City on the "River of Awe": An Historical & Observational Study of Missoula's Urban River Greenway

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CITY ON THE “RIVER OF AWE”: 
AN HISTORICAL & OBSERVATIONAL STUDY OF 
MISSOULA’S URBAN RIVER GREENWAY 

By 

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Undergraduate Thesis 

presented in partial fulfillment of the requirements 
for the University Scholar distinction 
and for the degree of 

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in Geography 

The University of Montana 
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Urban river greenways have the potential to serve as landscapes of civic environmentalism in the American West. Missoula’s urban river corridor is such a landscape. This study seeks to assess the history of Missoula’s urban river corridor, and the degree to which the city’s current urban river greenway meets social and environmental goals. The urban river greenway in Missoula is a successful social undertaking, and its history shows a positive change in the treatment of the river as a healthy landscape feature. In order to explore this concept, historical data was gathered on Missoula’s past relationship to the river, and how the riverfront came to be as it is today. Additional observational data was then gathered regarding the greenway and community sentiment toward the river. The urban river greenway serves many social purposes and satisfies many of the human dimensions of this landscape form. From an ecological perspective, it can be observed that alterations to the river’s course, and funding limitations, may not make it a successful natural area. Despite this, the environmental improvements which have already been made, and the community benefits derived from the urban riverfront, illustrate a positive change in the relationship between Missoula and the Clark Fork River.
Acknowledgements

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“I think sometimes we forget that a river isn’t just water running... A river the stature of Missoula’s Clark Fork is far more than just water running. But, what is it? Is it the sum total of a hundred things? That’s what I went walking to find out.”

-Kim Williams, 1982
# TABLE OF CONTENTS

INTRODUCTION .......................................................................................................................... 1

THE URBAN RIVER GREENWAY: CONCEPTS FOR COMPARISON ........................................... 3

  * Section One: Definition & Background ........................................................................... 3
  * Section Two: Social & Ecological Benefits .................................................................... 7
  * Section Three: Planning for the City and Nature ............................................................ 9

METHODS & DATA ...................................................................................................................... 15

THE HISTORICAL ERA: A DYNAMIC RIVER-CITY RELATIONSHIP ........................................... 20


THE PRESENT ERA .................................................................................................................... 28

  * Section One: Human & Ecological Dimensions ............................................................. 28
  * Section Two: Clark Fork Coalition River Cleanup .......................................................... 36

CONCLUSION .............................................................................................................................. 41

REFERENCES .............................................................................................................................. 43

APPENDICES .............................................................................................................................. 46
INTRODUCTION

It was the intention that drew me. Unlikely, that I would know when she would catch one; I should keep walking. But the heron was sure of herself. She could predict when that fish would be hers, and it was going to happen soon. In the pacing water the sky was reflected. On one side of the waves lay the black of the clouds and encompassing mountains. On the other lingered that pale sunset sky, a blue I hoped would last forever. The heron slid her patient legs into the water resting across the channel. The turret of her neck extended calm across the water. Of course, I missed it. I was watching my feet as I clambered down the bank. When I looked back her neck was wide with some unfortunate trout, and she triumphantly angled it into her stomach.

It is experiences like these, and the intentions of people who made them possible, which interested me in this particular urban riverfront. That evening, the heron and I were situated between two busy downtown bridges. Behind me were offices and apartments and the most popular public gathering place in town. The town is Missoula, Montana. The river is the Clark Fork, which drains much of the northwestern region of the state. Here, we are no strangers to the environmental exploitation that characterizes the American West, or to the shifting landscape values that currently bring people here. Like many western rivers, the Clark Fork has worked hard for its city, both as it flows through the city and as it flows through time. In the present, the urban river greenway with which Missoula has dressed its river meets significant societal needs. In the face of an increasing population and greater environmental awareness, there may be more that the city can do to meet the river’s environmental needs. While no longer the free-flowing “River of Awe” (Patterson 2002, 119) that the Salish Indians knew, significant social and environmental improvements show that the urban Clark Fork is still a place of wonder for the people who live along it.

The creation of these social and ecological benefits in Missoula’s urban river corridor is the focus of this study. In the following pages, I have examined the planning of an urban river greenway in the West, and the potential of this landscape to serve a new Western ethic of civic environmentalism. I have applied this understanding to Missoula as a case study, asking how the urban river corridor once was, how it has been changed, and the extent to which it meets both social and ecological goals in the present day. Through this analysis, this study has found that Missoula’s relationship to the Clark Fork has changed dramatically over the course of the city’s
history. This change shows many of the positive traits associated with the sustainable
development of urban river greenways in the West and their potential to produce social and
environmental goods. Through observation and analysis informed by an ecological framework,
this study has also found that the urban river greenway in Missoula satisfies human perceptions
of cleanliness, aesthetics, and development appropriate to its urban context. Perceived
naturalness on the greenway is limited by channel alterations resulting in reduced habitat value,
and lack of native species, however, the urban river corridor is useful as a connection between
habitats. Thus, the naturalness of Missoula’s urban river greenway is considered within its urban
reality.

This study begins with a review of key concepts that will inform an analysis of
Missoula’s urban river greenway. The potential of urban river greenways to act as landscapes of
social and environmental justice in the West is a primary focus. In addition, I will address the
benefits a river greenway can deliver, and outline a framework for the planning and evaluation of
social and ecological aspects of an urban river greenway. Methods and data used in this study
will be clarified. I will then analyze the empirical data, sorted into the three primary eras in
Missoula’s urban river corridor: historical, renewal, and current. An understanding of the
historical and renewal periods informs a final analysis of the current urban river greenway in
Missoula. This analysis is based on observations of the greenway, and on participant observation
of a community river cleanup activity. Through this structure, this study will assess both the
history, and the social and ecological success of the urban river greenway in Missoula, and reach
conclusions as to the success of this river-city interface.
THE URBAN RIVER GREENWAY: CONCEPTS FOR COMPARISON

This theoretical framework will inform my analysis of Missoula’s urban river greenway. First, I will define and explain the urban river greenway, and how it has evolved to serve numerous significant purposes as a landscape that reflects social values. The most important of these purposes, civic environmentalism, will be outlined in the context of the American West. Next, I will briefly outline the potential societal and ecological benefits of the urban river greenway. Finally, a framework for the planning and creation for an urban river greenway will provide an understanding of the human and environmental dimensions of the greenway.

Section One: Definition & Background

As a landscape and planning technique, greenways come in various forms and can serve various purposes. Simply defined, a greenway is a “corridor of largely natural open land or connected systems of larger open spaces and parks that provide environmental, recreational, flood reduction, and other benefits,” often focused around linear physical aspects of the landscape, such as rivers (Platt 1996, 339). Greenways encompass a wide range of uses, from those created primarily to protect wildlife habitat, to “recreation oriented” park and trail systems, to greenways strategically placed to provide aesthetic relief in an urban setting (Searns 1995, 66). In order to better understand the benefits, planning, and challenges of greenways today, and how they came to serve important functions within an urban and riparian setting, it is helpful to discuss a background of the landscape form itself.

As Robert Searns (1995) catalogs in his work on urban greenway evolution, the greenway concept has developed through various generations. Through all of these generations, the greenway is considered a human adaptation to the pressures of an urban, non-nature based existence. The first generation is based primarily around the concept of movement and utility, harkening back to the parkways of Europe and nineteenth century America. “Bucolic” parkways, like those proposed by Frederick Law Olmsted in 1860’s California, are an example of this generation, in which emphasis is placed on passage, usually by means other than one’s feet, through a beautiful natural setting (Searns 1995, 68). These parkways were often formed around canals and waterways, as these features are adept movement corridors that “inspired visitors”
(Searns 1995, 68). It was also during this generation that rivers began to be seen as “places for people” instead of trash, sewage, and industrial waste (Searns 1995, 69).

Greenways grew into their adolescence during the 1960’s to the 1980’s. Over this second generation, foot traffic and road bikes came to identify the greenway, and new emphasis was placed on trails and recreation. Most greenways of this time were automobile-free. The inaccessibility of most distant wilderness areas reinforced the greenway’s ability to bring the urban population in touch with nature (Searns 1995, 70). The rising popularity of the road bike, which requires a paved surface and decent line of sight, had a strong influence on the design of many greenway trails. Many greenways reflect this in the use of wide, paved trails with straighter paths and groomed shoulders (Searns 1995, 71). This increased emphasis on recreation, although it helped human health by bringing people in contact with nature, can and continues to be a conflict with environmental concerns.

Today, we see the adulthood of the greenway concept as a multi-objective corridor capable of serving an array of human and environmental needs. This complexity of objectives is reflected in the amount of coordination and cooperation necessary to create these third generation greenways, and the challenges they face. The difference between this burgeoning greenway form and its predecessors is that it is about more than human amenity. “Land and resource stewardship,” as well as cultural and safety needs, are now central purposes of developing greenways (Searns 1995, 72). Aesthetic, recreational, and economic objectives are equal to goals of habitat and species preservation, ecosystem health, and water quality, to name a few. The greenway of today is not just about helping people by bringing nature into the city: it is about people being able to help nature and themselves in their community.

The concept of urban river restoration is not new or concentrated in specific regions of the country. These urban river projects encompass a wide range of social and environmental goals, exemplifying the multi-purpose model outlined above. Two projects from California indicate the different goals that can be addressed. In San Jose on the Guadalupe River, the legal processes of construction were able to ensure important successes for the health of the river and fish species. The Los Angeles River restoration, in comparison, is socially-based, as the river’s course “traverses marginalized neighborhoods whose residents… demand more park space and river access” (Honey-Rosés 2008, 2071). This has allowed for the integration and cooperation of many community voices. A synthesis of these environmental and social aspects is demonstrated
in the Anacostia Waterfront Initiative, on the other side of the country in Washington, D.C. This project seeks to address many problems, such as water quality, public access and cultural use, and economic revitalization. Many other urban restoration projects addressing these social, ecological, and economic interests can be found around the country and world (Honey-Rosés 2008).

