

Cache la Poudre River Initiative

Threats, Opportunities, and Recommended Action Plan

Prepared by:

The City Of Fort Collins
Natural Resource Advisory Board
(NRAB)

Submitted To:

Fort Collins City Council
City Hall West, 300 LaPorte Avenue
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December 2011

1.0 Executive Summary

Healthy rivers and riparian areas are dynamic systems involving complex ecological interactions defined by unique local factors. In general, a healthy river can be defined as one that, “maintains key environmental processes and services indefinitely, is resilient in the face of recurring flow-related stresses, and still meets most societal needs and expectations”(Meyer, 1997). This definition alludes to three main factors contributing to a healthy river system in the eyes of modern society’s expectations; ecological health, societal health, and economic health.

Fort Collins has a well-deserved reputation as a leader in river management. The NRAB believes that now is the time to take the next steps to provide a framework promoting these “triple bottom line” elements of a healthy Cache la Poudre River.

NRAB Recommendations

1. The NRAB strongly advises that Council direct the City Manager to make recommendations to Council regarding: (A) the best organizational mechanism(s) to promote a Poudre River “champion” within the City governmental structure; (B) the best ways to assure accountability to both the City Council and the City Manager in achieving Council’s strategic goals, and (C) identifying what charter language must be changed to assure that the full suite of staff talents available can be mobilized toward those goals. We note that the City is in the process of identifying a Poudre River “champion” and we enthusiastically support the choice of the Natural Resources Director to assume this role.
2. The NRAB strongly recommends that Council establish a goal of providing minimum Poudre River flows through the city, as measured at the Lincoln Street gage, of 20 cubic feet per second (cfs) through a set of options that include water right exchanges, re-timing of diversions, cooperation with other municipal and agricultural diverters, purchase of selected water rights, and other actions.
3. The NRAB strongly recommends that Council direct staff to pursue opportunities to protect and partially restore high snowmelt flows as those opportunities arise. In particular, any proposals to divert high flows in order to bolster low flows should be summarily dismissed.
4. The NRAB strongly recommends that the Shields-to-Linden project be funded as part of the grant development for GOCO “Great Outdoors Colorado Rivers Initiative”.
5. The NRAB strongly recommends that the City should continue to be alert to any and all possibilities to acquire commercial in-holdings along the river corridor when they become available with the goal of establishing a nearly continuous

natural riparian ecosystem available for all to enjoy along the length of the Cache la Poudre River through Fort Collins.

6. The NRAB strongly recommends that Council establish sustainable funding mechanisms for Poudre River protection and enhancement initiatives, such as a voluntary “Check-off Box” subscription option on the Fort Collins Utility Bill that would encourage citizens to contribute funds, much like our wind power program.
7. The NRAB strongly recommends that the City's evolving floodplain plan do more to protect the river's natural values, including revising the floodplain regulations to not allow any new structures in the 100-Year floodplain.

2.0 Importance of the Poudre River to the Quality of Life in Fort Collins

It is time for the City of Fort Collins to develop a vision for the Poudre River which includes an action plan that will protect the river for the long term. Although it is probably impossible to quantify in absolute monetary terms the value of the river to this community, there can be no question that we are truly blessed to be located along a thirteen mile stretch of the Cache la Poudre River. Indeed, our City was founded along the river to take full advantage of all it can provide. The river has been and will continue to be a working river, serving a wide range of functions vital for the life of our city as well as the surrounding ecosystem. It is the basis of important riparian habitat for fish and other wildlife. It provides a portion of our drinking water and serves as a conduit for our storm water and wastewater. It supplies water for agriculture and food production that helps to feed our city and state. Various industries have specifically located here to profit from the proximity to the river. Many other businesses have come to Fort Collins largely due to our beautiful natural setting. These industries provide jobs and boost the local economy.

The river winds its way through our Natural Areas and cools our city in the summer as it flows. Those Natural Areas are the home for an array of animals, plants, fishes, insects and aquatic biota which delight City residents and offer a respite from urban life right in the heart of Fort Collins. Our parks, Natural Areas and trail systems allow citizens ample opportunities to enjoy a wide variety of activities along the whole length of the river as it journeys through our city. Fishing, boating, tubing, wildlife viewing and bicycling are just a few of the many recreation activities that citizens enjoy along the river. These activities have consistently proven to be of great importance to citizens and are ranked among the highest in importance to the quality of life in Fort Collins. Finally, we note that the view of the Poudre River in its undisturbed state was the number one desired “community character” image in the City’s 1995 Visual Preference Survey.

