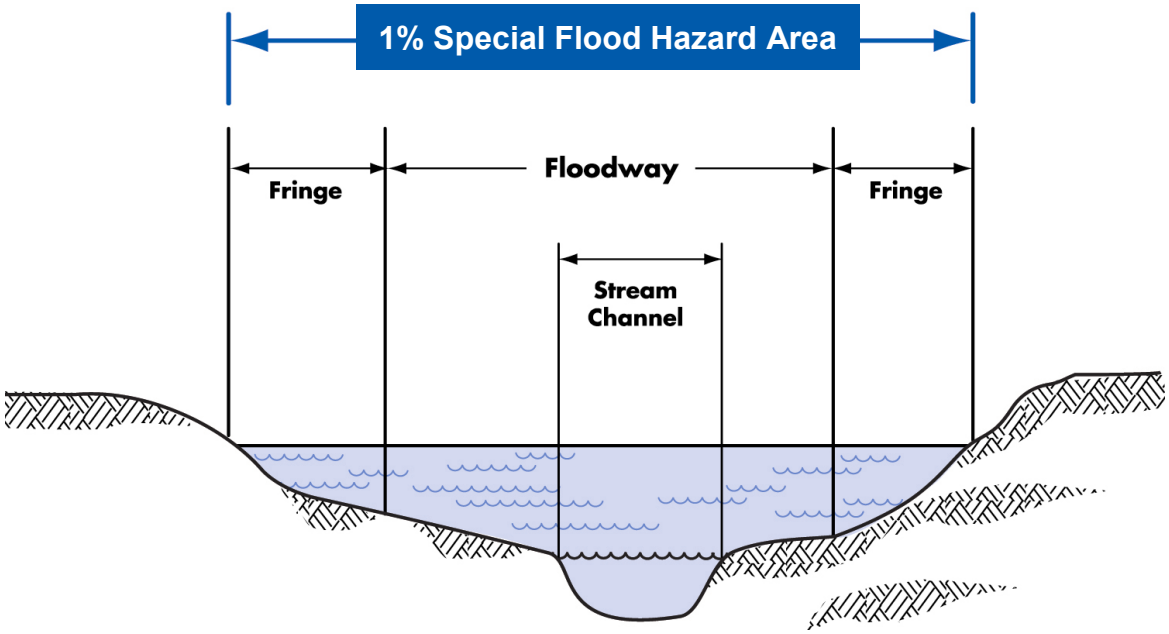
- Carry plastic bags when walking pets; and,
- Dispose of pet waste properly in the toilet or trash.

For more information on stormwater coalitions go to:
http://www.uswac.utah.gov

Special Flood Hazard Area

Floodplain - Land which is susceptible to inundation by water of any source.

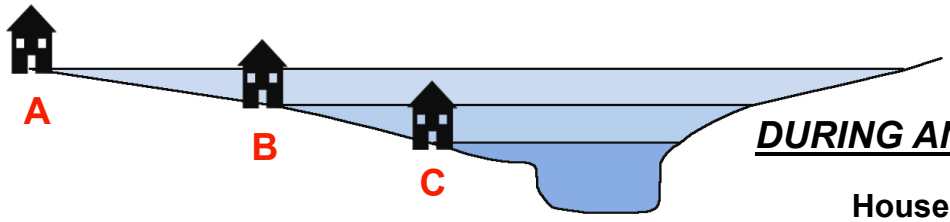
1% Special Flood Hazard Area - The flood elevation that has a one-percent chance of being equaled or exceeded in any given year. It is also known as the base flood.



Floodway - The stream channel and that portion of the adjacent floodplain that must remain open to permit the passage of the base flood.

Elevation Rating - One way to reduce your flood insurance premium is through an elevation rating. If the lowest floor of your house is above the base flood elevation (predicted flood depth in your area), you can qualify for lower rates. Local officials can help you determine the base flood elevation for your home.

WHAT DOES ALL THIS REALLY MEAN?



DURING ANY 30 YEAR MORTGAGE:

House A is in the 500 year floodplain.
It has a 6% chance of flooding.

House B is in the 100 year floodplain.
It has a 26% chance of flooding.

House C is in the 10 year floodplain.
It has a 95% chance of flooding.

AND…
The deeper these houses are in the floodplains, the WORSE the damages

Source: FEMA

What is More Likely Flood or Fire?

