















COLORADO STATE UNIVERSITY









Colorado Post-Fire Recovery Playbook

Guidance for Counties, Tribes, Municipalities, and Water Providers February 2021

Colorado Post-Fire Recovery Playbook

For Counties, Tribes, Municipalities, and Water Providers

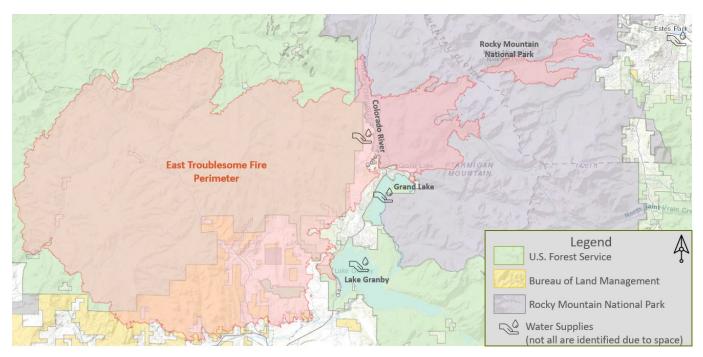
INTRODUCTION

Wildfires in Colorado have been increasing in frequency and severity, often leading to longer recovery periods and necessitating a collaborative, watershed-based approach to post-fire rehabilitation (see example in Figure 1). Counties, tribes, municipalities, and water providers are typically the entities most directly and immediately impacted by wildfire and post-fire erosion and flooding. This Post-Fire Recovery Playbook serves as an actionable worksheet that includes critical and specific steps to take and contacts to make before, during, and within the first 30 days of a fire to facilitate the recovery process.

How to use this Playbook: Before a wildfire, fill out your set of critical contacts in step 1.1 and implement the steps in Section 1. During and within the first 30 days of fire containment, implement the steps in Sections 2 and 3. Hyperlinks to specific contact information or resources are in orange text.

This Playbook was developed by volunteers from more than a dozen municipalities, state and federal agencies, water providers, watershed organizations, and consultants. Details on the Authors and Playbook Development are provided at the end of this document. The Playbook is available online at After the Flames and Colorado
Department of Public Health and Environment's websites.

Figure 1. The East Troublesome Fire in 2020 is an example of a multi-jurisdictional fire that has involved extensive coordination for post-fire recovery. The burn scar spanned both sides of the Continental Divide, impacting private and county-owned land, two U.S. Forest Service National Forests, Bureau of Land Management land, and Rocky Mountain National Park. Multiple water supplies were impacted, including the Colorado-Big Thompson Water Delivery System. Recovery efforts are being led by Grand County, Northern Water, local conservation districts, a watershed association, and more than 40 additional local, state, and federal entities. View a recovery effort summary here; base map source here.



ACRONYMS

Acronym Definition

BAER Burned Area Emergency Response

BARC Burned Area Reflectance Classification

BIA Bureau of Indian Affairs

BLM Bureau of Land Management

CDOT Colorado Department of Transportation

CDPHE Colorado Department of Public Health and Environment

CSFS Colorado State Forest Service

CWCB Colorado Water Conservation Board

DHSEM Division of Homeland Security and Emergency Management

DOLA Division of Local Affairs

DSR Damage Survey Report

ESR Emergency Stabilization and Recovery

EWP Emergency Watershed Protection

FEMA Federal Emergency Management Agency

FIRM Flood Insurance Rate Map

LRG Local Recovery Group

NGO Non-Governmental Organization

NRCS Natural Resources Conservation Service

NWS National Weather Service

OEM Office of Emergency Management

RRG Regional Recovery Group

USDA U.S. Department of Agriculture

USFS U.S. Forest Service

1 PRE-FIRE

1.1 Fill out a critical contacts list

Fill in contact information (including names, emails, and phones) for the local, state, and federal entities that will play lead or supporting roles in post-fire recovery efforts. Orange hyperlinks direct users to contact information. Users with more than one geographically distinct area of interest (e.g., source water watersheds, municipalities) may want to fill out more than one contacts list.

