

# Upper Colorado River Watershed Resiliency Plan



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Prepared by Grand Environmental Services  
For the Upper Colorado River Watershed Group (UCRWG)  
Board, Affiliates, and Technical Team



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## Executive Summary

Since the Upper Colorado River Watershed Group (UCRWG) was awarded the WaterSMART grant by the Bureau of Reclamation in 2016, the public scoping and technical team research has produced multiple and diverse findings. Research indicates that Grand County Colorado River headwaters communities are well-educated, outdoor-oriented, and place great value in community, education, and quality of life. People generally recognize that the upper Colorado River watershed is significantly degraded, but actual conditions and trends are not well understood at this time. Community outreach through several public meetings, conducted in a World Cafe format, indicated that there is a base of citizens who want to be involved in a more sustainable, resilient watershed future.

UCRWG can educate, empower, and enable Grand County, while inspiring other headwater communities, to move toward a more sustainable, resilient watershed future in three ways:

1. Develop a holistic watershed model that incorporates hydrology, ecology, geochemistry, industry/agency guidance, and community values.
2. Promote broad community participation in baseline monitoring, decision-making, watershed action, and cultural appreciation.
3. Help stakeholders protect, restore, and enhance our watershed as opportunities arise and in a manner consistent with this UCRWG Watershed Resiliency Plan.

This three pronged strategy ensures a balance between community outreach/ engagement, scientific research and technological findings, and education.



■ Outreach ■ Science, Technology, Management ■ Education

## Part A: Introduction



### Water SMART Cooperative Watershed Management Program

Water SMART is a US Bureau of Reclamation acronym to “**S**ustain and **M**anage **A**merica's **R**esources for **T**omorrow.” It is their Cooperative Watershed Management Program, with a Congressional Mandate to promote disaster preparedness in particular drought, wildfire, flooding. This program promotes agency cooperation, especially between the US Departments of Interior and Agriculture and holds an emphasis on resilience.

*“Ecological resilience is the capacity of a system to absorb disturbance and reorganize while undergoing change, so as to retain essentially the same function, structure, identity, and feedbacks.” (USBR)*

WaterSMART grant deliverables for fiscal years 2017 and 2018 includes a 501(c)3 Watershed Group, delivered as Upper Colorado River Watershed Group, and a cohesive Watershed Resiliency Plan.

### What is a Watershed Resiliency Plan

A Watershed Resiliency Plan is the strategic plan for restoring watershed capacity to sustain functions during drought, wildfire, and flooding. It is built on public scoping and Best Available Science and should be transparent and predictable, with clear mechanisms for monitoring, accountability. It contains a bundle of project concepts that are founded on community-based interests and concerns, includes cause-and-effect analyses and a proposal to work with local stakeholders to meet UCRWG objectives for watershed resiliency.

## Part B: Public Scoping



### Overview

Our UCRWG team led a series of open-house style “community conversations,” conducted in World Cafe format, in Granby, Grand Lake, Fraser, and Kremmling beginning in October 2016. These meetings directed our process of identifying and defining our combined objectives, daily operations, types of projects and deliverables. Guided by sustainability facilitator Hillary Mizia, our approach was to get folks talking about our communities in a neighborly watershed setting. The 100+ participants included ranchers, business owners, water-system operators, wildfire professionals, real estate agents, Rotarians, and a remarkable number of high school students. We collected and sorted through meeting notes (documented on oversized post-it notes) which revealed three primary themes of community interest: 1) Community, 2) Education, and 3) Quality of Life.

A follow-up public workshop was held in Granby during winter of 2017 to review our findings from the community conversations and gauge stakeholder interest in becoming more involved. Additional meetings were held with Rotary Clubs in Grand Lake, Granby, Fraser Valley, and Middle Park High School Interact Club as well as meetings with Trout Unlimited, Grand County Board of Realtors, Infinite West and USBR, all to ensure a complete understanding of the position and concerns of potential stakeholders and community members. We continue to have on-going conversations with Granby Parks, Columbine Lake Country Club HOA, and Outstanding Grand Lake Foundation, gathering their input and growing our community engagement. The UCRWG Board meets regularly for discussions on our scope and direction of the organization and projects, then in-depth follow ups with Technical Team and other UCRWG Affiliates bring discussion to action.

The resulting broad themes from our public scoping show our headwater communities are well-educated and outdoors-oriented with many eager to participate in a more sustainable, resilient

Colorado River watershed future. Watershed projects should come from, include, and benefit our local communities. Projects should also emphasize education to empower and enable interested stakeholders as well as maintain and enhance quality of life – cultivate a healthy relationship between community and natural resources and keep activities interesting.

