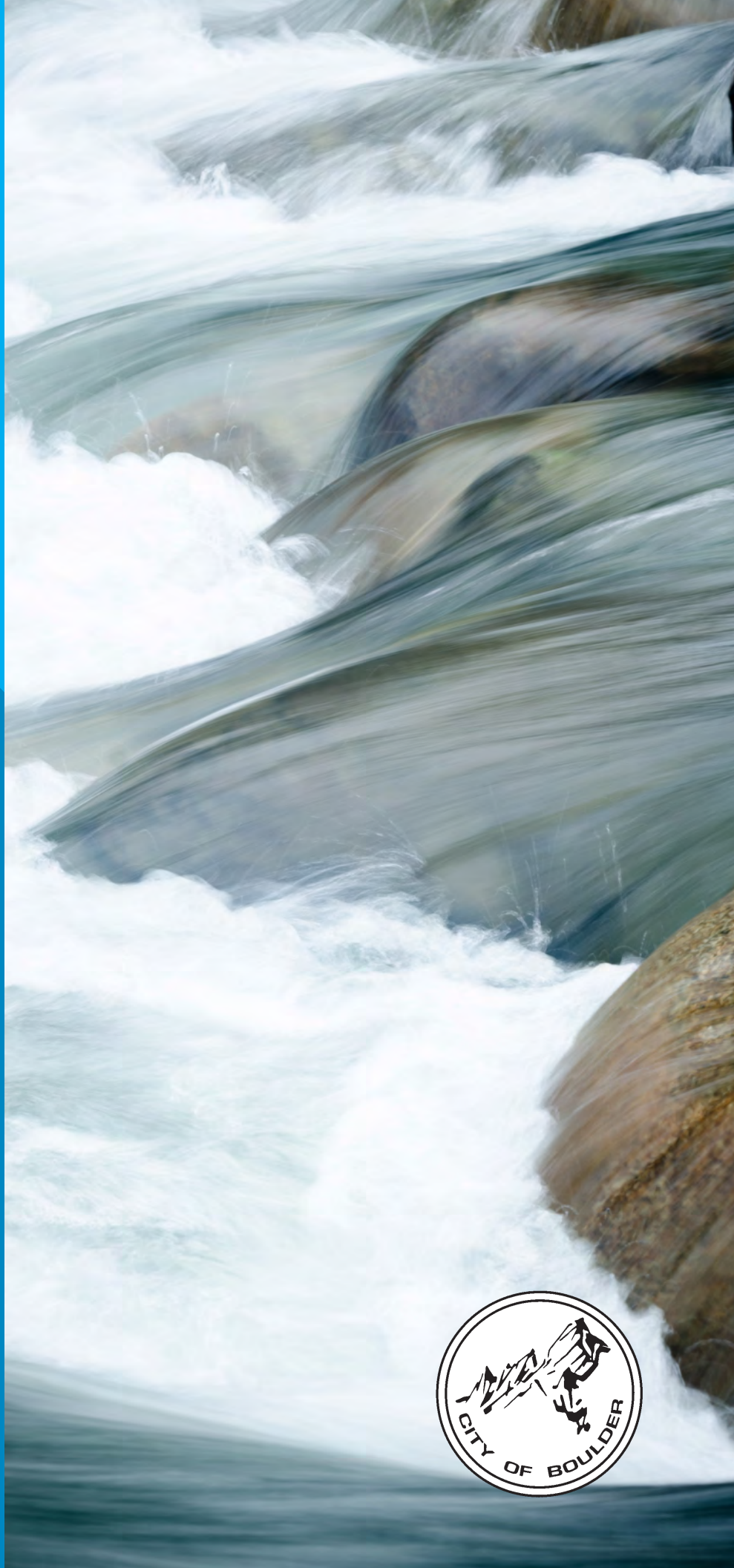
COMMUNITY GUIDE TO FLOOD SAFETY BOULDER, CO



BE AWARE • BE VIGILANT • BE SAFE

The Boulder Community Guide to Flood Safety supports personal preparedness and resilience. Use this guide to prepare your family, home and business for future floods.

www.BoulderFloodInfo.net

CITY OF BOULDER

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Did you sign up for free emergency alerts?

Visit **BoCo911Alert.com** to sign up for free emergency alerts at home, work, and via cellphones, text messages, and email. University of Colorado at Boulder (CU) students, faculty and staff can visit **alerts.colorado.edu** to sign up for CU emergency alerts.

www.BoulderFloodInfo.net

FLOOD SAFETY
BOULDER, CO

SPRING 2014
POST-FLOOD COMPANION GUIDE

City of Boulder

Tear this page to post around your home or business.

BE AWARE • BE VIGILANT • BE SAFE

Following the September 2013 flood, the City of Boulder wants residents to be prepared for any flash flooding, elevated groundwater levels and potential hillside instability that may occur with normal spring runoff and precipitation events. Creek and drainageway conditions have changed since last spring and residents should be aware of the potential risks.

FLASH FLOOD

Floods can still happen in a flash.

Although the September event happened over a few days, flash floods are still Boulder's primary risk. Due to the last flood event, residents should be aware of creek conditions that may increase flash flood risks:

- Creek capacities have been reduced due to sediment and rocky/woody debris;
- Due to upstream conditions,water surges can occur if sediment or debris dams suddenly break free; and
- The annual filling and spilling of area reservoirs (like Barker and Gross reservoirs), will increase flows on Boulder and South Boulder creeks and may happen earlier and continue longer than a typical year.

ELEVATED GROUNDWATER

In September 2013, more than 17 inches of rain fell on the region over an eight-day period. At the height of the event, the local water table was above ground in some areas and caused the widespread flooding of basements.

- All indications show that groundwater levels are still elevated citywide. For example, the city has received reports that residents continue to use sump pumps throughout the winter months, when groundwater levels typically recede.
- Spring runoff and any local precipitation will only add to soil saturation levels.
- If your basement flooded in fall 2013 due to local groundwater conditions, it may happen again as groundwater levels rise.
- Property owners should ensure that sump pumps are functional or consult with an expert to have their system assessed.

LANDSLIDES AND HILLSIDE INSTABILITY

Saturated soils and the increase of groundwater levels throughout the spring creates the possibility of landslides or larger hillside instability. When recreating in and around Boulder County, always be aware of your surroundings and watch out for potential landslide indicators like:

- Frequent rockfall events of all sizes (may indicate larger hillside instability); and
- Visible shifts in formations or structures (tilted telephone poles or trees, new cracks in pavement or asphalt, etc.).

If you notice any of the above landslide indicators, please call 911 to report your findings.

Sign up for emergency notifications
Go to: www.BoCo911alert.com

City flood info: **www.BoulderFloodInfo.net**
Office of Emergency Management: **www.BoulderOEM.com**

PERSONAL PREPAREDNESS TIPS:
FLOOD SAFETY STARTS WITH YOU

Floods Can STILL Happen in a Flash

Although the September floods happened over a few days, flash floods are still Boulder's primary risk. Be aware of the increased flash flood risk due to reduced capacities and accumulated sediment and debris in creeks. If sediment and debris dams temporarily block creek flows and then suddenly break free, water surges may occur.

- **If creek levels suddenly rise or fall, move to higher ground and call 911.**

Stay Alert

Monitor the weather, watch the water levels in nearby creeks, and be aware of your surroundings. Frequent falling rocks or visible shifts in landscape formations or structures (like tilted telephone poles or trees, or new cracks forming in pavement or asphalt) may indicate greater hillside instability.