Δ	rea	Δt	Int	ara	ct
$\overline{}$		() I			.51

Describe the geograp	hical extent for which thi	is critical contacts list applies.
	roup (LRG) Contacts	
-		cally led by a representative from the County/Tribe or local nization (NGO). See step 2.1 for details on LRG's.
	County or Tribal	
	Contact	
<u>A</u>	Municipality	
	Contact(s)	
•◊•	Watershed Group or	
• <u>•</u> •	NGO Contact	
		n be heavily impacted by post-wildfire sediment and debris. Water ate in the LRG. Locate drinking water providers

National Weather S	Service (NWS) – NWS pro	vides weather event notifications. Details in step 2.2.
WEATHER	NWS hydrologist from	
	<u>Pueblo</u> , <u>Grand</u>	
W. * 35	Junction, or Boulder	
Local Conservation	District – Conservation D	istricts are an important connection to private landowners and
typically play a role	in helping to implement r	recovery projects.
	Conservation District	
Y	<u>Contact</u>	
II S Denartment of	Δgriculture's (USDA) Na	tural Resources Conservation Service (NRCS) County Service
=	=	al assistance for post-fire recovery efforts on privately owned land.
		hould be a part of the LRG.
ANDCC	NRCS Service Center	
O NRCS		
Natural Resources Conservation Service		
USDA's U.S. Forest	 Service (USES)	ys a central role in most large fires, and any fire on USFS-owned
		ents and Project Implementation).
FOREST SERVICE	<u>District Ranger</u>	
UAS		
GOTMENT OF AGRICULE		
Colorado State Fore	est Service (CSFS) Field O	ffice – CSFS foresters can provide technical assistance for
evaluating tree surv	ival, identifying hazard tr	ees and reforestation needs, and salvaging burnt timber on non-
federal lands.		
	CSFS Contact	
COLORADO STATE		
COLORADO STATE UNIVERSITY		
		y Transportation Departments will coordinate with the Colorado
Department of Tran	sportation to assess trans	sportation infrastructure.
A THE	Local Transportation	
	Contact	
	Contact	
Regional Recover	<u>ry Group (RRG) Cont</u>	<u>acts</u>
USFS – USFS plays a	central role in most large	e fires, and any fire on USFS-owned land. Contact your Regional
Office at 303-275-53	350 for the BAER Coordin	ator contact information.
	Forest Cuparisar	
	<u>Forest Supervisor</u>	
FOREST SERVICE		
U ₹ 2	Region 2 BAER	
THENT OF AGRICULT	Coordinator	

USDA's NRCS – NRCS provides technical and financial assistance for post-fire recovery efforts on privately						
owned land through programs such as the Emergency Watershed Protection program (see Step 3.2 and						
Appendix A –Assessments and Project Implementation).						
	<u>District</u>					
	<u>Conservationist</u>					
The state of the s	FIMID Consulingston					
.A.NIRCS	EWP Coordinator					
Natural Resources Conservation Service	Charles Companyationist					
	<u>State Conservationist</u>					
Rureau of Indian Aff	fairs (RIA) — RIA coordina	tes on post-fire assessments when tribal lands are within or				
downgradient from		ites on post-ine assessments when tribariands are within or				
downgradient nom	a III C.					
1824 WENT OF	BIA Contact					
THE OF INDIAN AS						
		eld Office – BLM conducts assessments and implements post-fire				
recovery efforts. Wit	thin the website, select y	our District Office, then your Field Office for contact information.				
U.S. DEPARTMENT OF THE INVESTOR	PIM Contact					
	BLM Contact					
Colorado Water Cor	nservation Board (CWCB)	– CWCB is a primary source of funding for watershed stakeholder				
		chnical tool and model development, project implementation,				
	ent, and monitoring (see s					
	Colorado Watershed					
	Restoration Program					
DNR	Grants Coordinator					
Colorado Division of	f Homeland Security and	Emergency Management (DHSEM) – DHSEM can provide				
technical and financ	ial assistance, and in the	case of a State Disaster Declaration, will convene a State Long-				
Term Recovery and Mitigation Task Force.						
,	State Recovery					
CLAND SECUL	Officer					
ON THE WOOD OF THE PARTY OF THE						
	<u>District Field</u>					
THE PROPERTY OF THE PARTY OF TH	<u>Manager</u>					
CACY MANAG	Degional Mitigation					
	Regional Mitigation					
	<u>Specialist</u>					
Colorado Departme	nt of Public Health and E	Environment (CDPHE) – CDPHE provides information and				
•	providers (see step 1.3).	· · · · · · · · · · · · · · · · · · ·				
-3112	<u>CDPHE Source Water</u>					
	<u>Contact</u>					
CDPHE						
•		OT) Regional Office – CDOT will coordinate with County				
Transportation Departments to perform assessments to identify damaged or at-risk transportation						
infrastructure.						
	CDOT Contact					
	CDOT COIItact					
CDOT	<u>CDOT COMUCE</u>					