The term "100-year flood" has caused much confusion for people not familiar with statistics. Another way to look at flood risk is to think of the odds that a 100-year flood will happen sometime during the life of a 30-year mortgage - a 26% chance for a structure located in the 100-year floodplain.

Compare those odds to the only 1-2% chance that the house will catch fire during the same 30-year mortgage!

Source: FEMA

Flood Insurance

One of the ways to protect your home in future floods is to purchase flood insurance. This is the best means of recovery from flood damages.

Even if your home is not located in the floodplain, you can purchase flood insurance. In fact, more than 25 percent of flood insurance claims come from medium- or low-risk flood areas.

Flood insurance is available to any property owner located in a community participating in the National Flood Insurance Program (NFIP). While floods are not covered under your regular homeowners insurance, homeowners, business owners and renters may all purchase flood insurance as long as their community participates in the NFIP.

You can buy flood insurance from any licensed insurance agent, or through the

Flood Insurance Facts

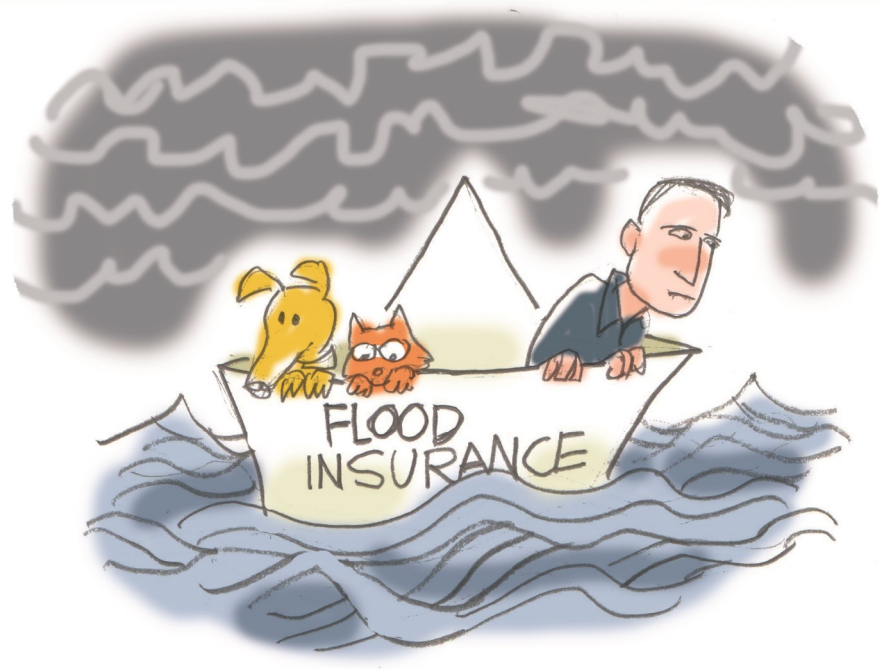
Building Above Base Flood Elevation (BFE)
Base Flood Elevation (BFE) is defined by FEMA as the water surface elevation resulting from a flood that has a 1 percent chance of equaling or exceeding that level in any given year.

Anything built at or below BFE has at least a 1% chance of being flooded. Buildings set above BFE have a reduced chance of flooding. Buildings with an Elevation Certificate that shows the lowest finished floor is at or above BFE typically qualify for significant reductions in flood insurance premiums. The graphic below demonstrates how much a residential customer might save in their flood insurance premiums by building at

Important Information

… if you live within a floodplain, your chances of getting flooded are higher - and your insurance premium is higher.

The **cost of flood insurance** will be determined in part by whether you live in a floodplain, also known as the Special Flood Hazard Area (SFHA). Your local building official(s) should have maps showing the location of any Special Flood Hazard Areas. You can determine whether you are in a low, medium or high-risk area by checking these maps.



Property owners located outside the mapped floodplain may be able to get a **Preferred Risk Policy**. These policies offer fixed combinations of building and contents coverage at set prices.

In summary, if you live within a floodplain, your chances of getting flooded are higher - therefore the premium is higher.

Even so, the cost of flood insurance is far cheaper than having to pay thousands of dollars to repair your home or replace contents because a flood caught you off guard.

What To Ask When Buying A Home

There are a number of things to consider when making a purchase of a home or property intended for development.

