Creating a Road Map for Crystal River Recovery

■ An Update ■

The Crystal River watershed provides critical habitat for fish and wildlife, as well as water essential for both local agricultural and municipal uses. The river system is home to cutthroat trout, Bald Eagles, Lewis's Woodpeckers and rare plant species, and draws anglers, kayakers and sightseers from around the world. Because of the free-flowing river's scenic, historic and recreational values, the U.S. Forest Service has found the upper Crystal River eligible for federal Wild and Scenic River designation. Interest in protecting the watershed and its consumptive and non-consumptive water uses has recently grown due to a variety of factors, including the addition of the Crystal River to America's '*Most Endangered Rivers*' list (by American Rivers in 2012), work being conducted on the Colorado Water Plan, and recent drought conditions.

In 2013, Roaring Fork Conservancy and Public Counsel of the Rockies, working with Lotic Hydrological, LLC, met with local water users and water rights holders throughout the watershed to listen to their concerns and solicit their ideas on ways to enhance riparian and instream conditions in and along the Crystal River. **The plan we are proposing for *Creating a Road Map for Crystal River Recovery* has been developed on the basis of that input. It responds to specific needs articulated by stakeholders in the Crystal River watershed and is premised upon all stakeholders playing an active role in the future.** This is the first of several newsletters, meetings and discussions that we hope will keep you informed and engaged. ***We need and look forward to your participation!***

Save the Date!
'KICK-OFF' MEETING on the proposed Roadmap for Crystal River Recovery.
SEPTEMBER 10, 2014
in Carbondale.

Where We Started. The 2008 ***State of the Roaring Fork Watershed Report*** summarized the serious issues faced by the Crystal River, including:

- Water quality issues. Stream temperatures exceed state standards when flows are low and air temperatures are high. High sediment loads fill in fish habitat and smother spawning areas, as well as the aquatic insects that fish feed upon.
- Riparian and instream habitat degradation. Seventy percent of the riparian and instream habitat in the lower Crystal River is '*heavily modified*' or '*severely degraded.*' Trout numbers are very low compared to other similarly-sized rivers in the area.
- Reductions in stream flow. Late summer and early fall flows are often below the instream flow established by Colorado for protection of the natural environment. There is sometimes insufficient streamflow to satisfy agricultural water users' appropriations.

These problems are the result of the Crystal River Valley's natural constraints as well as man-made alterations, such as Highway 133. Frequent drought conditions and climate change are only making these conditions worse.

In 2012, the ***Roaring Fork Watershed Plan*** was completed and the ***Coal Basin & Crystal River Area Restoration Workshop*** 'kick-started' collaborative planning and restoration efforts in the Crystal River watershed in accordance with the *Watershed Plan*'s recommendations for 'urgent' action. However, we needed a strategy before we jumped in and started spending money on projects and programs, and we needed answers to questions like:

- How much water does the river actually need to be 'healthy'?
- Where is all the sediment in the Crystal River really coming from?
- How much erosion from natural sources can we actually control?
- Would water conservation by the Town of Carbondale greatly increase stream flows?
- What difference would improvements at ditch head gates make?
- How do we balance consumptive and non-consumptive water needs?

Two years ago we didn't have all the information needed to answer these types of questions. Today we know a lot more.

The lower Crystal River during a drought year. The river was flowing at 15 cfs. The CWCB summer instream flow is 100 cfs.

Building the 'Road Map' for Recovery. Over the past year, Roaring Fork Conservancy and Public Counsel of the Rockies, working with partners like the Colorado Water Trust, have been conducting site visits and talking to landowners and water rights holders along the river about potential restoration initiatives. At the same time, we have been working with local, regional, state, and federal governmental entities involved in water management to explore restoration alternatives. We have also initiated a series of studies and projects necessary to help us determine how to protect the river ecosystem while supporting agricultural and municipal water uses (*see* http://www.roaringfork.org/crystalriver for a summary of these projects and studies). Finally, we have been seeking and securing a significant amount of cash and 'in-kind' recovery project funding from entities such as:

- Colorado Water Conservation Board
- The Dornick Foundation
- Carbondale Rotary Club
- West Divide Water Conservancy District
- Gates Family Foundation
- U.S. Forest Service

With your help and input we are now well on our way to developing a logical, scientifically-sound, cost-effective and stakeholder-supported 'road map' for Crystal River recovery.

Next Steps. During the next 18 months we will be integrating what we've learned with the results of some additional studies. We are proposing to complete the 'road map' for Crystal River recovery with the following projects:

- ***Ecological Decision Support System (EcoDSS)***: A series of computer models will be developed to show us how the river and the riverine environment, including its fisheries, will respond over time to channel modification or other resource management activities. With these models we will be able to:
    - Determine the best locations to make channel modifications to reduce erosion/sediment;
    - Identify where water conservation measures, or changes in the timing or amounts of diversions, will put the most water into the river for the benefit of the fisheries; and
    - Assess which parts of the floodplain would benefit the most from habitat restoration.

