# Yampa River Health Assessment & Streamflow Management Plan

City of Steamboat Springs

June 2018

# Executive Summary

The purpose of the Yampa River Health Assessment and Streamflow Management Plan is to identify and implement a long-term strategy for protecting and improving the health and resiliency of the Yampa River near Steamboat Springs. Significant drought events (i.e., 2002, 2012-2013, 2018) deplete river flow and warm stream temperatures to a sufficient degree to degrade water quality, aquatic habitat, and recreational value. These conditions have resulted in the placement of the reach of the Yampa River near Steamboat on the State's 303d Impaired Water Body list for temperature. Warming air temperatures, changing precipitation patterns, and increasing demand for water from the Yampa River are emerging threats to our valley's most treasured resource. This plan provides the community of Steamboat Springs with an executable implementation strategy and a scientifically-based and stakeholder-driven foundation for future planning, decision-making, and negotiation for the management of the Yampa River.

### PLAN GOALS

1. Build upon existing information to develop a science-based assessment of river system conditions and needs to inform decision-making and long-term monitoring
2. Preserve and enhance healthy aquatic and riparian habitat
3. Meet regulatory responsibilities including water quality and temperature standards
4. Protect a strong local economy, particularly the agriculture and recreation sectors
5. Establish integrated and flexible management strategies that align with other planning efforts and strengthen resilience and sustainability
6. Foster a culture of shared stewardship of the Yampa River among stakeholders and community members

## Community Engagement

The planning process involved the participation of a wide range of stakeholders and the public with the intent to understand diverse interests and develop community-supported solutions. Tailored engagement strategies for each of six key stakeholder groups involved one-on-one meetings, focus groups, and presentations to governing boards. An Advisory Committee representing these groups met throughout the process to make recommendations to inform the technical assessments and the management objectives and actions. The City hosted two community workshops focused on improving education about Yampa River health and gaining

input on community values and levels of support for different management strategies. Themes from the input received during the community engagement activities were the following:

- Residents value the health and ecological integrity of the river system as a whole, above any one specific water use.
- Temperature impairment and streamflow are priority issues to address, along with land use and development standards.
- Planning and action are needed or the health of the Yampa River will worsen in the future, attributed to development followed by climate change.
- A focus on implementation is critical to plan success and must include buy-in from elected officials, leveraging of existing organizations, and long-term funding sources for projects.

## Yampa River Health Assessment

A comprehensive assessment evaluated the core drivers of Yampa River health represented by 11 variables of river function (e.g., flow regime, water quality, riparian condition). The assessment divided the study area into 5 segments and developed a "report card" for each, which identifies the degree of river health impairment and the causes of the impairment. The overall grade for the reach through Steamboat was a C+. The segments near Rotary Park (B-) and below downtown (B-) received the highest grades, while the "Through Town" (C) or downtown segment was the most impaired. A few of the key findings include:

- The natural flow regime is the primary driver of the Yampa River's good condition.
- The conversion of the riparian area to urban and rural land uses and subsequent loss of native riparian vegetation communities affects many conditions of river health.
- Reduced floodplain connection is one of the most critically impaired aspects to ecosystem function on this section of the Yampa.
- It remains unclear why water temperature regularly exceeds State regulatory standards on this section of the Yampa. Reduced shading due to loss of riparian vegetation may play a role. It is also possible that periods of relatively warm temperatures are natural and that the State standards may be inappropriate measures of impairment for this river section.

## Management Objectives

Based on the river health assessment and input from community stakeholders, eight management objectives were defined to serve as specific, measurable outcomes that help to achieve the Plan's overall goals. Each objective includes monitoring indicators along with targets for the desired future conditions.

### MANAGEMENT OBJECTIVES

1. Maintain natural flow regime
2. Support protection of natural conditions in undeveloped areas of the watershed
3. Maintain or improve natural river form and processes
4. Maintain or increase functional floodplain extent above and below town
5. Maintain or improve riparian vegetation extent and condition
6. Protect native fish populations from further decline and promote range expansion where possible
7. Promote a self-reproducing sport fishery
8. Maintain compliance with State water quality standards and regulations

## Opportunity Areas

**Streamflow management** - The City hired the Colorado Water Trust to review its water rights portfolio to identify potential opportunities to achieve the Plan's management objectives. The recommendations included the continuation and refinement of Stagecoach Reservoir releases for non-consumptive use at the City's wastewater treatment plan, potential infrastructure projects on certain ditches, and operational changes that may restore flow to water-short stream reaches.

**Restoration projects** - The consultant team analyzed the opportunities for on-the-ground restoration projects to achieve management objectives. Six of the nine projects identified were riparian revegetation projects to plant native species on targeted areas where vegetation was historically cleared or disturbed. Practical opportunities for restoring natural floodplains and river form are limited because they would require the removal of roads, railroads, bridges, and other development. Riparian condition, floodplain connectivity, and natural processes are most intact on the Rotary Park segment and the segment below town. Protecting and restoring natural condition and function on these reaches is as important, or more so, than enhancing impaired areas for meeting the objectives of this plan.

**Water temperature impacts** - Modeling results indicate that the flow rates required to reduce water temperature enough to meet State standards are significantly higher than existing or natural conditions. Exposing the river to such abnormally high flows in mid-summer may produce unintended consequences for other aspects of river health. Smaller releases of water from Stagecoach Reservoir that keep flows in Steamboat above 100 cubic feet per second appear somewhat effective at reducing the likelihood of water temperature exceedances during late August and early September. Warming due to sunlight may be reduced by

increasing the amount of shading by riparian vegetation, particularly in the area between Lake Catamount and the confluence with Walton Creek.

## Plan Implementation

The community prioritized 15 actions to focus on initiating over the next two years. These are summarized in Table 3 on page 41-42. The lead organization for each action developed ideas and information for implementation in a project summary sheet; these are compiled in **Appendix A.**

The priority actions include specific projects, such as a riparian revegetation program, and range in type from streamflow management, land and stream restoration, land use and planning, and education and outreach. But many actions are also focused on improving foundational capabilities for long-term funding and decision–making, such as establishing a Yampa River Water Fund and an interdisciplinary City "stream team" to review potential projects that affect river health. The Plan also lists ideas for actions to consider in the future as resources and priorities change.

The actions are part of a larger implementation strategy that includes:

- Criteria to guide decisions on future activities
- Procedures for tracking actions, monitoring progress on objectives, and updating the plan
- Ideas for sharing successes with the community down the road

The Technical Committee of the Upper Yampa River Watershed Group will be responsible for tracking and updating actions twice a year. The City will coordinate the next comprehensive update to the Plan in ten years, unless events warrant updating in the interim.

The Steamboat Springs City Council adopted the Yampa River Streamflow Management Plan on [INSERT DATE], demonstrating the City government's commitment to the Plan's implementation and long-term success. However, the footprint of the municipal boundary is just 1.5 percent of the total square miles of the watershed contributing to the Steamboat reach of the Yampa River. River health in this reach is affected by many factors beyond the City's scope and authority. Therefore, partnerships are essential to achieving the goals and objectives laid out here. The implementation strategy is designed to be a shared responsibility, dependent upon the collaboration and commitment of many entities to protecting the health and resiliency of the Yampa River system.

# Acknowledgements


## Advisory Committee

Ben Beall, Steamboat Springs Public Works

Geoff Blakeslee, The Nature Conservancy

Dan Chovan, Yampa Valley Fly Fishers

Scott Cowman, Routt County Environmental Health

Marsha Daughenbaugh, Community Agriculture Alliance

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Colorado Water Trust

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## Funding Agencies

Colorado Water Conservation Board

City of Steamboat Springs

Yampa/White/Green Basin Roundtable

Routt County

Yampa Valley Fly Fishers / Trout Unlimited Chapter


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## References


Colorado Climate Plan. 2018 update. Colorado Water Conservation Board.

Colorado State Demography Office. 2017. Population Estimates.


All other references are attributed within the technical reports in the appendices.

# Table of Contents

# 1. About the Plan

Anglers fishing the Yampa River at sunset in Steamboat Springs.

The Yampa River is a treasured asset to the community of Steamboat Springs. The river is a scenic and recreational amenity running through the heart of the city and a core feature of community identity and sense of place. The river is also an anchor of the local economy, particularly for the agricultural, recreation, and tourism sectors. But drought, warming temperatures, and loss of riparian habitat are emerging threats to our valley's most treasured resource. Recognizing the need to implement a long-term strategy for protecting and improving the health and resiliency of the Yampa River, the City of Steamboat Springs led the development of the Yampa River Health Assessment and Streamflow Management Plan ("the Plan").

The Yampa River is considered the most free-flowing river remaining in the Colorado River system. There are several small reservoirs upstream of Steamboat; however, the current operation of these reservoirs does not significantly alter patterns of flow in the section of the Yampa through Steamboat. The lack of major water diversions from the river above town also helps preserve a relatively natural hydrograph. As a result, the Yampa is subject to the natural dramatic variation in seasonal high and low flows, which contributes to the health of all other river system functions.

In the 2017 City of Steamboat Springs Community Survey, 88 percent of respondents ranked the management of Yampa River health as an essential or very important service of

the municipal government. Out of the 27 services listed, only drinking water, emergency medical services, fire services, and snow removal outranked Yampa River health management in importance. Community input collected during the development of this plan indicated that residents value the health and ecological integrity of the river system as a whole, above any one specific water use.

Recent drought events in 2002 and 2012-2013, left the Yampa River significantly depleted of flow and warmed stream temperatures to a sufficient degree to degrade water quality, aquatic habitat, and recreational value. These conditions resulted in the placement of the reach of the Yampa River near Steamboat on the State's 303d Impaired Water Body list for temperature.

The Yampa River during the 2012 drought. Photo by John Russel, Steamboat Pilot & Today.

Colorado has warmed substantially in the last 30 years, and future estimates project temperatures rising an additional 2.5°F to 5°F by 2050. Studies indicate warmer temperatures may result in more drought and more short-duration intense rainfall events (Colorado Climate Plan, 2018). Scientists predict that future climate conditions will be different and much less predictable than in the past.

Another planning challenge facing the community is population growth and the increasing demand for water. Colorado's population is ballooning. The population of Steamboat Springs close to doubled between 1990 and 2016, and Routt County is projected to grow by more than 35 percent by 2030 (Colorado State Demography Office, 2017). Warming air temperatures, changing precipitation patterns, and increasing demand for water from the Yampa River may exacerbate the conditions that led to its placement on the 303(d) list.

# Stream Management Planning

The 2015 Colorado Water Plan creates a water management roadmap to address the state's projected future water needs. It sets a measurable objective to cover 80 percent of the locally prioritized lists of rivers with stream management plans by 2030 and provides funding for their development. A stream management plan uses a collaborative, inclusive approach to assessing stream system conditions and community values and to developing recommendations to protect and enhance natural systems and meet the needs of water users into the future.

The City of Steamboat Springs recognized the guidance and funding for stream management plans through the Colorado Water Plan as a unique opportunity to undertake a strategic, long-term approach to working with stakeholders on approaches to address water temperature and other river health concerns for the Yampa River. The City initiated work with partner organizations to identify matching funds and prepare a grant application to the Colorado Water Conservation Board (CWCB) Colorado Watershed Restoration Program. The CWCB awarded the City a stream management plan grant in 2016.

