



AGENDA
CITY OF GLENWOOD SPRINGS
Planning and Zoning Commission
Regular Meeting
OCTOBER 22, 2019
Council Chambers, First Floor
101 W. 8TH STREET
6:00 PM

- 1 Roll Call
- 2 Receipt of the Minutes
 - A. Minutes September 24, 2019
- 3 Comments from citizens appearing for items not on the agenda
- 4 Continued Items
 - 20-19 - Consideration of a Code Amendment to Section 070.040.020(d)(24) of the Glenwood Springs Municipal Code regarding riparian setbacks **ITEM WILL BE CONTINUED TO NOVEMBER 26, 2019**
- 5 New Items
 - A. Work Session - Conceptual Review of ANB Bank-910 Grand Avenue an approximately 10,000 square foot commercial building in the M2-Mixed Use Central Core Zoning District.
- 6 Commissioner Comments
- 7 Director Comments
- 8 Adjournment



MINUTES
City of Glenwood Springs
Planning and Zoning Commission
Regular Meeting
September 24, 2019
Council Chambers, First Floor, City Hall
101 W. 8th Street
6:00PM

Chairman Dehm called the meeting to order at 5:58 p.m.

1. Roll Call

Present at roll call were Commissioners: Amber Wissing, Ingrid Wussow, George Shaver, Marco Dehm, Carolyn Cipperly, Tim Malloy and Sumner Schachter

Absent: Kathryn Grosscup and Dean Kinkel

Also present were: Trent Hyatt, Senior Planner
Jenn Ooton, Asst. City Manager, Director
Gretchen Ricehill, Asst. Director
Anna S. Itenberg, City Attorney's Office
Kathleen Michel, Admin. Assistant

MOTION: Commissioner Malloy moved, seconded by Commissioner Schachter, to seat alternate Carolyn Cipperly for this meeting.

- 2. Receipt of minutes from the July 23, 2019 regular meeting.** On motion of Commissioner Malloy, seconded by Commissioner Shaver, the minutes were approved as corrected by Commissioner Malloy on pages 6, 8 and 9. Motion carried by voice vote.

Receipt of minutes from the August 24, 2019 regular meeting. On motion of Commissioner Malloy, seconded by Commissioner Wussow, the minutes were approved as written. Motion carried by voice vote, with Chairman Dehm and Commissioner Schachter abstaining.

- 3. Comments from citizens appearing for items not on the agenda.** No one appeared.

Continued Items:

4. 11-19 – Consideration of a special use permit to allow for the construction of a 2,800 square foot convenience store and re-location of underground fuel storage tanks.
ITEM WILL BE CONTINUED TO OCTOBER 22, 2019.

Commissioner Malloy moved, seconded by Commissioner Shaver, to continue the item to October 22, 2019. Motion carried unanimously.

5. 20-19 – Consideration of a Code Amendment to Section 070.040.020(d)(24) of the Glenwood Springs Municipal Code regarding riparian setback.

Applicant:	City of Glenwood Springs
Owner:	Multiple public and private properties
Location:	Applies to areas within 50 feet of the ordinary high-water mark of perennial water courses in the City
Zone:	All zone districts City-wide

George Shaver recused himself and left the meeting.

Trent Hyatt indicated that multiple persons wished to comment at this meeting. The Chairman indicated he would reopen the public comment and instructed those who wished to speak tonight to put their names on the sign-in sheet. The Chairman was advised that a number of people donated their three minutes of time to Mr. Vick to allow him to make his presentation.

The staff report was presented by Trent Hyatt. Mr. Hyatt distributed additional comment letters received today that were not in the packet. He indicated that the Commissioners could hear additional comments or begin deliberations on the matter.

Commissioner Malloy commented on new material received. Commissioner Malloy and Mr. Hyatt engaged in a discussion of:

- Vegetation and wildfire mitigation standards.
- Colorado State Forest Service standards.
- Permanent structures in river front areas.
- What qualifies as a permanent structure?
- Differences between ordinary high water mark and high water marks.

Commissioner Schachter wanted to clarify what they were being asked to approve to send to Council.

- The wording on page 4 of staff report. Mr. Hyatt replied that it is correct.
- Applicability to public utilities and public parks for non-motorized use and public open space.
- Does it apply equally to a private owner as well as a public owner?
- Mitigation, irrigation structures, flood control, erosion protection.
- Does that text apply to anybody who owns property on the river? Mr. Hyatt did not believe there was an intention to have a significant difference. If you look at the two exemptions, the wording is slightly different. The intent is to apply them equally to public and private projects.

- Stream bank erosion or irrigation structures. How would anyone know what they can do based on the conditions listed? Mr. Hyatt indicated that at some point some of those activities would have to occur in the riparian zone.
- High water mark and 50-foot buffer.
- Future study of red zone on properties in the city.
- Current code allows replacement or repair of an existing structure in riparian zone if damaged.
- Code would allow equipment in riparian zone to make repairs.
- Would code prevent development of property?

Mr. Hyatt pointed out that a number of lots on the riverfront may not qualify for development. Owners could still seek a variance and prove why they have a hardship.

Commissioner Wussow wondered how future property owners would know about these restrictions in the future. Would it then be done by the city through education and Previous HPOZ overlay is now gone. The difficulty of building on these lots still exists. Mr. Hyatt said that the audience members can go home to zero changes to their property. If a structure was destroyed by fire, per non-conforming use regulations they have 18 months to rebuild.

Commissioner Schachter wanted to know where the 10% number came from.

- Suggested staff provide existing properties information on how this percentage would apply. A visual representation of this would be helpful.
- Discussed maintenance of lawns with fertilizer and other chemicals. Mr. Hyatt replied that use of chemicals would be restricted.
- He suggested annual workshops for owners if this goes into effect. Mr. Hyatt replied that Roaring Fork Conservancy has provided workshops in the past.
- Notice to river front owners. Mr. Hyatt responded that river front owners were notified by mail of the original hearing.

Commissioner Wissing asked about enforcement on fertilization of lawns. Mr. Hyatt said that most reports of violations come from neighbors.

At 6:46 p.m. the Chair reopened public comment.

Chris Lynch, 602 Cowdin Drive, was concerned about this proposal. Her property was first improved in 1884. She fears this is taking her property away. Very emotional about it. Asks for consideration of people who had been here for so long.

Jaime Campa, 602 Cowdin Drive, multi-generational residence (four generations live there). Lived there 54 years. This is very stressful for the family. We have trees for birds; cool water for the trout where the rivers meet. We are a safe haven for animals, birds and fish.

Commissioner Wussow asked how this 20 foot difference would affect their family. She received a lengthy reply repeating what was said before.

Jen Angeloro, 612 Cowdin Drive, said her family loves living by the water. She brought a petition from residents regarding this proposal. They are opposed to the amendment.

Julie Rippy, 2262 Midland Ave., was opposed to the proposal. She felt that City projects were causing disturbances on the river. Asked for greater transparency in the process. Current 30 foot setback is adequate.

Bob Littler, 2280 Midland Ave., opposed to reduction of property rights. City's snow storage area drains into river with all the things picked up from the streets.

Amy Wray, 1042 Sprucewood Lane, lives in Spruce Meadows mobile home park. The residents are concerned about possible displacement of their units. Her unit is mobile and they could move out quickly but others are not as flexible.

Mike Blair 1204 Sprucewood Lane, disagrees with the proposed regulation for various reasons. Fifty feet is too large an area in the private property ownership. He suggests an education program rather than enforcement.

Bob Patillo, 3369 Grand Ave., lives next to the Old Cardiff Bridge. Spoke about storm water discharge and other public drainage. A drainage culvert from the Walmart parking lot empties into river by his home. Hillside is moving, needs a retaining wall to keep home in place.

The following all ceded their three minutes to Gary Vick, 614 Cowdin Dr. for a prepared presentation on behalf of riverfront property residents/owners: Maurine Howey, 2308 Midland Ave.; Joel Dickens, 388 Red Cliff; Mark A. Cose and Lexina Cose, 2202 Midland Ave.; Randy Rippy, 2262 Midland Ave.; Jim Waters and Veda Waters, 1205 Riverside Dr.; Roger Neal, 817 Traver Trail; Pat Hensley, 1776 Midland Dr.; and Maria Chansky, 2010 Midland Ave.

Gary Vick, 614 Cowdin Dr., presented prepared remarks (17 typewritten pages). Spoke against the proposed revision and urged the Commission to reject the revision as it disregards rights of property owners. Some of his points were:

- Property values
- Would lose the premium paid for the property
- Restriction of structures
- Use of herbicides, fertilizer

Commissioner Malloy engaged in a discussion with Mr. Vick regarding his summary of the effects of the proposed ordinance.

Commissioner Wussow requested a show of hands from the audience:

- How many are property owners?
- How many are property owners along the river?
- How many were aware of the 30 foot setback?
- How many saw the public notice?
- How many received the mailed notice?
- How many were made aware of the proposed change by Mr. Vick?

She wanted clarity of what brought the audience members to this meeting.

The Chair asked River Commissioners to speak.

Ashley Moffatt, 509 Maple St., River Commission Chair, clarified her involvement in this proposal.

- She is a property owner and has some property to be developed.
- She is an owner of a VRBO and experienced recent changes to those regulations similar to this process.
- City Council requested the River Commission to be involved in the process.
- This is the City's code; it was set aside to be handled separately from the land use code.
- To define the base line, you must survey the river for ordinary high water mark.
- They were involved in replanting at Veltus Park after shoreline work.
- They will do the same at Two Rivers Park when its shoreline work is completed.
- There are other plantings on their schedule.
- Storm water is on the City's radar for future attention.
- Vegetation is the non-conforming element.

Chad Rudow, 1201 Mountain Drive, technical adviser to the River Commission, and an employee of Roaring Fork Conservancy. He explained his role in developing the ordinance with reliance on science to preserve and enhance the river:

- Low flows/warm waters stressed the fish.
- Algae bloom from warm water following winter with little moisture.
- Roaring Fork River listed as "impaired" due to warm water temperatures.
- Healthy riparian areas are important.
- Resiliency important to health of the rivers.

In response to questions from Commissioner Malloy; Mr. Rudow listed the following benefits of healthy riparian areas:

- Slowing river flow
- Preventing point source pollution
- Roots and growth in riparian area reduce erosion

Commissioner Malloy agreed that storm water entering rivers leads to lesser quality. Riparian setback does not address storm water intrusion.

Rick Lofaro, 105 Ptarmigan Court, Basalt, commented on sedimentation from non-point sources.

Commissioner Schachter asked if there is a figure of how much riparian area has been lost over the last decade. There was no answer.

Chad Rudow commented that Roaring Fork Conservancy received inquiries from many other entities about impact on riparian areas from clearing the areas. We pass the concerns on to the appropriate entities.

Rick Lofaro, Basalt, commented that these regulations are a river management tool, not a taking of property rights. The grandfather clause can help people continue to enjoy their river property. Goal is to help landowners put things together to protect the rivers for future generations.

Scott Schreiber, 1806 Ouray Road, River Commissioner, lives by the river. Paid high premium for river property. Joined the River Commission to help keep the river a magical place and to keep the river for the future. He is an engineer who goes around the state helping to repair damaged riparian areas. Wants to help Glenwood Springs avoid damage.

Erica Gibson, 2701 Midland Ave., River Commissioner, commented that this code was intended to be a proactive code, not reactive. Much of what people already have or have been doing will be fine. If someone develops in the future, this code will apply. The primary item of concern for the present owners is use of fertilizer. The River Commission is starting a public outreach program to provide information to property owners.

The Chair closed public comment at 8:37 p.m.

Commissioner Malloy asked about Gary Vick's proposed revisions as he did not see staff comments on them.

Mr. Hyatt said Mr. Vick presented his ideas after the last hearing and they were in this packet. The task for staff was to simplify code and not to add another 15 pages or more. Staff was not able to explain every possible interpretation of the code.

Commissioner Malloy stated his intent to direct staff for some tweaks to the current document based on information received during the public hearing.

Commission Schachter commented on the concept of public outreach. Notice of our meetings is not public outreach.

Jenn Ooton responded to the question of whether there was adequate public outreach. This piece was set aside separately by the City Council from the recent code revision. It was part of the meeting we held about code revision.

Commissioner Schachter said we are making a recommendation to Council. Jenn Ooton reminded the Commissioners that Code now requires a public hearing before the Planning Commission to amend Article 070.

Commissioner Wussow asked about what was done in the VRBO revision. Ms. Ooton responded with:

- the survey,
- meetings held with the public,
- hearing with P&Z,
- then to Council.

The Chairman called for a MOTION regarding riparian setbacks.

Commissioner Malloy moved to continue this item and to direct staff to make a few refinements. He moved:

- To clarify language re non-conforming grandfathering. and how that would be managed;**
- To clarify that steps (specifically) are permitted in the riparian area;**
- To provide language regarding safe access to the river;**
- To clarify difference between the private and public sections of restrictions.**

Commissioner Wussow seconded the motion and wished to add language regarding improving notice to the public or providing notice when property changes ownership.

A discussion with Commissioner Malloy followed. No changes made to motion.

Commissioner Schachter concerned about whether we need to make some amendments right now with recommendations to Council to change. Clear boundaries about the water mark issue. Wants to hear rationale for the 10%. The other thing is to be on record for river front or riparian owners' workshops and other educational opportunities.

Discussion involving all Commissioners continued. Commissioner Malloy repeated his motion. He believed that staff changes, if approved, could then go to Council.

Commissioner Schachter wanted to see educational materials and workshops in the future.

Ms. Ooton said that might not be something to include in land use code but perhaps there could be something included in the budget for education.

Commissioner Cipperly wants specificity regarding trimming growth, mowing lawns, etc.

Commissioner Malloy agreed to accept the friendly amendments from Commissioners Wussow and Schachter.

Chairman Dehm wants to see how the proposed lines affect the properties. He wants to see an illustration showing the lines along the river front. Select some representative properties and provide an illustration. He was not asking for a map, just an illustration of what it does to real properties.

The motion carried unanimously to continue the item with the friendly amendments. Commissioner Shaver absent.

The Chair called for a five minute recess.

Commissioner Wussow left the meeting at the break. Commissioner Shaver did not return.

New Items

6. 32-19 – Special Use Permit for a 66-space surface parking lot in the m1-Mixed Use Corridor Zoning District. The project includes a variance request from the requirement that no block of parking exceeds eight spaces without providing a landscape island.

Applicant: Valley View Hospital
Owner: FirstBank
Location: 2014 Grand Avenue (PIN#: 2185-164-00-004 and -005)
Zone: M1-Mixed Use Corridor

Commissioner Schachter brought up a Commission request for a master plan for parking before we considered any more parking applications from this applicant. Ms. Ricehill asked for an overview of the request or just continue this item.

Brian Murphy, CEO of Valley View Hospital, stated:

- He is new to this job.
- They were working on a master plan.
- This proposal is to accommodate what we do now.

Commissioner Schachter repeated that the Commission was concerned about the spread of asphalt without a master plan for parking.

Ms. Ooton checked minutes and pointed out that the request for the master plan could not be attached as a condition to a future item before the Commission.

Dr. Murphy questioned how this proposal got this far.

Robert Smith from Valley View said that there is new leadership locally,

- Parking impact is crucial.
- They need to put parking somewhere now.
- It takes time to develop a master plan.
- Even if they build the parking garage already approved, they will displace parking.

Chairman stated they should move forward with this hearing.

Commissioner Schachter said the City does not have change of plans due to change of personnel, need to work within the comp plan.

Gretchen Ricehill presented the staff report.

- Sixty-six parking spaces for employee only use
- Access from 20th Street
- Taco Bell and First Bank will not have access to new parking area
- 16.5 foot wide access
- Valley View owns property for access
- 4 inch roll over curb for emergency access only
- Lot will be similar to other Valley View lots
- A variance is required to eliminate 3 landscape islands
- 21.8% of total lot is landscaping; 20% required
- Minor subdivision process (administrative)
- Variance requires P&Z review
- Stand-alone parking lot requires Special Use Permit
- Seven variance criteria required
- 2011-12 lot was resurfaced; landscaping not required then
- Grade difference between two lots
- Six criteria for special use permit
- Hospital is a regional medical center
- Technical comments from Public Works and Engineering.
- Reoriented bank parking
- Direct access from 20th Street; traffic light at intersection with Grand
- Landlocked parcel did not impact other commercial uses
- Two action items: approve, deny or continue; staff recommends approval

Commissioner Malloy requested additional information about:

- Lot line adjustment by Planning Director will take place after SUP approved
- Will there be an easement for access?
- Access is very narrow; how many park there?
- Is there a traffic study for the movement of the 66 vehicles?

Commissioners Cipperly and Schachter inquired about access from the condos through this property and cars queuing up to access the parking lot.
Reply: The applicant can provide additional information

Applicant presentation:

Robert Smith stated there is an access easement to the parking at the condos using the other driveway.

Yancy Nichol, engineer, preserve open space and landscaping;

- Access to Grand is subject to congestion.
- The employees who park here are already parking in the neighborhood.
- Hospital is staggering shift changes.
- Landscape islands would interfere with drainage flow and weaken asphalt.

Discussion between Mr. Nichol and Commissioner Malloy regarding drainage.

At 10:20 p.m. opened public comment. No one to speak. Closed public comment.

Ms. Ooton reported on the minutes from September 27, 2016, there was a question related to the master parking plan and putting a condition on future SUP for parking.

MOTION – Action Item 1: Commissioner Malloy moved for approval of item 1 as is; Commissioner Schachter seconded. No discussion. Carried unanimously.

MOTION – Action Item 2: Commissioner Malloy moved for approval of item 2 with findings and conditions 1-4 [with a condition 5 providing that no further land use applications be accepted without a master plan]; seconded by Commissioner Schachter.

Anna Itenberg, City Attorney's office, commented they could not attach a future action to this item by adding a 5th condition.

Commissioner Malloy removed fifth condition.

Motion carried unanimously.

7. Commissioner Comments

Commissioner Schachter questioned the all or nothing criteria for variances. Discussion followed involving staff and commissioners.

Commissioner Cipperly was in favor of providing incentives for conserving energy and resources as was done for this parking lot.

Commissioner Wissing thought we could have had a better public process. Discussion with staff followed.

Commissioner Schachter notified the Commission of an October 23 town meeting at 6:00 p.m. at the library. He is asking Council and Commissioners to be there.

Commissioner Schachter commented that a second monthly meeting to do the fun part of planning.

8. Director Comments

Ms. Ooton reminded Commission of October 16 joint meeting with Housing Commission and City Council in the Council Chambers.

Ms. Ooton said City Council would consider the Airport report at its next meeting.

9. Adjournment 10:34 p.m.

DRAFT

Agenda Item: 20-19 - Consideration of a Code Amendment to Section 070.040.020(d)(24) of the Glenwood Springs Municipal Code regarding riparian setbacks **ITEM WILL BE CONTINUED TO NOVEMBER 26, 2019**

Action Requested:

REQUEST	Consideration of a Code Amendment to Section 070.040.020(d)(24) of the <i>Glenwood Springs Municipal Code</i> regarding riparian setbacks
APPLICANT	City of Glenwood Springs
OWNER	Multiple public and private properties
LOCATION	Applies to areas within 50 feet of the ordinary high-water mark of perineal water courses within the City
ZONE	All zone districts City wide, where applicable

Department: Planning Department

Presented By: Trent Hyatt, Senior Planner

Background Info:

Issues: **Action 1 - Code Amendment** – to revise the riparian setback standards of Section 070.040.020(d)(24) of the Glenwood Springs Municipal Code.

Staff Recommendation: The Planning and Zoning Commission (Commission) first considered the proposed text amendment at the July 23, 2019 regular meeting. The staff report and related items from said meeting are attached for your review. Consideration of the proposal was continued to the August regular meeting and then again to the September regular meeting.

Staff has received various comments regarding the proposal since the first meeting which are attached. Comments from Gary Vick provide detailed recommendations and background information for potential alternate language while other comments object to the proposal. While a public hearing was held at the July 23 meeting, staff has received requests from numerous individuals requesting the ability to provide additional comments to the Commission.



Planning and Zoning Commission Report

Date: July 23, 2019
To: Planning and Zoning Commission
From: Trent L. Hyatt, Senior Planner
Subject: #20-19 – Riparian Setback Code Amendment

REQUEST	Consideration of a Code Amendment to Section 070.040.020(d)(24) of the <i>Glenwood Springs Municipal Code</i> regarding riparian setbacks
APPLICANT	City of Glenwood Springs
OWNER	Multiple public and private properties
LOCATION	Applies to areas within 50 feet of the ordinary high-water mark of perineal water courses within the City
ZONE	All zone districts City wide, where applicable

ACTION ITEM:

The Planning and Zoning Commission (Commission) is the recommending body to City Council on any and all revisions to the *Glenwood Springs Municipal Code* (Code).

Action 1 - Code Amendment – to revise the riparian setback standards of Section 070.040.020(d)(24) of the *Glenwood Springs Municipal Code*.

Staff recommendation: Staff recommends **approval** of the Code Amendment with the findings on page 8.

BACKGROUND/ANALYSIS

History/Proposal

On October 4, 2018, City Council held a work session with the River Commission (RC) and Planning and Zoning Commission (Commission) to facilitate a discussion regarding riparian setbacks. The work session followed a previous City Council discussion regarding the matter on April 26, 2018 that occurred in conjunction with a progress update on the development code re-draft which was ongoing at the time. Prior to the development code re-draft discussion in April 2018, City Council received a recommendation from the RC (following a unanimous vote on February 7, 2018) for the inclusion of a 50-foot riparian setback in the re-drafting of the development code. Details and background information from the River Commission are outlined in an attached letter.

To date, no action has been taken on the riparian setback recommended by the RC. As requested by City Council, Community Development is now processing a Code Amendment to allow for review and consideration of the associated revision by the Commission and City Council. Draft standards as well as options to incentivize stewardship in riparian zones are addressed below.

Current Riparian Standard

Per Section 070.040.020(d)(24) of the Code, Development in Waterways and Areas of Special Flood Hazard, the City requires a 30-foot riparian setback as follows:

“No improvement, building, structure, excavation, dumping or backfill shall be placed, built, undertaken or approved within a 30-foot setback area horizontally from the high-water mark of any river or live stream, except for bridges, paths for non-motorized use, irrigation structures or flood control and erosion protection devices.”

Formerly, Section 070.010.010 of the Code stated, "high water mark means for the Roaring Fork River, the level of the 1973 peak flow measured at eight thousand two hundred eighty (8,280) cubic feet per second. For the Colorado River, the level of the 1973 peak flow measured at twenty thousand five hundred (20,500) cubic feet per second. For any other river or stream, its highest peak flow between October 1, 1956, and September 30, 1976." However, "high water mark" is no longer provided for in the definitions section. This appears to be an error in the adoption of the revised development code in August 2018.

River Commission Recommended Standard

Below is the language recommended by the River Commission in February 2018.

a. Purpose

The purpose of this Subsection 070.040.020(d)(24) is to conserve and promote the health of the City's riparian ecosystems and water quality by maintaining a functional natural buffer adjacent to waterways.

- i. No improvement, building, structure, excavation, dumping, clearing of native vegetation, or backfill shall be placed, built, undertaken or approved within a fifty-foot setback area horizontally from the ordinary high-water mark of any river or live perennial stream.
- ii. Within the fifty-foot setback, no live vegetation may be removed except for species listed on the Garfield County noxious weed list, Chinese Elm, or Siberian Elm when replaced with appropriate plant species. The Director has discretion to permit the removal of native vegetation, not to exceed 10 percent of the area of the setback, to allow a property owner private access to and personal enjoyment of the waterway. This shall not be interpreted to allow for permanent structures of any kind within the setback area. The Director may also reduce the setback for bridges, public paths for non-motorized use, public open space areas, wildfire mitigation activities, irrigation structures, flood control and erosion protection devices, or upon demonstration by the applicant that such reduction shall not result in water quality degradation, stream bank erosion, or a reduction in the function and quality of a riparian area or wetland.
- iii. No chemical treatments, including but not limited to fertilizers, pesticides, and/or herbicides, are permitted within the fifty-foot setback area except for the removal of above listed noxious weeds in compliance with applicable regulations.

Discussion

The area of the proposed 50-foot setback as outlined by the RC above begins at "ordinary high water mark" (OHWH) as opposed to the current "high water mark" which is generally lower in elevation along the bank of any given water course. A simple definition of the OHWM is the *mark typically reached on an annual basis within a channel*. The term as defined by the Army Corp of Engineers is *“that line on the shore established by the fluctuations of water and indicated by*

physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.”

As a comparison, the highest mean daily discharge rate for the Roaring Fork River based on USGS data is 7,120 cubic feet per second (cfs) which is significantly higher than the average ordinary high-water discharge between 3,000-4,000 cfs since 1971. Generally, the OHWM is the lowland area of any stream or river that is regulated by the US Army Corp of Engineers, in addition to wetland areas. The diagrams at right and below provides a visual representation of the OHWM. Differing definitions of the OHWM exist based on ecological zone, stream type, flow rates/intervals, etc.



