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February 10, 2017

By Email: chris.sturm@state.co.us
Mr. Chris Sturm
Stream Restoration Coordinator
Colorado Water Conservation Board
1313 Sherman St., Room 721
Denver, CO 80203

***Re*: Colorado Water Supply Reserve Account Grant: Crystal River Watershed- Assessment and Design of Restoration Projects – Contract No. C150520**

Dear Chris:

Thank you for the generous funding provided by the CWCB for the Crystal River Watershed- Assessment and Design of Restoration Projects. Without your valuable support, the accomplishments of this project could not have been realized. We are pleased to report that the $304,464 grant was matched by $467,813 ($129,043 in-kind and $338,770 cash). Attached, please find each task's description and a summary of completed work, including all associated reports and documentation of education and outreach efforts, which, collectively, document the completion of this project.

This project applied a logical, scientifically-sound "watershed approach" to the prioritization and design of a series of restoration projects in the Crystal River Watershed which, when implemented, will enhance the ability to satisfy non-consumptive water needs that have not been met for years.

The original project was envisioned as a series of assessments to identify the sources of sediment-loading and the geomorphic processes that degraded water quality and damaged instream and riparian habitat in the Coal Basin sub-watershed, and contributed to the Crystal River's sedimentation issues. New stream flow, sediment, water quality, macroinvertebrate and meteorological data was planned to supplement these assessments, and, used collectively to prioritize and design a series of site- and process-specific restoration projects for the Crystal River Watershed - *with emphasis on Coal Basin and the Coal Creek/Crystal River confluence area*.

INITIAL OBJECTIVES:

1. Complete a series of land use and geomorphic assessments and obtain the information necessary to identify the primary natural and anthropogenic sources of sediment-loading in the Crystal River Watershed – with an emphasis on Coal Basin.
2. Design and prioritize a series of site- and process-specific mitigation projects to: (a) attenuate the Crystal River hydrograph, (b) contribute to the restoration of floodplain function at the Coal Creek/Crystal River confluence area, (c) improve

overall riparian and instream habitat in Coal Basin and the Crystal River, and (d) reduce sediment and total iron delivery to the Crystal River from Coal Creek.

3. Establish a permanent stream gauge and companion meteorological station in Coal Basin.
4. Obtain stream flow, meteorological data and sediment information for Coal Basin, and obtain water quality and macroinvertebrate data for both Coal Basin and the Crystal River to support the land use and geomorphic assessments and the design and prioritization of site- and process-specific mitigation projects, as well as to provide a baseline for measurement of overall project success.
5. Successfully reclaim and reduce sediment-loading from nearly 10 acres of the decommissioned road network in the former mining areas of Coal Basin.
6. Assess the cost-effectiveness and utility of using biochar in future large scale reclamation efforts in Coal Basin and other similar locations.
7. Promote and encourage implementation of other *Roaring Fork Watershed Plan* recommendations for meeting the Colorado Basin's consumptive and non-consumptive needs.

In April of 2014 CWCB approved a modification to these task to conduct an extensive and comprehensive assessment of the Crystal River as a more effective way to address long-standing issues on the Crystal River through on-the-ground projects. The most substantive modification of the scope was to Task 2: Conduct a Targeted Land Use and Geomorphic Assessment of Coal Basin. Based on results from the other tasks and in consultation with resource experts from the White River National Forest, Rocky Mountain Research Station, Lotic Hydrological, and RFC we concluded that the completion of Task 2 in its previous state would not adequately guide recommendations for restoration/reclamation actions throughout the watershed. Task 4 was also revised to provide a more comprehensive assessment of water quality data to inform the extensive analysis in Task 2.

Modified Task 2 states:

> Identify, design and prioritize a series of site- and process-specific mitigation projects to: (a) improve flows on the Crystal River, (b) contribute to the restoration of floodplain function of the Crystal River, (c) improve overall riparian and instream habitat on the Crystal River, and (d) reduce sediment in the Crystal River.

Final modifications and additions to the objectives was approved in May of 2016 and included:

- Produce and <u>begin implementation</u> of the Crystal River Management Plan to identify, prioritize and guide management actions that honor local agricultural production, preserve existing water uses, and enhance the ecological integrity of the river.