> *"Well-developed Stream Management Plans should be grounded in the complex interplay of biology, hydrology, channel morphology, and alternative water use and management strategies. They should also consider the flow and other structural or management conditions needed to support both recreation uses and ecosystem function."* - CWCB Colorado Watershed Restoration Grant Program Guidance, 2016

Funding for the Steamboat Springs Yampa River Health Assessment and Streamflow Management Plan was provided by the following partners: CWCB, City of Steamboat Springs (cash and in-kind match), Yampa/White/Green Basin Roundtable, Routt County, and Yampa Valley Fly Fishers (Trout Unlimited local chapter).

# Scope of the Steamboat Springs Plan

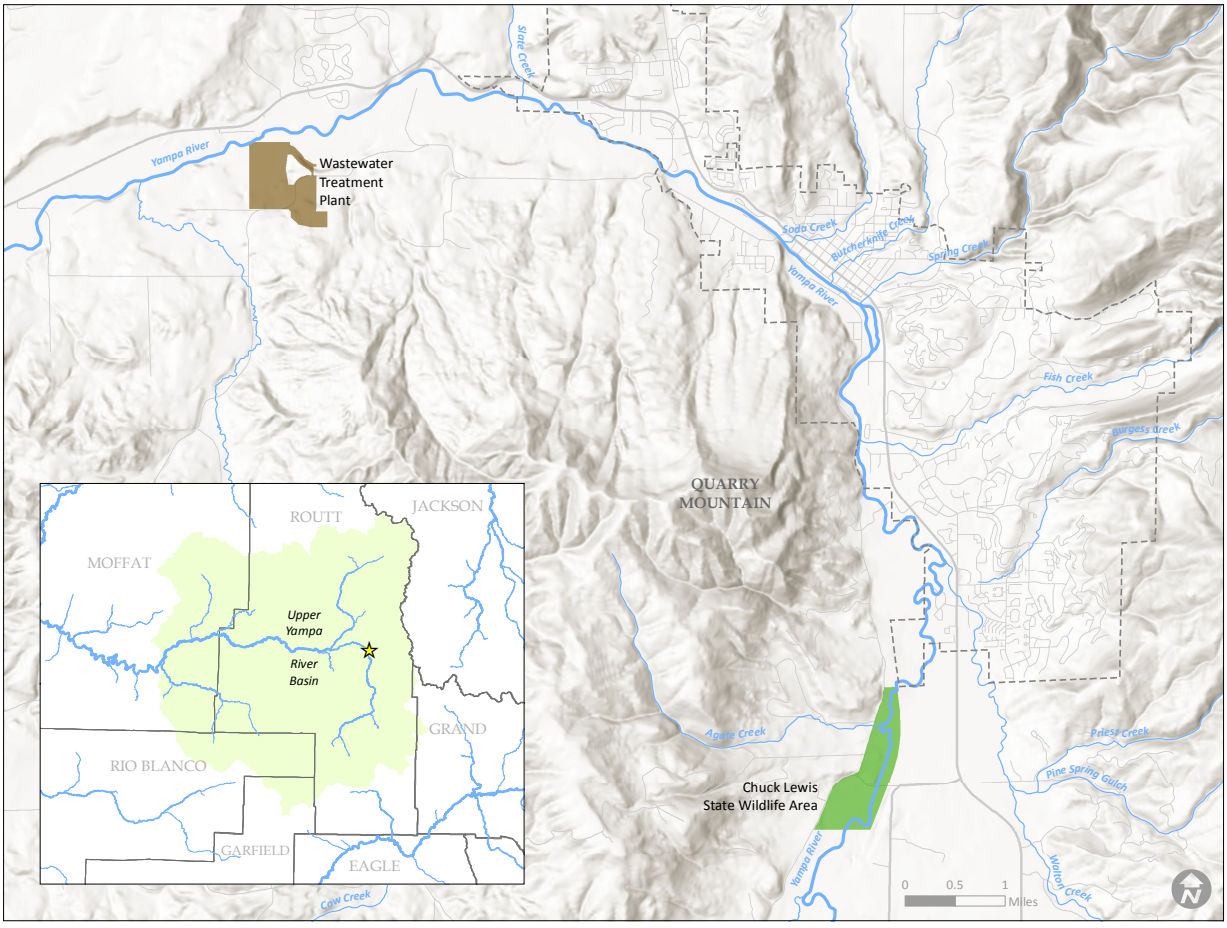
The desired outcomes of this planning project were to provide the community of Steamboat Springs with an executable, implementation strategy and a scientifically-based and stakeholder-driven foundation for future planning, decision making, and negotiation for the management of the Yampa River. The Plan refines non-consumptive flow needs and stream health targets for this reach of the Yampa River. It does not interfere with Colorado Water Law or the prior appropriation doctrine.

**Location and extent** - The Plan addresses 12.5 miles of the Yampa River from the Chuck Lewis State Wildlife Area to the City's wastewater treatment plant, but also considers issues upstream and downstream of Steamboat that might drive local conditions.

**Holistic river health assessment** - This planning project includes a comprehensive assessment of river health using best available data across multiple indicators, such as water chemistry and riparian condition. The outcomes of the health assessment help inform the planning and policies of the City Parks and Recreation Department, but this plan does not focus on the management of recreational activities, such as tubing.

**Streamflow management and stream restoration opportunities –** The Plan focuses on two primary opportunities for improving river health conditions and preventing exceedances of water temperature standards: 1) streamflow management strategies and 2) land and stream restoration projects.

Figure 1. Map of the reach of the Yampa River addressed by the Steamboat Springs plan.



**Measureable implementation strategy** - Outcomes of the Plan include actions and projects for implementation that were evaluated and prioritized by stakeholders. Implementation strategies emphasize incentives and partnerships, not regulation.

**Community engagement and partnerships** - Community engagement is critical to the success of this plan. The planning process involved the participation of a wide range of stakeholders and the public with the intent to understand diverse interests and develop community-supported solutions. The Upper Yampa River Watershed is 1,800 square miles. The watershed contributing to the Steamboat reach is 636 square miles, in which the footprint of the City's municipal boundaries is 9.9 miles, or 1.5 percent of the total. Yampa River health in this reach is affected by many factors beyond the City's scope and authority. Therefore, partnerships are essential to achieving the goals and objectives for river health. Many partner organizations beyond the City government have a role in the Plan's implementation.

# Plan Goals

The following goals represent the community's vision for a successful plan and the long-term outcomes it seeks to achieve with the Plan's implementation. Plan goals were informed by input from an Advisory Committee (see plan section 2) representing major stakeholders.

### YAMPA RIVER STREAMFLOW MANAGEMENT PLAN GOALS

1. Build upon existing information to develop a science-based assessment of river system conditions and needs to inform decision-making and long-term monitoring
2. Preserve and enhance healthy aquatic and riparian habitat
3. Meet regulatory responsibilities including water quality and temperature standards
4. Protect a strong local economy, particularly the agriculture and recreation sectors
5. Establish integrated and flexible management strategies that align with other planning efforts and strengthen resilience and sustainability
6. Foster a culture of shared stewardship of the Yampa River among stakeholders and community members

# Plan Framework and Organization

## Plan Sections

**2. Planning Process and Community Engagement**
Describes the major steps in the Plan's development and community engagement in the planning process, including the role of the Advisory Committee and how stakeholders and the public were involved.

**3. River Health Assessment**
Summarizes the assessment of Yampa River health, represented by 11 variables, along 5 segments of the river through Steamboat. Includes a summary of the condition and stressors for each segment. Results are organized into 9 key findings.

**4. Management Objectives**
Identifies measurable outcomes for river management based on the river health assessment and input from community stakeholders. Each objective includes one or more monitoring indicators along with targets that represent desired future conditions.

**5. Opportunity Areas**
Summarizes potential streamflow management strategies and restoration projects that may help achieve management objectives including the potential effects of these activities on water temperature. Describes other opportunities for addressing objectives.

**6. Implementation Strategy**
Provides the framework for how the community will accomplish its goals and document progress towards management objectives. The strategy includes identification of decision criteria, priority actions for 2018-2019, long-term action ideas, and procedures for plan monitoring and updating.

### PLAN FRAMEWORK DEFINITIONS

**Goal:** General guidelines that explain how to achieve the plan's overall purpose. Goals are defined before considering how to accomplish them so that they are not dependent on the means of achievement.

**Objective:** Specific, measurable outcomes that help to achieve plan goals.

**Action:** A specific project or activity undertaken to achieve management objectives and plan goals.

## Appendices

Background information used in the development of the Plan can be found in the following appendices available for download at: https://steamboatsprings.net/587/Yampa-River-Health-Streamflow-Management.

A. **Action Implementation Summaries -** Compiles one-page summaries for each action prioritized for 2018-2019 with additional details on ideas for implementation, partners, timeframe, cost estimates, and funding sources.
B. **Yampa River Health Assessment Report** - Provides the complete technical analysis and findings from the Yampa River Health Assessment, including the methods and data sources.
C. **Water Management Strategies Technical Memorandum** - Summarizes the review and analysis of the City of Steamboat Springs water rights portfolio to identify potential water management opportunities to benefit the Yampa River and meet management objectives.
D. **Land and Stream Restoration Opportunities Summary Report -** Identifies the opportunities for reach-scale projects to help achieve management objectives.
E. **Water Temperature Management Opportunities Summary Report -** Describes the technical analysis and findings on the effects of streamflow management and restoration activities on water temperatures in the Yampa River near Steamboat.
F. **Community Input Summary** - Documents community engagement activities of the planning process and summarizes the notes and feedback received.

# Alignment with Other Plans

This plan builds on multiple existing reports. It leverages existing data and studies, and it furthers the implementation of goals and activities established in the previous plans for the Upper Yampa River and its watershed:

***Upper Yampa River Watershed Plan*, 2016 -** The Upper Yampa River Watershed Group produced the watershed plan in 2016 and the *2014 State of the Upper Yampa Watershed Report*, which take a watershed-scale look at stream health and water quality. The plans identify several concerns for the Yampa River through Steamboat, including hydrologic conditions that advantage non-native species, warming temperatures, low flow drought conditions, nutrient-loading, and recreational conflicts. A watershed action plan prioritizes

projects to address these concerns, which include a recommendation to update the 2003 Yampa River Management Plan and a conduct a target flow study.

***Yampa/White/Green Basin Implementation Plan, 2015 -*** The plan modeled current and future flow conditions to help predict water supplies to proposed consumptive and non-consumptive needs. It identifies eight basin goals, including to quantify and protect non-consumptive water uses and to develop an integrated system of water use, storage, administration, and delivery to reduce water shortages and meet environmental and recreational needs.

**Steamboat Springs City Council 2018-2019 Goal**

Identify and implement strategies to promote water supply resiliency:

1. Prepare for growth
2. Plan for drought and wildfire
3. Plan for a Colorado River Compact call
4. Plan for water conservation
5. Develop a redundant supply

***Yampa River Structural Master Plan, 2008*** - This plan addresses 6.4 miles of river along City-owned property. It prioritizes recommended in-stream and riparian area improvements that will optimize the recreational benefits of the river while protecting its ecological integrity. These project recommendations were evaluated for addressing the management objectives of this plan as part of the Land and Stream Restoration Opportunities Report (Appendix D).

*"The Yampa River will always be a flourishing, vibrant, bio-diverse natural river corridor that is enjoyed, respected, protected, and supported by its community with commitment, education, and sensible regulation."* - Vision statement from the 2003 Yampa River Management Plan.