1.2 Identify a post-fire liaison for your entity

Identify a point of contact from your organization to serve as the primary post-fire rehabilitation liaison. The liaison will play a critical role in the Local Recovery Group, described in step 2.1. Post-fire liaisons may want to initiate contact with the individuals identified in the critical contacts list before a fire to review the area of interest. Often, communities contract with a local watershed group or NGO, which can provide a variety of services including public engagement, funding procurement, and project implementation - see Figure 2.

1.3 Identify and review critical infrastructure

Obtain geospatial data on critical infrastructure and drinking water supplies in the area of interest. This information may be obtained by contacting CDPHE's Source Water Team (see 1.1) and requesting an Emergency CD or Source Water Assessment and Protection Report.

Water providers: Initiate a meeting with the county and local OEM staff to review your source watershed(s), ground water protection zones, and/or critical infrastructure geospatial data. Post-fire sediment and debris flow can adversely impact water quality and quantity; therefore, meeting with the county in advance will better ensure that the water provider is brought into post-fire recovery conversations in the event the burn scar is within or upstream from the water supply watershed.

1.4 Confirm flood insurance eligibility

Municipalities, tribes, and counties: Flood insurance is available to anyone who is living in a participating National Flood Insurance Program community. Confirm that your entity 1) has a Floodplain Manager, and 2) has completed the Federal Emergency Management Agency's (FEMA) <u>Flood Insurance Rate Map (FIRM)</u>. Without FIRM mapping, the municipality will not be eligible for flood insurance, which is often necessary after a fire.

2 DURING THE FIRE

2.1 Establish a Local Recovery Group (LRG)

Begin coordinating with local entities to establish an LRG (see LRG contacts in step 1.1). Typically, LRG's are led and facilitated by a representative from the county, tribe, local OEM office, or watershed organization (see Figure 2 for an overview of watershed group and NGO capabilities). The primary intent of an LRG is to share information regarding risks, rehabilitation needs, funding options, etc. The LRG lead should regularly loop back with the Regional Recovery Group (RRG), which is generally comprised of state and federal agency representatives coordinating on assessments and rehabilitation. The RRG typically forms during the fire or within a week of the fire being 70% or fully contained.

2.2 Engage in fire-related updates and the local emergency warning system

<u>Inciweb</u> serves as the primary hub for information on the fire perimeter, fire containment, weather and fire behavior, evacuations, and closures. Fire districts and local OEM offices often set up social media sites to relay more frequent fire-related updates to the community. Check the <u>Energy Release Component</u> for your area of interest to assess how hot the fire could burn, and level of dryness which may increase post-fire flooding potential. For larger-scale events, contact your USFS District Ranger or Forest Supervisor (for fires on federally-owned land) or <u>Colorado Division of Fire Prevention and Control</u> to join the daily Incident Management Team briefings and obtain geospatial data on the burn perimeter.

