Colorado Watershed Coalitions
COALITION BUILDING THROUGH NATURAL BOUNDARIES

Learning Objective: Examine the cross-agency partnerships, projects, and innovative financial management strategies employed in Colorado to rebuild and restore the natural flood mitigation benefits of regional watersheds after the devastating flood in 2013.

Keywords: Recovery, Flood, Mudslide, Landslide, Severe Storm, Major Disaster Declaration, Regional Coordination, Recovery Planning, Infrastructure Systems, Natural and Cultural Resources, Resilience, Hazard Mitigation, Identifying and Leveraging Resources, Disaster Financial Management

Instructor’s Introduction
This Teaching Note is intended to prepare an instructor to use this case study in a classroom (live or virtually). The note expands on the lessons learned from this case study, which has been written to help students learn from a real-world disaster recovery experience. Selection of learning objectives, discussion questions, and activities can be customized based on audience and time allowance. The remainder of the guide provides suggestions of key concepts to explore as you teach the case. It is suggested that students read the Background and Challenges sections (Part One), and pause to discuss the scenario, before they move on to read the Actions, Results, and Lessons Learned sections (Part Two).

This case study describes the Colorado Office of Resilience and Recovery’s management of the 2013 flooding event, which impacted 24 counties. The extensive flooding and subsequent mudslides resulted in 10 fatalities, more than 17,800 damaged homes, and the destruction of 500 miles of road and dozens of bridges. The case study highlights the state’s innovative approach to cooperating with the local government to build capabilities needed for recovery and organizing stakeholders by watersheds instead of the traditional approach of jurisdictional boundaries.

To become more familiar with relevant concepts before teaching the case, please review the following:
- [Colorado Water Conservation Board](#)
- [Colorado Department of Local Affairs](#)
- [Watershed Resilience Pilot Program](#)
- [CDBG-DR Program](#)
- [Colorado Watershed Coalitions](#)
- [Colorado Watershed Recovery Success Stories](#)
- [APA Briefing Paper: Public Engagement in Recovery Planning](#)

Student Learning Outcomes:
- Discuss the benefits and challenges of an innovative approach to whole community recovery.
- Consider competing priorities and approaches to integrate resilience into the recovery process.
- Design an engagement strategy and discuss potential methods to ensure maximum community participation in the recovery planning process.

Key Takeaways:
- Partnership building, regional collaboration, and stakeholder engagement were key to establish shared goals and driving progress on recovery initiatives.
- The Watershed Coalitions provided a structure within which projects could be tailored to unique local needs and decision-making could reflect regional priorities.
- Integrating local perspectives and resilience concepts into project planning and implementation gave local stakeholders a stake in recovery outcomes and aided Colorado’s preparedness for future disasters.
PART ONE

Background
In September 2013, the Colorado Resiliency and Recovery Office knew they had their work cut out for them as they watched a major flood disaster unfold while still in the midst of managing a recovery effort from wildfires that had ravaged Colorado’s hillsides a year before. In the span of just five days, over 17 inches of water fell across the state, approaching the state’s total annual precipitation level. The extensive flooding and subsequent mudslides resulted in 10 fatalities and forced evacuations of over 18,000 residents. More than 17,800 homes and 2,250 non-residential structures were damaged or destroyed across 24 counties. Nearly 500 miles of roads and 30 bridges were destroyed, with an additional 20 bridges requiring significant repairs.

Three major rivers and their tributaries breached their banks: Big Thompson, St. Vrain, and South Platte. The high volume of floodwaters carved out new water channels within these three major watersheds in the state, causing significant damage. The recent wildfires and burn scars exacerbated these floods by drastically increasing the amount of silt and debris being carried through the waterways. As a result, many properties, resources, and public assets were left unprotected from the impact of floodwaters.

When the waters receded it became apparent how impactful this would be to the state’s economy. Over 28,000 acres of active agricultural land were destroyed, resulting in more than $5 million in crop losses. Road closures and direct damages had a severe impact on businesses in terms of repair costs and business loss. In addition, 230 miles of trails and 20 recreational facilities, including campgrounds, picnic areas, and boating access areas, had to be closed for repairs, resulting in lost tourism revenue. The total damage from the flooding was estimated at nearly $4 billion and 18 of the 24 affected counties were designated as eligible for federal disaster assistance.

Challenges
Colorado residents rely heavily on the watersheds for agriculture and recreation. Crop damage from standing water in fields and pastures, and the potential release of raw sewage or other hazardous materials into publicly accessible water sources were a major concern for residents and local leadership in the immediate aftermath of the flooding.

