

# BOULDER COUNTY CREEKS & RIVERS PREPAREDNESS GUIDE

## FLASH FLOOD, LANDSLIDE AND DEBRIS FLOW



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Living or recreating along a small creek or river in Boulder County can be a great way to spend a day, or may be an added value to your home and property. The close proximity to nature is one of the great perks of living in Boulder County, but it does not come without some risk.

## Know the Risks

- Flash Flooding
  - Thunderstorm-Related Flooding
  - Landslide
  - Debris Flow
  - Spring Runoff
  - Dam Overtopping
- **Spring Run-Off:** When seasonal snow pack begins to melt and flow down the creeks from higher elevations. Generally begins in May and continues into mid- to late-June.
  - **Thunderstorms-related Flooding:** This type of flooding occurs between May and September.
  - **Monsoon Rainfall:** Increased instances of afternoon rainstorms. Occurs from mid-July to mid-September.
  - **Debris Dam Flooding:** This type of flooding occurs whenever general debris is compacted by high-flow events.
  - **Dam/Reservoir Overtopping or Failure:** This occurs if water capacity is at maximum levels in the reservoir, and the water will spill over the edge of the dam. The flow rates down associated creeks can be high enough to cause local flooding.



## Woody Debris

Not all woody debris is a problem. Woody debris such as trees, branches, and stumps, form an important part of natural and healthy stream systems. Such debris can increase channel roughness, dissipate energy, slow floodwaters, and reduce the potential for flood damage downstream. This material also forms a basis for the entire aquatic ecosystem. Woody debris that poses little risk to infrastructure is best left in place.

In some instances, however, significant debris can impact flows by blocking bridge and culvert openings, diverting streams, and causing erosion of banks. When debris poses a risk to infrastructure such as bridges or homes, it should be removed.

## High Hazard Debris

When debris collects and seems to be a threat to lives, property, or infrastructure call 911 immediately to report the location and type of hazard. Once reported, a road crew or law enforcement professional will evaluate the hazard. The following criteria helps determine if the debris is truly hazardous.

### Tree Criteria

- The tree is  $\frac{3}{4}$  or 100% spanning creek from bank to bank.
- The tree is perpendicular within 70-110 degrees of creek flow.
- Debris is actively collecting.
- Structures, roadways, or bridges are in the immediate area.

### Multiple Tree Removal Criteria

- The trees are  $\frac{1}{2}$  or 100% spanning the creek channel.
- The tree is perpendicular within 70-

110 degrees of creek or flow.

- There are multiple trees within the area upstream or downstream.
- There are signs of debris collection.

### Debris Dam Removal Criteria

- The debris dam is spanning  $\frac{1}{2}$  to 100% of creek from bank to bank.
- The debris dam is already, or is going to, cause a change in flow around the dam causing erosion or water back up.
- Further collection of debris is going to create a complete dam.

## Guidelines for Removing Woody Debris

Some removal of debris will require a permit. Woody debris and trash can be removed from a stream without the need for a permit in the following situations:

- Fallen trees and debris can be pulled from a stream by vehicles and motorized equipment operating from the top of the streambank using winches, chains, or cables.
- Hand-held tools, such as chainsaws, axes, hand saws, etc. can be used to cut debris into smaller pieces.
- Downed trees still attached to streambanks should be cut off near their stumps. Do not pull tree stumps from banks. Stumps slow erosion.

- All trees, brush, and trash removed from a channel should be removed from the floodplain as well. Trash should be properly disposed at a waste management facility. Trees and brush can be used as firewood. To prevent the spread of invasive species, do not move firewood more than 50 miles from its point of origin.

A permit will be required to remove debris when:

- The project is likely to disturb a streambed or bank. Things like excavating sand and gravel, digging embedded debris from the streambed, or using motorized

vehicular equipment such as a tractor, backhoe, bulldozer, log skidder, four-wheel-drive truck, etc. (any heavy equipment) in the stream channel or anywhere below the top of banks.

- This type of work requires either a Protection of Waters Permit or an Excavation or Fill-in Navigable Waters Permit.

If you have any questions about when a permit is required, or you want to discuss permitting requirements, please call Boulder County Transportation or Parks & Open Space.



# Being Aware of Hazards

## 1. Check daily weather reports

- Get the forecast not just for your location, but for the watershed above. Storms high in the mountains can trigger floods miles downstream.
- Recent heavy rain? Be extra alert - saturated soil is more likely to flood.

## 2. Scout for signs of prior floods when recreating or camping

- Water stain marks on canyon walls, or debris lines or debris deposits in tree

branches indicates that flooding has occurred before and may occur again.

- Use caution in rocky areas which won't absorb excess water runoff.

## 3. Watch the creek for sudden changes

- If water in creeks suddenly gets deeper, faster, muddier, or begins carrying twigs, needles, or leaves, get to higher ground as soon as possible.
- Head to higher ground immediately if you hear the roar of fast-moving water.

# During a Flash Flood

Residents should take the following action in the event of a flash flood:

- Move to high ground immediately
- Stay out of floodwaters. Swift-moving water and debris can be deadly
- Stay away from power lines and electrical wires
- Leaving the area can pose significant dangers, as road washouts and landslides can occur along escape routes. If you plan to try to leave the area, give yourself as much time as possible, and know that it still may not be enough time.



## Purchase Flood Insurance

You can buy flood insurance no matter where you live or what your flood risk, but you should not wait until the rainy/flood season (April-Sept) to make a decision.

