RECREATION ON THE WICHITA RIVERFRONT:

ACTIVATING THE ARKANSAS RIVER AS A RECREATIONAL GREENWAY

by

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A REPORT

submitted in partial fulfillment of the requirements for the degree

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Abstract

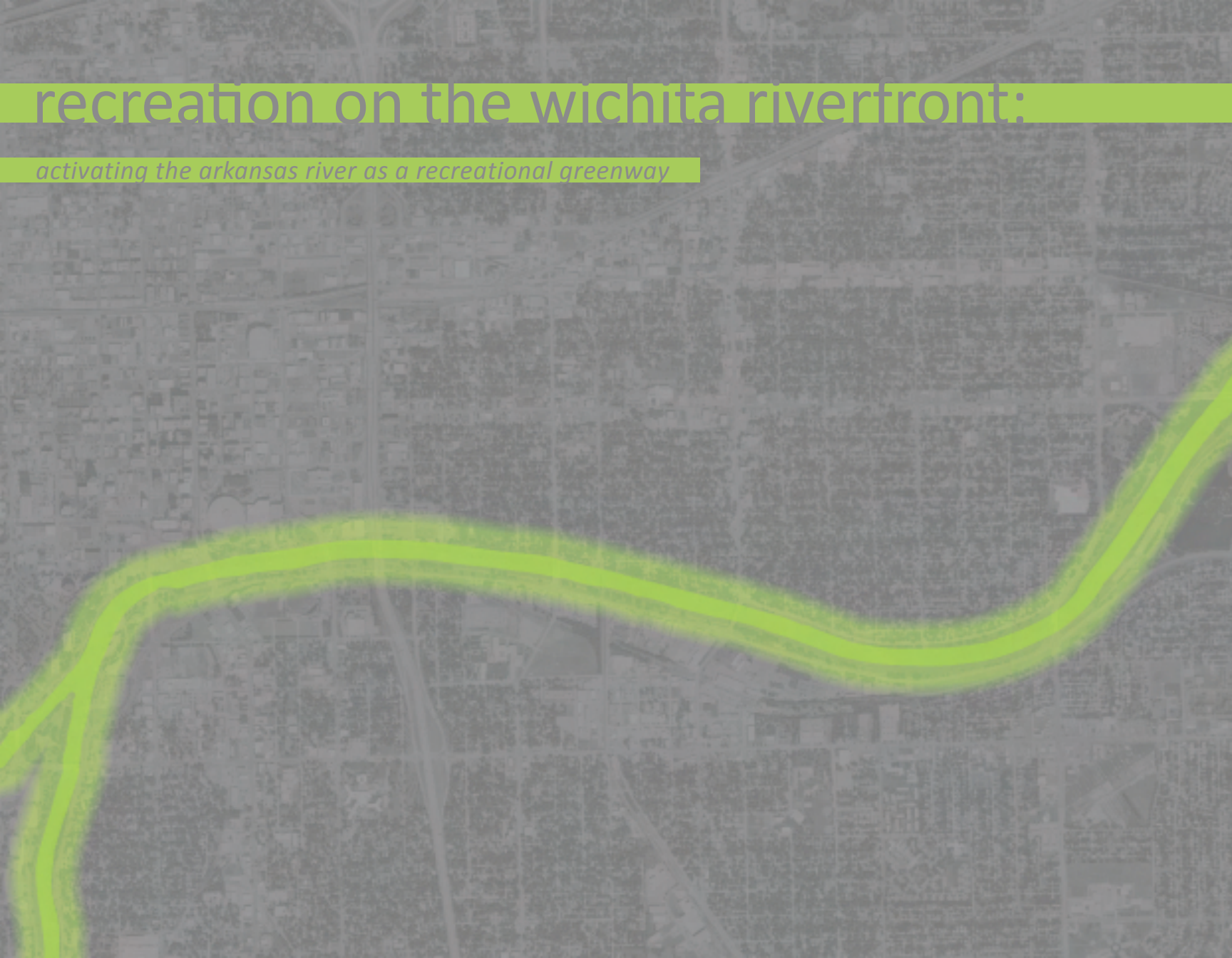
Riverfronts and greenways are our retreat to nature within the urban setting. They provide connections, opportunity for recreation, habitat for flora and fauna, and most importantly spaces that encourage exercise and social interaction. When these areas are located within the urban context, they are especially susceptible to the degradation that comes with the development of an area such as pollution, erosion, and in some cases lack of care or maintenance.

The riverfront in Wichita suffers from three hindrances that restrict it from becoming an asset to the community and compromises human and ecological health along the river. Limited accessibility, a lack of recreational amenities, and poor environmental quality all contribute to the river being under-utilized. While these three elements compromise the site, the location makes it a prime candidate for transformation, creating a cohesive riverfront that has great potential to be utilized by the residents of a quickly growing downtown area.

Through the establishment of these dilemmas a framework that focuses on the access and awareness, recreational amenities, and corridor enhancement can then be applied to the Wichita Riverfront. The Wichita Riverfront will encompass active and passive recreation that promotes human health through exercise, social interaction, and improved ecological conditions.

recreation on the wichita riverfront:

activating the arkansas river as a recreational greenway



recreation on the wichita riverfront:

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master's project and report
spring 2011

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college of architecture, planning & design
department of landscape architecture

“sit by a river. find peace and meaning in the rhythm of the lifeblood of the earth”

-anonymous

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acknowledgements
This project is a reflection of the continued support of the Landscape Architecture faculty over the past 5 years of my education. A special thanks to my major professor Jessica Canfield who helped throughout the year to push me to new heights with the Wichita Riverfront project. To Stephanie Rolley and Howard Hahn for their continued support and feedback as committee members.
Additional regards to Larry Hoetmer, Jan Long, and the rest of the City of Wichita Park and Recreation Department for supporting my endeavors and helping me grow in my internship.
Finally, a big thank you to my friends and family, especially Mom, Dad, Emily, and Fuzz, for supporting me in my endeavors and helping me throughout my learning career.

to emily,
an inspiration in my life

[1] initiate

This chapter gives an overview on the work to be completed throughout the master's project and report, the design process utilized, the literature that influenced the semesters work, and introduces the dilemma, thesis, and project framework.

“The good life of any river may depend on the perception of its music; and the preservation of some music to perceive”

-Aldo Leopold

masters work and expectations

As Landscape Architecture students enter the fifth year they are encouraged to create a project that suites their personal interests within the field of Landscape Architecture. This project is intended to become a culmination of the education and knowledge gained throughout the student's time in the program.

The masters work spans over two semesters, the first semester being dedicated to the development of the project intent, research, creating methodologies and frameworks, and inventory and analysis. The second semester focuses on applying the work done in the first semester to an educated solution that in turn solves the problems listed in the dilemma. Design development, production, and development of the final products are all completed within this semester.

Throughout the year checkpoints are set up to make sure progress is thorough and up-to-date. These check points include gateway 1 and 2 throughout the first semester, and starting the second semester mid critiques, substantial completion, and the final defense.

project inception

Throughout my time in the Landscape Architecture program, I have found one of my key interest stems from the design surrounding water. I feel it is important to design spaces that allow visitors of the site to interact with the water as well as taking steps to promote clean water.

I grew up outside of Wichita, but not near the downtown area. I remember as a child that going to the river was a great delight as we were not familiar with the river, yet fascinated nonetheless. As kids we played on the old playgrounds, however as I grew up I began to notice the river took on several characteristics and that certain stretches of the river seemed to be neglected.

I completed a professional internship with the City of Wichita Park and Recreation Department where I became even more familiar with the riverfront through several projects. This led me to discuss the opportunities of a master's project with my boss Larry Hoetmer. Larry embraced this idea due largely in part to the fact that in 2010 the population hit 382,368 and still needs designated spots on the river for recreation.

The City of Wichita was very willing to help me with any data or information I needed as I began to develop my project. The outcome of the project will be shared throughout this book.

project goals

• To activate the riverfront in the downtown area, turning it into an asset rather than a liability
• To change the residents generally negative outlook due to pollution and lack of care
• Becoming familiar with waterfront development and how principles of the practice can be used to revitalize a struggling downtown
• To enhance the overall aesthetic and recreational function of the Wichita River Corridor through sustainable development practices
• Educate the Wichita public on the subject of water quality and how design can prevent pollutants from entering the water supply
• To enhance the overall experience of the pedestrian in Wichita by connecting popular spots along the river and making them more accessible

key questions

• What does the term recreation mean and how can certain types of recreation further enhance Wichita's existing amenities?
• How can the riverfront be better connected to the surrounding communities to promote safer access for visitors?
• What environmental systems need to be modified in order to promote a better sense of ecological health along the Wichita Riverfront?

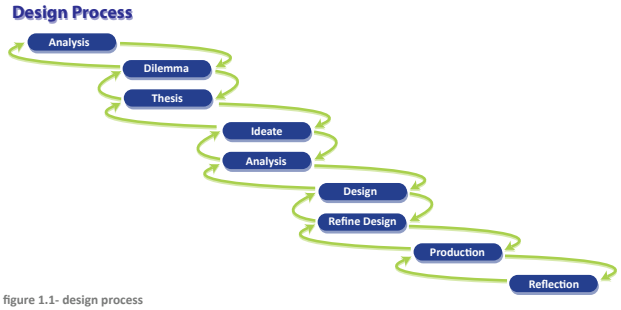


figure 1.1- design process
This diagram helps to graphically illustrate the path taken through the design process

design process and timeline

When diagraming the design process a linear approach as well as a circular approach was illustrated due to personal work habits. When beginning the design process a linear approach is set forth, however because design is iterative, this approach is refined multiple times during the process until the outcome fulfills the design goals and objectives. This helps the project grow in strength and allows for the refinement of the work throughout the design process.

The timeline was developed to illustrate the workload of the master's project throughout the year, simultaneously showing the design process interweaved. The timeline is broken down by months and entails the major deadlines and milestones according to their due date. The milestones are then listed at the bottom and provide a list of what each deadline requires.

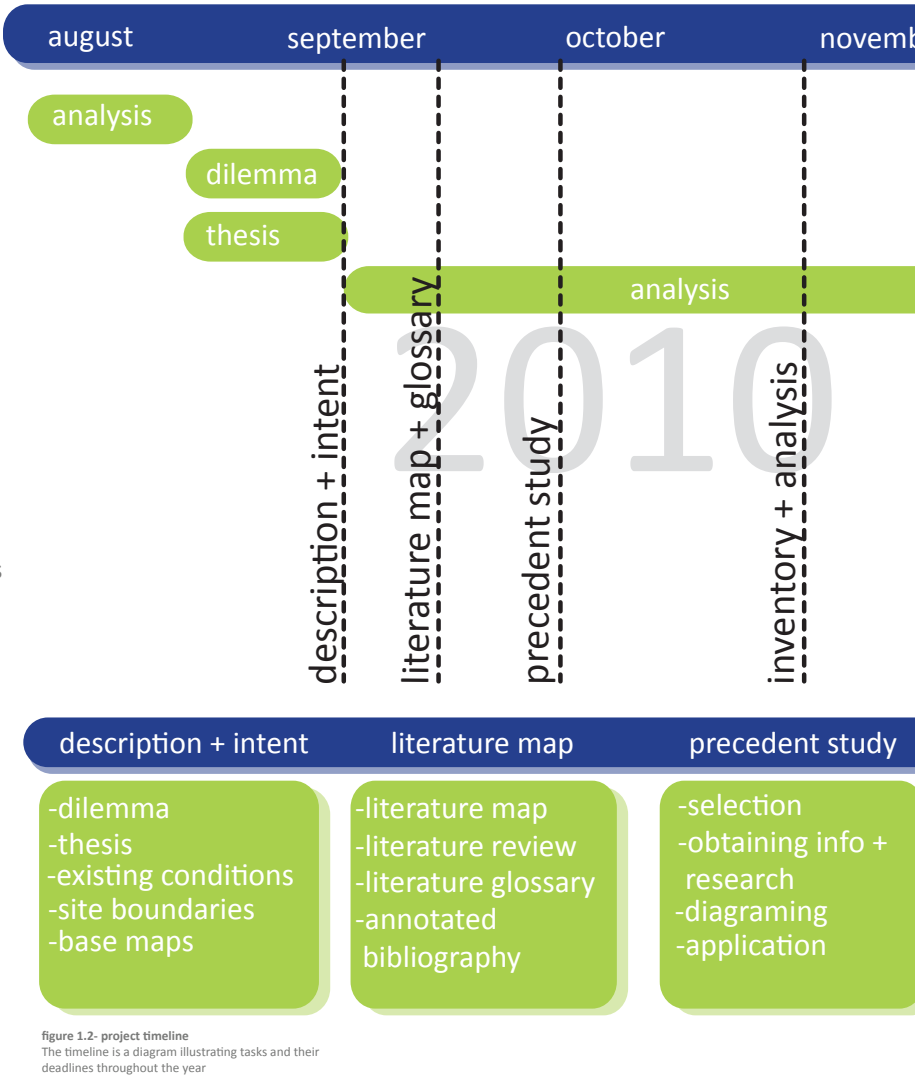
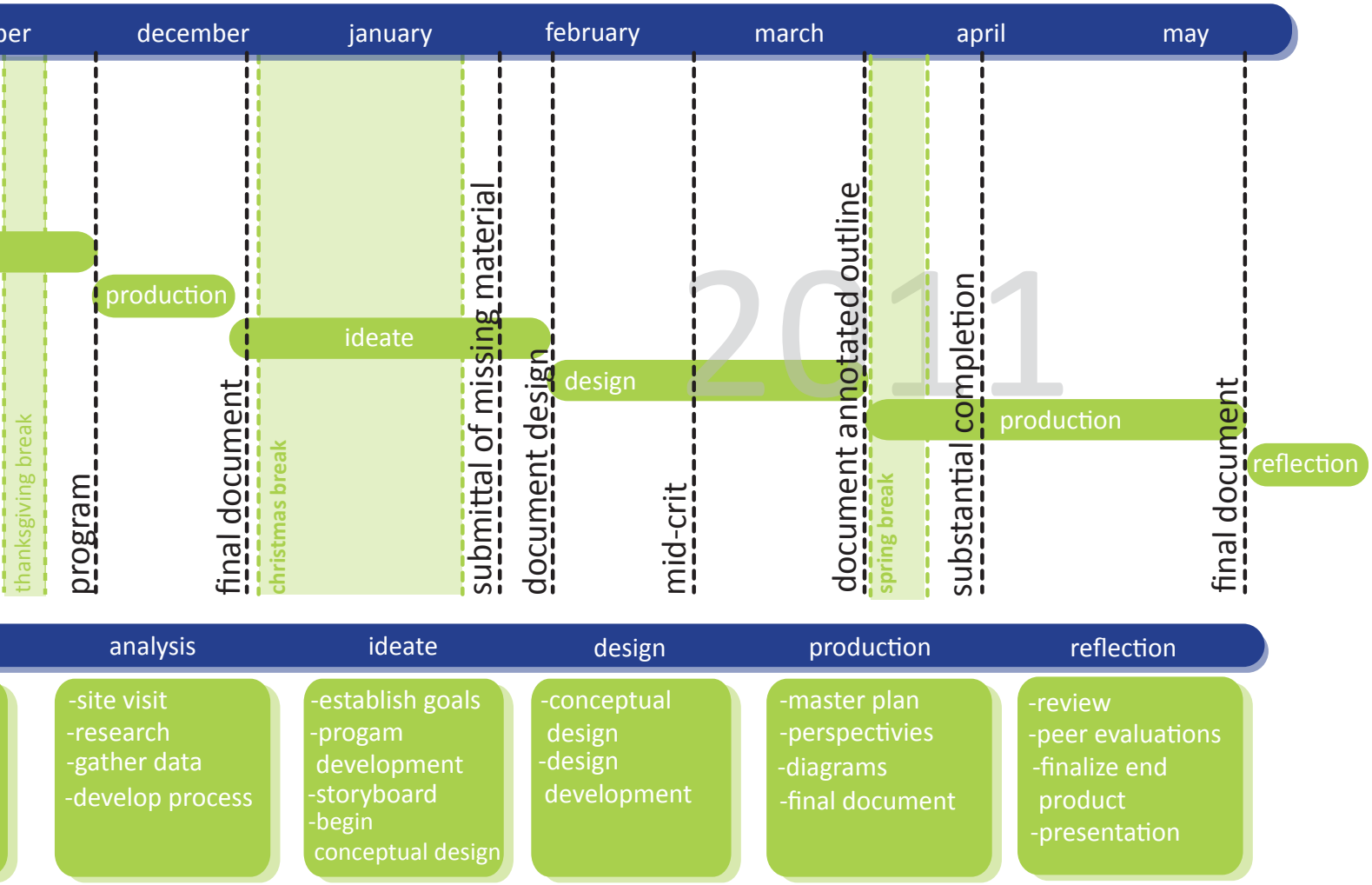


figure 1.2- project timeline
The timeline is a diagram illustrating tasks and their deadlines throughout the year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production
final document
christmas break
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mid-crit
document annotated outline
spring break
substantial completion
production
final document
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2011
analysis
ideate
design
production
reflection
-site visit
-research
-gather data
-develop process
-establish goals
-progam development
-storyboard
-begin conceptual design
-conceptual design
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-review
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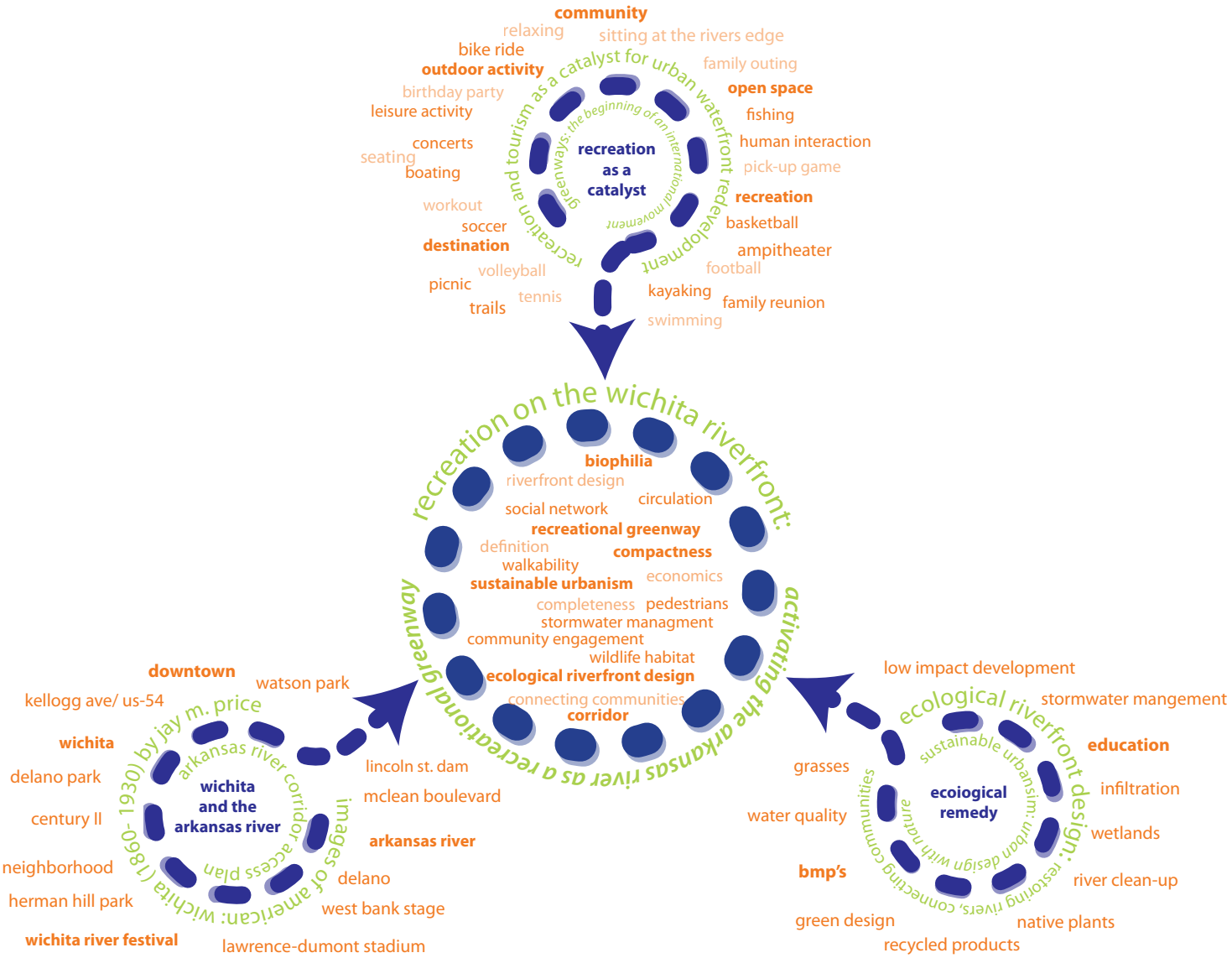


figure 1.3- literature map
The literature map helps to graphically illustrate the literature used throughout the project and how it ties into the overall concept

literature map

The literature was the main source of research for the early beginnings of the project. It was highly influential to help decide which path the project would take. Through the separate literature reviews certain aspects were discovered, which along with the dilemma, helped to mold the framework.