This contemporary generation of urban greenways, are potent landscape of justice, especially in a riverfront setting. As Don Mitchell (2003, 787) writes, landscapes are a reflection of “the desires and needs, the customs and forms of justice of the people who made them.” Landscapes and the people who perform their everyday lives within them are inextricably linked. Thus, a landscape says something about a society and its values. When interpreting what is said, construction and destruction of the landscape are very important. Often emphasis is placed on “the affirmative” creation of place, but equally as often we fail to recognize the landscape that is being lost, such as in the imperialist imposition of Euro-American landscapes upon the New World (Mitchell 2003, 789). This perspective can be employed at all scales. River corridors can serve as potent landscapes of justice. Their importance to societies past and present, their central role in many urban greenways, their subjection to changing cultural values, and their sensitivity to human uses mean that rivers eloquently speak to cultures and landscapes which are being created, and those that are being destroyed.

Landscapes of destruction are important to note in retrospect. As Mitchell practically and optimistically points out, landscapes must also be considered in a “prospective” way (Mitchell 2003, 789). That is, we must take stock of current and past destructive mechanisms and work to create the most just landscape that we can, presently and in the future. In a modern sense, urban river greenways are often the subject of both cultural and environmental justice, both through the politics of urban planning and the intrinsic human and environmental health issues that coincide with poor water quality practices. Third generation river greenways are capable of serving both social and environmental justice. They are opportunities to strengthen disadvantaged landscape components through attention to the management and ownership of property, and thus create a healthy landscape and a positive statement of society (Mitchell 2003, 793).

An excellent example of the social justice components of urban river rehabilitation is the aforementioned Anacostia River. Like many urban rivers, the Anacostia is marked by pollution and unjust social distributions. Under the new movement to clean and improve the river by those
who live on it, the environmental and social wrongs of a long river history are made clear. Colonialism, militarism, racism, and inequality through political ecology have left their mark on the Anacostia. In the present, the river is a feature that concentrates and exposes these injustices and allows for a recovery of social and ecological justice, for both the people and the river they love (Williams 2001).

For the purposes of this study, this justice is most closely tied to civic environmentalism in the context of the American West. Currently, the West is the setting of a struggle between social and ecological values, a struggle made all the more interesting by the fact that both goals are trying to be met by the same population. William Travis clarifies this conflict and the opportunities which it holds for the future in his book, *New Geographies of the American West*. The basis of this conflict lies in several important regional attributes, two of which can come as a surprise. The first surprise is that the West is urban focused. While typical perception is of a rural, agrarian West, the truth is that population centers “have long called the shots in western development,” not “their agricultural hinterlands” (Travis 2007, 89). The second surprise is that these western cities no longer revolve around extractive industries. Instead, “post-cowboy economics,” driven by companies unbound by place, and the service industry, have come to dominate the mining, timber, and agricultural economies associated with the region (Travis 2007, 28).

What should not come as a surprise is the fact that the West’s population is growing, and that this growing population is moving here for the scenic and aesthetic value of the region’s vast natural areas. As the city centers grow, it will be increasingly important to account for the value that their occupants place on the land into which they are intruding. Many western citizens rely on landscape for sense of place and quality of life. Landscapes “become the focus of residents’ sense of belonging, security, and identity” in addition to their significant economic role (Travis 2007, 212). From this, the historical conflict between settlement and environment in the West can be perceived in a new way. Nature is no longer an enemy to be battled; it is a resource to be mourned when lost, and preserved when possible.

In response to this perplexing dichotomy of people and place, a new “civic environmentalism” is emerging in the West (Travis 2007, 241). Civic environmentalism seeks justice for both the people and the environment that they inhabit. Today, “citizens are increasingly demanding development patterns that preserve a region’s unique attributes as well
as their communities’ quality of life” (Travis 2007, 195). Under this contemporary value system, society and ecology can interact positively. This opportunity is never more important than now, as more people move into the area and begin to influence the natural environment. When considering the fact that most of the West’s increasing population is living in urban centers, urban river greenways can be seen as a platform not just for nature in the city, but for civic environmentalism to make an impact on westerner’s everyday lives.

Considering the above theoretical review, it is evident that a third generation river greenway in today’s American West is about more than serving multiple community needs. It is about serving a new ethic of civic environmentalism where a river’s ecological health becomes a landscape of justice. The historical patterns of land and resource exploitation have left the West with a generous understanding of what landscapes can be destroyed when new ones are created, and how this destruction can harm human health. In the aftermath of environmental amorality, and in the face of increasing populations with limited access to nature, urban river greenways are a powerful platform for the communities and cities of the West to make a statement about our new civic environmentalism. To make that statement, these river greenways need to provide both social and ecological benefits.

Section Two: Social & Ecological Benefits

In addition to the opportunities outlined in the previous section, urban river greenways provide many social benefits. They can help to solve public policy issues related to visual blight, water pollution, erosion, and flooding (Platt 1996, 25). River greenways are most traditionally useful as sites of relaxation, recreation, and exercise both on and off the river. They are important for their aesthetic value, both in local revitalization movements and as features of a tourist-oriented region. Urban river greenways can also serve to build community through volunteer and entertainment events, healthy public space, and the connectivity and collaborative planning required by their nature (Searns 1996; Wessells 2007).

Access to nature is central social benefit of urban river greenways. For the urbanite who has little interaction with the natural world, a greenway can help turn abstract ecology into a physical reality, and thus help promote land stewardship. This proximity provides educational opportunities for schools located near greenways, which further develops land stewardship principles (Searns 1996, 79). Being in nature has basic psychophysical values, allowing an
individual to experience positive and restorative feelings associated with the environment (Chiesura 2004). Traditionally, we perceive of cities as inimical to nature, and set aside vast nature reserves which are inaccessible to large portions of the urban population. Urban parks and river greenways can serve to mend this inaccessibility and fulfill the important social and ethical function of conservation within sight and range of the average city dweller (Wessells 2007). Quality of life enhanced by access to nature is a tenet of cities that are sustainable socially and environmentally.

Ecological benefits can be many, although these are often more difficult to obtain. The parameters of civic environmentalism and a nurtured sense of land stewardship mean that, more often, ecological benefits are social benefits. Individuals who engage in the urban river greenways increasingly care about the health and naturalness of the parks they are experiencing (Gobster and Westphal 2004). In addition, the management of urban river corridors as valuable ecosystems can contribute to the watershed as a whole. This vision is in line with an increasing need for management on a watershed scale, especially as populations increase and more pressure is placed on water resources (Bates 2011). A watershed management perspective stems from the need to understand hydrological and ecological processes in order to secure water for human use, and thus also blurs the line between social and ecological benefits. Urban river corridors have an important role to play, not just as sources of non-point source pollution or erosion, but also to raise community awareness and to allow for collaborative, integrated management (Bates 2011).

The role of urban river greenways as corridors for species, seeds, energy, and nutrients is a particularly important ecological benefit. A primary environmental concern is that land fragmentation due to human settlement patterns and expanding populations have a negative effect on ecosystems and the species that count on them (Searns 1995). By their nature, greenways are connective features. They can be used to mitigate the effects that isolation can have on native ecosystems, becoming a conduit for species, nutrients, and energy. Ideally, a river greenway can serve as a transportation corridor and base habitat that is connected on a larger scale as a passage between wilderness areas and species sources (Baschak and Brown 1995). It is important to note that the ecological corridor model should not be perceived as the best or only solution to ecosystem fragmentation. It is still very important to preserve large “interior habitats,” and it would be unwise for a greenway to draw public attention away from the preservation of key park and wilderness areas (Searns 1995, 73).
Urban river greenways can also have specific biophysical benefits. In addition to the corridor effect just described, greenways are themselves important habitat and sources of species and nutrients. In this way they can help to maintain species variety, function, and genetic diversity (Baschak and Brown 1995, 213). Attention to hydrological processes shows that the greenway acts as a buffer zone between the city and the river. This allows for a filtering of contaminants and a stabilization of the slope, which can reduce erosion. River greenways can also “make a significant contribution to meso- and micro-climate improvement” (Baschak and Brown 1995, 213). Vegetation can help alleviate the urban heat island. On a smaller scale, vegetation provides wind protection and shade, and the evaporative cooling of water can also help make the river climate more conducive to plant and animal health. Once again, Baschak and Brown note that there is not a strict separation between social and ecological benefits, and that many of the contributions of a well-vegetated waterway have “tangible economic benefits” (Baschak and Brown 1995, 213).

Section Three: Planning for the City and Nature

With respect to public policy, a greenway is often a complex undertaking. Because it is a natural area undertaken at the municipal level, compared to parks and wildernesses managed by the state or federal government, it more directly reflects the desires of the local community and the vision that community has for itself. Due to this, the creation of a greenway park system involves collaboration across different political and spatial layers of authority. Public land for a parkway can be acquired through different means. Commonly, park land is gifted, purchased, or acquired by tax default. Often it is the maintenance of, and multiple functions served by, these greenways that cause issues related to planning and funding (Platt 1996, 32).

The complex planning of these “inspired and functional” river greenways is an endeavor that requires time, people, and “non-human material actants” (Wessells 2007, 18-21). During this time, various public and private stakeholders with differing degrees of organizational power must interact cooperatively. This interaction is aided by the actants, such as rivers, images, stories, or plans. Actants serve to mediate between the human and organization actors in the planning process. In this way, a physical feature like a river can exert influence in the planning process.
The agency of the river is particularly notable when combined with the “depth of feeling” (Gobster and Westphal 2004, 163) that community members often have toward their rivers. In their study, Gobster and Westphal found that communities truly cared about their river and greenway. This emotional attachment to the river itself, and not just the social assets and amenity it provides, means that the river has the power to energize the community. The love that community members have for their river as an entity will encourage them to act to benefit the river, whether by volunteering or by attending public meetings. As more people want the health of the river greenway in their community, more will work to accomplish social and ecological goals. As a beloved feature, the river itself can promote the sound social and ecological design and care of its urban greenway.