- **If you see something that doesn't seem right, call 911 to report it.**

Be Ready to Respond

Prepare in advance by making an emergency plan, choosing an emergency contact, designating safe meeting places, and assembling an emergency supply kit. Be ready to move to higher ground during heavy rainfall. In some locations and situations, it may be safest to shelter in place on the upper floor of the building.

Get Emergency Updates

Sign up for FREE emergency Alerts at **BoCo911Alert.com**. You can get alerts via home, work, and cell phones, text messages, and email. When a flood warning is issued for your area, seek emergency response information by tuning to local news and visiting **www.boulderoem.com**.

Buy Flood Insurance Now

Most standard homeowner's insurance policies do not cover flood damage to buildings or personal possessions. Boulder residents and businesses receive up to a 25 percent discount on standard flood insurance rates. Consider purchasing additional insurance coverage for potential sewer backups.

- **Call 1-888-379-9531 or visit www.floodsmart.gov and select "Agent Locator" under "Resources."**

Protect Your Property

Adjust downspouts to discharge away from your building and take measures to prevent floodwaters from entering through window wells, doors, and other openings. Any modifications or improvements must not adversely impact neighbors or adjacent properties and must comply with all adopted codes, standards, and regulations.

- **Visit www.boulderplandevelop.net to learn about city regulations and determine if a permit is required.**

Know Your Neighbors

As we saw in September, Boulder is full of caring and helpful folks. Collect your neighbors' contact information for emergency situations. Form neighborhood groups to meet, gather information, share resources, and mutually support each other.

Prepare for Basement Flooding

Local groundwater conditions indicate that soils are still saturated throughout Boulder. Spring runoff and any local precipitation will only increase groundwater levels. If below-ground areas on your property flooded before, it may happen again as groundwater levels rise throughout spring and summer. Consider buying a sump pump and test your dewatering system regularly to ensure that it is functioning properly.

Visit www.boulderfloodinfo.net or www.boulderoem.com for more information.

INTRODUCTION

Although Boulder experienced significant flooding in September 2013, it doesn't mean that it won't happen again soon. The odds of a major flood occurring are the same regardless of when the last flood occurred.

There is no way to predict how or when the next flood will occur, and it's unlikely that flooding will happen the same way in the future. The magnitude, duration, scope and path of flooding will vary and cause different impacts. Floods can happen at any time, with little or no warning. The best course of action is to be alert and prepared.

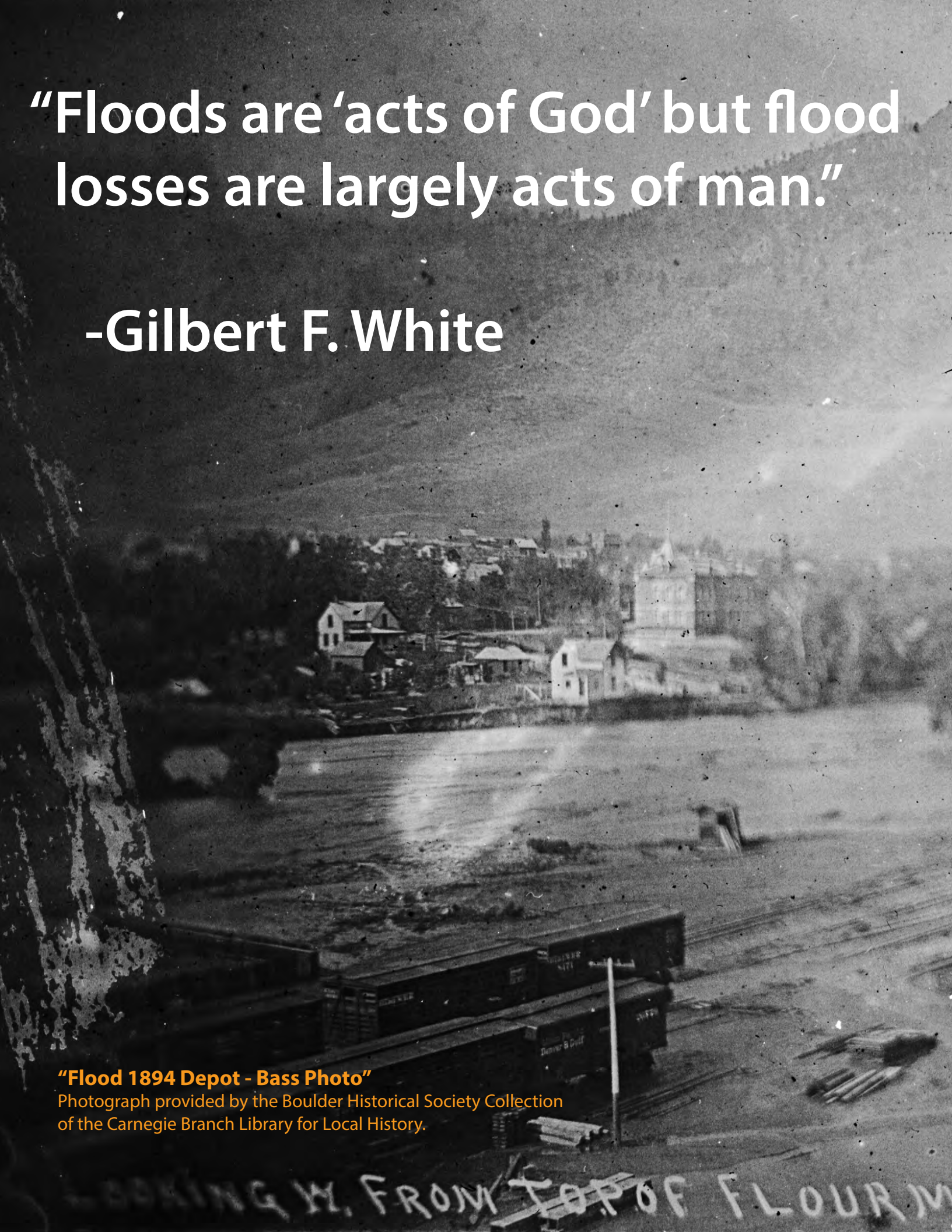
Boulder is the number one flash flood risk community in Colorado, due to its location at the mouth of several canyons and the number of people who live, work and recreate in the floodplains.

The City of Boulder maps and regulates the 100-year floodplain based on a storm event that has a 1 percent chance of occurring in any given year. Larger storms are less likely to occur in a given year (a 500-year flood has a 0.2 percent probability) and smaller storms are more likely to occur (a 20-year flood has a 5 percent probability). While properties outside of regulated floodplains have a lower statistical probability of being flooded, they may still be impacted. Flood safety awareness and preparation are critical to ensuring community resilience in response to flooding.

The Community Guide to Flood Safety provides information about what to do before, during and after a flood. This comprehensive guide compiles important city information into a single, compact resource that community members can reference, as needed. Although the guide captures a great deal of information, please visit **www.boulderfloodinfo.net** for the most current news and resources.

BOULDER CREEK WATERSHED

The Boulder Creek watershed encompasses more than 440 square miles and extends from the Continental Divide to the plains east of the city limits. There are 14 major drainageways with natural and man-made features that convey water runoff from rain and snowmelt through Boulder and eventually back into Boulder Creek. All 15 drainageways in Boulder are subject to flooding. Floods may be isolated to one waterway, or (as was experienced in September 2013) could affect several areas at once, throughout the region.



"Floods are 'acts of God' but flood losses are largely acts of man."

-Gilbert F. White

"Flood 1894 Depot - Bass Photo"
Photograph provided by the Boulder Historical Society Collection of the Carnegie Branch Library for Local History.