The literature map, as seen in figure 1.3, illustrates how the individual pieces of literature connect to the project as a whole. Three subjects, recreation, ecological remedies, and Wichita were the main focus when choosing articles. One article, Ecological Riverfront Design by members of the American Planning Association, became prevalent throughout the continuation of the project. It offered strategies for ecologically friendly riverfronts, strategies to improve connections, as well as creating spaces that attract visitors.

dilemma

Urban riverfronts and greenways, when designed with amenities, accessibility, and sound ecological practices can be a retreat to nature within the urban setting. They provide connections, opportunity for recreation, habitat for flora and fauna, and most importantly spaces that encourage exercise and social interaction. Since these areas are located within the urban context, they are susceptible to the degradation that comes with the development of an area such as pollution, erosion, and lack of attention.

Forster Ndubisi, head of the Department of Landscape Architecture at Texas A&M and author of Ecological Planning: A history and comparative account, said, "the pre-existent corridors [river systems] are our greenway networks within the city and they need to be treated with special care." It is apparent that sections of the riverfront have not been given the care necessary to provide a retreat for the residents of Wichita. The riverfront in Degraded environmental conditions exist along several stretches of the Arkansas River, but perhaps no more so than near downtown Wichita. Due to limited accessibility, a lack of user amenities, and poor environmental quality, this stretch of the Arkansas is greatly degraded and under utilized

Limited access to the riverfront is a considerable deterrent to visitors utilizing the river. A lack of suitable trails, high traffic streets, and safety concerns contribute to the under use of the riverfront. The area in question has great potential for use due to its location between downtown and two of Wichita's preeminent parks.

A concerning problem on the riverfront is the lack of amenities to draw visitors to the area. With nothing along the riverfront to attract visitors the public has little incentive to visit or spend time along this part of the riverfront, therefore it remains deserted. Further north of the

downtown area, museums, golf courses, and parks provide sources of enjoyment along the river. However, an invisible line exists south of the 1st Street Bridge where amenities seem to dwindle and eventually cease to exist.

Numerous stormwater outfall structures daylight into the river, causing pollutants, sediment, and debris from the surrounding urban areas to wash directly into the water. Rip-rap, placed along the riverbank to prevent erosion, has created adverse affects as well. It is not only a haven for invasive species, but is prevents vegetation from existing along the waters edge, which is crucial for a healthy stream habitat.

However, due to its geographical location within the city, its promimity to the downtown area, Herman Hill and O.J. Watson Parks, the riverfront holds great potential to be transformed into a cohesive riverfront, greenway corridor.

Therefore, considering the limited access, the lack of amenities and attractions, and the poor environmental quality within the river corridor, the main dilemma question becomes- How can the Arkansas River Corridor be revitalized and activated as a recreational corridor while enhancing the identity of the Wichita riverfront, making it more accessible and providing a solution that will enhance the river corridor?

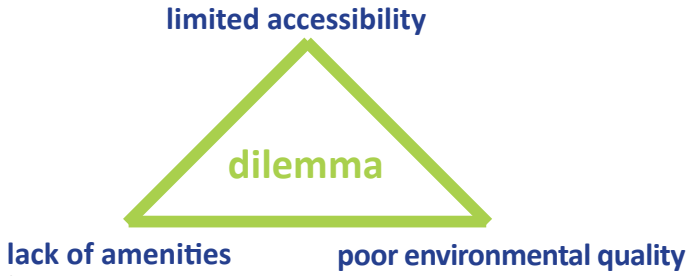


figure 1.4- dilemma triangle
The dilemma triangle is a graphic representation of the dilemma. It illustrates how the dilemma can be broken down into smaller complications on the river

thesis

The intent of this project is to redesign the banks of the Arkansas River between downtown Wichita and the Herman Hill and O.J. Watson Parks area in order to provide the citizens of Wichita a safe, environmentally healthy, aesthetically pleasing recreational corridor. Aiming to integrate access and awareness with recreational amenities and corridor enhancements, the design seeks to improve both human and environmental health through the creation of a cohesive riverfront.

Increased pedestrian circulation and access will be addressed to make sure the river corridor works as a practical connection between downtown Wichita and the surrounding districts. User amenities such as water fountains, restrooms, lighting, and seating will be incorporated along paths and trails to maximize the comfort of the pedestrians.

Recreation amenities will be incorporated into the riverfront to provide residents with opportunities for exercise and promote social interaction along this section of the river.

A solution will be created that promotes a positive impact on the surrounding river corridor. Stormwater management, an increase in flora and fauna, and education will be administered to promote a healthier river ecosystem.

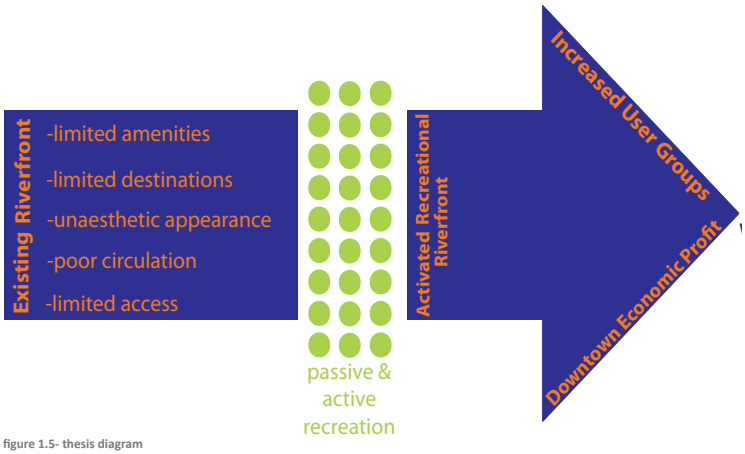


figure 1.5- thesis diagram
The thesis diagram illustrates the concept that through the use of recreation the complications with the existing riverfront can be solved to create an asset for the community

access + awareness

recreational amenities

corridor enhancement

objectives

- protect and create views within the river corridor
- protect the river from harmfull run-off due to on-site stormwater and stormwater outletted into the river through pipes
- protect natural systems of the river
- protect existing and create new habitats for flora and fauna that reside with the river corridor
- educate the public on river corridor protection and how they can make positive contributions

- provide a diversity of recreational opportunities along the riverfront to activate a new section of the wichita riverfront
- increase interaction with the water through accessibility, recreational opportunities and education
- maximize the visitors experience along the riverfront through art, lighting elements, and history
- create spaces that encourage community interaction
- make the riverfront more comfortable by incorporating user amenities

- create a single cohesive riverfront that flows through the wichita area
- connect existing districts adjacent to the riverfront to establish better riverfront access
- increase public safety by establishing pedestrian safe passages across harmful vehicular circulation
- connect destinations across the river that are not currently accessible to pedestrians on the opposite side

program possibilities

- educational signage
- outdoor classrooms
- pilot project areas
- wetlands/ rain gardens
- native grasses/ plantings
- woodlands
- education trails
- interpretive water features
- floating wetlands
- pollution awareness program/ trash teams

- promenade
- skate park
- plaza/ entry space
- kayak run
- boat launches/ rental
- fishing docks/ areas
- concerts
- playground
- gathering spaces
- interactive fountains
- cafe/ concessions
- open lawn/ relaxation
- meditation spaces

- riverfront boardwalk
- artistic lighting
- public art
- pedestrian bridge
- crosswalks
- centralized parking
- trails/ bike paths
- mile markers
- bicycle checkpoints and rental
- pedestrian amenities
- screen/ buffers

solve

limited accessibility

lack of amenities

poor environmental quality

figure 1.6- creating a framework
Through looking at project objectives and program possibilities the three categories of the framework were created to solve the dilemma issues

creating a framework

To strengthen the project a framework was created with direct ties to the dilemma to ensure that an underlying set of principles would be carried throughout the research process and into the design phase. Goals and program possibilities that contribute to the solution of the issues stated in the dilemma were developed and grouped into three categories. These three categories then became the groups for the framework.

[2] the riverfront + history

This chapter begins to introduce riverfronts through a historical look at riverfronts and greenways in urban areas. Historical information is then presented regarding Wichita and the Arkansas River.

“We abuse land because we see it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect.”

-Aldo Leopold

greenways and riverfronts in urban areas

Rivers have been vital to many cities in varying ways for more than four centuries (Otto, 2004). For the early settlers of this country the rivers were a transportation network that allowed them to move goods from city to city efficiently. As the west began to be settled goods began to be moved at a larger scale through the use of barges (Otto, 2004). Many imports would be brought by covered wagon to Pittsburgh where they would be shipped down the Ohio and Mississippi Rivers, thus cities began developing along major river systems (Otto, 2004). The riverfront cities began to boom with the invention of the railroad. Large piers, expansive rail yards, and street systems that connected to the riverfront became key features within the cities (Otto, 2004). Eventually riverfronts became over run with commercial buildings, industrial plants, and sewage treatment facilities (Otto, 2004). Elevated highways were often implemented to take citizens over the river as the riverfront was not something residents wanted to be associated with. By the late 1950's, shifts in technology began to make the rail system obsolete, thus leaving many riverfronts abandoned and left to deteriorate (Otto, 2004). However, not all cities began developed along the river because of access to large shipments, as is the case with Wichita. The Arkansas River and other like rivers did not support the depth of water for these large barges to run up and down. However, they did allow for smaller vessels to navigate the river making it easily accessible for traders to meet at set locations along the river. The city began to develop in much the same way as the other, larger river cities, being that businesses began to congregate along the river for convenience. This led to many cities developing without regard to the riverfront.

As early as the late 1960's, many riverfront cities such as San Antonio and San Francisco have decided to redesign there waterfronts, focusing on the rivers health (Otto, 2004).

Soon after cities such as Boston, Baltimore, and Toronto also took the same approach except focusing more upon the visitors experience along the riverfront (Otto, 2004). In 1972 Congress passed the Clean Water Act, producing funds for wastewater treatment facilities and greatly reducing the amount of sewage dumped into rivers (Otto, 2004). These efforts along with cities beginning to focus on redeveloping their riverfronts began to create a new age for clean riverfronts, that attract rather than repel visitors.

figure 2.1- baltimore inner harbor
The Baltimore harbor is an example of a city that decided to redevelop its riverfront and gear it towards its residents

history of wichita

In 1803, by putting pen to paper, United States President Thomas Jefferson doubled the size of the newly formed country (Price 2003). The Louisiana Purchase secured the better part of 13 states from the Rocky Mountains to the Mississippi River from the country of France (Price 2003). As the newly purchased land was explored many traders, merchants, and buffalo hunters congregated at the confluence of the Big and Little Arkansas to trade with the Indian tribe that occupied the area. A settlement was established by the U.S. government during the Civil War that quickly gathered in numbers. After the Civil War the Native Americans (namely the Wichita Indians) were relocated to present day Oklahoma to make way for pioneers to settle the land and plant crops (Price 2003). A number of cattle and railway trails were established, most famously the Chisholm Trail. It wasn't long after that James R. Mead and William Greiffenstien realized the potential and formed the current day city of Wichita.

James Mead was a pioneer who had created many successful trading posts in the Kansas and Missouri region (Price 2003). When Mead arrived in the Wichita region he partnered with William "Dutch Bill" Greiffenstien to establish a post that traded with local Indian tribes and eventually pioneers to the region. During Wichita's inception Buffalo and other game became the source of the cities wealth. By the late 1860's focus on the region's major industry changed from buffalo to cattle when one of Mead's business partners and close friend, Jesse Chisholm, forged a trail that moved cattle from Texas to Abilene, Kansas where the cattle were shipped eastward (Price 2003). This industry change brought a large focus on agricultural endeavors in the surrounding areas. As technology developed into the 20th century major companies such as Coleman and Cessna helped shape Wichita into what it is today (Price 2003).

figure 2.2- louisiana purchase
Map showing the land acquired during the Louisiana Purchase of 1803

figure 2.3- old wichita street
This image shows shops along an old street in the Delano District in the newly developing city of Wichita. In its early beginnings Delano developed as its own city

confluence of the rivers

Flowing from the Rocky Mountains to the Mississippi River, the Arkansas River was a major trading route for the Native Americans (Price 2003). Being a nomadic tribe, several tribes of the Wichita Indians took up residence at the confluence of the Little and Big Arkansas River for part of the year. The tribes found that the fertile soil in the area was opportune for harvesting crops.

Indians and many of the settlers began to use the river to travel from Colorado to Wichita by navigating up and down the river on canoes and small barges (Price 2003). The river was navigable most of the year, except for several months during the fall when the river was low (Price 2003). Navigation of the river continued until the state of Colorado began to develop and require more water to sustain its endeavors (Price 2003). After blocking the river the water level dropped and made the river non-navigable by barge. However, by this time the city of Wichita had already developed and had reliance on resources other than the navigability of the river.

figure 2.4- confluence of the rivers
This image captures a view of the downtown area from the confluence of the Little and Big Arkansas Rivers. The confluence is marked by the Keeper of the Plains

figure 2.5- keeper of the plains
The Keeper marks the spot of the confluence of the rivers. It is a statue created by a local artist that lies on the grounds of the Mid-American All Indian Center

flood control

The Wichita- Valley Center Flood Control Project, known to Wichitan's as the "Big Ditch", is an 18 mile, man-made ditch constructed by the US Corps of Army Engineers. Construction began in May of 1950 and was completed nine years later in March of 1959 (US Army Corps of Engineers, 2010). The project was based on a 25 year flood event and diverts waters from the Arkansas River, Little Arkansas, Cowskin Creek and Chisholm. The Big Ditch usually holds 1 to 2 feet of water, however, during a flood event engineers estimated the waters level to be at 17 feet with adequate room to spare (US Army Corps of Engineers, 2010). After being diverted to the Big Ditch, flood flows are discharged back into the Arkansas River, south of Wichita. The flood control project provides flood relief to approximately 49,000 acres of rural and urban land, in and around the Wichita and Valley Center city limits (US Army Corps of Engineers, 2010).

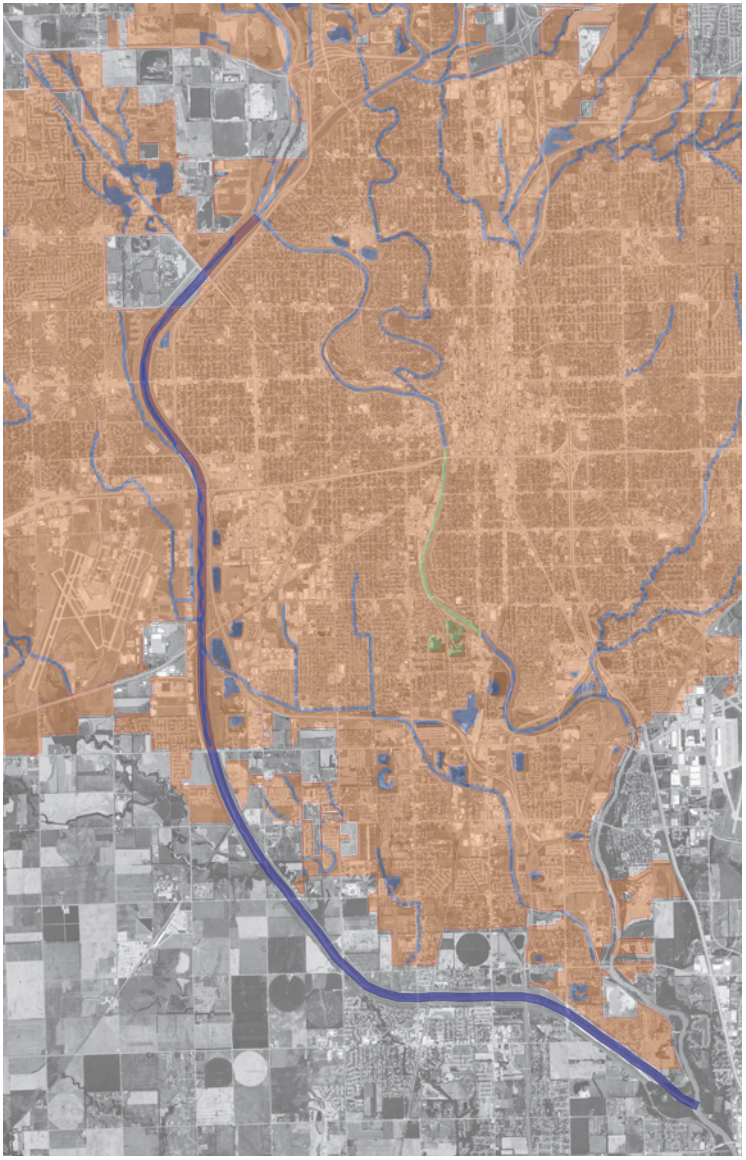


figure 2.6- wichita/ valley center flood control project
The flood control project, known to residents as the big ditch, is a 18 mile man made ditch that diverts water from the river and releases it south of the city

[3] arkansas river in wichita

This chapter introduces the site and explains how the site boundaries were chosen through an analysis of the context around them as well as documenting existing conditions

“the time has come to identify and preserve freeflowing stretches of our great rivers before growth and development make the beauty of the unspoiled waterway a memory”

-Lyndon B. Johnson

location

The project study area is located along the banks of the Arkansas River within Wichita, Kansas in Sedgwick County. It stretches from Delano Park at 1st Street in downtown Wichita to Herman Hill Park and O.J. Watson Park near South Broadway. The site is approximately 3.8 miles in length and roughly 230 acres.

Three different scales are considered for the project's design: city scale, site scale, and detailed design scale. This layering of design scales aims to addresses both site and system issues, leading to a more integrated final product.