Photo credit: Water Environment Federation

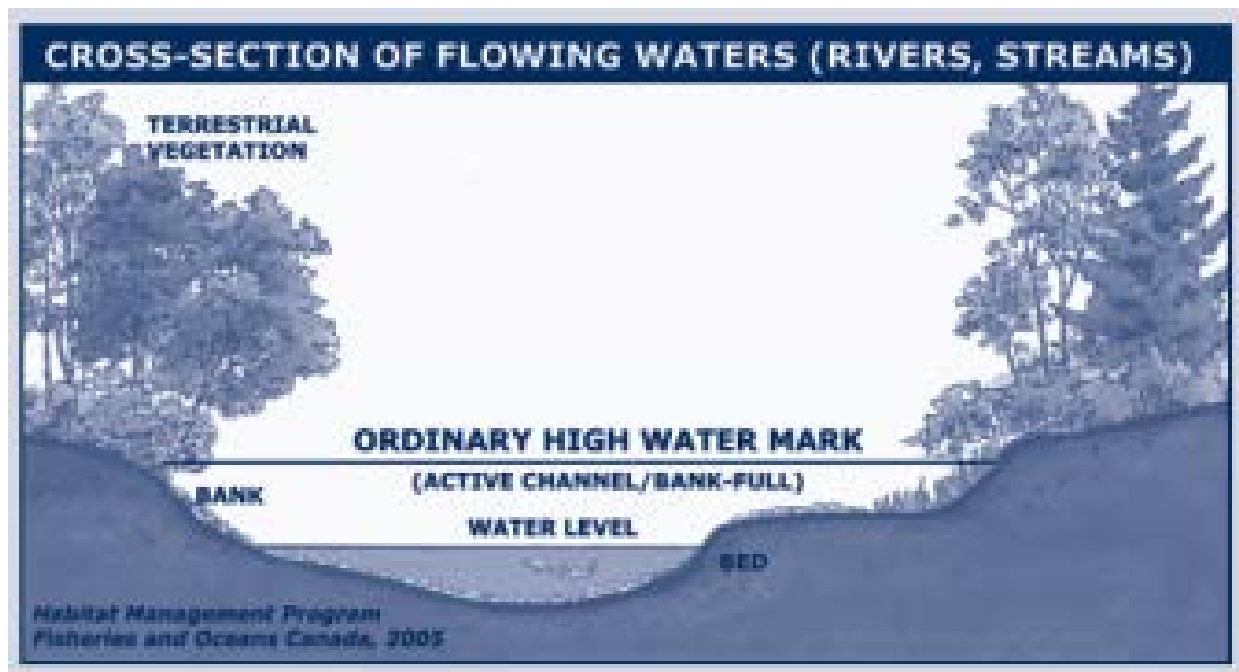


Photo credit: Habitat Management Program

A formal ecological survey can determine the exact location of the OHWM in the riverine areas of the City. A similar survey was recently conducted by the City of Aspen at a cost of approximately \$50,000. Drone technology is sometimes used to help determine the boundary. A simple means of determining the OHWM could be a site visit by staff when if there is a question as to whether a development proposal is impacting the riparian zone.

Staff Riparian Setback Standard

Staff provides the language in *italics* below for consideration to replace the current standard in Section 070.040.020(d)(24) of the Code:

070.040.020(d) Development in Waterways and Areas of Special Flood Hazard

(24) Conservation of Waterways

It is the purpose of this Subsection 070.040.020(d)(24) to conserve and promote the health of the City's riparian ecosystems and water quality by maintaining a functional natural buffer adjacent to waterways.

a. Applicability

All new improvements, buildings, additions, structures, excavations, grading, dumping, clearing of native vegetation, or backfill shall be subject to the requirements of 070.040.020(d)(24)b Standards unless the applicant demonstrates to the City Engineer and the Director by clear and convincing evidence that one or more of the following conditions is met:

- 1. The removal of native vegetation, not to exceed 10 percent of the setback area defined below, to allow a property owner private access to and personal enjoyment of the waterway. This shall not be interpreted to allow for permanent structures of any kind within said area.*
- 2. The construction of bridges, public utilities, public paths for non-motorized use, public open space areas, wildfire mitigation activities, irrigation structures, flood control and erosion protection devices that do not result in water quality degradation, stream bank erosion, or a reduction in the function and quality of a riparian area or wetland.*
- 3. Removal of vegetation listed on the Garfield County noxious weed list, Chinese Elm, or Siberian Elm in compliance with applicable regulations. Vegetation shall be replaced with appropriate riparian plant species to limit erosion.*
- 4. Applicant demonstrates the area does not contain significant riparian plant species or functions or is impacted by previous earth disturbing activities and proposed activity improves water quality, limits erosion, and promotes riparian or wetland restoration.*

b. Standards

- 1. No improvement, building, structure, excavation, grading, dumping, clearing of native vegetation, or backfill shall be placed, built, undertaken or approved within fifty feet of the ordinary high-water mark, measured horizontally, of any river or live perennial stream.*
- 2. No chemical treatments, including but not limited to fertilizers, pesticides, and/or herbicides, are permitted with said fifty-foot setback area.*

Differences in the standards recommended by the RC and staff are mostly related to formatting. However, staff does propose additional exception language, as outlined subsections 2 and 4 above, related to public utilities and areas previously disturbed.

Considerations

A major change in the proposed language from that which is codified today is that it limits the activities permitted in the setback area such as the clearing/removal of native vegetation (excluding invasive species) and the use of chemical treatments such as fertilizers. This may be the most difficult aspect of the regulation for in terms of enforcement by the City and would require some public outreach and education to implement. The letter and supporting information from the RC's February 2018 letter outlines the environmental and economic benefits of increase riparian protections. It also includes support for the proposal from the Roaring Fork Conservancy, the Ferdinand Hayden Chapter of Trout Unlimited, and American Rivers. The information provided by the River Commission also points out that the City is falling behind neighboring communities in terms of riparian protections as outlined in the table below.

REGION	SETBACK	DETAILS
City of Aspen	100ft/100 year floodplain	Development is "subject to heightened review." (Ord. 26.435.040)
Town of Basalt	50ft	Prohibits development and cutting of riparian and wetland vegetation. (Ord. 16-464a)
Town of Carbondale	Unspecific	If new development is proposed adjacent to any river, all practical means should be used to preserve natural grade, drainage patterns, soil and vegetation. (Ord. 4-2007)
Eagle County	75ft/100 year floodplain	No development within 75ft of high water mark or 100 year floodplain (whichever is greater).
Garfield County	35ft	Prohibits removal of any existing native vegetation or conducting any activity which will cause any loss of riparian area unless it involves the approved removal of noxious weeds, nonnative species, or dead or diseased trees.
Pitkin County	100ft/100 year floodplain	100 foot buffer for all activity and development. Setback may be reduced to a minimum of 50 feet if reduction does not result in water quality degradation, stream bank erosion and/or a reduction in the quality of riparian or wetland habitat.

During the April 2018 and October 2018 work sessions, there was a general concern expressed that such a riparian setback could impact development on both residential and commercial vacant lots or land where additional development might occur. Other Council and work session attendee considerations/concerns are outlined below.

- Interested in the proposal but unsure the appropriate setback distance.
- May need to raft/float the rivers to better understand the concepts.
- Need to recognize existing encroachments and use of riparian areas.
- Need to evaluate the impact to each lot.
- Avoid eliminating the ability to develop riverfront properties.
- Consider urban nature of the city and potential impacts to property values.
- Other current applicable regulatory standards yard setback, fire clearances, hillside protection, geologic hazards and floodplain regulations.
- Future redevelopment of properties may be difficult.
- Should guarantee amount of development on each property.
- Standards exist in all surrounding communities that exceed the City's.

- Explanation of the importance of riparian ecosystems was provided.
- Outlined the value of healthy rivers to our local economy.

The impact of the proposed regulation on the development and/or redevelopment of City owned properties such as the Confluence Area, the former Raymond Property, or Two Rivers Park is another consideration. Staff has created a few maps (attached), which depict the approximate limits of a 50-foot riparian setback on various properties within the City. The maps are simply an estimate of the area subject to the proposed setback and are not survey accurate.

Other Options

The Commission and City Council can also consider options in lieu of a specific regulation and/or to implement alongside a regulation to encourage/incentivize the conservation of existing riparian areas and/or the restoration of already disturbed riparian zones. A list of potential options is outlined below. Additionally, examples of incentive programs are attached.

- Grant program/annual funding for property owners to offset the purchase cost and/or installation of appropriate riparian plant species and other restoration projects.
- Education courses for homeowners and/or professional landscaping companies regarding the importance of healthy riparian ecosystems.
- Increased development thresholds/density bonuses for projects which conserve/do not disturb riparian areas.
- Example projects on City owned land similar to Veltus Park and former Raymond property.
- Sponsored riparian educational lunch series.

Code Amendment Approval Criteria

Section 070.060.040(c)(3)d.3 of the Code outlines the approval criteria for revision thereto. Each of the criteria are listed in **bold** below along with comments from staff.

i. Is consistent with the Comprehensive Plan and other City policies;

As shown at right in blue hatching, the *Future Land Use* maps of the *Glenwood Springs Comprehensive Plan* (Comp Plan) depict the City's rivers as Riverside Protection. According to the Comp Plan, the Riverside Protection designation states: "*Land and habitat along the Colorado and Roaring Fork rivers should be protected.*" The current proposal is in compliance with the map designation and description.

"Preserve natural resources" is a community goal outlined in the Executive Summary and subsequent chapters of the Comp Plan. Specific objectives and strategies related to the goal are outlined in the table below.



Comprehensive Plan Goal	Objective and Strategy
-Preserve natural resources	-Promote water conservation (Chapter 7, Page 84) - Plan for the city-owned land adjacent to the river trail (Chapter 8, Page 91) -Enhance and promote world-class fishing (Chapter 8, Page 91) -Continue leadership in protecting the natural setting (Chapter 9, Page 98) -Preserve and enhance the river corridor environment (Chapter 9, Page 100) - Support efforts in protect the Roaring Fork River and Colorado River systems (Chapter 9, Page 100) - Minimize human/wildlife conflicts (Chapter 9, Page 102)

ii. Does not conflict with other provisions of this Code or other provisions in the Glenwood Springs Municipal Code;

It does not appear the proposal conflicts with other provisions of the Code.

iii. Is necessary to address a demonstrated community need;

As outlined above, the City lags behind neighboring communities in the protection of water resources. Protection of riparian areas is essential to improved water quality as it limits the amount of nutrients and chemicals entering our rivers and streams via stormwater runoff.

iv. Is necessary to respond to substantial changes in conditions and/or policy; and

Adoption of the proposed standards would help in the City's future compliance with EPA Municipal Separate Storm Sewer System (MS4) permit requirements anticipated if/when our population exceeding 10,000 with the forthcoming 2020 census.

Some form of amendment to the Code regarding riparian standards is necessary to ensure protection thereof, whether a revision or re-adoption of the former "high water mark" definition.

v. Is consistent with the general purpose and intent of this Code.

The proposal appears to be consistent with the general purpose and intent of the Code. More specifically, integrated development, regulating the development of land upon impacts, and guarding against natural hazards are supported aspects.

Reviewing Agency Comments

No comments related to the proposed were received.

Adjacent Property Owner Comments

No comments from adjacent property owners have been received to date.

ACTION ALTERNATIVES AND STAFF RECOMMENDATION:

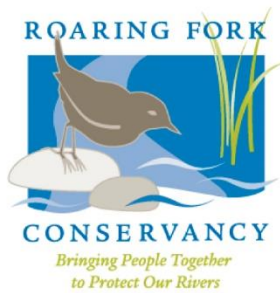
Section 070.060.040(c)(3)d.1 of the Code explains, “*The Planning Commission shall review the Code amendment application and recommend approval, approval with conditions, or denial of the amendment in accordance with 070.060.030(g) and the approval criteria in paragraph 3 below* [addressed by staff above]. The Planning Commission may also continue the hearing.

Action 1 – Code Amendment – to revise the riparian setback standards of Section 070.040.020(d)(24) of the *Glenwood Springs Municipal Code*.

Staff recommendation: Staff recommends **approval** of the Code Amendment with the **findings** below:

Recommended Findings:

1. The proposed amendment is consistent with the Comprehensive Plan and other City policies;
2. The proposed amendment does not conflict with other provisions of this Code or other provisions in the Glenwood Springs Municipal Code;
3. The proposed amendment is necessary to address a demonstrated community need;
4. The proposed amendment is necessary to respond to substantial changes in conditions and/or policy; and
5. The proposed amendment is consistent with the general purpose and intent of this Code.



July 19, 2019

City of Glenwood Springs
101 West 8th Street
Glenwood Springs, CO 81601
Attn: Trent Hyatt, Senior Planner/River Commission Staff Liaison

BOARD OF DIRECTORS

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RE: Recommended city code revision for riparian setbacks

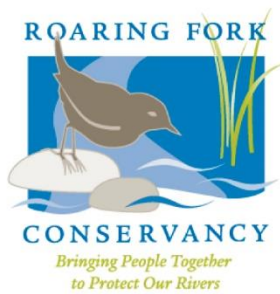
Honorable Mayor, City Council, and Planning and Zoning Commission,

Roaring Fork Conservancy (RFC) wishes to express support for the proposed City of Glenwood Springs riparian setback code revisions. RFC appreciates Glenwood Springs' investment in the continued protection of its water resources and strongly supports the implementation of regulations to preserve this invaluable natural and community asset.

RFC staff currently serves as a technical advisor for the Glenwood Springs River Commission, providing input, resources, and guidance on this and other projects. The collaborative effort between City staff, River Commission, and RFC has resulted in a well vetted code proposal which will conserve and promote the health of the City's riparian ecosystems and water quality into the future.

As a 501(c)(3) not-for-profit organization, RFC emphasizes the use of sound, defensible science to guide decisions regarding the health of local streams and rivers. Current research indicates that healthy wetlands and riparian areas are essential to healthy rivers. The natural functions of healthy riparian areas include:

- Dissipation of stream energy, which mitigates flooding, and reduces erosion and therefore mitigates property damage;
- Water storage during high flows, which return to the stream during late season low flows;
- Multi-storied habitat for wildlife and aquatic life;
- Integral wildlife migration routes;
- Rich and diverse food sources for wildlife and aquatic life;
- Increased shading which serves to lower river temperatures and slow evaporation;
- Buffer zones between the river and uplands, which mitigate sedimentation and erosion; and
- Natural bio-filters, which protect water quality by filtering pollutants.



Riparian buffers provide essential wildlife habitat protection. The Colorado Department of Parks and Wildlife recommends a 300ft setback from rivers and waterways.¹ Additionally, studies show that as riparian buffer size increases, protections from potential physical and chemical damages including sedimentation, erosion, and runoff contaminants increase as well. “It appears that a 100ft buffer is sufficiently wide to trap sediments under most circumstances... An absolute minimum width would be 30ft. To reduce nitrate concentrations, buffers of 50ft are usually sufficient.”² Importantly, when considering code changes such as the ones proposed here, water resource protection is far more cost effective and efficient than subsequent restoration often required when unanticipated events strike areas left vulnerable.

RFC worked diligently with the River Commission and City Staff to develop setbacks appropriate for the City, applying the best available science to the specific attributes of local waterways and unique community character. Based on these careful considerations, RFC recommends adoption of a 50ft riparian setback, as supported by the River Commission to ensure conservation of valuable waterways and irreplaceable wildlife for the present and future benefit of the City, its residents, and visitors. Similarly, in 2013, RFC served as a technical advisor to the Garfield County Board of County Commissioners and recommended adoption of 50ft riparian setback protections county-wide.

For your reference, Table 1 contains riparian protections retained in other Roaring Fork Watershed city and county land use codes. These adaptations are not intended to dictate the policy of the City, however awareness and consistency of policies adapted by others with similar resources could prove useful in the decision making process. Please note that all the setbacks in the table below include protections for riparian vegetation and the ability to make allowances for unique circumstances.

¹ Colorado Division of Wildlife, 2010. Actions to Minimize Adverse Impacts to Wildlife Resources, p.3

² Wegner, S., 1999. A review of the scientific literature of riparian buffer width, extent and vegetation, <http://researchweb8.wpengine.com/rivercenter/wp-content/uploads/sites/17/2015/03/A-Review-of-the-Literature-on-Riparian-Buffer-Width-Extent-and-Vegetation.pdf>

Table 1

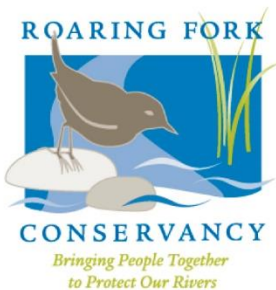
REGION	SETBACK	DETAILS
City of Aspen	100ft/100 year floodplain	Development is "subject to heightened review." (Ord. 26.435.040)
Town of Basalt	50ft	Prohibits development and cutting of riparian and wetland vegetation. (Ord. 16-464a)
Town of Carbondale	Unspecific	If new development is proposed adjacent to any river, all practical means should be used to preserve natural grade, drainage patterns, soil and vegetation. (Ord. 4-2007)
Eagle County	75ft/100 year floodplain	No development within 75ft of high water mark or 100 year floodplain (whichever is greater). ¹
Garfield County	35ft	Prohibits removal of any existing native vegetation or conducting any activity which will cause any loss of riparian area unless it involves the approved removal of noxious weeds, nonnative species, or dead or diseased trees.
Pitkin County	100ft/100 year floodplain	100 foot buffer for all activity and development. Setback may be reduced to a minimum of 50 feet if reduction does not result in water quality degradation, stream bank erosion and/or a reduction in the quality of riparian or wetland habitat.

Implementation of riparian protections also hold significant economic value. Healthy riparian areas:

- Reduce the cost of drinking water treatment by filtering sediment and other pollutants. The City of Glenwood Springs currently has a secondary drinking water intake on the Roaring Fork River near Veltus Park.
- Prevent property damage by protecting against erosion and flooding. Erosive effects are nearly 5 times more likely on non-vegetated stream banks, and up to 30 times more likely on non-vegetated stream bends.³
- Increase property values by improving aesthetics. "Several studies have shown that people will pay a premium to live or work near greenways or other protected areas, and this allows the developer to recoup at least some of the costs of not developing up to the stream bank."⁴
- Support the local fishing economy by maintaining high water quality for the Roaring Fork River's Gold Medal fishery.
- Support local river recreation (i.e. rafting, kayaking, stand-up paddle boarding) economy by providing scenic areas and wildlife viewing opportunities along rivers.

³ Chagrin Watershed Partners, Inc. 2006, Riparian Setbacks: Technical Information for Decision Makers. www.crwp.org/files/riparian_setback_paper_jan_2006.pdf

⁴ Chagrin Watershed Partners, Inc. 2006, Riparian Setbacks: Technical Information for Decision Makers. www.crwp.org/files/riparian_setback_paper_jan_2006.pdf



- Enhance aesthetics in a tourist economy that is defined by its relationship to water. The Glenwood Springs Chamber of Commerce currently markets Glenwood Springs as “The Land of Water,” a tourist destination based primarily on its water resources.

The adoption of the proposed code will help ensure the prosperity of human and natural communities in Glenwood Springs. Current research indicates “that the influence of riparian corridors on water quality is proportionately much greater than the relatively small area in the landscape they occupy.”⁵ Roaring Fork Conservancy strongly urges the Glenwood Springs Planning and Zoning Commission and City Council adopt the proposed riparian setback code revisions.

Thank you for your time and consideration.

Sincerely

Rick Lofaro
Executive Director

Chad Rudow
Water Quality Coordinator

Roaring Fork Conservancy has inspired people to explore, value, and protect the Roaring Fork Watershed since 1996. We bring people together to protect our rivers and work to keep water in the streams, monitor water quality, and preserve riparian habitat. As one of the largest watershed organizations in Colorado, Roaring Fork Conservancy serves residents and visitors throughout the Roaring Fork Valley through school and community-based Watershed Education programs and Watershed Action projects, including regional watershed planning, water resource

⁵ Chagrin Watershed Partners, Inc. 2006, Riparian Setbacks: Technical Information for Decision Makers. www.crwp.org/files/riparian_setback_paper_jan_2006.pdf



City Council
STAFF REPORT
City of Glenwood Springs
October 4, 2018
(date)

Agenda Item:	Work Session with the River Commission and Planning and Zoning Commission Regarding Riparian Setbacks
Action Requested:	No action is being requested at this time.
Presented By:	Trent L. Hyatt, Senior Planner/River Commission Staff Liaison, Community Development Department
Background Info:	On February 7th, 2018, the River Commission voted unanimously to recommend to City Council (as outlined in the attached letter) the adoption of a 50-foot riparian setback alongside the re-drafting of the land development code which was ongoing at that time. During a City Council work session regarding progress on the re-draft with the Planning and Zoning Commission on April 26, many in attendance expressed concerns that an increased riparian setback may potentially negatively impact development and/or the redevelopment of various properties. City Council ultimately decided to not include the recommended 50-foot riparian setback in the code re-draft and to instead discuss the matter further in conjunction with the River Commission. A date for the work session was set for October. Concerns raised by those in attendance on April 26 are addressed below. Per Section 070.040.020(d)(24) of the Municipal Code (Code), Development in Waterways and Areas of Special Flood Hazard, the City requires a 30-foot riparian setback: “No improvement, building, structure, excavation, dumping or backfill shall be placed, built, undertaken or approved within a 30-foot setback area horizontally from the high water mark of any river or live stream, except for bridges, paths for non-motorized use, irrigation structures or flood control and erosion protection devices.” The River Commission is requesting to replace the current riparian setback standard with the language (outlined below), which increases the setback by 20 feet for a total of 50 feet. Conservation of Waterways a. Purpose

The purpose of this Subsection 070.040.020(d)(24) is to conserve and promote the health of the City's riparian ecosystems and water quality by maintaining a functional natural buffer adjacent to waterways.

i. No improvement, building, structure, excavation, dumping, clearing of native vegetation, or backfill shall be placed, built, undertaken or approved within a fifty foot setback area horizontally from the ordinary high water mark of any river or live perennial stream.

ii. Within the fifty foot setback, no live vegetation may be removed except for species listed on the Garfield County noxious weed list, Chinese Elm, or Siberian Elm when replaced with appropriate plant species. The Director has discretion to permit the removal of native vegetation, not to exceed 10 percent of the area of the setback, to allow a property owner private access to and personal enjoyment of the waterway. This shall not be interpreted to allow for permanent structures of any kind within the setback area. The Director may also reduce the setback for bridges, public paths for non-motorized use, public open space areas, wildfire mitigation activities, irrigation structures, flood control and erosion protection devices, or upon demonstration by the applicant that such reduction shall not result in water quality degradation, stream bank erosion, or a reduction in the function and quality of a riparian area or wetland.

iii. No chemical treatments, including but not limited to fertilizers, pesticides, and/or herbicides, are permitted within the fifty foot setback area except for the removal of above listed noxious weeds in compliance with applicable regulations.

The proposed language explains the intent of the regulation which also limits the activities permitted in the setback such as the clearing/removal of native vegetation (excluding invasive species) and the use of chemical treatments such as fertilizers. This may be the most difficult aspect of the regulation for in terms of enforcement by the City and would require some public outreach and education to implement.

The letter and supporting information from the River Commission's February 2018 letter outlines the environmental and economic benefits of increase riparian protections. It also includes support for the proposal from the Roaring Fork Conservancy, the Ferdinand Hayden Chapter of Trout Unlimited, and American Rivers. The information provided by the River Commission also points out that the City is falling behind neighboring communities in terms of riparian protections as outlined in the table below.

During the discussion in April, there was a general concern expressed that such a riparian setback could impact development on both residential and commercial vacant land or land where additional development might occur.

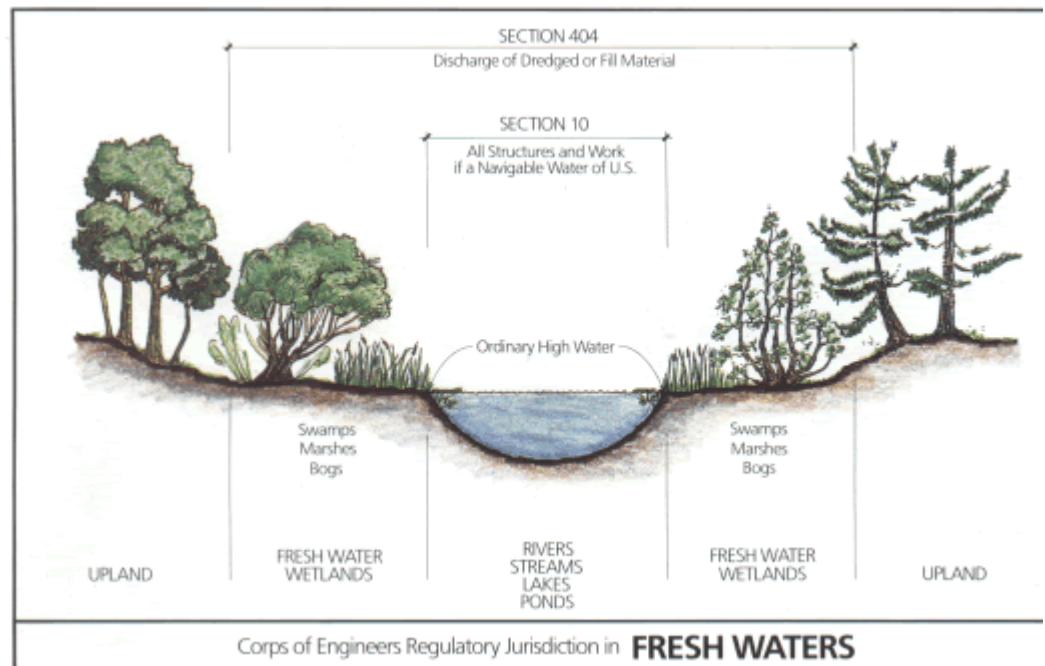
For example, one question/concern raised at the work session was whether or not the improvements at Iron Mountain Hot Springs completed in 2015 would have been possible under such a regulation as proposed. Related to this, the City has received a request for an encroachment into the existing 30-foot riparian setback for the addition of new soaking pools and as other shoreline

improvements more recently proposed by the property owner. This is for informational purposes only and should not be discussed in detail at the work session since it is an active planning application.

Another area of concern that was brought up during the discussion was related to river frontage lots along Midland Avenue, which is classified as an arterial roadway. Under the new development code, a 30-foot front yard setback is required for the majority of lots between 13th Street and the 27th Street bridge. This, combined with the required 30-foot riparian setback as well as other development constraints such as hillside/steep slope, geologic hazards and floodplain regulations may impact the development or redevelopment of roughly 26 riverfront properties. A significant investment was made by the owners in the purchase of these properties with likely intentions of building close to and enjoying the river.

The impact of the proposed regulation on the development and/or redevelopment of City owned properties such as the Confluence Area, the former Raymond Property, or Two Rivers Park is another consideration. Staff has created a few maps (attached), which depict the approximate limits of a 50-foot riparian setback on various properties within the City. The maps are simply an estimate of the area subject to the proposed setback and are not survey accurate.

Another important aspect of the proposed regulation is the feature by which to measure the setback, the “ordinary high water mark” (OHWM) as opposed to the “high water mark” as outlined in the current Code. A simple definition of the OHWM is the mark typically reached on an annual basis with a channel. As an a comparison, the highest mean daily discharge rate for the Roaring Fork River since 1906 is 19,800 cubic feet per second (cfs) which is significantly higher than the average ordinary high water discharge of 4,100 cfs per USGS since 1971. How exactly would the City define the OHWM? Generally, the OHWM is the lowland area of any stream or river that is regulated by the US Army Corp of Engineers, in addition to wetland areas. The diagram below provides a visual representation of the OHWM. Many differing definitions of the OHWM exist based on ecological zone, stream type, flow rates/intervals, etc.