The 2013 flood was Colorado’s first major flooding event in 14 years. This significant time gap between flooding events left many residents and businesses without a sense of urgency to prepare for the next big disaster. As Kevin Houck, Chief of the Watershed and Flood Protection Section of Colorado Water Conservation Board put it,

“When the flood happened, it was like drinking from a firehose. A lot of people just didn’t know what to do, because it had been so long since anybody in the state had to deal with this kind of thing, on anything more than just a very isolated scale. So, everyone was learning as we went.”

Managing the numerous federal and state funding sources available to support watershed recovery, following all funding-related requirements, and meeting the local grant funding matching requirements was challenging and required a significant amount of coordination and capacity.
building at both the state and local levels. Despite the numerous funding sources available, it was clear early in the recovery process that the available funding would not cover all of the projects proposed by the local recovery leaders in the Watershed Coalitions.

**Part One Discussion Activities**

**Discussion Questions:**

1. If you were Colorado’s recovery manager, how would you approach preparing nearly two dozen counties/local governments for the challenges they would face managing disaster recovery in the near future? What type of information would you distribute? What types of capacities would you want to immediately bolster?

2. The Colorado Resilience and Recovery Office opted to organize stakeholders by watersheds rather than political jurisdictions for this recovery process. What do you think are the benefits and drawbacks of this approach?

**Activity 1 (Optional): Organizing Watershed Coalition Meetings**

**Duration:** 45 Minutes

**Instructor Setup:** Split participants into two groups – (1) group one of 3-4 people representing state leadership and federal support, and the remaining participants in group (2) representing the Watershed Coalition members (for example, water authority board members and officials, local government officials from multiple jurisdictions, or other public authorities). Allow the groups to review their respective instructions and discuss internally for ~10 minutes. Convene the meeting for 20-25 minutes, then report out on the experience for 5-10 minutes.

**Instructions for Group 1:** State and federal representatives are in attendance to help guide the discussion and answer questions related to state and federal disaster support. Select one member of the state/federal group to represent state leadership, who will facilitate the meeting. The goal of this meeting is to determine this coalition’s top two priorities for recovery. To prepare for this meeting, as state leaders and federal recovery support, what technical assistance can you offer to the Watershed Coalition members? What should your role be in this discussion?

**Instructions for Group 2:** You are attending the first meeting of a Watershed Coalition just a month after the floods wreaked havoc on your towns. Each of you will take on a fictitious role to play, of your choice. This watershed contains two major streams, both of which breached their banks during the flooding. Bridge and road crossings are damaged or destroyed throughout the watershed. Recreational activities have ceased as public amenities are not currently accessible. Prepare for the meeting, consider how you will frame this discussion and determine the priorities for your watershed’s recovery. How will you ensure that all coalition members have the opportunity to participate in reaching a decision?

**Teaching Note for the Report-Out:** After the “meeting” has concluded, consider asking the students “What are the benefits and drawbacks to using a watershed coalition approach for determining watershed recovery priorities?”
PART TWO

Actions

Community leaders and local government representatives quickly realized the importance of working together in a coordinated effort across sectors and agencies to achieve sustainable recovery. Following the flooding, the Department of Local Affairs’ (DOLA) Colorado Resiliency and Recovery Office (now the “Colorado Resiliency Office”) led a stakeholder tour to engage local communities in the recovery process. Unique to this recovery effort, stakeholders were organized by watersheds rather than traditional jurisdictions, prompting cooperation among the affected communities in prioritizing needs. The state wanted to build upon the Colorado Water Conservation Board’s (CWCB) existing watershed work and apply the watershed scale approach to the disaster recovery context. The stakeholder meetings were an opportunity to engage communities at the grassroots level and highlighted the critical role of local decision-making in recovery planning. These early actions ensured that all stakeholders, including different levels of government, held a shared vision for watershed recovery.

CWCB and DOLA supported the creation of Watershed Coalitions, diverse groups of stakeholders who could identify additional funding opportunities, recruit volunteers, and coordinate resources to implement projects focused on restoring healthy and resilient watersheds. Nearly 70 Watershed Coalitions existed prior to the 2013 flooding. Following the flooding, ten Watershed Coalitions emerged from the hardest-hit areas as the primary entities in need of recovery support. Two of the ten coalitions existed prior to the flooding and were able to expand. While the composition of each coalition varied, a coalition typically included representation from every local government within the watershed, private landowners, and special interest groups. Coalitions determined their own members and set their own watershed boundaries to focus recovery efforts. In addition, FEMA liaisons attended many coalition meetings, providing access to federal resources, technical support, and promoting information-sharing among coalitions and the federal recovery office.

In order to jumpstart the recovery process, state funding was utilized to draft the Watershed Master Plan and form the Watershed Coalitions. Rather than waiting for federal funding, which could have delayed program implementation, providing state funding upfront gave state and local officials the flexibility to establish the structure and goals for the program, in preparation for other, later grants and funding opportunities. This proactive investment by the state highlighted its commitment to the communities and to the projects, presenting an even more compelling case in its requests for funding from federal, local, and private sector sources.