GILBERT F. WHITE: A LEGEND IN HIS OWN TIME

Gilbert F. White did more to advance flood policy than perhaps anyone. While his efforts had broad impacts advancing natural hazard research, White was a tour de force in Boulder.

White published his first study on the Boulder Creek floodplain in 1957, taught at the University of Colorado at Boulder beginning in 1970, founded and directed the Natural Hazards Research and Applications Information Center initially in 1976 and again in 1992. In 1994, he created the Boulder Creek Flood Notebook, which contained suggestions for what to do in the event of a major Boulder Creek flood event.

White participated in several city floodplain management discussions up until his last presentation to City Council in 2002 (the same year he won the Association of American Geographer's Lifetime Achievement Award). White died in 2006 at his home in Boulder and a memorial commemorating his efforts was erected in 2011 near Boulder Creek, just east of the Broadway bridge.

Flood Overview & History

The Community Guide to Flood Safety provides information about what to do before, during and after a flood. This comprehensive guide compiles important city information into a single, compact resource that community members can reference, as needed. Although the guide captures a great deal of information, please visit **www.boulderfloodinfo.net** for the most current news and resources.

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The largest flood on record hit Boulder Creek in May 1894, devastating the core of the city. The September 1938 flood on South Boulder Creek caused major damage in Eldorado Springs, destroying much of the resort. In June 1969, flooding along Boulder Creek, South Boulder Creek, and Bear Canyon Creek closed critical roads and damaged property. Later in 1969, the City of Boulder adopted its first floodplain regulations and began implementing measures to mitigate the damages caused by future flooding.

> 'Boulder is the number one flash flood risk community in Colorado'

September 2013 brought unprecedented rainfall to the Boulder region, causing significant flooding, loss of life, and extensive damage to both private property and public infrastructure. As a result of the flooding, Boulder County (including the City of Boulder) was designated a Federal Disaster Area. Affected critical services have been restored, but full recovery will take years.

There is no way to predict how or when the next flood will occur, and it's unlikely that flooding will happen the same way in the future. The magnitude, duration, scope and path of flooding will vary and cause different impacts. Floods can happen at any time, with little or no warning. Boulder is the number one flash flood risk community in Colorado, due to its location at the mouth of several canyons and the number of people who live, work and recreate in the floodplains. The best course of action is to be alert and prepared.

The City of Boulder maps and regulates the 100-year floodplain based on a storm event that has a 1 percent chance of occurring in any given year. Larger storms are less likely to occur in a given year (a 500-year flood has a 0.2 percent probability) and smaller storms are more likely to occur (a 20-year flood has a 5 percent probability). While properties outside of regulated floodplains have a lower statistical probability of being flooded, they may still be impacted. Flood safety awareness and preparation are critical to ensuring community resilience in response to flooding.

Timeline of Flooding and Related Events: 1858 - 2013

1859: City of Boulder is founded.

1894: The "Great Flood" is Boulder Creek's largest flood on record.

1906: Sunshine Creek flash flood.

1909: Twomile Canyon Creek flash flood causes two deaths.

1921: Boulder flooding and cyclone.

1938: Highest recorded flood on South Boulder Creek.

1950: Original flood siren installed.

1955: Flooding in North Boulder.

1963: Emergency Broadcast System begins.

1969: Flooding on Boulder and South Boulder Creeks, city floodplain regulations start, and the Urban Drainage and Flood Control District established by the Colorado legislature.

Flood Mitigation

Over the last 30 years, the City of Boulder has designed resilient public infrastructure to accommodate floods, rather than control them. Flood mitigation infrastructure along the major drainageways helps reduce the energy of floodwaters flowing through Boulder. Specially engineered drop structures help stabilize waterways to guide flows and prevent floodwaters from cutting new channels. These controlled elevation changes help contain floodwaters, keeping creeks from meandering outside of their banks and damaging properties.

Boulder's multi-use paths and roadway underpasses are designed to serve the dual purposes of conveying floodwaters and accommodating bicycle and pedestrian traffic. In September 2013, numerous pathways and underpasses effectively conveyed floodwaters through Boulder and away from properties, demonstrating the results of decades of engineering and planning.

Some bicycle and pedestrian bridges along Boulder's drainageways are designed to swing away to allow floodwaters to flow past. During a 100-year flood, the bridges will remain attached to one side of the stream bank so that they do not float downstream and cause damage or blockages.

Stormwater Collection System

The stormwater collection system, also known as the storm drain, storm sewer, or municipal separate storm sewer system (MS4), is designed to keep Boulder's streets passable during normal rain events. The system consists of inlets, catch basins, pipes, street gutters, and other features that collect water from streets and properties and deliver it to major drainageways, such as creeks.

Storm drains go directly to creeks without being treated!

BENEFITS OF FLOODS

Although they can be destructive, floods and other natural events often have some positive environmental benefits. Flooding can serve an important ecological function by regenerating the natural environment and shaping the local landscape; creating meadows, wetlands and riparian zones. These natural areas help improve water and air quality, replenish groundwater resources, and support aquatic and wildlife habitats. This is particularly true on Boulder's extensive open space.

1973: City of Boulder Stormwater and Flood Management Utility begins.

1976: Big Thompson flash flood is the deadliest flash flood in Colorado's recorded history.

1984: Boulder Greenways system projects begin.

1995: River flooding across Boulder County.

1997: Emergency Alert System begins; Community Collaborative Rain, Hail & Snow Network (CoCoRaHS) also begins.

2000: Independent Review Panel oversees Fourmile Canyon Creek master planning; includes Gilbert F. White.

2008: Boulder Creek Web cam goes live.

2010: Fourmile Canyon fire increases flood concerns.

2011: Gilbert F. White Memorial dedication; monument marks the 50-year, 100-year, 500-year and Big Thompson flood levels.

2013: Significant widespread flooding in Boulder County; the city receives almost a full year's rainfall in one week.

Floodplain Maps

Flood insurance rate maps provide the basis for floodplain management, regulation, and insurance requirements by identifying areas that are expected to have a 1 percent chance of major flooding in any given year. Floodplain maps are reviewed and approved by the Federal Emergency Management Agency (FEMA). Once approved, the floodplain maps guide the City of Boulder's flood management programs, including floodplain safety, regulation, preservation, preparation and mitigation. Floodplain maps are periodically updated and revised to reflect changing conditions, new topography, land development, updated mapping studies, and construction of floodplain mitigation improvements.

In a Flash

Both smaller and larger floods can happen anytime and anywhere. Although Boulder's floodplain mitigation (and regulation) is aligned with a 100-year flood event, it doesn't mean flooding can't happen outside of the floodplain at any time. The 100-year flood is basically a measurement tool and reference point.

Is Your Property in a Floodplain?

Locate your property at **www.boulderfloodinfo.net** or visit the Planning & Development Services Center at 1739 Broadway, third floor. Call 303-441-1880 or visit **bouldercolorado.gov/water/floodplain-maps** to determine if your property is regulated.

Floodplain Regulations

Floodplain regulations are intended to reduce risks to people and property in areas along the 15 major drainageways that are prone to flooding. The City of Boulder regulates development based on FEMA Flood Insurance Rate Maps of the 100-year floodplain, an area that has a 1 percent chance of being impacted by flooding in any given year. The regulated floodplain currently covers approximately 15 percent of Boulder and 2,500 individual structures.