Additionally, the City would need to address how the setback impacts smaller stream segments in the City such as Three Mile Creek or Mitchell Creek. Most of these tributaries are already developed and perhaps a reduced setback should be considered for these streams.

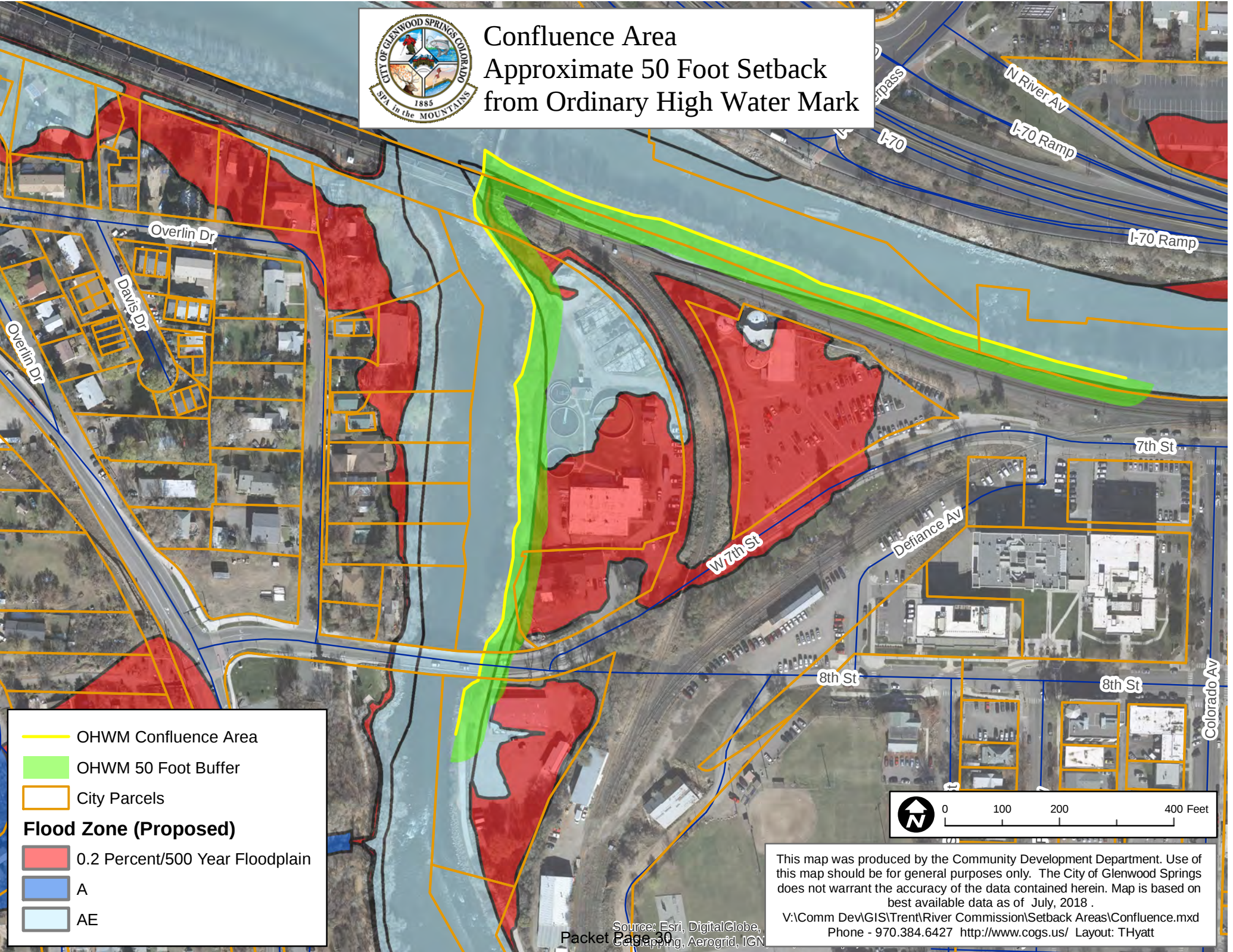
In an effort to allow for the enjoyment of a riverfront property by its owners, an exception for the disturbance of up to 10 percent of the setback area is identified. Additionally, bridges, public paths for non-motorized use, public open space areas, wildfire mitigation activities, irrigation structures, flood control and erosion protection devices are necessary and/or required to occur within riparian areas and are identified as exceptions.

The letter and supporting information from the River Commission's February 2018 letter outlines the environmental and economic benefits of increase riparian protections. It also includes support for the proposal from the Roaring Fork Conservancy, the Ferdinand Hayden Chapter of Trout Unlimited, and American Rivers. The information provided by the River Commission also stresses that the City is falling behind neighboring communities in terms of riparian protections as outlined in the table below.

	REGION SETBACK DETAILS		
	City of Aspen	100ft/100 year floodplain	Development is "subject to heightened review." (Ord. 26,435,040)
	Town of Basalt	50ft	Prohibits development and cutting of riparian and wetland vegetation. (Ord. 16-464a)
	Town of Carbondale	Unspecific	If new development is proposed adjacent to any river, all practical means should be used to preserve natural grade, drainage patterns, soil and vegetation. (Ord. 4-2007)
	Eagle County	75ft/100 year floodplain	No development within 75ft of high water mark or 100 year floodplain (whichever is greater).
	Garfield County	35ft	Prohibits removal of any existing native vegetation or conducting any activity which will cause any loss of riparian area unless it involves the approved removal of noxious weeds, nonnative species, or dead or diseased trees.
	Pitkin County	100ft/100 year floodplain	100 foot buffer for all activity and development. Setback may be reduced to a minimum of 50 feet if reduction does not result in water quality degradation, stream bank erosion and/or a reduction in the quality of riparian or wetland habitat.
Action Alternatives:	No action being requested at this time. City Council can provide direction to or request additional information from staff if determined necessary.		
Staff Recommendation:	No recommendation from staff is necessary at this time.		



Confluence Area Approximate 50 Foot Setback from Ordinary High Water Mark



— OHWM Confluence Area

— OHWM 50 Foot Buffer

— City Parcels

Flood Zone (Proposed)

0.2 Percent/500 Year Floodplain

A

AE



0 100 200 400 Feet

This map was produced by the Community Development Department. Use of this map should be for general purposes only. The City of Glenwood Springs does not warrant the accuracy of the data contained herein. Map is based on best available data as of July, 2018.

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Phone - 970.384.6427 <http://www.cogs.us/> Layout: THyatt



Shaver Property Approximate 50 Foot Setback from Ordinary High Water Mark

Midland Av

- Parcel Boundary
- OHWM Shaver Property
- OHWM Shaver Property Buffer

Flood Zone (Proposed)

- 0.2 Percent/500 Year Floodplain
- A
- AE



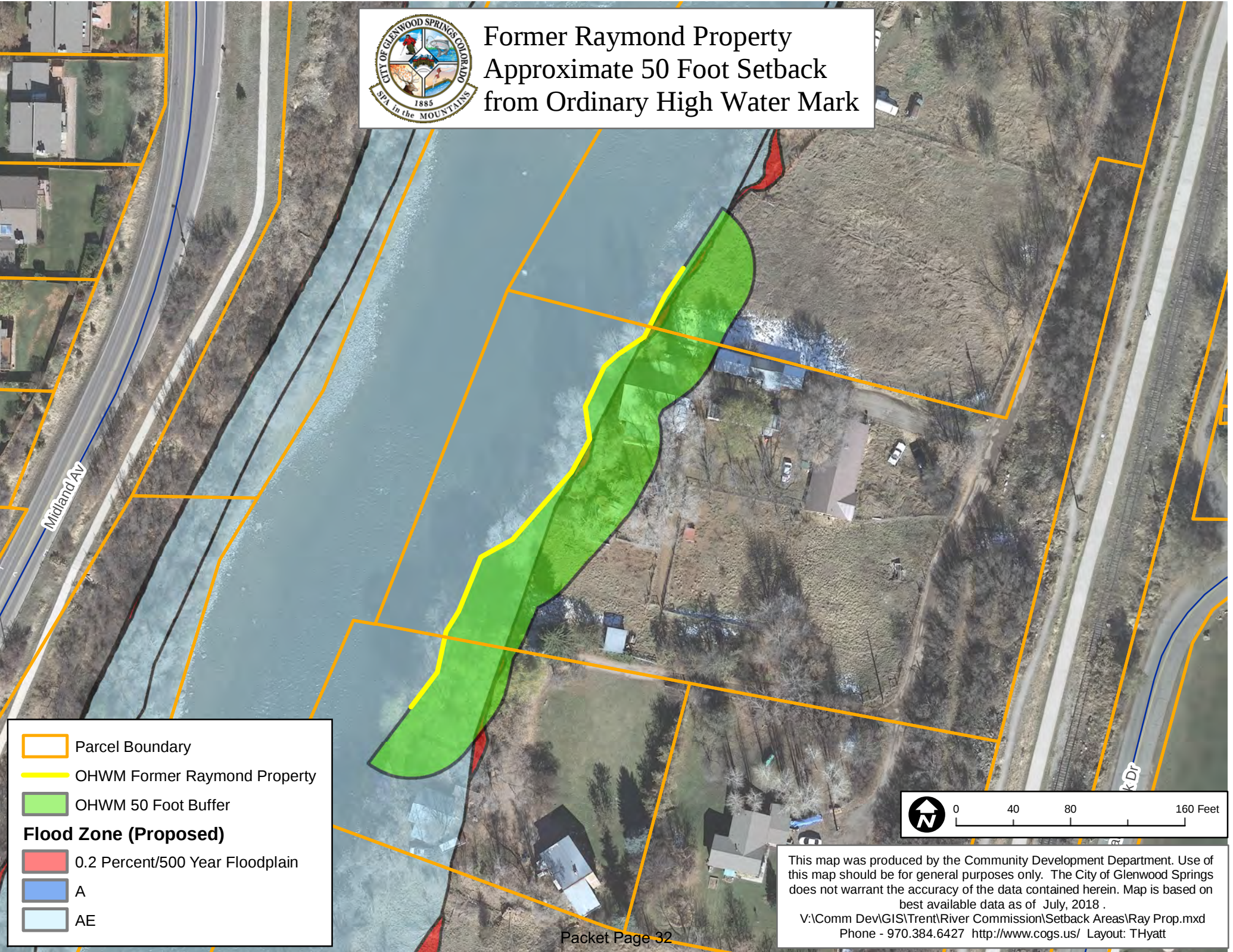
0 25 50 100 Feet

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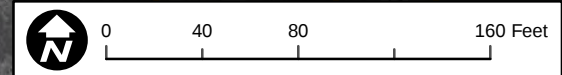
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Phone - 970.384.6427 <http://www.cogs.us/> Layout: THyatt



Former Raymond Property Approximate 50 Foot Setback from Ordinary High Water Mark



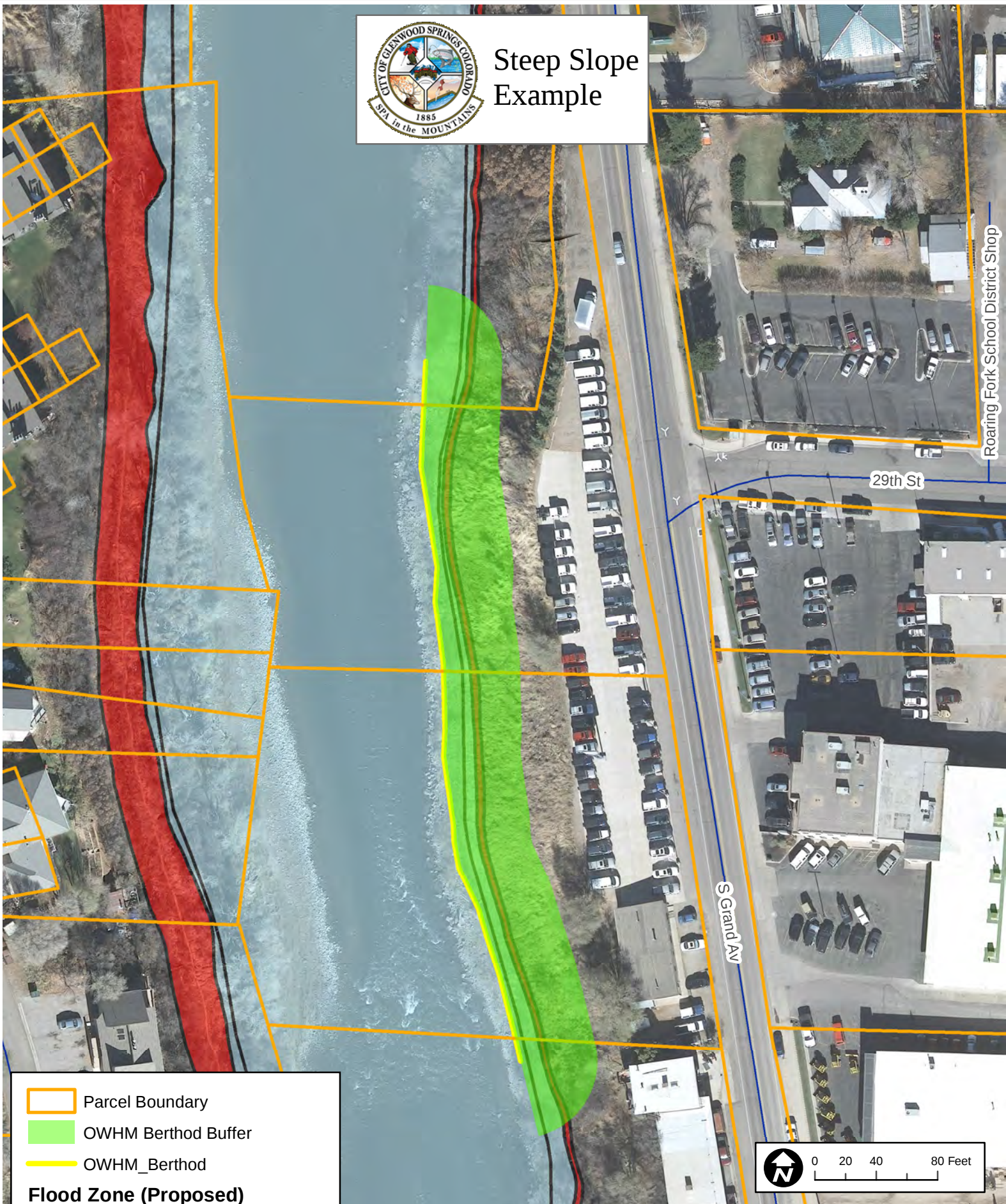
- Parcel Boundary
 - OHWM Former Raymond Property
 - OHWM 50 Foot Buffer
- Flood Zone (Proposed)**
- 0.2 Percent/500 Year Floodplain
 - A
 - AE



This map was produced by the Community Development Department. Use of this map should be for general purposes only. The City of Glenwood Springs does not warrant the accuracy of the data contained herein. Map is based on best available data as of July, 2018 .
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Phone - 970.384.6427 <http://www.cogs.us/> Layout: THyatt



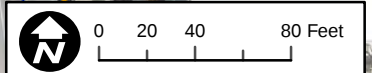
Steep Slope Example



- Parcel Boundary
- OWHM Berthod Buffer
- OWHM_Berthod

Flood Zone (Proposed)

- 0.2 Percent/500 Year Floodplain
- A
- AE



This map was produced by the Community Development Department. Use of this map should be for general purposes only. The City of Glenwood Springs does not warrant the accuracy of the data contained herein. Map is based on best available data as of September, 2018.

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February 28, 2018

Mayor Gamba and City Council
101 West 8th Street
Glenwood Springs, CO 81601
Attn: Trent L. Hyatt, Senior Planner/River Commission Staff Liaison



RE: Recommended city code revision for riparian setbacks

Honorable Mayor and City Council,

At our February 7th, 2018 meeting, the River Commission **voted unanimously** to recommend City Council adopt a 50 foot riparian setback for incorporation into the re-draft of the land development code. The recommended language is attached for your review.

As you know, the streams that flow through our beautiful City significantly benefit our regional economy by supporting countless jobs and these areas provide immeasurable positive social impacts for our citizens and visitors alike. Each year, the River Commission, Roaring Fork Conservancy, and rafting/fishing guides have observed new and continuous disturbances within the riparian zones adjacent to both the Roaring Fork and Colorado Rivers within the City (pictures attached). While the City has a 30 foot setback from ordinary high water mark requirement for structures and fill, this regulation does not limit the removal of riparian plant species which are vital to the ecosystem.

The River Commission has been discussing this topic for a couple years now and provide this recommendation after thorough review of industry best practices as well as regulations from numerous other neighboring municipalities and counties. We feel the recommended setback strikes a balance between the space/ area required for riparian zones to function efficiently while still providing private owners a means to enjoy their investment in riverfront property.

We respectfully request that you incorporate the new setback into the re-draft of the development code currently under consideration. Also, attached is a letter in support of the setback from Roaring Fork Conservancy. Please let us know if you would like additional information or a work session to discuss the matter further.

Regards,

Brendon Langenhuizen, Chairman
Glenwood Springs River Commission



February 7, 2018

River Commission

Recommendation for Adoption by City Council

070.040.020(d)(25) Conservation of Waterways

a. Purpose

The purpose of this Subsection 070.040.020(d)(25) is to conserve and promote the health of the City's riparian ecosystems and water quality by maintaining a functional natural buffer adjacent to waterways.

i. No improvement, building, structure, excavation, dumping, clearing of native vegetation, or backfill shall be placed, built, undertaken or approved within a fifty foot setback area horizontally from the ordinary high water mark of any river or live perennial stream.

ii. Within the fifty foot setback, no live vegetation may be removed except for species listed on the Garfield County noxious weed list, Chinese Elm, or Siberian Elm when replaced with appropriate plant species. The Director has discretion to permit the removal of native vegetation, not to exceed 10 percent of the area of the setback, to allow a property owner private access to and personal enjoyment of the waterway. This shall not be interpreted to allow for permanent structures of any kind within the setback area. The Director may also reduce the setback for bridges, public paths for non-motorized use, public open space areas, wildfire mitigation activities, irrigation structures, flood control and erosion protection devices, or upon demonstration by the applicant that such reduction shall not result in water quality degradation, stream bank erosion, or a reduction in the function and quality of a riparian area or wetland.

iii. No chemical treatments, including but not limited to fertilizers, pesticides, and/or herbicides, are permitted within the fifty foot setback area except for the removal of above listed noxious weeds in compliance with applicable regulations.



February 7, 2018

River Commission

Recommendation for Adoption by City Council

070.040.020(d)(25) Conservation of Waterways

a. Purpose

The purpose of this Subsection 070.040.020(d)(25) is to conserve and promote the health of the City's riparian ecosystems and water quality by maintaining a functional natural buffer adjacent to waterways.

i. No improvement, building, structure, excavation, dumping, clearing of native vegetation, or backfill shall be placed, built, undertaken or approved within a fifty foot setback area horizontally from the ordinary high water mark of any river or live perennial stream.

ii. Within the fifty foot setback, no live vegetation may be removed except for species listed on the Garfield County noxious weed list, Chinese Elm, or Siberian Elm when replaced with appropriate plant species. The Director has discretion to permit the removal of native vegetation, not to exceed 10 percent of the area of the setback, to allow a property owner private access to and personal enjoyment of the waterway. This shall not be interpreted to allow for permanent structures of any kind within the setback area. The Director may also reduce the setback for bridges, public paths for non-motorized use, public open space areas, wildfire mitigation activities, irrigation structures, flood control and erosion protection devices, or upon demonstration by the applicant that such reduction shall not result in water quality degradation, stream bank erosion, or a reduction in the function and quality of a riparian area or wetland.

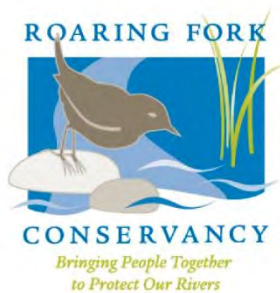
iii. No chemical treatments, including but not limited to fertilizers, pesticides, and/or herbicides, are permitted within the fifty foot setback area except for the removal of above listed noxious weeds in compliance with applicable regulations.

Existing Regulation for Reference

070.030.030 - Suitability of Land for Development.

Land subject to natural hazards such as flooding, falling rock, landslides, mud flows or snowslides shall not be developed or approved for development until plans are submitted to the Director and approved by the City Engineer and the Planning Commission in order to prevent such conditions from endangering life, health or other property.

- (1) Development in waterways and areas of special flood hazard.
 - a. No improvement, building, structure, excavation, dumping or backfill shall be placed, built, undertaken or approved within a thirty-foot setback area horizontally from the high water mark of any river or live stream except for bridges, paths for non-motorized use, irrigation structures or flood control and erosion protection devices.



February 26, 2018

Glenwood Springs City Council
101 West 8th Street
Glenwood Springs, CO 81601
Attn: Trent Hyatt, Senior Planner/River Commission Staff Liaison

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RE: Recommended city code revision for riparian setbacks

Honorable Mayor and City Council,

Roaring Fork Conservancy (RFC) wishes to express support for the City of Glenwood Springs riparian setback code revisions proposed by the Glenwood Springs River Commission. RFC appreciates Glenwood Springs' investment in the continued protection of its water resources and strongly supports the implementation of regulations to preserve this invaluable natural and community asset.

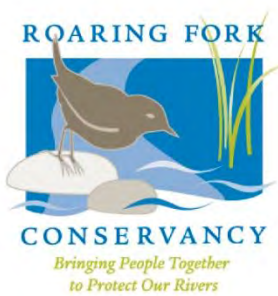
RFC staff currently serves as a technical advisor for the River Commission, providing input, resources, and guidance on this and other projects. The collaborative effort between City staff, River Commission, and RFC has resulted in a well vetted code proposal which will conserve and promote the health of the City's riparian ecosystems and water quality into the future.

PROGRAM STAFF

Rick Lofaro
Executive Director
Heather Lewin
Watershed Action Director
Christina Medved
Watershed Education Director
Liza Mitchell
Education & Outreach Coordinator
Kristen Doyle
Watershed Educator & Office Coordinator
Chad Rudow
Water Quality Coordinator
Sheryl Sabandal
Development Manager
Johnny Cronin
Director of Donor Relations

As a 501(c)(3) not-for-profit organization, RFC emphasizes the use of sound, defensible science to guide decisions regarding the health of local streams and rivers. Current research indicates that healthy wetlands and riparian areas are essential to healthy rivers. The natural functions of healthy riparian areas include:

- Dissipation of stream energy, which mitigates flooding, and reduces erosion and therefore mitigates property damage;
- Water storage during high flows, which return to the stream during late season low flows;
- Multi-storied habitat for wildlife and aquatic life;
- Integral wildlife migration routes;
- Rich and diverse food sources for wildlife and aquatic life;
- Increased shading which serves to lower river temperatures and slow evaporation;
- Buffer zones between the river and uplands, which mitigate sedimentation and erosion; and
- Natural bio-filters, which protect water quality by filtering pollutants.



Riparian buffers provide essential wildlife habitat protection. The Colorado Department of Parks and Wildlife recommends a 300ft setback from rivers and waterways.¹ Additionally, studies show that as riparian buffer size increases, protections from potential physical and chemical damages including sedimentation, erosion, and runoff contaminants increase as well. “It appears that a 100ft buffer is sufficiently wide to trap sediments under most circumstances... An absolute minimum width would be 30ft. To reduce nitrate concentrations, buffers of 50ft are usually sufficient.”² Importantly, when considering code changes such as the ones proposed here, water resource protection is far more cost effective and efficient than subsequent restoration often required when unanticipated events strike areas left vulnerable.

RFC worked diligently with the River Commission to develop setbacks appropriate for the City, applying the best available science to the specific attributes of local waterways and unique community character. Based on these careful considerations, RFC recommends adoption of a 50ft riparian setback, as supported by the River Commission to ensure conservation of valuable waterways and irreplaceable wildlife for the present and future benefit of the City, its residents, and visitors. Similarly, in 2013, RFC served as a technical advisor to the Garfield County Board of County Commissioners and recommended adoption of 50ft riparian setback protections county-wide.

For your reference, Table 1 contains riparian protections retained in other Roaring Fork Watershed city and county land use codes. These adaptations are not intended to dictate the policy of the City, however awareness and consistency of policies adapted by others with similar resources could prove useful in the decision making process. Please note that all the setbacks in the table below include protections for riparian vegetation and the ability to make allowances for unique circumstances.

¹ Colorado Division of Wildlife, 2010. Actions to Minimize Adverse Impacts to Wildlife Resources, p.3

² Wegner, S., 1999. A review of the scientific literature of riparian buffer width, extent and vegetation, <http://researchweb8.wpengine.com/rivercenter/wp-content/uploads/sites/17/2015/03/A-Review-of-the-Literature-on-Riparian-Buffer-Width-Extent-and-Vegetation.pdf>

Table 1

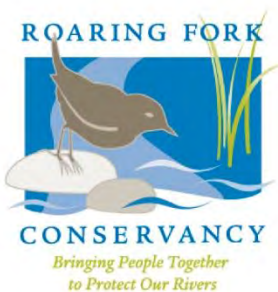
REGION	SETBACK	DETAILS
City of Aspen	100ft/100 year floodplain	Development is "subject to heightened review." (Ord. 26.435.040)
Town of Basalt	50ft	Prohibits development and cutting of riparian and wetland vegetation. (Ord. 16-464a)
Town of Carbondale	Unspecific	If new development is proposed adjacent to any river, all practical means should be used to preserve natural grade, drainage patterns, soil and vegetation. (Ord. 4-2007)
Eagle County	75ft/100 year floodplain	No development within 75ft of high water mark or 100 year floodplain (whichever is greater). ¹
Garfield County	35ft	Prohibits removal of any existing native vegetation or conducting any activity which will cause any loss of riparian area unless it involves the approved removal of noxious weeds, nonnative species, or dead or diseased trees.
Pitkin County	100ft/100 year floodplain	100 foot buffer for all activity and development. Setback may be reduced to a minimum of 50 feet if reduction does not result in water quality degradation, stream bank erosion and/or a reduction in the quality of riparian or wetland habitat.