***Yampa River Management Plan, 2003 -*** The 2003 plan provides direction for the management of the river within Steamboat Springs, including the types, amount, and location of recreation activities. The plan includes a policy framework and action plan. Significant accomplishments in implementing the plan, as well as new data and changing conditions (e.g., flood events, invasive species, water demands) now warrant an update to the plan.

# 2. Planning Process & Community Engagement

**Figure 2. Phases of the planning process, February 2017-June 2018.**

Figure 2 depicts the phases of the planning process initiated by the City of Steamboat Springs in February 2017 and completed in June 2018 to develop the Plan. One of the first steps in the process was the development of a community engagement plan to provide the strategy for engaging a diverse range of stakeholders and the public. The community engagement plan identified objectives, target audiences, key messages, stakeholders, and an activities schedule. The objectives for engagement included the following:

- Build on local knowledge and provide meaningful opportunities for stakeholders and community members to engage throughout the process
- Understand and address diverse perspectives, interests, and needs
- Increase education and awareness of issues and opportunities surrounding a healthy Yampa River
- Strengthen partnerships for long-term collaboration and success
- Create a transparent planning and decision-making process
- Develop solutions supported by local ownership and buy-in

# Advisory Committee

The City convened an Advisory Committee representative of the major stakeholder groups. The committee met six times between March 2017-April 2018 to review progress on tasks and advise the process. Specific responsibilities were to:

- Act as liaisons to key stakeholder groups
- Provide expertise, data, reports, and information
- Advise and support the community engagement process
- Assist in prioritizing projects for implementation
- Review and provide input on draft documents
- Communicate plan purpose in the wider community

**ADVISORY COMMITTEE**
**Included representatives from:**

Steamboat Springs Parks and Recreation

Steamboat Springs Public Works

Routt County Environmental Health

Colorado Parks and Wildlife

Community Agriculture Alliance

Friends of the Yampa

Upper Yampa River Watershed Group

Upper Yampa Water Conservancy District

Yampa Valley Fly Fishers / Trout Unlimited Chapter

Colorado Water Trust

Trout Unlimited, Colorado Water Project

River Network

# Stakeholder Involvement

Stakeholders are the groups and individuals affected by the plan and who have a stake or interest in it. The City identified six major stakeholder groups critical to engage in the process for the plan to be effective, see Figure 3. Individual contacts for various organizations were identified in the community engagement plan along with the proposed method for engaging them. Some stakeholders were engaged through the Advisory Committee and others through individual phone calls and meetings, focus groups, and presentations to elected officials, boards, and commissions.

Figure 3. Major stakeholder groups in the plan.


# Public Outreach

## Community Workshops

The City hosted two workshops (November 6, 2017 and April 18, 2018) during the planning process that were advertised to the public through the local newspaper, online and social media, and flyers posted around the city. Additional stakeholders were directly invited by email. The workshops focused on informing the public about the planning process, improving education and awareness about Yampa River health, and gaining input on community values and levels of support for different types of management actions.

Figure 4. Flyer for Community Workshop 1.


## Media Updates

The City used a variety of traditional and social media to provide information on the plan and inform the public of the opportunities to be involved. These included a dedicated webpage on the City of Steamboat Springs website, Facebook and Twitter postings, press releases, newspaper articles, and a local radio talk show.

# Summary of Community Input

During the first Community Workshop for the Plan, participants completed a short questionnaire about their opinions on questions related to Yampa River health and this planning effort. Most participants (86 percent) believed that the health of the Yampa River would be worse in 20 years without additional planning and action. The most common reason they believed it would worse was development, followed by climate change and population growth. When asked about what they most valued about a healthy Yampa River, the most common value listed by respondents was the overall health of the Yampa River ecosystem. Respondents identified temperatures and flows as the two most important issues for the Plan to address, followed by land use planning and regulations, particularly waterbody setbacks.

During the second Community Workshop, participants learned about each of the actions prioritized by the Advisory Committee for implementation in 2018-2019. Participants then "invested" in actions they believed most important in the near term. The actions most important to participants were securing water contracts with the Upper Yampa Water Conservancy District and implementing riparian revegetation projects along the river, followed by developing a Yampa River educational curriculum and improving the City's waterbody setbacks regulations. The participants' investments were spread fairly evenly across actions in four categories: streamflow management, land and stream restoration, land use and planning, and education and outreach.


Advisory Committee members following their April 2017 meeting.


Presentation at the Yampa Valley Fly Fishers holiday party.

Other themes that emerged during presentations and focus group meetings included the need to:

- Understand the causes of temperature impairment
- Identify long-term funding sources for projects
- Work with the agricultural community and provide incentives
- Focus on the buy-in of the community and elected officials for the actions and projects
- Leverage community organizations to help promote the Plan and its implementation

Community Workshop 1, November 6, 2017.

Table 1 on the following page lists the schedule of meetings for the project. **Appendix F Community Input Summary** includes more detailed information on the meetings and activities and the feedback received.

Presentation for members of Friends of the Yampa and the recreation community.

Table 1. Timeline of community engagement meetings.

| DATE | MEETING | PURPOSE |
|---|---|---|
| 03/13/17 | **Advisory Committee Meeting #1** | Introduced project purpose and scope, confirmed responsibilities, and identified opportunities and challenges. |
| 04/10/17 | **Advisory Committee Meeting #2** | Reviewed and discussed: 1) the existing data sources and reports for the river health assessment and 2) the draft community engagement plan. |
| 08/31/17 | **Advisory Committee Meeting #3** | Reviewed preliminary findings from the river health assessment and confirmed goals for the streamflow management plan. |
| 10/17/17 | City and County Planners | Met with planning staff from the City of Steamboat Springs and Routt County to identify areas of alignment and potential conflicts. |
| 10/26/17 | Friends of the Yampa | Friends of the Yampa promoted this special event for members and other interested parties in the recreation community to learn about the Plan. |
| 11/06/17 | **Community Workshop #1** | Introduced project purpose and scope, presented findings from the river health assessment, and collected input on community values. |
| 11/8/17 | Yampa/White/Green Basin Roundtable | Updated the Roundtable on the Plan's progress as part of the agenda of a regularly scheduled meeting. |
| 11/16/17 | Routt County Planning Commission | Updated the commission on the Plan's progress as part of the agenda of a regularly scheduled meeting. |
| 12/13/17 | Yampa Valley Fly Fishers | Presented information on the Plan at the holiday event for the local Trout Unlimited chapter. |
| 01/16/18 | Steamboat Springs City Council | Updated Council on the Plan's progress as part of the agenda of a regularly scheduled meeting. |
| 01/17/18 | **Advisory Committee Meeting #4** | Discussed overall framework for the plan and potential action types. Reviewed key findings from the river health assessment and identified management objectives and targets. |
| 03/13/18 | **Advisory Committee Meeting #5** | Confirmed management objectives, discussed results of opportunities reports, and brainstormed ideas for actions and projects. |
| 04/03/18 | **Advisory Committee Meeting #6** | Determined the framework for implementing the stream management plan and identified the highest priority activities in the short term. |
| 04/18/18 | **Community Workshop #2** | Presented plan outcomes to date and collected information on community support and priorities related to potential actions identified. |
| 06/12/18 | Steamboat Springs City Council | Presented the draft final plan for City Council's review and consideration for adoption. |

# 3. River Health Assessment

The Yampa River Health Assessment is a platform for identifying and evaluating the management alternatives available to the City of Steamboat Springs and local stakeholders for addressing important river health issues. There are many factors affecting river condition and the ability to provide the vast array of functions local residents appreciate and depend upon. The complex interactions that exist between the many components of river systems make a comprehensive and integrative approach to assessment necessary. Management objectives and actions that address specific river health issues involve trade-offs between different aspects of river function that become clear in a robust characterization of whole-system condition and behavior. The full ***Yampa River Health Assessment Report*** is included as Appendix B.

## Approach

Over the summer and fall of 2017, an interdisciplinary team of scientists incorporated information from existing reports, available data, field surveys, and scientific models into a holistic assessment of river function. The assessment considers the core drivers of Yampa River health, represented by 11 variables (flow regime, sediment regime, water quality, landscape, floodplain connectivity, riparian condition, organic material, morphology, stability, physical structure, and trophic structure) in an organizational framework adapted from the Functional Assessment of Colorado Streams - FACStream 1.0.

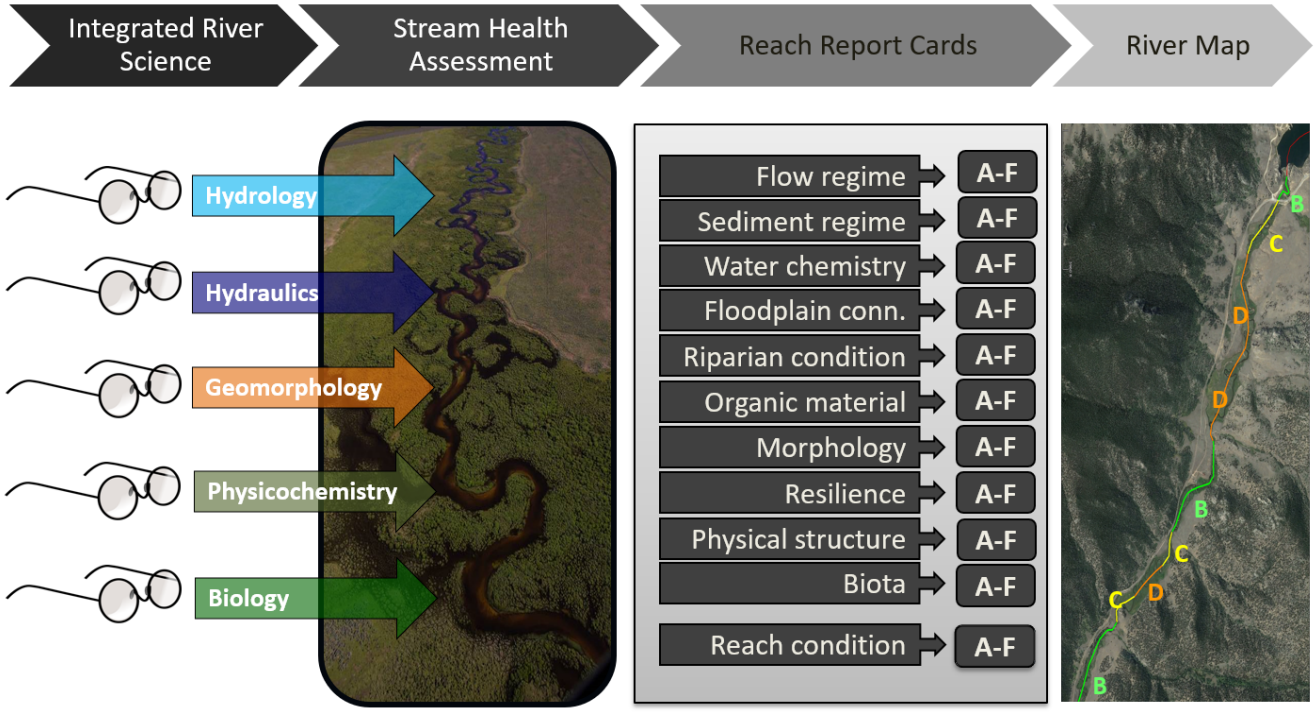
Identifying the causes of impairment, or stressors is a critical first step to understanding which aspects of river health local stakeholders can feasibly and practically address. This assessment evaluates river health impairment, by reach, and the degree of departure from a natural state. It is based on the assumption that ecological condition and function is optimal in the reference or unaltered state, and that functional degradation brings about a corresponding reduction in the ecosystem goods and services that the river naturally provides. It is an ecological and holistic approach that does not factor in social preferences or special interests.