Economic Benefits Provided by the Cache la Poudre River

The Poudre River is truly an “economic engine” for the city of Fort Collins. Some of its benefits have been quantified, some have not. A quick review of the literature reveals that our citizens are happily “willing to pay” for river flow maintenance or supplementation to the tune of between \$283 million and \$425 million (Loomis, 2008). They should, given that the City has spent almost \$10 million building a bike path and tens of millions more protecting open space along and near the river, both of which help promote the recreational and tourism economy for fly fishing, swimming and tubing, bird and nature-watching, biking and hiking. According to a Fort Collins Natural Areas Program study, more than 100,000 user-days were logged on the Cache la Poudre River trail in 2007.

Yet another study by Loomis has shown that our city, like many others in Colorado, could realize at least \$750,000 per year if a downtown water park were constructed for

kayakers, tubers, and family observers (Loomis and McTernan, 2011). Many other cities have estimated the economic benefits garnered by maintaining a healthy, vibrant river community, with or without a clear central focus such as a water park. For example, it has been shown that property values in urban areas with restored streams can increase \$4,500 to \$19,000 from actions like stabilized stream banks and putting in educational trails (Streiner and Loomis, 1996). Other economists (e.g., Colby and Wishart, 2002) have shown that property values, and therefore also property tax revenues, are increased by millions of dollars simply through proximity to riparian areas in arid regions like ours.

In addition to scientifically measured benefits, it is realistic to note many additional economic benefits that will accompany the Poudre if we continue to safeguard the role it plays in our community. To name a few:

- maintaining a generous floodplain and floodway channel reduces the spread of floodwaters and thus the costs of inevitable flooding;
- adequate streamflows dilute treated effluent from the City's wastewater treatment plants enabling the City to more economically treat wastewater and allowing the City to upgrade wastewater treatment plants less frequently;
- adequate streamflows also decrease the need for additional City expenditures on stormwater treatment in streams, ditches, and outflows that discharge into the Poudre River through Fort Collins;
- enhancing and restoring the river also protects the value of the natural areas and open space through the City while protecting the City's and the private sector's economic investment along the river;
- protecting the river and its corridor also upholds the market value of real estate, especially in the downtown area of Fort Collins, where properties adjacent to the Poudre River are increasingly magnets for economic development.

2.1 NRAB Research and Findings

The Natural Resources Advisory Board has spent the past year researching the health of the Poudre River and we have learned that the river is facing many threats. Most threats are directly related to the effects of human activity and development along the river's course. These impacts include, but are not limited to:

- Channelization and confinement of the river, lower flows, decreased ground water recharge, and a lack of in-channel scouring are dramatically affecting the health of the riparian ecosystem.
- The Cottonwood Gallery forest is aging and disappearing. A significant fruiting shrub component is absent from the shrub/willow community with a resultant decrease in bird diversity. Plant surveys show that 4 of 7 rare plants historically found along the Poudre River are now gone.

- Water quality issues include: selenium contamination, the presence of antibiotic resistant genes, hormones, psychotropic drugs and other emerging contaminants released with waste water discharges.
- Seasonally high water temperatures which threaten the diversity of fish and aquatic invertebrate populations.
- Before the Poudre reaches its confluence with the South Platte, it shows serious ecological impairment from organic pollutants, largely due to the accumulated effects of effluent from waste water discharges and low water flows.

The Natural Resources Department has identified many of the current challenges facing the river and is monitoring and documenting the changes taking place. The Natural Areas Program is responding through the 2011 update to the Cache la Poudre Natural Areas Management Plan. This is an excellent document which provides clear direction for steps to be taken within the Natural Areas to achieve key conservation, cultural and recreation goals. However, the scope of the plan is limited to the properties owned and/or managed by the Natural Areas Program and it does not address river flows, private lands, utility corridors, and lands managed by the City's Parks and Stormwater Departments. In order to mount an effective campaign to solve the issues facing the river, there is a need for coordination of efforts among all City departments that have a stake in the river.

