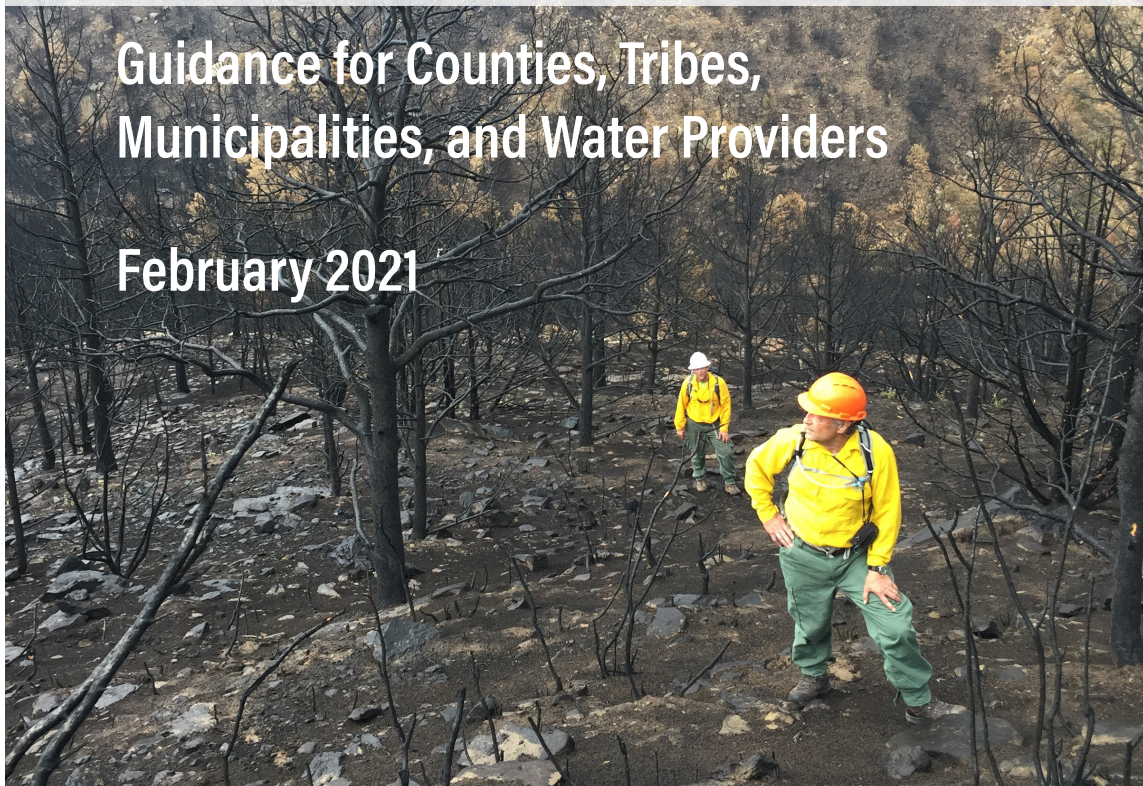
Colorado Post-Fire Recovery Playbook

Guidance for Counties, Tribes, Municipalities, and Water Providers

February 2021



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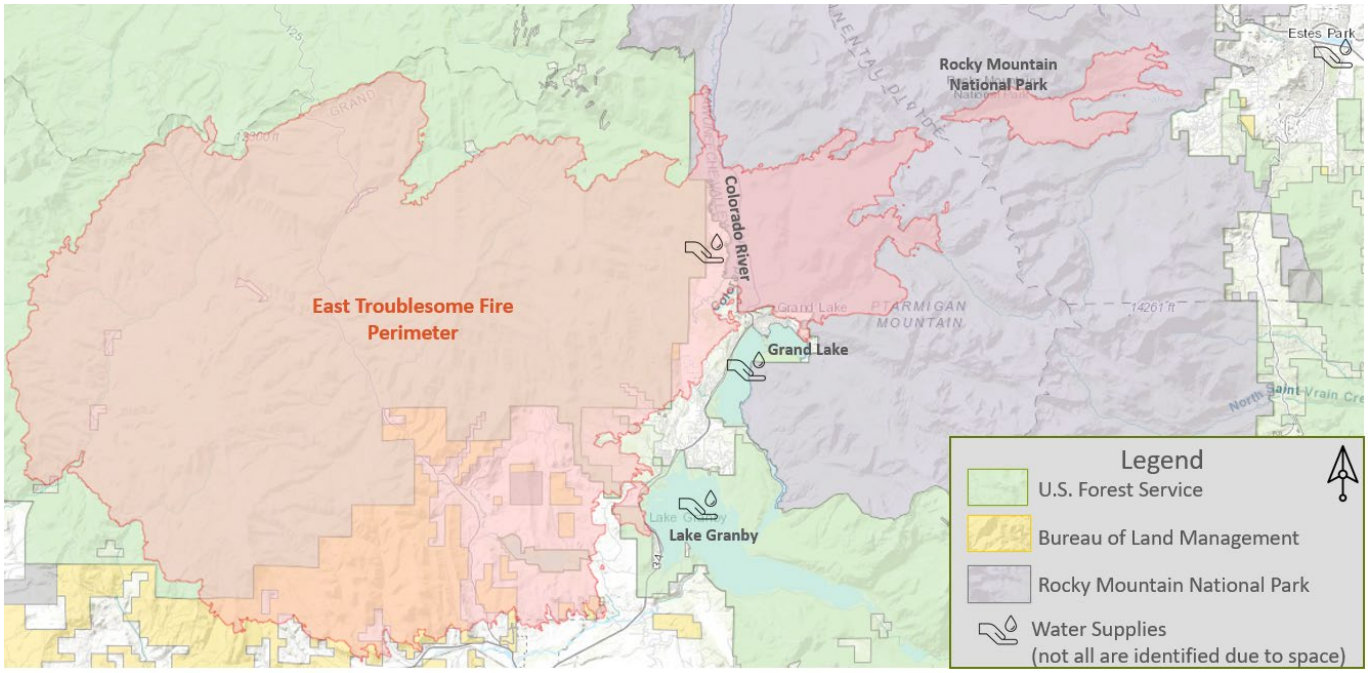
INTRODUCTION

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

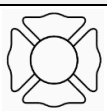
1.1 Fill out a critical contacts list

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.

Area of Interest

Describe the geographical extent for which this critical contacts list applies.

Local Recovery Group (LRG) Contacts

Local Recovery Group Leads – LRG's are typically led by a representative from the County/Tribe or local watershed group or non-governmental organization (NGO). See step 2.1 for details on LRG's.		
	County or Tribal Contact	
	Municipality Contact(s)	
	Watershed Group or NGO Contact	
Water Provider – Drinking water supplies can be heavily impacted by post-wildfire sediment and debris. Water providers are encouraged to actively participate in the LRG. Locate drinking water providers here.		
	Water Provider Contact(s)	
Local Office of Emergency Management (OEM) – OEM staff help to coordinate and support disaster preparation, response, and recovery. See steps 1.3 and 2.2 for details on OEM involvement.		
	*Local OEM Contact*	
Electric/Internet Utility – Utility providers generally own land or infrastructure within fire perimeters or downgradient from burn scars. Coordinate with utility providers on safe access for fire and recovery crews.		
	Utility Contact	

National Weather Service (NWS) – NWS provides weather event notifications. Details in step 2.2.		
	NWS hydrologist from Pueblo, Grand Junction, or Boulder	
Local Conservation District – Conservation Districts are an important connection to private landowners and typically play a role in helping to implement recovery projects.		
	Conservation District Contact	
U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) County Service Center – NRCS provides technical and financial assistance for post-fire recovery efforts on privately owned land. A representative from the local NRCS office should be a part of the LRG.		
	NRCS Service Center	
USDA's U.S. Forest Service (USFS) – USFS plays a central role in most large fires, and any fire on USFS-owned land (see step 2.3 and Appendix A –Assessments and Project Implementation).		
	District Ranger	
Colorado State Forest Service (CSFS) Field Office – CSFS foresters can provide technical assistance for evaluating tree survival, identifying hazard trees and reforestation needs, and salvaging burnt timber on non-federal lands.		
	CSFS Contact	
County Transportation Department – County Transportation Departments will coordinate with the Colorado Department of Transportation to assess transportation infrastructure.		
	Local Transportation Contact	