City Scale- Investigates how the riverfront blends and connects with the rest of the city and makes one cohesive greenspace throughout the city

Site Scale- Creates a framework that focuses on active and passive recreation and enforces pedestrian circulation on site as well as connections to off-site destinations

Detailed Scale- Provides an opportunity to create suggestions to improve smaller areas within the overall site

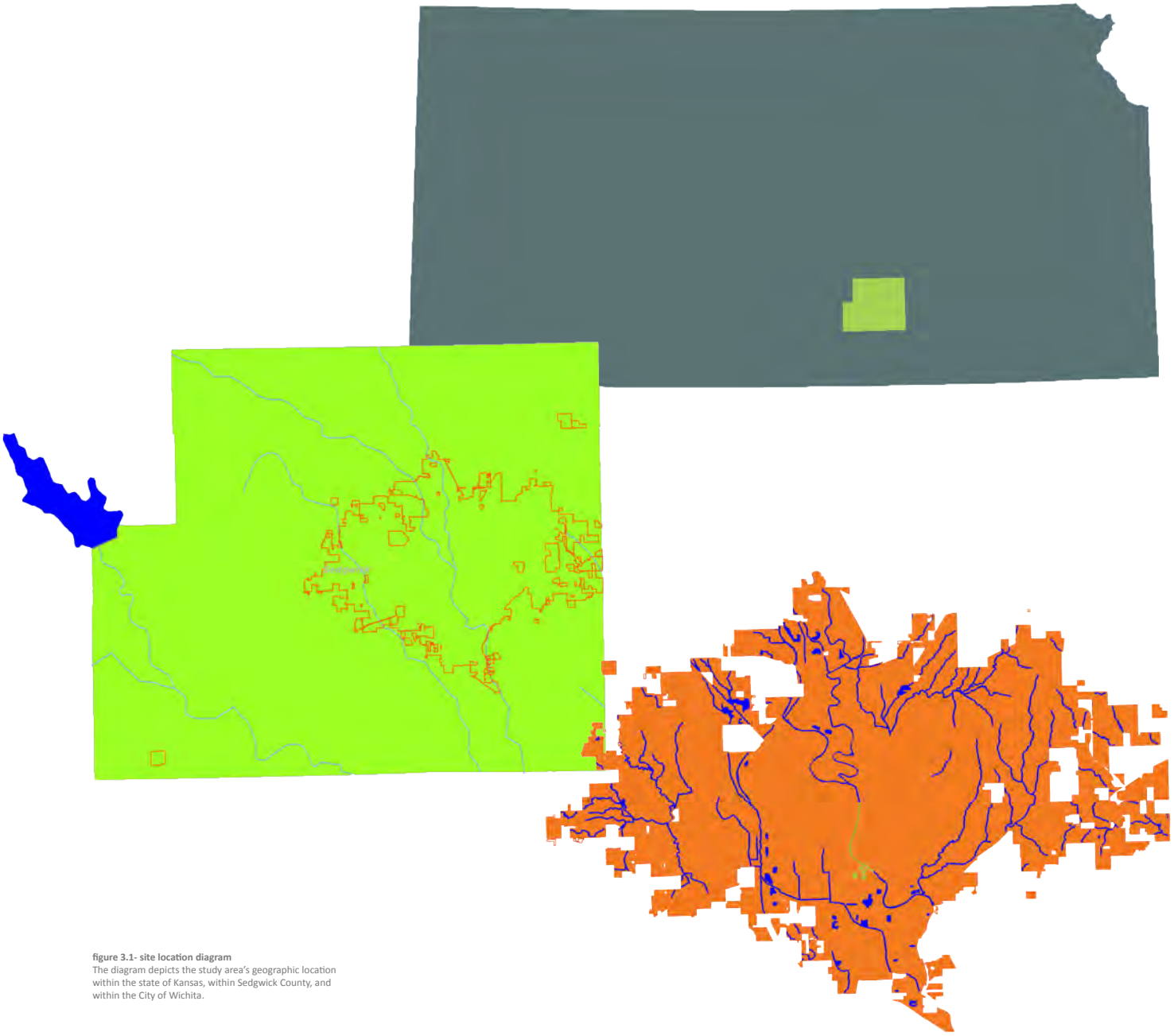


figure 3.1- site location diagram
The diagram depicts the study area's geographic location within the state of Kansas, within Sedgwick County, and within the City of Wichita.

existing conditions

By analyzing the surrounding areas the site can be broken down into three categories based on similar existing conditions within them. The three categories are:

- Urban/ Downtown Center
- Industrial
- Neighborhood.

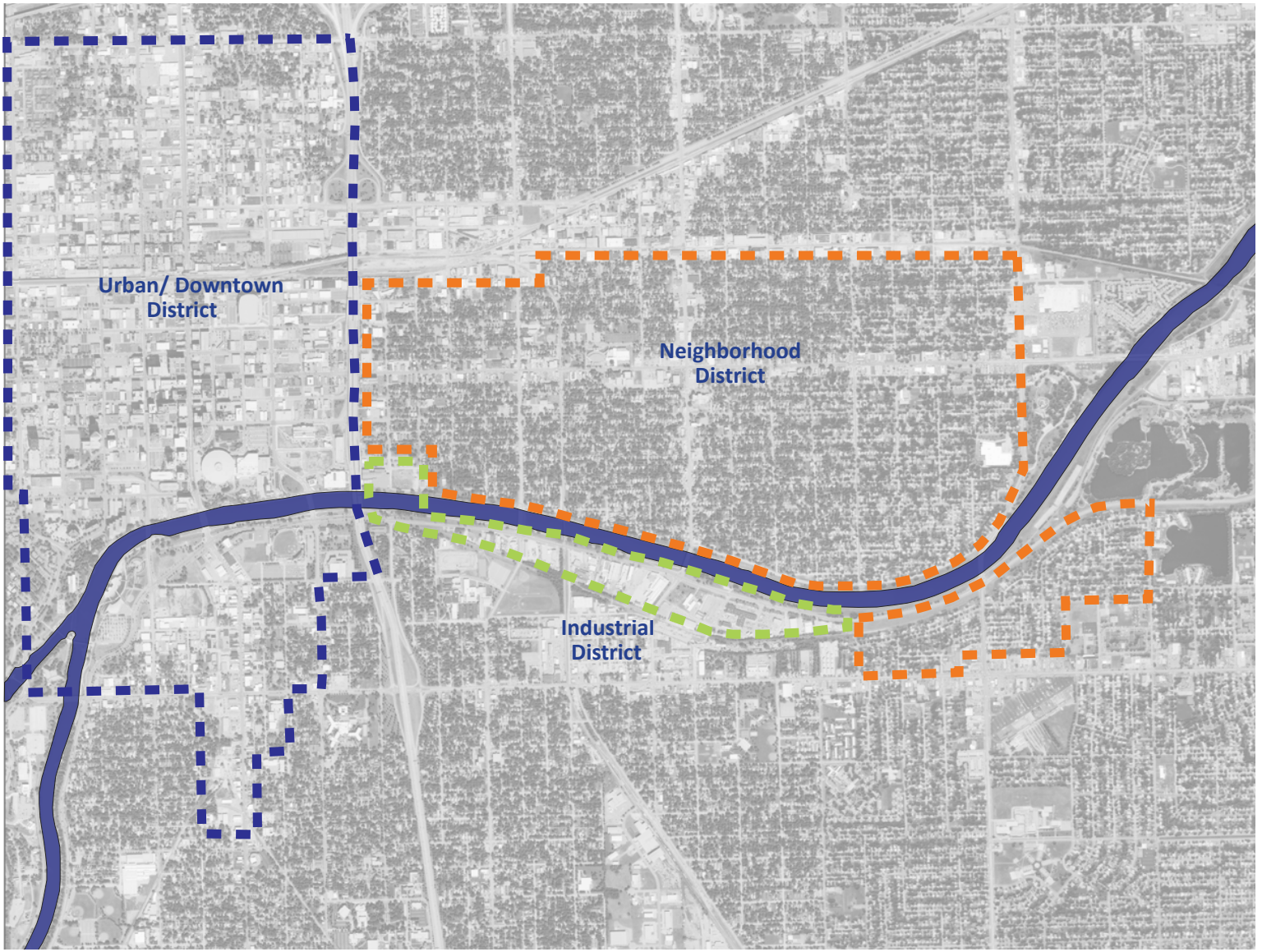


figure 3.2- existing conditions map
The existing conditions are broken down into three sections called out in the map above

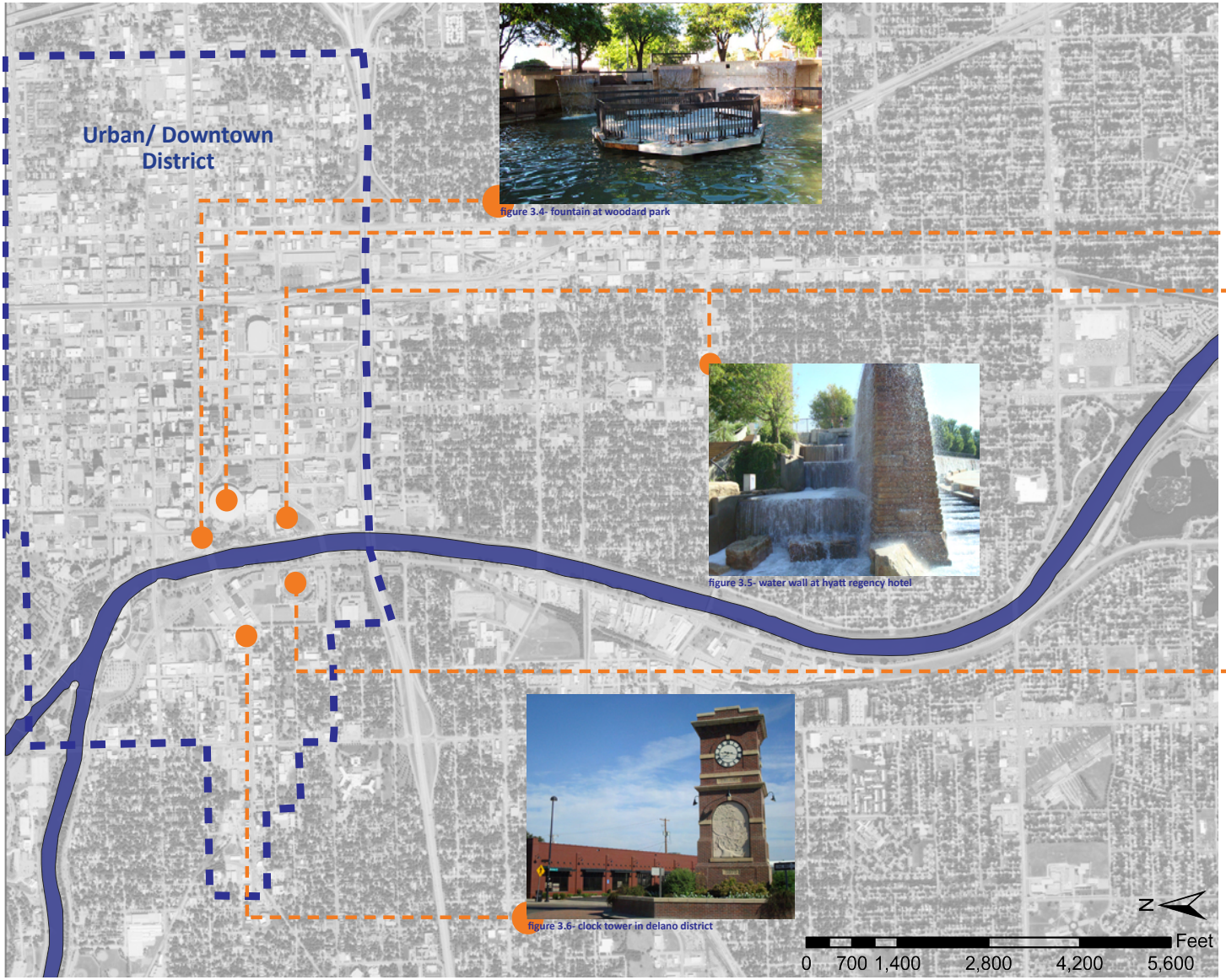


figure 3.3- urban/ downtown map
A map showing the boundaries of the urban/ downtown area and key features within it

figure 3.7- century II expo center
Wichita's performing arts and convention center

figure 3.8- hyatt regency hotel
the Hyatt Regency Hotel was a catalyst in the development of the Wichita waterwalk

figure 3.9- lawrence-dumont stadium
the newly developed outfield and concourse help to draw visitors to more sporting events in Wichita

downtown/ urban district

Extending from the 1st Street Bridge to US-54 on both sides of the river, this area consists of office buildings, parks, and recreational facilities. The recreational facilities in this area include Lawrence Dumont Stadium and the Century II Expo Center.

recreation

Lawrence Dumont Stadium is located at Lewis and McLean on the west side of the river. The stadium was opened in 1990 and held upwards of 6,000 after opening. The Park and Recreation Department is currently working with a local Landscape Architecture firm to produce designs to renovate parts of the stadium. The stadium is home to Wichita's minor league baseball team and holds the annual National Baseball Congress.

The Century II Expo Center, opened in 1969, is Wichita's performing arts and convention center. Until the Intrust Bank Arena was introduced into the downtown area, Century II received a majority of the big-name concerts, sharing with the Kansas Coliseum. The Century II Expo center is located along the east riverfront, separated from the river by A. Price Woodard Park.

A. Price Woodard Park, named after Wichita's first black mayor, is located on the site of William Greiffenstein's former homestead. William Greiffenstein, also known as "Dutch Bill", was called the Father of Wichita after he established the first trading post along the Cowskin Creek (Century II Performing Arts and Convention Center, 2010). The park displays urban waterfalls, walkways, and James Rosati's free form sculpture "Wichita Tripodal."

Delano Park, located on the west side of the river at McLean and Douglass, was once the home of West Bank Stage which was a popular attraction for outdoor concerts and events such as the River Festival. In 2007 the stage was removed due to structural issues and was never replaced. This left Delano Park empty and ultimately unused. It is in a prime spot for downtown access and displays a number of monuments dedicated to the history of Wichita.

Historical landmarks consists of a plaque dedicated to Ackerman Island, an island that developed when Colorado water rights caused the level of the Arkansas River to decrease, a large decorative stone dedicated to the passing through of the Chisholm Trail and a fountain dedicated to one of Wichita's founding fathers, Ben F. McLean.

figure 3.10- intrust bank arena
the Intrust Bank Arena opened in 2010, helping to draw larger concerts and venues to Wichita

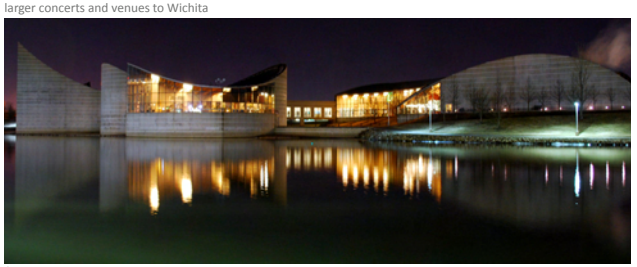


figure 3.11- exploration place
the Exploration Place is a childrens museum and science center built on the river. It was designed by famed architect Moshe Safdie

figure 3.12- keeper of the plains
the Keeper of the Plains is a piece of artwork designed by a local artist to mark the confluence of the Little and Big Arkansas Rivers

figure 3.13- apartment/ office building
a new mixed use building adjacent to the Hyatt Hotel. This building is one of many high density apartments to be built in the downtown area

office and retail

Office and retail is located on the east and west side of the river. The *Central Business District and Government District* make up the office and retail on the east side of the river. High-rise buildings in this area, such as the Epic Center, Garvey Center, Ruffin Building, and the Broadway Plaza make up the Wichita skyline. In 1997 the Hyatt Regency Hotel opened along the east side of the river, stimulating riverfront development. The Hyatt took full advantage of the river by creating an outdoor patio that fronts the river and helped to co-fund the construction of a 5 million dollar, 300 foot stone, interactive water wall that serves as an extension of the river.

The *Delano District* is the source of office and retail on the west side of the river. The Delano District began developing when early trading posts in Wichita were established. The increased trading from farmers markets and livestock trails that ran through Delano caused it to begin developing as a separate city. Eventually, Delano was merged into Wichita and began developing into an entertainment district. Today it exists as a historic location that provides art, entertainment, shopping, and dining.

figure 3.15- deteriorating sidewalks

figure 3.17- city maintenance facilities

figure 3.16- park maintenance facilities

figure 3.14- industrial map
A map showing the boundaries of the industrial area and key features within it

figure 3.18- gravel parking lot
A gravel parking lot, in poor condition, is located along the riverfront across from City Maintenance facilities

figure 3.19- railroad ties
Railroad ties are located along the path, intended to work as seating

figure 3.20- water department
the main branch of the Water Department is located south of City Maintenance along the river

industrial district

This area is located along the west side of the river from US-54 to just north of Pawnee St. along the west side McLean Boulevard and consists of maintenance and auto repair shops. The City of Wichita owns many of the parcels in this area as the *Park and Recreation Maintenance, Forestry, Water Department, and City Maintenance* all have their maintenance sheds and offices along this stretch of McLean Boulevard. This part of the riverfront, while separated by McLean, consists of large maintenance sheds, vast amounts of surface parking, and storage for city equipment such as lawn mowers, tractors, and forestry trucks. Due to the nature and of this area it is not very aesthetically pleasing. Many of these shops are necessary for the continued function of the city.

recreation

This area has few objects that would provide the visitor with comfort or pleasure along the river's edge except for the concrete/asphalt path that varies in condition. The pathway can be considered dangerous for bikers, rollerbladers, or skateboarders who approach the harmful areas at high speeds. Portions of the path have large cracks and potholes as well as sections that are deteriorating and crumbling away. This could cause a loss of traction for those on bicycles or a tripping hazard for those on foot.

Seating is located in two places along this section of the riverfront and is made of railroad ties placed just off the path. The benches are beginning to deteriorate and fall apart due to weathering and years of use.

A small gravel parking lot is located directly across from the City Maintenance Facility that can accommodate 15 to 20 cars. The parking lot is in poor shape due to lack of gravel and drainage issues.