2.2 Existing Policy, Principles, and Management

Our community clearly places a high value on the Poudre River and the recent update to City Plan highlights this idea by including principles and policies to maintain the health of the Poudre. Of the multiple guiding principles and resulting policies in the current City Plan, the NRAB identifies the following to be of particular importance:

- **Principle ENV 24**

The City will support a healthy and resilient Cache la Poudre ecosystem and protect, enhance and restore the ecological values of the River.

- **Policy ENV 24.5 – Coordinate to Provide Adequate Instream Flows**

Work to quantify and provide adequate instream flows to maintain the ecological functionality, recreational, and scenic values of the Cache la Poudre River through Fort Collins.

- **Principle ENV 26**

The City will manage the Poudre River floodplain to minimize potentially hazardous conditions while promoting natural processes associated with flooding, erosion and channel migration to occur over time as appropriate.

These principles and policies seek to protect and restore the riparian ecosystem, provide adequate instream flows, and allow the river to act like a natural river as much as possible, within the constraints of passing through an urban corridor.

City Plan also incorporates the Sustainability principle of Triple Bottom Line analysis which attempts to give equal consideration to economic, social, and environmental values in the shaping and execution of policy. The NRAB would like to see a greater emphasis on the environmental aspect of the Triple Bottom Line analysis, especially with regard to the very complex issues facing the river. We believe that a greater emphasis on the environmental attributes will automatically benefit the other two components.

The Natural Resources Department is charged with the stewardship of environmental policy in the City, but to do so, it cannot act alone. The principles in City Plan point us in the right direction, but much more is needed to reach and maintain the goal of a healthy and resilient river ecosystem.

2.2.1 Current Cache la Poudre River Management

Existing Need for a Lead Advocate

Several City departments deal with the Poudre River: the Water Utility, Natural Resources (Natural Areas specifically), Stormwater, Parks and Recreation, Economic Development, Planning, Transportation, and perhaps others. However, no department truly claims any 'ownership' of the Poudre -- the City doesn't 'own' anything except some natural areas, easements, etc. Because each department has their own relatively narrow mandate, there is no comprehensive and passionate leadership or spokesperson for the Poudre as a whole. In some cases, this fragmentation leads to the right hand not knowing what the left hand is doing, though a recently revived Poudre River Task Force interdepartmental group is, we are told, working well.

Given the divided responsibilities, perhaps locked in by current City or Enterprise charter language, each department sticks so closely to their mission that each can say that something as complex as managing instream flows, for example, is "not our responsibility." Each can say, with complete honesty, "our department supports the City's overarching goals for the river," but none are in a position to assume responsibility and implement actions, coordinated or otherwise, to achieve overarching goals. To mix metaphors a bit, each department takes care of their tree, but no one is in charge of the forest.

In addition, expertise and financial resources are also fragmented among departments. For example, the Water Utility has the knowledge and institutional experience to deal with river flows, but is not chartered to expend funds to achieve specific instream flow objectives. Natural Areas has the ecological expertise to understand the benefits of amount and timing of flow, but has limited jurisdiction, personnel, and finances to do more. Allocation of departmental funds is, understandably, task directed, but not strategically coordinated. Finally, the City will often need a single point of contact in dealing with Larimer County, the Division of Wildlife, gravel mining companies, the Fort Collins Museum and Discovery Center, and similar organizations, all of whom have Poudre-specific objectives.

To achieve the goals in City Plan the river needs an advocate or “champion” within City government with dedicated funding, who has the authority to act and the responsibility to develop an action plan and work across the various departments to coordinate and lead the effort. Natural Resources may be in the best position to assume this leadership role to bridge the existing intra-departmental interests.

- **The NRAB strongly advises that Council direct the City Manager to make recommendations to Council regarding: (A) the best organizational mechanism(s) to promote a Poudre River “champion” within the City governmental structure; (B) the best ways to assure accountability to both the City Council and the City Manager in achieving Council’s strategic goals, and (C) identify what charter language must be changed to assure that the full suite of staff talents available can be mobilized toward those goals. We note that the City is in the process of identifying a Poudre River “champion” and we enthusiastically support the choice of the Natural Resources Director.**

3.0 Current and Future Threats to the Poudre River

3.1 Ecological degradation (plants, birds, fish, invertebrates)

The Cache la Poudre River supports regionally representative aquatic invertebrate communities, as well as fish and avian species and important riparian plant communities dominated by native willows and cottonwoods. These biological components are threatened ecosystems all along the Front Range of Colorado. Unfortunately, even before the river exits Poudre Canyon, altered hydrological regimes affect the river, including water releases and withdrawals for agricultural use and domestic supplies of drinking water for our own and neighboring cities. The invertebrate, vertebrate, and plant communities degrade further as the river flows from the canyon down to the western border of Fort Collins (Overland Trail) and enters the city.