**There is a 30-day waiting period before coverage goes into effect.**

By law, flood insurance is issued as a separate insurance policy through the Federal government, and can be purchased through your existing insurance company and agent.

Go to [www.floodsmart.gov](http://www.floodsmart.gov) to find an agent who can help or for more information.

# Staying Informed

- Sign up to receive emergency alerts on home, work, and cell phones, text messages, and email. Visit [www.boco911alert.com](http://www.boco911alert.com) to register.
- Follow the Boulder OEM on Facebook and Twitter for updates:
  - [Facebook.com/BoulderOEM](https://www.facebook.com/BoulderOEM)
  - [@BoulderOEM](https://twitter.com/BoulderOEM)
- Contact your Fire Protection District and attend meetings in your community.
- Stay informed through local radio (KOA - AM 850), television alerts, and your own observations
- Monitor a NOAA Weather Radio (with S.A.M.E. and back-up battery)

- Listen for the latest Flood Watches, Warnings, and Advisories:
  - **WATCH** indicates life-threatening flooding is possible within the designated watch area
  - **ADVISORY** indicates non-life-threatening flooding of small streams, streets, and low-lying areas is occurring or is imminent
  - **WARNING** indicates that flash flooding or flooding has been reported or is imminent, and necessary precautions should be taken at once

# Get Ready

Gather emergency supplies for **sheltering-in-place** at your home. If your home is located on high ground and it is **NOT** in danger from debris flows, you may choose to **shelter-in-place**. Plan to be on your own without water, gas, and electricity for at least three days.

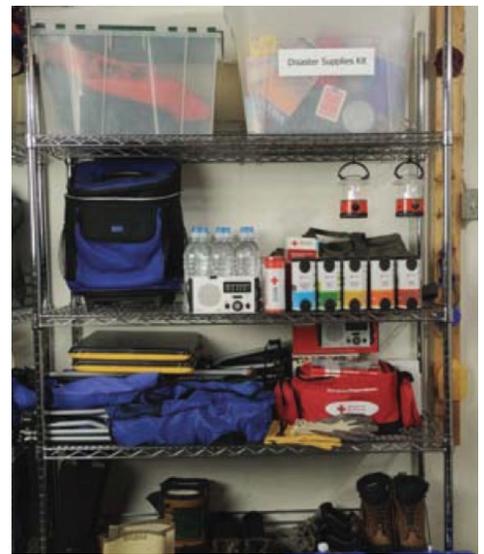
- Battery-powered radio and/or NOAA weather radio (with S.A.M.E. and back-up battery. Local frequency: 162.550 MHz Denver)
- Two (2) flashlights and extra batteries
- Extra blanket(s)
- Non-perishable foods
- Essential medications
- Personal hygiene items
- Important papers
- Manual can opener
- Water (1 gallon per person per day)
- Water purification tablets
- Paper towels
- Plastic utensils
- Pre-moistened towelettes
- Pet needs (food, medications, litter)
- Telephone that does not require a separate electricity source (i.e., one that plugs directly into a phone jack)

Gather emergency supplies to **take with you** if you need to leave quickly. You should have your own food, water, and other supplies to last for at least 72 hours. Put these items in a backpack so they'll be ready to go.

- Radio and/or portable NOAA Weather Radio (S.A.M.E.)
- Flashlight and extra batteries
- First Aid kit
- Necessary medications
- Change of clothes
- Walking shoes
- Rain gear
- Whistle to signal for help
- Gloves
- Important papers/identification
- Important phone numbers
- Cellphone chargers
- Blanket(s) or sleeping bag(s)
- Food and water
- Water purification tablets
- Waterproof/windproof matches

Develop an emergency plan for your family. Disasters can occur at any time – if separated, how will you and your family reunite during or after an emergency if communications systems aren't operating?

- Plan for how you and your family will communicate during and after an emergency. Identify a meeting location in case you can't call one another.
- Plans should address any individuals with access and functional needs, children, and pets
- Identify multiple routes for evacuating during the disaster
- In some cases, a cell phone's text capabilities will be available even when a call cannot be connected. **Note:** Text messages also help cell tower congestion to a minimum, which is vital to emergency correspondence.
- Identify a shelter-in-place location in the home



## Safety Routes

- Plan to go to a safe location. Identify two locations located at higher ground in the case of flooding, and two locations out of the area in case of landslides.
  - Moving to higher ground is not necessarily the best choice in the case of landslides.
- Have a plan for your pets so you won't be delayed in leaving a danger zone.
- Know more than one way to get to your safe locations on foot if necessary.
  - NOTE: The City of Boulder may not always be a safe location.
- Practice leaving by means of your safety routes.
- Talk with family members and neighbors to plan where you will meet and how you will check in.

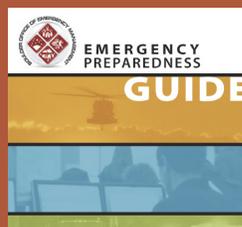
### Boulder Office of Emergency Management

Address: 3280 Airport Road | Boulder, CO 80301

Phone: 303.441.3390 | [www.BoulderOEM.com](http://www.BoulderOEM.com)

Visit us online and download our Emergency Preparedness Guide

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## HELPFUL WEBSITES:

[www.BoulderOEM.com](http://www.BoulderOEM.com)

[www.BoulderCountyFlood.org](http://www.BoulderCountyFlood.org)

[www.ReadyColorado.com](http://www.ReadyColorado.com)

[www.BoulderFloodInfo.net](http://www.BoulderFloodInfo.net)

[www.crh.noaa.gov/den](http://www.crh.noaa.gov/den)