Where is the property in relation to a possible floodway?

- Dry wash or disrupted drainage channel
- Natural stream channel and floodplain
- Steep Streets
- Potential for runoff from adjacent property
- Proximity to storm drainage facilities

Where does water go once it enters the property?

Can water be routed around the building site without affecting adjacent property?

Is the property on the downhill side of a sloped street or across an intersection from a sloped street?

Important Information

The most important thing to keep in mind is that water flows downhill and typically follows the path of least resistance.

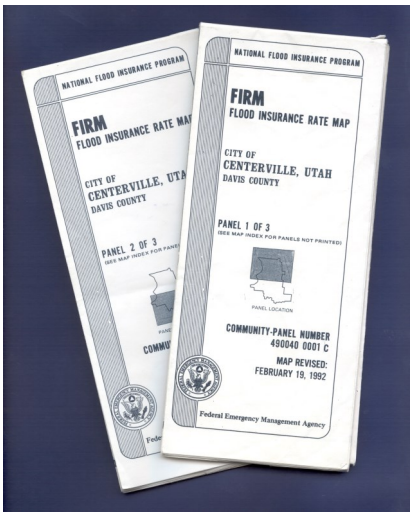
Evaluating Your Current Home

There are several measures that can be taken to reduce flooding potential. When implementing these measures, remember that water flows downhill. These measures include:

- Make sure the ground surface adjacent to the building slopes away from the building;
- Keep discharge from downspouts directed away from the building;
- Swales (shallow ditch or depression) can be incorporated into grassed or landscaped areas to direct water where you want it to go;
- Berms, walls, and steps can be constructed as obstructions or means of directing water in a desired direction;
- Pipe and gravel drains can be installed to catch water from the property or from an adjacent property and direct it to a desired location such as the street or other storm drainage ditch or system;
- Make sure rain gutters and street gutters are free of leaves and debris that can plug storm drain systems; and,
- If the property is near a channel, make sure the channel is clear of debris and obstructions including structures over or across the channel. Do not alter or change the course of the channel. Keep all buildings well away from and above the channel.

Photo Courtesy of Dustin Lewis

Flood Map Overview

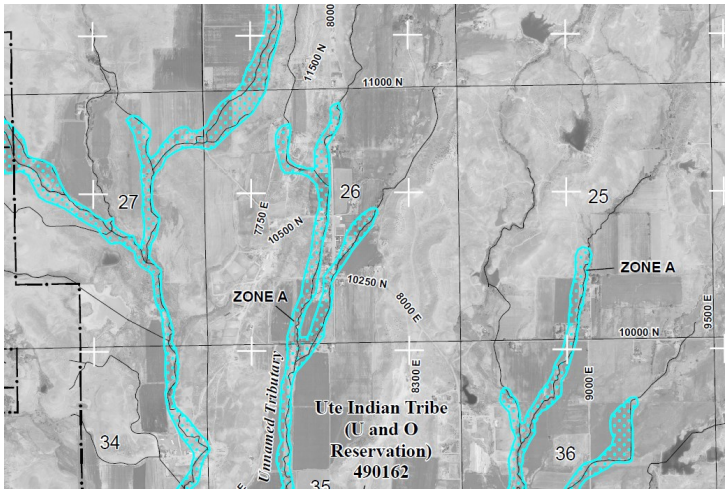


How to Obtain Flood Maps - The flood maps for your community should be available for review at your local planning, zoning or engineering office. These are also available online at: **www.msc.fema.gov**

Flood Map Coverage - Most flood maps cover only one jurisdiction. If that jurisdiction is an unincorporated part of a county, flooding information is shown only for those areas. Separate flood maps are prepared for incorporated areas and in some locations countywide flood maps may be available.

Flood Map Index - Since the geographic area of a Flood Map may be quite large, FEMA divides the area into sections called panels. The index is provided to show what area may be found on each panel.

Elements Found on All Panels -



Floodplain Boundary - These boundaries show the 100-yr and 500-yr Floodplains.

Hazard Area Designation - These areas appear as dark and light tints. Dark tints indicate areas of greater flood hazard. Lighter areas indicate a lesser flood hazard.