The FACStream framework organizes information into reach-by-reach report cards. A simple grading system is used to express varying degrees of impairment and the ability of a reach to perform characteristic functions (see Figure 5). Appendix B of the ***Yampa River Health Assessment Report*** describes the methods and guidelines for scoring the 11 variables and explains what each grade category means.

Figure 5. Functional condition grading criteria in the stream health assessment.

| | | |
|---|---|---|
| | A | Reference standard |
| | B | Highly functional |
| | C | Functional |
| | D | Functionally impaired |
| | F | Nonfunctional |

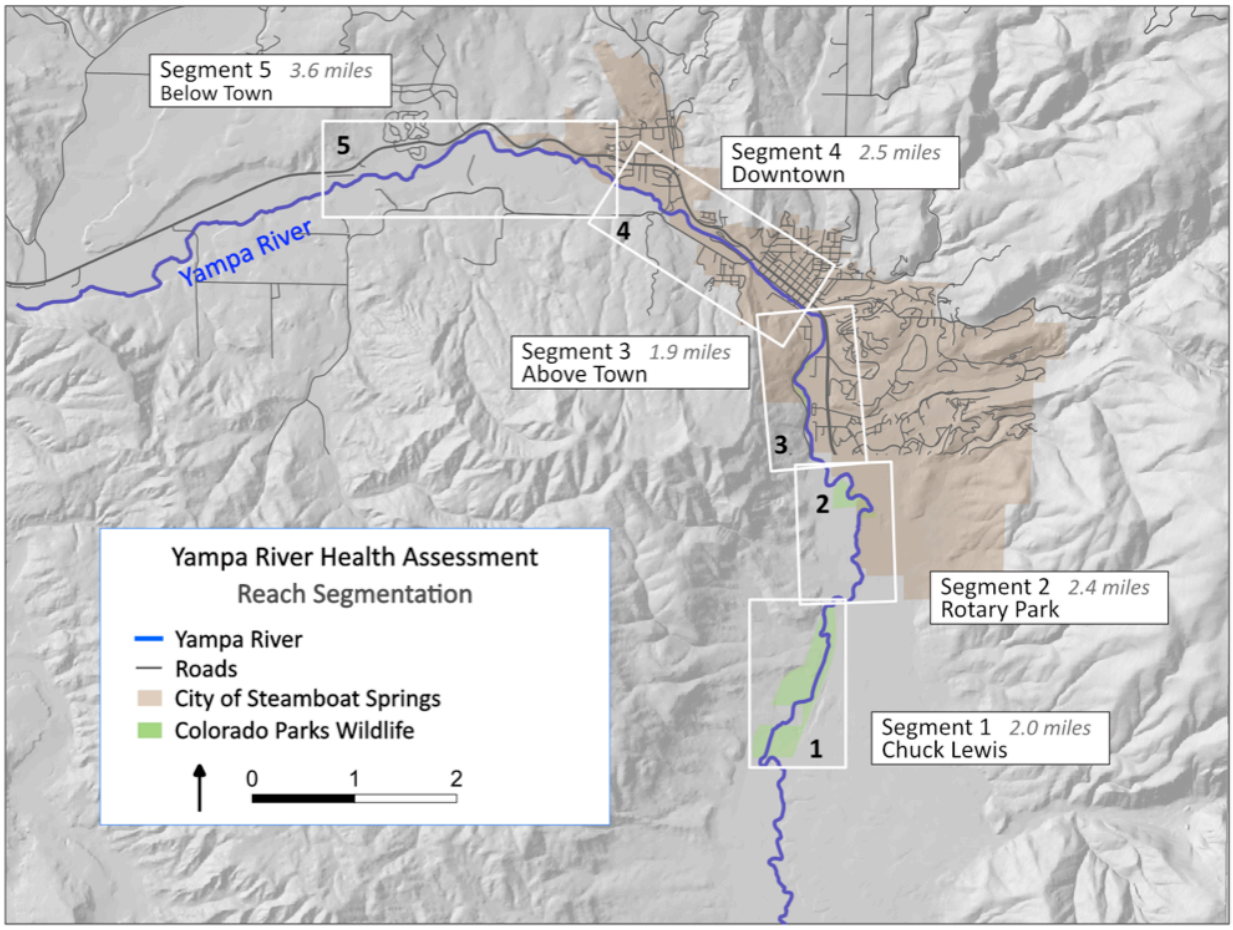
Figure 6. Overview of the FACStream framework used in the Yampa River Health Assessment.




## Yampa River Segments Studied

This study area includes about 12.5 miles of the Upper Yampa River from the confluence of Oak Creek on the Chuck Lewis State Wildlife Area (SWA), through Steamboat Springs, downstream to the City's wastewater treatment plant. This assessment divided the study area into 5 segments shown in the map in Figure 7 and each segment is further divided into 19 assessment reaches.

**Figure 7. Map of five river segments assessed on the Yampa River near Steamboat Springs.**




# Yampa River Health Report Card

Figure 8 is the overall report card summarizing the grades for each of the five river segments assessed. Grades indicate the degree of impairment from the natural state for each subvariable within in each river segment. The segments near Rotary Park (B-) and Below Town (B-) received the highest grades, while the Through Town (C) or downtown segment was the most impaired. Table 2 summarizes the priority health issues and likely causes of impairment for each of the five river segments.

Figure 8. Yampa River Health Report Card by assessment reach segment: 1. Chuck Lewis SWA, 2. Rotary Park, 3. Above Town, 4. Through Town, and 5. Below Town.

| Yampa River Stream Health Report Card: Reach Summaries | | | | | | | |
|---|---|---|---|---|---|---|---|
| Scale | Variable | Subvariable | Assesssment Reach | | | | |
| | | | 1 | 2 | 3 | 4 | 5 |
| Watershed | Flow regime | Total volume | A | A | A | A | A |
| | | Peak flow | B | A- | A | A | A |
| | | Base flow | A- | A- | A- | A- | A- |
| | | Rate of change | B | B+ | A- | A | A- |
| | Sediment regime | Land sources | A- | A- | B | B- | B- |
| | | Channel sources | A- | A- | A- | A- | A- |
| | | Continuity | C+ | B- | B+ | B | B |
| | Water quality | Temperature | D | D | D | D | D |
| | | Nutrients | C+ | B | B | B | B |
| | | Chemical Condition | B | B | B+ | B+ | B+ |
| | Landscape | Buffer capacity | B | C+ | C+ | D | C+ |
| | | Terrestrial connectivity | B- | B | C- | D | B- |
| | | Aquatic connectivity | B | B+ | C+ | C | B |
| Riparian | Floodplain connectivity | High Frequency | D+ | C+ | D | D | C+ |
| | | Medium Frequency | C- | B | D | D | B- |
| | Riparian Condition | Riparian Condition | B- | B- | C | D | B- |
| | Organic material | Wood | B- | B | B | C | B- |
| | | Detritus | B- | B | B | B- | B- |
| Stream | Morphology | Planform | D | B- | C | D | C+ |
| | | Dimension | C | B- | C+ | D+ | B- |
| | | Profile | C+ | B | C+ | C | B |
| | Stability | Resistance | B- | B- | B | B- | B |
| | | Equilibrium | C+ | B- | B | B- | B |
| | | Resilience | D+ | B- | D- | D | C |
| | Physical structure | Macrohabitat | C- | C+ | C | C | B- |
| | | Microhabitat | C+ | B- | B | B- | B |
| | Trophic Structure | Trophic structure | C | B- | C+ | C | B- |
| Overall River Health | | | C | B- | C+ | C | B- |

Table 2. Summary of health issues and likely causes of impairment for the five stream segments.

| SEGMENT | PRIORITY HEALTH ISSUES | LIKELY CAUSES |
|---|---|---|
| **Chuck Lewis SWA** | Floodplain connectivity | Channelization, levees[1], direct impacts from aggregate mining |
| | Morphology | Direct impacts from aggregate mining, avulsions and channel evolution following riparian degradation and destabilization |
| | Stability (equilibrium and resilience) | Encroachment on channel migration zone, levees and artificially high banks, riparian degradation, channel enlargement, direct impacts from aggregate mining |
| | Physical structure | Channelization, armored and artificially high banks, in-stream structures, channel enlargement and evolution |
| | Water quality (temperature) | Loss of riparian vegetation, reservoirs |
| | Trophic structure | Habitat loss related to health issues listed above, exotic species |
| **Rotary Park** | Water quality (temperature) | Loss of riparian vegetation and reservoirs may exacerbate natural patterns of downstream warming |
| **Above Town** | Floodplain connectivity | Channelization, levees, floodplain encroachment, bridges |
| | Stability (resilience) | Development, road, railroad encroachment on channel migration zone |
| | Water quality (temperature) | Loss of riparian vegetation, reservoirs |
| | Riparian vegetation | Habitat loss related to health issues listed above, exotic species |
| **Through Town** | Floodplain connectivity | Channelization, levees, floodplain encroachment, bridges |
| | Riparian condition | Riparian development |
| | Landscape connectivity | In-stream structures, development, roads and bridges |
| | Morphology | Channelization and levees, channel armoring, in-stream structures |
| | Stability (resilience | Development, road, and railroad encroachment on channel migration zone |
| | Water quality (temperature) | Loss of riparian vegetation, reservoirs |
| | Physical structure | Channelization, armored and artificially high banks, in-stream structures, channel enlargement and evolution |
| | Trophic structure | Habitat loss related to health issues listed above, exotic species |
| **Below Town** | Water quality (temperature) | Loss of riparian vegetation, reservoirs |

[1] In this report, a levee is considered any artificial embankment that prevents overflow of a river onto its floodplain. The term is not used to imply a structure designed and constructed to contain or control the flow of water during a flood.

# Key Findings

The following key findings summarize the main stressors to the Yampa River near Steamboat Springs and the impacts of the stressor to stream health overall or in a particular segment or location. The key findings statements help to distill the results from the health assessment into information that can be used in this planning context to develop management objectives and actions.

1. **The natural flow regime is the primary driver of the Yampa River's good condition.** This section of the Yampa has a very natural flow regime due to few diversions and only two small flow-through reservoirs upstream. Flow regime is a foundational element of river health affecting all other factors and functions.
2. **Undeveloped forestlands and the low density of roads and other disturbances in the upper watershed** contribute to many aspects of stream health in the Steamboat section, including water quality and sediment and flow regimes.
3. **The conversion of riparian area to urban and rural land uses affects many conditions of river health,** including riparian vegetation, habitat connectivity and buffer capacity, floodplain connectivity, stream stability, river form, and habitat structure**.** Riparian conditions and landscape connectivity are impacted on all segments, but are most impaired in the downtown area where urban development has taken over most of the historic riparian zone.

A section of riparian area below town with mature cottonwood forest.