Implementation of riparian protections also hold significant economic value. Healthy riparian areas:

- Reduce the cost of drinking water treatment by filtering sediment and other pollutants. The City of Glenwood Springs currently has a secondary drinking water intake on the Roaring Fork River near Veltus Park.
- Prevent property damage by protecting against erosion and flooding. Erosive effects are nearly 5 times more likely on non-vegetated stream banks, and up to 30 times more likely on non-vegetated stream bends.³
- Increase property values by improving aesthetics. "Several studies have shown that people will pay a premium to live or work near greenways or other protected areas, and this allows the developer to recoup at least some of the costs of not developing up to the stream bank."⁴
- Support the local fishing economy by maintaining high water quality for the Roaring Fork River's Gold Medal fishery.
- Support local river recreation (i.e. rafting, kayaking, stand-up paddle boarding) economy by providing scenic areas and wildlife viewing opportunities along rivers.

³ Chagrin Watershed Partners, Inc. 2006, Riparian Setbacks: Technical Information for Decision Makers. www.crwp.org/files/riparian_setback_paper_jan_2006.pdf

⁴ Chagrin Watershed Partners, Inc. 2006, Riparian Setbacks: Technical Information for Decision Makers. www.crwp.org/files/riparian_setback_paper_jan_2006.pdf



- Enhance aesthetics in a tourist economy that is defined by its relationship to water. The Glenwood Springs Chamber of Commerce currently markets Glenwood Springs as “The Land of Water,” a tourist destination based primarily on its water resources.

The adoption of the proposed code will help ensure the prosperity of human and natural communities in Glenwood Springs. Current research indicates “that the influence of riparian corridors on water quality is proportionately much greater than the relatively small area in the landscape they occupy.”⁵ Roaring Fork Conservancy strongly urges the Glenwood Springs City Council adopt the Glenwood River Commission’s proposed riparian setback code revisions.

Thank you for your time and consideration.

Sincerely

Rick Lofaro
Executive Director

Chad Rudow
Water Quality Coordinator

Roaring Fork Conservancy has inspired people to explore, value, and protect the Roaring Fork Watershed since 1996. We bring people together to protect our rivers and work to keep water in the streams, monitor water quality, and preserve riparian habitat. As one of the largest watershed organizations in Colorado, Roaring Fork Conservancy serves residents and visitors throughout the Roaring Fork Valley through school and community-based Watershed Education programs and Watershed Action projects, including regional watershed planning, water resource

⁵ Chagrin Watershed Partners, Inc. 2006, Riparian Setbacks: Technical Information for Decision Makers. www.crwp.org/files/riparian_setback_paper_jan_2006.pdf

February 27, 2018

The City of Glenwood Springs City Council
101 W 8th Street
Glenwood Springs, CO 81601

Dear Council Members,

RE: Development Code Revisions to 070.040.020(d)(25) Conservation of Waterways.

The Ferdinand Hayden Chapter of Trout Unlimited is the local TU Chapter representing members from Aspen to Rifle. FHTU is one of the oldest TU Chapters, being the 8th chapter created nationwide in the 1960's.

We are writing to strongly support the proposed revisions to the City Code regarding stream setbacks and protection of the adjacent riparian areas. The riparian zone adjacent to any stream or river is an integral and vitally important part of the larger stream ecosystem. Ninety percent of the base food material for all of the aquatic life comes from the vegetation growing in the riparian zone. The existing riparian area along the Roaring Fork from Carbondale to Glenwood Springs is in sorry shape, due largely to overzealous development and removal of vegetation by landowners.

Both Glenwood Springs and the larger Roaring Fork Valley depend a great deal on the value and economic benefits that a healthy river ecosystem provide. This is a world class fishery, consistently named by magazines such as Outside and Sunset as one of the best places to be if you like to fish.

We think that this Code revision is a prudent and responsible step for the City to take in order to insure the continued health and vigor of the Roaring Fork River ecosystem through town. We strongly urge you to support and approve this code revision as well.

Sincerely,

Jason Groves

Jason Groves, President
Ferdinand Hayden Chapter (008) of Trout Unlimited



February 27, 2018

City of Glenwood Springs City Council
101 W 8th Street
Glenwood Springs, CO 81601

Dear Council;

American Rivers is a national river conservation organization with offices across the country, including Glenwood Springs, Colorado. Our mission is to promote and work for a nation of clean, healthy rivers that sustain and connect us. American Rivers protects wild rivers, restores damaged rivers, and conserves clean water for people and nature.

We ask that you support and approve the proposed revisions to the City Development Code, **070.040.020(d)(25) Conservation of Waterways**. These revisions will greatly expand needed protections for the riparian zone along the Roaring Fork River and other streams in Glenwood Springs. These riparian areas are not just a strip of vegetation along the river bank, they are an integral part of the larger river ecosystem itself. Riparian areas and the vegetation they contain are absolutely critical to the overall health of ecosystem. They provide the organic food foundation for insects, which in turn support the world class fishery that draws both residents and tourists to Glenwood Springs. These same aquatic insects are also the major food source for many of the migratory and permanent bird species that we enjoy.

This code revision just makes good sense and is long overdue. Landowners adjacent to the river also need to learn more about the vital role of the riparian vegetation on their property for the health of the river that they enjoy.

Please do not hesitate to contact me if I can answer any questions or concerns you may have.

Thank you!

Ken Neubecker, Director
American Rivers Upper Colorado Basin Program within Colorado
24 S Meadow View Ct.
Glenwood Springs, CO 81601
(970) 230-9300
Kneubecker@americanrivers.org

Glenwood Springs Riparian Assessment

Prepared by:

Chad Rudow, Roaring Fork Conservancy (biologist)

Andrea Holland, Glenwood Springs River Commission (retired hydrologist)

Submitted: 2/26/2018

Introduction

The City of Glenwood Springs (GWS) is essentially defined by the confluence of the Roaring Fork and Colorado Rivers. These two waterways provide significant recreation, aesthetic and economic benefits to the community. In addition the lower Roaring Fork is a sourcewater area, providing a backup drinking water supply for GWS. The riparian zone along these rivers is a key component that helps sustain water quality and quantity, as well as fish and wildlife habitat. As the city grows and development continues along these rivers, the potential for increasing impacts to both river and riparian health can be expected. The primary objective of this project is to assess the current condition of the riparian zone and consider ways to maintain or improve these critical components to watershed and river health.

Background

In 2007, the Stream Health Initiative (SHI) conducted by Emerick and Malone, surveyed the riparian and instream habitat of the lower Roaring Fork River. It noted historic impacts from agriculture and more recent residential and commercial impacts and having significantly modified riparian areas throughout the segment when compared to pre-development conditions. Such impacts include “reduced riparian zone width, vegetation quality, and ecosystem function on the majority of reaches”¹. However, it also notes that “a few remnant predevelopment plant communities persist wherever human disturbances are minimized” and these communities are “characterized by a wide riparian zone, a diversity of native riparian plant species, structurally complex habitat, and a more even-age class distribution of trees and shrubs”¹. More information from the SHI can be found in the State of the Roaring Fork Watershed Report 2008 found online at www.roaringfork.org/publications.

Methods

This report documents an informal assessment, conducted October 6, 2017, of riparian conditions along the Roaring Fork and Colorado Rivers within GWS city limits. The river-view assessment relied on qualitative observations and photo-documentation of the integrity of riparian condition and function. See photo location map on page six. Tributaries in GWS such as Threemile Creek, Oasis Creek, and Mitchell Creek also contain riparian areas but were not included in this assessment.

This assessment documented the existing riparian condition including presence and density of riparian vegetation, evidence of erosion, occurrence of development or structures within

¹ Emerick J.C. and Malone, D.G. 2007a. Catalog of stream and riparian habitat quality for the Roaring Fork River and tributaries, Central Colorado. Roaring Fork Stream Health Initiative.

the riparian zone, and human alteration to natural areas. Observations considered the natural functions of a healthy riparian area which provide:

- flood mitigation by dissipating stream energy and reducing erosion and property damage.
- water storage during high flow and releases during low flows.
- multi-storied habitat for wildlife and aquatic life.
- wildlife migration route between habitats.
- rich and diverse food source for wildlife and aquatic life.
- shading that lowers river temperatures and slows evaporation.
- buffers which mitigate sedimentation and prevent erosion.
- natural bio-filters which filter pollutants and protect water quality.

Observations

Roaring Fork River

Within city limits, the banks of the Roaring Fork River are generally high and steep. Nonetheless, areas with minimal development impact indicate the potential for narrow, healthy riparian areas. Occasional lower “benches” of level land exist along this reach, providing the primary opportunity for riparian habitat and related functions.

General observations:

- The west bank through GWS is primarily residential lots while the east bank tends to have more commercial development and mixed uses.
- Two bike paths run adjacent to the Roaring Fork River in Glenwood Spring, the Atkinson Canal Trail along the west bank in south GWS, and the Glenwood River Trail along the east bank through downtown GWS. While these paths provide an important amenity for transportation and river access, their proximity to the river and maintenance represent impacts to the respective riparian areas.
- Despite the steep terrain and density of development, numerous areas within GWS still exhibit robust riparian vegetation. The density of vegetation is typically greatest along a narrow strip next to the river while the upper gradient areas are generally more sparse. Densely vegetated riparian areas typically exhibit good multi-story habitat.
- The west bank of the Roaring Fork River between the Cardiff Bridge and 14th street pedestrian bridge exhibit the majority of recent riparian alterations by private landowners. A few alterations were also noted along the east bank in this reach.
- Riparian trees show a slightly unbalanced age class, with large numbers of tall, mature trees (particularly cottonwoods) and less young tree recruitment for recovery/maintenance of the species.
- Engineered or rip-rap banks exist at numerous locations along this reach. While this meets the initial goal of bank stabilization, it contributes to loss of vegetation, creates a challenging environment for regrowth, and increases channelization of the river and potential related impacts.
- Non-native riparian plant species were noted in riparian areas along this reach. Volunteer projects conducted jointly by City of GWS, Garfield County, Roaring Fork Outdoor Volunteers, and Roaring Fork Conservancy, have significantly reduced

Tamarisk and some Russian Olive near the Threemile Creek confluence and upstream of the municipal airport. Due to these efforts, minimal Tamarisk were noted during this assessment, however numerous Russian Olive still exist in riparian areas along this reach, particularly on private property.

Sections of concern and potential treatments:

- Stream banks at the outlet of Threemile Creek are marginally vegetated and actively eroding. Suggest bank stabilization with long term goal of revegetating slope to native density while still allowing some beach area for public access.
- Backyard development creep and riparian vegetation clearing are increasing. Numerous landowners with private access to the river have created sitting areas ranging from a few chairs tucked into the vegetation to more extensively cleared spaces with grills, tables and numerous chairs. Some have cleared and developed a wide access down the hill slope. The latter impacts may disrupt riparian function and, if copied by neighbors, could result in extensive loss of riparian habitat. Potential treatments include curtailing this kind of bank development in order to preserve riparian function while still allowing private landowner desire to enjoy riverside amenities. Public education is a key component for addressing these concerns.
- Various structures have been constructed within the riparian zone throughout this reach in GWS. They include trails and steps built to access the river, gazebos, boat ramps, and various platforms for chairs and tables. The structures vary in size and amount of disruption to riparian areas. Potential treatments are similar to those listed above regarding riparian vegetation clearing.
- Concrete slabs were deposited along parts of the river and now hinder vegetation growth. Potential treatments include removing engineered banks where feasible and replanting native riparian vegetation.
- The newly constructed 14th street pedestrian bridge resulted in widening and clearing of the river's banks at that location. Riprap was used as the primary bank stabilization feature. Treatments include replacing riprap with vegetation to restore this area to a healthy riparian habitat.
- Removal of critical riparian vegetation, especially cottonwood, along River Meadows Mobile Home Park. A few willow patches have returned but the stream bank consists primarily of open lawn. Trees line the upper terrace of the Park but little vegetation remains along the baseflow edge of the River. Treatments include education for private landowner(s) and possible joint efforts to re-establish vegetation diversity or pocket protection areas.
- Veltus Park contains riparian impacts including eroding banks and some instances of riparian vegetation clearing by city staff. GWS is currently pursuing a redevelopment and restoration plan for this area. It is recommended that this project prioritize the balance of public access to the river, erosion control, and re-establishment of healthy riparian system. Additional education of city staff regarding riparian best management practices to avoid adverse impacts to river health is also encouraged.

Colorado River

This reach has seen over a century of impacts from the construction of the railroad, I-70, Two Rivers Park, commercial development, and most recently a whitewater park. However, there remain localized stretches along the river that contain healthy riparian conditions.

General observations:

- Both banks represent mixed land use with primarily railroad right-of-way and commercial development along the south bank. The north bank combines large stretches of I-70, Two Rivers Park, and some commercial use.
- The railroad and I-70 run along opposite sides the Colorado River and represent existing impacts to riparian areas through impairment of habitat, loss of vegetation and hindrance to wildlife passage. Additionally, operation, maintenance and chemical treatments of these structures represent ongoing impacts. However, these land uses also restrict human access to portions of the remaining riparian areas, thereby limiting other human impacts.
- Riparian trees show unbalanced age class, with large numbers of tall, mature trees (particularly cottonwoods) and a lack of young tree recruitment for recovery and maintenance of the species.
- Engineered or riprap banks exist at numerous locations along this reach. While this meets the initial goal of bank stabilization, it contributes to loss of vegetation creates a challenging environment for regrowth, and increases channelization of the river and potential related impacts.
- Non-native riparian plant species were noted in riparian areas along this reach. Volunteer projects conducted jointly by City of GWS, Garfield County, Roaring Fork Outdoor Volunteers and Roaring Fork Conservancy, have significantly reduced Tamarisk and some Russian Olive near Two Rivers Park and along the river in West GWS. Although these efforts have removed many invasive plants, more of both species remain throughout this reach, particularly in areas which are difficult to access.

Sections of concern and proposed treatments:

- Two Rivers Park represents a significantly impacted riparian area. GWS is currently pursuing a redevelopment and restoration plan for this area, which will include addressing the current conditions. This project as planned should continue to prioritize the balance of public access to the river and re-establishment of healthy riparian system.
- Sections along Devereux Road show signs of impact and may benefit from riparian rehabilitation – further study recommended.
- Riparian vegetation between the river and Iron Mountain Hot Springs is scarce and may have been removed as part of this development. Potential treatments include working with landowner to provide views of the river from the facility balanced with replanting of riparian vegetation.
- Sections along I-70 need removal of non-native vegetation followed by revegetation of native species but may need to study potential impacts of Mag-Chloride and stormwater runoff related to vegetation health before attempting revegetation efforts.

- Some of the largest, most intact riparian areas on city property exist along the south bank of the Colorado River at the west end of GWS along the former Cardinell Homestead in the area of the new wastewater treatment facility. This area has healthy, diverse vegetation, minimal human impacts, and connection to good upland wildlife habitat. It is strongly recommended that this area be kept intact and natural with minimal development or mandated riparian buffers if development is necessary.

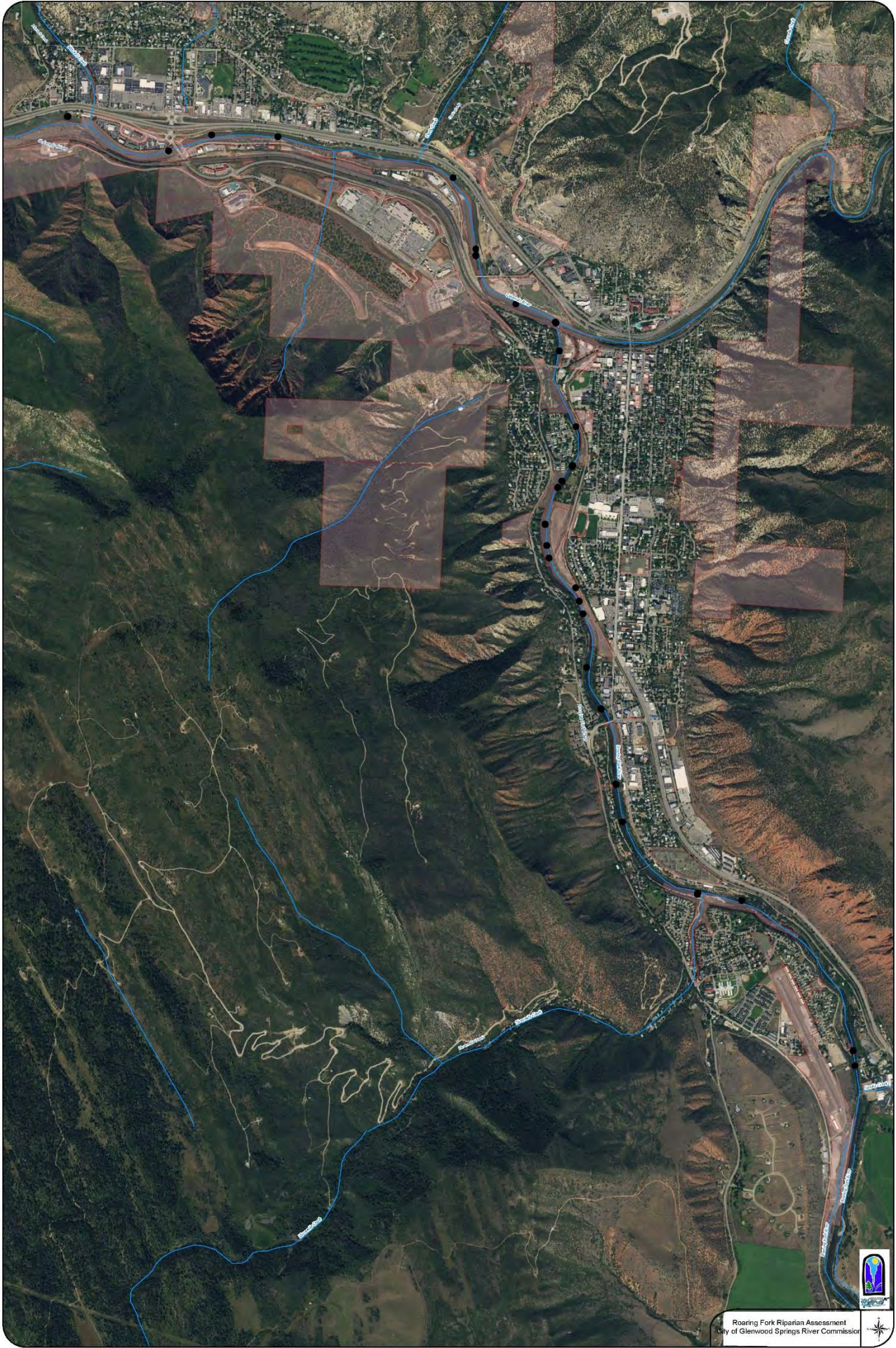
Summary

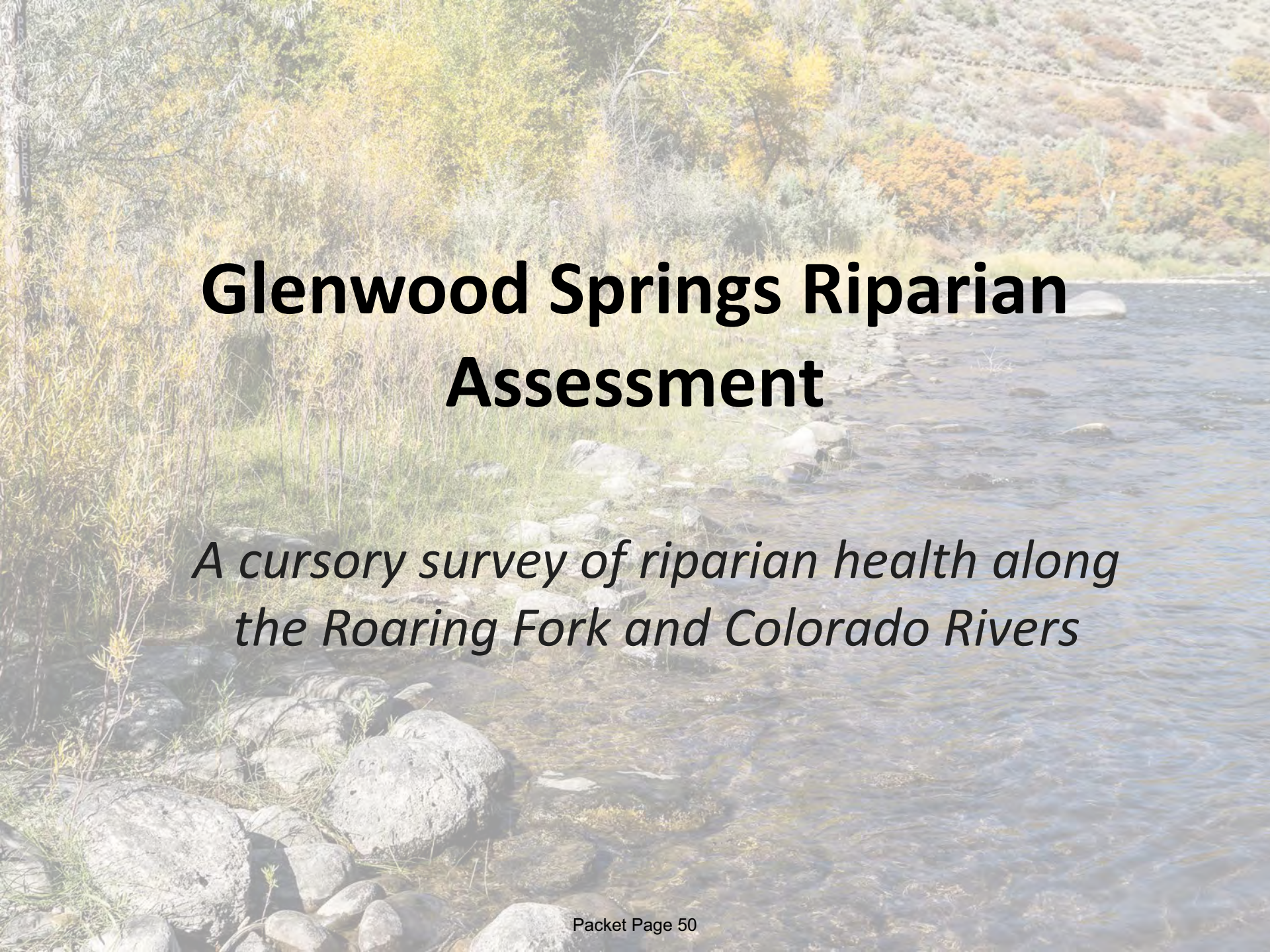
This assessment noted three general categories of riparian conditions within GWS:

- Minimally disturbed areas - exhibit fairly natural conditions and healthy riparian vegetation. These areas were noted throughout GWS although typically in localized pockets. Human impacts to these areas, particularly by private landowners, has been increasing in recent years.
- Partially disturbed areas – exhibit some human impacts and less healthy riparian vegetation. These areas, although exhibiting some disturbance, have the potential to revert to more healthy conditions given the application of best management practices or in many cases simply allowing the natural regrowth of riparian vegetation. These areas represent the largest portion of riparian land throughout GWS.
- Impacted areas – exhibit significant human impacts and alteration of riparian vegetation and conditions. These areas represent a fairly small portion of riparian land yet a fairly significant impact within that localized area. The presence of these areas emphasize the importance of maintaining riparian health in the less disturbed areas and improving riparian health in the partially disturbed areas.

This assessment indicates opportunities within Glenwood Springs where integrity and function of riparian areas can be maintained or improved. It also provides a basis for GWS to consider policy, regulations, public education or other means that recognize the value of riparian health and its associated impacts on river health.

Riparian Assessment Photo Location Map



The background image shows a river flowing through a landscape. In the foreground, there are large, light-colored rocks along the riverbank. The water is dark and reflects the surrounding environment. The background is filled with dense vegetation, including tall grasses and trees with yellow and orange foliage, suggesting an autumn setting. The overall scene is a natural, riparian environment.

Glenwood Springs Riparian Assessment

*A cursory survey of riparian health along
the Roaring Fork and Colorado Rivers*

Primary Objectives

- Photo document the range of riparian area conditions within GWS (healthy, marginal or poor).
- Suggest actions that can improve riparian health where needed.
- Inspire dialogue on how best to maintain or improve riparian conditions within GWS.

Methods

- Qualitative observations and photo documentation from raft, October, 2018
- Past documentation of same area by Design Workshop* and Roaring Fork Conservancy
- Observers have professional backgrounds in assessing the health of physical and biological functions of riparian areas

*Riverside Stewardship Manual, prepared for the City of Glenwood Springs, March 1997.

Key Observations Considered

- Reproduction and vigor of riparian plants
- Presence of non-native noxious plant species
- Connectivity of wildlife migration routes between habitats
- Bank stability
- Extent of active erosion

The Good News



Despite steep slopes and areas of dense development there are river segments within GWS that exhibit robust riparian health.