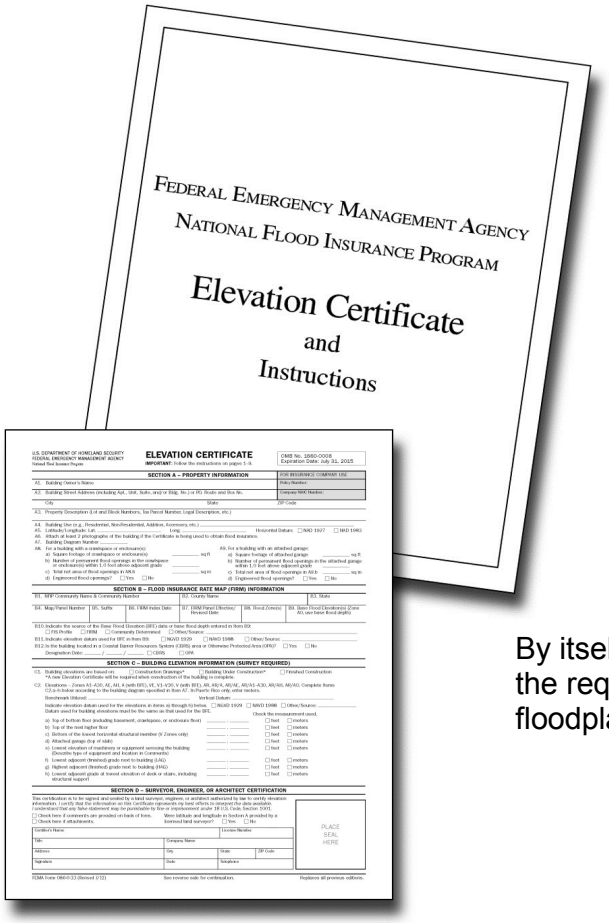
Flood Insurance Risk Zone Designations - The zone designations indicate the magnitude of the flood hazard in specific areas of a community.

The **Floodway** is the "cross-hatched" area.
Zone AE (dark shaded) is the 100-year (1% annual chance) floodplain.
Zone X (unshaded) includes all other areas, considered low risk.
Zone X (shaded) shows low risk areas affected by the 500-year floodplain (0.2% annual chance).

Map Scale - This allows you to relate distances measured on the Flood Map to actual distances on the ground. The scale shown applies only to that panel. Most commonly used scales indicate one inch on the map equals 500, 1,000 or 2,000 feet on the ground.

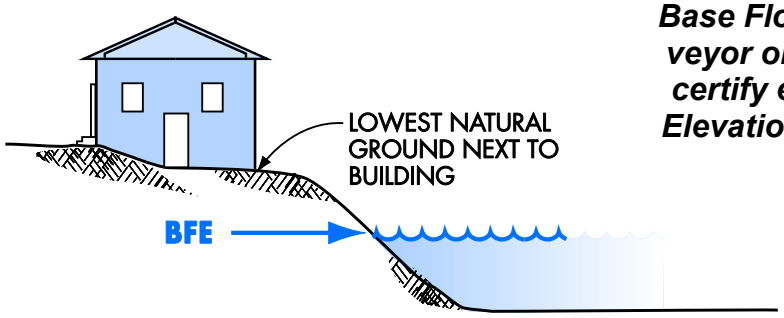
What Is The Elevation Certificate and How Is It Used?

The Elevation Certificate can be used to show that the site's natural ground is above the Base Flood Elevation.



- The Elevation Certificate is a FEMA form. Go to www.fema.gov and search for "Elevation Certificate".
- The Elevation Certificate must be completed and sealed by a registered surveyor or engineer when the floodplain has a Base Flood Elevation.
- A community official may complete the Elevation Certificate for sites in AO zones and A zones without Base Flood Elevations;
- It is used to verify that buildings are elevated properly.
- Insurance agents use the Elevation Certificate to write flood insurance policies.

By itself, the Elevation Certificate cannot be used to waive the requirement for flood insurance. Contact your local floodplain administrator with questions.



If your land is shown on the map as "in" the floodplain, but the natural grade of your building site is higher than the Base Flood Elevation (BFE)… get a surveyor or engineer who is authorized to certify elevations to complete a FEMA Elevation Certificate for a Letter of Map Amendment (LOMA).

Be Ready Utah

Get a Kit
Get tips and ideas on the types of kits and how to build them.

Earthquake
Utah is earthquake country. Learn earthquake facts and safety tips.

Make a Plan
Get started making your family emergency plan.