Floodplain Development

Property owners with buildings located in the 100-year floodplain are required to obtain a Floodplain Development Permit before expanding a building or constructing improvements. Buildings in the 100-year floodplain that are financed through a federally backed mortgage are required to have flood insurance. Buildings that are located in the high-hazard or conveyance zone of the 100-year floodplain are subject to additional regulations and restrictions.

There are many areas in Boulder that are currently outside of the highest-risk floodplains, but are still at risk for flooding. In these areas, property owners may choose to meet or exceed floodplain regulations and/or obtain flood insurance, depending on their tolerance for risk. Visit **bouldercolorado.gov/plan-develop/floodplain-development** for more details.

Conveyance Zones and High-Hazard Zones

Conveyance zones are portions of the floodplains that are subject to additional regulations to prevent developments from increasing flood depths, redirecting flows, or adversely impacting properties. High-hazard zones are portions of the floodplains where there is the most significant risk that people will be swept off their feet by deep and/or high-velocity floodwaters.

Critical Facilities and Lodging Facilities

To ensure community safety, protect vulnerable populations, and maintain essential services during and after a major flood, the City of Boulder has established a Critical Facilities and Lodging Facilities Ordinance. The ordinance requires critical and lodging facilities in the 100-year and 500-year floodplains to develop emergency management plans for natural disasters, like floods.

The emergency management plan requirement applies to essential services (such as fire stations, hospitals and government operations), at-risk populations (such as daycares, schools and long-term care facilities) and lodging facilities (such as hotels, motels, bed and breakfasts, and dormitories). Emergency management plans help keep people safe, minimize service interruptions, protect buildings and assets from damage, and prevent environmental contamination due to floods.

Visit **bouldercolorado.gov/water/critical-facilities-lodging-facilities-ordinance** to review the Emergency Management Plan Guidelines and download an Emergency Evacuation Plan Template.

BEFORE A FLOOD

When flooding occurs, you may only have a few minutes to react. Be prepared and know how to respond.

☑ Know the Risks

Just because there was a flood in September 2013 doesn't mean it can't (or won't) flood in the near future.

- Flash floods happen fast- even if it's not raining at your location, rain may be falling upstream in the foothills.
- Flooding and debris flows can block roads, sweep away vehicles, and collapse bridges.
- Power outages and loss of phone and Internet communication services are possible.
- Flooding may cause landslides and falling rock on roadways and open space.
- Many bridge underpasses serve the dual purpose of conveying floodwaters and will flood when creeks overflow.
- Surges of water may occur if sediment and debris dams temporarily block creek flows and then suddenly break free.

☑ Make an Emergency Plan

Create an emergency plan in advance and make sure that everyone in your family, home, and business knows what to do and where to go during a flood. Your plan should include emergency contact information, meeting locations and other relevant information. Complete the plan together, discuss it with everyone, and post the plan in a prominent location.

☑ Choose an Emergency Contact

Designate someone who lives and works outside of Boulder as your emergency contact. After a flood, contact this person to communicate your location, status and other key information.

☑ Designate Meeting Places

Choose at least two safe meeting locations, located at higher ground, and practice moving to the locations using various different routes and travel methods. Never designate meeting places that require crossing a creek or drainageway.

☑ Shelter in Place

If your building is elevated or floodproofed and you cannot reach higher ground without crossing a creek or drainageway, the safest strategy may be to shelter in place on the upper floor of the building.

☑ Assemble an Emergency Supply Kit

Gather emergency supplies to take with you if you need to evacuate quickly or are cut-off from resources. Assemble an emergency supply kit in advance; including all of the items needed to be self-sufficient for several days without access to water, gas or electricity. Visit **www.ready.gov/build-a-kit** to find out what you will need to build your own emergency supply kit. Collect the following items and store them in a portable container in an easily accessible location.

- Water stored in tightly-sealed containers (one gallon per person, per day)
- Water purification device or tablets
- Food that does not need to be cooked or refrigerated
- First aid kit and supplies
- Essential medications
- Personal hygiene items
- Battery-powered AM radio and/or NOAA Weather Radio
- Flashlights/headlamps
- Batteries
- Generator
- Portable utensils and a manual can opener
- Rubber boots and gloves
- Rain gear and waterproof clothing
- Blankets or sleeping bags
- Important documents and paperwork in a watertight container
- Pet supplies (food, medications and litter)

RESOURCES FOR KIDS

Want to educate kids about floods? Visit **www.ready.gov/kids** for interactive games and lessons to help kids learn how to prepare.

Flood Insurance

Most standard homeowner's insurance policies do not cover flood damage. The City of Boulder's participation in the National Flood Insurance Program enables Boulder residents to purchase federally-backed flood insurance for structures and contents insurance for personal possessions. Property owners can also purchase additional insurance coverage for wastewater backups.

City of Boulder residents receive up to a 25 percent discount on flood insurance rates. Properties located outside of the 100-year floodplain can still obtain flood insurance and generally have discounted insurance premiums.

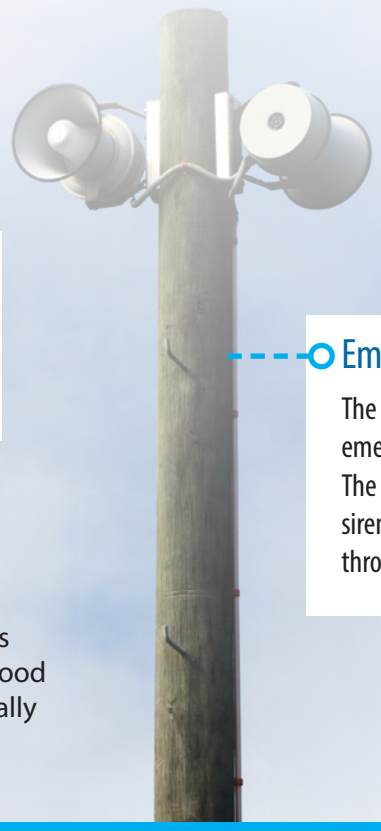
You can purchase flood insurance from a licensed private insurance company or an independent property and casualty insurance agent. This is usually your homeowner's insurance agent. To find a National Flood Insurance Program agent, visit **www.floodsmart.gov** and select "Agent Locator" under "Resources."

Do not wait for the next flood to buy flood insurance!
With most policies, there is a 30-day waiting period before flood insurance takes effect.

Visit **bouldercolorado.gov/water/flood-insurance** or **www.floodsmart.gov** for more information.

Did You Know?

More residents in Boulder have flood insurance policies than in any other city in Colorado.



Emergency Sirens

The City of Boulder tests emergency sirens monthly. The countywide emergency sirens are tested from April through August.

Neighborhood Organizations

In response to the September 2013 flooding, many Boulder residents are strengthening relationships with their neighbors and neighborhood groups are forming to host meetings, gather information, and mutually support each other.

How to Organize a Neighborhood Resiliency Team

- Collect your neighbors' names and phone numbers so you can contact them in case of an emergency.
- Determine the best way(s) to communicate with your neighborhood during an emergency. Examples include email lists, Facebook or Yahoo groups, and/or Nextdoor accounts.
- Encourage your neighbors to develop emergency plans, assemble emergency supply kits, sign up for emergency alerts, and know what to do during a flood.
- Share strategies to protect homes without adversely affecting your neighbors.

For more tips, visit **www.boulderoem.com** and **www.readycolorado.com**.

Protect Your Property

Protecting your property from future flood damage can involve a variety of actions, ranging from inspections and maintenance to adding protective measures. Most of these actions, especially those that affect the structure of a building or its utility systems, require a city permit and must be carried out by qualified maintenance staff or professional contractors licensed to work in the City of Boulder.