Regional Recovery Group (RRG) Contacts

USFS – USFS plays a central role in most large fires, and any fire on USFS-owned land. Contact your Regional Office at 303-275-5350 for the BAER Coordinator contact information.		
	Forest Supervisor	
	Region 2 BAER 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).		
	District Conservationist	
	EWP Coordinator	
	State Conservationist	
Bureau of Indian Affairs (BIA) – BIA coordinates on post-fire assessments when tribal lands are within or downgradient from a fire.		
	BIA Contact	
Bureau of Land Management (BLM) Local Field Office – BLM conducts assessments and implements post-fire recovery efforts. Within the website, select your District Office, then your Field Office for contact information.		
	BLM Contact	
Colorado Water Conservation Board (CWCB) – CWCB is a primary source of funding for watershed stakeholder coordination, early flood warning systems, technical tool and model development, project implementation, adaptive management, and monitoring (see steps 2.3 and 3.2).		
	Colorado Watershed Restoration Program Grants Coordinator	
Colorado Division of Homeland Security and Emergency Management (DHSEM) – DHSEM can provide technical and financial assistance, and in the case of a State Disaster Declaration, will convene a State Long-Term Recovery and Mitigation Task Force.		
	State Recovery Officer	
	District Field Manager	
	Regional Mitigation Specialist	
Colorado Department of Public Health and Environment (CDPHE) – CDPHE provides information and assistance for water providers (see step 1.3).		
	CDPHE Source Water Contact	
Colorado Department of Transportation (CDOT) Regional Office – CDOT will coordinate with County Transportation Departments to perform assessments to identify damaged or at-risk transportation infrastructure.		
	CDOT Contact	

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) Flood Insurance Rate Map (FIRM). 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

Inciweb 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 Energy Release Component 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 Colorado Division of Fire Prevention and Control 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 public messaging 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 Burned Area Emergency Response (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 local disaster, a state or tribal disaster, or a federal (Presidential) disaster 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 Burned Area Reflectance Classification 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 online as well.