### Scoping Considerations for UCRWG Watershed Resiliency Plan

Grand County understands our importance as source-waters for Colorado Front Range communities, but we’re not clear on what local stream conditions we’ll see in the future. When examining the scope of the UCRWG Watershed plan, it is important to consider the following findings and questions:

Algae blooms are common in our waterways. What do these tell us about overall watershed conditions? Water temperatures sometimes exceed recommended values for cold-water aquatic life. Is this just the nature of extended drought, and what can we do about it? Municipal water suppliers are challenged to meet permit limits with decreasing dilution flows. Can watershed restoration reduce technical and economic burdens? Our agricultural community may need to increase water diversions to compensate for drought conditions including falling water tables. How can we maintain crop production during extended drought?

The Western US is experiencing a trend toward fewer, but larger and more intense, wildfires. How do our local efforts to promote “healthy forests” and “fire-wise communities” reduce wildfire risk? Can our healthier, post-pine-beetle forests protect and/or improve water quantity/quality? Can stream corridor restoration reduce wildfire risk? Can a watershed perspective help guide wildfire mitigation efforts, and possibly improve project funding?

How will the trend toward earlier Spring runoff and drier Summer/Fall conditions affect local water users including agricultural and municipal diversions? Will we see increased Spring flooding? Should we expect California-style, post-wildfire, mudslides and, if so, how would a watershed perspective improve response and recovery?

**GRAND COUNTY:**  
*The Colorado River*  
**STARTS here.**

*What happens next?*

All Grand County citizens are invited to a series of community conversations about our Grand County watershed future. These facilitated meetings will help shape the Upper Colorado River Watershed Group and create a resilient watershed plan. All interested parties are encouraged to attend these free, public events.

**Grand Lake: Town Hall**  
1026 Park Ave. • 6-9pm  
Tuesday, October 25, 2016

**Granby: Mountain Parks Electric**  
321 W. Agate • 6-9pm  
Monday, October 17, 2016

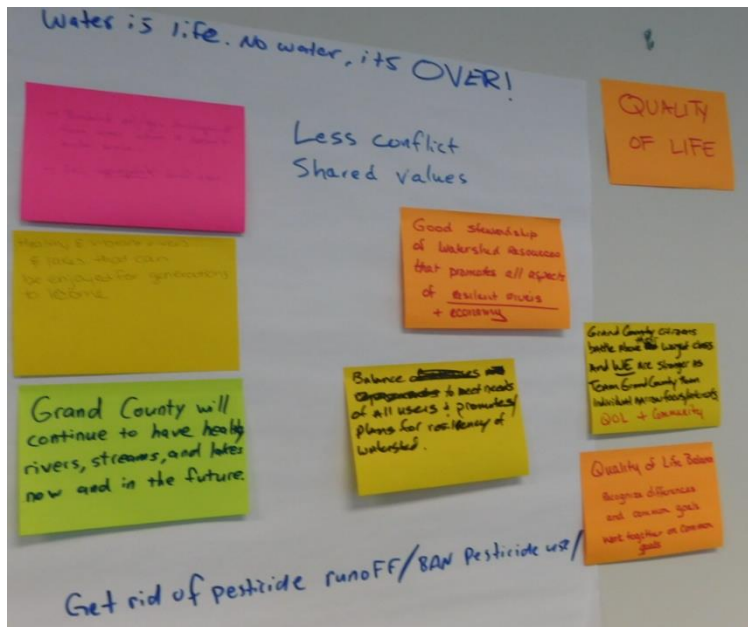
**Kremmling: West Grand High School**  
208 12th St. • 6-9pm  
Monday, November 14, 2016

**Fraser: Historic Church**  
107 Eisenhower Dr. • 6-9pm  
Friday, November 11, 2016

**\*\*Refreshments will be provided at all meetings. Families are welcome!\*\***

**MORE INFO AND RSVP AT: [WWW.UCRWG.ORG](http://WWW.UCRWG.ORG)  
FOLLOW US ON FACEBOOK: [FB.COM/UCRWG](https://www.facebook.com/ucrwg)**

## Part C: Issue Statements



### UCRWG Issue Statements from Public Scoping and Technical Team Analysis

1. It's difficult to understand local watershed conditions.
2. Many local stakeholders would like to become more involved in a more sustainable, resilient watershed future.
3. Watershed-restoration resources are not always readily available to smaller-scale, grass-roots efforts.

#### Issue Statement 1: It's difficult to understand local Watershed Conditions

Water Quantity and Quality (Water-QQ) trends are complex, reflecting “cumulative” watershed influences and a long history of actions. Water-QQ monitoring data is abundant in the area, but lacks a cohesive watershed perspective which in turn limits cause-and-effect analyses and generation of new, cost-effective mitigations.

#### RECOMMENDATION:

Develop a holistic watershed model incorporating baseline conditions, hydro-bio-geochemical models, standard guidelines + BMPs, and community education for all stakeholders.