With CWCB technical support and funding, each of the ten Watershed Coalitions coordinated the development of a stakeholder-driven Watershed Master Plan. The plan established goals, prioritized projects for the short-term and long-term stabilization and rehabilitation of affected watersheds, and provided implementation strategies.

To solve the issue of limited local capacity to determine and execute the best way to leverage the array of federal and state grant opportunities and requirements to implement their recovery objectives, outside consultants were brought in to augment the small program team. The consultants helped address this issue by designing and prioritizing projects with a high chance of receiving funding and a high degree of potential impact, supplementing the capacity of the Watershed Coalitions as projects moved into the implementation phase.

Each Watershed Coalition had the freedom to develop its own governance system and utilize its unique local knowledge to serve its community’s needs. However, CWCB and DOLA worked closely with the coalitions’ operations, serving as both financial partners and technical partners. This dual role allowed for greater oversight of each coalition’s actions and decisions and created a review system to ensure that all projects were compliant with any

Key Recovery Partners
- Colorado Department of Natural Resources, Colorado Water Conservation Board (CWCB)
- Colorado Department of Local Affairs (DOLA), Division of Local Government
- U.S. Department of Housing and Urban Development (HUD)
- USDA - Natural Resources Conservation Service
- Watershed Coalitions
grant-related requirements. It also created opportunities to identify gaps and leverage available resources. For example, CDBG-DR funding cannot be used for fundraising efforts, so CWCB funding was applied to support up to ten percent of DOLA-funded staff members’ time to fundraise.

CWCB and DOLA also facilitated the creation of a Watershed Coalition cohort, which held monthly cross-learning calls, extensive in-person training events, and served as a crucial forum for coalitions to receive feedback and help each other during project implementation rather than rely solely on the state.

The Watershed Coalitions proved instrumental in engaging local community members in watershed restoration efforts, obtaining local and private matching funds for federally funded projects, and pushing projects through to completion. The coalitions also provided a forum for regional collaboration and sharing best practices.

Public engagement meetings were held to discuss community goals and solicit the local perspective. Consultants from the private sector who were engaged through the coalitions provided technical expertise and volunteers with the knowledge and skills to develop robust, resilient project designs that would better protect the restored watersheds from future risks.

Results

After the Watershed Master Plan was established, DOLA was awarded $320 million in Community Development Block Grant-Disaster Recovery (CDBG-DR) funds from the U.S. Department of Housing and Urban Development (HUD). These funds were used to support the formation of a Watershed Resilience Pilot Program, implementing a part of the Colorado Resiliency Framework. The development of the Colorado Resiliency Framework itself was a cross-agency effort led by the Colorado Resiliency and Recovery Office, supported significantly by FEMA and the Community Planning and Capacity Building (CPCB) RSF, and developed over one year with more than 150 local, state, and federal stakeholders. Its six sectors are depicted in Figure 4 on the right.

The CDBG-DR-funded Watershed Resilience Pilot Program was a holistic program designed to align watershed restoration and risk mitigation with community and economic development goals, using a collaborative, multi-jurisdictional, coalition-based approach. Per CDBG-DR funding requirements, the Program focused on projects within the hardest-hit counties of Boulder, Larimer, and Weld. The CDBG-DR funds supported capacity-building by providing up to two staff members for up to three years in each coalition.

With staff on board, the CDBG-DR program then funded demonstration projects, which were intended to implement some smaller, shovel-ready projects in the watersheds’ master plan and build momentum for the subsequent rounds of large-scale restoration and resilience projects. These large-scale projects included repairing ditch infrastructure and ensuring all adjacent waterways were functioning properly.

Additional funding from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Emergency Watershed Protection (EWP) Program was secured, which provided additional financial and technical assistance for watershed projects related to erosion, bank protection, conservation, and riparian health. The EWP Program funding required a local match of 25%, which was met through a 50/50 contribution from CWCB and
available CDBG-DR funds. DOLA successfully navigated the CDBG-DR Program requirements so the Watershed Coalitions could utilize the CDBG-DR Watershed Program to supplement CWCB’s contribution and meet the EWP-required funding match. As a result, 67 flood recovery projects were funded through the NRCS EWP Program. The adaptability of the CDBG-DR funding source and DOLA’s flexibility were key to the successful implementation of the Watershed Coalitions’ priority projects.

The projects funded through the Watershed Resilience Pilot Program and EWP utilized the natural channel function approach, which avoids the construction of excessive structures in streams. Hard structures were built only where critical infrastructure needed to be protected. The characteristics of the landscape, including previous flood history, stream depth, and water velocity were considerations in each project’s design. Successful projects can decrease erosion and sedimentation risks and minimize the need for future oversight and stream management. This innovative approach integrates habitat and resource considerations with development goals, mitigates flood risk for people and properties, and is a relatively new line of thinking in the stream restoration field.