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- Establish a series of gauges and real-time stage recorders on ditches on the Lower Crystal to support project efforts to reduce diversions and increase stream flows.
- Continue conversations/meetings with irrigators to provide information and answer questions to understand and voluntarily implement options to reduce diversions and increase stream flows in the Lower Crystal River.
- Conduct education and outreach efforts to convey the results of the Crystal River Stream Management Plan and the relationship to the recently completed Roaring Fork Watershed Regional Water Efficiency Plan and companion Carbondale Water Efficiency Plan.
- Continue conversations/meetings with residents, staff, and board of the Town of Carbondale, Community Office for Resource Efficiency, and Ruedi Water and Power Authority to discuss options for reducing the town's diversions from the Lower Crystal River.
- Develop and make presentations regarding the Crystal River Stream Management Plan to share the process, results, and lessons learned from the planning effort. This will also help other groups embarking on Stream Management Planning in Colorado.

We greatly appreciate CWCB's willingness to work with us to modify the project to significantly improve the utility and effectiveness of the final results. The revisions expanded the geographic scope of the project from a focus on Coal Basin to the entire Crystal Watershed, improved stakeholder buy-in (crucial to successful project implementation), and attracted additional funders to the project. Modifications did not affect project funding or timeline.

Modified Task 2 produced the Crystal River Management Plan, one of Colorado's first completed Stream Management Plans, with the goal of:

> *Identifying, prioritizing and guiding management actions that honor local agricultural production, preserve existing water uses, and enhance the ecological integrity of the river.*

The plan can be publicly viewed via RFC's web site. The results of the extensive assessments that informed the plan are found in the seven appendices. Each report represents significant standalone research associated with project tasks listed below:
Appendix A: An EcoDSS for balancing Consumptive and Non-Consumptive Water Uses on the Crystal River, Colorado (Task 2)
Appendix B: Erosion, Sediment Sources, and Channel Analysis in the Crystal River Watershed, Colorado (Task 1)
Appendix C: Crystal River Water Quality Summary, 2004-2014 (Task 2 and 4)
Appendix D: FACStream Results for the Crystal River (Task 2)
Appendix E: Crystal River Hydraulic Modeling Report (Task 2)
Appendix F: 2012 Crystal River and Coal Basin Aquatic Life Use Assessment (Task 2 and 4)

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Appendix G: Water Quality in the Upper Crystal River and Coal Creek Basin (Task 2 and 4)

We look forward to continuing our working partnership with CWCB to implement CRMP goals and the opportunity to effect far-reaching changes not only on the Crystal River, but as a prototype for other watersheds.

Please contact me to answer any questions you have or provide any additional detail. Thank you again for your contributions, support and partnership.

Sincerely,

Heather Tattersall Lewin
Roaring Fork Conservancy Watershed Action Director

Attachments:
Final Report by Task Number
Crystal River Management Plan with Appendices

cc: Mr. Jim Pokrandt *(jpokrandt@crwcd.org)*

February 2017 Final Report:
Crystal River Watershed – Assessment and Design of Restoration Projects in the Colorado River Basin

TASK #1 – Conduct a High-Level Crystal River Watershed Land Use and Geomorphic Assessment

Description of Task: Using NetMap (www.netmaptools.org), conduct a high-level assessment of the twenty-four 12-Level Hydrologic Units (HUs) in the Crystal River Watershed to obtain a better understanding of the existing natural conditions, human-induced changes to those conditions, and the dynamic geomorphic processes in the watershed. This assessment prioritized the relative contribution of Coal Basin, especially the area above Coal Creek's confluence with Dutch Creek to identify obvious sediment supply sources and processes affecting sediment supply and channel stability, as well as sources and causes of problems not intuitively obvious. This initial screening eliminated stable, low-risk slopes, sub-watersheds and river reaches from further analysis.