## Issue Statement 2: Many local stakeholders would like to become more involved in a more sustainable, resilient watershed future.

On-going watershed restoration efforts are currently being managed by federal, state, and local agencies; nonprofit organizations; and Local landowners. Unfortunately, local grass-roots efforts are limited and sometimes complicated by larger scale timelines.

### RECOMMENDATION:

Emphasize participatory models for baseline monitoring, decision-making, and community involvement in watershed projects consistent with the UCRWG Watershed Resiliency Plan.

## Issue Statement 3: Watershed-restoration resources are not always readily available to smaller-scale, grass-roots efforts.

On-going projects are making great strides in specific areas, but they are not generally coordinated in a watershed context which limits community involvement. Large, multi-agency funding coalitions are not always welcoming to smaller scale, local efforts and potential watershed-restoration participants can become discouraged by the steep learning curves and technical requirements of multi-disciplinary projects.

### RECOMMENDATION:

Bring more diverse resources to support grass-roots, community-based projects that are consistent with the UCRWG Watershed Resilience Plan.



## Part D: Alternatives Considered for UCRWG Organizational Structure

There are many alternative courses of action for the Upper Colorado River Watershed Group to take when deciding on an organizational structure. Many have both pros and cons; however, a strategic combination of options will yield the best community results.. All action alternatives would be non-regulatory and non-political per WaterSMART guidelines, which is consistent with public sentiment.

1. No Action – carry on with Status Quo
2. Large organization managing contractor team focused on turn-key watershed restoration
3. Professional organization helping bring local scientists together with stakeholders and contractors
4. Modest-sized organization focused on educating stakeholders on watershed processes, restoration techniques, and project management including funding
5. Modest-sized business organization able to secure grant funding and share with stakeholders

Best Fit:

A creative combination of #3, #4, and #5 above

## Part E: Strategy – UCRWG can promote a more sustainable, resilient Colorado River headwaters by:

1. Developing a holistic watershed model to clarify resource conditions and ecological processes, Federal/State/local guidelines and initiatives, and project opportunities to systematically improve watershed sustainability and resilience (Appendix A)
2. Promote community participation in watershed efforts including crowd-based citizen-science monitoring, adopt-a-waterway programs, broad educational support, and related small-business opportunities (Appendix B)
3. Collecting, prioritizing, and sharing technical tools and funding opportunities to facilitate local community-based projects consistent with this UCRWG Watershed Resiliency Plan (Appendix C)

## UCRWG 5-Year Plan

Project Work Phases	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
1) Initial outreach, public scoping	Done				
2) Continue outreach, form nonprofit watershed group + Board of Directors + Vision/Mission, develop project concepts		Making Progress			
3) Continue outreach, build out project concepts into workplans					
4) Initiate pilot projects, permitting and funding for larger scale efforts					
5) Watershed restoration in earnest					

## UCRWG Project Concepts: Respond to Community Needs

Project Concepts	Promote Community	Support Education	Maintain and Enhance Quality of Life
1) Develop a holistic watershed model including land use, functional processes, and initial assessment results	✓ Yes	✓ Yes	✓ Yes
2) Promote community participation consistent with the UCRWG Watershed Resilience Plan	✓ Yes	✓ Yes	✓ Yes
3) Help stakeholders restore and enhance watershed as opportunities arise	✓ Yes	✓ Yes	✓ Yes

## Watershed Restoration Plan (WRP) Editorial Timeline

2018	Mar	Apr	May	Jun	Jul	Aug	Sep	FY 2019
1) Shape WPR, working draft to UCRWG Board + Affiliates	Yellow	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
2) UCRWG Board reviews WRP, recommendations	Yellow	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
3) Edits, post WPR to Website	Light Blue	Yellow	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
4) Summer activities, add content including public comments as available	Light Blue	Light Blue	Green	Green	Green	Green	Light Blue	Light Blue
5) Final updates under WaterSMART 1A	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Yellow	Light Blue
6) Next Phase – detailed workplans	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Green

## Appendix A: Develop Holistic Watershed Model Project Concept Details

The holistic Watershed Model developed by UCRWG will be publicly available GIS-based mapping and analysis that incorporates hydrology, ecology, geochemistry, industry + agency guidance, land use and community.

### Analytical Base:

The Colorado River Flyway is a recognizable geographic theme, consistent with Federal and non-profit initiatives. It is closely tied to waterways and associated riparian corridors, but expands outward to adjacent forest and rangeland habitats to encompass entire UCRWG project area. The Colorado River Flyway is fit as the analytical base because birds are excellent surrogates for environmental health and fit existing wildlife-monitoring models.