City of Boulder Planning and Development Services (P&DS) is available to assist customers with the permitting process for the repair, reconstruction and restoration of flood-damaged properties. Before beginning any flood protection projects for your property, contact the P&DS Center at **plandevelop@bouldercolorado.gov** or visit **www.boulderplandevelop.net** to determine if a city permit is required. Visit the P&DS Center at 1739 Broadway, third floor, during regular business hours.

Flood-Repair Permit Fees Waived

The City of Boulder will continue to waive fees for flood-repair permits and applications filed on or before March 1, 2015. There will be no fee charged for flood-repair permits or the subsequent inspections to ensure that flood damage has been properly addressed, though applicants will be required to pay the associated taxes. Fees for permits unrelated to flood damages will not be waived.

Permits and Fees

A City of Boulder permit is an official document that authorizes the alteration, demolition, construction, enlargement, movement, repair, removal, or replacement of any building or structure, or of any accessory attached to a building or structure. Permit approvals require conformance with all of the City of Boulder's adopted building codes, land use regulations, and design and construction standards. These codes, rules and regulations comprise the minimum standards required for development in the City of Boulder.

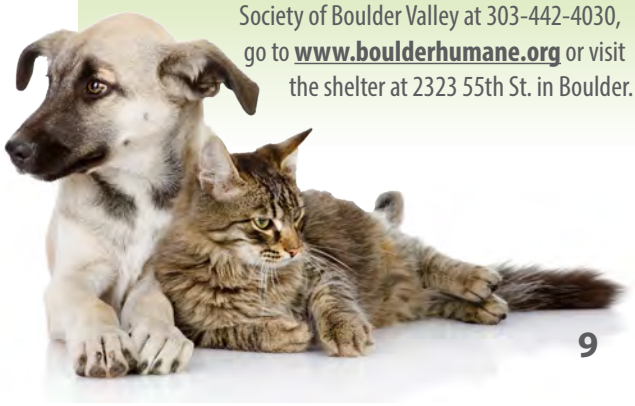
A City of Boulder permit and inspection is required for repairs to electrical, mechanical or plumbing systems. A permit is not required for drywall repairs or carpet replacements.

PET HEALTH & FLOODS

The 2013 flood was also hard on pets. If you don't have a disaster plan for your pets, it may be time to make one.

- Make an evacuation kit for your animals.
- Share your animal care plan with your neighbors.
- Record your pet's microchip number (or get them chipped).
- Be sure to have a boarding plan for pets.

To get more tips or to find a missing pet, call the Humane Society of Boulder Valley at 303-442-4030, go to **www.boulderhumane.org** or visit the shelter at 2323 55th St. in Boulder.



FLOOD PROTECTION MEASURES

Start Planning Today.

Some property owners, especially those located in the floodplain, may choose not to refinish their basements due to the higher risk of damage from future floods. Remember, any modifications or improvements to protect private property must not adversely impact adjacent properties and must comply with all adopted building codes, design and construction standards, and land use regulations.

Floodproofing

Dry floodproofing consists of sealing your home to prevent floodwaters from entering. Wet floodproofing measures make uninhabited parts of your property more resistant to flood damage.

Subsurface Drainage and Sump Pumps

Installing a drainage system with a sump pump may help keep water out of below-grade areas of your property, prevent structural damage, and limit the buoyancy of your building. Property owners that already have a drainage system and/or sump pump should maintain (or assess) their dewatering system on a regular basis to ensure that it is functioning properly and will continue to protect the property during and after a flood. Those with significant risk may wish to consider purchasing a generator. Consult with geotechnical or structural engineers to identify any adjustments that can be made to improve the reliability or efficiency of the dewatering system.

Grading and Site Drainage

Drainageways that do not have a city easement are the responsibility of the property owner. A grading permit is required to stabilize the banks of a drainageway on private property. Those seeking to alter existing grades or drainage patterns to protect their property may need to apply for a grading permit. A grading and drainage plan, stamped and signed by a Colorado-licensed professional engineer, may be required as part of the grading permit application.

Contact Planning and Development Services to determine if a permit is required.

Sandbags

Buy sandbags in advance to help protect your property from damage during a flood. Sandbags must be stacked or placed in a manner that does not divert water or debris flows onto adjacent properties.

Barriers, Berms, Fences and Walls

Construction of barriers, berms, fences or retaining walls may be allowed in accordance with City of Boulder codes and regulations. If any barrier, berm, fence or wall was (or is) being constructed to divert drainage without a building permit, visit **www.inquireboulder.com** and provide the property address of the possible violation.

Remove Debris and Sediment

Remove accumulated debris and sediment from drainage channels or ditches on your property. You may need to do this several times during a rainy season.

Preventing Wastewater Backups

Options vary depending on specific plumbing configurations, but there are a variety of products designed to prevent wastewater backups that can be installed in homes and businesses by a qualified plumber. Property owners should consult with a professional plumber to determine what methods may be most appropriate for their specific situation.

Some of the options available to help prevent sewer backups include installing backflow prevention devices and/or check valves. These options require a permit for installation and inspection. Contact Planning and Development Services to obtain a permit.

All properties and waterlines with cross-connections to the City of Boulder water utility must provide an approved backflow prevention assembly in relation to the potential backup hazard (Boulder Revised Code 11-1-25).

DURING A FLOOD

How to Get Emergency Information

Boulder County has emergency warning systems that monitor rainfall, water flows, weather radar, and in-field reports to provide as much as advance notice as possible for major flooding. When a flood warning is issued, tune to local news, visit **www.boulderoem.com** and prepare to move to higher ground.

Emergency Alert System

The emergency alert system broadcasts local, state, and national emergency warnings via television and radio stations. The system is designed to automatically interrupt regular programming to provide specific guidance for your area.

Emergency Notification System

Public safety officials use the Emergency Notification System to call landline and cellular phones, send text messages, and send emails to inform the community of immediate threats to public health and safety. Sign up for free emergency alerts at BoCo911Alert.com.

Outdoor Warning Sirens

The outdoor warning sirens are used to alert people of an imminent threat to their safety. More than 30 outdoor warning sirens are in place across Boulder County, including Boulder and the University of Colorado campus. The sirens will broadcast a warning signal and voice message to inform the public of the situation and what safety actions should be taken.

Warning System Tests

The Boulder Office of Emergency Management tests the emergency outdoor warning sirens at 10 a.m. and 7 p.m. on the first Monday of every month from April through August. During a warning system test, the sirens will sound for two minutes.