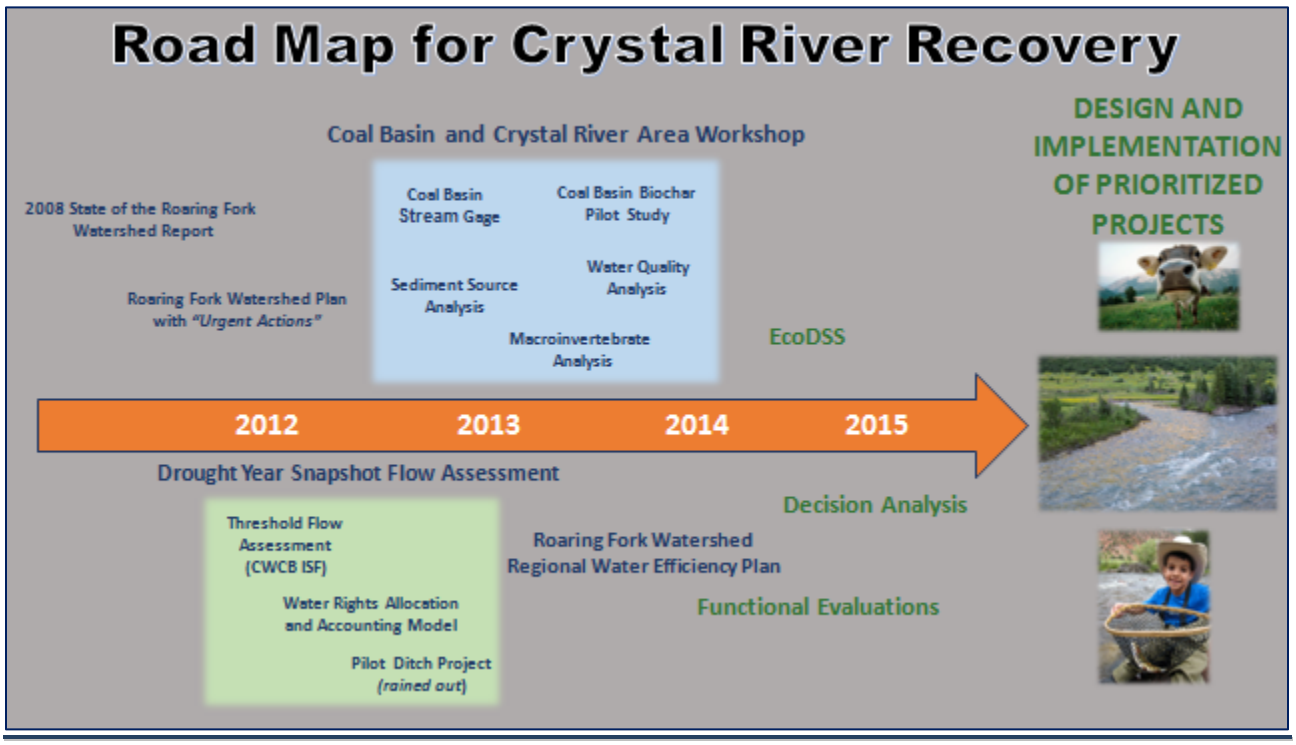
Colorado Parks and Wildlife-led fish shocking on the Crystal River. We are working with them in 2014 on a repeat survey, including additional sites.

- ***Ecosystem Functional Assessment (EFA) & Resource Management Evaluation:*** A series of assessments will be performed to evaluate current conditions and trends in and along the river. These assessments will include further evaluation of the condition of the fisheries and riparian habitat, as well as an evaluation of the potential for water diversion and irrigation infrastructure improvements.

- ***Project Prioritization /'Action Plan':*** This is the most critical component for ensuring our recovery plan's success. Beginning in early 2015, we propose to use the information from our models and the additional assessments of current conditions and trends to work with Crystal River stakeholders to come up with a set of common goals for the river, identify preferences for achieving those goals, and work through the various waters interests (*e.g.*, consumptive water use needs supporting the local agricultural economy and non-consumptive needs supporting recreation, aesthetic values, and ecosystem processes) to select and prioritize a set of on-the-ground restoration projects.

Seth Mason (Lotic Hydrological, LLC) will be the lead on these projects. Seth will be working with a team of subcontractors on the various components.

By 2015 we will have a logical, science-based and well-vetted 'action plan' with the potential to guide significant and measured improvements in the health of the Crystal River, while at the same time **protecting the agricultural heritage of this beautiful watershed**. The plan will identify on-the-ground projects on critical stream reaches that have the greatest promise and cost-effectiveness for achieving restoration goals. **Most importantly, the restoration plan will be developed with information responsive to *your* questions, with *your* ongoing input, and reflect *your* priorities for the river.** We expect the Natural Resources Conservation Service and other entities will be able to offer financial and engineering support for the actual design and implementation of restoration projects. Our ongoing collection of baseline data on the river (fish, temperature, macroinvertebrates, flow, and potentially sediment) will be used to both support and monitor the effectiveness of these future site-specific projects and resource management activities.



Track our Progress: Follow all of the Crystal River watershed restoration activities on the Roaring Fork Conservancy's website at: http://www.roaringfork.org/.

Project Contacts: Have an idea, comment or concern? Let us hear from you!

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Roaring Fork Conservancy is the premier watershed conservation organization in the Roaring Fork Valley. Since 1996, it has built consensus on complex water issues by bridging the gaps between hard science, local and regional land use and energy policies, recreational interests, the requirements of a rural agricultural community, and the varied interests of both full- and part-time residents in the Roaring Fork Valley. It served as the lead consultant on the *Roaring Fork Watershed Plan*.

Public Counsel of the Rockies is a regional and largely virtual non-profit, working to develop strategic partnerships and funding around timely and replicable conservation projects and cases for critical issues of water, energy and public justice. Public Counsel of the Rockies is partnering with Roaring Fork Conservancy on *Creating a Roadmap for Crystal River Recovery* in the areas of strategic planning, fundraising, stakeholder collaboration and outreach.

Lotic Hydrological, LLC is a Colorado-based consulting firm offering a range of ecological, hydrological, GIS and other data acquisition services. By helping its clients improve their understanding of the interactions between the human and natural environments, the company strives to improve their approach to the use, management and conservation of Colorado's valuable water resources.

Page 1 photo courtesy of the Thompson Divide Coalition.