Community involvement is especially important for the ecological rehabilitation of an urban river corridor. The opinions and desires of the community are important in shaping management options, and communication between the public and planning agencies aids the diffusion of knowledge and enthusiasm. Not least important is the valuable role that communities play by providing a volunteer work force to assist in restoration projects. Thus, the success of urban river ecological projects depends on their ability to “integrate community stakeholders and provide demonstrable improvements” (Gobster and Westphal 2004, 163).

In addition to the depth of caring demonstrated by the community for the river that passed among them, Gobster and Westphal (2004) outlined several important human dimensions of the river greenway experience which will be useful for analysis of Missoula's urban river greenway. Their study was based on participant and focus group interviews from three distinct user groups of the 150 mile Chicago River corridor. The dimensions which they discovered were translated directly to funding priorities by a river corridor planning project (Gobster and Westphal 2004, 162). Based on the setting of their study, the two outlined dimensions of access and safety are less relevant in Missoula's setting. Thus, I will here be discussing their findings based on social concerns of cleanliness, aesthetics, naturalness, and appropriateness of development. These dimensions are important to use as a social framework for understanding urban river greenways.

Cleanliness stood out as a concern above all others in their study. Perceptions of cleanliness were based primarily on the appearance of the river, and to a lesser extent the land around it, as well as knowledge or experience with water quality. The “powerful subtext of the
archetypal river” (Gobster and Westphal 2004, 152) played an important role in determining how water quality was perceived. For example, many participants expected that the river should be blue if it were indeed clean. But, “the Chicago River was a prairie slough... it never was blue” (Gobster and Westphal 2004, 152). Thus, it is important that public education and outreach inform the community of the less visible improvements that have been made in water quality. This dedication to cleanliness often translates to concern for the health of the river. This community interest in water quality, combined with a straightforward cause-and-effect solution, create a conducive environment for volunteer activities, such as wetland re-planting, that accomplish ecological goals (Gobster and Westphal 2004, 153). While participants were often not entirely content with perceived water quality, they were willing to move on to other goals. Neatness of the maintained lands along the river also contributed to perceptions of cleanliness.

The notion of visible health translates to the next significant human element of the urban river greenway, which is aesthetics. The attractiveness and maintenance of the greenway help to convey to those who use them that the place itself is valued and cared for by those who design it and manage it. This creates value of the landscape itself in those who engage with it, and shows how the riverfront can help mediate between community and the planning infrastructure. The aesthetic component of the greenway refers not just to the “beauty and scenery of river views” (Gobster and Westphal 2004, 156) but also to the contrast between these views and those of the surrounding urban fabric. The river greenway can provide a visual relief. And, as the study notes, the attractiveness of the greenway does not just come from its natural, green space. Participants also value key aspects of the built environment, such as bridges or park structures. This results in the need for a “broader, multi-value approach” in the planning of these urban parkways (Gobster and Westphal 2004, 157).

Naturalness and appropriateness of development are the final two linked values placed on the urban river greenway. The naturalness of riparian parks and trails is valued regardless of the urban setting in which they occur, as is supported by the tradition of the greenway. Trees, wildlife, and natural areas are considered key components of the urban river greenway experience. Participants in the study valued the natural spaces for two main reasons, one of which being the fact that often it is “the only green we've got around here” (Gobster and Westphal 2004, 155). The value for a nature which was limited in the city was augmented by a general appreciation for nature. Participants found that the natural aspects of the river greenway
contributed to their physical and psychological health, and added to the recreational and aesthetic value of the greenway. Once again, this value for the natural component of the greenway influenced volunteer activities to help re-grade riverbanks and plant native species (Gobster and Westphal 2004, 154).

In considering the weight placed on the presence of natural environments in the greenway, the study noted that this value varied with setting. Participants who lived in less developed, more natural reaches of the river were more likely to guard its natural and ecological sensitivity. Those who lived in parts of the river that had already been dramatically altered by urbanization and development saw the naturalness of the river greenway as secondary to its values as a recreational, cultural, and scenic feature. Ecosystem health was important to participants, but it was felt that “the natural environment should be integrated with sensitivity to the urban context in which it is located” (Gobster and Westphal 2004, 160). This appropriateness of development is the final human dimension of the greenway. Appropriate development can help shape planning goals for different parts of the greenway, and explain why ecological goals might not be socially advocated in certain urban riverfront segments.

An ecological framework is necessary to achieve environmental goals in the planning of an urban river greenway (Baschak and Brown 1995). To begin, it is important to understand that these urban ecosystems are under stress from a number of different sources. The primary source of stress is the isolation and restriction that occurs due to human development which breaks up natural areas. Subsequent use by the urban population, such as commuting or recreation on greenway trails, places pressure on the systems, in addition to “fluxes of energy, species and nutrients from the surrounding urban matrix” (Baschak and Brown 1995, 211). Also of importance is the fact that many parks along river greenways are intended for cultural use and thus do not incorporate native species or the “characteristics required to support” them (Baschak and Brown 1995, 211).

Hydrology is an important limiting factor of the river ecosystem, especially when considering an ambitious restoration project (Findlay and Taylor 2006). The characteristics of the river catchment and the amount of urbanization are central in determining the influence of settlement on the river corridor. Impermeable surfaces, such as parking lots, are especially influential. “Rivers are an inherently disturbed environment” (Findlay and Taylor 2006, 315) and thus can adapt to dramatic shifts in geomorphology due to urbanization. Dredging, channelizing,
and the placement of berms and riprap are the most notable influences of urban development. Increase in runoff flow and intensity due to impermeable surfaces, and simultaneous or subsequent erosion, further compound this simplification. Despite these influences, a river can often reach a new “equilibrium” (Findlay and Taylor 2006, 315). Although it may be reassuring to know that the river can adjust itself, this new balance can still have detrimental effects on the riparian zone. As Findlay and Taylor (2006, 315) explain, this habitat is “often seen as a limiting factor for urban stream health,” thus the enrichment of riparian habitat through attention to river hydrology and other ecological considerations remains the focal point of ecological restoration and planning.

In considering these issues, it becomes clear that finding ecological solutions in an urban setting is no easy task. The best way to combat these many stresses is to increase the “effective size of habitats” (Baschak and Brown 1995, 223). In order to increase the effectiveness of the corridor, focus should be placed on the linking of disparate natural areas, a characteristic of the greenway which has been discussed previously. The patch and corridor model is important for encouraging the transfer of species and nutrients, and for ensuring that river greenways can be in touch with core natural areas that can provide these components. Thus, this connectedness is significant at all scales. For example, a greenway can work to connect different natural parks within an urban center, and it can also work to connect to natural areas outside of the urban zone.

In addition to this connectivity, a central facet of the ecological restoration of a river is the utilization of native plant species. An understanding of the native ecology of the region is necessary in order to use native vegetation. By using native vegetation, planners can increase the natural adaptability of a plant to its environment, and also help to simulate, and expand simulations of, the natural environment. Ultimately this native vegetation will help to restore the ecosystem to the stability and health it formerly knew. Unfortunately, the nature of current non-native ecology, and the onslaught of “outside influences” from the city, often inhibits the growth of native plants and the ability of natural areas to buffer themselves (Baschak and Brown 1995, 222). What this means is that planners have to work carefully and in concert with the natural topography and ecology of the landscape to slowly build these natural habitats. An example of this process is using a hardy shrub to pioneer a relatively inhospitable slope, and thus make the slope more inhabitable for other plants to follow (Baschak and Brown 1995).
Considering the complex interactions of society and environment in an urban river greenway, it can be seen that planning has to be considered under the realistic limitations it faces. Almost without exception, a river’s ecosystem cannot be restored to its pre-disturbed state, regardless of whether it runs through the middle of a city. This means that planning must find the balance that will benefit the ecosystem the most in its current setting. As explained previously, this balance is appreciated by the public, and a carefully considered and maintained natural environment can increase the social value of a greenway. In addition, funding can be a central limiting factor in the ability of public planning to meet ecological goals. Often, the maintenance of tender native parks is not on the budget. However, an urban greenway provides more adaptability in finding funding solutions, considering the myriad resources of an urban center, from community volunteers to non-profit organizations. Because an urban river greenway can provide “simultaneous enjoyment for a large population” (Findlay and Taylor 2006, 322) it is likely that this population, with adequate dedication, can find the resources to meet its realistic civic and environmental goals.
METHODS & DATA

In order to best understand Missoula’s urban river greenway as a multi-objective park system capable of fulfilling the goals of civic environmentalism, I approached this project from a chronological standpoint. I will begin my analysis with a historical background, in order to explain the environmental abuses and neglect which characterized that period from Missoula’s founding until the 1960’s. From there, I focus on the economic revitalization of 1970-1990, and how it provided the motivations and means of riverfront redevelopment in Missoula. Lastly, I consider the contemporary era from two different observational standpoints.

In order to aid with this analysis, I limited the study area, which is convenient for a spatial analysis of the naturalness and other factors of the riverfront. The study area, referred to as Missoula’s urban river corridor, is defined as the stretch of river, and adjacent parks and trails, between the Van Buren footbridge and the Orange Street Bridge. For a map of the study area, parks within it, and the locations of observational photographs, please refer to Appendix B. While important for limiting consideration of the human and ecological dimensions of Missoula’s greenway, this study area was fairly flexible when it came to more conceptual analysis. Initially, the study area was also limited in time, but the historical overview did not necessitate such specificity.

Information for the three different eras was collected from a variety of sources to be discussed shortly. Once collected, it was organized chronologically and analyzed based on the above outlined conceptual framework. In the data I searched for themes of justice and civic environmentalism in particular. The renewal period was especially important for determining the logic and mechanisms of Missoula’s riverfront park system. The complexity of the park’s creation was also of note, however the scope of this study did not allow for a thorough consideration of Missoula’s planning community.

It is with the current era and the social and ecological potential of Missoula’s river greenway that this study’s analysis is most avidly concerned. In analyzing the information I collected on Missoula’s riverfront, I assessed it based on the four human dimensions outlined by Gobster and Westphal (2004): cleanliness, aesthetics, naturalness, and appropriateness of development. In order to better assess the “naturalness” category, I employed key components of the ecological framework outlined in the theoretical section: habitat value based on river
geomorphology, the park system as a species and nutrient corridor, and the use of native vegetation.