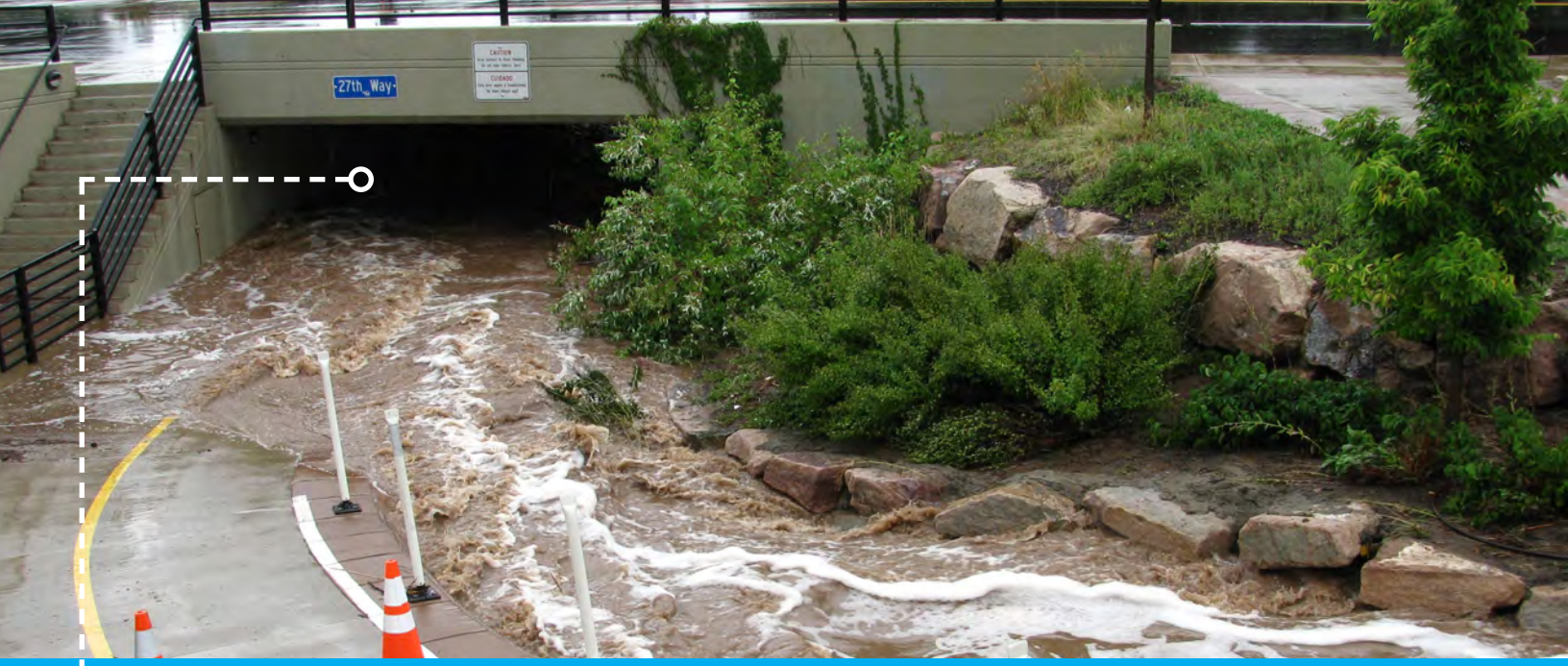
WHAT DO THE SIRENS SAY?

Can't understand the voice message from the sirens? Visit **www.boulderoem.com** and select "Current Emergency Information" or tune to local news. The outdoor warning sirens are sounded only in the event of an emergency or during pre-announced tests. During an actual emergency, the sirens will sound for five minutes.

Never drive through floodwaters. Most vehicles will float in 18 inches of water.

Did You Know?

Half of all flood fatalities are automobile-related.



Do not seek shelter under bridges. Many of Boulder's underpasses serve the dual purpose of conveying floodwaters. They are designed to flood when creeks overflow.

Stay Safe

1. Move to higher ground immediately. In some cases, higher ground may be the top floor of your house or structure.

2. Stay out of floodwaters. Swift-moving water may sweep people away and floodwater contaminants can seriously threaten your health. You may not be able to tell how fast the floodwater is moving or see other dangers that lie beneath the surface.

3. Stay away from power lines and electrical wires. Electrocution is the number two killer in floods.

National Weather Service Flood Alerts - www.crh.noaa.gov/bou

• Flood Watch

Weather conditions may cause flooding in the specified watch area. Be alert and prepared to respond to a flood emergency. Tune to local news or visit **www.boulderoem.com** for updates.

• Flood Warning

Flooding is occurring or is imminent in the specified area. Move to higher ground immediately. In some cases, higher ground may be the top floor of the building.

• NOAA Weather Radio

National Oceanic and Atmospheric Association (NOAA) Weather Radio is a nationwide network of stations that broadcast continuous National Weather Service forecasts, watches, warnings and other hazard information. This radio network provides an official source for emergency information about all types of hazards - natural, environmental, or public safety. When the NOAA Weather Radio is activated, an alarm tone sounds, along with specific information about the potential or imminent hazard. **Tune to the 162.550 MHz** frequency to hear NOAA Weather Radio Broadcasts for the Denver metro area.

Be sure your radio has Specific Area Message Encoding (SAME) and back-up batteries!

Drinking Water Quality

If the municipal drinking water system is contaminated or otherwise unsafe for the public, the City of Boulder may issue a Boil Water Order for some or all of its water customers. If a Boil Water Order is issued, customers should boil their water for at least 10 minutes for drinking or cooking purposes, or use bottled water. As soon as tests indicate that the drinking water is safe, the Boil Water Order will be lifted. Visit **www.boulderwater.net** or call the city's Drinking Water Quality Program at 303-413-7400.

TESTING WELL WATER

During the 2013 flood, many wells were compromised with possible contaminants. The Boulder County Water Quality lab, located at the city's Boulder Reservoir Water Treatment Facility, waived fees and processed numerous samples. For questions about sampling wells and well water, call 303-413-7400.

Sewer Backups

If there is a sewer backup on your property, call 303-413-7100 to request the city's assistance to help you determine the cause and resolve the issue, if possible.

Be aware that the sanitary sewer service line is the responsibility of the property owner, up to and including the connection to the city-owned sewer line. If the problem is determined to be in the sewer service line, it is recommended that you call a plumber to investigate and resolve the problem.

Water Being Pumped or Diverted Off of Private Property onto Public Property

The City of Boulder regulates the discharge or diversion of water onto public property. Property owners that are using a sump pump to discharge groundwater onto any sidewalk, street, alley, or other public right-of-way may be subject to enforcement action. To report water being pumped or diverted onto any public property such as an alley, sidewalk, gutter, storm drain, right-of-way, or street, visit **www.inquireboulder.com** or call 303-441-4237.

Water Being Pumped or Diverted from One Private Property onto Another

The City of Boulder does not regulate the discharge or diversion of water from one private property onto another private property. If you believe you have suffered damages or other impacts to your private property due to the activities of neighboring property owners diverting or discharging water, you may wish to consult with a private attorney to explore your legal rights. The city cannot provide legal advice to people who believe they have suffered damages due to an adjacent or nearby property owner diverting water onto a neighbor's property.

Elevated Groundwater/Water Table

The water table (the depth below ground where the soil is saturated with groundwater) varies throughout Boulder and some areas have a higher water table than others. Groundwater levels typically fluctuate seasonally, peaking in spring and early summer and then dissipating as water is taken up by vegetation, recharges creeks, and generally migrates eastward from the mountains to the plains.

Flooding may saturate soils, causing the water table to temporarily rise. After a flood, groundwater levels in Boulder may remain higher than usual for some time, particularly as precipitation adds more moisture to the already saturated soil. Due to elevated groundwater levels, some property owners may continue to experience water seeping into their basements, and those with sump pumps may notice that the pumps are running more than usual. It is not unusual for sump pump needs to vary significantly between adjacent properties. Property owners should address groundwater seepage by:

- Working with experienced professionals to repair damages and prevent further seepage; and
- Coordinating with their insurance companies to see if they are covered for damages.

Install a drainage system with a sump pump to help keep groundwater out of below-grade areas of your property, prevent structural damage, and limit the buoyancy of your building structure.

The city does not have a public infrastructure system intended to maintain groundwater levels to accommodate below-ground basements, crawlspaces, or foundations. Property owners are responsible for installing and maintaining dewatering systems for subsurface portions of their buildings. Sump pumps must discharge onto your own property and must not adversely impact neighboring properties. Discharging groundwater to any public sewer, sidewalk, street or gutter is prohibited.