4. **It remains unclear why water temperature regularly exceeds state regulatory standards on this section of the Yampa.** Reduced shading due to loss of riparian vegetation and the possible warming effects of the relatively shallow Lake Catamount may play important roles. It is also possible that periods of relatively warm temperatures are natural and that the state standards may be inappropriate measures of impairment for this river section. However, if the community strongly values a sustainable year-long trout fishery and frequent occupation of the reach by mountain whitefish, it may be necessary to manage for cool water that meets these standards, regardless of whether the causes of warming are natural or artificial.
5. **Non-native fish species alter aquatic food webs and compete with native and sport fish**. Currently, northern pike present the most significant threat to native and sport fish via predation and competition. Northern pike are particularly prevalent on the reaches upstream of Steamboat, especially in the Walton Creek confluence area.
6. **Natural processes that maintain aquatic habitat complexity are more intact on the Rotary Park and Below Town segments, and habitat conditions are better there.** Artificial habitat enhancement structures on the Chuck Lewis SWA, Above Town, and Through Town segments only partially mitigate natural habitat losses.
7. **Historic aggregate mining resulted in long-term negative impacts to river health, particularly in the Chuck Lewis SWA segment.** The river channel and floodplain were excavated, channelized, and confined between dikes and levees, drastically changing the river's dimension, pattern, and profile, reducing floodplain connectivity, altering patterns of erosion and sediment transport, and degrading riparian condition. The City, Colorado Parks and Wildlife, and other partners have invested in and made significant progress in improving river conditions in this segment. However, the long-term negative impacts of historical alterations on channel form and dynamism persist.
8. **Reduced floodplain connection is one of the most critically impaired aspects to ecosystem function on this section of the Yampa**. On most reaches, the floodplain is inundated only in exceptional runoff years, decreasing the exchange of water, sediment, organic matter, nutrients, and organisms between the river, floodplain, and alluvial aquifer. Channel impacts and

Floodplain and riparian area cut off by the railroad.

land uses in the floodplain include roads and rail beds that act as levees, bridges that constrain flow passage, and urban encroachment. Floodplain connectivity is most significantly impaired in the Chuck Lewis SWA and downtown segments.


Aggregate mining was an invasive land use on the Chuck Lewis SWA segment in the 1970s through 1990s. Mined lands were reclaimed as gravel pit ponds and depressional wetland, but the channelized river form and floodplain levees remain. Historical aerial imagery from the US Geological Survey.

9. **Channelization and armoring near downtown Steamboat Springs reduces channel resilience**. Urban development in the historic floodplain, channelization, engineered in-stream structures, and bank armoring have resulted in a straightened planform, entrenchment, increased channel capacity, and elevated flow velocities. These characteristics degrade the river's ability to respond to and recover from large disturbances, such as floods and wildfires. Many sections of the river rely on artificial stabilization measures, and if these become overwhelmed there is little capacity for rapid natural recovery.

# 4. Management Objectives

The following management objectives are intended to serve as specific, measurable outcomes that help to achieve the Plan's overall goals. The objectives are informed by the findings of the Yampa River Health Assessment and on input from community stakeholders on their values and priorities related to Yampa River health.

Management objectives are categorized as either *Preservation and Protection* or *Improvement and Enhancement*. Preservation and protection objectives support the protection of the existing conditions in the watershed that contribute to a highly functional river system. These objectives seek to prevent impairment or harm to watershed-level aspects of river health, such as flow regime and sediment regime, which are foundational elements of river health. Improvement and enhancement objectives are intended to actively maintain or improve onsite conditions in the reach near Steamboat Springs. Objectives may target specific segments for improvement or apply to all river segments within the plan's scope.

Each management objective includes the following information to help with plan implementation and monitoring:

- **Indicators –** One or more indicators for monitoring progress toward achieving the objective over time.
- **Monitoring Frequency** - The recommended frequency for assessing conditions against targets.
- **Targets** - For each indicator, the plan identifies short-and long-term targets for desired future conditions. These targets are designed to be aspirational, but also to be feasible, and to balance river health and community needs.
- **Rationale –** The justification for the inclusion of the objective in the plan – either from the Yampa River Health Assessment or the plan goals informed by stakeholder engagement.

# Preservation and Protection Objectives

## Objective 1. Maintain natural flow regime.

| Selected Monitoring Indicators | Recommended Monitoring Frequency | Targets for Future Conditions | |
|---|---|---|---|
| | | Short Term | Long Term (stretch) |
| 1.1 Weekly average streamflow measured in downtown Steamboat Springs | 10 years and before/after significant events that could impact flow regime | Less than +/- 5% alteration in the 25th and 75th percentile weekly average streamflows | |

**Rationale –** Health Assessment Key Finding 1: The natural flow regime is the primary driver of the Yampa River's good condition and a foundational element of river health affecting all other factors and functions. This section has a relatively natural flow regime due to few diversions and only a few small reservoirs upstream. Future shifts in climate, local water use, or changes in reservoir operations may alter the hydrological regime in a way that degrades other aspects of river health.

## Objective 2. Support protection of natural conditions in undeveloped areas of the watershed.

| Selected Monitoring Indicators | Recommended Monitoring Frequency | Targets for Future Conditions | |
|---|---|---|---|
| | | Short Term | Long Term (stretch) |
| 2.1 Percent of watershed covered by natural forest | 10 years and before/after significant deforestation, construction, or development | No net loss or appropriate mitigation to offset impacts | |
| 2.2 Percent of watershed covered by impervious surface | | No net loss or appropriate mitigation to offset impacts | |

**Rationale** – Health Assessment Key Finding 2: Undeveloped forestlands and the low density of roads and other disturbances in the upper watershed contribute to many aspects of stream health in the Steamboat Springs section of the Yampa River. Land use changes in the greater watershed may produce impacts on water quality and sediment and flow regimes that degrade other aspects of river health or impede progress toward planning objectives.

| Objective 3. Maintain or improve natural river form and processes. | | | | |
|---|---|---|---|---|
| **Selected Monitoring Indicators** | | **Recommended Monitoring Frequency** | **Targets for Future Conditions** | |
| | | | Short Term | Long Term (stretch) |
| 3.1 | Composite stream condition assessment (e.g., stream attributes of the Stream Health Assessment Framework) | 5 years over the whole river and on specific reaches before/after significant events that affect the stream or floodplain | No additional impairment to river morphology, stability, and physical structure beyond existing assessed conditions. | |

**Rationale** – Health Assessment Key Finding 9: Urban development in the historic floodplain, channelization, engineered in-stream structures, and bank armoring have simplified river form and produced some degree of entrenchment. These characteristics degrade the river's ability to respond to and recover from disturbance, such as floods and wildfires. Many sections of the riverbank near downtown Steamboat rely on artificial stabilization measures. If these degrade or fail there is little capacity in the system for timely natural recovery.

# Improvement and Enhancement Objectives

| Objective 4. Maintain or increase functional floodplain extent above and below town. | | | | | |
|---|---|---|---|---|---|
| **Selected Monitoring Indicators** | | **Recommended Monitoring Frequency** | **Segment** | **Targets for Future Conditions** | |
| | | | | Short Term | Long Term |
| 4.1 | Floodplain inundation extent associated with the 2-year peak flow | Before/after significant events that impact stream/floodplain topography or flow regime | Chuck Lewis | 5% increase | |
| | | | Rotary Park | 5% increase | |
| | | | Above Town | No net change | |
| | | | Through Town | No net change | |
| | | | Below Town | No net change | |
| 4.2 | Floodplain inundation extent associated with the 5-year peak flow | | All segments | No net loss | |

**Rationale** - Health Assessment Key Finding 8: Reduced floodplain connection is one of the most critically impaired aspects to ecosystem function on this section of the Yampa River. Floodplain connectivity is most significantly impaired in the Chuck Lewis SWA and downtown segments.

## Objective 5. Maintain or improve riparian vegetation extent and condition.

**Recommended Monitoring Frequency:** 5 years over the whole river and on specific reaches before/after significant events that affect the riparian area

| Selected Monitoring Indicators | Segment | Targets for Future Conditions | |
|---|---|---|---|
| | | Short Term | Long Term (stretch) |
| 5.1 Composite riparian condition assessment (e.g., riparian attributes of Colorado Stream Health Assessment Framework) | Chuck Lewis | Detectable changes to vegetation community, but native species predominate and are self-sustaining. Habitat resembles native conditions with characteristic patchiness, interspersion, and vertical structure. | |
| | | B- | B- | B |
| | Rotary Park | Detectable changes to vegetation community, but native species predominate and are self-sustaining. Habitat resembles native conditions with characteristic patchiness, interspersion, and vertical structure. | |
| | | B- | B | B |
| | Above Town | Decreased plant diversity, structural complexity, and/or patchiness and interspersion are evident, but the riparian area is vegetated. Small populations of noxious species may occur. A significant proportion of the species are exotic or aggressive natives. | |
| | | C | C | C |
| | Through Town | Decreased plant diversity, structural complexity, and/or patchiness and interspersion are severe. Noxious weeds, aggressive species, or exotics are prevalent. Bare ground or impervious surfaces make up a large portion of land cover, but native species and vegetation structure are present. | |
| | | D | D | D |
| | Below Town | Detectable changes to vegetation community, but native species predominate and are self-sustaining. Habitat resembles native conditions with characteristic patchiness, interspersion, and vertical structure. | |
| | | B- | B- | B |

## Objective 5. Maintain or improve riparian vegetation extent and condition (continued).

| Selected Monitoring Indicators | | Segment | Targets for Future Conditions | |
|---|---|---|---|---|
| | | | Short Term | Long Term (stretch) |
| 5.2 | Percent of mapped highly functioning riparian area by reach | Chuck Lewis | > 30% | > 40% |
| | | Rotary Park | > 30% | > 40% |
| | | Above Town | > 30% | > 40% |
| | | Through Town | > 15% | |
| | | Below Town | > 30% | > 40% |
| 5.3 | Percent of mapped riparian area with woody vegetation cover by reach | Chuck Lewis | ≥ 20% | ≥ 30% |
| | | Rotary Park | ≥ 20% | ≥ 30% |
| | | Above Town | ≥ 20% | ≥ 30% |
| | | Through Town | ≥10% | |
| | | Below Town | ≥ 20% | ≥ 30% |

**Rationale** – Health Assessment Key Finding 3: The conversion of riparian area to urban and rural land uses affects many conditions of river health. Riparian conditions and landscape connectivity are impacted on all segments, but are most impaired in the downtown area where urban development has taken over most of the historic riparian zone.

## Objective 6. Protect native fish populations from further decline and promote range expansion where possible.

| Selected Monitoring Indicators | | Recommended Monitoring Frequency | Segment | Targets for Future Conditions | |
|---|---|---|---|---|---|
| | | | | Short Term | Long Term (stretch) |
| 6.1 | Mountain whitefish biomass (lbs/acre) | 2 years | All segments | No net reduction | 10% increase |
| 6.2 | Northern pike biomass (lbs/acre) | | Chuck Lewis | 20% reduction | 80% reduction |
| | | | Rotary Park | 50% reduction | 80% reduction |
| | | | Above Town | No net gain | |
| | | | Through Town | No net gain | |
| | | | Below Town | No net gain | 90% reduction |
| 6.3 | Chronic temperature threshold (maximum weekly average temperature) for Coldwater Tier II species (April - October: 18.3˚ C, November - March: 9˚ C) | Annually | All segments | 20% decrease in the average number of summer days above the threshold | 30% decrease in the average number of summer days above the threshold |
| 6.4 | Aquatic macroinvertebrates % EPT* taxa | 2 years | All segments | > 35 when assessed as a median 5-year score | |

**Rationale** –Health Assessment Key Finding 5: Non-native fish species like northern pike alter aquatic food webs and prey on or compete with native and sport fish. Summer water temperatures through Steamboat Springs regularly exceed identified thresholds for mountain whitefish health impairment. Urbanization and nonpoint source pollution may threaten aquatic macroinvertebrate communities. Macroinvertebrate communities are also expected to respond to changes in riparian forest quality and aquatic habitat complexity. Reductions in large macroinvertebrates may alter food webs and limit the size or carrying capacity for native and sport fish.