Unfortunately, the additional challenges posed by meandering through a city of >140,000 citizens is more than the river ecosystem can sustain. Low flows result in

water temperature increasing during the summer and early fall, in turn lowering dissolved oxygen. Critical temperatures for trout and other keynote species survival are often surpassed during an average year. Storm water is compromised by urbanization and land uses which convert “green fields” to “brown fields” resulting in developed land covered with asphalt that will not allow the water to drain naturally through the soil. Storm water runoff and other nonpoint sources (a consequence of the large number of cars and other factors in our city) contain high levels of pollutants and silt, which are deposited directly into the river. In addition, although our city water reclamation utility does an excellent job of treating sewage, the large volume of water returned to the Poudre from our sewage plants is far from pristine.

Finally, the channelization of the Poudre River as it flows through Fort Collins, due to extensive development along the river corridor, does not allow the natural floodplain processes necessary to sustain the riparian communities, especially the plains cottonwoods. This in turn threatens the avian and other wildlife communities along the river.

In summary, low flows, storm water runoff, wastewater effluent, development along the river and channelization bring the Poudre River riparian ecosystem to a tipping point during an average year. Our community fails in its responsibility to be a conscientious steward of this national and regional treasure and the threats to the Poudre River ecosystem will only continue to grow in the future. Fort Collins must acquire sufficient water rights or take other actions to maintain minimum and maximum flows in the Cache la Poudre River through Fort Collins or it will see the natural riparian communities we treasure continue to disappear over time.

3.2 Poudre River Floodplain

The NRAB has commented on the City’s floodplain policy twice this year as Council has reviewed the existing floodplain regulations. Our recommendation is: The Poudre River floodplain regulations must be revised to not allow any new structures in the 100-Year floodplain. As we have noted, allowing development to encroach into the floodplain does not support the sustainability of the river or the community. Maintaining a healthy flowing river is in the long term economic interests of the City. Furthermore, current regulations do not address the increased preservation of the natural and beneficial functions of the floodplain and the critical importance of the natural processes of flooding to the sustained health of the riparian ecosystem.

- **The NRAB strongly recommends that the City's evolving floodplain plan do more to protect the river's natural values, including revising the floodplain regulations to not allow any new structures in the 100-Year floodplain.**

3.3 The Ups and Downs of River Flows

A river's annual flow regime (amount of flow and when during the year those flows occur) almost completely governs how that river functions and whether the river can sustain the biotic communities that evolved along with it, even in the face of normal, periodic stresses common among rivers today. Of special interest are the very lowest flows that occur as well as the very highest. These two extremes, and the frequency with which they occur, directly control the integrity of the river perhaps more than any other attributes.

Although our city has taken small steps to protect the lowest streamflows, these steps have proved insufficient to keep the river from going dry, especially from the late summer through the winter. Similarly, the high snowmelt flows, already greatly diminished except in the very highest flood-flow years, appear to be at risk given current water development proposals (e.g., the Northern Integrated Supply Project, NISP) and may be at additional risk if climate change occurs as has been predicted. The NRAB recognizes that a huge (and quite worthwhile) effort has gone into evaluating the consequences of NISP, and trusts that these efforts will continue as needed in the future.

For purposes of this report, we believe that far more can be done in the short term by City initiative to bolster low flows than high flows. Restoring adequate low flows, as has happened in other Colorado communities, will be seen as a significant community amenity by future generations and should be a central target of a Poudre River vision and action plan. Though it will not be easy to accomplish, restoring low flows is a task that should be relatively straightforward to "sell" to the public since the results can be so clearly contrasted with zero flow. The City Water Board has studied the low flow issue and estimated that providing a minimum flow of 20 cfs would require an average of about 5,000 acre feet per year (memo to staff, 3/12/09). The NRAB concurs with the Water Board and seconds that amount as an appropriate initial goal. Ultimately, minimum streamflows should approach those estimated by sound scientific analysis to be protective of ecosystem values.