In addition, my goal was to assess the more intangible community enthusiasm which Missoula has for its river. To gather data on how the river can motivate people to help it through the love that they hold for it, and also to gather general information on community perception of the riverfront, I participated in the 10\textsuperscript{th} annual Clark Fork Coalition’s River Cleanup. Specific information related to this data collection is discussed below. Once collected, this information was analyzed for main themes and related to the theoretical framework of how human perceptions, care for the river, and the river itself can influence community action and sentiment.

\textit{Historical photographs}

Historical information was gathered primarily through the historical photograph compilations of Stan Cohen, and through a repeat photography exercise I conducted in the fall of 2012. The University of Montana Archives and Special Collections provided both of Cohen’s compilations, \textit{Missoula County Images} (1983) and \textit{Images of America: Missoula} (2013) and the historic photographs which I used for my repeat photography. A summary of the findings of this repeat photography can be found in Appendix A.

\textit{Interview}

I conducted an informal interview with Chris Behan, Assistant Director of the Missoula Redevelopment Agency (MRA), on April 18, 2013. This interview was very informative and data from it contributed to an understanding of all three eras. We conducted the interview at the MRA office and were able to reference a map and a riverfront plan as we talked. Much of the information fit with previous research I had conducted. The interview was structured primarily around my interest in the history of the riverfront park system and how it came to be, and also aspects of ecological planning. I typed up my handwritten notes immediately following the meeting.

\textit{Government documents and other primary sources}

Further MRA information was also collected, mainly from their website. I was able to use informational publications, brochures, maps, and plans. In addition, I examined the 1990
Missoula Downtown Riverfront Plan (Timchak 1990) which I checked out from the MRA office. This data was useful for an understanding of MRA contributions to riverfront development, and also for historical and renewal era information. I also gathered information from two Missoulian articles (Szpaller 2013: Chaney 2013).

Secondary sources
I consulted a thesis on the urban planning of the Missoula Riverfront (Gilliam 1983). I read pertinent sections of The River We Carry With Us (Stone-Manning and Miller 2002). In addition, I conducted a review of the peer-reviewed literature of urban river restoration and greenway planning.

Riverfront Observation
To gather data on the riverfront park system, I relied primarily on my own observations of Missoula’s river greenway. I use the riverfront trail system frequently for commuting to and from the university. I also use the riverfront park system frequently for exercise and recreation, thus I am fairly familiar with it. I did a specific examination of the park system for this project (please see Appendix B). It was my aim in analyzing the riverfront park system this way that I would be able to view it from the perspective of an informed community member. Thus this study is an attempt to convey what the civic environmentalism of Missoula’s Clark Fork is, through the eyes of a civic environmentalist who knows and cares about this riverfront.

In observing the study area, I focused on the human dimensions of urban river greenways outlined by Gobster and Westphal (2004): cleanliness, aesthetics, naturalness, and appropriate development. I employed the ecological framework discussed in the theoretical review in order to gather an informed perception of the naturalness of the greenway. Ecological points were based on geomorphological alterations of the river’s course, the corridor capability of the river greenway, and the use of native plants.

Participant Observation: Clark Fork Coalition River Cleanup
This event took place on Saturday, April 20, 2013. Volunteers reported to Caras Park, where we were divided into groups. Groups could be registered for ahead of time, or assigned at the event. I was assigned to a group. At ten a.m. the event began with an introduction from a
member of the city and safety information. Then, we set out to our designated segments of the river. Once we had picked through our area, we sorted litter from recyclable material. Trash was carried out by trucks. Then, we returned to Caras for lunch at noon.

I was able to speak to several of the participants who were part of the small group to which I was assigned. I had plenty of time to talk with participants, both while we were waiting for the event to begin, as we walked to and from our designated area, and while we were working. When we reached our segment and were going over logistics, I was able to raise my hand and tell the group, of about fifteen or twenty, that I was doing a project on the river. I made it clear that I would be interested in any thoughts, opinions, or perspectives they might have. Considering our current endeavor, it was no surprise that they all seemed interested.

While speaking to people, I tried to ask them general questions to begin with. I did this because I wanted to let them guide the conversation, without the influence of my leading questions. I learned to do this fairly quickly within the first two conversations. For example, I asked a young man if he would consider coming to the riverfront for a picnic. He responded with a smile, "I don't usually go on picnics." After this I used mostly vague questions, such as "What do you think of the riverfront?" or "Do you use the trail system along the river?" Questions such as these allowed me to get more unbiased responses, I believe, and identify themes from what the participants came up with themselves. In this way I came to ask my favorite question, in order to repeat what two participants had said earlier: "So you do think the river is beautiful?" To which they responded emphatically; “yes”.

In order to organize the information I collected from participants, I refer to them by a pseudonym when discussing their statements. I was able to speak with seven people total about their perception of the riverfront in Missoula, and the riverfront park system.

There is an obvious bias in operation during this participant observation. The first is that, by nature of the event, all of the participants were much more likely to have a positive outlook on the river and the urban park system around it. They had committed their time to picking up litter on the river banks, on a Saturday morning. Several of the people I spoke to said they had always wanted "to help," showing that they already thought highly of the river as a natural and social asset.

After I announced my project, several of the participants voluntarily came up to me during the activity to talk. Demographically, the participants with whom I spoke were quite
varied. Three were the same gender as I, and only two were close to the same age. I was able to talk with older, middle aged and young adult participants. They seemed to bring different perspectives to the river. When I asked, I found that some had moved to the area recently, some had grown up here, and some had been here over thirty years. This diversity of perspectives on the river allowed me to gain a broader understanding of what the river means to community members.
THE HISTORICAL ERA: A DYNAMIC RIVER-CITY RELATIONSHIP

Change is natural to a river. Subjected, as it is, to variations in the years and seasons, a river’s shape, flow, and role in the ecosystem is not dependable through time. The Clark Fork, like many rivers upon which a city has been built, is no exception. And, like these other rivers, this natural penchant for fluctuation seems to magnetically attract the interesting changes in human use and culture which are the subject of this study. In this section, I will go over the early history of Missoula’s river, and the role that each character, river and city, played in the development of the other.

The story of the Clark Fork and the city of Missoula begins with two men and two mills. At the end of the nineteenth century, C.P. Higgins and F. L. Worden relocated their sawmill and gristmill to more desirable “water resources” at the edge of the Clark Fork (Cohen 2013, 12). What they called the ‘Missoula Mills’ soon turned into a city. The first bridge across the Clark Fork was built in 1869, but the river promptly erased it in a flood two years later (Cohen 1982). The replacement, John Rankin Bridge, appeased the waters for some time, until it too was washed out in the disastrous flood of 1908. Still considered the largest in Missoula’s history, the 1908 flood also took out a railroad bridge downstream, and its waters spread extensively into the residential developments to the north and south of the river. Upstream, floodwaters exceeded the capacity of Milltown Dam, resulting in a power outage in the city (Cohen 1982).

Leading up to this time, historic photographs show a markedly different riverfront in the developing Missoula. Not surprisingly, the smaller town had less of an impact on the river's course. Fewer buildings are shown on the edge of the river, and the muddy banks are occasionally trampled, but otherwise not lived on or constricted (Cohen 1982, 11). A photograph from 1890 of teepees of the native Salish who have gathered to dig bitterroot shows a location on the river that is nearly unrecognizable today, except by the mountains in the background (Cohen 1982, 68; please see Figure 1).

Another interesting photo is one from 1904, in which a crowd of men and women are gathered at the northern end of the John Rankin Bridge (please see Figure 2). Trees still populate the south shore and an island which is now gone. On the north side only a few buildings are built up against the water, but a sign clearly reading "Real Estate" is the harbinger of development yet to come. Two men have climbed the bridge lattice and stand looking south, with an amiable air. The smiles of the crowd are almost visible, even through the century. It is an especially apt
Figure 1: Teepees on south side of the Clark Fork, circa 1890 (Image 83.0040. Archives & Special Collections Digital Photographs, Archives & Special Collections, Maureen and Mike Mansfield Library, The University of Montana-Missoula.)

Figure 2: Activity on Higgins Avenue Bridge about 1904 (Missoula County Images, 12. Archives & Special Collections, Maureen and Mike Mansfield Library, The University of Montana-Missoula.)
photograph. Standing at the edge of the river, they also stand at the edge of an era whose
development and economy will fundamentally alter the river.

The arrival of the railroad to Missoula helped to begin this urban river history; however,
the railroad in question was not the Northern Pacific, as is the case in many western towns.
Instead, it was the Milwaukee, Chicago, and St. Paul Railroad that had the greatest impact on the
Clark Fork in Missoula. Arriving in Missoula around 1908, the Milwaukee Railroad ran along
the southern edge of the river and is visible in many historic photographs (Cohen 1982). The
railroad berm altered the slope of the south bank, and necessitated substantial rip rap which is
still present today. The railroad berm and rail yard can be seen clearly to the right in Figure 2a
(please see Appendix A). This rail yard has since been turned into a park and high school sports
field. With the arrival of the Milwaukee Railroad, we see the first in a series of extensive
alterations to the Clark Fork's urban corridor.

The second significant alteration was ongoing at the same time as the arrival of the
railroads, and has continued into today. At this time development began on the river's banks,
especially on the northern flood plain (please see Figure 2a in Appendix A) and in downtown.
Development caused constriction of the river's course, but that was not its only affect. Waste
dumping into the river has been common practice for most of Missoula's history. This includes
both garbage and human waste, and polluted urban runoff. While it seems like these practices
ended a long time ago, the last sewer to open directly into the river was closed in 1965 (Behan
2013). For a developing city, a river can serve as a convenient depository of waste, especially as
it "flushes itself once a year," and because the practice was common (Behan 2013).