These images were taken from the Roaring Fork River

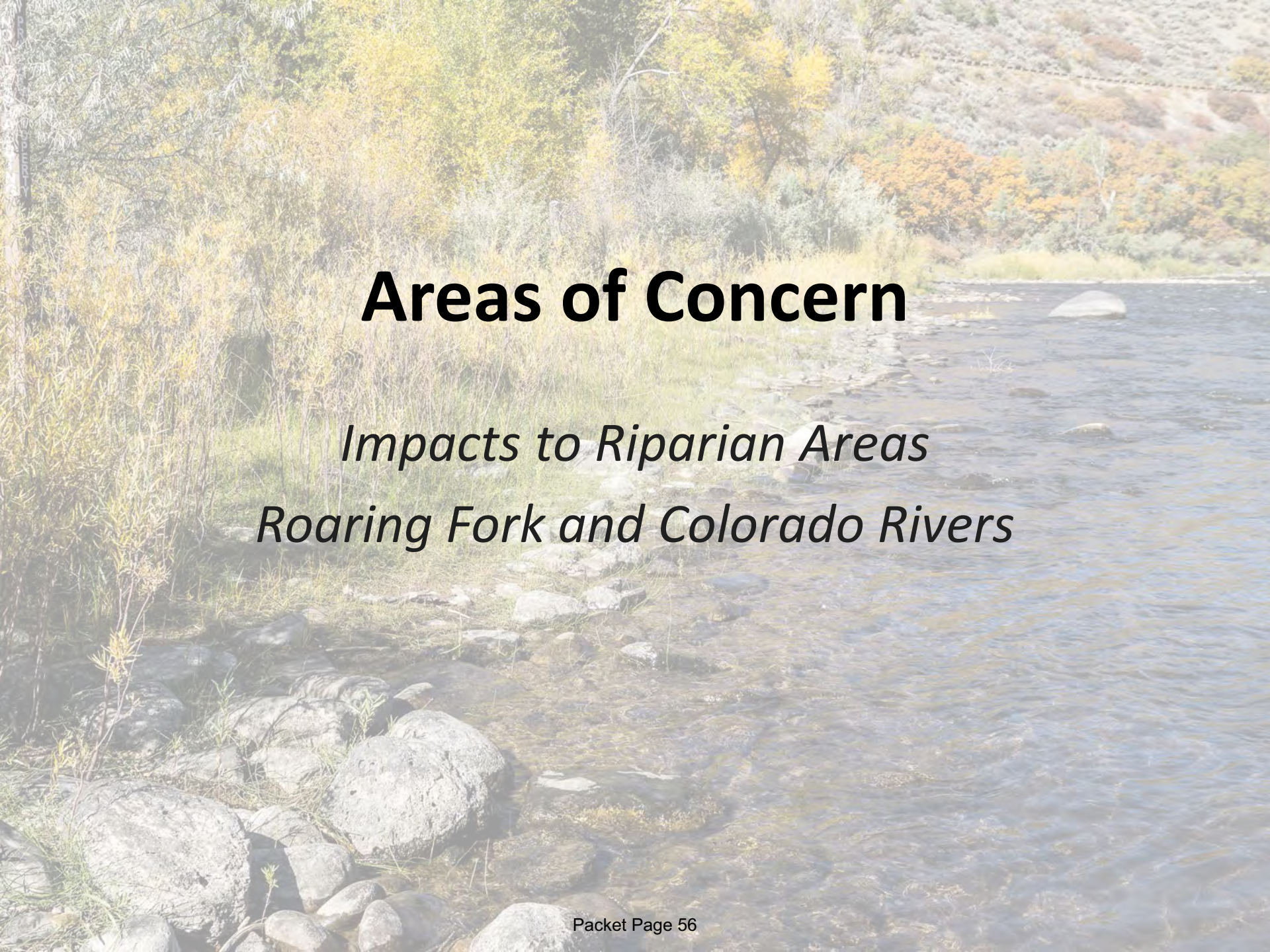
The Potential is There



Municipal development can occur without significantly degrading riparian health.



These images were taken from the Colorado River

A scenic view of a river with a rocky shoreline and autumn foliage. The foreground shows large, light-colored rocks along the bank, with some green and yellow grasses. The river water is dark and calm, reflecting the sky. In the background, there are trees with yellow and orange leaves, suggesting an autumn setting. The overall scene is peaceful and natural.

Areas of Concern

*Impacts to Riparian Areas
Roaring Fork and Colorado Rivers*

Slope stability



Without sufficient vegetation steep slopes are susceptible to erosion which can impact water quality and property values.

Presence of Non-Native Plants

Minimal Tamarisk were noted likely due to active Tamarisk removal projects.

Russian Olive still occurs in dense stands both on the Roaring Fork and Colorado Rivers



Public Access – Three Mile



Popular site for neighborhood residents, anglers and rafters leaves river banks heavily impacted.

River flow pattern was significantly modified during construction of now abandoned ditch (adding to riparian impacts).



Public Access – Two Rivers Park



Heavy foot traffic can
exasperate riparian
health



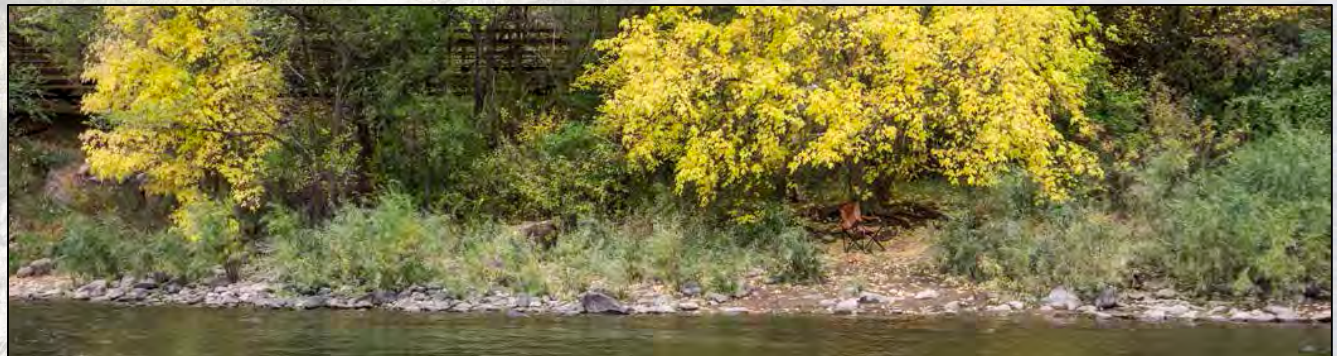
Floodplain Clearing

Backyard clearing of riverside vegetation along private lots has been incrementally increasing over time. Impacts to riparian ecosystem vary in scope of removal.



Clearing can be extensive...

or minimal.



This practice appears to be growing as more homeowners seek the aesthetics of developing their riverside backyards.

Private River Access Impacts

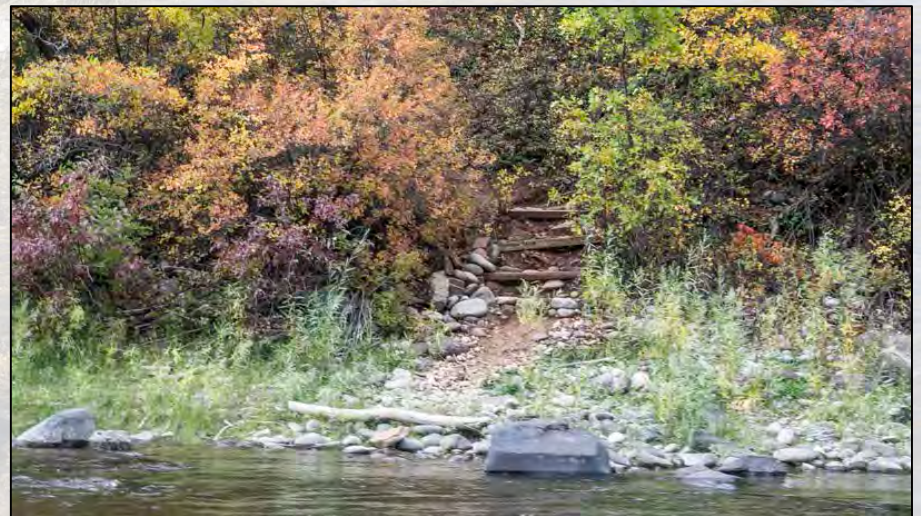


Access design should consider riparian and water quality protection

Top Left: Minimal impact to riparian vegetation and soil cover.

Top Right: Loss of riparian vegetation but decent soil cover.

Right: Improved design could reduce impacts of erosion into the river and protect trail's integrity.



Vegetation Loss in Other Areas



Loss of vegetation can lead to greater bank erosion, reduce river shading and bird habitat and limit its function to filter out sediments and excess nutrients

The Dark Side of Riprap



Riprap may effectively stabilize a river bank but it also inhibits re-establishment of riparian vegetation.



Waste Material Side Cast



Like Riprap, asphalt and concrete tossed onto river banks inhibits vegetation re-growth, ultimately impairing riparian function. (And it's unattractive)



We All Benefit from Healthy Riparian Areas



Riparian Buffer Zones: Functions and Recommended Widths



Prepared by

**Ellen Hawes and Markelle Smith
Yale School of Forestry and Environmental Studies**

For the

Eightmile River Wild and Scenic Study Committee

April 2005

Table of Contents

1. Function of Riparian Buffers.....	3
2. Recommended Buffer Widths.....	4
a. Erosion Control.....	4
b. Water Quality.....	4
c. Aquatic Habitat.....	5
d. Terrestrial Habitat.....	5
3. Factors Influencing Buffer Widths.....	6
a. Slope.....	6
b. Soil Type.....	6
c. Vegetation Mix.....	6
4. Buffer Types.....	8
a. Variable Width.....	8
b. Fixed Width.....	9
c. Three Zone.....	9
5. What Order Streams to Protect.....	11
6. Appendix 1: Summary of Effective Buffer Widths From Literature Review.....	12
7. Appendix 2: Other Tables.....	13
8. Appendix 3: References.....	14
9. Appendix 4: Web Resources.....	15

1. Functions of Riparian Buffers

Riparian buffers are vital elements of watersheds, primarily due to their protection of surface and ground water quality from impacts related to human land use. These vegetated buffers are complex ecosystems that provide food and habitat for unique plant and animal species, and are essential to the mitigation and control of nonpoint source pollution. In fact, the removal of streamside vegetation, primarily for development purposes, has resulted in degraded water resources and diminished value for human consumption, recreation, and industrial use.¹

In the Eightmile River watershed, maintenance of riparian buffers in their natural condition has been identified as one of the most effective means of protecting multiple outstanding resource values (ORVs), including water quality, hydrology, unique species and natural communities, and watershed ecosystem function.

Sedimentation increases turbidity and contributes to rapid siltation of waterbodies, negatively impacting water quality. Increased sediment loads also narrow channel widths and provide substrate for colonization of invasive aquatic plant species. Intact riparian buffers ameliorate these negative impacts by stabilizing streambanks. Roots of riparian vegetation deflect wave action and hold bank soil together. The buffer vegetation also decreases erosional impacts during flood events and prevents undercutting of streambanks.

Excess nitrogen and phosphorous from fertilizers and animal waste, as well as other pollutants originating from pesticides and herbicides, often bond to soil particles. The nutrient-loaded sediment contained in surface runoff then flows to the nearest waterbody and is deposited. This process is the primary cause of accelerated eutrophication of lakes and rivers². Streamside forests function as filters, transformers, and sinks for harmful nutrients and pollutants³. Buffer plants slow sediment-laden runoff and depending upon their width and vegetational complexity, may deposit or absorb 50 to 100% of sediments as well as the nutrients and pollutants attached to them⁴. When surface water runoff is filtered by the riparian buffer approximately 80 to 85% of phosphorous is captured⁵. Nitrogen and other pollutants can be transformed by chemical and biological soil activity into less harmful substances. In addition, riparian plants act as sinks, absorbing and storing excess water, nutrients, and pollutants that would otherwise flow into the river, reducing water quality.

One of the most important functions of riparian buffers is enhanced infiltration of surface runoff⁶. Riparian vegetation in the buffer surrounding a waterbody increases surface roughness and slows overland flows. Water is more easily absorbed and allows for groundwater recharge. These slower flows also regulate the volume of water entering rivers and streams, thereby minimizing flood events and scouring of the streambed.

¹ Welsch 1991

² Jontos 2004

³ Welsch 1991

⁴ Connecticut River Joint Commission 2005

⁵ Connecticut River Joint Commission 2005

⁶ Dillaha et al. 1989

Many plant and animal species depend on the distinctive habitat of riparian buffers, which include elements of both terrestrial and aquatic ecosystems. Forested buffers improve habitat quality by providing shade that cools water temperatures, thereby elevating the dissolved oxygen content that is necessary for many species of fish and aquatic insects. Woody debris from shrubs and trees within the vegetated buffer provides food and cover for a multitude of aquatic species. If large enough, buffers also provide corridors essential for terrestrial wildlife movement.

Vegetated buffers may serve as screens along waterways, protecting the privacy of riverfront landowners and blocking views of any unsightly development. Hiking and camping opportunities are also facilitated by forested buffers, which if large enough, allow outdoor enthusiasts to enjoy the proximity of the water. The diversity of plant species provides visual interest and increases aesthetic appeal.

2. Recommended buffer widths

The width of a buffer depends greatly on what resource you are trying to protect. Scientific studies have shown that efficient buffer widths range from 10 feet for bank stabilization and stream shading, to over 300 feet for wildlife habitat. Furthermore, the necessary width for an individual site may be less or more than the average recommendations, depending on soil type, slope, land use and other factors. The ranges cited below come from four literature reviews by The U.S. Army Corps of Engineers New England Division, the University of Georgia's Institute of Ecology, the U.S. Army Engineer Research and Development Center, and researchers from the UK Forestry Commission.⁷ Results from studies done in New England fall within the ranges cited below, and no evidence was found in the literature to suggest that buffers should be, on average, either wider or narrower.

a. Erosion control

Erodibility of soil type is a key factor when assessing adequate buffer widths. Widths for effective sediment removal vary from only a few feet in relatively well drained flat areas to as much as several hundred feet in steeper areas with more impermeable soils. In order to prevent most erosion, vegetated buffers of 30 feet to 98 feet have been shown to be effective.

b. Water quality

Nutrients - Nitrogen and phosphorous can be retained in buffers that range from 16 to 164 feet. The wider buffers will be able to provide longer-term storage. Nitrogen is more effectively removed than phosphorous. In 1995, a study conducted in Maine found that the effectiveness of buffers at removing phosphorous is variable but in most cases, a 49-foot natural, undisturbed buffer was effective at removing a majority of the nutrient from surface runoff. However, the U.S. Army Corps of Engineers concluded in their 1991 study that there was insufficient evidence

⁷ U.S. Army Corps of Engineers 1991, Wenger 1999, Fischer and Fischenich 2000, Broadmeadow and Nisbet 2004, respectively.

to determine a necessary buffer width for phosphorous retention. It is important, therefore, to combine buffer zones with strategies to reduce phosphorous at its source.

Pesticides – Buffer widths for pesticide removal range from 49 feet to 328 feet. Pesticides that are applied manually require less of a buffer area than aerially-sprayed pesticides.

Biocontaminants – Buffer widths for biocontaminants, such as fecal coliform, were not reviewed in this study. The University of Georgia found that, in general, buffers should be 30 ft. or greater. However, buffers may not be able to adequately filter biocontaminants and it is also important to reduce these pollutants at the source.

c. Aquatic habitat

Wildlife – The minimum width of riparian buffers to protect aquatic wildlife, including trout and invertebrates, range from 33 feet to 164 feet.

Litter and debris input – Recommendations for buffer widths to provide an adequate amount of debris for stream habitat range from 10 feet to 328 feet, although most fall within 50 feet to 100 feet.

Stream temperature. Adequate shading can be provided by a 30-foot buffer, but buffers may need to be up to 230 feet to completely control stream temperature. The amount of shade required is related to the size of the channel. The type of vegetation in the buffer regulates the amount of sunlight reaching the stream channel. Generally, a buffer that maintains 50% of direct sunlight and the rest in dapple shade is considered preferable⁸.

d. Terrestrial habitat

The Eightmile River watershed contains a large number of roadless, undeveloped forest blocks and is more than 80% forested in total. Furthermore, the riparian corridor within 300 ft. of the river and its tributaries has remained mostly intact, supporting a high level of biodiversity as well as protecting water quality. The Eightmile River is host to a number of important species, including native brook trout, freshwater mussels, blue back herring, bobcats, great horned owls and cerulean warblers.

The habitat requirements for birds, mammals, reptiles, amphibians and fish vary widely, and the necessary buffer width to protect each species varies widely as well. While trout and salmon can benefit greatly from the shading, habitat, food, and water quality protection that a 150-foot buffer provides, mammals such as the red fox and the bobcat require riparian corridors of approximately 330 feet. Furthermore, birds such as the cerulean warbler, which requires large areas of forest, may need a buffer that is much greater than 330 ft.⁹ For this reason, we do not believe that it is feasible to capture all of the habitat needs of all species with a uniform buffer. More careful targeting of potential riparian habitat, work with landowners to create conservation

⁸ Broadmeadow and Nisbet 2004

⁹ Chase et al. 1995

easements, as well as the creation of protected areas by the town will aid in more specific approaches to habitat preservation for these species.

For a more detailed look at the range of recommended buffer widths, see Appendix 1.

3. Factors influencing buffer width

There are many factors that influence the effectiveness buffers. These include slope, rainfall, the rate at which water can be absorbed into the soil, type of vegetation in the buffer, the amount of impervious surfaces, and other characteristics specific to the site.

a. Slope

As slope increases, the speed at which water flows over and through the buffer increases. Therefore, the steeper the land within the buffer, the wider it needs to be to have time to slow the flow of water and absorb the pollutants and sediments within it. Many researchers suggest that especially steep slopes serve little value as a buffer, and recommend excluding areas of steep slope when calculating buffer width. The definition of “steep” varies from over 10% to over 40% slope¹⁰.

b. Soil type

The type of soil affects how quickly water can be absorbed. Soils that are high in clay are less permeable and may have greater runoff. On the other hand, soils that are largely made up of sand may drain water so rapidly into the groundwater that roots are not able to effectively trap pollutants. Furthermore, soils that are moister and more acidic have a better capacity to take up nitrogen from the soil and release it to the atmosphere (through denitrification).

c. Vegetation mix

Structurally diverse riparian buffers, i.e. those that contain a mix of trees, shrubs and grasses, are much more effective at capturing a wide range of pollutants than a riparian buffer that is solely trees or grass. Removal efficiencies range from 61% of the nitrate, 72% of the total phosphorous and 44% of the orthophosphates from grass buffers to 92% of the nitrate 93% of the total phosphorous and 85% of the orthophosphates from combined grass and woody buffers.¹¹

¹⁰ Wenger 1999

¹¹ Jontos 2004

Table 1: Estimated reduction of nutrient loads from implementation of riparian buffers¹²

Buffer Type	Nitrogen	Phosphorus	Sediment
Forested	48-74%	36-70%	70-90%
Vegetated Filter Strips	4-70%	24-85%	53-97%
Forested and Vegetated Filter Strips	75-95%	73-79%	92-96%

Source: Delaware Department of Natural Resources and Environmental Control

Generally, the grass filter strip works best for sediment removal, while the forested buffer is better for nitrate removal from subsurface flows¹³. Grasses have a shallower and denser root mat that is more effective in slowing runoff and trapping sediments from the surface flow. Trees have a deeper root system that can trap and uptake nutrients from the groundwater, stabilize banks, and regulate the flow of water to the stream.

Forests provide certain functions that grasses cannot. Trees shade the river and provide an input of leaf litter and branches that are necessary for many aquatic species. In addition, a forested buffer provides important habitat for terrestrial wildlife. Native plants species are preferred to ornamentals or exotics due to the habitat advantage they provide for wildlife. Old trees are especially valuable for providing inputs of coarse woody debris.

The most effective riparian buffers should include a mix of trees, shrubs and herbaceous plants native to the region and appropriate to the environment in which they are to be planted. When planting buffers, it is best to use adjacent reference riparian buffers as the basis for selecting floral composition¹⁴.

Table 2: Plant type vs. removal efficiency

Function	Grass	Shrubs	Trees
Sediment trapping	High	Medium	Low
Filtration of Sediment born Nutrients, Microbe and Pesticides	High	Low	Low
Soluble forms of Nutrients and Pesticides	Medium	Low	Medium
Flood Conveyance	High	Low	Low
Reduce Stream Bank Erosion	Medium	High	High

Source: Jontos 2004 (modified after Fisher and Fischenich 2000)

¹² (Palace, 1998; Lowrance et al., 1995; Franti, T.G., (1997); Parsons et al. (1994); Gilliam et al. (1997); Osmond et al., (2000)

¹³ Triangle J. Council of Governments 1999

¹⁴ Jontos 2004

4. Buffer types

a. Variable Width

Several models have been created to consider individual site factors in determining buffer width. These range from the complex to the relatively simple. The more complex models take into account multiple factors, such as slope, erodibility and infiltration rates¹⁵. Examples of such models include:

Brown et al. (1987):

$$\text{Buffer width} = (\text{average slope/erodibility factor})^{1/2}$$

Cook College Department of Environmental Resources:

$$\text{Buffer width} = 2.5 (\text{time of travel of overland flow}) * (\text{slope})^{0.5}$$

More simple models only take into account slope. A common formula is to set a fixed buffer width and apply 2 feet per percent slope. Many of these models recommend *not* including impervious surfaces or areas of steep slope in the buffer width (**Figure 1**). Cook College recommends excluding anything greater than 15% slope, while Wenger (1999) recommends excluding all slopes over 25%.

b. Fixed Width

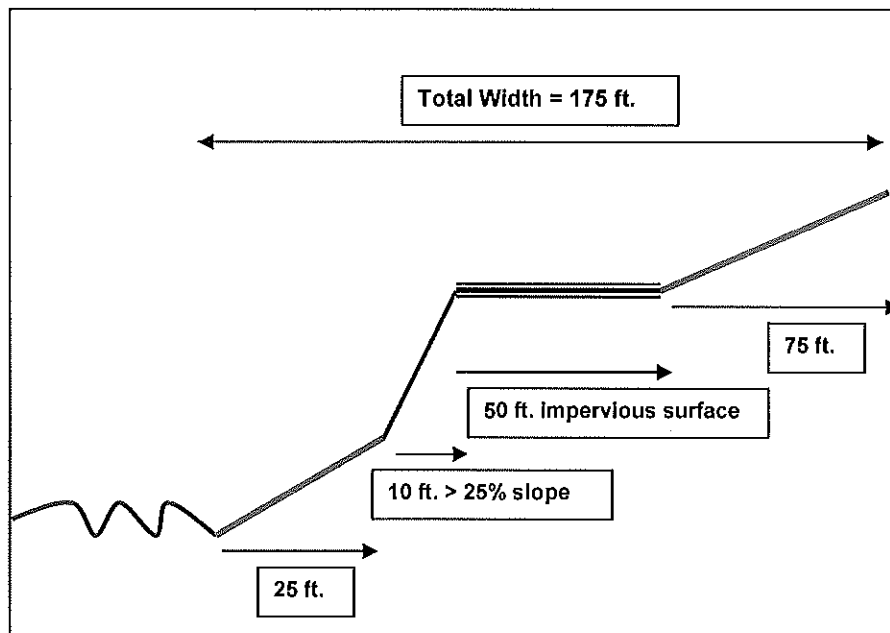
A fixed buffer width is the easiest to administer. However, care must be taken to select the appropriate width for the resources you are targeting. Studies unanimously support the conclusion that buffer efficiency at filtering out pollutants increases with width. However, this does not increase infinitely, and the goal is to find the most efficient width. For example, a study in the Mid-Atlantic¹⁶ found that 90% of sediments were removed by a 62 ft. riparian buffer, but only 94% were removed by more than doubling the buffer width to 164 ft.

If a fixed buffer width is chosen, it should be on the conservative side to provide leeway for slope and soil type. Data for the Eightmile River watershed show that significant areas of the land bordering the river have slopes that are above 15%. Therefore, we believe it is necessary to make a fixed buffer width wider than the average minimum recommendation of 100 ft.

¹⁵ Described in the US Army Corps of Engineers (1991) literature review.

¹⁶ Peterjohn and Corell 1994.

Fig.1: Variable buffer width adjusted from 100 feet to 175 feet to account for effects of slope and impervious surface.



c. Three Zone

The Three Zone system was originally developed as part of an initiative to protect the Chesapeake Bay. The combination of vegetation types (trees, grass and shrubs) helps maximize the efficiency and diversity of benefits that the buffer provides (Figure 2).

Zone 1

Minimum Width: 15 ft.

Composition: Native trees and shrubs

Function: Bank stabilization, habitat, shade, flood prevention

Management: None allowed except bank stabilization and removal of problem vegetation.

Zone 2

Minimum Width: 60 ft.

Composition: Native trees and shrubs.

Function: Removal of nutrient, sediments and pollutants from surface and groundwater, habitat

Management: Some removal of trees to maintain vigorous growth.

Zone 3

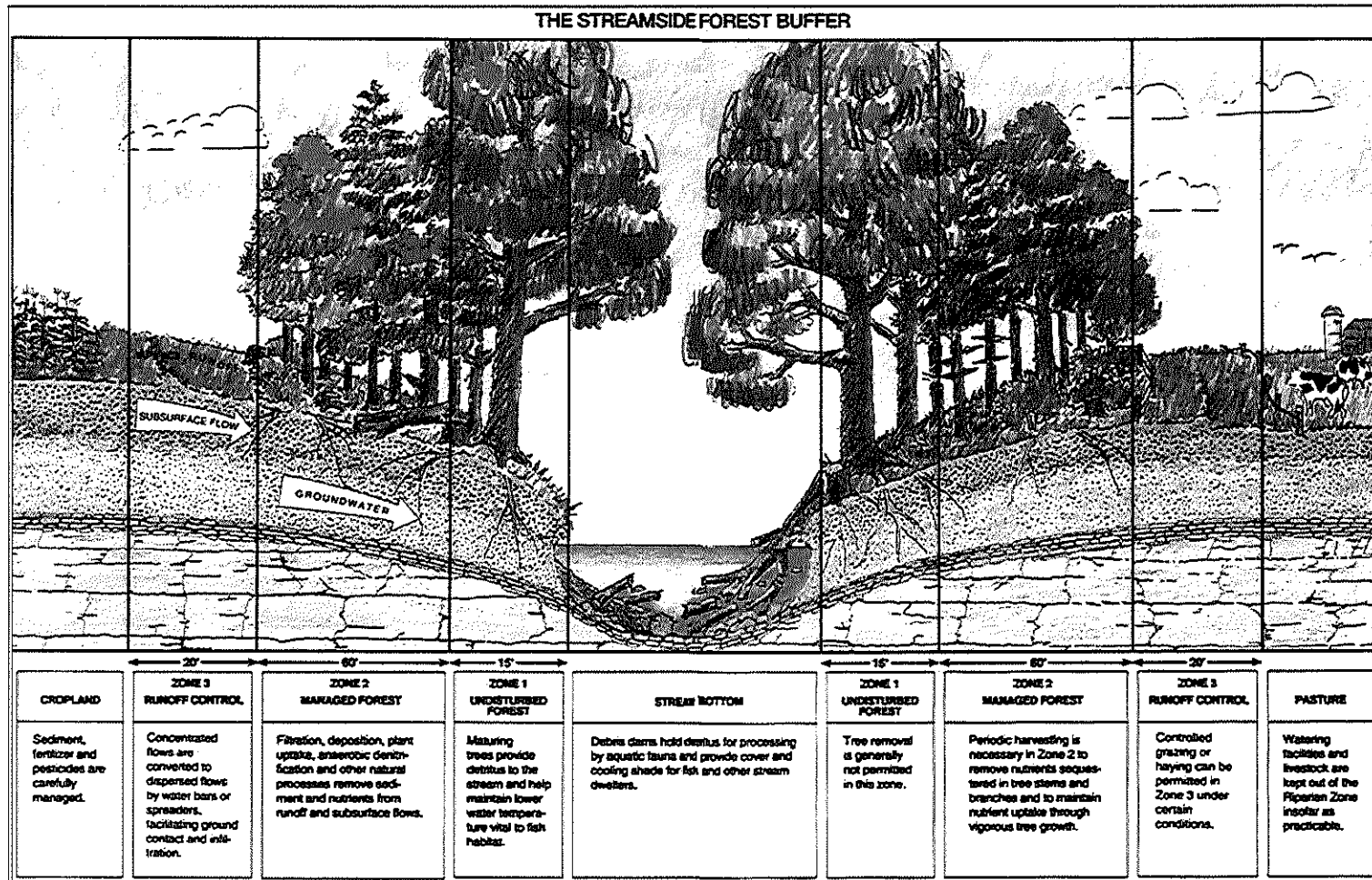
Minimum Width: 30 ft.