Summary of Work: RFC contracted with Earth Systems Institute (ESI) to conduct a NetMap analysis of erosion sources in the Crystal River Watershed with a focus on sediment sources in Coal Basin. The results of this work, done in collaboration with the U.S. Forest Service - Rocky Mountain Research Station and U.S. Forest Service – White River National Forest are documented in the report: *Erosion, Sediment Sources, and Channel Analysis in the Crystal River Watershed, Colorado*. Summary results include:

- Indications that gully and shallow landslides play an important role in supplying channels in the Crystal River with coarse sediment with varied distribution across the landscape.
- The supply of coarse sediment from a closely spaced set of five tributaries, including Coal Basin, in the center of the Crystal River watershed appears to be a major contributor to a sediment wedge, located in the vicinity of the Coal Basin confluence near the community of Redstone, CO. The sediment wedge is likely causing increased potential for overbank flooding in the vicinity of the Coal Basin confluence and Redstone.
- Fine sediment from hillslope and road surface erosion was also predicted although the relative magnitude of fine sediment supply appeared to be considerably smaller compared to sediment supply from gullying and shallow land sliding. Maps of surface erosion potential from hillsides and from roads can be used to help prioritize erosion control aimed at reducing fine sediment delivery to streams.

Numerous maps portray the results of the Netmap analysis including classifications hydrologic unit and stream reach. NetMap analyses results, along with the initial outcomes from Task 5, led to the development the Crystal River Management Plan (modified Task 2), and contributed to its scientific accuracy by greatly expanding the geographic scope and improving the overall project benefit to the Crystal River.

TASK #2 (Revised) – Conduct an Assessment of the Crystal River[1]

Description of Task: Conduct an extensive and inclusive assessment of fluvial geomorphic processes, riparian health, fisheries health and habitat, water quality (*see* Task #4 (Revised) below), water diversion infrastructure and associated channel structures, to identify and produce an action plan for implementing high-priority/high-impact projects and feasible water resource management alternatives throughout the Crystal River watershed. This work elucidated important drivers of stream channel change and identified the primary natural and anthropogenic sources of detrimental impacts in the watershed. The results of this assessment guided recommendations for specific restoration/reclamation actions on the Crystal River from the Town of Marble to the confluence with the Roaring Fork River. This work included development of an Ecological Decision Support System (EcoDSS) for understanding and predicting ecological impacts produced by geomorphic modification of the streambed or implementation of alternative management strategies for consumptive and non-consumptive water uses on the lower Crystal River.

Summary of Work: RFC partnered with Public Counsel of the Rockies and Lotic Hydrological, LLC to complete the work in Task 2, which forms the foundation for the *Crystal River Management Plan*. The Plans findings and recommendations are:

- Few external stressors exist in the headwaters of the Crystal contributing to a generally healthy ecosystem above Redstone.
- Constraints on ecosystem function slowly increase in the downstream direction due to the cumulative effects of floodplain development and surface water diversions.
- The reaches of the Crystal River between Thompson Creek and the confluence with the Roaring Fork exhibit the most degraded overall functional condition.
- Reductions in late summer baseflows produce cascading impacts on channel hydraulics, water temperature, and physical habitat quality and availability.
- Supply shortages on water-limited tributaries are common. Demand shortages on the Crystal River exist for the junior rights on the East Mesa Ditch, Sweet Jessup Canal, Helms Ditch, and Kaiser & Sievers Ditch. The CWCB ISF right is frequently short in late summer.
- Water efficiency upgrades (e.g. sprinkler irrigation and ditch lining) can significantly reduce the frequency and magnitude of demand shortages experienced by agricultural producers.
- The most feasible and effective management options for meeting planning goals include Non-Diversion Agreements between the Sweet Jessup Canal and Carbondale Ditch, and ditch lining and short term water leasing by the Town of Carbondale on the Carbondale Ditch and Weaver and Leonhardy Ditch.
- Non-Diversion Agreements of approximately 25 cfs in severe drought and 10-15 cfs during moderate drought will meet management goals for maintaining moderate risk to ecosystem function. Current conditions place the ecosystem at high risk for unfavorable change.
- Reaching management targets will require diversion reductions between 5-18% (depending on drought severity) between the Sweet Jessup Canal and the Carbondale Ditch.
- Stakeholders should continue to investigate the feasibility of stand-alone water efficiency infrastructure projects, off-channel reservoir development, and channel modifications to

[1] A revision to Task 2 was approved on behalf of the Colorado Water Conservation Board (CWCB) by Chris Sturm, Stream Restoration Coordinator, CWCB, in 2014. Chris Sturm informed RFC that a formal amendment to Contract No. C150520 was not necessary for RFC to proceed with the new work.

simultaneously promote ecosystem function and the long-term sustainability of local agricultural production.