Get Involved
Learn about CERT Training and other ways to help during a disaster.

Pet Preparedness
Don't forget Fido! Find tips on emergency plans and kits for your pets.

Water Storage
As disaster water supplies may be cut off. Are you prepared?

Food Storage
Where to start, what foods are best and how much you will need.

Be Informed
Knowing about disasters can help you better to prepare for them.

Evacuation
Get tips on the many types of disasters that may force evacuation.

Special Needs
Learn how you or someone you love can get assistance in an emergency.

Social Media
Keep up to date with emergency preparedness info and news.

Children and Disasters
Info to better prepare your children in case of disaster.

For more information on how to prepare, go to:
www.bereadyutah.gov

Photo Courtesy of Utah Historical Society

Photo Courtesy of Andrea Booher/FEMA Photo

TERMS

BASE FLOOD – The base flood is referred to as the 1% Special Flood Hazard Area or 100-year flood.

BASE FLOOD ELEVATION (BFE) – The level of floodwater reached during the Base Flood is referred to as the Base Flood Elevation or 100-year flood elevation.

CFM - Certified Floodplain Manager

DFIRM - Digital Flood Insurance Rate Map

FLASH FLOOD - A flood that peaks in a short length of time and is often the result of heavy rainfall in a localized area.

FLOOD FRINGE – The area in the 1% Special Flood Hazard Area outside of the floodway.

FLOOD INSURANCE RATE MAP (FIRM) – a FIRM is an official map issued by FEMA designating areas of special flood hazard for insurance and planning use.

FLOODPLAIN – The area anticipated to be inundated by the 100-year flood.

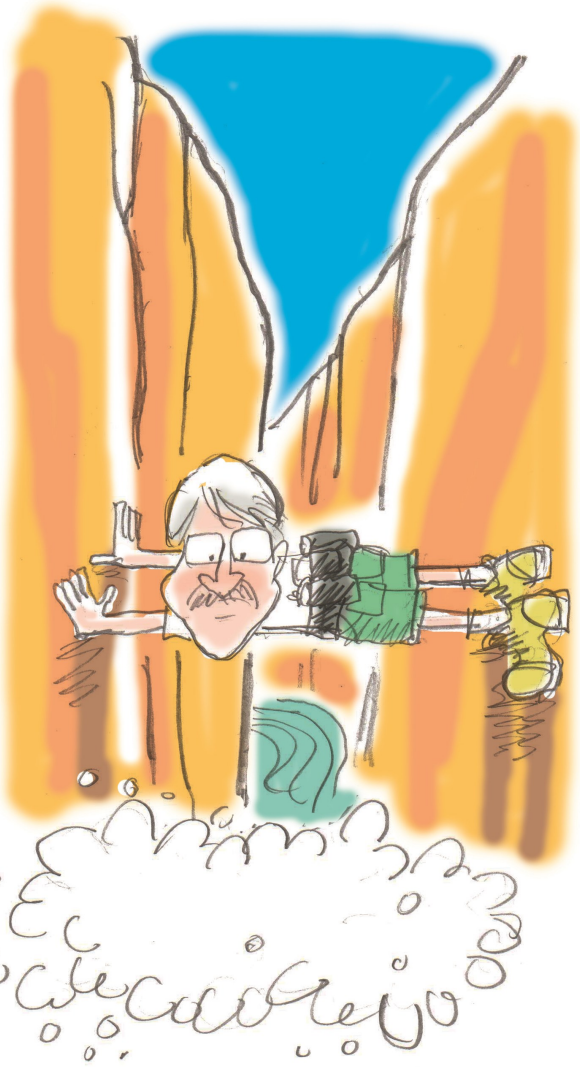
FLOODWAY – The river channel plus any adjacent floodplain areas.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA) - U.S. Weather Bureau.

1% SPECIAL FLOOD HAZARD AREA - The flood elevation that has a one-percent chance of being equaled or exceeded in any given year. It is also know as the base flood.

RUNOFF - The portion of precipitation that is not intercepted by vegetation or soil, thus flowing toward lakes or rivers.

SPECIAL FLOOD HAZARD AREA (SFHA) – Dark shaded areas on FIRM that identify the area of the 1% Special Flood Hazard Area.

Floodplain UTAH Stormwater

Utah Floodplain and Stormwater Management Association