Composition: Grasses and herbaceous plants

Function: Slow surface runoff, trap sediments and pesticides

Management: Mowing

Fig. 2: Three-Zone System



Source: Welsch 1991. Riparian Forest Buffers: Function and Design For Protection and Enhancement of Water Resources.

5. What order streams to protect

Buffers are most effective when they are contiguous. Guidelines for buffer widths recommend that long, continuous buffer strips should often be a higher priority than fragmented strips of greater width.¹⁷ Small gaps in vegetation along the bank can channelize runoff into the river and effectively negate the effect of surrounding buffers. For this reason, landowners who currently have lawns that run to the edge of the river should be encouraged to replant trees and shrubs along the bank. In addition, footpaths cleared for river access should be winding, rather than straight, and as narrow as possible to minimize sedimentation.

Failure to extend protection to the smaller headwater streams in the river basin also ignores important sources of sedimentation and pollution. To preserve water quality in the Eightmile River, it is essential to protect all of its tributaries. In fact, smaller order streams often account for the greatest miles of watercourse in a basin. Buffering low order streams (1st, 2nd and 3rd) has greater positive influence on water quality than wider buffers on portions of larger order streams already carrying polluted water. While it may be politically infeasible to set wide buffer zones around intermittent and ephemeral streams, this omission is not justified by the science. A University of Georgia study of riparian buffers warns, "Governments that do not apply buffers to certain classes of streams should be aware that such exemptions reduce benefits substantially."¹⁸ A review of buffers by the U.S. Army also notes that "even the best buffer strips along larger rivers and streams cannot significantly improve water that has been degraded by improper buffer practices higher in the watershed".¹⁹

Smaller headwater streams have the greatest area of land-water interaction, and have the greatest potential to accept and transport sediment. Ephemeral streams, which only exist during periods of high rain, can serve as important sources of sediment and pollutants to the river. It is important that they are maintained in a vegetated condition in order to help trap and slow the flow of pollutants. Furthermore, removing riparian vegetation from the banks of small, heavily shaded streams will have a much greater impact on stream temperature and aquatic habitat throughout the watershed than removing vegetation from larger rivers, where only a fraction of the water is shaded. Rather than ignoring these streams completely, a compromise would be to create a smaller setback. Clinnick et al (1985) advocate a minimum of a 20 m wide buffer for ephemeral streams, and where that is not possible, at least leaving the banks vegetated²⁰.

¹⁷ Fisher and Fischenich 2000

¹⁸ Wenger 1999

¹⁹ Fisher and Fischenich 2000

²⁰ Wenger 1999

Appendix 1–Summary of Effective Buffer Widths from Literature Review

Author	Effective Width of Buffer (in feet)							
	Aquatic Wildlife	Terrestrial Wildlife	Stream Temperature	Litter/Debris input	Nutrient Retention	Sediment Control	Bank Stabilization	Pesticide Retention
Wenger 1999		220-574 ft.	33 – 98 ft.	50 ft.	50 – 100 ft.	82 – 328 ft.	–	> 49 ft.
Army Corps 1991	98 ft.	30 – 656 ft.	33 – 66 ft.	66-102 ft.	52 – 164 ft.	33 – 148 ft.	49 – 98 ft.	49 – 328 ft.
Fisher and Fischenich 2000	> 98 ft.	98-1,640 ft.	–	10 – 33 ft.	16.4-98 ft.	30-200 ft.	30 -66 ft.	–
Broadmeadow and Nisbet 2004	33 –164 ft.	–	49 – 230 ft.	82 – 328 ft.	16.4-98 ft.	49 – 213 ft.	–	–

Appendix 3

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Appendix 2 - General Recommended Widths of Buffer Zones

Source: Jontos 2004 (modified after Fisher and Fischenich 2000)

<i>Function</i>		Recommended Width
Water Quality Protection	Buffers, especially dense grassy or herbaceous buffers on gradual slopes, intercept overland runoff, trap sediments, remove pollutants, and promote ground water recharge. For low to moderate slopes, most filtering occurs within the first 10 m, but greater widths are necessary for steeper slopes, buffers comprised of mainly shrubs and trees, where soils have low permeability, or where NPS loads are particularly high.	5 to 30 m
Stream Stabilization	Buffers, particularly diverse stands of shrubs and trees, provide food and shelter for a wide variety of riparian and aquatic wildlife	10 to 20 m
Riparian Habitat	Riparian vegetation moderates soil moisture conditions in stream banks, and roots provide tensile strength to the soil matrix, enhancing bank stability. Good erosion control may only require that the width of the bank be protected, unless there is active bank erosion, which will require a wider buffer. Excessive bank erosion may require additional bioengineering techniques.	30 to 500 m +
Flood Attenuation	Riparian buffers promote floodplain storage due to backwater effects, they intercept overland flow and increase travel time, resulting in reduced flood peaks.	20 to 150 m
Detrital Input	Leaves, twigs and branches that fall from riparian forest canopies into the stream are an important source of nutrients and habitat.	3 to 10 m

Appendix 4 - Web Resources

Chesapeake Bay Committee. Chesapeake Bay Riparian Handbook: A guide for establishing and maintaining riparian forest buffers.

<http://www.chesapeakebay.net/pubs/subcommittee/nsc/forest/handbook.htm>

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WEDNESDAY, APRIL 25 | 12 PM

Lionshead Welcome Center
Lower level of Lionshead
Parking Structure

A Complimentary
Ecology Presentation

FREE

FREE LUNCH
for attendees

Come enjoy a complimentary lunch and listen to Pete Wadden, Town of Vail Watershed Education Coordinator, discuss the history and ongoing controversy surrounding the philosophies of Conservation and Preservation in the United States. Experts from the Town of Vail, Walking Mountains Science Center, and Eagle River Watershed Council will be on hand to answer questions about what residents can do to help Restore the Gore. There will also be stickers and informational brochures available to attendees.



walking mountains[®]
science center



TOWN OF VAIL
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Project Re-Wild

The Town of Vail will provide partial funding to riparian and stream bank restoration projects on private land that reduce sediment and pollution loads in Gore Creek and its tributaries by (1) establishing native vegetation buffers, (2) stabilizing stream banks or (3) reducing impervious surfaces. The town will provide up to 75% funding to projects that staff determine best serve each of the three aforementioned goals.

APPLICATION PROCESS



Homeowners or their agents who wish to apply for partial project funding from the Town of Vail must submit a completed application form in addition to all other local, state, and federal permit applications. Applicants will be asked to take time to provide detailed answers to the questions in the application packet and provide any additional information that is available such as architectural drawings and photos. Town staff will determine whether each proposed project meets the criteria listed below and will award funding to projects which best:

- Prevent erosion or reduce sediment loading in the creek
- Restore native riparian vegetation
- Remove impervious surfaces
- Rehabilitate or create wetlands or floodplains
- Incorporate BMPs in their design
- Improve in-stream habitat (pool/riffle complexes, meanders, etc.)
- Occur in high priority areas (areas of highest concern based on MMI scores)
- Provide detailed map and architectural plan of proposed project
- Have the greatest potential to add Value to the Environment

ELIGIBILITY



This fund will provide assistance to private homeowners in the Town of Vail who wish to restore stream bank on their property abutting Gore Creek or its tributaries. Funds may not be used for projects on Town of Vail stream tract property.

WHAT GOES WHERE

You can help preserve Gore Creek. Here's how.

LANDSCAPE DESIGNER'S GUIDE

As a landscape architect or landscape designer in Vail, you do a lot to keep our town beautiful.

But you may not realize that Gore Creek—the main waterway that meanders through town—is suffering the impact of fertilizers, pesticides, and landscaping techniques that destroy native vegetation.

As rain or melting snow flows across our yards, rooftops, and paved areas, it picks up pollutants including sediment, organic matter, pesticides and fertilizers. Polluted water then flows off these properties to roadways, ditches or through storm drains to Gore Creek, harming important aquatic insects, increasing algae blooms and adding sediment all of which impact the food chain for our prized trout fishery. The cumulative impacts of urbanization in the Gore Creek valley over the past half-century have had a significant impact on the health of Gore Creek, including the insects, fish, birds and vegetation that depend on clean water.

Because landscaping is so closely tied to natural processes, design and maintenance practices can have a significant effect on water quality in Gore Creek and beyond. The good news is you can improve the Creek's health by adopting a few simple practices.

- Add trees and shrubs to your clients' yards to capture, hold and filter rainwater.
- Encourage your clients to use up to three inches of mulch (like leaves, aged wood chips, compost or grass clippings),

primarily in spring and fall. Mulch stabilizes soil temperature, prevents weeds, feeds the soil for healthier plants and helps to conserve water.

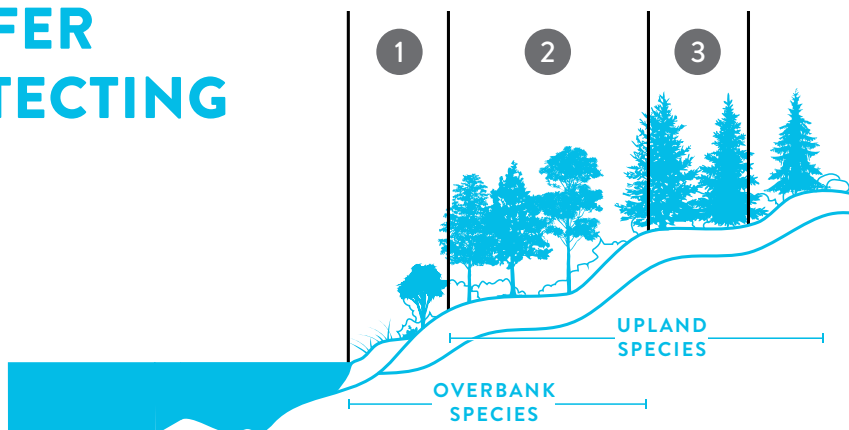
- Incorporate swales and berms into landscapes to slow runoff and prevent it from leaving yards.
- Consider installing a rain garden and directing roof drains to it.
- Consider using porous pavements such as pavers, flagstone and gravel instead of impervious surfaces such as asphalt or concrete for sidewalks and driveways.
- Observe town ordinances regarding riparian buffers and setbacks.
- Use the Three-Zone Buffer System (next page) for guidance on building and landscaping activities within 100 feet of any stream.
- Minimize the use of turf where possible, which will in turn reduce fertilizer, pesticide and water requirements.
- Plant a diverse landscape, which will naturally minimize pest problems.

Thank you for playing a critical role in preserving a special part of Vail's community—Gore Creek.

LEARN MORE AT [LOVEVAIL.ORG](https://lovevail.org)



THREE-ZONE BUFFER SYSTEM FOR PROTECTING GORE CREEK



1 < 25 FEET OVERBANK ZONE

This area is important for bank stability, preventing erosion, filtering and absorbing pollutants, and providing habitat for terrestrial and aquatic wildlife. Contains wetland plants and mature riparian forest.

- Leave native vegetation undisturbed.
- Reintroduce native shrubs, grasses and forbs as a substitute for turf and other manmade improvements.
- Limit the use of pesticides to what is absolutely needed to control invasive weed species.

2 25–75 FEET TRANSITIONAL ZONE

This area lies between upland development and the overbank zone, and is important in filtering stormwater runoff and absorbing pollutants. Contains mature native forest and vegetation.

- Design low-impact landscaping, which reduces maintenance requirements and less need for pesticide and fertilizer.
- Reduce the use of turf and impervious surfaces such as concrete and asphalt paving.
- Create vegetative buffers to filter runoff from roofs, drives and roadways.

3 75–100 FEET UPLAND ZONE

This is an area for actively managed landscapes or natural conditions, which allows water to slowly filter into the ground.

- Lawn, garden, and compost wastes can be stored here, and stormwater BMPs may be installed, but this zone should be left as undisturbed as possible in order to optimize the value of the riparian buffer.
- Minimize turf areas to what is truly needed. Avoid siting any impervious surfaces in this zone.

WHAT TO PLANT

The Rocky Mountains are home to numerous native plant species. These plants are adapted to the highly variable climate and micro-climates found in mountain habitats. This list offers recommendations for areas along Gore Creek, as well as upland and transitional zones away from the water's edge. These plants can be used in

ornamental landscape plantings as buffers between landscaped and native areas or in native habitat restorations. Planting a variety of species provides biodiversity, which protects against pest outbreaks and provides important habitat for native fauna—all key components in improving water quality in Vail.



Thin-leaved
Alder



Twinberry
Honeysuckle



Bog
Birch

COMMON NAME	SCIENTIFIC NAME	HEIGHT	SPREAD
OVERBANK: TREES/SHRUBS			
Thin-leaved Alder	<i>Alnus incana</i>	15-30'	15-20'
Bog Birch	<i>Betula grandulosa</i>	3-6'	3-8'
Red-twig Dogwood	<i>Cornus sericea</i>	6-8'	8-12'
Twinberry Honeysuckle	<i>Lonicera involucrate</i>	3-5'	3-6'
Narrow-leaved Cottonwood	<i>Populus angustifolia</i>	30-50'	20-30'
Lance-leaved Cottonwood	<i>Populus x acuminata</i>	40-60'	30-40'
Drummond's Willow	<i>Salix drummondiana</i>	6-12'	6-12'
Coyote Willow	<i>Salix exigua</i>	6-12'	4-8'
Yellow Mountain Willow	<i>Salix monticola</i>	8-12'	6-8'



Harebells

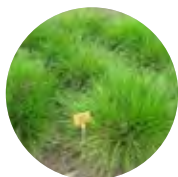


Cow Parsnip



Western Blue Flag

COMMON NAME	SCIENTIFIC NAME
OVERBANK: FORBS	
Monkshood	<i>Aconitum columbianum</i>
Marsh Marigold	<i>Caltha leptosepala</i>
Harebells	<i>Campanula rotundifolia</i>
Chiming Bells	<i>Mertensia ciliata</i>
Cow Parsnip	<i>Heracleum maximum</i>
Western Blue Flag	<i>Iris missouriensis</i>



Tufted
Hairgrass



Slender
Wheatgrass



Baltic
Rush

COMMON NAME	SCIENTIFIC NAME	DISTRIBUTION
OVERBANK: NATIVE SEED MIX		
Tufted Hairgrass	<i>Deschampsia caespitosa</i>	20%
Streambank Wheatgrass	<i>Elymus lanceolatus</i>	20%
Slender Wheatgrass	<i>Elymus trachycaulus</i>	15%
Big Bluegrass	<i>Poa secundiflora</i>	5%
Western Wheatgrass	<i>Pascopyronsmithii</i>	15%
Fowl Bluegrass	<i>Poa palustris</i>	20%
Baltic Rush	<i>Juncus balticus</i>	5%

Thank you for playing a critical role in preserving a special part of Vail's community—Gore Creek.

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Rabbitbrush



Quaking Aspen



Boulder Raspberry

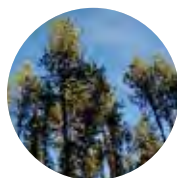
COMMON NAME	SCIENTIFIC NAME	HEIGHT	SPREAD
UPLAND: DECIDUOUS TREES/SHRUBS			
Rocky Mountain Maple	Acer glabrum	20-30'	10-20' <i>(smaller in Vail)</i>
Saskatoon Serviceberry	Amelanchier alnifolia	6-20'	6-12'
Rabbitbrush species	Chrysothamnus nauseosus	2-6'	2-6'
Potentilla or Cinquefoil	Pentaphylloides floribunda	2-3'	2-3'
Quaking Aspen	Populus tremuloides	20-50'	20-30'
Native Chokecherry	Prunus virginiana melanocarpa	8-20'	8-12'
Wax Currant	Ribes cereum	2-4'	2-4'
Woods Rose	Rosa woodsii	3-6'	3-6'
Boulder Raspberry	Rubus deliciosus	3-6'	3-6'
Thimbleberry	Rubus parviflorus	3-5'	4-6'
Red-berried Elder	Sambucus pubens	4-12'	4-12'
Snowberry	Symphoricarpos albus	3-5'	3-5'



Native
White Fir



Rocky Mountain
Juniper



Lodgepole
Pine

COMMON NAME	SCIENTIFIC NAME	HEIGHT	SPREAD
UPLAND: EVERGREEN TREES			
Native White Fir	Abies concolor	40-60'	20-30'
Rocky Mountain Juniper	Juniperus scopulorum	20-30'	8-12'
Engelmann Spruce	Picea engelmannii	40-60'	
Colorado Blue Spruce	Picea pungens	40-60'	
Bristlecone pine	Pinus aristata	10-20'	
Lodgepole pine	Pinus contorta latifolia	50-70'	10-15'
Douglas-fir		50-80'	



Rocky Mountain
Columbine



Silvery
Lupine

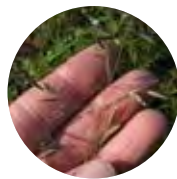


Pussytoes

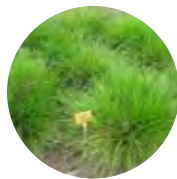
COMMON NAME	SCIENTIFIC NAME
UPLAND: FORBS	
Rocky Mountain Columbine	Aquilegia caerulea
Rocky Mountain Penstemon	Penstemon strictus
Richardson's Geranium	Geranium richardsonii
Silvery Lupine	Lupinus argenteus
Aspen Daisy	Erigeron speciosus
Sulphur Flower	Eriogonum umbellatum
Pussytoes	Antennaria rosea



Mountain
Brome grass



Sandberg
Bluegrass



Tufted
Hairgrass

COMMON NAME	SCIENTIFIC NAME	DISTRIBUTION
UPLAND: NATIVE SEED MIX		
Streambank Wheatgrass	Elymus lanceolatus	20%
Mountain Brome grass	Bromus marginatus	20%
Slender Wheatgrass	Elymus trachycaulus	15%
Blue Wildrye	Elymus glaucus	5%
Big/Canby Bluegrass	Poa secunda	5%
Rocky Mountain Fescue	Festuca saximontana	5%
Sandberg Bluegrass	Poa secunda	5%
Prairie Junegrass	Koeleria cristata	5%
Tufted Hairgrass	Deschampsia caespitosa	5%

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Riparian Setback Code Amendment Planning File #20-19

Planning and Zoning Commission

July 23 , 2019



History

- **May 2019**
 - Staff directed to bring forth proposed setback for discussion and review via the Code Amendment process
- **October 4, 2018**
 - City Council work session with River Commission and Planning and Zoning Commission
- **February 7, 2018**
 - River Commission recommended setback to City Council



Proposal

- **Current Standard**

- *"No improvement, building, structure, excavation, dumping or backfill shall be placed, built, undertaken or approved within a 30-foot setback area horizontally from the high-water mark of any river or live stream, except for bridges, paths for non-motorized use, irrigation structures or flood control and erosion protection devices."*
- Formerly Section 070.010.010 defined "high water mark means for the Roaring Fork River, the level of the 1973 peak flow measured at eight thousand two hundred eighty (8,280) cubic feet per second. For the Colorado River, the level of the 1973 peak flow measured at twenty thousand five hundred (20,500) cubic feet per second. For any other river or stream, its highest peak flow between October 1, 1956, and September 30, 1976."



CITY OF

GLENWOOD
SPRINGS

COLORADO

Proposal

- **Proposed Standard**

070.040.020(d) Development in Waterways and Areas of Special Flood Hazard

(24) Conservation of Waterways

It is the purpose of this Subsection 070.040.020(d)(24) to conserve and promote the health of the City's riparian ecosystems and water quality by maintaining a functional natural buffer adjacent to waterways.

a. Applicability

*All new improvements, buildings, additions, structures, excavations, grading, dumping, **clearing of native vegetation**, or backfill shall be subject to the requirements of 070.040.020(d)(24)b Standards unless the applicant demonstrates to the City Engineer and the Director by clear and convincing evidence that one or more of the following conditions is met:*

- 1. The removal of native vegetation, not to exceed 10 percent of the setback area defined below, **to allow a property owner private access to and personal enjoyment of the waterway**. This shall not be interpreted to allow for permanent structures of any kind within said area.*
- 2. The **construction of bridges, public utilities, public paths for non-motorized use, public open space areas, wildfire mitigation activities, irrigation structures, flood control and erosion protection devices** that do not result in water quality degradation, stream bank erosion, or a reduction in the function and quality of a riparian area or wetland.*
- 3. Removal of vegetation listed on the Garfield County **noxious weed** list, Chinese Elm, or Siberian Elm in compliance with applicable regulations. Vegetation shall be replaced with appropriate riparian plant species to limit erosion.*
- 4. Applicant demonstrates the **area does not contain significant riparian plant species or functions or is impacted by previous earth disturbing activities** and proposed activity improves water quality, limits erosion, and promotes riparian or wetland restoration.*

b. Standards

- 1. No improvement, building, structure, excavation, grading, dumping, clearing of native vegetation, or backfill shall be placed, built, undertaken or approved within **fifty feet of the ordinary high-water mark**, measured horizontally, of any river or live perennial stream.*
- 2. **No chemical treatments**, including but not limited to fertilizers, pesticides, and/or herbicides, are permitted with said fifty-foot setback area.*



CITY OF

GLENWOOD
SPRINGS

COLORADO

Considerations

- Ordinary High Water Mark

- “mark typically reached on an annual basis within a channel”
- Per Army Corp of Engineers..... “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.”
- Determination
 - Formal ecological survey (approximately \$50,000).
 - Site visit by staff



Photo credit: Water Environment Federation

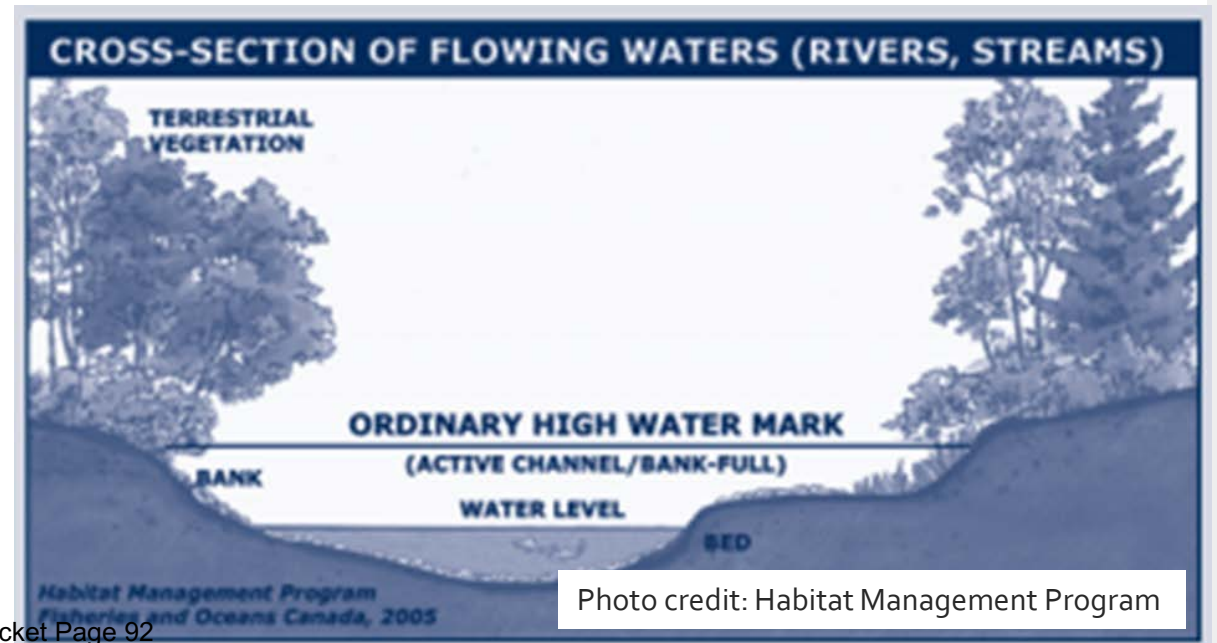


Photo credit: Habitat Management Program

Considerations

- Other communities
 - Garfield County – 35 feet
 - Basalt – 50 feet
 - Carbondale – Preservation of natural grade, drainage patterns, soil, and vegetation
 - Pitkin County – 50 to 100 feet
 - Eagle County – greater of 75 feet or 100 year floodplain
 - Aspen – heightened review with 100 feet or 100 year floodplain



Considerations

- Concerns expressed at work session
 - Interested but unsure the appropriate setback distance
 - May need to float the rivers to better understand concepts
 - Need to recognize existing encroachments/uses
 - Need to evaluate the impact to each lot
 - Avoid eliminating the ability to develop riverfront properties
 - Consider urban nature of the city and potential impacts to property values
 - Other current applicable regulatory standards yard setback, fire clearances, hillside protection, geologic hazards, and floodplain regulations.
 - Future redevelopment of properties may be difficult
 - Should guarantee amount of development on each property
 - Standards exist in all surrounding communities that exceed the City's



Code Amendment Approval Criteria

- 070.060.040(c)(3)d.3
 - i. Is **consistent with the Comprehensive Plan** and other City policies;
 - Riverside Protection
 - “Preserve natural resources” is a community goal
 - ii. Does **not conflict with other provisions of this Code** or other provisions in the Glenwood Springs Municipal Code;
 - Does not conflict
 - iii. Is necessary to **address a demonstrated community need**;
 - City lags behind neighboring communities
 - Essential to improved water quality



Comments

- Reviewing Agency
 - None
- Adjacent Property Owners
 - None received
- Others
 - Support
 - City of Glenwood Springs River Commission
 - Roaring Fork Conservancy
 - American Rivers
 - Trout Unlimited
 - Andrea Holland, Retired Hydrologist/Past River Commissioner



Action Item 1 and Staff Recommendation

- **Section 070.060.040(c)(3)d.1**
 - Recommend to City Council
 - Approval
 - Approval with conditions
 - Denial
 - Continue
- **Staff recommends**
 - Approval of Action Item 1
 - Findings on page 8



Action Item 1 Findings

- **Recommended Findings:**

- 1. The proposed amendment is consistent with the Comprehensive Plan and other City policies;
- 2. The proposed amendment does not conflict with other provisions of this Code or other provisions in the Glenwood Springs Municipal Code;
- 3. The proposed amendment is necessary to address a demonstrated community need;
- 4. The proposed amendment is necessary to respond to substantial changes in conditions and/or policy; and
- 5. The proposed amendment is consistent with the general purpose and intent of this Code.