The planning effort culminated in development of a collaborative process for evaluating the feasibility of different water and land management alternatives to enhance and preserve important ecological attributes of the Crystal River system and outlines the implementation plan's core components and recommendations. The results provided the scientific credibility and comprehensive assessment needed to build stakeholder trust, and the necessary information to assess how the findings measure up to community values, including the desire to pursue future action. The formal engagement process consisted of a series of three stakeholder meetings in the fall of 2015 (Oct 30, Nov. 10, and Dec. 15). These took place in addition to numerous informal individual stakeholder conversations. The first meeting presented and discussed findings from the Crystal River assessment and modeling analysis, and identified stakeholders' questions and concerns. The second meeting explored issues and concerns regarding potential future action scenarios with assistance from technical and legal experts. The final meeting, in response to stakeholders repeated request for a specific desired flow target, provided the rationale for and identification of a range of ecologically-based flow targets and an estimate of the system-wide conservation percentage needed to obtain them. A proposal by the Colorado Water Trust to pay willing water users upstream of the fish hatchery to reduce diversions in drier years complemented this presentation. At this time, one non-diversion agreement is in final negotiations, with anticipated signing prior to the 2017 irrigation season.

TASK #3 – Collect Stream Flow and Meteorological Data and Conduct Sediment Sampling in Coal Basin

Description of Original Task: Establish a stream gauge and companion meteorological station in Coal Basin to collect the basic hydrologic/meteorologic information necessary to support the design of site- and process-specific mitigation measures and to determine the effectiveness of restoration efforts in the Coal Creek watershed. Conduct in-stream sediment sampling in Coal Basin to support Task 2 assessments.

Description of Modified Task: Design and establish a series of up to three stream gauges and four real-time stage recorders on ditches to support recommendations to reduce diversions and increase stream flows identified by the recently completed Crystal Stream Management Plan (Task 2). Ongoing monitoring will quantify both baseline conditions and the impacts associated with diversion reductions and document ecological health benefits.

Summary of Work: One monsoon season's data was collected from a stream gauge, turbidity meter, automated sediment sampler, and companion meteorological station installed in Coal Basin. Subsequently, RFC and its partners at the U.S. Forest Service, with the consent of CWCB staff, determined that continued operation and maintenance of the equipment on Coal Creek was not worthwhile based on the sediment transport modeling completed under Task 1, and geomorphic assessments completed for Task 2, which both indicated that investment in additional restoration projects was unlikely to significantly reduce the overall sediment yields into the Crystal River. RFC-owned components of the original gauge will be used in conjunction with newly purchased equipment to establish gauging stations at the Nettle Creek Bridge, Thomas Road Bridge, and RVR South Bridge. These strategic locations were chosen to not only collect valuable baseline data, but also document and track accountability of non-diversion agreements established through the Crystal River Management Plan. Gauges will be installed and operational spring 2017.

TASK #4 (Revised) – Water Quality and Macroinvertebrate Sampling and Analysis for Coal Basin and the Crystal River[2]

Description of Task: Conduct a review of existing water chemistry and macroinvertebrate data for the Crystal River and its major tributaries to obtain information regarding the spatial and temporal nature of impacts to aquatic ecosystem, including analysis of water quality and macroinvertebrate data recently collected in Coal Basin and the Crystal River.

Summary of Work: Dr. Russ Walker, with Colorado Mesa University's Dept. of Physical & Environmental Sciences, analyzed existing water quality data for the mid to upper Crystal River and Coal Basin collected from several sources. Results of this work is found in: Water Quality in the Upper Crystal River and Coal Creek Basin.