As the city developed along the riverfront, this trend of waste dumping continued
alongside one of neglect. Figure 3a (please see Appendix A) looks down on what was a
municipal landfill from 1895 through 1933, in the center and right of the image (MRA 2008, 8).
Across the river lies what would become McCormick Park, but at that time the park was
undeveloped. Even where there was not active waste dumping, the river was not viewed as a
cultural resource. This neglect is evident in later photographs as well.

In the 1960s both the river and city began to agitate along the lines drawn between them.
In 1964 the river flooded, causing much concern over the poorly protected developments on the
northern shore. In order to protect these valuable neighborhoods at high risk, the Army Corps of
Engineers (ACE) built a concrete levee spanning most of the river front between Madison Street
and Orange Street (Behan, 2013; please see Figures 10, 11 in Appendix B). Bank reinforcement was not as important on the southern shore due to the railroad berm discussed previously. This levee is important from a hydrologic point of view, as they more permanently interfered with the river’s course and natural ecology. They are also significant from a cultural point of view in the modern day, in that they interfere with the aesthetic value of the riverfront.

Another significant change in the urban river landscape occurred in 1965. While constructing a new Higgins Bridge, the State Highway department was asked to widen the southern channel of the river (Behan 2013). This resulted in the relocation of the island which had been in the center of the river at this location (please see Figures 4, 5 in Appendix A). The reshaped island was wedged against what had been the north shore of the river. Initially called Island Park, this site was eventually turned into Caras Park (Behan 2013).

The creation of this island is an important statement both about city control of the river and about changing perspectives. Like the development, berm, and levee construction before it, the relocation of the island indicates the power that the city has had over the urban river corridor. In addition, the placement of an open parcel of land alongside the river foreshadows the valuable public space which would characterize the urban riverfront. It was in the following decade that the Missoula riverfront came to be recognized for its economic and social potential, as will be discussed in the next section.

The contemporary role of the river in the city is not as it was in the eras just described. The changes between these two time periods are evident in my repeat photography exercise (please see Appendix A). The project can serve as a fitting summary of what I have explained above. From the results, two main themes emerged. The first was the blatant alteration of the river's course. The second was the substantial changes in cultural value which have been placed on the river. In essence, these two themes are different primarily in their mutability.

The effect of development in Missoula on the Clark Fork’s course and ecology has continued since the turn of the century. While not used for trains anymore, the railroad berm continues to enforce the shape of the river to the south. The levee put in by the ACE still guards the north shore from spring runoff, and separates the river from its floodplain. Caras Park, a very important community asset, sits as proof of the power of human engineering, while few residents know of its origin. Residential and commercial development on both shores has thus ensured the channelization of the river. This channelization has remained the same.
What has changed with time is apparent in each of the repeat photographs. Cultural value has been placed on the riverfront in this city. In photographs from the modern day, the park and trail system which lines the river is evident. This series of connected public spaces is a result of intentional community action focused on the capacity of the urban river interface. What is less clear in the images is change in waste dumping practices. The community no longer empties its trash or toilets into the river. The river and the land around it are now powerful recreational, aesthetic, and natural amenities. The community has taken the river as an opportunity, instead of losing it to neglect and abuse.

In terms of landscape construction and destruction, this historical review speaks clearly to the landscape that is at stake between Missoula and the Clark Fork. As the 1890 photograph indicates, the Salish and other American Indian tribes used to camp along the river, follow it towards the bison to the east, and dig on its banks for sustenance. The settlement of Missoula and its harsh alteration and infringement upon the river reflects the destruction of this Indian landscape by the flourishing Euro-American settlers and their iron horse, so clearly sketched on the history of Missoula’s Clark Fork. This pattern of destruction bled onto the river itself, as it was lost for decades to neglect and abuse. While our options to heal these past encroachments are limited, it is important to heed them as we look toward the future.

Missoula’s Clark Fork has seen encouraging positive change, which will be the focus of the next sections. The current issue is now environmental: the landscape of plant and wildlife species which depend on the river system, and which we in turn depend on for the health of our land. Considering the darker aspects of Missoula’s river history, it is important to take a prospective and strong stance to ensure that further human and environmental burdens are not created. In the future, ecological opportunities may be able to develop from this social success. Missoula's relationship to the Clark Fork is a story of both continuity and change; the community changes its view on the river that it continues to depend on, just as in a river there are patterns which repeat themselves, and processes which are forever evolving. The next section will serve to explain how these cultural changes came about.

Missoula's river first began to be recognized as a potential community asset by crafters of public policy in the 1970's. Mayor John Toole saw the riverfront as a possible draw for the community, especially considering that downtown's economic health was lagging. He advocated the use of this resource and the revitalization of downtown. During his tenure, and with the help of prominent community members, urban renewal funds were solicited for the city of Missoula, which would later serve to develop the city's developing riverfront parks, one of which bears the Mayor's name. Interestingly, Toole himself did not support the notion of improving public property first, but instead considered that private business should be developed and park health would follow. When Caras Park's amphitheater was constructed, he is reported to have said that its seating capacity would never be tested (Behan 2013). As we now know, the park regularly draws a greater audience than can be seated in that particular structure.

In 1976, Mayor Toole's ambitions for the riverfront were further aided by the Missoula County Parks, Recreation, and Open Spaces Plan (Gilliam 1983). This plan aided the new shift towards a riverfront park system in Missoula by announcing the county-wide value of open spaces. Considered the "basis for all park development within Missoula County," the plan addressed the open space needs of the county and made planning, policy, and site recommendations (Gilliam 1983, 11). A river park system, including trails and bikeways, including McCormick, Greenough, Caras, Kiwanis, and Jacobs Island parks, was suggested along the Clark Fork, this area having been identified as a "major recreational asset" (Gilliam 1983, 13). In addition, the plan suggested that all stream and river corridors be protected. This plan is instrumental in forming many of the parks in Missoula County, and well reflects changing values concerning open space and the environment. In combination with a need for economic revitalization in downtown, the 1976 plan boded well for a riverfront park system.

Missoula's Urban Renewal Plan of 1978 reflected this natural and aesthetic value, and incorporated the riverfront into plans for downtown revitalization. While the focus of the plan was on downtown improvement and the subsequent community bettering, it importantly acknowledged the role of open space as having high "scenic value," which could be beneficially "melded into the city" (Gilliam 1983, 14). The river and the parks adjacent to it provided this open, natural, and aesthetic space for the recovering downtown. At this time, Missoula defined its first Urban Renewal District, also the first in the state, and formed the Missoula
Redevelopment Agency (Behan 2013). Both of these creations eventually resulted in improvements for the riverfront.

The Missoula Redevelopment Agency (MRA) is a public agency under the City Council, initially charged with managing the "sound reuse of the built environment" (MRA 2005, 2). Funding for MRA projects comes primarily through tax increment funding, as well as private, state, and federal grants. Tax increment funding (TIF) functions on the creation of a renewal district. Once the district has been delineated, the tax base is set at the present amount, and any increase in taxes paid over that original level are specifically reinvested in the district. To be defined as a renewal district, urban areas must fit a flexible definition of blighted, such as dilapidation, failure to meet code, or lack of sidewalks (MRA informational brochure).

From its original focus on the built environment of downtown, the MRA expanded its mission to include riverfront restoration. With MRA funding, the park and trail system on the river was developed extensively, resulting in a "necklace of parks and trail on both sides of the river" (MRA 2005, 2). Key MRA projects include the Ron McDonald riverfront trail system, the bike and pedestrian bridges at Van Buren and Madison streets, Caras Park, Clark Fork Natural Park, and improvements at Kiwanis Park. Many of these renovation and reconstruction projects were undertaken between 1986 and 1990 (MRA 2005). The extensive involvement of MRA funds, provided for through the economic success of the commercial districts they reflect, show the intimate link between Missoula's economy and riverfront. The explicit nature of this relationship speaks to the value that the community places on its riverfront public spaces and park system.

The Missoula Downtown Riverfront Plan of 1990 directly acknowledges this value placed on the riverfront by the city. The plan, created by the MRA in response to public input the year prior, recognizes the dramatic changes that have taken place on the riverfront, and that the park system on the Clark Fork "is central to the image of our city" and functions as a "town square and promenade" (Timchak 1990, ii). While many changes have been affected, the plan points out that many more possibilities await. However, at that time, there was a lack of cohesive public policy to direct riverfront development. Thus, the plan sought to outline parameters for the design, protection, and enhancement of the riverfront system. It also emphasized the importance of cooperation and communication between the public and private stakeholders, and determined plans to acquire "key properties and easements to complete a continuous trail system" (Timchak
1990, ii).

It was during this era from 1970 to 1990 that the structure of Missoula's riverfront greenway was laid down. Through a consideration of these various plans and policy which combined to create this park system, it can be seen that riverfront recovery was closely linked to economic and community desires. The river itself, and its adjacent land, played an important role as the scenic and recreational component of Missoula's downtown revitalization. In addition, the community respected the contribution of this hard-working river, by reinvesting funds to continue to beautify and enhance the park system. At this time we see the river born again, transformed from a sewer into an appreciated community stage, over a remarkably brief period of time. This change is evidence of the new image that Missoula has of its river, and how that river has the power to pay back this appreciation, via the measurable reinvestment processes that helped craft the river's greenway.
THE PRESENT ERA

Analysis of the urban river greenway in present-day Missoula is organized in two separate sections. First, an overview of the riverfront park system in Missoula is given, with supporting maps and photographs. Next, these photographs are referenced when analyzing this park system for the human dimensions of cleanliness, aesthetics, naturalness, and appropriate development. In order to address ecological concerns, the “naturalness” category is further divided by an ecological framework. This framework considers the hydrology-based habitat value, corridor ability, and native vegetation of Missoula’s urban river corridor. From this analysis it is concluded that Missoula’s river greenway meets important social requirements, however its primary ecological role is as a corridor due to impaired riparian habitat. A consideration of why further ecological improvement is not feasible follows. The second section in this analysis addresses social themes discovered through participant observation in the River Cleanup. In this way, this empirical section creates a complete picture of Missoula’s urban river greenway, in both its social and ecological duties.