Though the Watershed Resilience Pilot Program was focused on community and economic development, and the EWP Protection Program was focused on protecting life and property while enhancing ecological function, both programs shared similar goals around natural and environmental health on a watershed scale. The partnerships that developed early on in flood recovery broadened to increase coordination in order to leverage program funding to execute more flood resiliency projects.

State funding programs were successfully leveraged in order to access Federal funds and/or cover expenses that were ineligible for federal funding. For example, DOLA’s Energy/Mineral Impact Assistance Fund and CWCB’s Colorado Watershed Restoration Grant Program supplemented coalition staffing grants to cover staffing and other expenses ineligible for federal funding. In total, over $4.6 million was awarded in various capacity-building grants.

As of September 2018, the Watershed Coalitions and their associated stakeholders have completed 117 flood recovery projects across 65 miles of river and floodplain improvements and have engaged over 700 private property owners through the EWP Program. Two rounds of projects identified from coalitions’ Master Plans have been implemented, and the third final round, focused on large scale impact and replicability of projects, is underway. Though outcomes are still being evaluated, preliminary studies examining watershed projects across all ten coalitions have demonstrated a decreased flood risk to low- and moderate-income populations, a stipulation of CDBG-DR funding. The 2013 flood impacts underscored to communities the need to prepare for the next flood event, no matter how many years might pass before the next event. Extensive mitigation work, such as CWCB’s flood mapping efforts, will continue to improve communities’ readiness to respond and recover from future flooding.

**Lessons Learned**

- Multi-jurisdictional partnerships and the ability to leverage and coordinate federal, state, and private funding sources expedited the watershed recovery process following the devastating flood.
- The state’s early engagement with local and regional stakeholders was crucial in establishing clear channels of communication and shared goals for Colorado’s watersheds.
- The application of CDBG-DR funds to the restoration of...
dynamic stream systems required an adaptive project management strategy tailored to each Watershed Coalition’s unique regional needs, and an iterative decision-making process.

- Local engagement in the recovery process, particularly through the Watershed Coalitions, was key to the success of the various stream and watershed restoration projects. Pairing local volunteers with subject matter experts for training on long-term maintenance and monitoring gave communities a stake in the success or failure of their restoration projects.
- By integrating resilience and hazard mitigation into the watershed restoration efforts, Colorado will be better prepared for future flooding disasters.

**Part Two Discussion Activities**

**Discussion Questions:**

1. The Watershed Resilience Pilot Program was designed to integrate risk mitigation into recovery projects in the hardest-hit counties and improve natural and environmental health on a watershed scale. How do you think this program contributed to the overall preparedness and resiliency of the region for future disasters? What are the major challenges you would anticipate with this approach?

2. The state provided an oversight role for the coalition, but let each group operate independently, setting their own governance structure and procedures. The oversight role allowed the state to identify gaps and resources and facilitate peer learning opportunities. As part of the federal support team, what additional technical assistance or expertise could you offer to this structure? How could federal support most effectively assist and advise within these locally-run, state-supervised Watershed Coalition teams?

**Activity 2 (Optional): Designing an Engagement Strategy**

**Duration:** 45 minutes

**Instructor’s Setup:** Split participants into groups of 3-4 people. Provide each group with poster paper and markers for note taking.

**Instructions:** You are staff of the Colorado Department of Local Affairs’ Recovery and Resiliency Office. One of the Watershed Coalitions has asked for assistance in developing an engagement strategy to ensure adequate public participation in the selection of recovery projects, prioritization of efforts, and formalization of their Watershed Master Plan. In your group, spend 15-20 minutes designing your engagement strategy. We will then come back together as a large group to share the engagement strategies. Select one person from your team to be your spokesperson for the report-out.

**Suggested Report Out Discussion Questions:**

1. Describe the key components of your engagement strategy and how you came up with them.
2. What federal resources are available for states/local governments to draw on when recommending and implementing this engagement strategy?
3. How would you measure the success or failure of your engagement strategy? What data or outcomes would you utilize as a benchmark? At what point would you assess your engagement strategy, and how would you adjust if your strategy was not achieving adequate public participation in the Watershed Coalition planning process?

*Teaching Note: It may be helpful to review the American Planning Association Briefing Paper on Public Engagement in Recovery Planning before leading this exercise.*
Follow up with the FEMA Guidance Development Office

The Guidance Development Office (GDO) develops and distributes FEMA’s Interagency Recovery Coordination (IRC) case studies. Our team would appreciate your feedback on these case studies and accompanying teaching notes. Please let us know how you have used this case study for a learning experience and your thoughts on what went well or could have been improved. To get in contact with our team, please email FEMA-RECOVERY-ICD-GDO@fema.dhs.gov. Thank you.