National Weather Service (NWS) hydrologists work with assessment teams to determine areas prone to excessive runoff from the burn scar and set an initial rainfall rate threshold to use to issue Flash Flood Warnings. NWS communicates the thresholds to OEM and to the public. Reach out to your local OEM staff and local NWS

hydrologist to implement warning systems for weather events. As needed, coordinate with OEM staff on <u>public</u> <u>messaging</u> regarding flooding potential, particularly if the fire exceeds 8,000 acres. Note that local OEM staff may coordinate with Colorado DHSEM to help coordinate and support wildfire response and recovery efforts.

2.3 Request assistance with assessments

Regardless of land ownership, USFS, NRCS, and BLM will likely play a lead or supportive role in post-fire assessments and recovery efforts; Bureau of Indian Affairs may be the lead federal partner on tribal land. Working with the LRG, reach out to the federal agencies to request information on burned area conditions and anticipated watershed response; and assistance in identifying and describing potential post-fire threats to critical water infrastructure, including undersized culverts. Depending on the extent and severity of the fire, a federal BAER) team may begin conducting a BAER assessment as soon as it is possible to safely access the burned area. Assessments are conducted to:

- Determine burned area conditions and associated post-fire risks for soil erosion, debris, and flooding.
- Describe threats to life, property, water quality and critical natural or cultural resources on federal lands.
- Recommend response actions and treatments to address these issues.

The Colorado Water Conservation Board can also provide support on post wildfire technical evaluations, analysis, planning, and project prioritization to LRGs and communities. More information on the CWCB technical assistance team can be found under the Disaster Recovery Resources heading here.

It may also be worth securely sharing locational information on critical infrastructure within or downgradient from the burn scar to help ensure that the geographical scope of the assessments covers infrastructure at risk. Critical infrastructure may include drinking water reservoir and intake locations, water, wastewater, gas, and electrical line data. Information collected by federal BAER teams is shared with other federal, state, and local emergency response agencies so that they can assist communities and private landowners who may also be affected by post-fire damage. Federal BAER teams are typically comprised of specialists from one or more federal agencies, working on federal-owned land. NRCS provides assistance on privately-owned land. Further details are in Appendix A –Assessments and Project Implementation. In cases where the fire perimeter covers mostly state-owned land, tribal land, and/or private property, federal agencies may not take the lead and there may be a need for the RRG to assess creating their own BAER team – see example here for how this has been done and also reach out to CWCB.

2.4 Disaster declaration (if warranted)

If local and state resources are overwhelmed, consider the options for pursuing a <u>local disaster</u>, a <u>state or tribal disaster</u>, or a <u>federal (Presidential) disaster</u> to open up funding opportunities, such as the Disaster Relief Fund. Any declaration must be performed in partnership with the county, tribe, municipality, and OEM, at a minimum. Primary funding options are provided in Appendix B – Key Sources of Funding.

3 FIRST 30 DAYS

3.1 Request the BAER report and burn severity map

If not automatically provided to members of the LRG, request to review the federal BAER team's Burned Area Report, any applicable specialist reports, and the soil burn severity map. The soil burn severity map is generally based on field validation and correction (if needed) of a <u>Burned Area Reflectance Classification</u> or BARC map. Federal BAER team personnel generally complete field validation of the BARC to create a final soil burn severity map within a few days after fire activity has appreciably subsided. The burn severity map may be formally requested <u>online</u> as well.