*EPT = Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies)

## Objective 7. Promote a self-reproducing sport fishery.

| Selected Monitoring Indicators | | Recommended Monitoring Frequency | Targets for Future Conditions | |
|---|---|---|---|---|
| | | | Short Term | Long Term (stretch) |
| 7.1 | Number of catchable trout > 8" per acre | 2 years | No net reduction | |
| 7.2 | Number of quality trout > 14" per acre | | No net reduction | |
| 7.3 | Chronic temperature threshold (maximum weekly average temperature) for Coldwater Tier II species (April - October: 18.3˚ C, November - March: 9˚ C) | Annually | 10% decrease in the average number of summer days above the threshold | 20% decrease in the average number of summer days above the threshold |

**Rationale** - Plan Goal 4: Protect a strong local economy, particularly the agriculture and recreation sectors. The Yampa River near Steamboat is a fly-fishing destination and the sport fishery contributes to the local tourism economy. The City has invested significant grant funding into restoring fish habitat through town and Colorado Parks and Wildlife manages the fishery with stream improvements, stocking, monitoring, and more.

## Objective 8. Maintain compliance with State water quality standards and regulations.

| Selected Monitoring Indicators | | Recommended Monitoring Frequency | Targets for Future Conditions | |
|---|---|---|---|---|
| | | | Short Term | Long Term (stretch) |
| 8.1 | Chronic temperature threshold (maximum weekly average temperature) for Coldwater Tier II streams or as modified by Water Quality Control Division (WQCD) for the Yampa River through Steamboat | Annually | No exceedances as assessed according to WQCD guidelines | |
| 8.2 | Acute temperature threshold (maximum weekly average temperature) for Coldwater Tier II streams or as modified by WQCD for the Yampa River through Steamboat | | No exceedances as assessed according to WQCD guidelines | |
| 8.3 | Aquatic macroinvertebrate multi-metric index (MMI) score | 2 years | No exceedances as assessed according to WQCD guidelines | |

**Rationale** - Plan Goal 3: Meet regulatory responsibilities including water quality and temperature standards. Listing on the WQCD 303d list for impaired temperature can mean that water quality permits, such as the wastewater treatment plant discharge permit, are required to meet more stringent effluent limits. Meeting these stricter requirements can warrant multi-million dollar facility upgrades that may or may not result in improved stream health and water quality. Investing in river health as a whole and working to meet water quality standards on a watershed scale can help the City avoid costly infrastructure upgrades.

# 5. Opportunity Areas

The Plan focused on two types of opportunities for meeting management objectives:

1. **Streamflow management strategies** - Opportunities to improve water management or to strategically manipulate the timing and/or magnitude of flows to benefit non-consumptive needs.
2. **Land and stream restoration projects** - Stream and riparian wetland restoration projects or treatments that could measurably improve river health.

This section also summarizes the potential impacts of these activities on Yampa River water temperatures and describes other opportunities for action.

## Streamflow Management

The City of Steamboat Springs hired the Colorado Water Trust ito review a portion of its water right portfolio ("Identified Water Rights") in 2018 for the purpose of identifying potential alternative water management opportunities to benefit the Yampa River. **Appendix C** is the full technical memorandum describing their analysis and findings. The Colorado Water Trust has a long-standing presence in the Yampa Valley, and the first-ever, short-term lease of water to the CWCB's Instream Flow Program restored 4,000 acre-feet of water to the Yampa River during the drought year of 2012. The Water Trust contracted for water from the Upper Yampa Water Conservancy District and made releases for instream flow use by the CWCB below the reservoir for a significant portion of the summer.

Since 2012, the Colorado Water Trust's efforts in the Yampa River Basin have evolved and have included five years when additional releases from Stagecoach Reservoir benefitted the Yampa River, sometimes being used downstream by the City itself. Starting in 2016, the City made releases of its own contracted water from Stagecoach Reservoir for non-consumptive municipal use at its wastewater treatment plant. In 2017, for the first time, the Water Trust and the City conjunctively released water from Stagecoach Reservoir, resulting in increased flows through

the CWCB's instream flow reach and through the City of Steamboat Springs down to its wastewater treatment plant.

## Approach

The Colorado Water Trust analyzed the Identified Water Rights through the dual lenses of the streamflow restoration tools available in Colorado and the Plan's Management Objectives 6, 7, and 8. The tools include formal transactions for flow restoration, infrastructure modifications, and operational changes. They vary in levels of flexibility, protection, and potential streamflow benefits, and are situational - requiring certain qualifying conditions to be effective. Any contractual arrangements that form the basis of these transactions may be permanent or temporary and can offer significant flexibility to water right owners.

Stagecoach Reservoir. Photo by the Colorado Water Trust.

To identify potential alternative water management opportunities using the Identified Water Rights, the Water Trust reviewed water court decrees, agreements, engineering reports, stream gage records, and other supporting documentation including relevant information about the CWCB's instream flow reach rights.

## Summary of Recommendations

The City's Identified Water Rights include rights on Spring Creek, Butcherknife Creek, Soda Creek, Walton Creek, and the Yampa River. Streamflow restoration opportunities using the City's Identified Water Rights include:

- The continuation and refinement of Stagecoach Reservoir releases for non-consumptive use at the City's wastewater treatment plant
- Potential infrastructure projects on certain ditches
- Operational changes that may restore flow to water-short stream reaches

Each of these potential projects will require further due diligence and development before implementation. The types of projects identified have development and implementation timelines ranging from one month to several years.

# Land and Stream Restoration

A number of the Plan's management objectives (Objectives 4-7) can be addressed through reach-scale restoration projects. The consultant team analyzed the opportunities to help achieve each of these objectives through the following types of on-the-ground treatments.

### TYPES OF REACH SCALE TREATMENTS

**Restoration** – actions aimed at improving river health and natural function by removing or mitigating causes of impairment, for example: replanting native vegetation to areas where it had been cleared, removing artificial levees to open up floodplain access, and realigning river segments that were historically channelized.

**Enhancement** – manipulating the river or constructing features to optimize specific functions or uses, for example: artificial structures that create boating features, artificial fish habitat structures, diversions, and clearing natural debris from the river.

**Stabilization** – actions aimed at protecting property by preventing the river from moving or flooding, for example: bank armor and rip-rap, erosion-control structures, channelization, levees, and dikes.

## Approach

The ***Land and Stream Restoration Opportunities Report*** **(Appendix D)** summarizes this analysis and describes the resulting potential reach-scale projects by location and action type and assigns each a high, medium, or low prioritization ranking. Project benefits relevant to each management objective are described, along with an analysis of relative cost, risk, and potential conflicts or tradeoffs.

The benefits to river health of potential treatments were characterized by assessing potential improvement to relevant stream health variables as determined in the Yampa River Health Assessment (see Appendix B). Benefits related to community values (e.g., recreation and regulatory compliance) were evaluated according to criteria identified by local stakeholders.

The effectiveness and feasibility of reach-scale opportunities were evaluated by assessing:

- **Technical constraints** - whether the objective can be addressed using reach-scale restoration, enhancement, or stabilization treatments
- **Practical constraints** - land ownership, desirability, conflict with other uses, and cost
- **Risk** - potential for causing harm to another aspect of river health

## Potential Projects

Nine potential projects were identified:

- **Six riparian revegetation projects** - These projects involve planting native trees, shrubs, and hydric herbaceous vegetation on targeted areas where vegetation was historically cleared or disturbed and subsequently managing for riparian vegetation establishment and persistence. The revegetation projects range from high to low in priority. Priority is based primarily on feasibility due to land ownership (public versus private) and on preference for larger contiguous areas versus dispersed, smaller sites.
- **Two projects to prevent exotic fish from entering the Yampa River -** These projects vary from low to high risk depending on the degree of intervention/alteration of channel structure.
- **One fish passage improvement project** - This project aims to identify native fish migration barriers with the focus on the hydraulic conditions created by in-channel structures (e.g., culverts, weirs, diversion dams) during periods when native fish are migrating through the section of the Yampa River near Steamboat and its major tributaries. Infrastructure improvements may include modifications to existing structures and design requirements for future bridge, culvert, or other in-channel structures.

Each of these projects was evaluated and prioritized by the Advisory Committee as part the Implementation Strategy.

## Considerations and Constraints

Recreation and bank stabilization structures above town.

Floodplain extent on this section of the Yampa River is primarily limited by unnatural river morphology including channelization, channel enlargement, straightening, bank armor, levees, and artificially high banks. Large portions of the floodplain are also cut off by elevated road and railroad grades and bridges or encroached upon by development. These impacts can be treated by restoring natural river and bank morphology, removing levees and other impediments to flooding, and

regrading floodplain areas. However, practical opportunities for completing projects of this scope and scale are limited, because they often require the removal of roads, railroads, bridges, or other developments. Likewise, channelized river segments, high banks, and levees were usually constructed to prevent overbank flooding, to protect property, or to facilitate agriculture or other land uses, so practical opportunities for restoring natural floodplains in these areas are limited to where the original structures and modifications are no longer serving their intended purposes.

The primary cause of riparian impairment on the Chuck Lewis SWA, Rotary Park, and Below Town segments is land conversion. Riparian condition on these cleared areas could be partially restored by reestablishing native trees and shrubs, especially on areas within 100 meters of the main river channels where floodplain connectivity is still good. Treatments would involve aggressive planting and years of active management and maintenance to assure survival. These are moderately expensive treatments with very low risk to other aspects of river health.

The feasibility of meeting objectives related to natural form and process via reach-scale river and riparian treatment is determined, to a great extent, by the potential for restoring natural floodplain and riparian vegetation. This is because natural form and process is predicated on floodplain connection and riparian function. Some river projects have focused on artificial means to stabilize the river channel and enhance it with artificial habitat and recreational features. The primary risk involved with artificially channelizing, stabilizing, and artificially enhancing the river for specific uses is the potential loss of natural functions and services, poor sustainability, decreased resilience, and tradeoffs in other river uses. Riparian condition, floodplain connectivity, and natural processes are most intact on the Rotary Park segment and on portions of the segment below town. Protecting and restoring natural condition and function on these reaches is at least as important, or more so, than enhancing impaired areas for meeting the objectives of this plan.

Riparian forest in the Yampa River segment below town.

An ounce of prevention is worth a pound of cure. Alongside efforts to restore, enhance, or stabilize the river, on-the-ground efforts to protect areas at risk may be the best way to make meaningful net gains in all the Plan's management objectives. Land protection, in the form of acquisition for open space, conservation easements, or other mechanisms is often less expensive than treating damages. It carries no risk of imposing further damage, and there are usually no conflicts or tradeoffs. The highest priorities for land protection are reaches in the best functional condition or ones that provide specific community benefits. Parcels at risk of development or other deleterious land use practice should be triaged to the top of the list.