Some highlights and recommendations from the report include:

- The primary water quality issue in the Crystal River and Coal Basin is the iron content in sediments being washed into the river and streams;
- Dissolved oxygen appears to be a localized problem in the Crystal River at Penny Hot Springs;
- Some water temperature measurements were found to be higher than the temperature limits but because these temperature measurements were not conducted in the manner specified in the water quality regulations, they do not represent definite exceedances of the standard;
- Nitrate, pH, cadmium, copper, lead, and selenium exceeded standards infrequently and are not considered to be a widespread or on-going problem;
- Ideally water quality monitoring should be conducted quarterly at two sites on the Upper Crystal River (above and below the confluence with Coal Creek) and one site at the mouth of Coal Creek. Monitoring should include all parameters with state standards to provide a baseline and include a program to address sediment inputs; and
- Annual collections of macroinvertebrates and pebble counts are recommended.

In addition, development of the Crystal River Management Plan included water quality data analysis for the entire Crystal Basin. Results can be found in Appendix C: Crystal River Water Quality Summary 2004-2014.

RFC collaborated with the U.S. Forest Service – White River National Forest and Timberline Aquatics on the collection and assessment of macroinvertebrate data. The results documented in the *"2012 Crystal River and Coal Basin Aquatic Life Use Assessment"* report include: 1) For both the 2011 and 2012 sample analyses, benthic macroinvertebrate communities were assessed using Colorado's Multi-Metric Index (MMI) and several additional metrics. In 2012, MMI scores identified impairment of WQCD standards for aquatic life use for five of the six sites in Coal Basin. The lowest scores were for Dutch Creek and Coal Creek downstream of Dutch Creek. The site at the mouth of Coal Creek was not impaired. Three of these sites were also sampled in 2011 and were not impaired. One hypothesis assert that large sediment pulses caused by several major summer monsoonal events preceding the sampling may have caused the lower scores in 2012; and 2) In both 2011 and 2012, MMI scores identified attainment of WQCD standards for aquatic life use at all the sites on the Crystal River. In 2012, scores were highest at the most upstream and downstream sites on the Crystal River and dipped in the middle reaches.

[2] A revision to Task #4 was also approved in 2014. *See* fn. 1 *supra*.

Data from Task 4 initiatives also informed the Crystal River Management Plan's analyses conducted under Task 2 (Revised).

TASK #5 – Conduct a Road Reclamation Pilot Project in Coal Basin

Description of Task: Reclaim some of the highest sediment-producing portions of the decommissioned road network in the former mining areas of Coal Basin and assess the utility of using biochar in this type of reclamation effort.

Summary of Work: Results of this work, undertaken in partnership with the U.S. Forest Service – White River National Forest, are documented in the *South Fork of Dutch Creek Pilot Project Report*. This project reclaimed more than 10 acres of the decommissioned road network in Coal Basin's former mining areas to reduce sediment-loading to Coal Creek with the longer-term goal of reducing sediment loading in the Crystal River. The planning and discussion that went into the Coal Creek Pilot Project led to a watershed-wide assessment of erosion and sediment supply dynamics using NetMap (Benda and Litschert, 2013). This work and concurrent discussions regarding conditions in the Lower Crystal River eventually led to the development of the Crystal River Management Plan (CRMP), which concluded "The Crystal River appears to transport elevated sediment loads from Coal Creek without the telltale signs of sediment transport functional degradation. Furthermore, bridge constrictions, levee construction and bank armoring near Redstone appear relatively innocuous in their impact on the continuity of sediment transport dynamics. A natural geological grade control north of Redstone causes the greatest disruption in transport dynamics in that part of the watershed. Impairments to sediment regime largely abate below Avalanche Creek where the influence of Coal Basin diminishes." The CRMP identified one "Management Response Opportunity" regarding the sediment regime: Limited erosion control projects on historical mining and roadway surfaces. The techniques used in the project and the monitoring results will be useful for subsequent restoration projects in this area and other similarly harsh environments.