Gary Vick

614 Cowdin Drive
Glenwood Springs, Co
(303) 548-0962 (cell)
garywvick@icloud.com

September 16, 2019

The City of Glenwood Springs
101 West 8th Street
Glenwood Springs, CO 81601
Attention: Mr. Trent Hyatt, Senior Planner, Community Development

RE: Proposed revision to Ordinance 070.040.020(d)(24) Conservation of Waterways

Honorable Mayor, City Council, and Planning and Zoning Commissioners:

I am grateful for and appreciate your taking the time to review the attached package that is submitted to facilitate your review of the subject revision. I look forward to discussing these items with you at scheduled P&Z and Council meetings.

I respectfully urge you to reject the proposed revision.

The proposed revision puts severe limitations on the use of our property in exchange for no quantifiable, demonstrated gain. There is no outcry for this revision, and it is not required at this time. It will result in potentially severe devaluation of the property values of homeowners along the Roaring Fork River. It ignores the rights of property owners to use and enjoy their land by forwarding the goals of well intentioned but minority environmental groups. The revision has not been subject to even a cursory cost/benefit analysis. The City has not determined how many properties would be made non-compliant by this revision, nor to what extent. There has been no meaningful outreach on the part of the City to solicit stakeholder input or work with citizens to craft an ordinance that can garner stakeholder support. The proposed ordinance does not meet the City's threshold for ordinance change. These arguments are substantiated in the attachments hereto.

Living on a river is magical. It is a truly wonderful experience. As residents living along the Roaring Fork in Glenwood Springs, we are lucky. Most of us purchased our properties for the express purpose of viewing, using, accessing, and enjoying the river. We listen to the river every day. We sleep to it every night. We watch it at breakfast and dinner every day. We fish in it. We watch families of fox, deer, bear, raccoon, mink, geese, ducks, hawks, and bald eagles feed and play in it. We watch the stars by it, picnic by it, and camp by it. We kayak and raft to our own back door. We do so responsibly, caring for the environment that we paid a premium to own.

We use our backyards much as you do, only there is no proposed ordinance revision

that could sterilize and make unusable up to 90% of your backyard's most attractive features without meaningful stakeholder input and without the City demonstrating any quantifiable need for, or quantifiable benefit from, this sterilization. You are not facing an ordinance that would limit your enjoyment and severely impact the value of your property.

I have provided City Staff ("Staff") with alternate language for the ordinance that mitigates many of these concerns (the "Proposed Changes"). I also provided thorough justification for the Proposed Changes. I have asked Staff to provide these documents in your packets.

Staff has reviewed the Proposed Changes and has stated to me that many of the changes are desirable. Perplexingly, none of the Proposed Changes have made it into the text of the code you will review tonight. You are reviewing something that, apparently, Staff might want to modify, that the City has not justified, that negatively impacts stakeholders along the river, and that has not had the benefit of meaningful outreach on the part of the City.

Accordingly, you have no choice other than to deny approval of the ordinance as presented. Alternatively, you could recommend that Council instruct Staff to i) engage stakeholders to solicit their input and concerns, ii) incorporate changes based on such input that Staff feels is appropriate, iii) fully justify the need for the ordinance with a proper cost/benefit analysis, and iv) resubmit the ordinance for approval.

Thank your for your efforts in the review of this material.

Best regards,

/signed by Gary W. Vick/

Gary W. Vick

Attachments

Discussion

The Proposed Ordinance does not appear to meet City Ordinance requirements for an Ordinance Change, section 070.060.040.(c)(3)d.3

- ii. **Does not conflict with other provision of this Code or other provisions of the Glenwood Springs Municipal Code.**

Rebuilding of existing non-conforming structures (such as those in the proposed setback area) is contemplated in the Code, but the Proposed Code stipulates that no excavation may occur in the setback area. Such excavation may be required in order to rebuild a nonconforming structure, and could be a conflict in the code.

- iii. **Is necessary to address a demonstrated community need**

The staff report states that the City lags behind neighboring communities in the protection of water resources.

This statement is not accurate.

The Roaring Fork Conservancy (“RFC”) performed a spot comparison of ordinances found in nearby municipalities and counties. This is shown below.

REGION	SETBACK	DETAILS
City of Aspen	100ft/100 year floodplain	Development is “subject to heightened review.” (Ord. 26.435.040)
Town of Basalt	50ft	Prohibits development and cutting of riparian and wetland vegetation. (Ord. 16-464a)
Town of Carbondale	Unspecific	If new development is proposed adjacent to any river, all practical means should be used to preserve natural grade, drainage patterns, soil and vegetation. (Ord. 4-2007)
Eagle County	75ft/100 year floodplain	No development within 75ft of high water mark or 100 year floodplain (whichever is greater).
Garfield County	35ft	Prohibits removal of any existing native vegetation or conducting any activity which will cause any loss of riparian area unless it involves the approved removal of noxious weeds, nonnative species, or dead or diseased trees.
Pitkin County	100ft/100 year floodplain	100 foot buffer for all activity and development. Setback may be reduced to a minimum of 50 feet if reduction does not result in water quality degradation, stream bank erosion and/or a reduction in the quality of riparian or wetland habitat.

The RFC comparison did not include municipalities downstream from Glenwood Springs from whom no outcry regarding water quality has been heard. The RFC’s inclusion of county ordinances for comparison is not appropriate insofar as municipalities generally have much greater density

and diversity of land use than do counties which can be much more rural, are more agricultural in nature, and require different land use criteria. One has only to compare a drive down Midland Avenue to a drive to Grand Junction to see this. Some individual landowners in nearby counties, for example, can easily have more river frontage than the 50 stakeholders addressed in this letter combined.

Accordingly, I prepared a more thorough comparison of ordinances in neighboring municipalities in the table below. The comparison concentrates on municipalities and omits counties. Though it does not capture every riverfront municipality in the state, it is what could put together in the time available. It captures a much better picture of where Glenwood stands in comparison to its neighbors than does the RFC comparison.

Six of the 10 municipalities reviewed have no riparian setbacks of any kind, and only one, Basalt, applied vegetation limitations retroactively to existing homeowners. Those municipalities without setbacks see no need for them. There is no demonstrated need for revised setbacks in Glenwood Springs.

Glenwood Springs does not lag behind the majority of its neighboring municipalities in the protection of water sources. There is no need to “keep up with the Jones”, and the Proposed Ordinance would be one of the most restrictive to existing homeowners in the comparison.

Municipality	Setback	Vegetation Restriction Retroactive to existing Properties	Summary of Ordinance
Aspen (from RFC)	100'/100 yr Flood-plain	No	Development subject to heightened review
Snowmass Village	25' from Riparian edge	No	<u>New development only.</u> Recreational access sites allowed. Vegetation loss to be minimized, replacement vegetation ratio may be less than 1:1 to facilitate a view of, and use of, the creek.
Basalt (from RFC)	50'	Yes	Apparently very restrictive, prohibits development and cutting of riparian and wetland vegetation.
Carbondale	<u>None</u>	No	Developments shall minimize impacts to...wetlands, and...stands of trees. Such resources... shall be preserved where practicable...development shall be designed to preserve existing waterways...primary vegetation (trees)...and other features.
Vail	30' or 50' from stream CL	No	Decks may extend 10' into setback, <u>no restrictions on vegetation.</u> City historically has paid 75% of regrowth design costs for citizens, is considering more restrictive code <u>after outreach and stakeholder input</u> but staff expects "very serious pushback" from citizens.
Gypsum	<u>None</u>	No	Community Development Director states that nothing is driving the need for an ordinance. City adopted <u>Eagle River Watershed Plan</u> but specifically, and significantly, did not adopt the setbacks associated with the plan.
New Castle	<u>None</u>	No	Planning Department stated no specific restrictions exist
Silt	<u>None</u>	No	Nothing found in review of code, messages left for city staff
Rifle	<u>None</u>	No	Nothing found in review of code, messages left for city staff
Parachute	<u>None</u>	No	...subdivisions... shall preserve, insofar as possible, ... drainage, ..., lakes, rivers, streams and trees. Significant vegetation, including dominant or mature trees & shrubs shall be retained where possible.
Glenwood (existing)	30' from HWM ~ 8127 cfs	No	Entire Ordinance: No improvement, building, structure, excavation, dumping or backfill shall be placed, built, undertaken or approved within a thirty-foot setback area horizontally from the high water mark of any river or live stream, except for bridges, paths for non-motorized use, irrigation structures or flood control and erosion protection devices.
Glenwood (proposed)	50' from OHWM per USGS	Yes	See proposed ordinance and Proposed Changes in letter to Trent Hyatt 8-31-19

You should instruct Staff to provide a more thorough comparison for review, inclusive of additional parameters and municipalities.

iv. Is necessary to respond to substantial changes in conditions and/or policy

Staff states that adoption of the proposed standards would help the City meet future compliance with EPA Municipal Separate Storm Sewer System (MS4) permit requirements if the population exceeds 10,000 in the 2020 census.

The Proposed Ordinance is premature, as is the perceived need to meet MS4 without knowing the results of the census.

If it is necessary to meet MS4, the Proposed Ordinance does not help to meet compliance in a substantial or meaningful way. The lands covered by the Proposed Ordinance represent less than 1% of the City's land area. The vast majority of the City's storm water disposal is untreated, running through yards, streets, and drainage systems directly into the river system. The vast majority of storm water does not go through any riparian environment of any kind. As such, improvement of the riparian environment, even by a substantial amount, would not materially affect overall storm water quality.

The bulk of the City's inability to comply with the MS4 permit, if any inability exists, has nothing to do with the areas addressed by the Proposed Amendment. The interior of the City, where most storm water is generated, should be the focus of this requirement, not the narrow riparian zones along the river.

To use this MS4 as a justification for the Proposed Ordinance is disingenuous and violates the requirements for ordinance change and its intent.

The Proposed Ordinance lacks balance between cost and benefit.

Many endeavors in life can be successful if one simply copies a similar, previously successful process. I didn't invent that phrase: Compaq, Dell, Microsoft, and other successful business did.

A relevant process to follow here is exemplified by the EPA under previous administrations. Prior to implementing clean water regulations the EPA gathers input from stakeholders from all sides the issue. Environmental groups, whom I generally support, are consulted. Industry, citizens, and municipalities are consulted. Significantly, no one group writes the rules. Rather, the EPA balances goals and needs, performs cost/benefit analyses, and writes regulations that generally garner the widest possible support.

Now lets compare this process to the derivation of the Proposed Ordinance that is before you today.

The Proposed Ordinance has been authored by Staff and the River Commission ("RC") with significant input from the RFC and certain members of City Council (collectively, the "Authors"). Staff states that the Proposed Ordinance has been in process for several years. Stakeholders have not been solicited or consulted to any meaningful degree during the drafting of the ordinance and were notified of the Proposed Ordinance through a single mailing approximately two weeks prior to a scheduled vote on the ordinance by the Planning and Zoning Commission ("P&Z"). The ordinance furthers the well intentioned goals of the Authors alone at the expense of reduced property values on the part of stakeholders.

The Authors have not performed any cost/benefit analysis, or even a cursory cost/benefit comparison, to justify the Proposed Ordinance. The Authors have not quantified the benefits of the Proposed Ordinance and have ignored the serious potential impact on the property values of stakeholders.

Significantly, they have not identified the number of properties that will be made non-compliant by the Proposed Ordinance and to what extent they will become non-compliant.

This is no way to run a railroad. Costs and benefits are properly discussed below.

Costs of the Proposed Ordinance

The costs of the Proposed Ordinance will be born by a small number of stakeholders and could be in the million of dollars.

The Proposed Ordinance restricts, or sterilizes, a portion of the land owned by homeowners. It limits a homeowner's use of his property, potentially limits his ability to clear or even trim vegetation so as to be able to see, use, access, and enjoy the river he paid dearly to be able to see, use, access, and enjoy. As proposed, it may limit the ability of a homeowner to rebuild a non-conforming structure or build a new structure at the 50' edge of the setback area due to lack of construction access.

The value of a less restricted property is more than the value of a more restricted property. The only question is to what degree. In my case, I paid a 28% premium for my property to be on the river and have a view of, use of, and access to the river. This premium is born out by square footage tax assessments of my property compared to other properties in my neighborhood.

If a homeowner's view, use, and access to the river are hindered and his ability to develop, redevelop, or rebuild his property is limited by the Proposed Ordinance, then the Proposed Ordinance will cause him to potentially loose the premium associated with his property.

There is no hard data as to how much more homeowners along the Roaring Fork paid to be able to see, use, and access the river, or how much the property value will be reduced by the Proposed Ordinance, but we can get a feel for the order of magnitude of this premium by making some reasonable assumptions. In my case the amount of market value that I will lose under the Proposed Ordinance is on the order of \$100,000 (\$450,000 market price X $(1 - 1/1.28)$ ~ \$100,000).

According to Staff, there are 50 odd private homes along the river that could be affected by the Proposed Ordinance. Though many of these homes are larger and more expensive than mine, if these homes incur a \$100,000 devaluation per property, valuation losses of over \$5 million could be incurred by the stakeholders.

As established in the next section, there is no corresponding benefit associated with this cost.

The Authors claim that there will be no impact on property valuation. None. They claim that property values may increase under the Proposed Ordinance. These claims defy common sense. The value of a less restricted property is more than the value of a more restricted property.

That said, I had the Chairman of the RC tell me that *"Common sense does not apply. We have a study showing that riparian setbacks have no effect on property values and may increase them."* Another member of the RC told me that resale prices would not be affected by the Proposed Ordinance because *"whoever can afford (this) property can afford to get any variance they need"*. I had not realized variances were for sale.

The Chairman of the RC was kind enough to forward me a copy of the subject study performed in 2006 by Dr. Brian A. Mikelbank of Cleveland State University ("CSU") entitled *Hedonic Analysis of Riparian/Wetland Setbacks*. It was performed on a fee basis on behalf of Chagrin River Watershed Partners, Inc. ("CRWP"), a watershed conservancy group similar to the RFC.

The study performed a regression analysis (a statistical analysis of outcomes with respect to multiple variables) on roughly 4,000 home sales over several years in the CRWP watershed area, roughly 400 of which bordered a stream or river. The overwhelming majority of properties bordering a stream or river had setbacks in place. The regression analysis took into account a multitude of variables that could influence transaction prices. The regression analysis did not show a correlation between setbacks and transaction prices.

As a degreed engineer turned CFO that has taken both graduate and post graduate statistics classes, this seemed a bit counterintuitive to me. As a numbers guy I read the study cover to cover, number for number. On page 15 of the study I found the reason why the regression analysis did not find a correlation between setbacks and transactions prices. Page 15 states (emphasis added):

“While a homebuyer valuing the environmental protection the setback provides could explain this result, our focus group meeting indicated that this explanation is unlikely in this market.

The consensus opinion expressed at that meeting was that potential homebuyers do not know about setback designations. Further, the consensus was that it was unlikely that realtors would even know whether or not a property had a designated setback. Thus, the focus group predicted that setback designation would not be an influence in the area housing market. That makes the results of the community specific model somewhat suspect”.

Two things bothered me after I read the study.

First, the vast majority of homes with setbacks were the same homes that were on the river. The setback variable and the streamside variable were therefore coupled. If you get one, you generally get the other. Because the variables were coupled, the higher prices paid for homes with setbacks might be attributed to their being on a stream, a generally desirable trait. Absent common sense, there is no way to know.¹

Second, it seems to me that a buyer would not be in a position to pay more, or less, for a property with, or without, a setback if he or she was unaware of the existence of the setback when the real estate transaction was made. It seems to me that statistically measuring if people will pay more, or less, for a property with, or without, a setback is impossible if the parties do not know about the setback and factor the setback into their pricing decision.²

The Author’s contention that riparian setbacks do not influence real estate transaction prices is based on a study that has fatal flaws. Their conclusion is false. Setbacks will be widely known in Glenwood Springs and required to be disclosed at the time of sale. Setbacks will have a negative impact on transaction prices.

This conclusion is verified by attached emails from two statisticians. One reviewed the study at my request, and the other is Dr. Mickelbank, the author of the study.

¹ For an analogy, consider that Ferraris come with fancy tires not found on other cars. If you do a regression analysis on 1,000 various car sales and include car brand and tire type as variables, the analysis may not be able to distinguish between these two effects because they always come together. So common sense is used to determine whether the buyer paid \$300,000 for the Ferrari, or for the tires.

² Staying with the car sales analogy, suppose that 500 of the 1,000 cars above had a handful of sand thrown into their engines prior to the sale and no one knew about it. The regression analysis would not detect any devaluation in price due to the sand in the engine because no one knew it was there and no one paid less for the car with sand in its engine. Can you conclude that sand in the engine, if known about, has no effect on the price? No.

Benefits of Proposed Ordinance

The Authors have not demonstrated a need for the Proposed Ordinance.

The benefits shown by the RFC have not been shown to be needs, are general in nature, none were quantified, and no credible argument was presented showing that implementation of the Proposed Ordinance would mitigate any of the concerns discussed in the proposed benefits to any meaningful, measureable degree.

The Roaring Fork River is over 70 miles in length. Only about 4 of those miles are in the city of Glenwood Springs. The fact of the matter is that there is no wholesale, overt destruction or degradation of riparian habitat along the banks of the Roaring Fork River through Glenwood Springs by homeowners who live along the river. To the contrary, most homeowners love the river more than the Authors do and are good environmental stewards of the lands they paid a premium to own and use.

In its July 19, 2019 letter to the Mayor, Council, and the P&Z the RFC infers that the Proposed Ordinance will have a positive economic impact because it will:

- *Reduce drinking water costs in the event that the City's secondary water source is required to be used.* This claim is not substantiated. The City's water supply currently meets applicable specification, as does its drinking water.
- *Reduce erosion.* This claim is not quantified, even on a cursory level. Examination of the river from Google Earth, Red Mountain, or by floating the river does reveal some areas of erosion within Glenwood Springs but it is impossible to tell over what time frame these occurred and they do not require a broad-brush ordinance to correct.
- *Increase property values.* This claim is false as shown in the previous section.
- *Support the local fishing economy.* Homeowners along the Roaring Fork generally love to fish. The RFC does not quantify this claim in any fashion whatsoever and there is no measureable degradation to the fishing industry by homeowners along the river or any measureable increase claimed if the Proposed Ordinance is adopted. The statement is completely general.
- *Tourism will be increased by improved aesthetics.* Aesthetics are in the eye of the beholder. Comments shouted to homeowners from passing commercial rafters are universally complimentary with respect to the aesthetics of individual properties. I hear such comments literally every day in the summer season. Not once in 21 years have I heard a derogatory comment relating to the aesthetics of my property or those of my neighbors.

People have impacted their environments as far back as our Native American ancestors. By default, tradeoffs are made between an ecosystem and a municipality. During discussions regarding the Proposed Ordinance, a liaison Council member told me that "*we must do everything possible to protect the river.*" Really? Everything? At any cost? The EPA does not see it that way. Nor does Staff.

When I related this conversation to Staff, the planner literally burst out laughing. He stated *“well, in that case we might as well just go shoot ourselves right now, because we will always have some level of impact on the river.”*

You may hear from the Authors that river temperatures are rising and that last summer there was an algae plume in the river. All true. Our environment is getting warmer, and last summer was particularly dry and hot. That is when algae plumes occur. But we are not burning the Amazon along the banks of the Roaring Fork River here in Glenwood Springs. You will not hear the Authors present any credible scientific evidence to support any claim that if the Proposed Ordinance had been in place last summer then these anomalies or any others would have been avoided.

In a document entitled *Glenwood Springs Riparian Assessment* dated February 26, 2018, members of the RC and RFC make the following observations that I comment on below.

- *The Banks at Threemile Creek are marginally vegetated and under erosion.*

The National Forest Service (“NFS”) routinely closes damaged areas to traffic to facilitate revegetation. This problem does not need a broad-brush ordinance to resolve.

- *(summarized) Backyard development creep and riparian vegetation clearing are increasing...some (landowners) have cleared ... access down the hill slope (that) may disrupt riparian function and if copied...could result in extensive loss of riparian habitat. Potential treatments include curtailing ... development ... to preserve riparian function while still allowing private landowner(s)...to enjoy riverside amenities. Public education is a key component for addressing these concerns.*

A number of points regarding vegetation are relevant here.

1. The claim is anecdotal and unsubstantiated.
2. There is no pre and post analysis over any defined time frame to justify a claim that creep is significant or detrimental. There is no objective science here. There is no wholesale or overt degradation of riparian habitat that warrants this broad brush approach.
3. Staff has stated that there are roughly 50 private homes along the river in Glenwood. The extent of their riverfront is therefore limited, and the extent of any cleared or developed riverfront is even more limited. Staff has provided no hard data on this riverfront footage.
4. Property owners have a right to use, enjoy, view, and access the river on the property they paid a premium to own.
5. Efforts to discuss alternative usage scenarios have been rebuffed by the Authors. Property owners currently enjoy 100% use of their

property. The Proposed Ordinance's provision to allow property owners to use only 10% of their riparian area is unfair and insufficient by any standard. It is invasive and an affront to property owners rights. When you live on the river, you understand this.

6. The Assessment states that "*Public Education is a key... (see above)*. So where, exactly, has been this public outreach and education? With the exception of Staff, the Authors have largely refused to engage well intensioned citizens in a constructive revision of the Proposed Ordinance. Instead, it is being considered with scant notice to stakeholders after years of work by the Authors to further their own environmental views.

The Assessment's claim seems rooted to some extent in the Authors' objection to non-native grasses in the riparian zone. The following table was reproduced from a 2005 study provided by the RFC entitled *Riparian Buffer Zones: Functions and Recommended Widths*. As shown below, it suggests that grasses actually fare pretty well in comparison to other types of vegetation.

Function	Grass	Shrubs	Trees
Sediment trapping	High	Medium	Low
Filtration of Sediment born Nutrients, Microbe and Pesticides	High	Low	Low
Soluble forms of Nutrients and Pesticides	Medium	Low	Medium
Flood Conveyance	High	Low	Low
Reduction of Stream Bank Erosion	Medium	High	High

The study goes on to say that the removal efficiency of grasses, compared to an ideal mix of grasses, shrubs, and trees, have a removal efficiency of 61% of nitrates, 72% of phosphorus, and 44% of orthophosphates. Grasses are therefore not completely inept at removal of pollutants. And remember, the existing and potential area of grasses along the riverbank is relatively small.

The takeaway here is that non native homeowner grasses comprise a very small percentage of the short Roaring Fork riverbank through Glenwood Springs, that there is no objective evidence to suggest that the amount of grass coverage is egregious, detrimental, or increasing, that grass is better than or equal to 4 of the 5 functions listed in the table above, that grass provides meaningful absorption of nitrates and phosphorous, and that the vast majority of storm water runoff does not flow through the riparian environment but drains through storm sewers directly into the river which makes concentrating on homeowner riverbanks somewhat of a fruitless exercise.

It cannot be concluded that the Proposed Ordinance would result in meaningful reduction in riparian function or increase water quality to any meaningful, demonstrable degree.

Gary W. Vick

614 Cowdin Drive
Glenwood Springs, CO 81601
(303) 548-0962

August 31, 2019

Mr. Trent Hyatt
Senior Planner, Community Development
The City Glenwood Springs
101 West 8th Street
Glenwood Springs, CO 81601

RE: Basis of changes to proposed Riparian Setback Ordinance

Trent,

I appreciate your meeting with me last Monday to review changes to the proposed ordinance regarding riparian setbacks (the "Proposed Changes"). As we discussed, the vast majority of your original language has been retained and most of the Proposed Changes are expansions and clarifications. Based on our conversations it appears you are in agreement with many of the Proposed Changes.

I recommend that you incorporate these changes prior to the next P & Z meeting and notify affected stakeholders of the changes so that their comments may be considered by P & Z.

The proposed ordinance is somewhat cavalier with respect to the rights of property owners. What follows is a summary of the reasoning for the Proposed Changes and is provided to facilitate discussion among your staff and your advisors.

Purpose

The purpose of the ordinance has been expanded in the Proposed Changes based on consultations with you, members of the River Commission, and members of Council. It now fully reflects the intent of the ordinance as represented to me by these parties. This section is self explanatory.

Definitions

Definitions are added for clarity and will of course need to be relocated to the definitions section of the Code.

Standards

Generally, the standards have been expanded to reflect the consultations mentioned above. Proposed Changes focus on three main areas:

1. **Improvements have been segregated into two separate sections: new and existing to adequately provide for “grandfathering”.**

Section 070.010.070 (Nonconformities) was not designed to, nor does it, address riparian areas. Section 070.10.070 (f) (3) is the closest applicable section and addresses landscaping. It states that the nonconforming features must be upgraded if, among other things, *any* changes are made to parking areas and *certain* changes are made to structures outside of the riparian area. Simply put, an insignificant change to something not impacting the riparian area could result in a loss of grandfathering. This is not the intent of the grandfathering discussed with members of Council and the River Commission. Section 070.10.070 is inappropriate for this particular purpose.

Accordingly, separate sections covering new and existing improvements were added in the Proposed Changes.

2. **Trimming of vegetation is allowed in the Proposed Changes.**

Consultations with you and Council Members affiliated with the River Commission indicate that it is not the intent of the ordinance to restrict a private owner's view and use of the waterway by restricting his ability to trim vegetation. The term “clearing” in the proposed ordinance is vague.

Accordingly, Clearing of Native Vegetation has been added to the definitions and trimming is specifically allowed in the Proposed Changes provided that root systems are not damaged or destroyed.