Section One: Human & Ecological Dimensions

Missoula’s river revelation is not endemic. As the conceptual framework showed, rivers across the country have changed in the eyes of those who live on their banks, and the Clark Fork is the subject of saddening and inspiring recollections all through its basin. These memories are the subject of a book of river love, published in 2002, that well reflects current sentiments toward the Clark Fork by the many who have called it home. In The River We Carry With Us, the Clark Fork is considered as "a great, vast mind, and what lies in its bed are memories" of past abuses and changes, of "lives lived," lives to whom the river meant something (Miller 2002, 7). This book was made to cherish the river, and in so doing it says something powerful about the value the river has to its population. It is an apt place to begin a discussion of the current status of Missoula's urban river.

In considering the changes in the river since her childhood in Missoula, Caroline Patterson writes of the "terrible itch" she got after swimming in the river, to the horror of her mother (Patterson 2002, 115). She was allowed to play in many places around town, but never near the ugly river, at that time nearly impossible to equate with its earlier manifestation as the
"River of Awe" to the Salish who yearly traversed its banks (Patterson 2002, 119). Where there are now parks and bike paths on the south shore, the railroad used to attract vagabonds, and the cars crashed in the night. To Patterson as a child, the railroad was a place of "desire for what lay beyond the green hills surrounding our valley" (Patterson 2002, 120). Now, the site of the old tracks and the river flowing are "where we go to touch the heart of the town" (Patterson 2002, 120). From the unhealthy, raucous danger of the railroad river, today's park system brings nourishment to Patterson and many Missoula residents. The new river greenway acts like the Milwaukee Road of yesterday: linking us across space, of the lands that lie beyond our sight.

In light of the love that we have for this river, it is no surprise that Missoula has invested in the park system that borders its urban corridor. While not the most extravagant or cohesive greenway, Missoula's riverfront is an impressive combination of open, green public parks and trails which provides a movement corridor and park space within the urban core. Missoula's river greenway is dominated by public parks oriented toward recreation, the majority of which are not nature-oriented, and by a pedestrian and bike path. The path is mostly continuous on both sides of the river, often paved, and assisted by two non-motorized bridges, as well as stairs to larger bridges. For a detailed view of the park and trail system, refer to the study area map (please see Appendix B). The greenway boasts many community attractions, including the nominal town square of Caras Park. It provides important bike and foot commuting opportunities, and connects the university district to downtown and commercial and residential districts further west.

The creation of Missoula's greenway has been and continues to be a patchwork process. The entrenched nature of many developments along the river has led to creative solutions. Some areas have been entirely overhauled, such as Toole Park, which prior to its collaborative acquisition by the city, high school district, and university, had been the Milwaukee Road railroad as well as a petroleum tank farm (Behan 2013). Another example is the right of way which passes under Higgins Bridge, in front of the Missoulian offices and the old Milwaukee Depot. This land was acquired through a conservation easement with the respective land owners. The Van Buren footbridge, made of the remnants of the John Rankin bridge, was constructed using Community Transportation Enhancement funding, which diverts highway funds to non-motorized transport uses. On that note, a portion of the bike and trail system is dedicated to its strongest proponent, Ron McDonald, a long-time MRA board member whose advocacy for the trail system ensured its realization (Behan 2013).
The bike trail on the south side of the river is the product of significant historical changes. The Kim Williams Trail, as the four-mile segment of paved trail running through the study area is called, is a Rails-to-Trails project. These projects, which are numerous across the country, convert former railroad tracks into pedestrian and bike paths (RTC 2013). When the Milwaukee Road closed down 1980 (Briggeman 2010), the remnant tracks in Missoula were used to construct the trail, connecting Hellgate Canyon to the east with communities and trails to the west. Had the mysterious railroad of Patterson’s youth not been abandoned, this integral half of Missoula’s urban river greenway would not have been possible.

The complexity of Missoula’s river greenway creation and the cooperation of many different government and private entities is reflective of greenway planning as a whole. Often, in such tight quarters as an urban river often runs through, many entities have, or want to have, a say in greenway planning and design. As a multi-objective park system that meets that various needs of many different user groups, Missoula's greenway is no exception. The work of the MRA has helped to streamline the river greenway development process, as riverfront enhancement is one of its primary goals, and they have worked diligently to bring Missoula's river greenway to fruition.

When looking at Missoula's riverfront park system, it is also important to consider the MRA's role and what it says about the economic and environmental value that the community places on the river. Community revitalization is the MRA's primary purpose. The fact that most of its funding is TIF based means that improvements in the district will be reflected in increased funding opportunities. Basically, as the renewal district succeeds, property taxes will increase over the base, and this increase will be directly reflected in improvements to the district, including the riverfront system. Investments in the riverfront made by the MRA, and the less quantifiable love described by authors like Patterson, indicate that Missoula's river greenway is economically valuable for cultural, scenic, recreational, and communal purposes. It is a specific example of the value that populations in the American West place on their landscapes. It is also an example of the capability of the river itself to act in the community and to influence a community's image.

But love is not all about looks, or utility. Missoula's relationship to its urban river is no exception. Missoula's investment in its riverfront has powerfully demonstrated that the neglect and abuse the river once knew is a thing of the past. Its current cultural value will be further
expanded upon in the next section. In addition, as the conceptual framework has shown, urban river greenways have the potential to improve the ecosystem health of the riverfront. They have the ability to try civic environmentalism for more than the value that it places on the physical attributes of the West, and see if population centers in this region can seek health for their landscapes under the surface. This will eventually benefit both the environment and the human population. In this scenario, Missoula's urban river greenway would look beyond its social components and look to the soul of the river, the ecosystem that brings it to life. This study addresses this potential through an observational consideration of habitat, connectedness, and native species in Missoula’s river greenway. This perception of naturalness can indicate the ecological success of Missoula’s river greenway.

To begin my assessment of Missoula’s riverfront, I will focus on the first two human dimensions of cleanliness and aesthetics, and then move on to a more in-depth consideration of the naturalness and appropriate development of the greenway. To begin, Missoula's urban river greenway is well groomed and maintained (please see Figures 4, 9, 12, and 13 in Appendix B). The parks are mowed and paved and fairly litter free. Using it as much as I have, I sense that it is well cared for and appreciated, which fosters a care for it in my mind. Water quality is also an important component of the Clark Fork, as it has been polluted by a number of harsh upstream uses, such as mining and logging of which the community is well aware. Knowledge of restoration projects upstream, such as the Milltown Dam removal, inform my opinion. In such a traditionally harmed river corridor, it is well known that improvements have been made in water quality. Recreation on the river reinforces this. In the summer, residents float the river to relax. Most of the year kayakers and surfers can be seen at the man-made Brennan's wave beside Caras Park, and often in the evening fishermen and dog-walkers ply the river banks. Just the other day I sat on the shore by Madison Bridge and lost count of the fish jumping. I often see kingfishers at the same location, and a pair of herons frequently. All of these activities and creatures indicate a water quality that is safe for human recreation.

The river greenway in Missoula has high aesthetic and scenic value. It provides a visual break from the surrounding city, and also a vantage point from which to view the surrounding landscape (please see Figures 1, 2, 11 in Appendix B). The scenic break and presence of the river serve to compensate for any aesthetic gaps in human-made features. The riprapped banks and concrete levee can detract from the view of the opposite shore (please see Figures 10, 11, 14 in
Appendix B). Both Higgins and Madison bridges are unforgiving structures when it comes to visual appeal from the riverfront level (please see Figures 7, 8 in Appendix B). However, many of the newer built investments in Missoula’s river interface, such as the Caras Park pavilion or the non-motorized bridges in the Clark Fork Natural Park (please see Figures 6, 9 in Appendix B) indicate that planning now understands the importance of attractive development to community perceptions. The aesthetics of the Clark Fork in Missoula are aided by an equal value for public space, recreation, and transport in addition to its scenic amenity. Missoula's river greenway is valued by the community, as the next section will show, and definitely does provide a visual relief from the surrounding development.

Emphasis is placed on lawns, fields and cultural parks over natural and native vegetation in Missoula’s river greenway. This non-natural state is most apparent for the length of the study area, although Clark Fork Natural Park on the east side of Orange Street is where this non-natural atmosphere begins to dissipate. Constriction due to urban development is the main cause of this cultural, non-natural park system along the Clark Fork. The parks themselves do not mitigate this reality, as most are dominated by Kentucky Bluegrass and the lawns are extended to the edge of the false banks (please see Appendix B). To further investigate the natural elements of the Clark Fork's urban river greenway, I will be using the ecological framework based on habitat value due to channel constriction, corridor connectivity, and the use of native species.

As Findlay and Taylor (2006) discussed, the geomorphology of the river, and how it has adjusted to urbanization, is an important consideration in assessing the habitat viability of a river corridor. Often, simplification and constriction of the river's course increases and shifts flow. This is compounded by flanking urbanization and pavement, which increases the rate and intensity of runoff. All of these changes have occurred along the banks of the Clark Fork as it runs through Missoula, as a review of the historical era revealed (please see Appendix A). While the river hydrology may have adjusted, this flow regime can have negative effects on riparian habitat. In Missoula this alteration is most evident between Van Buren and Higgins bridge. The banks west of the Madison Street bridge (please see Figure14 in Appendix B) are an example of how channel simplification can influence riparian habitat. These artificially steep banks are rocky and relatively empty, except for a few bushes and shrubs. The intensity and force of the river at peak flow throughout its urban corridor is increased by this channelization and by the removal of stream braids and flood plains. The result of this channelization and simplification is that the
urban river corridor is, not surprisingly, sub-prime riparian habitat for most native plants and wildlife.

This increases the corridor value of the park system, by which it can allow for the flow of species between more wild parts of the river. The connectedness of the riverfront park and trail system appears to bolster its corridor abilities. To the east of the study area, Hellgate Canyon, through which the Kim Williams trail runs, is a much more natural environment, especially on the south side. To the west, the river is less substantially constricted until it passes Reserve Street, when it adopts much more of its natural braiding and broadness. The urban river corridor is also the site of Rattlesnake Creek's merging with the Clark Fork, thus connecting species from the Rattlesnake watershed with the Clark Fork.