Public Facilities, Infrastructure and Services

If there is a threat to public safety, community access to affected public facilities, infrastructure and services may be temporarily restricted while officials assess conditions. Access will be restored as soon as conditions are deemed safe for the public.

Public Information

Websites
- **www.boulderoem.com**
- **www.bouldercolorado.gov**

Facebook
- **www.facebook.com/BoulderOEM**
- **www.facebook.com/bouldercolorado.gov**

Television
- Channel 8

Twitter
- **@boulderoem**
- **@bouldercolorado**
- **@boulderpolice**

Emergency Response

- **Ambulance:** 911
- **Boulder Office of Emergency Management:** 303-441-3390
- **Emergency:** 911
- **Non-critical Situation:** 303-441-3333

During a major flood, emergency personnel will not be able to respond to individual requests for assistance with private property damage. If your property is flooded, contact a qualified professional to help you pump out floodwaters and remove debris.

Water, Sewer and Stormwater

- **Phone:** 303-441-3245
- **Website:** **www.boulderfloodinfo.net**
- **Email List:** **bouldercolorado.gov/newsroom/city-of-boulder-email-lists** - -> "Public Works News"

Transportation: Road and Path Closures

- **Phone:** 303-413-7162
- **Website:** **www.boulderconezones.net**
- **Email List:** **bouldercolorado.gov/newsroom/city-of-boulder-email-lists** - -> "Public Works News"

Open Space and Mountain Parks (OSMP)

During and immediately after flooding, the City of Boulder open space system may be temporarily closed to ensure public safety and the protection of sensitive natural resources. Visitors are asked to respect any closures that may exist, since responding to problems on open space can divert emergency personnel away from ongoing rescue operations. As conditions improve, OSMP will focus on removing any trail restrictions as soon as possible while ensuring the safety of all visitors.

Trail Closures/Openings

Call 303-441-3440, visit **www.osmp.org** or follow **@boulderosmp** on Twitter.
You can also sign up for the newsletter email list at **bouldercolorado.gov/osmp/osmp-newsletter-sign-up**.

Parks and Recreation

During and immediately after flooding, City of Boulder parks, recreation facilities, and paths may be partially or completely closed to ensure public safety. Parks and Recreation will work to ensure that public amenities, programs, and services remain available to the community.

Park, Recreation Facility, and Path Closures/Openings

Visit **www.boulderparks-rec.org**, like "City of Boulder Parks and Recreation" on Facebook at **www.facebook.com/boulderparksrec** or follow **@boulderparksrec** on Twitter.
To be put on the email list, email **bouldercolorado.gov/parks-rec/parks-recreation-e-mail-lists**.

Phone Numbers

- **Parks and Recreation Main Line** - 303-413-7200
- **Boulder Reservoir** - 303-441-3461
- **East Boulder Community Center** - 303-441-4400
- **Flatirons Golf Course** – 303-442-7851
- **North Boulder Recreation Center** - 303-413-7260
- **South Boulder Recreation Center** - 303-441-3448

VOLUNTEER

OSMP Volunteer Opportunities

To help rebuild flood-damaged trails, visit **bouldercolorado.gov/osmp/volunteer-program** and select a project or program.

Parks Volunteer Opportunities

To help restore community parks and recreation facilities, visit **bouldercolorado.gov/parks-rec/seasonal-jobs-volunteer-opportunities-and-internships** and select a project or program.

AFTER A FLOOD

Recovery & Resilience Goals

After the September 2013 flood, the Boulder City Council adopted the following goals to help guide near-term recovery and long-term resilience:

- Help people get assistance;
- Restore and enhance our infrastructure;
- Assist business recovery;
- Pursue and focus resources to support recovery efforts; and
- Learn together and plan for the future.

LOCATE MISSING PERSONS

During and after a flood, the Emergency Operations Center (EOC) will record the names and descriptions, and last known locations of missing persons. Calling back to report when a missing person has been located will help emergency workers maintain an accurate list.

Flood Recovery Resources

City of Boulder Human Services

The City of Boulder Human Services Department works with local nonprofit organizations and local, state and federal agencies to provide support and services for Boulder residents in need. For more information on available community services, visit **www.bouldercolorado.gov/human-services** or call 303-441-3140.

Long-Term Flood Recovery of Boulder County

The Long Term Flood Recovery Group (LTFRG) of Boulder County is a collaborative partnership between government organizations, nonprofits, businesses and faith based organizations, dedicated to meeting all Boulder County businesses' and residents' unmet needs resulting from the September 2013 flood event. The LTFRG has established a recover center to help people navigate available resources including financial, volunteer and construction assistance, and to develop a personal flood recovery plan. Assistance available through the Long-Term Flood Recovery Center includes:

- Identifying housing options for residents with immediate housing needs;
- Help connecting with volunteers to assist in repairs, rebuilding, removing debris or other projects;
- Assistance with access to donated goods;
- Assistance accessing health and emotional support services; and
- Help in applying for direct financial assistance through the Foothills Flood Relief Fund.

The recovery center intake process is the first point of contact to assess and identify what needs are unmet and what resources and services are available. To be connected with a case manager to coordinate assistance, visit **www.bocofloodrecovery.org**, email **floodrecovery@unitedwayfoothills.org** or call 303-895-3429.

Emergency Family Assistance Association (EFAA)

Boulder residents affected by flooding may also be eligible for assistance from EFAA for basic needs such as food, rent, transportation, housing deposits, emergency shelter and much more. To make an appointment with a caseworker to discuss your situation and the forms of assistance that you may be eligible for visit **www.efaa.org** or call 303-442-3042.

Housing

The City of Boulder Division of Housing preserves and provides safe, high-quality, and affordable housing opportunities through collaborative community planning and funding of programs. Visit **www.boulderaffordablehomes.com** or call 303-441-3157.

Residents and businesses can also access case management and resources for the following programs through the Long Term Flood Recovery Group. Visit **www.bocofloodrecovery.org**, email **floodrecovery@unitedwayfoothills.org** or call 303-895-3429.

Flood Repair Loans

The City of Boulder Division of Housing and Flatirons Habitat for Humanity have partnered to assist homeowners in the City of Boulder who have been affected by a damaging flood. This program provides a low-cost resource for homeowners to complete remaining major system, health and safety repairs after exhausting other options, such as hazard/flood insurance and FEMA assistance. For more information, visit **bouldercolorado.gov/homeownership/home-repair-programs** or call 303-441-3157, option two.

Home Repair Program

If you own a home in the City of Boulder that needs repairs, but you don't have the cash or equity to finance them, the Division of Housing may be able to help! The division offers low-interest loans for health and safety repairs and energy conservation measures of up to $25,000 for single-family homes. Repayment of the loan is deferred for 15 years or until you sell your home, whichever comes first. If you are interested in applying to the Home Repair Program, please call our partner, Longs Peak Energy Conservation, at 720-864-6401.

Mobile Home Repair Program

Funding is also available for repairs to mobile homes located within the City of Boulder. To apply, contact our partner, Longs Peak Energy Conservation, at 720-864-6401.

Tenant and Landlord Relations

The City of Boulder Community Mediation Service assists in resolving disputes between landlords and tenants. Mediation is based on open communication and a sincere desire to resolve the dispute. Call the Community Mediation Service at 303-441-4364.

Federal Emergency Management Agency

After a significant flood, the Federal Emergency Management Agency (FEMA) will establish a window of time in which you can apply for assistance. For more information or details on how to apply for assistance, visit **www.disasterassistance.gov**.