3. **A 15 foot work zone has been added to facilitate construction, rebuilding, and repair of new and existing structures.** The provision provides that any vegetation disturbed in this process will be reasonably replaced.

It is the intent of the proposed ordinance to allow structures to be built within 50 feet of the OHWM and for existing structures within the setback to be rebuilt or repaired. Unfortunately, the proposed ordinance does not account for the need to have space around a new or existing structure for crews or equipment. The unintended consequence of the proposed ordinance is to increase the setback by the distance required to work around the structure. This is not the intent of the proposed ordinance as presented to me in the consultations reference above.

This is remedied simply by inclusion of a 15 foot perimeter work zone in the Proposed Ordinance, provided that commercially reasonable efforts are made to substantially replace any disturbed vegetation within the 15 foot perimeter. This retains the intent of the riparian setback.

Applicability

Proposed Changes to Applicability relate to two main areas, river access and consistency between subparagraphs 2 and 4.

1. **Consistent threshold for Paragraph 2 and 4.** Paragraphs 2 and 4 have different thresholds of performance and remedy. As currently proposed, City activities are not as limited as homeowner activities. The Proposed Changes correct this and a “do no harm” standard is used for both paragraphs.
2. **Stairs.** Many homeowners have a need for stairs on steeper parts of the banks along the river. Whether stairs do or do not now exist, this is a safety issue and homeowners have a right to safe river access. Stairs are provided for in the Proposed Changes.
3. **River Access.** The Proposed Changes allow for increased access and use of the river vis-à-vis the proposed ordinance. The proposed ordinance allows clearing 10% of the vegetation in the setback area, whereas the Proposed Changes increase this to the greater of 25% or that required to allow for an Access Corridor 30 feet wide through the setback area.

Many homeowners purchased their properties on the Roaring Fork expressly for the purpose of viewing, using, accessing, and generally enjoying the river. Most paid a premium to do so. Living on the river is magical. Take it from someone who does it everyday: the river and its wildlife are healthy. One

only has to float the river or view the river from Red Mountain to confirm that no wholesale, overt destruction of riparian environment is occurring along the banks of the Roaring Fork through Glenwood Spring.

Rather than use local solutions to address local areas of habitat loss, the proposed ordinance would sterilize and makes unusable up to 90% of a homeowners river frontage without meaningful stakeholder input and without the City demonstrating any quantifiable need for, or quantifiable benefit from, this sterilization.

That said, in an attempt to strike a balance between homeowners who own and use the river frontage every day and those who will incur no quantified benefit or any personal cost associated with its sterilization, the Proposed Changes includes an expansion of the usable riparian area that many homeowners may find acceptable.

There is a minimum amount of access a homeowner requires to view, access, use, and enjoy the river, regardless of the size of his lot or the length of his stream frontage.

Different homeowners may have different thoughts, but I recommend 30 feet for the Corridor Width because this allows a small lot owner to have adequate access to the river. I have a 30 foot corridor on my 75 foot lot and in my personal experience this is the minimum you need to get two or three rafts, some kayaks, lawn chairs, coolers, friends, family, and a couple of dogs together along the river bank for a get together. It is also the minimum I need for fishing, relaxing, and viewing. Keep in mind it is my land, not yours. I currently have 75 feet I can use; limiting my unrestricted use to 30 feet is a generous offer on my part.

I recommend 25% as the area parameter because, by any objective measure, telling any home owner that he can only use 10% of what he already owns and can currently use without restriction is authoritarian, heavy handed, one sided, and an affront to the rights of property owners rights. This may not have been the intent, but it is the result. The 10% figure was arrived at by and large by people who don't live on the river and have 100% use of their own back yards to use as they see fit. I might have authored such a 10% proposal myself if I did not live on the river. But I do.

So, how do these Proposed Changes compare to the proposed ordinance? The following calculation is pertinent: There are roughly 4 miles of river through Glenwood Springs. That's about 8 miles of riverbank, or about 42,000 feet of riverbank in aggregate along both sides of the river. The Proposed Changes would allow 50 homeowners to clear 30 feet of vegetation along the riverbank. Not all homeowners would take advantage of this. Some might not want to, and others might not be able to due to topography, and some may have already done so and are grandfathered. Some might put the corridor in areas of no riparian habitat.

But let's make an extremely onerous assumption and say that all 50 homeowners clear a new 30 foot Access Corridor to the riverbank through virgin riparian habitat. That means that 1,500 feet of river front could be cleared. Under this extreme scenario, 1,500 feet out of 42,000 feet, or 3.6% of the riverfront, would not remain sterilized by the Proposed Changes. Said another way, 96.4% would remain sterilized. If one takes into account that grasses could be planted in the Access Corridor, and that these grasses have, according to data provided by the Roaring Fork Conservancy, between 70% and 90% (depending on the pollutant) of the filtering capacity of a mixed riparian habitat, then less than 1% of the filtering capacity of the stream bank would be affected. That's not much. The proposed Changes give you between 96% and 99% of what you are asking for. And frankly that's on the low side, because not everyone will construct such a corridor.

I am not trying to be melodramatic, but homeowners along the Roaring Fork cannot accept the proposed ordinance in its current form. We have the motivation, resources, expertise, and remedies available to successfully contest this issue.

You love the river as much as I do, and I know trampling on property owner rights was not your intent. But the proposed ordinance does exactly that as an unintended consequence. The Proposed Changes are more than reasonable, mitigate many concerns, should be incorporated in their entirety, presented to stakeholders for comment, and subsequently reviewed by P & Z and Council.

Regards,

/ signed by Gary W. Vick/

Gary W. Vick

(24) **Conservation of Waterways**

It is the purpose of the Subsection 070.040.020 (d) (24) to: 1) conserve and promote the health of the City's riparian ecosystems and water quality by maintaining a functional natural buffer adjacent to waterways, 2) allow owners of properties affected by this ordinance to access, use, view, and personally enjoy the river ecosystem and waterway, 3) not materially degrade the underlying value of any property affected by this ordinance, and 4) not impede development or redevelopment of any property affected by this ordinance except as set forth below.

For the purposes of this Subsection 070.040.020 (d) (24):

- **Clearing of Native Vegetation** shall be defined as complete removal of vegetation and the removal or destruction of the root systems associated with that vegetation.
- **Ordinary High Water Mark ("OHWM")** shall be defined */USGS definition to be inserted here/*.
- **Riparian Setback Area** shall be defined as the area within 50 feet of the OHWM measured perpendicular to the OHWM that contains Riparian habitat.
- **Access Corridor** shall be defined as a continuous corridor not to exceed 30 feet in width measured collinear with the OHWM through the Riparian Setback Area.

a. Applicability

All new improvements, buildings, additions, structures, excavations, grading, dumping, clearing of native vegetation, or backfill shall be subject to the requirements of 070.040.020 (d) (24) b *Standards* unless the applicant demonstrates to the City Engineer and the Director by the preponderance of the evidence that one or more of the following conditions is met:

1. The removal of native vegetation, not to exceed the greater of 25% of the Riparian Setback Area or area of the Access Corridor, to allow a property owner private access to, use of, view of, and personal enjoyment of the

river ecosystem and waterway. This shall not be interpreted to allow for permanent structures of any kind within said area (except for access steps no more than 4 feet in width and no more than 18 inches high), nor shall it be interpreted to prevent trimming of native vegetation outside of the Access Corridor or 25% of the Riparian Setback Area so long as that vegetation has historically been trimmed and so long as the root systems of the vegetation are not removed or destroyed.

2. The construction of bridges, public utilities, public paths for non-motorized use, public open spaces, wildfire mitigation activities, irrigation structures, flood control and erosion protection devices that to not result in water quality degradation, increased stream bank erosion, or a reduction in the function and quality of a riparian area or wetland.
3. Removal of vegetation listed on the Garfield County noxious weed list, Chinese Elm, or Siberian Elm in compliance with applicable regulations.
4. Applicant demonstrates that the area does not contain significant riparian plant species or functions or is impacted by previous earth disturbance activities and proposed activity does not result in water quality degradation, increased stream bank erosion, or a reduction in the function and quality of a riparian area or wetlands.

b. Standards

1. No new improvement, building, structure, excavation, grading, dumping, Clearing of Native Vegetation, or backfill shall be placed, built, undertaken or approved within the Riparian Setback Area associated with any river or live perennial stream, provided that: i) trimming of any native vegetation is permitted in the Riparian Setback Area so long as the root systems of the vegetation are not removed or destroyed, and ii) the Riparian Setback Area may be disturbed within the footprint of any new improvement, building structure, or excavation within a 15 foot perimeter of any new improvement, building, structure, or excavation to facilitate construction provided that commercially reasonable efforts are made to substantially replace any disturbed riparian vegetation within the 15 foot perimeter with vegetation of similar type and function.

2. No existing improvement, building, structure, or excavation may be repaired, maintained, rebuilt, or redeveloped within the Riparian Setback Area or any river or live perennial stream, provided that: i) trimming of native vegetation in the Riparian Setback Area is permitted to any extent so long as that vegetation has historically been trimmed and so long as the root systems of the vegetation are not removed or destroyed, and ii) the Riparian Setback Area may be disturbed within the footprint of any existing improvement, building structure, or excavation and within a 15 foot perimeter of any existing improvement, building, structure, or excavation to enable repair, maintenance, rebuilding, or redevelopment of such improvement, building, structure, or excavation provided that commercially reasonable efforts are made to substantially replace any disturbed riparian vegetation within the 15 foot perimeter with vegetation of similar type and function.
3. No chemical treatments, including but not limited to fertilizers, pesticides, and/or herbicides, are permitted within the Riparian Setback Area.

(24) Conservation of Waterways

~~1.~~ It is the purpose of the Subsection 070.040.020 (d) (24) to: 1) conserve and promote the health of the City's riparian ecosystems and water quality by maintaining a functional natural buffer adjacent to waterways, 2) allow owners of properties affected by this ordinance to access, use, view, and personally enjoy the river ecosystem and waterway, 3) not materially degrade the underlying value of any property affected by this ordinance, and 4) not impede development or redevelopment of any property affected by this ordinance except as set forth below.-

For the purposes of this Subsection 070.040.020 (d) (24):

- Clearing of Native Vegetation shall be defined as complete removal of vegetation and the removal or destruction of the root systems associated with that vegetation.
- Ordinary High Water Mark ("OHWM") shall be defined */USGS definition to be inserted here/*.
- Riparian Setback Area shall be defined as the area within 50 feet of the OHWM measured perpendicular to the OHWM that contains Riparian habitat.
- Access Corridor shall be defined as a continuous corridor not to exceed 30 feet in width measured collinear with the OHWM through the Riparian Setback Area.

a. Applicability

~~a.~~

All new improvements, buildings, additions, structures, excavations, grading, dumping, clearing of native vegetation, or backfill shall be subject to the requirements of 070.040.020 (d) (24) b *Standards* unless the applicant demonstrates to the City Engineer and the Director by clear and convincing the preponderance of the evidence that one or more of the following conditions is met:

~~2.1.~~ The removal of native vegetation, not to exceed ~~the greater of 40~~25% of the ~~setback area~~Riparian Setback Area, or area of the Access Corridor, to allow a property owner ~~private private~~ access to, ~~use of, view of, and~~ ~~and~~ personal enjoyment of the ~~river ecosystem and~~ waterway. This shall not be interpreted to allow for permanent structures of any kind within said area ~~(except for access steps no more than 4 feet in width and no more than 18 inches high), nor shall it be interpreted to prevent trimming of native vegetation outside of the Access Corridor or 25% of the Riparian Setback Area so long as that vegetation has historically been trimmed and so long as the root systems of the vegetation are not removed or destroyed.~~

~~3.2.~~ The construction of bridges, public utilities, public paths for non-motorized use, public open spaces, wildfire mitigation activities, irrigation structures, flood control and erosion protection devices that to not result in water quality degradation, ~~increased~~ stream bank erosion, or a reduction in the function and quality of a riparian area or wetland.

~~4.3.~~ Removal of vegetation listed on the Garfield County noxious weed list, Chinese Elm, or Siberian Elm in compliance with applicable regulations. ~~Vegetation shall be replaced with appropriate riparian plant species to limit erosion.~~

~~5.4.~~ Applicant demonstrates that the area does not contain ~~ss~~significant riparian plant species or functions or is impacted by previous earth disturbance activities and proposed activity ~~does not result in water quality degradation, increased stream bank erosion, or a reduction in the function and quality of a riparian area or wetlands~~improves water quality, ~~limits erosion, and promotes riparian or wetland restoration.~~

b. Standards

1. No ~~new~~ improvement, building, structure, excavation, grading, dumping, ~~ec~~clearing of ~~n~~Native ~~v~~Vegetation, or backfill shall be placed, built, undertaken or approved within ~~fifty feet of the ordinary high water mark,~~

~~measured horizontally,~~ the Riparian Setback Area ~~of associated with~~ any river or live perennial stream, provided that: i) trimming of any native vegetation is permitted in the Riparian Setback Area so long as the root systems of the vegetation are not removed or destroyed, and ii) the Riparian Setback Area may be disturbed within the footprint of any new improvement, building structure, or excavation within a 15 foot perimeter of any new improvement, building, structure, or excavation to facilitate construction provided that commercially reasonable efforts are made to substantially replace any disturbed riparian vegetation within the 15 foot perimeter with vegetation of similar type and function.

2. No existing improvement, building, structure, or excavation may be repaired, maintained, rebuilt, or redeveloped within the Riparian Setback Area or any river or live perennial stream, provided that: i) trimming of native vegetation in the Riparian Setback Area is permitted to any extent so long as that vegetation has historically been trimmed and so long as the root systems of the vegetation are not removed or destroyed, and ii) the Riparian Setback Area may be disturbed within the footprint of any existing improvement, building structure, or excavation and within a 15 foot perimeter of any existing improvement, building, structure, or excavation to enable repair, maintenance, rebuilding, or redevelopment of such improvement, building, structure, or excavation provided that commercially reasonable efforts are made to substantially replace any disturbed riparian vegetation within the 15 foot perimeter with vegetation of similar type and function.

~~1.3.~~ No chemical treatments, including but not limited to fertilizers, pesticides, and/or herbicides, are permitted within ~~said fifty foot~~ the ~~Setback Area~~ Riparian Setback Area.

From: Brian A Mikelbank b.mikelbank@csuohio.edu
Subject: RE: Could you please answer a couple of quick questions on a 2006 study you performed?
Date: September 3, 2019 at 3:12 PM
To: Gary Vick garywvick@icloud.com

Hi Gary:

No imposition at all – it is good to know that this research is being discussed!

I have inserted responses below your specific questions.

From: Gary Vick [<mailto:garywvick@icloud.com>]
Sent: Thursday, August 29, 2019 12:42 PM
To: Brian A Mikelbank <b.mikelbank@csuohio.edu>
Subject: Fwd: Could you please answer a couple of quick questions on a 2006 study you performed?

Dr. Mikelbank,

I am retired and live on the Roaring Fork River in Glenwood Springs, Colorado. The City is considering introducing a setback ordinance which limits property owners activities within 50 feet of the Roaring Fork river. There is currently a 30' setback covering structures, but the proposed ordinance increases the setback and restricts other activities in the setback area.

While this may be generally desirable, my neighbors and I are concerned that the proposed ordinance could reduce property values by limiting their use and redevelopment potential in the future. A developer or builder, for example, could be further restricted by the proposed ordinance and therefore might pay less for a more restricted property than he would for a property that is less restricted. At least that's the theory.

Yes! This was exactly the perception CRWP was facing when we started talking about this project.

The City provided me with a copy of your 2006 “Hedonic Analysis of Riparian/Wetland Setbacks”. It is a thorough study and I enjoyed reading it. As you know, it was commissioned by Chagrin River Watershed Partners, a watershed conservancy and reviewed roughly 4,000 home sales in the watershed area, roughly 400 of which bordered a stream or river. As you know, the study concludes that setbacks do not decrease property values and may increase them.

The conclusions seem counterintuitive to me. While I have a background in engineering and finance and have taken undergraduate and graduate statistics courses, I would welcome your comments regarding a couple of observations I have with the study.

1. First, the study was commissioned by a conservancy group (link

1. First, the study was commissioned by a conservancy group (link here: <https://crwp.org>). I don't know that they had an agenda or were seeking a predetermined outcome, but setbacks generally help their cause, as would, by corollary, any data showing setbacks are good for property values. When they ask you to perform the study, were they seeking satisficing data to confirm a theory that setbacks have no impact on property values?

At our college's research centers it is an early conversation that we're being hired to answer a research question, whether or not that answer is what they might be looking for. I think organizations coming to a university know that, but we always review. Given their mission, they obviously thought setbacks were a good thing. And they heard from local realtors that prospective purchasers don't know if there is a setback or not. But when they went to communities to talk about implementing setbacks they were getting pushback exactly along the lines you mentioned earlier – that all else equal, we might reasonably expect deed restrictions to reduce property value. They wanted to know what the data had to say on the matter.

2: Second, the homes with setbacks are, by and large, the same ones that are on a stream or river. It seems to me these variables could be coupled. Any increase in prices for homes with setbacks may have been due to simply being on the stream or river, a generally desirable thing.

Agreed. That is why it was important to have a mix of stream front houses in the sample that did and did not have setback restrictions. Actually, I seem to recall that I should use "setback designation" not "setback restriction"! This allows the regression model to distinguish between the separate effects of being stream front vs. being stream front with a setback designation.

3: Third, the second and third full paragraphs on page 15 of the study state that when properties were bought and sold, the consensus opinion was that neither homeowners nor realtors were aware of any setbacks. It seems to me that a buyer would therefore not be in a position to pay more, or less, for a property with, or without, a setback if he or she was unaware of the existence of the setback. It seems to me that statistically measuring if people paid more, or less, for a property with, or without, a setback is impossible if the buyers did not know about the setback and factor the setback into their pricing decision.

Again, agreed. The issue, though, was the degree to which the assembled focus group captured the entirety of the market reality. Certainly they were a valuable source of information, but they surely hadn't talked to all of the purchasers, sellers (and potential purchasers and sellers) throughout the market, throughout the years being covered in the study.

If designation doesn't impact house price, there are two options – buyers/sellers didn't know, or they knew and didn't care.

We did get a few blips of positive impacts, but it seemed that those weren't very robust.

But you're right, if people don't know, then a statistical finding of positive or negative price impact is really telling you about something else. In the case of Auburn and Bainbridge it seemed to be

capturing some type of “late-in-the-study-period” effect as prices were ramping up (before the housing crisis!). We did have year indicator variables that should have accounted for this, but perhaps not in its entirety.

I think my take-away, looking back, is that the focus group probably had a good sense of the buying and selling public – that setback designations were not on their radar, and thus might not exhibit a strong price impact either way. But I think the experience of you and your neighbors is similar to what CRWP was trying to make sense of. That even though they were hearing from real estate professionals that buyers don’t know of them, when they talked to homeowners about establishing designations in their communities there were concerns over the loss of value and loss of development/expansion potential.

I hope this is helpful and that you are satisfied with how your community moves forward.

Don’t hesitate if you have additional questions,

Brian.

I may have missed something and any comments or clarifications on these items would be greatly appreciated.

I apologize for the imposition but am grateful for your help. Thank you so much.

Regards,

Gary W. Vick
614 Cowdin Dr
Glenwood Springs, CO 81601
(720) 548-0962 (cell)

Link to study:

https://crwp.org/files/final_report_hedonic_analysis_riparian_wetland_setbacks.pdf

6 September 2019

This statement is provided at the request of Gary Vick and in review of the September 2006 study, “Hedonic Analysis of Riparian/ Wetland Setbacks”, prepared by Brian A. Mikelbank.

In statistics, there are three steps used to infer causality or cause-and-effect. The three steps simply put are (1) relationship, (2) temporal precedence, and (3) non-spuriousness. I was asked to review a study for these elements with regard to inferences on the causality between setback policies and real estate valuations. The study shows statistical significance for no effect on the principles of step (1) relationship. The study isolates for temporal precedence by selecting valuations that occurred after the setback policies were enacted, appealing step (2). However, the most important and troublesome step of non-spuriousness was not able to be established. Non-spuriousness refers to showing that the relationship from step 1 is not false or potentially caused by a third extraneous variable. In the provided study, there are several factors that indicate the findings may be due to a spurious (false) relationship between setback policies and real estate prices. To name a couple of these factors, the valuation methods for the real estate did not include the knowledge of a setback policy by the transacting parties, and the resulting regression tools contain variables, such as location, that provide a stronger statistical relationship with real estate prices. So, while the study provides mathematical statistics for a no-effect or no-relation between setback policy and real estate prices, it does not provide causal statistical significance for the effects of consumer valuation through real estate prices from setback policies. [This is not a statement on the value of setback policies or a political opinion/recommendation of the reviewer on such matters.]



Elizabeth T Poulos, Ed.D.
SummitCOPrep@gmail.com

About the Author: Dr. Elizabeth Poulos is a statistics and economics instructor at Colorado Mountain College. In addition to a Doctor of Education, Dr. Poulos’ academic degrees include an MBA, a Master of Financial Analysis, a Master of Business in Financial Risk Management, and a Bachelor of Economics. She is an award-winning scholar with publications and presents on a variety of topics internationally.

From: [Julie Rippy](#)
To: [Trent Hyatt](#)
Subject: Letter sent to P & Z - Consideration of a Code Amendment to Section 070.040.020(d)(24)
Date: Tuesday, September 17, 2019 12:17:58 PM

Hi Trent. Hope you are well! I am not sure if this came across your desk, but below is a letter Randy and I sent to Gretchen requesting she forward it on to the P & Z Commissioners prior to the meeting in July. We also copied council on this letter. I wanted to make sure to send it on to you since you are the Senior Planner on this code amendment proposal

Since the meeting ran so late with the ANB agenda item, many folks who may have wanted to speak on this agenda item did not get the opportunity, as they had to leave. We would like to formally request to you and P & Z Commissioners that the item be opened to public comment at the Sept. 24th meeting.

As always, thank you!

Julie Rippy

Dear Planning & Zoning Commissioners,

Because we are unable to attend the public hearing this evening, we feel compelled to express our views via email on the proposed waterways code amendment topic.

Although we certainly appreciate the spirit of the proposed amendment to the Development in Waterways and Areas of Special Flood Hazard of the municipal code, we do not support the proposed amendment standards and/or the proposed applicability of those standards. We believe this proposal, as is, oversteps the city's authority as to what property owners and tax payers should be able to *responsibly and legally* do on their own property. Plus this would render some existing homes on narrow lots worthless if homeowners chose to remodel their existing homes.

We live on the Roaring Fork River and believe we are good stewards of the river. We agree with the idea of protecting our waterways and currently do so with how we manage our property. However, we feel this proposal is the wrong plan, is far too aggressive and intrusive, and that it impedes upon our rights as property owners to conduct small, benign projects. We are not saying that property owners along the river should clear-cut vegetation or build a full-size home along the river's edge. But we should be allowed, within reason and current code standards, to utilize our property as we see fit. Barring any structure, regardless of size, or barring any removal of native vegetation, regardless of project scope, is not fair to property owners, nor would it necessarily protect the waterways.

For example, if we want to build for a small deck, patio or tree house and clear out some vegetation within 50 feet of the riverbank to allow a line-of-sight of the river, we should have the right to do so... all WITHOUT being subjected to jumping through numerous hoops and navigating through red tape, only with the potential of a negative outcome. We pay extremely high property taxes due to the ever-increasing tax evaluations of property along the river and

this plan inhibits us from being able to enjoy our property how we legally choose.

Also, please consider that this plan does greatly curb a homeowner's ability to freely exercise wildfire mitigation, which could create a vulnerable situation for the homeowner and a liability for the city.

We request that this unreasonable amendment proposal not be considered, as-is, and that planners go back to the drawing board and design a much more balanced and fair amendment proposal while taking the rights of responsible homeowners along the river into consideration.

We appreciate your time and attention to our comments!

Sincerely,

Randy and Julie Rippy
2262 Midland Ave.
Glenwood Springs

Mauriene Howey
2308 Midland Avenue
Glenwood Springs, CO 81601
970-230-9496

To: The Members of the Planning & Zoning Committee
Our Honorable Mayor
City Council Members

My name is Mauriene Howey and I live at 2308 Midland Avenue. The back part of my property fronts on a beautiful stretch of the Roaring Fork River.

I have heard that there is a proposed new code amendment that stands to greatly affect my riverfront.

Please consider the following:

My property is steep along the edge of the river. To access the river safely requires steps. The steps I have now are fairly minimal and will periodically need to be improved. The steps also require a minimal amount of brush trimming to be used safely .

My family respects and appreciates the river and they hope to inherit and use my property for decades to come.

If a rule was passed prohibiting me from maintaining and improving my steps, that rule would basically make the river inaccessible from my own property as the river cannot be accessed safely without the steps.

I am concerned about any rule that would inhibit the use of the river by my grandkids, great grandkids, and guests.

I also have outstanding views of the river **and Mount Sopris**. I am concerned about any rule that would limit my ability to trim brush and maintain trees on my own property. Even if such a rule is loosely enforced, I am concerned that if the rule is written to enable restrictions on brush and tree trimming that such a rule could be more strictly enforced in the future by authorities.

I paid a premium for my property because of the ability to access the river and for the views. My tax values reflect such amenities and I pay a significant amount of taxes based on the physical amenities of the property. Any rules that negate these amenities in any way seem both unfair for the property owner and unwise for the tax values of the city.

If my rights to use the river and maintain the vegetation adjoining such were to be infringed upon in any way, such actions would be an unreasonable taking of private property rights. In this case it would be a significant taking of valuable property rights. This amendment would lower the value of my property because it would limit my access to the river.

I have great concerns that the proposed new code as written infringes on my ability to fully utilize my property as outlined above.

I am 82 years old and admittedly have limited resources to fight this battle if one arises. I would greatly appreciate the city and the planning commission looking after my rights without such a battle. Thank you for your consideration and assistance with the above concerns.

Sincerely,

Mauriene Dickens Howey

970-230-9496



MEMO

TO: Planning & Zoning Commission

From: Gretchen Ricehill
Community Development Dept.

DATE: October 22, 2019

RE: Work Session – ANB Bank

ANB will provide conceptual plans for general discussion during the October 22nd work session.

*City of Glenwood Springs Community Development Department
101 W 8th Street
Glenwood Springs, Colorado 81601
Tel: 970-384-6400
FAX: 970-945-8582*