The second project objective, assessing the cost-effectiveness and utility of using biochar and other carbonaceous soil amendments in future large-scale reclamation efforts in Coal Basin and similar locations, show that compost and compost with biochar hold more soil moisture than untreated areas. Furthermore, compost with biochar treatments are beginning to show better soil moisture holding capacity over time. Additional years of monitoring are necessary to confirm initial observations. Assessing the cost-effectiveness of these treatment methods proved difficult because: 1) the value of increased soil moisture is very difficult or impossible to quantify; 2) the longevity and trajectory of the two treatments is unknown; 3) vegetation monitoring did not compare areas amended with compost to those amended with compost and biochar; and 4) the high cost of biochar could be reduced with a local supply and larger quantity production.

TASK #6 – Manage Project; Education & Outreach

Description of Task: Manage the overall project, including preparation of CWCB reports. Conduct public education and outreach related to the project.

Summary of Work: RFC coordinated and oversaw implementation of the overall project including submitting all CWCB project reports and invoices, and the significant outreach effort associated with the CRMP. In addition to shaping CRMP investigations and prioritized outcomes, outreach efforts have resulted in an engaged relationship with the agricultural community with a foundation of mutual respect

and growing trust. Presentations at statewide conferences and published articles have allowed the project team to share results with a broader audience, relaying methodology, successes, and lessons learned with those looking to embark on stream management planning in other basins.
The following tables document the broad range of education and outreach efforts related to this project:

Date	Presentation	Number in Attendance
5/21/2011	Pitkin County Rivers Board	9
7/21/2011	Field trip with USFS and Biochar reps	12
7/26/2011	Field trip with Crystal Valley Environmental Protection Association (CVEPA) and Colorado Department of Reclamation Mining and Safety	16
9/8/2011	Crystal River Caucus	17
10/20/2011	Pitkin County Rivers Board	8
10/28/2011	Landowner's rep field visit	3
11/16/2011	Pitkin County Rivers Board and Board of County Commissioners (BOCC)	15
12/12/2011	USFS	6
12/14/2011	CVEPA	12
12/17/2011	Landowner	2
12/20/2011	Pitkin County BOCC	9
1/4/2012	Future Forest Roundtable	31
1/5/2011	Aspen Valley Land Trust	4
1/6/2012	Landowner's attorney	4
1/12/2012	Roaring Fork Watershed Collaborative	23
1/13/2012	Thompson Divide Coalition Board	11
3/4/2012	Redstone Community Association	32
3/23/2012	Future Forest Roundtable	28
4/1/2012 and 4/4/2012	Cattleman's Association	8
5/ 1 and 2, 2012	Technical Experts Workshop	47
5/10/2012	Crystal River Caucus	22
5/18/2012	USFS District Rangers Tour of Coal Basin	7
6/15/2012	Future Forest Roundtable	18
6/22/2012	Roaring Fork Conservancy Watershed Explorations	38
9/21/2012	Forest Roundtable	32
10/10/2012	Colorado Watershed Assembly conference presentation	25
11/15/2012	West Divide Board	9
12/17/2012	USFS Aspen Sopris Ranger District staff	15
1/10/2013	Roaring Fork Watershed Collaborative quarterly meeting	38
3/21/2013	Forest Leadership Team	10
4/5/2013	Future Forest Roundtable	35