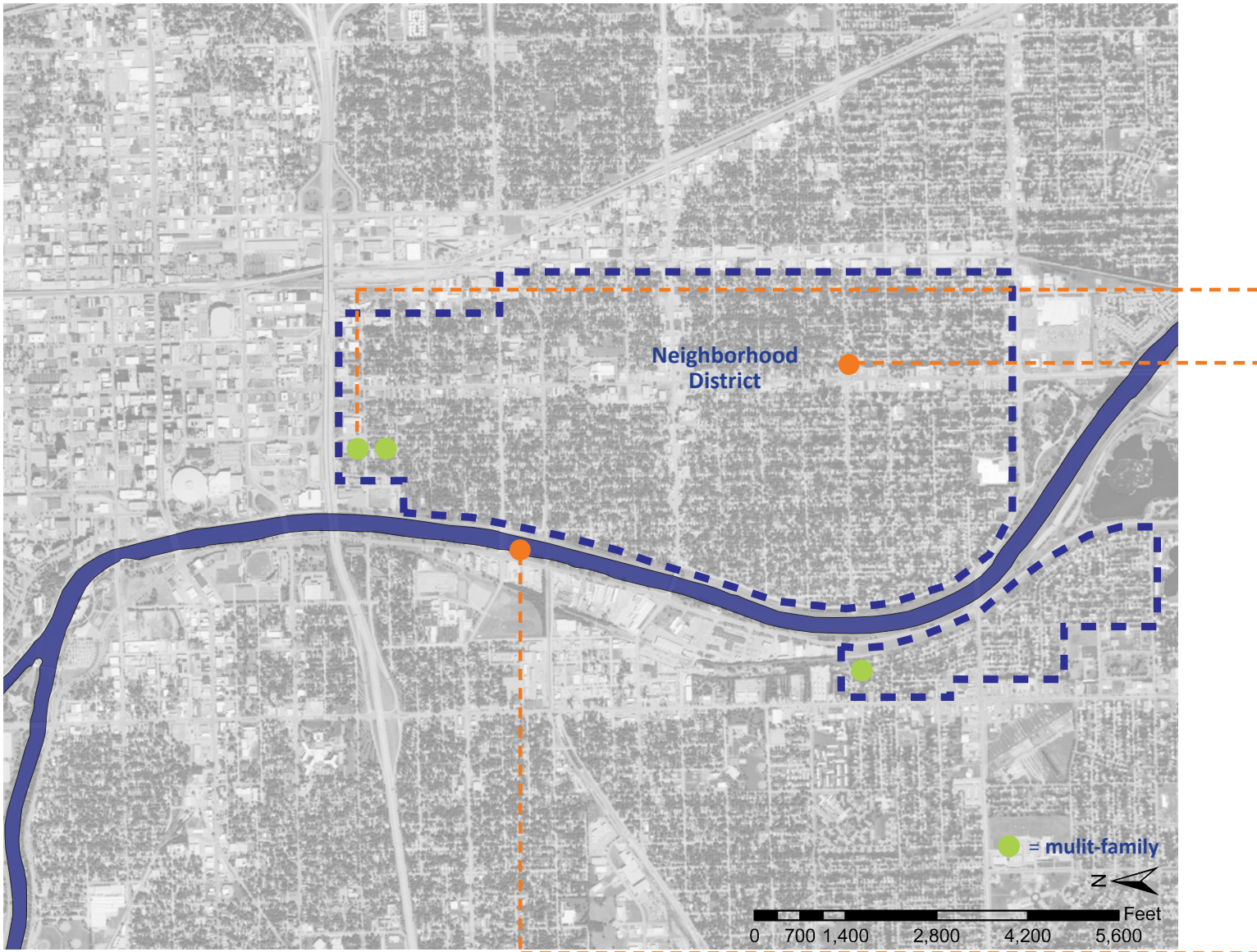


figure 3.21- neighborhood map
A map showing the boundaries of the neighborhood area and key features within it

Image from bing maps

figure 3.22- apartment buildings
One of three apartment buildings located within the neighborhood area

figure 3.23- single family housing
Single family housing located along the east bank of the river

figure 3.24- lincoln street bridge and dam
The Lincoln Street Dam is built into the existing bridge. Due to structural concerns with the bridge, both are being reconstructed

neighborhood district

This area is located on the east side of the river south of US-54 to Watson Park and on the west side of river south of Pawnee Street to Watson Park. This area contains single family residential with several multi-family residential buildings on the north and south ends of the east side and on the north end of the west side (denoted on the map).

recreation

The *Lincoln Street Dam* creates opportunities along the river for fishing as well as maintaining a constant water level in the downtown area. Locals use the area just south of the dam to catch the large fish that are frequently seen along the edge of the current, making the dam one of Wichita's most-visited fishing destinations. Unfortunately, the City of Wichita hasn't officially recognized this as a public recreational feature until recently and because of this there are no user amenities around the dam such as seating, restrooms, or parking. Users park along the side of S. Palisade St. and provide their own seating.

The bridge has recently been deemed as unsafe and is scheduled for redevelopment.

User amenities are limited in this area with no seating, restrooms, water fountains, or paths currently located along the river. Sidewalks along Lincoln Street enter the site from the east and terminate near the dam. The neighborhood on the west side of the river has an asphalt pathway that extends along the river from the northern portion of the site to Watson Park in the southern section. This pathway is not readily accessible to the residents of the westerly neighborhood due to the disconnect caused by McLean Boulevard.

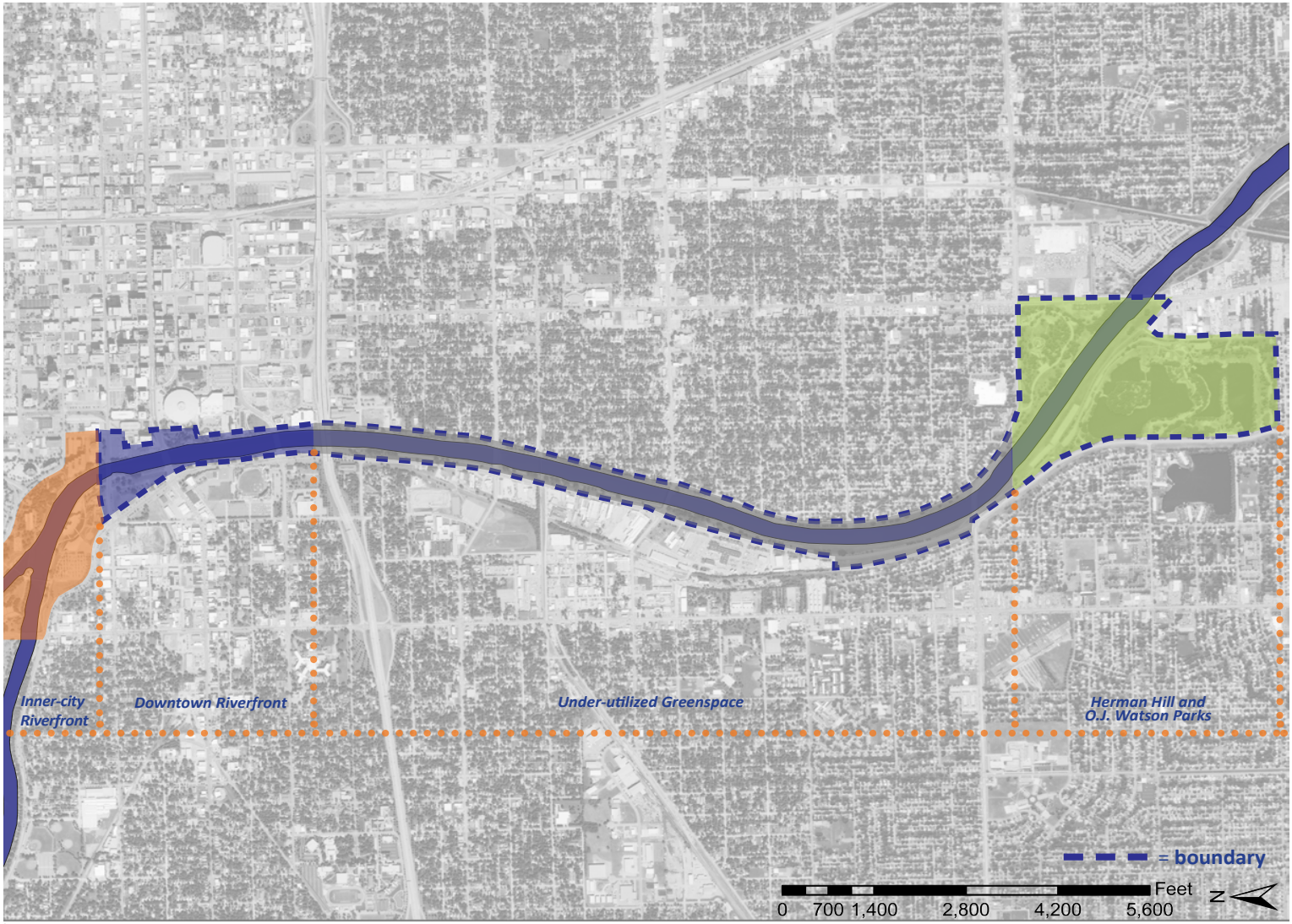


figure 3.25- site boundaries
After an analysis of the surrounding areas, the river's edge was analyzed to determine appropriate site boundaries to develop the areas with the most need

creating a cohesive riverfront

connect

inner city riverfront

- riverside parks
- exploration place
- keeper of the plains
- veterans memorials
- museums on the river
- easy riverfront access

The inner city riverfront contains many attractions and amenities that currently draw Wichita citizens to this area. This area contains both the Little and Big Arkansas Rivers and their point of confluence denoted by the famous keeper of the plains and a museum dedicated to the indians who helped settled the city.
This section of the river contains the most opportunities for leisure and recreation and is to be connected to other points of interest down the river.

downtown riverfront

- delano park
- a. price woodard park
  - assembly area
  - decorative water fountain
- lawrence-dumont stadium
- hyatt regency hotel
- delano district

The downtown riverfront has many attractions that have the potential to see the same amount of use as the inner-city area. The destinations located in this area are often either at a disconnect from the river corridor or have few amenities or attractions to draw visitors to the area. Delano Park is a prime example of open greenspace with prime location along the river and bounded by the delano and downtown district. However, due to the lack of amenities it fails to attract visitors.

under-utilized greenspace

- lincoln st. dam
- open greenspace

This area consists of approximately 2.5 miles of open greenspace along the river with the only user amenities being a bike path and the lincoln street dam for fishing.

herman hill and o.j watson park

- herman hill park
  - water center
  - frisbee disc golf
  - playground
  - police substation
- o.j. watson park
  - concessions
  - playground
  - fishing pond
  - miniature golf course
  - miniature train rides
  - paddle boats
  - pony rides
  - shelters

This section of the riverfront contains two of Wichita's most visited premier parks. These parks have a diversity of recreational opportunities that attracts visitors from all over town. Due to the lack thereof and condition of the user amenities present along the riverfront, pedestrian access is highly unlikely.

selection criteria for boundaries

The following criteria were taken into consideration for site selection: access and connection to the riverfront, recreation amenities, both along the riverfront and in the surrounding community, and ecological conditions. Areas where these criteria were lacking, yet had the greatest potential to exist, influenced ultimate site selection.

The 4 mile long site was chosen because it lacks connections, has few recreational amenities, and exhibits poor environmental conditions; however due to its prominent location within the city and adequate physical space, the site is well suited for a redesign.
Its boundaries abut the existing, urbanized downtown riverfront to the north and Herman Hill and O.J. Watson Parks to the south

figure 3.28- herman hill park
One of the two parks at the south end of the site. These parks suffer from a disconnect due to lack of trails, amenities, and poor pedestrian safety

figure 3.26-image location map

figure 3.29- o.j. watson park
O.J. Watson Park has been defined by the Park and Recreation Department as the "premiere" park in Wichita. It has seen many improvements in the past five years

figure 3.27- riverfront at delano park
Delano Park lies along the cut-off of amenities along the riverfront. Just north, across the 1st Street Bridge lies the Exploration Place

figure 3.30- open green space
Much of the riverfront from Kellogg Avenue to the parks area is under-utilized green space

[4] inventory + analysis

This chapter begins by establishing a framework for the project. A program with supporting inventory and analysis is then completed based off of the framework categories

“To know that we know what we know, and to know that we do not know what we do not know, that is true knowledge.”

-Nicolaus Copernicus

program

A program was developed based upon the categories within the framework. It was necessary to develop the program prior to the inventory so as to be able to single in on the specific characteristics that the selected program elements entailed. After the program elements were selected an inventory was completed to determine the best location to implement said elements.

goals and objectives

access + awareness

- create a single cohesive riverfront that flows through the wichita area
- connect existing districts adjacent to the riverfront to establish better riverfront access
- increase public safety by establishing pedestrian safe passages across harmful vehicular circulation
- connect destinations across the river that are not currently accessible to pedestrians on the opposite side

recreational amenities

- provide a diversity of recreational opportunities along the riverfront to activate a new section of the wichita riverfront
- increase interaction with the water through accessibility, recreational opportunities and education
- maximize the visitors experience along the riverfront through art, lighting elements, and history
- create spaces that encourage community interaction
- make the riverfront more comfortable by incorporating user amenities

corridor protection

- protect and create views within the river corridor
- protect the river from harmful run-off due to on-site stormwater and stormwater day-lighted into the river through pipes
- protect natural systems of the river
- protect existing and create new habitats for flora and fauna that reside with the river corridor
- educate the public on river corridor protection and how they can make positive contributions

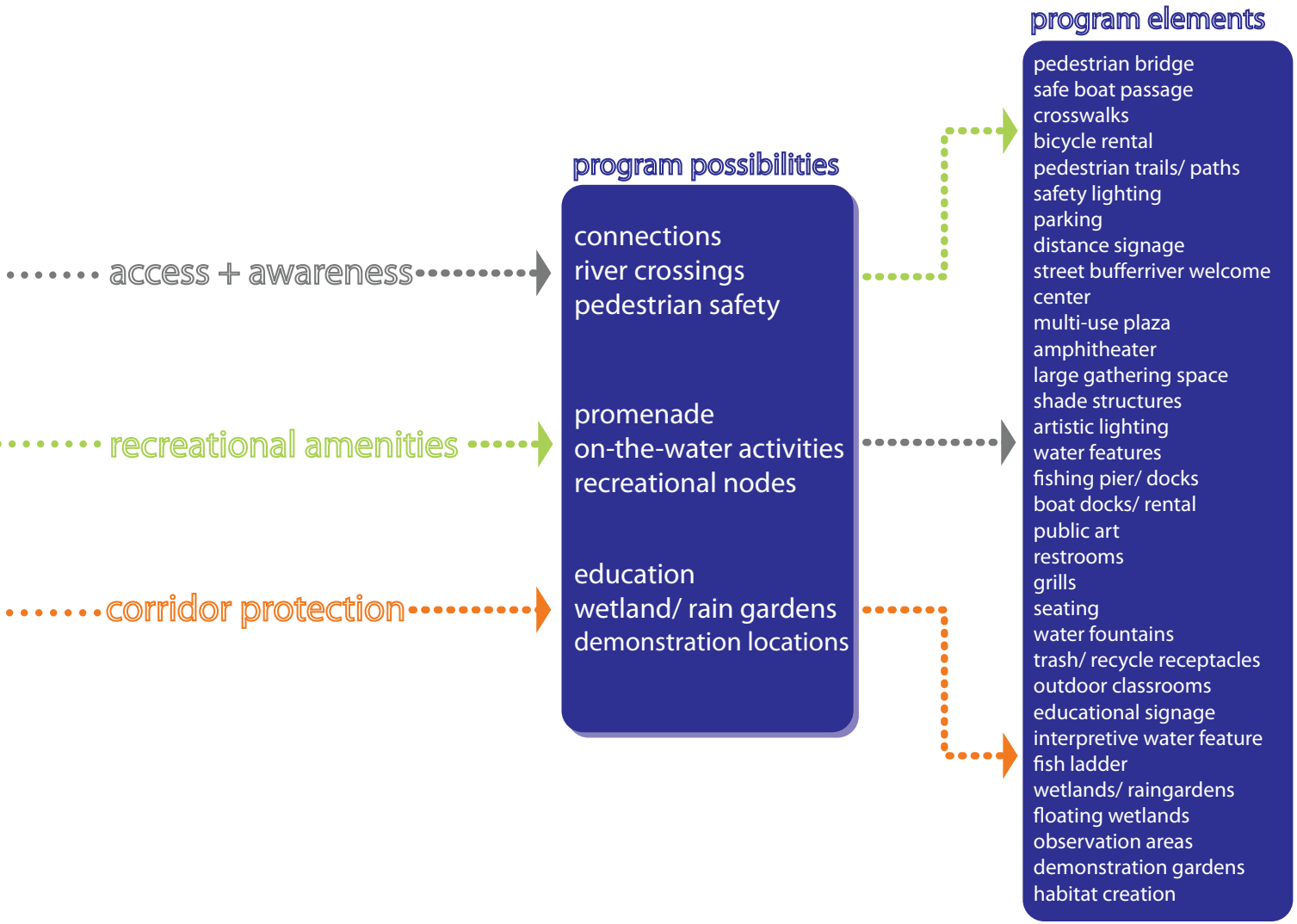


figure 4.1- program development
Goals and objectives were developed for each part of the framework. From this program elements were then derived to accomplish said goals and objectives

figure 4.2- program index
The framework, developed by William Pena, helps the riverfront address topics such as goals, facts, concepts, needs and problems relative to time, function, form, and economy

program

access + awareness

Programming for this area is designed to provide connections along the riverfront and protect the pedestrians that utilize the area. Programming includes pedestrian bridges to establish major connections, trails, crosswalks, and lighting. Program elements include bicycle rentals, artistic lighting, parking, distance signage, and buffers from the major streets that bypass the site.

recreational amenities

Programming in this area is designed to give residents a reason to visit the riverfront. Programming includes a safe boat passage, promenade and river welcome center, boating and fishing opportunities, as well as nodes implemented to make the river more comfortable to visitors. Program elements will include boat launches, fishing docks, art, boat and fishing rentals, as well as amenities such as water fountains, seating, restrooms, trash and recycling receptacles.

corridor enhancement

Programming for this area is designed to protect the river from current stormwater issues, educate the public, and improve the environment quality of the river corridor. Program elements consist of wetlands, observation areas, educational signage, an interpretive water feature, fish ladder, and habitat creation through wetland areas and trees.

inventory

Once the program became clear the inventory could be completed and analyzed to determine which sites would be developed within the river corridor as well as the strategies that would be applied to the river corridor as a whole. Inventory items are organized within the three main categories of the framework, access + awareness, recreational amenities, and corridor enhancement, to ensure that the design will be well researched and able to solve the goals of the project.

items inventoried:

art and history
boating restrictions
existing parks and destinations
intensity of development
stormwater outlets
edge conditions
slopes
street system
existing trails
watersheds
community events
concerts
museums on the river
historical locations
wildlife
schools
public parking
transit
lighting

watersheds

A watershed is an area of land whose surface water drains into a river, lake, or stream (sedgwickcounty.org, 2010). Watersheds range in size depending on the scale, ranging from several acres to several hundred acres with boundaries that consist of street curbs at the smallest scale, to the more common hills, ridges, and mountains. The Little Arkansas Watershed drains to the Little Arkansas River while the Gar Peace Watershed drains into the Big Arkansas River. These two watersheds meet at the confluence of the two rivers where the Arkansas River continues south, fed by the Middle Ark Slate Watershed.

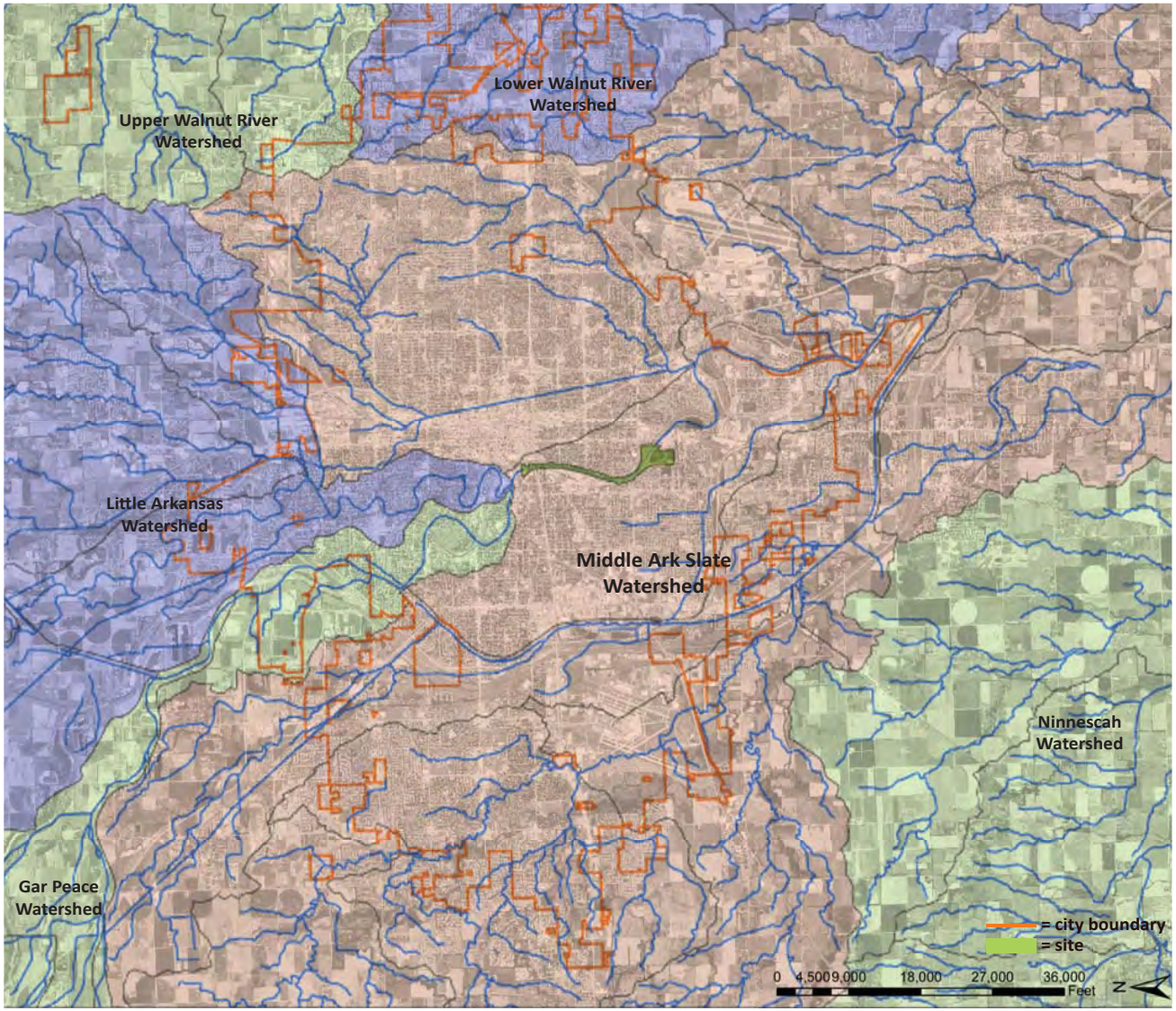


figure 4.3- watershed map
This map shows the site within the Middle Ark Slate Watershed and the watersheds that surround it

figure 4.4- existing parks and destinations

parks and destinations

The majority of the existing parks and destinations lie on the northern portion of the riverfront, just above the before mentioned Downtown Riverfront in the Inner-city Riverfront. The parks located within the site boundaries are Delano Park, Herman Hill Park, and O.J. Watson Park. Delano Park is not easily accessed due to the disconnect caused by McLean Boulevard and the fact that it supports no vehicular parking. O.J. Watson Park and Herman Hill Park are on the southern end of the site boundaries, cut off from the Downtown Riverfront due to a lack of quality trails and amenities.