This means that the river park corridor, as it flows through the heart of Missoula, can act as a shuttle for species and nutrients between these more natural flanking areas. Occasional studies conducted by university students or Fish, Wildlife, and Parks have found that the river park system has functioned as a land corridor for larger animals such as moose or black bears (Behan 2013). Thus, from an ecological perspective, it can be loosely inferred that the park system on the banks of the urban Clark Fork, while not the best base habitat, can help facilitate movement of species between more preferable locations. This is, perhaps, the more realistic hope: as outlined in the conceptual framework, one of the greatest ecological potentials of the greenway is to link disparate wild environments and thus facilitate species compositional and genetic diversity.

Lastly, Missoula's urban river greenway can be evaluated for naturalness based on its native plant population. As Baschak and Brown indicated, native vegetation is central to the restoration of urban river corridors. Missoula's urban river greenway, especially in those most channelized segments, does not fully meet that requirement, although this is mitigated by two aspects. First, the segment which is most rigorously man-made should be considered in proportion to the semi-structured to more undeveloped surrounding habitats. Secondly, several community attempts have been made at creating a more natural riparian habitat along the Clark Fork, and these changes are readily evident to those who use the trail.

The Clark Fork Natural Park (please see Figures 3-6 and map in Appendix B) is the most prominent natural park undertaking in Missoula's urban river corridor. Organized by the MRA, this park was the product of facilitated meetings with the community, through a plan to create a
natural environment using, when possible, mostly native vegetation (Behan, 2013; Timchak, 1990). The park itself had been previously stripped of vegetation due to stream alterations, so park creation required the input of soil and plants from elsewhere in the valley (Behan, 2013). At first, the natural aspect was fairly successful. However, the use of native plants and the noxious tendencies of lawn grass meant that hand-weeding was necessary to preserve the native nature of the park. Eventually, the maintenance, provided through the city Parks and Recreation Department, proved too much. Now, while still having a substantially more natural ambiance than the adjacent parks and fields, the grass lawn is mowed in similar fashion (Behan 2013).

Additional natural park endeavors include the Clark Fork Native Prairie and the attached Water-wise Garden (please see Figures 15, 16 in Appendix B). When planted, the Native Prairie utilized sage-brush, bunchgrass, and a variety of other native plants and wildflowers. Today, Kentucky bluegrass has pioneered the area, meaning smaller plants have not endured. This again points to the difficulty of maintaining one of these native parks. The Water-wise Garden is a cooperative undertaking between Mountain Water Company, the Parks and Recreation Department, the Missoulian, and the Clark Fork Coalition (MWC 2012). The garden demonstrates mostly native plants and how they can be used in individual gardens. It is a good example of community collaboration and ecological values working together.

Considering the course channelization, urbanization, and cultural parks which constrict the role of the Clark Fork as riparian habitat for native species, this evaluation concludes that the urban river greenway in Missoula is environmentally most useful as a corridor for seeds, plants, and animals. Thus, the naturalness of the river greenway is hampered by that fourth human dimension, the appropriateness of development. To that end, it is clear the Missoula's river greenway is a primarily cultural park system, whose goals are more social than they are environmental, especially in the reaches of the river which are most dramatically altered by channel constriction. With established development along these banks, the riverfront system is best suited for societal uses, such as the trails and parks of which it is currently comprised. To these uses it has acquitted itself successfully.

When considering why ecological park goals are not more often undertaken, maintenance is often the deciding factor (Behan 2013). The Missoula Parks and Recreation Department (MPR) provides maintenance for the new and existing parks and trails in Missoula. As the park system across the city increases and their budget decreases, MPR is often asked to do "more with
less" (Behan 2013). Selectively preserving more native parks is often too time-consuming and costly of an undertaking to be practical.

This problem could be solved in a number of ways, and the historical progress and future plans are encouraging. As was noted in the conceptual framework, and will be shown in the next section, community volunteer involvement can be a very successful means of achieving ecological restoration goals. Community weeding goals have been met in Missoula previously, and it is possible that with the right enthusiasm, coordination, and leadership, this community power could be focused on the city's river. The Clark Fork Natural Park shows that there is community interest. In addition, creative funding opportunities could also be developed to provide for the maintenance of natural parks. At this point in time, however, riverfront park system users in Missoula have to accept a "natural feel," such as that of the natural parks described above, over a more truly natural river ecosystem (Behan 2013). Future plans continue to incorporate native environment aspirations, especially as MRA revitalization plans spread beyond the Clark Fork's urban core. A new plan for Broadway Island, to the west of the study area, seeks to preserve and enhance the native habitat. This plan is interesting in that the island is explicitly a floodplain zone, meaning that access bridges are the only substantial construction projects which will be undertaken there, providing more room for native vegetation (Chaney 2013).

This exploration of the current status of Missoula's urban river greenway has sought to evaluate it from a human perspective, based on the four human dimensions of cleanliness, aesthetics, naturalness, and appropriate development. In order to assess the natural dimension, an ecological framework was used to observe the river’s riparian habitat based on channel alteration, the connectedness of the corridor to external systems, and the use of native vegetation. This observational study has shown that the urban riverfront fulfills many societal goals, through its scenic, recreational, transportation, and public role in the city. The parks are well maintained, the water quality is appreciated by the community as far improved over historical lows, and the parks and river work to be beautiful within the constraints of the built environment. From a social perspective, the naturalness of the river is limited, but this limitation fits the reality of its urban setting and amenity purposes.

Perceptions of the naturalness of the study area indicate that Missoula's fidelity to its river ecology is thwarted by this urban reality. To improve riparian habitat would require an
impractical overhaul of the constricted banks, behind which sit significant residential and commercial areas. The success of native plants would partly rely on this nonexistent rehabilitated habitat, and partly on the unlikely expansion of the MPR’s budget, or a complex community endeavor. The greatest environmental benefit of Missoula's riverfront park system is thus its corridor capabilities: the fact that it is a series of open spaces and fairly clean water through which can hopefully pass many animal and plant species. To this end, it is beneficial that the river's most raw urban constriction does not cover too much area, is mitigated in most places by buffering park zones, and can be checked by surrounding, less altered environments.

The hurdles of environmental planning are many and often frustrating. In Missoula, they include the economic nature of the riverfront development, the realities of urbanization, and the cost of maintenance. This frustration is lessened by a consideration of the past. Missoula has made many improvements to its urban riverfront, in small pieces contributed over roughly forty years. The river is no longer a dump, nor an ugly and poisonous place. Instead, it is a community asset that reflects the value we place on our landscapes. Looking into the future, it may come to reflect our entwined environmental values as well. In light of this, Chris Behan ends our interview with a reference to Mother Teresa. As she said, "We ourselves feel that what we are doing is just a drop in the ocean. But the ocean would be less because of that missing drop." It is this perspective which can most effectively accomplish ecological goals in the future, as it was the same that accomplished the social goals and environmental improvements we enjoy today. Every drop in the river counts, and every change and improvement helps to remind us that we are living on the River of Awe.

Section Two: Clark Fork Coalition River Cleanup

In order to assess the intangible social importance of the urban river interface and greenway in Missoula, I participated in the Clark Fork Coalition's 10th annual River Cleanup. This year, nine hundred volunteers from Missoula and surrounding communities spent two hours picking up litter, garbage, and miscellaneous junk along the river as it flows through the city. As the Missoulian reported, volunteers "gave back to the river, learned about community, and ... picked up lots and lots of cigarette ends" (Szpaller 2013). At ten in the morning on a Saturday, after an introduction and safety presentation, volunteers set out in small groups to clean up designated segments of the riverfront, and returned afterward for a barbeque lunch.
The overall atmosphere prior to the event beginning was very jovial and communal. There were many children and families, as well as groups or teams which arrived together. The crowd was large and happy, creating an air of excitement. The city council member who began the event said, "We used to throw trash into the river, not take it out." This clear reference to the history of Missoula's relationship to the city, a history I outlined earlier, shows the drastic change in the community's outlook on its river. It was clear that the people gathered knew they were doing something positive for a feature of natural beauty. They showed they valued it through their presence and actions. In addition, they showed that they valued each other, by coming together and interacting positively to reach a desired goal. The event in itself is not only a message about the societal view of the urban river interface. It is also a message of how that interface can serve as a platform to promote community interaction, health, and cooperation.

A set of themes closely related to this ambiance developed as I spoke with the various participants. The first theme which I found was that of a positive attitude toward the river itself. Two people referred to it as "beautiful," and several explained that they had wanted to "help" with this river cleaning project for some time. As previously mentioned, their dedication to the actual hydrologic feature was clear in the fact that they had dedicated their time to pick up litter on its banks. It was clear that the participants knew and believed that they were benefiting the Clark Fork by volunteering, and that this positive influence was what they wanted. Their enthusiasm was further proved by their willingness to speak with me about the river. Jessica and I pondered why it was that earlier generations might not have had such a positive outlook on the river. She suggested that perhaps it was economic. For example, poorer countries do not have the luxury of valuing their natural resources, and perhaps the developing west was a similar situation. All of these comments helped me to see that the participants valued the river simply in itself, as an environmental feature.

One of my main questions concerned the urban riverfront trail system. Many of the participants spoke highly of it, and most said they used it on a regular basis. Chris discussed how it was very useful for commuting purposes, especially when he used to work and live at opposite ends of town. He also spoke of the riverfront system as an important starting point for trails throughout the city, and for trails which could connect to key recreation areas outside of town. This was in line with the vision that John Gilliam outlined, in that the riverfront park system can serve as a "center of future urban recreation development" (Gilliam 1983, 18). Chris pointed out
that this process of expansion is well underway and that the riverfront is an important part of it.