# Water Temperature Impacts

Several years of water temperature data collection by the City of Steamboat Springs and Colorado Parks and Wildlife staff indicate regular exceedance of Colorado water temperature standards. This issue was highlighted in the Yampa River Health Assessment Report (Appendix B), but the exact cause of elevated stream temperature could not be diagnosed. Reduced shading following degradation of riparian forests and increased thermal gain in Lake Catamount may unnaturally increase the rate of warming in summer, but it is unclear whether these mechanisms are significant compared to the natural rate of downstream warming. Despite this uncertainty, the Advisory Committee and the City want to understand the potential for using streamflow management and riparian restoration as tools for controlling water temperature during peaks in late summer.

These potential actions were investigated using 1) models of observed streamflow, water temperature, and air temperature from several locations on the Yampa River and 2) an energy balance model for water temperature representing the section between Lake Catamount and the wastewater treatment plant outfall. The combined approach to modeling system behavior helped identify the types and locations of management activities most likely to yield decreased summer river temperatures. ***Appendix E Water Temperature Management Opportunities*** includes a complete technical summary of the assessment methodologies, the results, and the management implications.

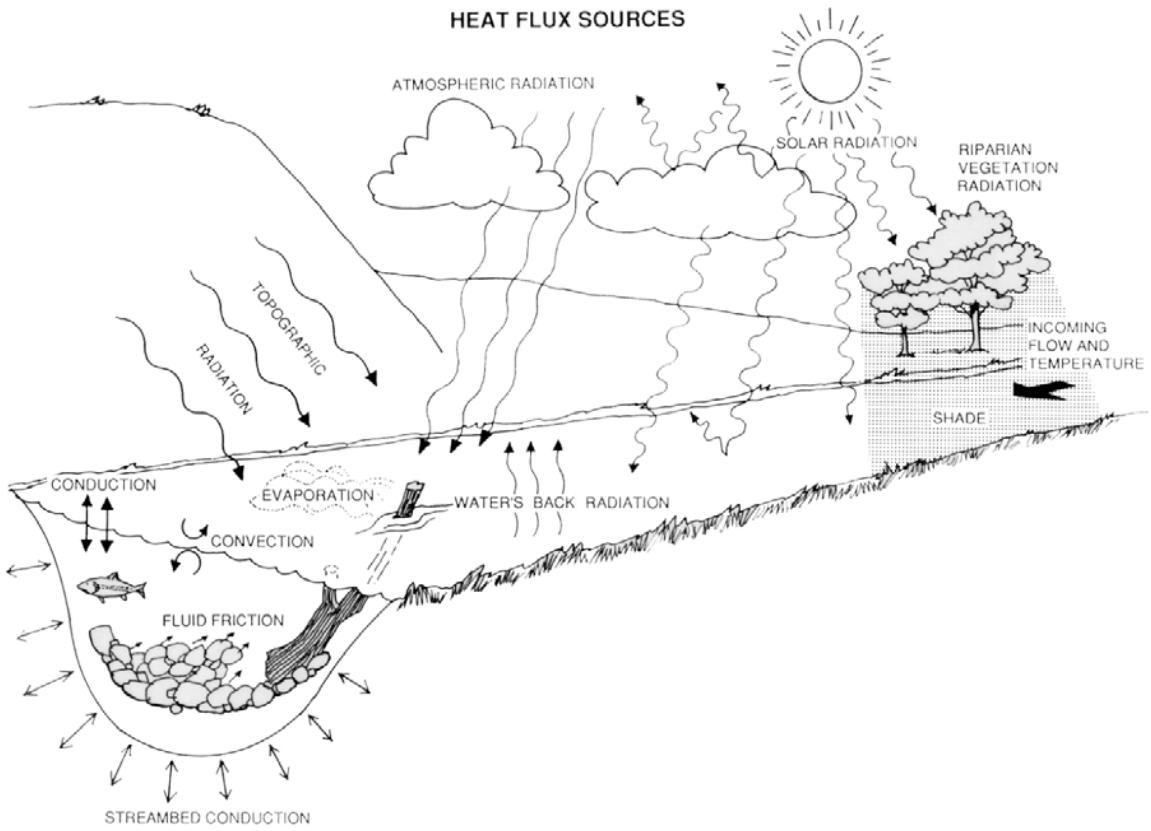
## Summary of Findings

Modeling results suggest that streamflow management activities (e.g., contracted releases of water from Stagecoach Reservoir) aimed at mitigating elevated water temperatures to meet State standards will require substantial increases in mid- to late-summer flows below Lake Catamount. The flow rates required to reduce water temperature enough to meet State standards are significantly higher than either existing or natural conditions, and exposing the

river to such abnormally high flows in mid-summer may produce unintended consequences for other aspects of river health. The beneficial impacts of smaller releases of water from Stagecoach Reservoir that keep flows in Steamboat Springs above 100 cubic feet per second do appear somewhat effective at reducing the likelihood of undesirable water temperature conditions during cooler atmospheric conditions in late August and early September.

Energy balance modeling indicates that solar irradiance (sunlight) is the most important factor in warming river water on this reach. Radiative warming may be reduced by increasing the amount of shading by riparian vegetation. Widespread increases in shading may be achieved through long-term floodplain management efforts that encourage the recruitment of large woody species (e.g. cottonwood) in the area between Lake Catamount and the confluence with Walton Creek. It does not appear that channel modification efforts to reduce channel top-width will significantly alter patterns of water temperature.

**Figure 9. Conceptual model of the heat fluxes that control stream water temperature (Theurer, et al., 1984, see Appendix E).**



# Other Opportunities

Although this project focused on opportunities for streamflow management and restoration, other types of management actions emerged during the planning process as important to achieving objectives. The opportunities in these areas were not evaluated in-depth through the scope of this project, but specific actions were prioritized in the Implementation Strategy.

## Land Use and Planning

Planning, policy, and regulatory actions related to managing where and how development occurs can help to protect riparian areas and water quality. Examples are open space acquisitions, conservation easements, incentive programs, water conservation measures, and zoning, floodplain, and setback ordinances.

## Infrastructure Improvements

Projects to improve existing or construct new infrastructure can use techniques that minimize impacts to river and ecosystem health. Examples are green infrastructure techniques, stormwater management techniques, ditch lining, and removal of in-stream obstructions.

## Education and Outreach

These are actions to improve education and awareness about Yampa River health and the activities that the public and other stakeholders can take to protect and improve conditions. Examples are public events, outreach to elected officials, web-based information materials, a citizen advisory committee, and a monitoring and evaluation program.

Friends of the Yampa organizes an annual river clean-up day in Steamboat Springs.

# 6. Implementation Strategy

The Implementation Strategy describes how the community will accomplish the overall goals of the Plan and document progress toward achieving the management objectives. A well-structured and accountable implementation component for the Plan emerged as an important priority and success factor during the planning process. Stakeholders continually emphasized the need to focus on moving identified projects and actions forward.

Since this planning project was initiated, the Steamboat Springs City Council set a goal to "*Identify and implement strategies to promote water supply resiliency.*" An actionable plan will enable the City to make progress towards this goal. A focus on implementation also better positions the community to quickly take advantage of different funding and resource opportunities.

The Plan's Implementation Strategy is composed of the following major components:

**Decision Criteria** - A set of documented criteria used to determine current priorities and that can be applied down the road as new data and opportunities become available.

**Actionable Items -** A list of actions and projects prioritized to begin within the next one to two years. For each action, the lead organization provided general ideas on how it will be implemented.

**Monitoring and Updating Procedures** - An accountable structure for reviewing progress on action implementation, evaluating progress toward objectives, and adjusting activities to meet current conditions and priorities.

**Integration with Existing Capabilities** – The Plan is designed to leverage the existing capabilities in place in the community. These are the existing organizations, funding sources, programs, policies, and other management structures that are functioning well. The Implementation Strategy is designed to be integrated with what is already taking place and avoid creating new layers of management and responsibility.

# Decision Criteria

The following criteria were agreed upon by the Advisory Committee to help evaluate the feasibility and effectiveness of proposed actions and projects.

### DECISION CRITERIA

1. **Effectiveness for Achieving Objectives**: Is the action likely to be effective at achieving identified management objectives and targets?
2. **Benefit vs. Cost:** What are the benefits in achieving management objectives compared to the cost of the action? Are there potential funding sources available?
3. **Long-Term Community Goals**: Does the action advance other long-term community plans and goals?
4. **Capacity:** Does the community have the staff resources, capabilities, and underlying structures to administer and maintain the action?
5. **Political and Public Support**: Does the action have support from elected officials and is there the political will to accomplish it?
6. **Partnership Opportunities:** Are there ready partners for funding and collaboration that can be leveraged to expand the benefits of the action?

# Priority Actions for 2018-2019

The community identified 15 actions to focus on within the next two years. Alternative action and project ideas were generated from the technical reports for the project (see Appendices), City staff, and the stakeholder engagement process. These ideas were then filtered through the Decision Criteria by City staff and the Advisory Committee and prioritized by participants in the second Community Workshop.

ReTree event in Steamboat Springs. Photo from the Yampa Valley Sustainability Council.

Table 3 lists the actions prioritized for 2018-2019, along with the lead

organization and key partners for each. The lead organization developed ideas and estimated information on how they foresee implementing the action in a project summary sheet. These summary sheets are compiled in **Appendix A**. Projects have not been scoped in detail and this information is intended to provide a high level picture of how each may be acted upon for planning purposes. Changes in capabilities, resources, and other conditions will affect if and how the action moves forward.

**Table 3. 2018-2019 priority actions.**

| ID | ACTION | LEAD ORGANIZATION | PARTNERS |
|---|---|---|---|
| **Streamflow Management** | | | |
| SM-1 | Seek water contracts with Upper Yampa Water Conservancy District to meet instream flow and City streamflow objectives. | -City of Steamboat Springs Public Works (Water Resources)<br>-Colorado Water Trust | Upper Yampa Water Conservancy District, The Nature Conservancy, Catamount Metro District, Tri-State General & Transmission, CWCB, CPW |
| SM-2 | Identify water rights owned by the City of Steamboat Springs that could benefit late summer flows and implement projects as appropriate. | City of Steamboat Springs Public Works (Water Resources) | Colorado Water Trust |
| SM-3 | Explore other voluntary, market-based streamflow restoration projects. | Colorado Water Trust | Community Agriculture Alliance, Colorado State University (CSU) Extension Service |
| SM-4 | Improve City of Steamboat Springs water diversion structures. | City of Steamboat Springs Parks and Recreation | City Public Works (Water Resources) |
| **Land & Stream Restoration** | | | |
| RE-1 | Establish a native riparian revegetation program for implementing the identified revegetation projects along the Yampa River through Steamboat. | City of Steamboat Springs Parks and Recreation | Yampa Valley Sustainability Council, City Public Works, Friends of the Yampa, Yampa Valley Fly Fishers, Riverkeeper, Yampa Valley Land Trust, Colorado State Forest Service, CPW, private landowners |
| RE-2 | Work with public and private partners to develop and implement projects that restore watershed health within the Upper Yampa watershed. | Upper Yampa River Watershed Group | City of Steamboat Springs, Routt County, Community Agriculture Alliance, CSU Extension, Yampa Valley Land Trust, Natural Resources Conservation Service |
| RE-3 | Fund and implement US Geological Survey (USGS) proposed nutrient source evaluation for the Upper Yampa River Basin. | Upper Yampa River Watershed Group | USGS, City of Steamboat Springs, Routt County, Upper Yampa Water Conservancy District, CPW, Trout Unlimited, US Forest Service |