3.2 Request funding assistance

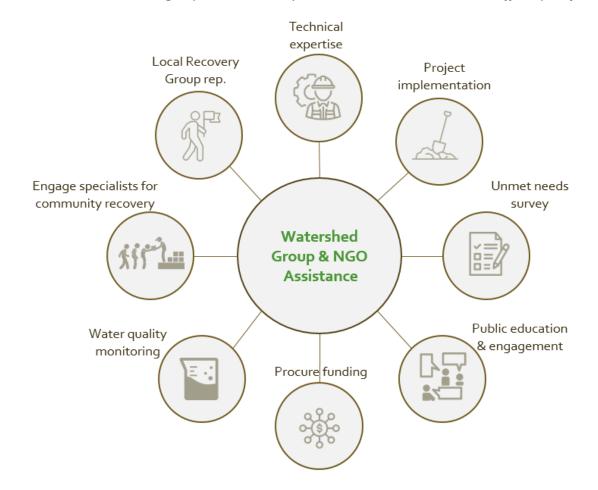
Post-fire recovery is often costly and requires procuring funding from several sources. A variety of funding mechanisms are available and partnering with a watershed group or NGO may help to facilitate the process. At a minimum, contact the CWCB and NRCS for funding and support (see critical contacts in step 1.1 and also Appendix B – Key Sources of Funding). CWCB support is set up to fund a stakeholder-driven collaborative, focused on mitigating post-fire flood hazards, enhancing ecological processes, and performing watershed-scale assessments.

For NRCS' Emergency Watershed Protection (EWP) funding, an entity must commit to being an <u>EWP sponsor</u> and request assistance via letter to the NRCS State Conservationist within 60 days from the end of the event, or when access is allowed. An NRCS Damage Survey Team will work with the sponsor to assess threats to life and property and complete a Damage Survey Report (DSR). If funded, all eligible work agreed upon in the DSR and installed properly as designed, will be reimbursed at 75% once the sponsor submits a request for reimbursement. Further details on EWP funding, eligibility, requirements, and the process are provided here.

3.3 Begin retrieving landowner permission for recovery efforts

The LRG should coordinate with the RRG to retrieve private landowner permission for (1) performing assessments on private property, and (2) conducting specified work related to post-fire rehabilitation on private property. Watershed groups and NGO's may assist in project implementation and working with landowners (Figure 2). The Arkansas River Watershed Collaborative has developed an online agreement form that can easily be filled out by landowners remotely. The Collaborative's form may serve as a starting point, though users should be well-informed about the process before entering into agreements with landowners.

Figure 2. Areas in which watershed groups and NGOs may be able to assist in rehabilitation efforts post-fire.



AUTHORS AND PLAYBOOK DEVELOPMENT

During the 2019 After The Flames conference in Denver, attendees expressed a need for useable, concise guidance to help local governments navigate post-fire complexities. In fall 2019 a subgroup of interested parties from across the state set out to develop this Colorado Post-Fire Recovery Playbook. The group committed to developing a Playbook by spring 2020 that achieved the following:

- ✓ **Target audience** Counties, tribes, municipalities, and water providers.
- ✓ **Concise** Communicate only the *critical* steps to facilitate post-fire recovery.
- ✓ **Useable** Provide an easy-to-use worksheet that allows users to identify specific contacts and understand roles and responsibilities and primary funding sources.
- ✓ Accessible A combination of text and infographics.

The 14 authors of this Playbook (see list below) brought a variety of perspectives to the table – ranging from entities that have experienced post-fire impacts first-hand, to watershed groups and consulting companies that have assisted myriad Colorado communities procure funding and implement post-fire projects, to federal and state agencies leading BAER teams, to municipalities seeking guidance to plan for a wildfire. The group frequently sought outside input to ensure Playbook accuracy and completeness. This Playbook is not formally endorsed by any agency or authority and does not reflect official recommendations or policy of the agencies and organizations whose staff participated in the Playbook development. The group updated the Playbook in winter 2021 based on feedback received during the 2020 fire season. Please contact Kate Dunlap with questions.