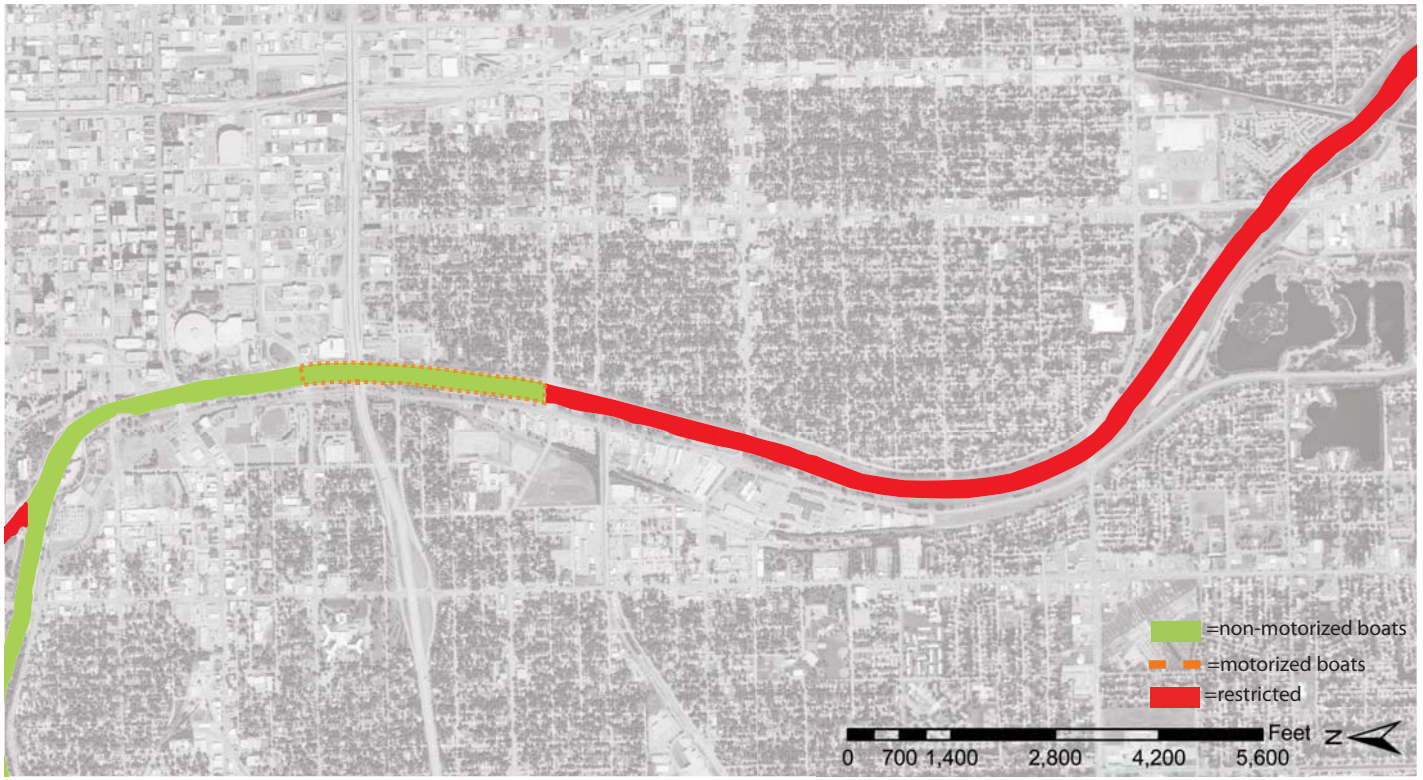


figure 4.5- boating restrictions along the river

boating restrictions

Boating on the Arkansas River is limited in certain areas due to several barriers. According to the City of Wichita's boating map, the only legal places for boats on the river are on the Big Arkansas River north of Lincoln Street. The most significant barrier is the Lincoln Street dam, which cuts off and restricts boating down the river. As it currently exists with the dam, boaters would have to portage around the dam to continue along their way, if boating downstream was permitted. The second barrier of boating on the Arkansas River is the water level. The average water level of the river in the Wichita area is 3 to 3.5 feet, which is perfect for non-motorized boats, but unfortunately poses problems for motorized crafts (Applied Ecological Services et al, 2008). According to the ARCAP (Arkansas River Corridor Access Plan) the water levels south of Wichita are adequate for floating the river, which consists of non-motorized crafts such as canoes or kayaks.

figure 4.6- flyer for the annual wichita riverfest

community events

In 1970 the City of Wichita celebrated its 100th birthday. To commemorate the centennial celebration a one day event on the river was planned for the residents to relax and enjoy activities along the water. The event was such a success that since the festival has been expanded to cover nine days with turnouts in the 350,000 to 400,000 range. The festival now includes an opening parade, the medallion hunt, athletic events, concerts, the river run, and closing fireworks.

figure 4.7- band setting up to play along the riverfront

figure 4.8- concert along the riverfront at delano park

concerts

Since the opening of the Intrust Bank Arena in January 2010, the music scene has erupted in Wichita. With a venue that big-name musicians are willing to play the city has seen an increase in the amounts of concerts held. Artists such as the Eagles, Kid Rock, Keith Urban, and the Trans-Siberian Orchestra have performed in the Arena. With the positive attendance Wichita residents have shown a new, smaller venue could be implemented with the river as a backdrop. This could allow guests to indulge in their favorite artists while enjoying the beautiful Kansas summer night on the river.

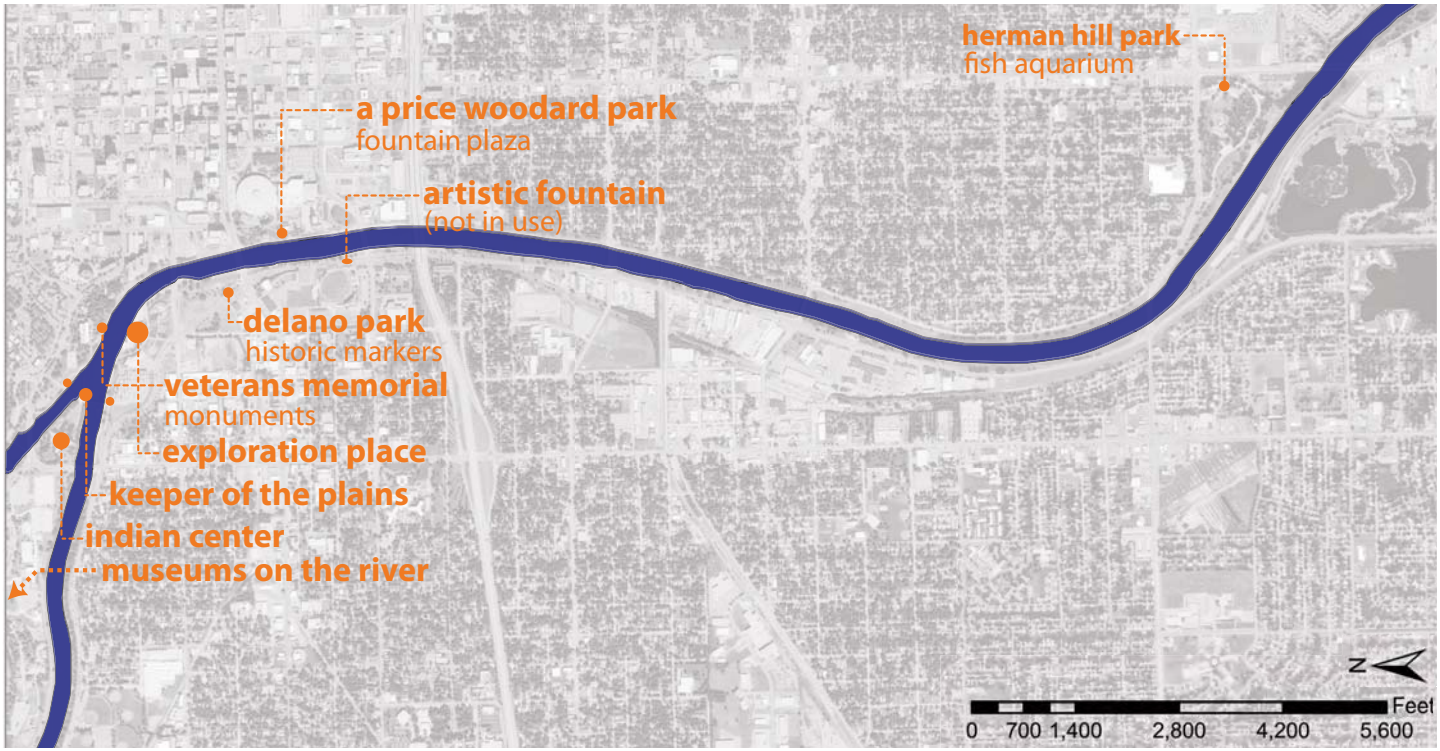


figure 4.9- art and history along the river

art and history

While art and history can be found on the Arkansas River in abundance it is confined to certain areas. The historical features are found in the downtown area, predominately near Delano and A. Price Woodard Parks. Delano Park is rich in history with monuments and plaques dedicated to founding fathers, exciting urban myths, and historical trails that passed through the area. The park has the potential to share this history with its visitors, but unfortunately, due to its disconnect the information remains un-accessed.

Art can be found scattered about more frequently than historical elements. A majority of the art found along the river is near the confluence of the Little and Big Arkansas Rivers called “Museums on the River.” Art and history are found in a combined state at Veteran’s Park. Veteran’s parks features memorials from every major American war since World War I. The only art found within the project boundaries is a water feature that is currently inoperable near Lawrence-Dumont Stadium.

museums on the river

Botanica

Botanical gardens run by the Wichita Area Garden Council and the City of Wichita. Botanica boasts 24 themed gardens and exhibits over nine acres and a horticultural library

(botanica.org, 2010)

Exploration Place

Science center and children's museum that explores regional processes and issues through the use of hands-on exhibits and displays, provides many opportunities for education and entertainment

Wichita Art Museum

Largest art museum in Kansas and has one of the best displays of American art in the nation

Old Cowtown Museum

Old west town consisting of 35 exhibits that depicts life between 1865 and 1880

Mid-American All Indian Center

Museum that includes artifacts and paintings of the Native American cultures throughout Kansas (home of the Keeper of the Plains)

figure 4.10- botanica gardens
The Botanica gardens features 24 themed gardens, gathering rooms, and an extensive horticultural library

figure 4.11- Exploration Place
The newest addition to the Museums on the River, the exploration place is built on the river

figure 4.12- keeper of the plains
The keeper of the plains is situated on the grounds of the Mid-America All Indian Center, a museum dedicated to the Native Americans who settled the area

history

A. Price Woodard Park

Named after Wichita's first black mayor, it is located on the site of William Greiffenstein's former homestead. William Greiffenstein, also known as "Dutch Bill", was called the Father of Wichita after he established the first trading post along the Cowskin Creek (Century II Performing Arts and Convention Center, 2010)

Delano Park

Ben F. McLean- a fountain dedicated to one of the founding fathers of Wichita

Ackerman Island- a plaque dedicated to Ackerman Island, an island that developed when Colorado water rights caused the level of the Arkansas River to decrease

Chisholm Trail- a large decorative stone dedicated to the Chisholm Trail, a cattle trail, which stretched from San Antonio, TX to Abilene, KS and passed through Wichita

Delano Township- a plaque dedicated to the township of Delano, known for its old west lifestyle of drinking, gun fighting, and prostitution. The township was eventually absorbed into the City of Wichita

figure 4.13- chisholm trail
This monolithic memorial, located in Delano Park, is dedicated to Jesse Chisholm and the cattle trail he started that helped establish Wichita in its early days

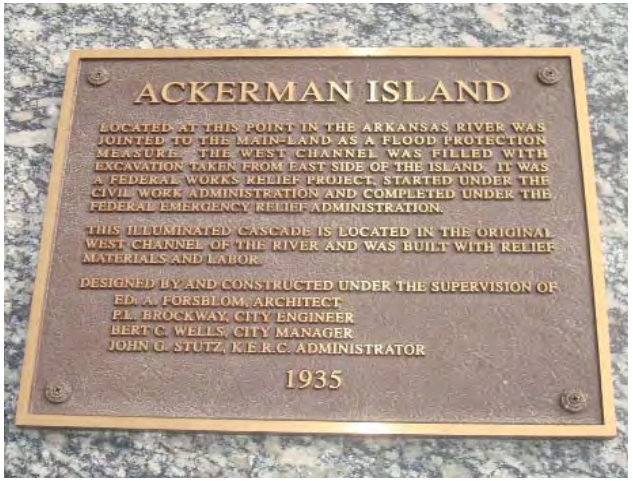


figure 4.14- ackerman island
A plaque dedicated to the history rich Ackerman Island. Due to flood protection measures it was eventually attached to the mainland

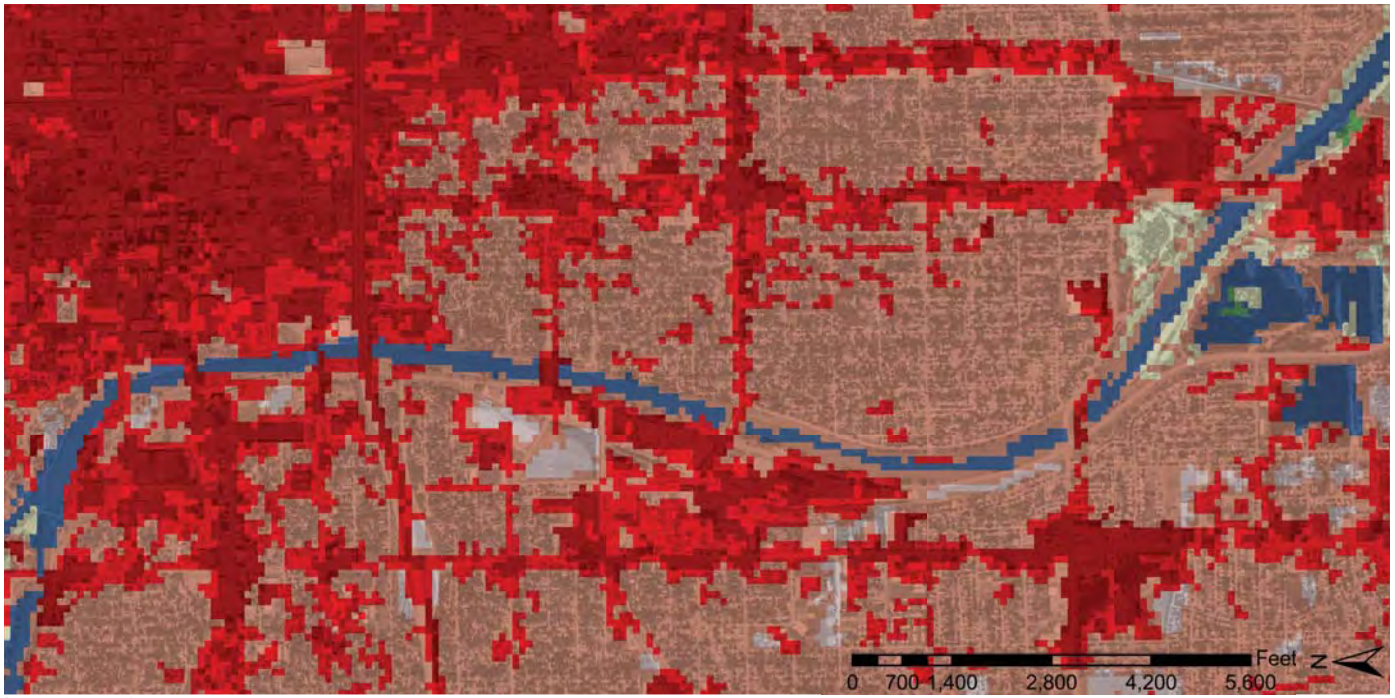


figure 4.15- intensity of development along the river

land use

Land use within the site boundaries can be classified into 3 main categories: open water, open greenspace, and developed area. The open water and open greenspace are located in the river corridor. The developed area can be found in the areas surrounding the river corridor and has three subcategories of varying intensity: high, medium, and low. The criteria for these areas are:

1. Developed, High Intensity—Includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses, and commercial/industrial. Impervious surfaces account for 80 to 100 percent of the total cover
2. Developed, Medium Intensity—Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50–79 percent of the total cover. These areas most commonly include single-family housing units
3. Developed, Low Intensity—Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20–49 percent of total cover. These areas most commonly include single-family housing units

key
= open water
= developed, open space
= developed, low intensity
= developed, medium intensity
= developed, high intensity

These sub categories can help give a feel for the space surrounding the riverfront. For example, the downtown area is covered in dark and crimson red, signifying high and medium intensity of development. The intensity of development can suggest the frequency of visitors to a certain section of the riverfront. This can then be assessed to formulate zones for active and passive recreation seen strolling up and down the north-eastern portion of the site, enjoying the night time views of the river.