### Overlay Components:

Functional Assessment of Colorado Streams and Wetlands (FACStream/FACWet)

FACStream and FACWet provide an interdisciplinary approach developed by Colorado State University, accepted by Colorado Departments of Transportation and Parks and Wildlife, Corps of Engineers, and US Departments of Agriculture and Interior. UCRWG would begin with the initial FACStream identification and description of broad-scale assessment reaches including valley lengths and widths, drainage areas, valley type, and gradients. Then communicate broad conditions, trends, and opportunities with Federal, State, and local stakeholders. A mapping baseline will be set to facilitate more detailed assessment and decision-making.

### Hydrogeomorphic (HGM) System

An HGM model is based upon interplay between the waterway and adjacent vegetated corridor. As the foundation for FACStream and FACWet, it is similarly an interdisciplinary approach to watershed management. The HGM model is accepted by Corps of Engineers, USDA Natural Resources Conservation Service (NRCS) and US Fish and Wildlife Service.

This model includes lacustrine, riverine, depressional, and slope riparian systems and is based upon widely recognized functional values such as flood-flow attenuation, geochemical cycling, habitat. HGM includes other functional values as well. Overbank flow and “flood-flow attenuation” which reduces flood intensity and damage is measured. Groundwater recharge during flooding and through banks, then discharge back to waterway at lower flows is measured. Sediment and debris capture in overbank areas, nutrient and carbon cycling in plants and riparian aquifers and Vegetation for bank stabilization, fish and wildlife habitat and food-chain support are all key functional values of HGM.

### **Hydro-Bio-Geochemistry**

The Hydro-Bio-Geochemistry overlay combines existing baseline data including: 208 designated stream uses, 303(d) listed stream impairments, GCWIN monitoring , Chemistry + aquatic macroinvertebrates. It develops conceptual models for general restoration strategies such as riparian fencing, bank stabilization, beaver reintroduction and wildfire fuels treatment.

### **Applicable Guidance and BMPs**

Another important piece to this watershed model is the inclusion of guidance and best practices from Federal, State and local sources and nonpoint source (319) guidance including land use/conservation status and applicable Best Management Practices (BMPs). These guidelines and BMPs will be relevant to waterway, urban and transportation, agricultural, public lands, commonalities and Collective Impact measures and projects.

### **Community Values and Opportunities**

Past, present, and reasonably foreseeable projects likely to improve watershed resilience will be accessible from this model. Public lands and recreational access will be seen on this mapping format. There is also the opportunity to use this method to identify relevant organizations as well as watershed themes likely to attract funding educational and cultural events.

## Appendix B: Community Participation Project Concept

The overall goal of this project is to promote community participation consistent with the UCRWG Watershed Resilience Plan. This community participation has a number of benefits. Crowd-based citizen-science monitoring can leverage existing monitoring for water quality and habitats, broadening our understanding of existing conditions, trends, and opportunities for watershed improvements. Increased stakeholder education and involvement can strengthen decision-making with broader perspectives, greater transparency, and more consistent follow-through. Greater diversity can increase funding opportunities as well as social engagement.

Increased community participation can be used to develop standard communications practices that blend arts and cultural events with watershed projects. Where practicable, UCRWG will coordinate community projects on public and private lands with Adopt-A-Waterway projects which clarifies ownership, responsibilities, and long-term goals with our community.

### **Overlay Community Values, Opportunities (from Appendix A)**

Past, present, and reasonably foreseeable projects likely to improve watershed resilience will be accessible within the holistic watershed model project of Appendix A. Public lands and recreational access will be seen on this mapping format. There is also the opportunity to use this method to identify relevant organizations as well as watershed themes likely to attract funding educational and cultural events. This overlay ties the two projects of a holistic watershed model and community participation together.

## Appendix C: Help Stakeholders as Opportunities Arise Project Concept

Helping stakeholders restore watershed sustainability and resilience using UCRWG Watershed Resiliency Plan as a template can be accomplished by identifying and supporting on-going and new watershed efforts where UCRWG is welcome. It can and should include technical support, fund-raising, project management, and outreach assistance. Helping stakeholders cultivates watershed opportunities with non-traditional stakeholders and promotes creative alliances. Other ways UCRWG can support stakeholders includes structured project reviews and community based adaptive management for continuous improvement.

### **UCRWG Strategic Partners with Projects now in Development**

- Middle Park High School (Rotary) Interact Club: Adopt-A-Waterway project on Smith Creek including willow-revegetation training in May of 2018. This project was recently approved by Granby Town Trustees.
- Grand Lake Metropolitan Recreation District
  - Citizen-Science project: This is a recently initiated iNaturalist project with expanding participation.
  - GC Open Lands: Meeting with GLMRD Staff to help write the grant for educational trails projects
- Columbine Lake Country Club: Adopt-A-Waterway and Citizen-Science projects are being discussed.
- Outstanding Grand Lake Foundation: Kidz Zone pop up watershed learning experience and Rivers Trails and Conservation Assistance.