Volunteer leads on this effort

- Kate Dunlap, City of Boulder
- Stephanie Crabtree, City of Golden
- Theresa Springer, Coalitions and Collaboratives, Inc.
- Jonathan Bruno, Coalitions and Collaboratives, Inc.
- John Duggan, CO Dept. of Public Health and Environment
- Kristen Hughes, CO Dept. of Public Health and Environment
- Weston Toll, Colorado State Forest Service
- Eric Howell, Colorado Springs Utilities
- Madelene McDonald , Denver Water
- Vicky Amato, SWCA
- Brad Piehl, JW Associates
- Eric Schroder, U.S. Forest Service
- Steve Sanchez, U.S. Forest Service
- Thomas Timberlake, U.S. Forest Service









SWCA





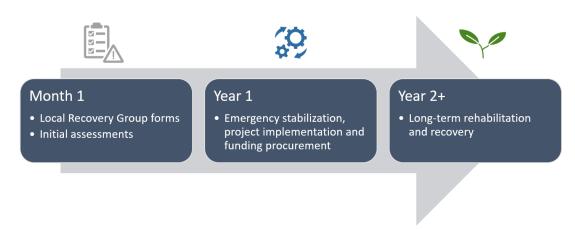




APPENDIX A -ASSESSMENTS AND PROJECT IMPLEMENTATION

The first year post-fire is the most critical time to implement emergency stabilization projects to prevent or minimize downstream sediment and debris flow, and flooding. While the partners involved will vary depending on the fire location, extent, and severity (see example land ownership in Figure 1), this Appendix attempts to summarize key phases and players that are typically involved in post-fire recovery efforts (Figure 3 and Figure 4). Partnering with CWCB as well as a watershed group or NGO will help to ensure a watershed approach to recovery (see Figure 2).

Figure 3. Summary of key post-fire recovery phases.



Assessment and Recovery Efforts on Federal-Owned Land

USFS – USFS' BAER team is comprised of specialists who arrive on-scene and assess whether post-fire effects threaten life, safety, property, or critical natural and cultural resources on USFS-owned land. Assessments typically take 7-10 days and the initial BAER Report and funding requests are due within 7 days of containment. Emergency response actions/treatments recommended under BAER should be implemented before the first damaging storms and/or within one year of the fire. Other (non-BAER) restoration projects may be planned and implemented beyond these emergency response timelines.

BLM – Within 7 days, BLM's Field Office will recommend whether to perform an Emergency Stabilization and Rehabilitation (ESR) assessment on BLM land. Within 21 days, BLM will complete an ESR Plan (equivalent to a USFS BAER Report). After the first year and up to five years post-fire, BLM's local field office representatives implement any Burned Area Rehabilitation projects.

BIA –BIA has a National Post Wildfire Recovery Program and will coordinate with other federal and non-federal partners on BAER team assessments when tribal lands are within or downgradient from a fire.

CDOT and **County Transportation departments** - Transportation departments will work with federal and non-federal partners during the assessment and recovery phases. Key points of interest are to assess potential risks and damage to transportation infrastructure and identify undersized culverts in need of improvement to prevent downstream flooding. Within or downstream from burn scars, ephemeral channels can turn into larger rivers transporting debris, sediment and heavy flows downstream, leading to downstream culvert blowouts.

Assessment and Recovery Efforts on Non-Federal-Owned Land

NRCS – Post-fire assistance on private land is accessed through your local USDA Service Center. NRCS offers a host of programs to assist individual private landowners (e.g., EWP, and the Environmental Quality Incentive Program). In the case of EWP, NRCS has 60 days after receiving a request for EWP assistance from a potential sponsor, to complete a DSR. The local liaisons should request to be a part of the assessment team and review the DSR.

BIA – BIA will coordinate with federal and non-federal partners on BAER team assessments when tribal lands are within or downgradient from a fire.

CDOT and County Transportation departments – Transportation departments will work with federal and non-federal partners during the assessment and recovery phase – see above description for details.

Water providers, municipalities, tribes, counties – In partnership with the above entities and a watershed group or NGO, conduct your own assessments to determine risks and vulnerabilities – particularly those downgradient from the burn scar on non-federal or state-owned land.