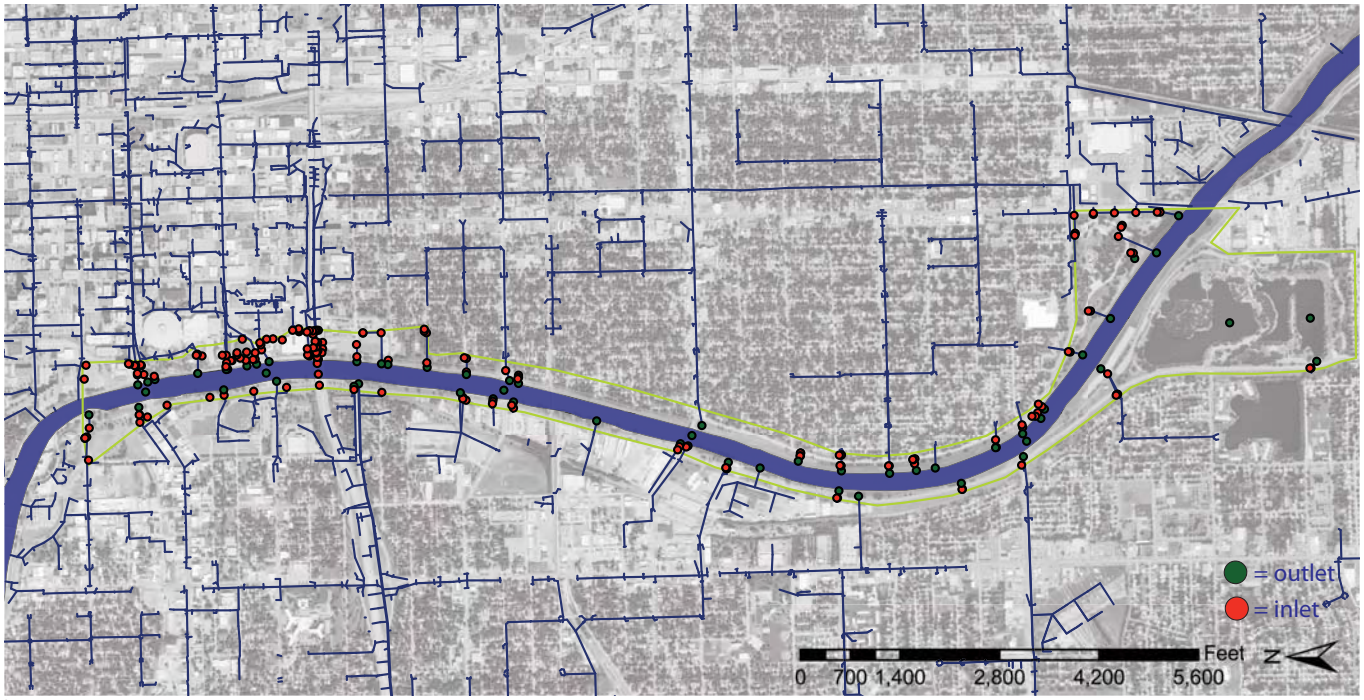


figure 4.16- stormwater outlets along the river

stormwater

Stormwater becomes a problem aesthetically and functionally along the river. Stormwater is collected through inlets along the surrounding streets where it collects pollutants such as oil, antifreeze, and sediments and then is deposited into the river because of poor filtration systems. Garbage and unwanted items such as tires and chain-link fence have been found near these outlet points. Within the site boundaries there are 63 outlets that dump straight into the river. A more natural approach, such as rain gardens and wetlands, can be implemented to help better filter the stormwater before it enters into the river.

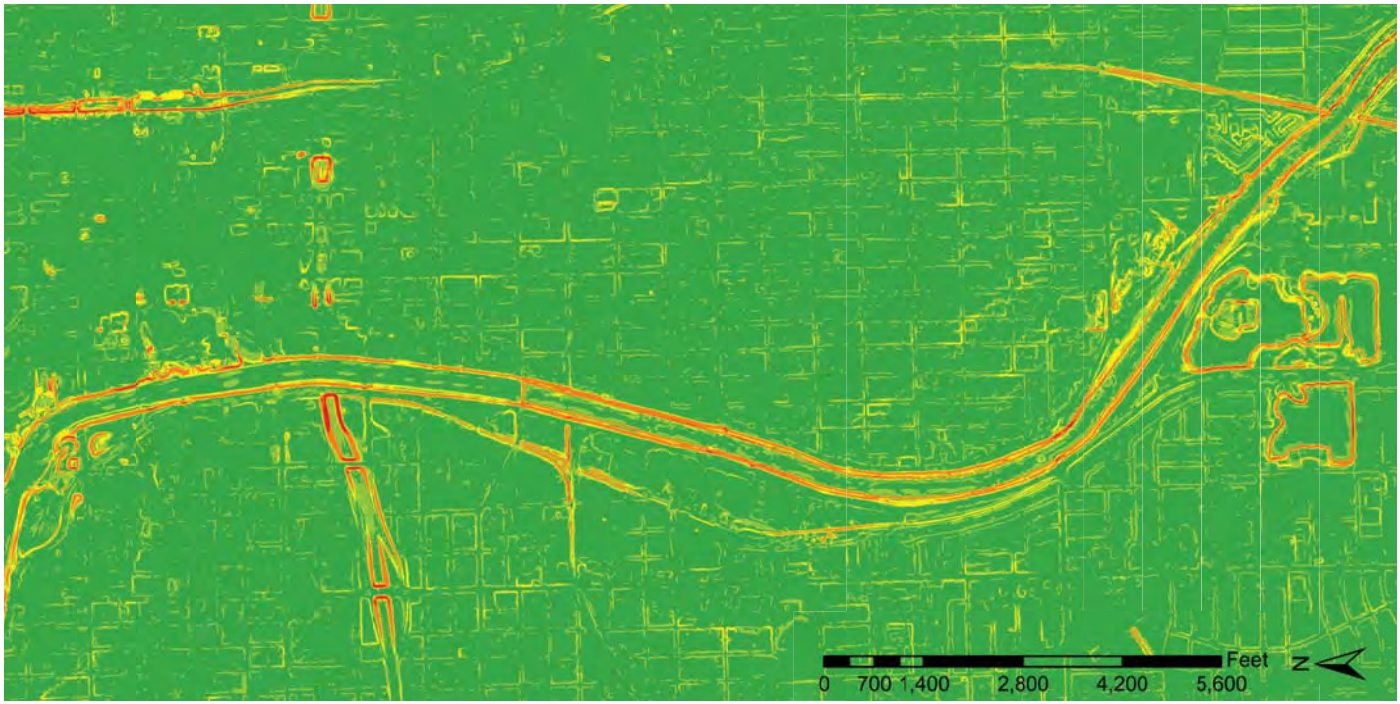


figure 4.17- slopes along the river

slopes

Slopes are an important aspect when looking at designing a riverfront. As characteristic of an urban riverfront, large banks are found on either side of the river for flood safety concerns. An average of fifteen to twenty-five feet of grade change can be seen within the river corridor over a distance of one hundred to three hundred feet on each side of the river. Some areas, especially steeper areas that have stormwater outlets introduced, become susceptible to erosion problems. The erosion causes small gulleys that water navigates to, increasing the sediment erosion along the bank and causing the gulleys to grow in size.

key

- = 0-2%
- = 2.1-5%
- = 5.1-10%
- = 10.1-20%
- = 20.1%+

figure 4.18- edge conditions along the river

edge conditions

Two strategies are employed along the river's edge, sea walls and rip-rap. Sea walls are used on the east side of the river from Kellogg Avenue extending north off the site. Sea walls are reinforced concrete walls built into the riverbank that help prevent erosion of river banks. Sea walls are usually limited to coastal applications to protect against large waves coming of the sea. However, vertical sea walls are often used in riverside applications to achieve a cleaner, more accessible feel on the river.

The rest of the site, consisting of the whole west side and the east side from Kellogg Ave. south uses rip-rap along the river's edge. Rip-rap is a cheaper, less aesthetic form of erosion control that uses large rocks, usually granite, limestone or concrete rubble to deflect waves which cause erosion.

The rip-rap section of the river's edge is a problem aesthetically. The holes in the rip rap accumulate trash and are usually neglected causing the riverfront to look dirty and polluted. The rip-rap is also a haven for weeds to grow and makes the river's edge inaccessible. The sea walls provide a clean approach to the river's edge and at the same time makes the water more approachable.

wildlife

threatened and endangered species

	common	scientific
4.19 	Arkansas Darter	*Etheostoma cragini*
4.20 	Arkansas River Shiner	*Notropis girardi*
4.21 	Arkansas River Speckled Chub	*Macrhybopsis tetranema*
4.22 	Bald Eagle	*Haliaeetus leucocephalus*
4.23 	Eastern Spotted Skunk	*Spilogale putorius*
4.24 	Eskimo Curlew	*Numenius borealis*

	common	scientific
4.25 	Least Tern	*Sterna antillarum*
4.26 	Peregrine Falcon	*Falco peregrinus*
4.27 	Piping Plover	*Charadrius melodus*
4.28 	Silver Chub	*Macrhybopsis storeriana*
4.29 	Snowy Plover	*Charadrius alexandrinus*
4.30 	Whooping Crane	*Grus americana*

species in need of conservation

common	scientific
Black Tern	*Chlidonias niger*
Bobolink	*Dolichonyx oryzivorus*
Cerulean Warbler	*Dendroica cerulea*
Chihuahuan Raven	*Corvus cryptoleucus*
Eastern Hognose Snake	*Heterodon platirhinos*
Ferruginous Hawk	*Buteo regalis*

common	scientific
Golden Eagle	*Aquila chrysaetos*
Plains Minnow	*Hybognathus placitus*
River Shiner	*Notropis blennius*
Short-eared Owl	*Asio flammeus*
Southern Flying Squirrel	*Glaucomys volans*
Western Hognose Snake	*Heterodon nasicus*
Whip-poor-will	*Camprimulgus vociferus*

*Data courtesy of Kansas Department of Wildlife and Parks
Images courtesy of Google Images

figure 4.19- Arkansas Darter (KDWP)
figure 4.20- Arkansas River Shiner (KDWP)
figure 4.21- Arkansas River Speckled Chub (KDWP)
figure 4.22- Bald Eagle (KDWP)
figure 4.23- Eastern Spotted Skunk (KDWP)
figure 4.24- Eskimo Curlew (KDWP)
figure 4.25- Least Tern (KDWP)
figure 4.26- Peregrine Falcon (KDWP)
figure 4.27- Piping Plover (KDWP)
figure 4.28- Silver Chub (KDWP)
figure 4.29- Snowy Plover (KDWP)
figure 4.30- Whooping Crane (KDWP)

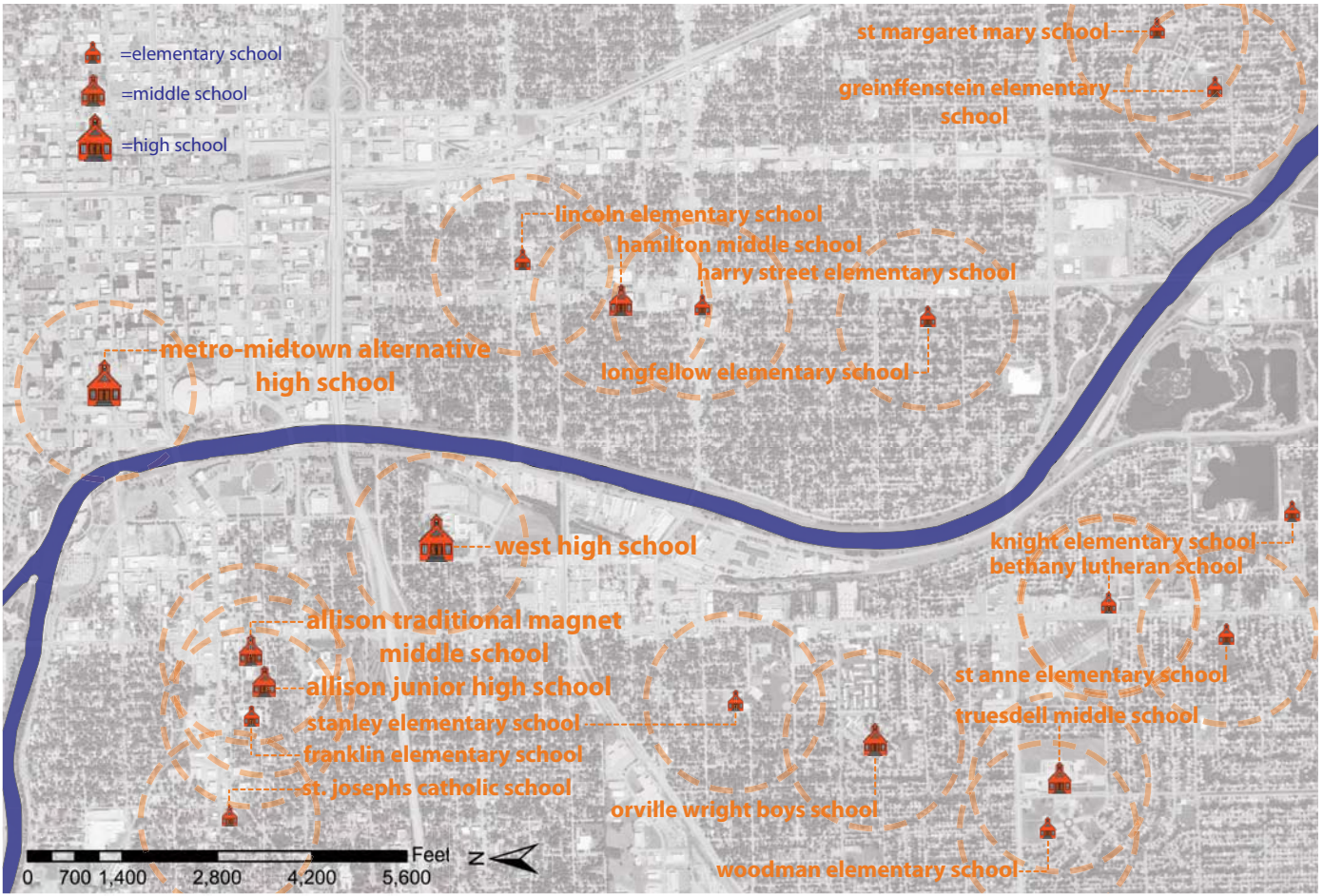


figure 4.31- schools along the river

schools

Several schools are located near the river corridor with the closest and largest being West High School. West High School is located just west of the Lincoln St. Bridge on Lincoln Street. Currently the connection between the riverfront includes sidewalks in mediocre condition and an unmarked crosswalk across the busy McLean Boulevard. Connections should be enforced to encourage faculty and students to utilize the riverfront and gain knowledge from the processes at work within the corridor.

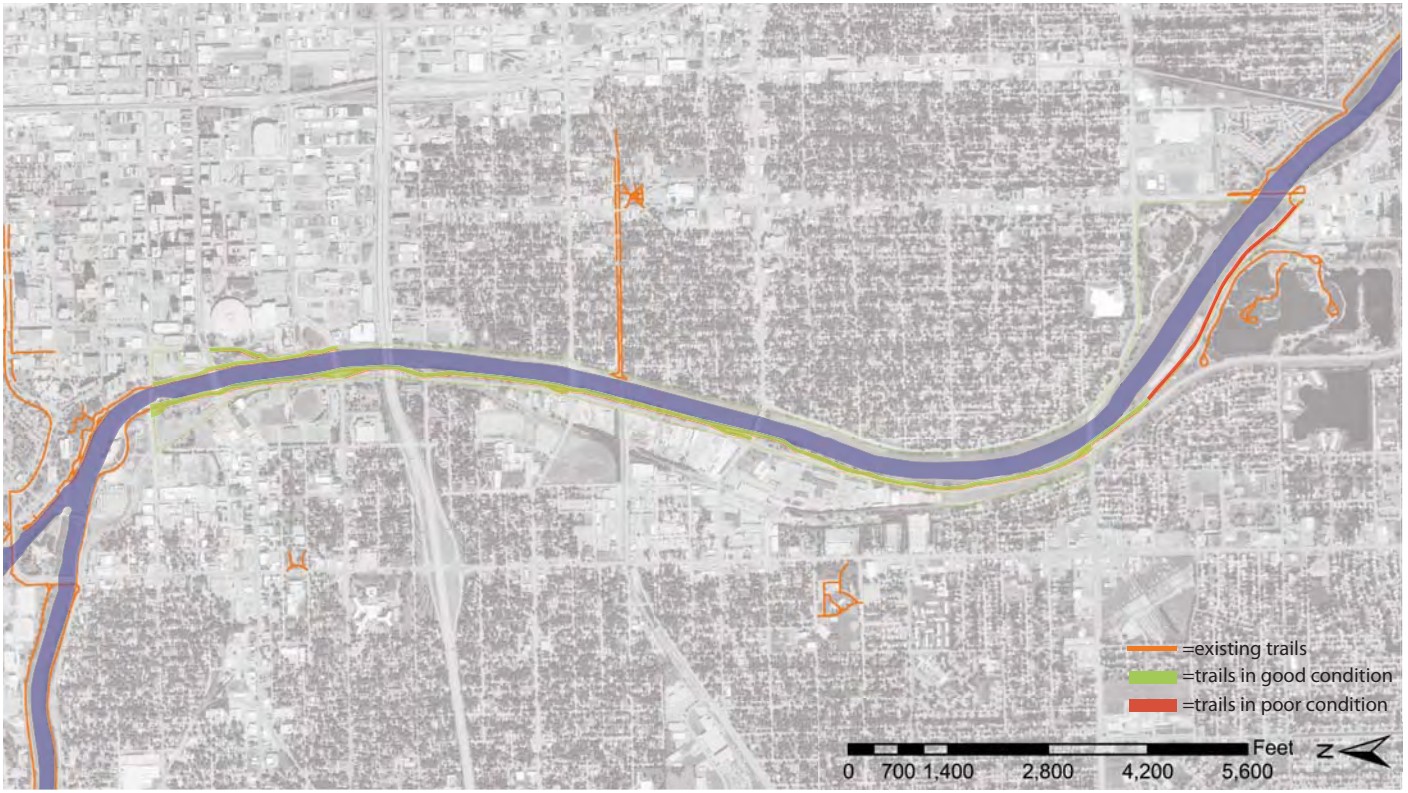


figure 4.32- existing trails along the river

trails and conditions

Trails along the river are the predominate form of circulation for pedestrians. The lack of paths or paths in poor conditions can make the visitors experience one of labor and agony. Currently trails on the west side of the river, from the northern end of the site to Watson Park are in moderate condition. The term “moderate” implies that the trails in this area are functional; however several areas are beginning to deteriorate and cause spots that can be harmful to unsuspecting pedestrians and bicyclists. The path starting at Watson Park and extending south to South Broadway is labeled as poor condition. This section of the path has experienced large amounts of deterioration and is a safety hazard to those who use it. The east side of the river only has paths from the northern end of the site to Kellogg Avenue that are in good condition and experience the most traffic.