3.2 Request funding assistance

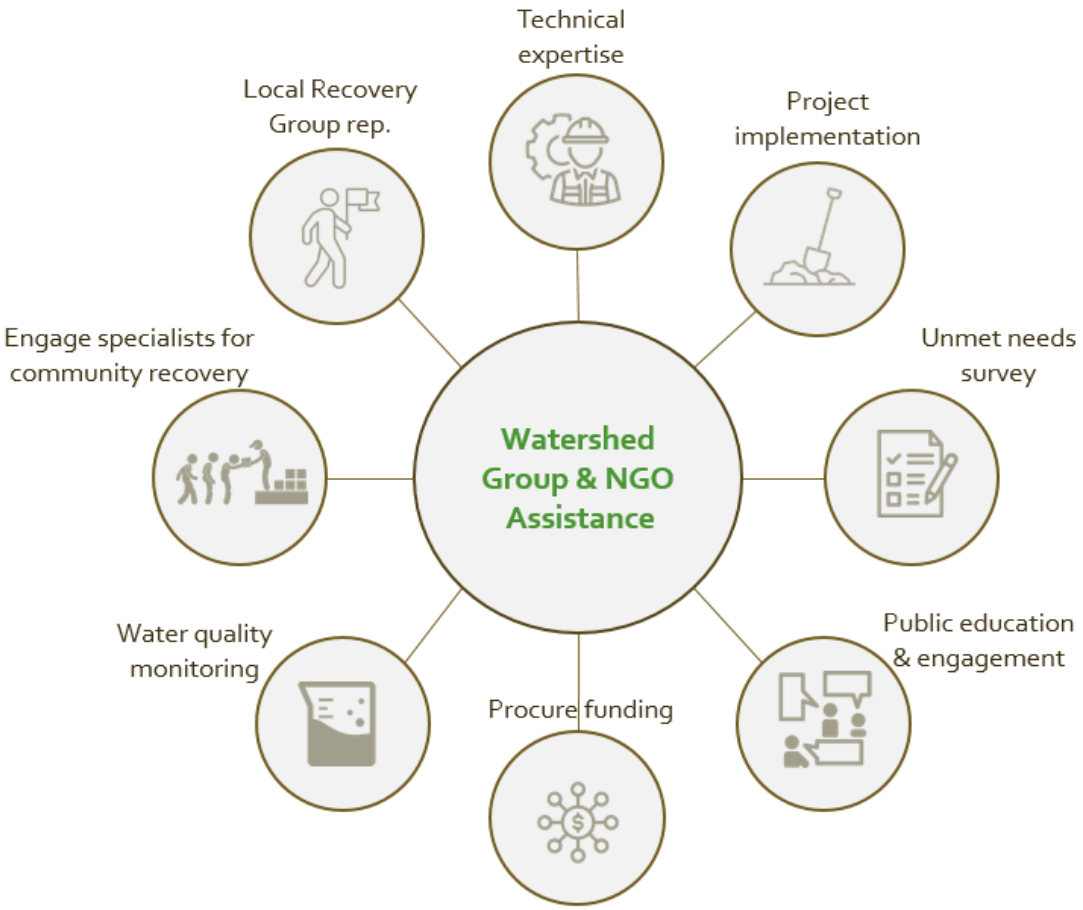
Post-fire recovery is often costly and requires procuring funding from several sources. A variety of funding mechanisms are available and partnering with a watershed group or NGO may help to facilitate the process. At a minimum, contact the CWCB and NRCS for funding and support (see critical contacts 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 EWP sponsor 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
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- **Eric Howell**, Colorado Springs Utilities
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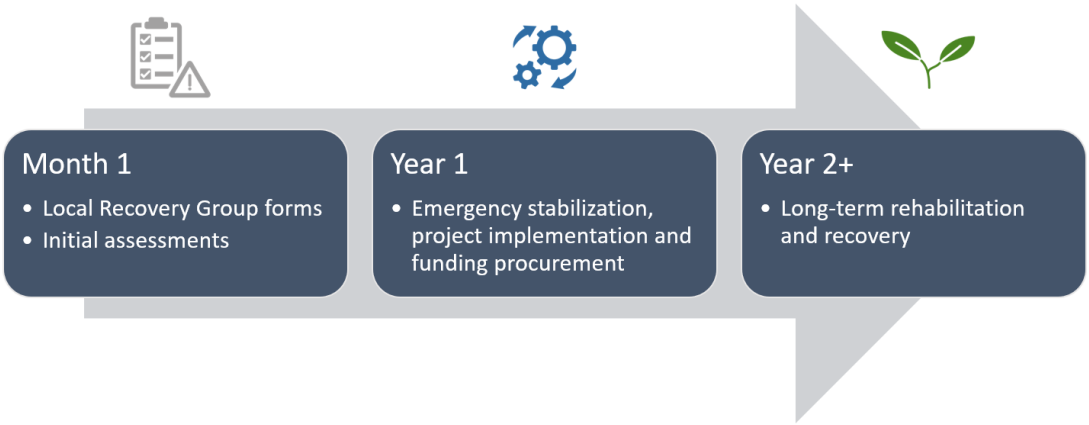
- **Vicky Amato**, SWCA
- **Brad Piehl**, JW Associates
- **Eric Schroder**, U.S. Forest Service
- **Steve Sanchez**, U.S. Forest Service
- **Thomas Timberlake**, U.S. Forest Service

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+
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	Partner on private land	• Damage Assessment • Damage Survey Report	• Assist EWP sponsor in implementing post-fire recovery treatments	• Assist EWP sponsor as needed.
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
CSFS	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
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 and state agencies to implement projects and track rehabilitation efforts

APPENDIX B – KEY SOURCES OF FUNDING

Several primary funding options are highlighted below. Also, contact DHSEM 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 (DOLA) 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