CSFS – CSFS foresters can provide technical assistance for evaluating tree survival, reforestation needs, salvage of burnt timber and hazard tree identification on non-federal lands. The CSFS Nursery can supply trees and shrubs that can be purchased for revegetation. CSFS can assist other agencies with post-fire damage assessments, vegetation recovery recommendations and treatment implementation. The agency can participate in collaborative groups organized to address post-fire recovery when acting in a capacity suitable to CSFS expertise and core services.

Figure 4. Overview of key landowners/ partners and their roles during the first month, first year, and beyond, after a fire. Roles were defined by representative(s) from each entity.

	Agency		First month	Year 1 (emergency phase)	Year 2+
UAS ETMENTO MASS	USFS	Landowner	BAER Assessments BAER Report, BARC Map	BAER Team and USFS national office implement projects	USFS rehabilitation efforts transition over to the local national forest office
	BLM	Landowner	• ESR Assessment • ESR Plan	• Local field office implements ES projects	Local field office implements BAR projects
⊘ NRCS	NRCS	Partner on private land	Damage Assessment Damage Survey Report	Assist EWP sponsor in implementing post-fire recovery treatments	Assist EWP sponsor as needed.
DNR	CWCB	Partner	• Stakeholder coordination and watershed assessments	 Assist with flood hazard project engineering, design and implementation 	 Assist with stream and floodplain restoration, adaptive mgmt., monitoring
OLORADO STATE UNIVERSI	_	Partner	Technical assessment of tree survival, reforestation needs, timber salvage, etc.	Supply trees and shrubs (for a fee) and provide technical assistance for hazard tree removal, mitigation techniques	 Advise landowners on site-specific reforestation efforts
3	BIA	Partner	BAER team Assessments	Coordinate with other DOI agencies on BAER projects	 Coordinate with other DOI agencies on BAER projects
	Local gov't, tribe, water provider	Landowner, Partner	Partner with state and federal agencies to conduct assessments	 Serve as a sponsor for funding sources Partner with federal and state agencies to implement projects 	Partner with federal an state agencies to implement projects and track rehabilitation effort

APPENDIX B - KEY SOURCES OF FUNDING

Several primary funding options are highlighted below. Also, contact <u>DHSEM</u> to seek financial assistance for post-fire recovery efforts. DHSEM will work in coordination with the other state and federal agencies involved, including the Colorado Department of Local Affairs (<u>DOLA</u>) for other grant opportunities.

Funding Mechanism	Funding Source	Deadline	Available Funds	Match
Emergency Watershed Protection (funding for immediate, emergency use)	USDA-NRCS	Within 60 days of the fire	Project specific	Sponsor pays 100% up-front costs; reimbursed up to 75%
Colorado Watershed Restoration Grant Program	CWCB	November	\$4M statewide	≥ 50% in-kind or cash
Colorado Water Supply Reserve Fund Grants	CWCB (with approval from a basin roundtable)	Rolling	Variable - \$1M-\$12M per basin	≥ 25% in-kind or cash (possible waiver)
Colorado Healthy Rivers Fund (partner with a local watershed organization)	Colorado Watershed Assembly	November	\$20k max	≥ 20% in-kind or cash (cash match only for project application)
Hazard Mitigation Grant Program Post-Fire	FEMA	Set when a Fire Management Assistance Declaration occurs	Variable depending on Hazard Mitigation Plan status. ~\$500,000.	The federal share of assistance is not <75% of the eligible cost
FEMA Public Assistance Program	FEMA	Set when a state or tribal disaster is declared	Not specified	The federal share of assistance is not <75% of the eligible cost
Community Development Block Grant - Disaster Recovery	DOLA-HUD (Housing and Urban Development)	Following presidential disaster declaration	Not specified	Not specified
Emergency Community Water Assistance Grants (for rural communities, tribes)	USDA – Rural Development Office	Year round	Up to \$500,000	None required