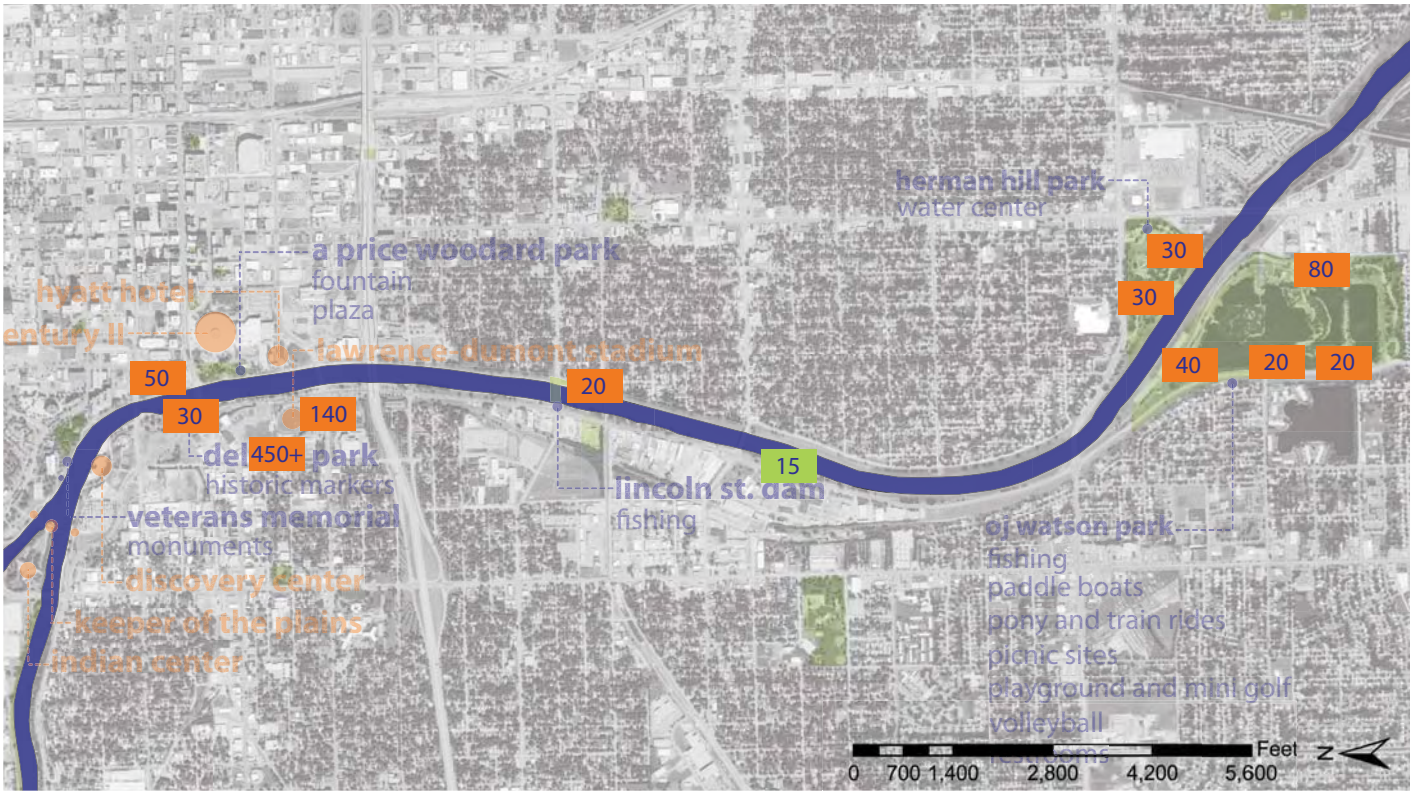


figure 4.33- public parking along the river

public parking

Parking along the riverfront can be an agonizing experience for visitors. While there is adequate parking along the river, the majority of that parking is not easily accessed. On the west side of the river Lawrence-Dumont offers 500+ parking spots that can be shared as the peak time of usage for Lawrence-Dumont activities comes during the evening when baseball games are held. Unfortunately, connections from the Lawrence-Dumont parking lot to the river, across McLean, are somewhat unsafe. A crosswalk exists at Lewis St, but an overhead crossing should be considered given the traffic of McLean. Delano Park currently has a gravel parking lot that is cut-off to visitors due to curb and guttering surrounding the park. The largest need for parking exists at the Lincoln St. Dam where many users currently utilize the side of South Palisade St. to park their vehicles.

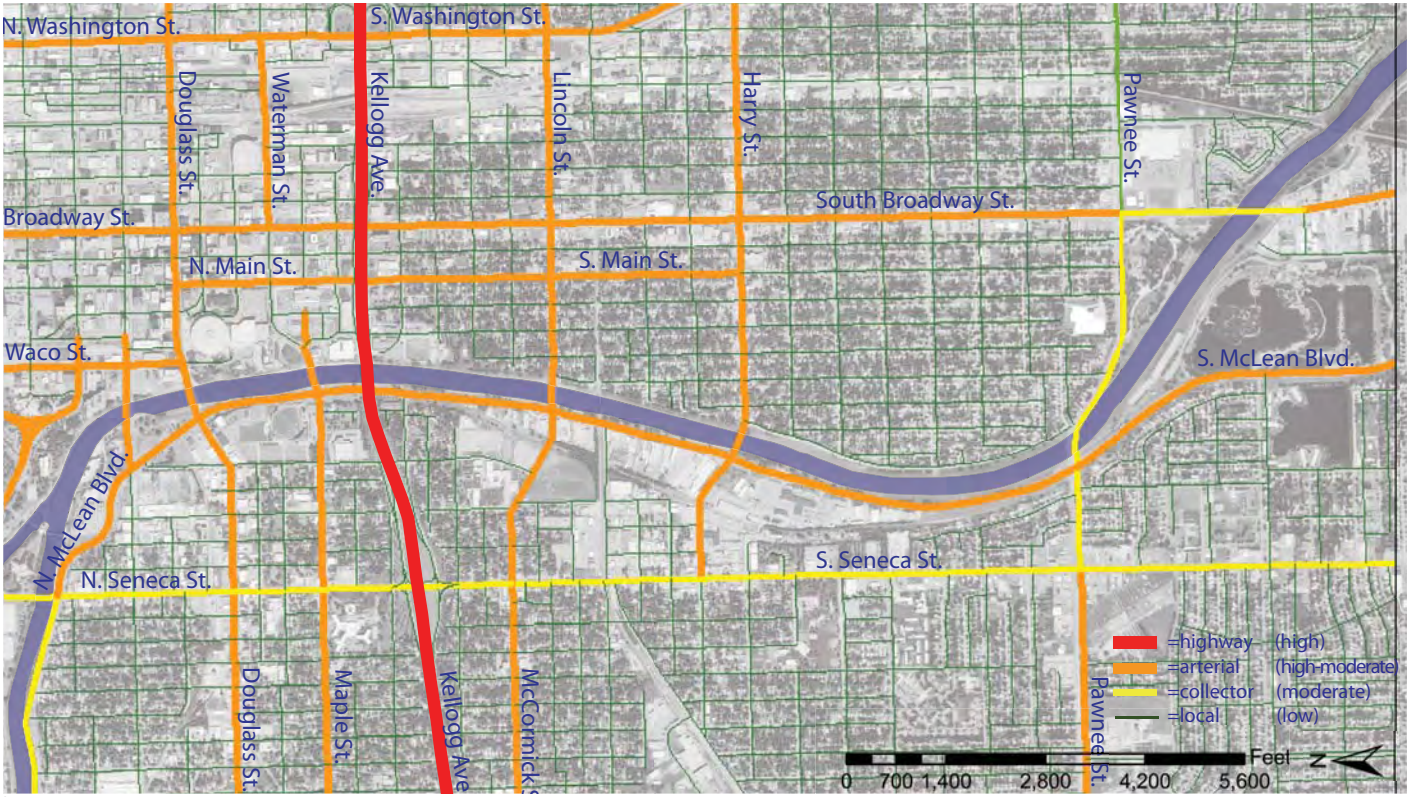


figure 4.34- street system

streets

Vehicular circulation is the largest barrier when accessing the riverfront. Many surrounding districts are cut off from the river due to high traffic roads that offers no safe crossing for pedestrians. The major highway that cuts through the site, Kellogg Avenue, has the least effect on circulation because it is a raised highway and offers safe passage under it. The most conflicting street is McLean Boulevard, which runs along the west side of the river. McLean receives a large amount of traffic as it is a major connection between the north and south sides of Wichita. McLean does little for pedestrian safety, as crosswalks are seldom incorporated and has limited sidewalks that run alongside it.

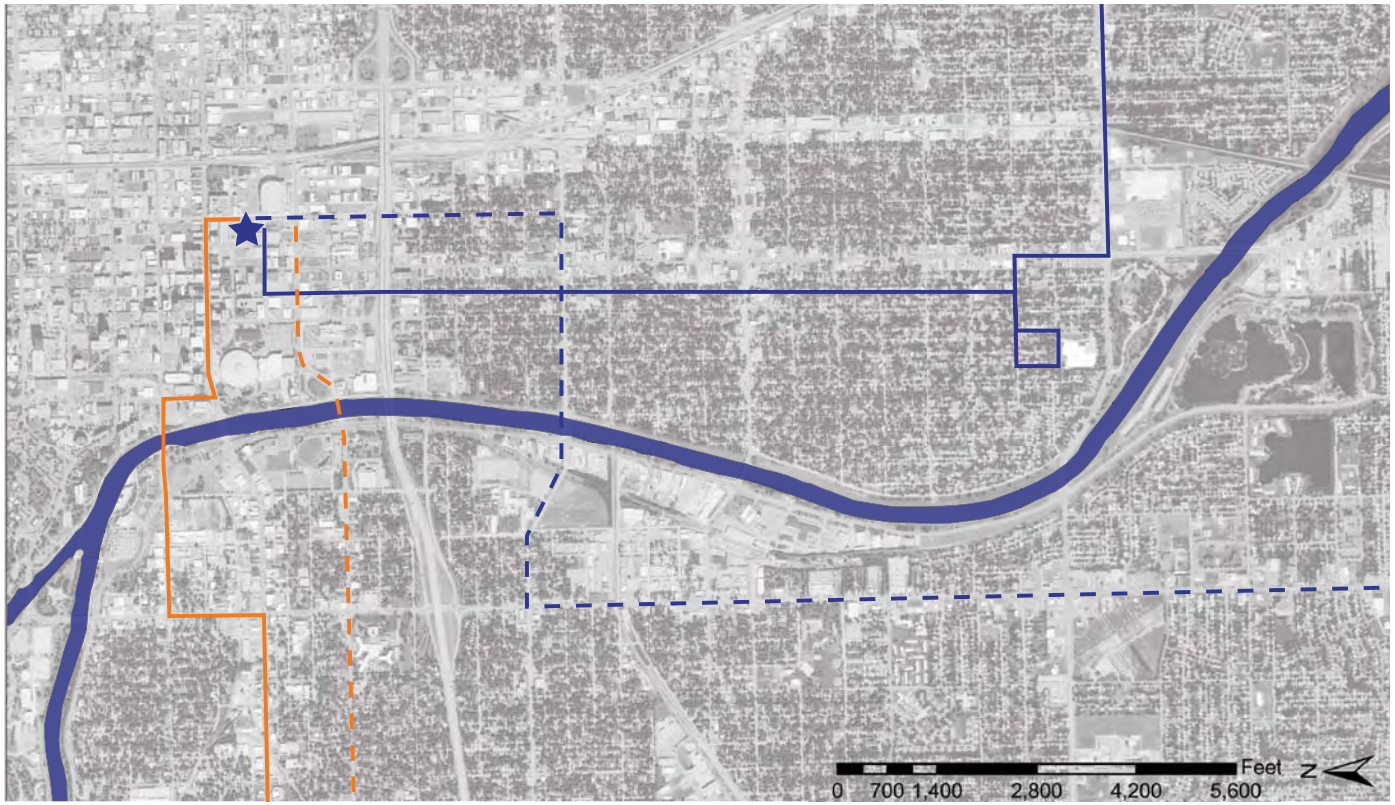


figure 4.35- transit routes near the river

transit

Transit is a viable form of transportation in Wichita, especially in the downtown area. While the only current stop within the site boundaries is at the south side of O.J. Watson Park, many routes near it, making it easy to propose new stops. One route runs along 1st street on the north side of Delano Park while another route runs across the Lincoln St. bridge, making those two areas easy access points for transit.

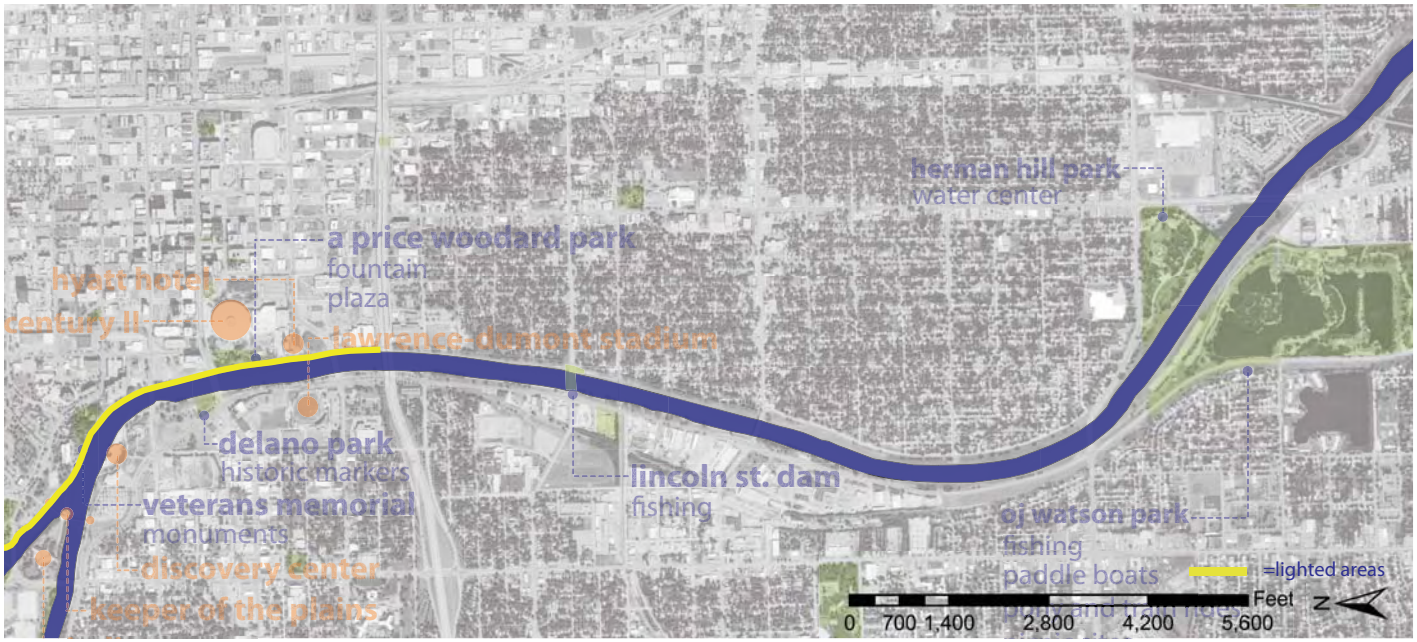


figure 4.36- existing lighting along the river

lighting

Lighting plays a vital part in giving the riverfront life in the evening and night hours. When implemented correctly lighting can draw visitors to a site, if it is done in a creative and artistic way. When lighting is not present citizens tend to avoid those spaces due to feelings of insecurity. Lighted areas can often be seen as the limits of a visitor's willingness to travel in the darker hours. The only lighting currently within the site is along the east side of the river, north of Kellogg Avenue. Observations from the Hyatt Hotel show that this is the most heavily traversed section of the river in the evening hours as visitors were often seen strolling up and down the north-eastern portion of the site, enjoying the night time views of the river.

site selection

With the inventory finalized an analysis was completed to determine which two sites within the river corridor would provide the most advantageous to develop. The analysis consisted of taking numerous inventory elements and overlapping them to make assumptions and suggestions regarding site selection as well as overall remedies for the river corridor. The two sites selected for development were Delano Park and the Lincoln St. Bridge. Analysis maps were created to illustrate the factors that influenced the decision for each site.

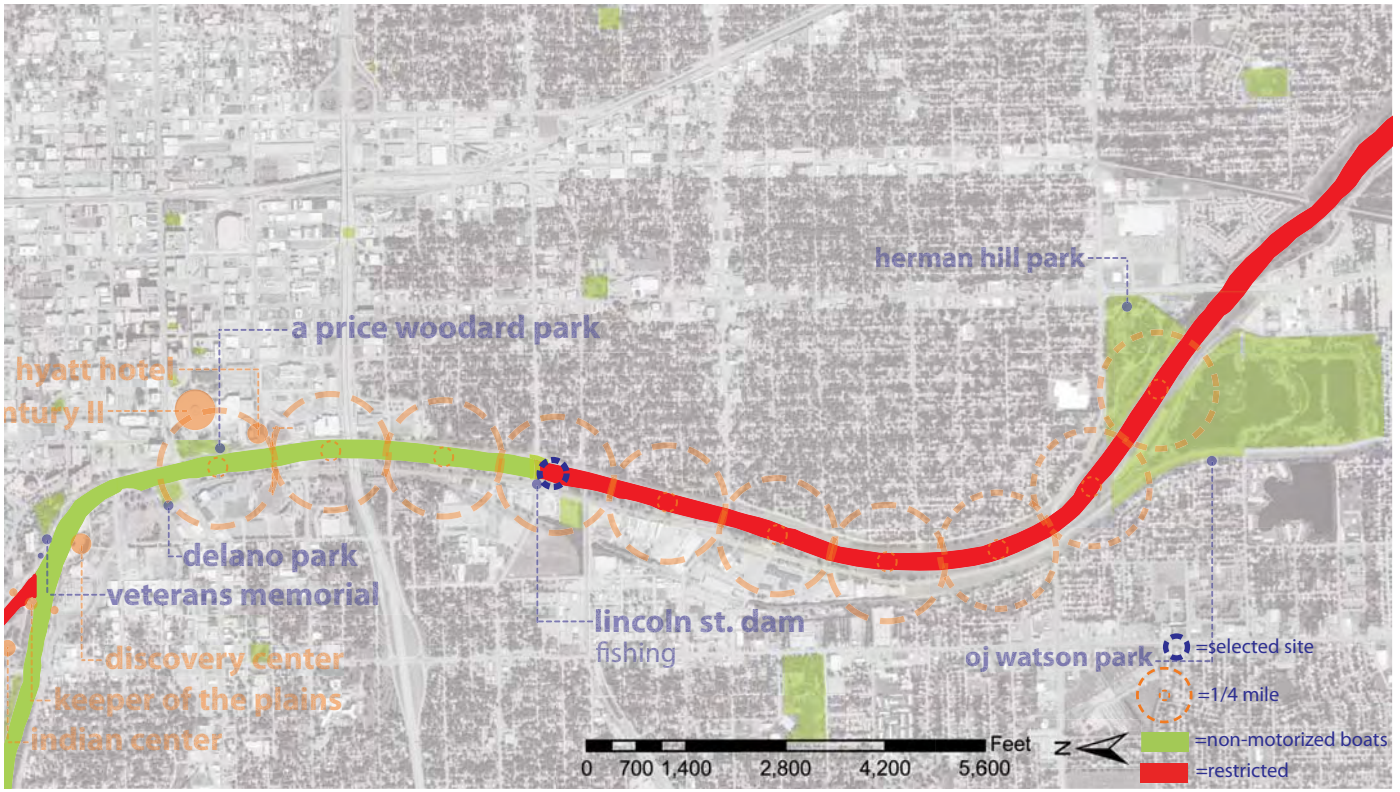


figure 4.37- lincoln street dam site selection map

lincoln street dam

The Lincoln Street Dam site was chosen for several reasons. The most significant reason was due to the barrier that it posed on boating within the city. Non-motorized crafts were denied access down river due to the blockage of the dam. City regulations currently list the river south of the dam as restricted access, but the ARCAP document, adopted by the city, states that this portion of the river has depths that make it accessible. The second reason the Lincoln Street Dam was selected is because of the current level of activity it receives. The Dam draws numerous visitors each day to fish below it or from the bridge above it, as it is one of the only bridges in the city that is legal to fish off of. The site draws numerous visitors but can only sustain approximately twenty parking stalls for vehicles and a majority of those are located on the side of a street. The final reason the Lincoln St. site was selected is due to the placement within the 1/4 mile nodes set up to achieve spacing of recreational opportunities. The area can be

figure 4.38- lincoln street dam
Wichita citizens regularly use the dam for fishing purposes. Due to lack of amenities they provide their own seating above the existing rip-rap

figure 4.39- lincoln street dam
With no designated spots to fish visitors have to navigate the dangerous rip-rap to access the river

designed to include program elements related to fishing as well as seating and water fountains for pedestrians strolling along the river.

wildlife

Wildlife was also considered in the inventory of the Arkansas River Corridor. Currently four species of fish that are found to exist within the river are on the threatened and endangered species list. Two more, the Plains Minnow (Hybognathus placitus) and the River Shiner (Notropis blennius) are on the Species in need of Conservation list. With the cities plan for a new bridge, these endangered species could be negatively affected. Therefore, precautions shall be taken during development as well as a design that allows the species to navigate

Arkansas Darter *Etheostoma cragini*

Arkansas River Shiner *Notropis girardi*

Arkansas River Speckled Chub *Macrhybopsis tetranema*

Silver Chub *Macrhybopsis storeriana*

lincoln street

site scale inventory

A smaller scale of inventory was now needed to guide the final design for the selected sites. Three principal site factors, slopes, stormwater outlets, and circulation were inventoried for each of the sites to help discover a new depth of knowledge that was not visible in the previous scale of inventory.

figure 4.40- lincoln street existing circulation

circulation

Bordering the Lincoln Street site on the west is McLean Boulevard. McLean Boulevard, known for its traffic, creates a barrier between the residences and West High to the west. A safer connection shall be established to link these two areas, providing greater access to the riverfront. On the east side of the Lincoln Street site is South Palisade Street. This street is currently used for parking for residents utilizing the dam to fish. Trails exist along the west side of the river but are absent on the east. A trail system enters the site from the east along the railway, but terminates due to a lack of trails on the east side.