Our short-term recommendation to secure low flows does not, however, eliminate the need to secure additional high flows that are critical for maintaining healthy and resilient riverine values over the long term. We believe it highly likely that the current Poudre River Ecological Modeling Project will identify the need to increase seasonal high flows in order to stem the current loss of the river's cottonwood forest environment and protect other values. Accordingly, our recommendations are as follows:

- **The NRAB strongly recommends that Council establish a goal of providing minimum Poudre River flows through the city, as measured at the Lincoln Street gage, of 20 cubic feet per second (cfs) through a set of options that include water right exchanges, re-timing of diversions, cooperation with**

other municipal and agricultural diverters, purchase of selected water rights, and other actions.

- **The NRAB strongly recommends that Council direct staff to pursue opportunities to protect and partially restore high snowmelt flows as those opportunities arise. In particular, any proposals to divert high flows in order to bolster low flows should be summarily dismissed.**

4.0 Strategic Opportunities for the Coming Years

The NRAB has identified the following areas as those that provide opportunity for the City of Fort Collins, its citizens, and all other stakeholders benefiting from the attributes of the Cache la Poudre River that serve to maintain the communities current high quality of life.

4.1 *Establish Continuous Natural Corridor*

The City of Fort Collins has done an excellent job of securing land along the Cache la Poudre River for the protection of fragile riparian ecosystems and for the enjoyment of many through wildlife and bird watching, fishing, biking, and the simple pleasure of a walk along the river and enjoying nature. From the Butterfly Woods at the northwest corner of the City, to Arapahoe Bends Ponds on the southeast corner of the City, much of the river is protected for future generations. Unfortunately, commercial and real estate in-holdings along the river break up the continuity of the riparian ecosystem and diminish its value for the protection of avian, mammal, fish, and invertebrate species. These properties also require channelization of the river to protect commercial assets from flooding, with attendant negative consequences on existing plant communities, including the plains cottonwood forest, which gives our riparian communities their distinct flavor.

- **The NRAB strongly recommends that the City should continue to be alert to any and all possibilities to acquire commercial in-holdings along the river corridor when they become available with the goal of establishing a nearly continuous natural riparian ecosystem available for all to enjoy along the length of the Cache la Poudre River through Fort Collins.**

4.2 *Strategic Water Storage Promoting Ecological Health*

As mentioned elsewhere in this document, options for the City to provide minimum instream flows in the Poudre through the city are limited and complex, but they are not zero. The NRAB recommends adopting a long-term plan to protect and partially restore instream flows, but also strongly recommends taking immediate and decisive steps to ensure that adequate momentum is achieved. Fortunately, the Water Utility has already investigated several options worthy of additional scrutiny. Physically, these

include reserving a special “instream flow volume” in an expanded Halligan Reservoir or other storage body, acquiring and dedicating near-river gravel pits as short-term operational storage, and/or leasing “surplus” water to downstream agricultural or other interests. Institutionally, there are opportunities that the City may be able to exercise single-handedly, as well as opportunities to lobby for different policies to manage C-BT carryover storage in Horsetooth Reservoir or negotiate flows with other regional partners, including the Colorado Water Conservation Board.

We are well aware that all of these options have constraints and costs, some quite significant. That’s why it is so important for Council to push steadily forward and drive action toward the vision they craft, while still meeting City obligations to provide a safe and reliable water supply to its water customers. Ultimately, projects that enhance flows through Fort Collins should be supported and those that deplete flows should be opposed.

4.3 Foster Increased Recreational Use

The continuation and improvement of world class recreation activities is dependent on careful planning and river health. Increased year round in-stream flows would foster improved recreation opportunities, such as: improved fishing for a longer period of time; fewer periods of unattractive “slack water” where the river appears to not flow at all; and improved boating conditions which could lead to the creation of a whitewater park. Improving the recreational opportunities will result in increased use and appreciation of the river by our citizens. Without careful planning and monitoring, increasing use can negatively affect the ecology and enjoyment of the area. Resources will be needed to manage and protect natural features. A proposal has been developed by City Staff to improve the stretch of river and associated habitat from Shields to Linden in response to a GOCO “Great Outdoors Colorado Rivers Corridor Initiative”. This proposal includes efforts to improve way-finding in and around Legacy Park, to improve entry and exit from the river by recreational users, modification of the “boat chute” downstream from the Engines and Energy Conversion Laboratory (Engines Lab) and a pedestrian bridge near the new Discovery Center. This package represents a unique opportunity to improve the experience of recreational users in the busiest section of the river. Matching funds are needed from the City of Fort Collins to take advantage of this grant opportunity. Council should step forward and provide the assurances necessary to move this project forward, whether or not the GOCO funds are obtained.