| ID | ACTION | LEAD ORGANIZATION | PARTNERS |
|---|---|---|---|
| | **Land Use & Planning** | | |
| PL - 1 | Review and improve the effectiveness of the City of Steamboat Springs waterbody setback standards for implementing the objectives of the stream management plan. | City of Steamboat Springs Planning | City Council, City Public Works, City Stream Team, UYRWG, CPW, CWCB, local development community |
| PL-2 | Review existing City of Steamboat Springs plans and regulations to identify areas to improve consistency and compliance with the stream management plan. | City of Steamboat Springs Planning | City Council, City Public Works, City Parks and Recreation, City Manager's Office, City Stream Team, Routt County, numerous community partners |
| PL-3 | Integrate green infrastructure concepts and improvements into City of Steamboat Springs standards, policies, and procedures. | City of Steamboat Springs Public Works (Engineering) | City Planning and Community Development, City Public Works, local development community |
| PL-4 | Establish an interdisciplinary City "Stream Team" to coordinate and review City infrastructure projects, regulatory updates, and other projects, programs, and policies within the City that may affect river health. | City of Steamboat Springs Public Works (Water Resources) | City Public Works, City Planning, City Parks and Recreation, City Manager's Office, City General Services |
| PL-5 | Identify high priority parcels for acquisition for open space due to location in floodplain or high value riparian habitat. | City of Steamboat Springs | Yampa Valley Land Trust, The Nature Conservancy, CPW, private landowners |
| | **Education & Outreach** | | |
| ED-1 | Develop a K-12 Yampa River curriculum and partner with statewide organizations to enhance understanding of the value of the Yampa River. | Yampa/ White/ Green Basin Roundtable (Public Education Participation & Outreach Committee) | Community Agriculture Alliance, Yampatika, Friends of the Yampa, school districts within the Yampa, White, and Green river basins |
| ED-2 | Improve education and awareness about river health and actions people can take by leveraging existing programs and organizations. | Upper Yampa River Watershed Group | Friends of the Yampa, Yampa Valley Sustainability Council, Yampatika, Community Agriculture Alliance, City of Steamboat Springs, Routt County |
| ED-3 | Establish long-term funding sources for Yampa River management, such as the Yampa River Water Fund with The Nature Conservancy. | The Nature Conservancy | City of Steamboat Springs, Moffat County, Routt County, Yampa Valley Community Foundation, Upper Yampa River Watershed Group, Friends of the Yampa, Yampa/White/Green Basin Roundtable, Colorado Water Trust |

# Action Ideas for the Future

Many additional ideas for projects and initiatives were identified through the planning process but did not meet criteria for high priority for implementation in 2018-2019. Common factors for this were a combination of high cost, lack of a funding source, technical complexity, or other risks to success in the current environment. The following actions are recommended by the Advisory Committee as important initiatives to consider in the future as resources, funding opportunities, local champions, and community priorities change.

- Assess opportunities to construct or enhance wetlands on City Open Space parcels with dedicated water rights to improve riparian vegetation and help offset impacts within the City.
- Develop a river health and resiliency standard to be applied to the design review of all infrastructure, restoration, and development projects impacting the Yampa River and its tributaries.
- Further evaluate projects identified in the Yampa River Structural Master Plan and the Yampa River Restoration 5-Year Capital Improvements Plan in light of the Yampa River Health Assessment and the management objectives identified in this plan.
- Where feasible, install fish barriers/screens in ditches and in off-channel ponds, or inlets/outlets that are hydrologically connected to the Yampa River to eliminate off-channel sources of undesirable fish.
- Partner on a restoration project at the Yampa River-Walton Creek confluence in an effort to reduce backwater habitats and eliminate northern pike recruitment in this area and improve overall river health.
- Evaluate fish passage on Fish Creek between the Yampa River confluence upstream past the box culvert under Highway 40. Incorporate fish passage objectives into proposed changes to the box culvert and at the Park City Main Lateral.

# Valuable Activities to Continue

During the planning process, several existing capabilities and activities in the community were identified as important contributors to achieving management objectives. This is not a comprehensive list but highlights a few of the capabilities already in place that are critical for the community to support and sustain into the future to meet plan goals.

**Streamflow Management**

- Maintain (legally and physically) the Steamboat Springs Recreational In-Channel Diversion
- Actively monitoring regional water development and transbasin diversion projects that may impact the natural flow regime and participate in water planning processes to advocate for community interests

**Land and Stream Restoration**

- Continue to improve the Yampa River Temperature Monitoring Program
- Continue funding the USGS Water Quality Monitoring Program
- Maintain efforts to remove undesirable fish species throughout the Upper Yampa River Basin, as is feasible and deemed necessary
- Collect data and evaluate geothermal influences (i.e., hot springs) on stream temperature

City staff checking water temperature probes in the Yampa River.

**Land Use and Planning**

- Preserve and implement policies in City and County master planning documents to direct growth toward existing developed areas and avoid new development in open space, agricultural areas, and forested areas
- Implement the City's Watershed Protection Ordinance within the 5-mile contribution zone for its Yampa River infiltration galleries
- Complete and implement the Fish Creek Critical Community Wildfire Watershed Protection Plan
- Refine and enforce criteria for closing the river to recreation during vulnerable periods
- Identify opportunities for municipal and agricultural water savings through conservation measures

**Education and Outreach**

- Work with Trout Unlimited/Yampa Valley Fly Fishers to implement angler outreach programs to prevent damage to spawning beds and angling mortality
- Educate the public about problems associated with releasing non-native fish into area water bodies
- Coordinate with federal land management agencies on plans and activities in the watershed

# Tracking Implementation of Actions

The Upper Yampa River Watershed Group (UYRWG) will coordinate tracking progress on the implementation of actions identified in the Plan. The UYRWG is made up of broad stakeholders in the community, including landowners and the general public, interested in protecting and enhancing the health of the Upper Yampa River watershed by using a science-based and collaborative approach to addressing technical issues.

**Who:** Upper Yampa River Watershed Group

**When:** Biannually

**How:**

- Twice a year during regular monthly meetings of the UYRWG Technical Committee
- Annual Report on progress and new actions

The UYRWG includes a Technical Committee responsible for leadership and decision-making. This committee met on a regular basis in the past and is comprised of many of the same members as the Advisory Committee for this plan. The UYRWG's coordinator will re-establish regular, monthly meetings of the Technical Committee. Twice a year, their agenda will include tracking the status and progress of the action items in the Plan. All lead organizations for Plan action items will be specifically invited to participate in the bi-annual review meetings. The biannual meeting will include the following discussion topics:

- Report out on the status of each priority short-term action by the lead organization
- Identification of new actions for achieving the management objectives
- Prioritization of new actions according to the Decision Criteria to be considered for the short-term action plan or future action ideas list
- Review of public comments received on the Plan (such as through the website)
- Review of any data collected on the monitoring indicators
- Tracking of any needed minor changes and updates to the Plan

The City will also internally track each of the actions that City departments are coordinating through their Stream Team. The City Water Resources Manager in coordination with the UYRWG Technical Committee will develop a short annual report for City Council on the progress of action implementation.

# Monitoring Progress Toward Objectives

The City of Steamboat Springs Stream Team will lead the monitoring of indicators for each management objective. Depending on the specific indicator, the frequency for monitoring is recommended on an annual, two-year, five-year, or ten-year basis, as well as before/after major events. The monitoring frequency recommendations are included with the management objectives in Section 3.

**Who:** City of Steamboat Springs Stream Team

**When:** Regular monitoring, after major events, and every ten years

**How:**

- Monitoring indicators according to the recommended frequency
- Ten-year update of the Yampa River Health Assessment as part of a major plan update

# Updating the Plan

## Annual Report

The City of Steamboat Springs Water Resources Manager will coordinate an Annual Report for City Council and the community on the progress on the Plan. The report will be used to update City Council on the Plan's progress each May. The Annual Report will include the following:

- Status of the implementation of the short-term action items identified in the plan
- Recommendations on new actions to be added to the short-term action plan (for the following one to two years)
- Updates on monitoring indicators of progress toward management objectives
- Summary of any other significant events and trends identified by the City and UYRWG Technical Committee as important to communicate to the public

**Who:** City of Steamboat Springs Public Works Department

**When:** Annually and every ten years

**How:**

- Annual Report on progress and new actions
- Comprehensive update of all plan components every ten years

## Minor Changes to the Plan

Suggestions for needed changes to the Plan may come from City departments, the Technical Committee, and other stakeholders and community members. These will be tracked by the City's Water Resources Manager, reviewed by the Technical Committee for approval, and addressed in either the Annual Report or the ten-year plan update.

## Major Update to the Plan

A comprehensive update of the Plan will occur at least every ten years. The City of Steamboat Springs in consultation with other City departments and the UYRWG Technical Committee will begin to evaluate this need in 2026. The City will work with the CWCB to understand current State priorities, Colorado Water Plan initiatives, and available funding sources and requirements for updating stream management plans and make recommendations to City Council and the Yampa/White/Green Basin Roundtable. Based on the direction from these groups, the City will coordinate identifying partners for matching funds and submitting grant applications.

A comprehensive plan update may be warranted in the interim due to the following types of conditions:

- A major disaster, such as flood, wildfire, or prolonged drought that dramatically alters conditions in the watershed and/or provides new funding resources for mitigation and recovery
- A significant new direction or opportunity in State priorities or eligibility for funding, such as through future updates to the Colorado Water Plan
- Credible threats to the long-term water security of the community and region, such as a transmountain water diversion

A comprehensive plan update should include a robust community and stakeholder engagement process and an evaluation and update of each of the major components of the Plan, including the goals, Yampa River Health Assessment, management objectives and targets, and the short-term (one to two years) action items.

# Sharing Outcomes

The City of Steamboat Springs will coordinate communicating updates on the plan's implementation with stakeholders and the public over time. This will include sharing successes and celebrating accomplishments, such as obtaining funding for an action or completing a project. The primary methods for communicating progress over time include:

**Who:** City of Steamboat Springs

**When:** Ongoing

**How:**

- City website
- Annual Report
- Updates to partner organizations and at community events

- An Annual Report provided to City Council for discussion during a public meeting and shared with stakeholders;
- Presentations at community events and to the boards of partner organizations upon request, for example to Routt County, Friends of the Yampa, Yampa Valley Fly Fishers, Upper Yampa Water Conservancy District, and Yampa/White/Green Basin Roundtable;
- Information posted on the City's website, including the complete plan document along with a method for collecting comments from the public over time; and
- Updates shared through traditional and social media.

# Appendices

Background reports and information used in the development of the Plan can be found in the following appendices available for download at: https://steamboatsprings.net/587/Yampa-River-Health-Streamflow-Management.

**A. Action Implementation Summaries**

**B. Yampa River Health Assessment Report**

**C. Water Management Strategies Technical Memorandum**

**D. Restoration Opportunities Summary Report**

**E. Water Temperature Management Opportunities Summary Report**

**F. Community Input Summary**

Photo credit: Karolina Borkowski