Julie uses the riverfront trail system exclusively for commuting, especially to get across the river. She told the story of one day when she was riding her bike on the trail system, and it was so busy that she wondered to herself when they were going to put in a second lane. Since she and I are from the same town, she mentioned that she "wished Kalispell had something like it." I thought this was a very powerful indicator of how she appreciates the riverfront trail system, and I know I share that sentiment. In addition, Joe was an assertive proponent of the riverfront parks and trails. He announced happily that it was one of Missoula's best features, and he uses it frequently.

The riverfront park and trail system was also explicitly valued as a recreational and aesthetic amenity by most of the people I spoke with. Many of them mentioned that they floated the river for fun in the summer, or that when they were out for a weekend afternoon they would come down to the parks along the river. As I mentioned, Chris addressed the recreational value of the river corridor. He pointed out that families could use the trails in order to get to parks along the river, and possibly in the future to get to parks further out of town. Max was especially enthusiastic about the change in the appearance of the parks and riverfront since he moved to Missoula about forty years ago. He smiled as he mentioned the beneficial changes that river rehabilitation has made in his neighborhood. Joe said it simply: the river is one of the "top five" attractions in Missoula.

Lastly, the river, and the parks and events that surround it, were understood by many of the people I spoke with as significant features of the community. When explaining why she was volunteering that day, Amy said that the cleanup would be a good way for her and the people she brought with her to get involved in the community. The participants who came up to talk to me were interested in the concept of the river, but grew even more interested when I explained that I was mainly studying the human aspect of this landscape. This showed me that while they cared about the river, they cared even more about the social environment surrounding it. Chris spoke of the natural and open space of the riverfront park system as an important source of cooperation and interaction between different members and interest groups of the community. Joe described how busy the riverfront is in the summer, and smilingly said he hoped my report would not make it too much more popular.

In this consideration of participant input, several of the human dimensions of urban river
greenways become clear. These participants in Missoula’s river greenway showed that they were sensitive to the appropriate development and aesthetic value of the park system. The fact that many of the participants I spoke with appreciated and used the trail system indicates that they value the riverfront as a commuting and exercise tool. In addition, they appreciated the aesthetics of the river itself and the park system around it, referring to it as a community attraction and a pleasant place to relax on the weekend. Thus, they realize that the park and trail system is an asset to the community and place value in it based on the human benefits that can be drawn from it. They see the riverfront in Missoula as a place of practical and scenic utility. Thus, it is the social, not ecological, import of the Clark Fork in the city that stands out.

The notion of river cleanliness is an important human dimension which fuels the River Cleanup, and this sensitivity coincides with a sense of ecological justice to motivate volunteer activity. The purpose of this activity was to pick up litter on the river; therefore, the problem had to be both announced to and perceived by the volunteers. This is a fairly direct example of how the perceptions of harm done to a river can prompt action from community members. Alongside this comes the theme of correcting a wrong. As described above, many of the participants spoke of wanting to help the river, and of the positive social changes that have occurred with time which lead us to value instead of hurt the landscape. The councilman’s proud comment of the change in our treatment of the river shows how these volunteers feel that they are correcting historical and current transgressions against the river.

This same comment by the councilmen supports an analysis of the river’s role as an actant within the community. Stories like his help to create bonds between the community, the river, and the event organizers. These bonds help to ensure that community, organizational, and environmental goals can be collaboratively reached, as was the case at this event. As the participants I spoke with revealed, it is not just stories that make these bonds. The river itself, beautiful, scenic, and important, was a motivator for the volunteers that I met. The human dimension of aesthetics, combined with a less analytical, more mysterious human affinity for this notable geographical entity, cultivates an attachment to the river which was evident in the participants I spoke with. This empathy can in turn encourage action and collaboration.

Thus, the River Cleanup was an exercise in civic environmentalism. Through their sense that an environmental wrong needed to be corrected, and the love that they had for the river itself, these participants showed that they valued Missoula’s landscape and were willing to work
for its health. This civic environmentalism, revolving around the city’s river, shows how the community and the Clark Fork can join forces. The power of this relationship is not just in its ability to strengthen the health of the river. In addition, this civic environmentalism was able to foster a greater sense of community within the landscape. The participants I spoke with valued the cleanup as a community activity, and enjoyed the fact that it brought them together and gave us a sense of a shared and accomplished goal. In my experience, I was also reminded of the power of events like this to bring us closer to those who care about what we care about. I was able to meet and learn from people I would otherwise not have: all because we both wanted to help the river. On that day, the river brought us together. It is one more thing for which the Clark Fork deserves thanks.

This experience with participant observation and discussion with other volunteers revealed that the urban riverfront is a strong and recognized asset to the community. Those who gave their time to clean it on that Saturday morning proved to me that they valued the Clark Fork's innate beauty, as well as the cultural superstructure of trails, recreation, and community character we have built around it. I was reminded of the power of community, and that it is often translated to us through one-on-one interactions while in the pursuit of a shared goal. I was able to meet very different personalities, and learn from their curiosity and kindness, both to me and to the beautiful river. They showed me that civic environmentalism is a strong force in Missoula, and that perceptions of, and love for, the river can motivate positive community action. Even though it was spurred by shared environmental values, the River Cleanup is an even greater example of the power of the river to combine with human sentiment to promote real ecological and community health.
CONCLUSION

It is spring, and the yellow willow bushes are reaching exuberantly from the river banks, alongside the dandelions dispersing across the lawns. Sunlight flashes off the water, and surfers splash in Brennan’s Wave. An osprey floats by overhead, eyeing the waters below. Recent rains have left the river high and tinted as it quickens to the west. Across the water, the old brick of the railroad depot faces the afternoon, and the Clark Fork Natural Park presents a jumble of cottonwoods and shoreline. Like many others in Missoula, I think of this river place as mine, and go to it for nourishment and a sense of where I am. There is so much to say about a river, and so little understanding of what it is that speaks to us from the flowing water.

This study has attempted to understand this river-city landscape, a landscape that is valuable to me for reasons tangible and intangible, obvious and incomprehensible, social and environmental. Through this research, I have been able to apply theory to a study area that is right out my back door. Theory presented here explained the ability of urban river greenways to serve civic environmentalism in the American West, as well as the benefits that could be achieved, and how these benefits could be planned for and analyzed. Data was collected on the urban river greenway in Missoula and analyzed based on this theoretical framework. An explanation of the history and renewal of Missoula’s riverfront helped to inform the analysis of the current era. Current social and ecological benefits were assessed through observation, and the power of the river and the human dimensions of civic environmentalism were explored through participant observation.

What this study has shown is that Missoula and the Clark Fork have a dynamic relationship. The urban river corridor is a landscape which has seen considerable changes with time. This change has favored social justice by better serving the needs of the community through which the river runs. The cultural, aesthetic, recreational, and community amenity provided by the river has come to replace the role it once filled as a garbage disposal. The riverfront park system has been an important component of downtown economic revitalization. My participant experience with the River Cleanup demonstrated that the river can serve to facilitate community and ecological interests. Lastly, an observational analysis of Missoula’s river greenway based on human dimensions indicates that it is a success in terms of cleanliness, aesthetics, and appropriate development. A more in depth look at the dimension of naturalness, using an ecological framework of analysis, shows that Missoula’s urban river corridor may also
serve important environmental needs by facilitating the movement of species and nutrients to less disturbed areas. However, this study suggests that the role of the urban river corridor as riparian habitat for native species may be lacking. The feasibility of achieving this ecological benefit is limited by several factors. The most limiting factors are the geomorphology of the simplified urban river corridor which results in poor riparian habitat, and the restricted funding available for maintenance of native vegetation.

This study has provided an understanding of Missoula’s past and present relationship to the Clark Fork River. This relationship illustrates a remarkable change in the urban river interface, and how this change has had a positive effect on the river and community. This success is the product of changing landscape values and dedication on the part of the community and city government. In this story, we can see that the Clark Fork is still working hard for Missoula. In contrast to the past, the city now appreciates this work in a way that can continue to benefit the social and natural environment of the urban river corridor.
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APPENDICES

Appendix A: Summary of Repeat Photography
*Repeat photographs are provided in black and white to limit bias based on color prints

Figure 1. Looking west towards Higgins Bridge, 1908 (Image B.I.e -003): Note that the floodplain on the right (North) side of the original image is now the site of Kiwanis Park and residential and commercial developments. Berms and the concrete dyke on the north shore have channelized the river. It is unlikely that the original is dated correctly, as residences on this north side were displayed as flooded in photographs of the 1908 flood.

Figure 2. From Higgins Bridge looking east, 1914 (Image 91.0119): In this original, the north shore is to the left. Development is encroaching on this side, with the Milwaukee Railroad and rail yard on the south shore. In the repeat, it can be seen that both shores have been converted into green space, however the channel constrictions, development-derived dyke on the north and railroad berm on the south, endure into the present.
Figure 3. Bon Ton Bakery and Orange Street, 1940 (Image 94.0436): This original image depicts the site of the old landfill on the north (right hand) shore and the as yet undeveloped McCormick Park across the river. No substantial channel shifts, but park and trail development in the repeat photograph indicate the increased cultural value of the riverfront.

Figure 4. The Wilma and the power plant, 1945 (Image 94.3007): This image pair shows the island which used to divide the river at this location.
a. *Original: 1955*

**Figure 5. The Wilma and parking lot, 1955 (Image 90.0610):** Another image pair depicting the creation of Caras Park. The river channel which used to pass alongside replaced by the island to the left in the original. This area is now Caras Park and parking.
Appendix B: Map of Study Area & Figures
Figures: Observational photographs

Figure 1: Scenic break, vantage point

Figure 2: Scenic break

Figure 3: Clark Fork Natural Park (CFNP)

Figure 4: CFNP

Figure 5: CFNP

Figure 6: CFNP Aesthetic Bridge
Figure 7: Higgins Avenue Bridge

Figure 8: Madison St. Bridge

Figure 9: Caras Park Pavilion

Figure 10: Concrete levee (opposite bank)

Figure 11: Levee, community art

Figure 12: Bess Reed Park
Figure 13: Kiwanis park

Figure 14: Riprap and poor riparian habitat

Figure 15: Clark Fork Native Prairie

Figure 16: Water-wise garden