- **The NRAB strongly recommends that the Shields-to-Linden project be funded as part of the grant development for GOCO “Great Outdoors Colorado Rivers Initiative”.**

A second proposal in response to the GOCO “Great Outdoors Colorado Rivers Corridor Initiative” is being developed by Larimer County and the City. This would fund improvements to the Poudre River recreation trail in the section that runs from Arapahoe Bend Natural Area to Windsor and would include (among other features) a

trail underpass at I-25 and the river. The NRAB is equally supportive of this proposal, especially if a trail under I-25 can be done as part of a Department of Transportation sediment removal project.

4.4 Develop Funding Source(s)

The City of Fort Collins faces an array of challenges in maintaining, much less enhancing, the Poudre River as a vibrant healthy ecosystem. Looking toward the future, the City must respond to the environmental impact statement on NISP/Glade, then the Seaman and Halligan Reservoirs expansion proposal, and likely other unnamed water retention or diversion projects. The City will also need to plan novel and potentially costly efforts to foster minimum water flows in the Poudre River as it travels from Overland Trail to I-25.

City staff, including a river “champion” or “coordinator” must be poised to take advantage of opportunities to make key property purchases throughout the river corridor in order to establish a nearly continuous natural ecosystem along the river. In addition, efforts like the Shields-to-Linden GOCO project to enhance recreational enjoyment of the river by Fort Collins citizens and visitors will require matching funding from the City.

All these efforts will demand a funding stream to complement monies available from the general fund. Council and staff should consider all options for establishing a dedicated funding stream to support and enhance the ecosystem and community enjoyment of the Poudre River within Fort Collins. A Utility Check-Off box may be a good way to establish such a funding source for projects related to the river. Citizens could voluntarily contribute to environmental enhancement of the Poudre River without the controversial aspects of an additional sales tax levy on all citizens. Such a system might be modeled after the City’s successful wind power program where rate payers subscribe to designate a portion of their monthly water and wastewater bill to go towards a river protection and restoration program. Although a voluntary check-box contribution to the Poudre River environmental preservation may start slowly, it could grow as the community appreciates the benefits that accrue to their enjoyment of the river and environs. A subscription program might also gather more momentum as threats to the Poudre River ecosystem continue to emerge. Novel systems that encourage water conservation and contribute money saved on individual bills to river preservation programs also have merit but are somewhat more complex than a simple check-box contribution system. Other options suitable for our community should also be considered.

- **The NRAB strongly recommends that Council establish sustainable funding mechanisms for Poudre River protection and enhancement initiatives, such as a voluntary “Check-off Box” subscription option on the Fort Collins Utility Bill that would encourage citizens to contribute funds, much like our wind power program.**

5.0 Summary and Call for Action

The Cache la Poudre River is one of the most recognizable natural resources among many that our unique community and its preceding generations have benefitted from since settlement. The ecological functions, character, and societal dynamics of the river that exist today remain only through the foresight of previous and current stewardship efforts. This paper has highlighted the importance of the river, current threats to its sustainability, current management principles and policy, and areas of opportunity for progress within existing management actions as well as emerging areas ripe for expansion.

Although current issues regarding the health of the Cache la Poudre River ecosystem demand immediate attention, today's urgency should not impinge on the ability of Council, City staff, and community leaders to look to the future of the Cache la Poudre River. Forward looking, thoughtful, progressive policies are needed now to protect the future of this precious natural resource.

Durable solutions can be obtained by combining inspired vision with bold actions. We believe that Council can continue to advance the vision that our natural and built river system warrants dedicated attention, investment and actions. The Poudre River beckons us to devise innovative local and regional strategies, apply appropriate technology, and promote integrated policy and management solutions that will conserve and restore our river's unparalleled values for generations to come.

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