5/2/2013	Pitkin County Rivers Board and Open Space and Trails and request for funding	15
6/20/2013	follow-up mini-presentation to Rivers Board	8
6/21/2013	Tour of Coal Basin with CFWE Tour of Upper Colorado River Basin	44
6/26/2013	RFC Board	12
7/11/2013	Crystal River Caucus	28
7/12/2013	Forest Roundtable	23
8/22/2013	Colorado Riparian Assessment Team Course-field site Coal Basin	24
11/1/2013	CRMS students-site visit	12
4/4/2014	CTU annual meeting Redstone	17
4/4/2014	Forest Roundtable in Aspen	35
4/11/2014	West Elk Scenic By-Way meeting in Crawford	15
5/29/2014	Field visit with partners	18
3/17/2014	NRCS and team overview of the Crystal	5
4/8/2014	NRCS, TOC, private landowners, project team field trip	10
5/13/2014	Pitkin County OS&T, CP&W, USFS, and team field visit to public properties-lower river	7
5/15/2014	River District	5
5/15/2014	Pitkin County Rivers Board	13
5/16/2014	Pitkin County, Colorado Parks and Wildlife, USFS, and team field visit to public properties-upper river	7
9/10/2014	Crystal River Stakeholders Meeting and Project Update	24
10/23/2014	Mt Sopris Rotary Project Presentation	23
11/5/2014	Crystal River Conversations: Rubicon Headgate Technology	16
12/2/2014	Crystal River Conversations: Trout Unlimited Restoration Projects & Outstanding Waters	31
1/14/2015	Carbondale Rotary Project Presentation	47
3/24/2015	Crystal River Conversation - Storage	25
6/22/2015	CBRT Presentation	58
10/30/2015	1st Crystal River Stakeholder Meeting and Discussion Forum	32
11/10/2015	2nd Crystal River Stakeholder Meeting and Discussion Forum	44
12/15/2015	3rd Crystal River Stakeholder Meeting and Discussion Forum	34
4/12/2016	Presentation to Front Range Conservation Groups- Boulder	22
5/23/2016	CBRT Presentation	52
5/26/2016	Carbondale Community Presentation	26
6/16/2016	Pitkin County Rivers Board	8
8/24/16	Colorado Water Congress: Stream Management Planning Panel	40
8/1/16	Thompson Creek and associated properties site visit with PCOST, PCHRS, RFC, Lotic	7
10/11/16	Colorado Watershed Assembly: Stream Management Planning Workshop	50
10/12/16	Colorado Watershed Assembly: CRMP Presentation	25

1/23/17	Stakeholder Meeting and Discussion: Non-Diversion Agreements, Crystal Restoration Fund, Town of Carbondale Ditch Efficiency Work, Water Banking	27
	TOTAL NUMBER	**1,435**

Date	Media	Article
10/20/2011	Crystal Valley Echo and Marble Times	Coal Creek Restoration
Winter/Spring 2012	RFC Newsletter	Restoring Coal Basin and the Crystal River Confluence
12/20/2011	Aspen Times	Roaring Fork Conservancy Eyes Coal Creek Cleanup
5/4/2012	Press Release on workshop	
5/10/2012	Sopris Sun	article on Coal Basin Restoration
6/1/2012	Crystal Valley Echo	article on Coal Basin Restoration, Sharon Clarke and John Emerick
Summer/Fall 2012	RFC Newsletter	Planning underway to restore Coal Basin and Crystal River Confluence Areas
Winter/Spring 2013	RFC Newsletter	Work begins on Coal Basin Restoration Project
10/11/2012	Press Release	Dutch Creek Pilot Project
10/15/2012	Press Release	WSRA funding
11/7/2012	Article on WSRA for Grand Junction Free Press highlighting collaboration with Colorado Mesa University	WSRA funding
Summer/Fall 2013	RFC Newsletter	Crystal River Map with various project areas
Winter/Spring 2013	RFC Newsletter	Coal Basin Project update
Winter/Spring 2013	RFC Newsletter	Restoration work progresses on Crystal River and Coal Basin
Summer/Fall 2014	RFC Newsletter	update
July 2014	Creating a Road Map for Crystal River Recovery: An Update	
Spring/Summer 2015	RFC Newsletter	Crystal River Stream Management Plan study update
February 2015	Crystal River Stakeholder Newsletter	
July 2015	Crystal River Stakeholder Newsletter	
Fall/Winter 2015	RFC Newsletter	Crystal River Stream Management Plan study update
Summer 2016	RFC Newsletter	"Stream Management Planning: A New Era in River Studies"
8/16/16	CFWE: Your Colorado Water Blog	"Collaborative Watershed Management Highlights in the Roaring Fork Basin"

8/22/16	CFWE: Your Colorado Water Blog	"A rancher, a scientist, an angler and a conservationist walk into a room…"
September/October 2016	Colorado Water	"Stakeholders and the Crystal River Management Plan"
September/October 2016	Colorado Water	"Science-Based Strategies: the Critical Role Quantitative Methods and Simulations Play in Successful Integrated Management Planning"