SUPPORTING LOCAL FARMERS

Local farmers were hit hard by the 2013 flood, with damage to property equipment and entire crops lost. Supporting local agriculture is one of the ways that the City of Boulder continues to help the community get back on its feet, helping the local economy and promoting healthy living. In times of extreme weather and disruptions to transportation corridors, having local food options becomes particularly important.

Flood Repair and Restoration

City of Boulder Planning and Development Services (P&DS) is available to assist customers with the permitting process for the repair, reconstruction and restoration of flood-damaged properties. Email **plandevelop@bouldercolorado.gov** or visit **www.boulderplandevelop.net** to get started. Refer to the "Flood Protection Measures" listed in the previous "BEFORE A FLOOD" section for details about how to limit future flood damages.

Permits and Inspections

A City of Boulder permit and inspection is required for repairs to electrical, framing, mechanical or plumbing systems. A permit is not required for drywall repairs or carpet replacements. To apply for a permit and/or request an inspection, visit **www.boulderplandevelop.net** or the P&DS Center at 1739 Broadway, third floor.

Contractors

Depending on the scope of your project, you may be required to hire a contractor licensed with the City of Boulder to complete the work. Visit **bouldercolorado.gov/plan-develop/hiring-a-contractor** for lists of city-licensed professionals to assist with your project.

Rebuilding and Resilience

Taking measures to protect your property as you rebuild can help it withstand future floods. For some property owners in the floodplain, it may be safest to not rebuild in the same location. Others may choose to restore everything except for below-grade basements that are subject to flooding and groundwater seepage. Planning for resilience will help ensure that restored properties are built to last.

Flood Debris & Waste Disposal

Boulder residents may take flood debris to the Western Disposal transfer station, located at 5880 Butte Mill Road (303-444-2037) or to the Foothills Landfill at 8900 Highway 93 near Golden (303-279-9037). Call 303-441-3333 to report improper waste disposal and/or overflowing dumpsters. Flood debris can contain any number of contaminants. Take the following precautions when handling flood debris.

1. **Avoid direct contact with debris by wearing protective clothing, boots, and gloves.**
2. **Do not sweep, dump, or wash debris into stormwater catch basins, which drain into creeks.**
3. **Do not pile debris in a manner that blocks gutters, sidewalks, or fire hydrants, creating potential hazards and blocking drainage.**
4. **Take flood-related sandbags and other contaminated debris to the transfer station.**

Mold and Mildew

After a flood, failure to remove contaminated materials and reduce moisture can present serious health risks. Mildew and mold can develop within 24 to 48 hours after water exposure and will continue to grow until steps are taken to eliminate the source of moisture and effectively deal with the problem. It is essential to remove all damp materials from the flooded area, such as drywall, carpet, carpet padding, furniture, damp boxes, and anything else that got wet. After removing these items, the next step is to assess the mold or mildew and work to mitigate its current and future impacts.

Contact a hardware store for mold mitigation resources.

Neither state law nor local codes require landlords to remediate mold. Tenants may negotiate with their landlord through the city's Community Mediation Service at 303-441-4364.

REMOVING TRASH & DEBRIS

In response to the September 2013 flooding, the City of Boulder coordinated placing 16 trash receptacles throughout the community and monitored the drop-off sites to ensure proper disposal of more than 1,300 tons of flood-related debris. The curbside collection service was provided between Sept. 26 and Oct. 14, 2013, and collected more than 500 truckloads, removing 10,593 tons of flood-related debris and sediment from more than 10,000 households.

Hazardous Waste

Household hazardous waste, such as motor oil, car batteries, paint, pesticides, and chemicals, must be taken to the Hazardous Materials Management Facility at 1901 63rd St., located behind the Boulder County Recycling Facility. The facility is open Wednesday through Saturday from 8:30 a.m. to 4 p.m. Call 720-564-2220 to learn more about what materials are accepted.

Electronics Recycling

By state law, electronics such as computers, monitors and televisions cannot be disposed of in landfills. However, these items can be taken to the following facilities.

- Western Disposal transfer station at 5880 Butte Mill Road.
- Eco-Cycle's Center for Hard to Recycle Materials (CHaRM) drop-off site at 6400 Arapahoe Ave.

** Visit **www.ecocycle.org/charm** to learn more about what CHaRM does and does not accept.*

Appliance Recycling

- Refrigerators, freezers, air-conditioners, and other appliances that require Freon removal should be taken to facilities that accept them for special handling, including Western Disposal Services and CHaRM.
- Appliances without Freon, like washers, dryers and water heaters should be recycled as scrap metal at Western Disposal or CHaRM.

Insurance Claims

If your property (automobile, home, building or other insured property) is damaged by flooding, contact your insurance agent.

- Thorough documentation of the damage to your property is important to qualify for assistance. Your insurance adjuster will need as much evidence of the damage as possible to prepare your repair estimate.

- Take photographs and/or video of all of the damaged property, including discarded objects and structural damage.

- Make a list of damaged or lost items and include their date of purchase, value and receipts, if possible. Save all receipts related to flood repairs and restoration.

State of Colorado Division of Insurance property and casualty experts are available to answer insurance questions by phone at 303-894-7490.

United Policyholders is a nonprofit 501(c) (3) organization whose mission is to be a trustworthy and useful information resource and an effective voice for consumers of all types of insurance in all 50 states. Visit **www.uphelp.org** for assistance with post-flood insurance issues.

Claims Against the City

If you believe that the City of Boulder (or any of its employees) has injured you or damaged your property, Colorado law requires you to file a written Notice of Claim with the Boulder City Attorney's Office before you can file a lawsuit against the city.

Damage claims against the City of Boulder are only paid when the city is legally responsible for the damage. The city's legal responsibility does not include natural disasters, including wildfires and floods.

Before you file a claim, visit **bouldercolorado.gov/city-attorney/claims-against-the-city** or call the City Attorney's office at 303-441-3023 to speak with a risk management specialist.

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Long-Term Resilience

Flooding and other natural disasters can cause harm, but also create opportunities to think critically about the future and work together as a community to support long-term sustainability and resilience.

The City of Boulder is integrating its long-term resilience planning with citywide master planning efforts. The city will continue to work with the community and across the organization to plan for future challenges and potentially reprioritize infrastructure investments and resources.

In December 2013, Boulder was selected as an inaugural community for The Rockefeller Foundation's 100 Resilient Cities Network. Along with 32 other cities across six continents, Boulder is now part of a global network of community leaders focused on building resilience, learning from others' experiences, sharing best practices, and leading by example. In the coming months and years, the City of Boulder will benefit from international planning tools, relationships, technical support, and resources as it works to build local and regional resilience.

The 100 Resilient Cities Network provided Boulder with the financial support needed to hire an Assistant to the City Manager for Resilience to spearhead planning efforts, create a long-term strategy, and implement a comprehensive resilience plan. These efforts will involve Boulder residents, businesses, nonprofit organizations, local government partners, and others who are critical to helping the community respond to future crises.

Innovative engineering, planning, land use policy, environmental stewardship, community engagement, and partnerships with neighboring communities will all help Boulder to better prepare for and withstand new challenges and then bounce forward to a better future.

Visit **www.boulderfloodinfo.net** to learn more about the city's commitment to supporting the Boulder community's near-term flood recovery and long-term resilience.

Lefthand Canyon - September 2013

"Our bridges are broken. Our roads are broken.
Our spirits are not broken."

AWARE
VIGILANT
SAFE
www.BoulderFloodInfo.net