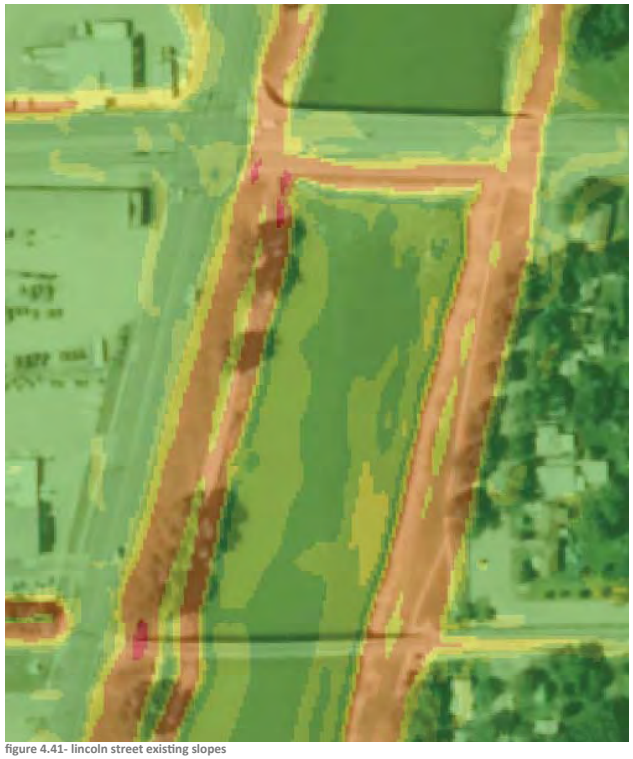


figure 4.41- lincoln street existing slopes

slopes

The Lincoln Street site is posed with the challenge of creating a space on a riverbank that has moderate slopes. The slope increases south of the bridge due to the ten foot drop in grade change for the dam. The program shall adapt to the challenge the slopes present. For example trails shall be implemented and spaces that utilize the existing slopes shall be created for relaxation and picnic opportunities. Grading will be minimized to reduce the chance of creating erosion problems.

figure 4.42- stormwater outlets within the lincoln street site

stormwater

Five stormwater outlets are located within the Lincoln Street site. These outlets collect stormwater from adjacent streets and residences and pipe it into the river. Similar to the Delano Park scenario, filtration sites will be developed to help cleanse the water to an extent before it enters the river system.

figure 4.43- delano park site selection map

delano park

Delano Park was chosen as the second site for consideration for several reasons. The first and most significant is the location of the park. Delano Park is located in the heart of Wichita at the nexus of two of the largest entertainment districts in Wichita, the Delano District and Downtown. Because of its location, Delano Park has the potential to be an entertainment hub along the river that connects the two districts at the pedestrian level. The underlying land-use map shows the intensity of development in the area and hints at the intensity of traffic this area could potentially see. Delano Park is also located among many of the amenities in the downtown area including art and historical sites.

figure 4.44- delano park view of downtown
Delano Park currently features the Ben F. McLean fountain as well as other memorials. A sidewalk runs along these and then terminates as it enters the park

history

Delano Park is host to four major pieces of Wichita history, which vary in form from fountains to monolithic monuments. The four pieces include:

Ben F. McLean- a fountain dedicated to one of the founding fathers of Wichita

Ackerman Island- a plaque dedicated to Ackerman Island, an island that developed when Colorado water rights caused the level of the Arkansas River to decrease

Chisholm Trail- a large decorative stone dedicated to the the Chisholm Trail, a cattle trail, that stretched from San Antonio, TX to Abilene, KS and passed through Wichita

Delano Township- a plaque dedicated to the township of Delano, known for its old west lifestyle of drinking, gunfighting, and prostitution. The township was eventually absorbed in the city of Wichita.

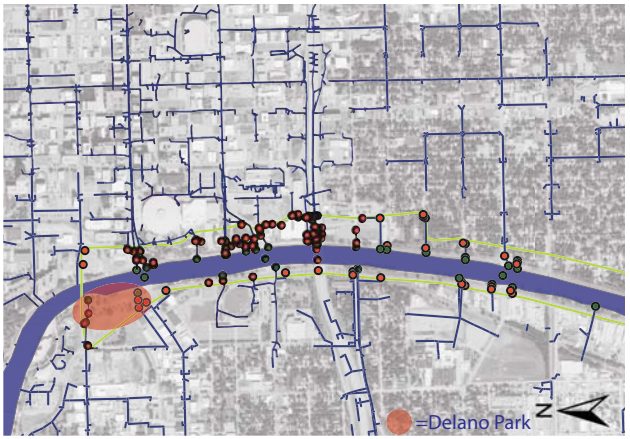


figure 4.45- stormwater outlets
Two stormwater outlets are currently emptied into the river system

stormwater opportunities

Currently there are two stormwater outlets that deposit into the river in Delano Park. These two areas can be taken into consideration when designing to help promote best management practices along the river.

wichita river festival

Delano Park is home to many of the activities during the wichita river festival due to its location on the river. These activities include on the water events and concerts. This space can be designed to accommodate these needs as well as the elements that will be used the rest of the year.

delano park

figure 4.46- delano park existing circulation

circulation

Three busy arterial streets surround Delano Park: 1st Street on the north, McLean Boulevard on the west, and Douglass Street to the south. McLean Boulevard can be considered an exception, as it is usually busier than an arterial street due in fact that it connects north and south Wichita along the river. This high traffic makes accessing the park a tedious task.

The park can be accessed from the east side of the river through sidewalks along the 1st Street and Douglass Bridges. A small, deteriorating trail is also located along the riverfront that connects the part to the Exploration place on the north.

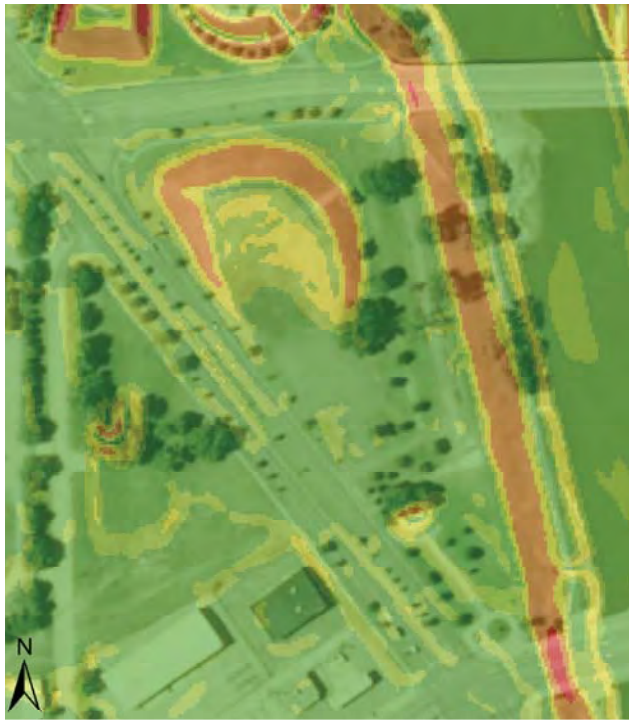


figure 4.47- delano park existing slopes

slopes

Slopes along Delano Park create two separate spaces within the park. The upper park and lower park are separated by a approximately twenty foot grade change. This change is grade is in the ten to twenty percent category and should be treated with caution and care when designing.

In the north-western portion of the park lies a large man-made hill, where the old west bank stage used to sit. The hill could be utilized as an amphitheater or used to construct a building into its side.

figure 4.48- stormwater outlets within delano park

stormwater

Two stormwater outlets are located within Delano Park. These outlets collect stormwater from the street and adjacent areas and pipe the water into the river. The problem with this practice is that there is no filtration system that the water can go through before it enters the river system. A filtration system could be designed that can be applied throughout the river corridor that allows water being piped in from off site to be filtered before it enters the river.

synthesis of sites

Delano Park is to be designed as a nexus that provides safe connections over the surrounding high traffic streets that currently border it. Slopes will be utilized in the design to create spaces and opportunities for views. Native species will be used to allow for bank stabilization to prevent erosion problems on site.

Lincoln Street is to be designed as a spot where residents can continue to fish under the dam. A kayak run and fish ladder will be implemented to combat the change in grade created by the dam. Native species will be used to combat erosion problems along the steep sections of the riverbank. Safer connections will be established to connect the riverfront to the adjacent areas.

figure 4.49- delano park
A large man-made hill exists at Delano Park where the West Bank Stage once stood

figure 4.50- lincoln street
Edge conditions are poor along the Lincoln Street site due to rip-rap and weeds that grow in and around it

[5] precedent studies

This chapter looks at two precedent studies, the Central Platte Valley and the Trinity River Corridor. A methodology is created based upon the framework to analyze each precedent and apply it to the Wichita Riverfront

“We learn by example and by direct experience because there are real limits to the adequacy of verbal instruction.”
-Malcolm Gladwell

figure 5.1- central platte valley
Pedestrian bridge connecting the Central Platte Valley to the adjacent high-density residential area

figure 5.2- trinity river corridor
Bridge to the Trinity River Audubon Center

methodology

a strategy for analyzing precedents

To better analyze the precedent studies and make the application to the Arkansas River Project more successful, a methodology was created based upon the framework. The methodology consists of 6 key categories that are analyzed throughout each precedent so they can then be applied to the Arkansas River site. The 6 categories as they apply to the framework are:

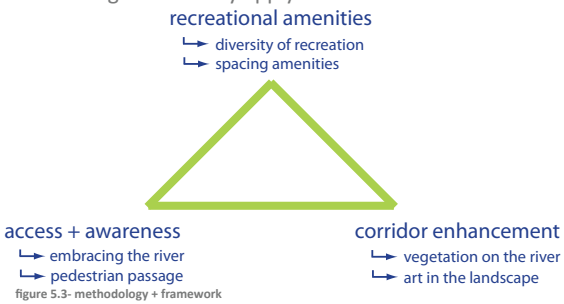


figure 5.3- methodology + framework

To better analyze the precedents a methodology was created based on the framework

Each category provides useful strategies and examples for creating a more successful riverfront.

Diversity of recreation- by weaving a diversity of recreational opportunities into a site the user base can be multiplied, simply because it reaches out to a broader group of users. Diversity is key when thinking about the programing of a site. The surrounding communities should be assessed to gauge what forms of recreation will maximize the amount of users.

Spacing amenities- in many instances the extent a visitor is willing to walk before losing interest in the site or becoming uncomfortable is 1/4 of a mile. This can be countered by creating nodes within the site at roughly 1/4 mile interval. These nodes do not have to include recreational opportunities at each location, but some sort of user amenities should be required such as seating, restrooms, water fountains, etc. to enhance the user's comfortability.

Embracing the river- the river should be considered the single most important element on the site. Humans have always shown an attraction to water. It provides us with nourishment, enjoyment, and a means of transportation. The water should be accessible to the visitors to enhance the riverfront experience. Even if the river is not accessible to the touch for safety reasons, the user should feel that the water is within their grasp.

Pedestrian passage- pedestrian circulation is a pivotal part of a successful riverfront. Pedestrians should be able to move about the site and access adjacent areas with ease and safety. Certain amenities should be considered for the pedestrian, especially along such a long length of the riverfront. Amenities to maximize the pedestrians comfort, such as water fountains, seating, restrooms, and smooth pathways are vital for a positive pedestrian experience.

Vegetation on the river- vegetation on the river is a key part to a healthy ecosystem. A wide diversity of vegetation in the river corridor creates habitats for fauna, helps filter stormwater, and creates spaces that contradict the surrounding urban context.

Art in the landscape- art is to be a broadly used term in this instance. It is meant to include items such as educational signs along the river, fountains, sculptures, and lighting elements. The art element helps to bring excitement to the riverfront through a blend of historical elements, interactive spaces, and scenic quality.

central platte valley

denver, co

figure 5.4- central platte valley
A model created of the Central Platte Valley and surrounding context

central platte valley

where the waters meet

The Central Platte Valley holds an important place in the history books of the City of Denver. The location for the Central Platte Valley is at the confluence of the South Platte River and Cherry Creek. On November 22, 1858, General William Larimer staked a claim on the hill overlooking the confluence.

Larimer was a land speculator from eastern Kansas who traveled to the Denver area after word began to spread that there was gold in the region. Larimer named his claim Denver City after the governor of Kansas, James W. Denver in hopes that it would be named the county seat of Arapaho County.

As the city developed the area turned into a hub for railway transport. In the 1980's the confluence area was left for abandoned after the decline of the rail industry.

In the early 1990's the land was inherited by the Trillion Corporation after the company bought 450 parcels of land in over 200 cities. In 1994 Mayor Wellington Webb, the City of Denver, and Trillion began working with Civitas to produce a plan to clean up the 70+ acre brownfield site and developed it into something valuable to the surrounding community.

timeline

1994- Planning begins for the 30 acre Denver Commons Park

1997- Commons Park West, a $33 million, 350 unit apartment complex breaks ground in Downtown Denver. This is the first step in the development of the Central Platte Valley

1998- Site clearance begins on the brownfield site that is now Commons Park

2000- City breaks ground on Commons Park

2001- Commons Parks receives the ASLA Colorado Chapter Merit Award for Design

2002- Millennium Bridge is officially opened, connecting Commons Park to Lower Downtown Denver

2006- Confluence Park receives ASLA Colorado Chapter Merit Award for Design

size

Overall Site- 70+ acres

Commons Park- 20 acres

designers

Civitas- main consultant for master plan of Commons Park

Jones and Jones- final design of Commons Park

Design Workshop- streetscape design for development

Architerra Group- final design for Confluence Park and Denver skatepark

embracing the river

The Central Platte Valley area was once a major industrial railyard and warehouse district due to its close proximity to Union Station. After the decline of the railway in the early 1980's the area was planned to be redeveloped with an emphasis on the river. Starting in the 90's East- West Partners purchased a majority of the land and began to create a residential development with a focus on high density development.

In 2004, after the relocation of an electrical substation, Confluence Park was redesigned to include a new plaza, a lawn that opened up to the river, and a kayak run.

Commons Park was developed to be the centerpiece of the new Riverfront Park development. The park consists of 20 acres of green space and native plants that provides easy access to the South Platte River. The park is dominated by "the hill" which is a large grassy mound that is decorated with a polished granite compass on its top.

To the north Commons Park is the Denver Skate Park, the largest free public skate park in the country.

figure 5.5- embracing the river
Diagram illustrating the CPV and the proximity of its amenities to the river and adjacent creek

spacing amenities

When designing this large park system the main contributors (Civitas, Jones and Jones and Architerra Group) realized that to pull people through the whole site they would have to use elements that captured the attention of the public and space them in somewhat equal intervals.

On the north-east/ south-west axis one would start at the Denver Skate Park and see, in the distance, the artistic Platte River Bridge and the Hill at Commons Park. After a 7 minute walk to these elements Confluence Park comes into view which consists of another 8 minute walk.

On the north-west/ south-east axis one would start at the Highland Bridge and make your way to the Platte River Bridge. After a quick 3 minute walk you arrive on the bridge over the river and then proceed another 9 minutes to the artistic Millennium Bridge.

By strategically placing these elements within the site the designers are able to use the visitor's curiosity to pull them throughout the site and make sure there are no instances when a visitor would become uninterested in the site.

figure 5.6- spacing amenities
Diagram showing the spacing of amenities throughout the CPV

figure 5.7- pedestrian passage
Diagram showing the CPV in relation to surrounding districts. The CPV works as a nexus, connecting the surrounding districts

pedestrian passage

The Central Platte Valley serves as a nexus for five major districts in the downtown Denver area. The major elements used in the connection of these areas are pedestrian bridges that allow for safe passage over busy city streets and major highways.

The major north-west/ south-east axis uses the Platte River Bridge to cross the Platte River and then the Highland Bridge to cross over the North Valley Highway. Going the opposite way the Millennium Bridge provides safe passage across the existing railroad tracks and into the Union Station sub-district which is a part of the Downtown District.

The north-east/ south-west axis utilizes greenways to allow for safe passages from district to district. One can come from Prospect Park on the north and down into Commons Park by navigating the trails along the river. Once in Commons Park all surrounding districts are accessible through pedestrian bridges or by following the trails along the river.

figure 5.8- diversity of recreation
Diagram showing the diversity of recreation throughout the CPV. Through a diversity of opportunities a large visitor base can be achieved

diversity of recreation

The reason the Central Platte Valley is so successful is that the recreation along the river is so diverse it attracts an even more diverse crowd. Starting on the north portion of the site is the Denver Skate Park which is the largest free public skate park in the nation. The City of Denver collaborated with local skaters to make sure the park was designed for skaters, by skaters.

Next is the three major elements in Commons Park: The long meadow, the hill, and the lawn. The entry to the long meadow is an artistic staircase that winds around and connects to the paths throughout the park. The hill is a large grassy mound that visitors can picnic on or scale to enjoy the view at the top. The lawn is simply an open grassy area where people can picnic, play frisbee, or enjoy a number of other activities.

The Confluence area has four main elements: the plaza, designated swim area on Cherry Creek, the kayak run, and the access point where visitors can enjoy the Platte River.

art in the landscape

The art in the Central Platte Valley is conspicuously interwoven into the design of the parks and the details within them. Two prominent examples are the overhead structure at Confluence Park and the granite compass atop the hill in Commons Park. The shade structures at Confluence Park are elements that incorporate artistic cutouts of species of fish found within the river. While this type of art is simple in taste it provides to the overall aesthetics and character of the site. The compass is a large compass form made of granite that is inlaid into the hill within Commons Park. Visitors make their way to the top of the hill to view the giant compass and enjoy the views atop the hill.

figure 5.9- artistic overhead structure

figure 5.10- the granite compass

vegetation on the river

According to the SPRVIP (South Platte River Vision Implementation Plan) the city of Denver main focus for vegetation is to implement native vegetation and create riparian and wetland riverbanks to promote water quality enhancements. Through the installation and creation of native areas the city hopes the river can be morphed back into its natural element.

figure 5.11- native grasses at commons park

figure 5.12- vegetation along the river

figure 5.13- central platte valley map

key

1. Confluence Park
2. Confluence Park Plaza
3. Highland Bridge
4. Platte River Bridge
5. Commons Park
6. Millennium Bridge
7. The Hill (Compass Hill)
8. Entry to the Long Meadow
9. 18th Street Bridge (In progress)
10. Denver Skatepark
11. Railyard Dog Park (In progress)

establishing pedestrian connections

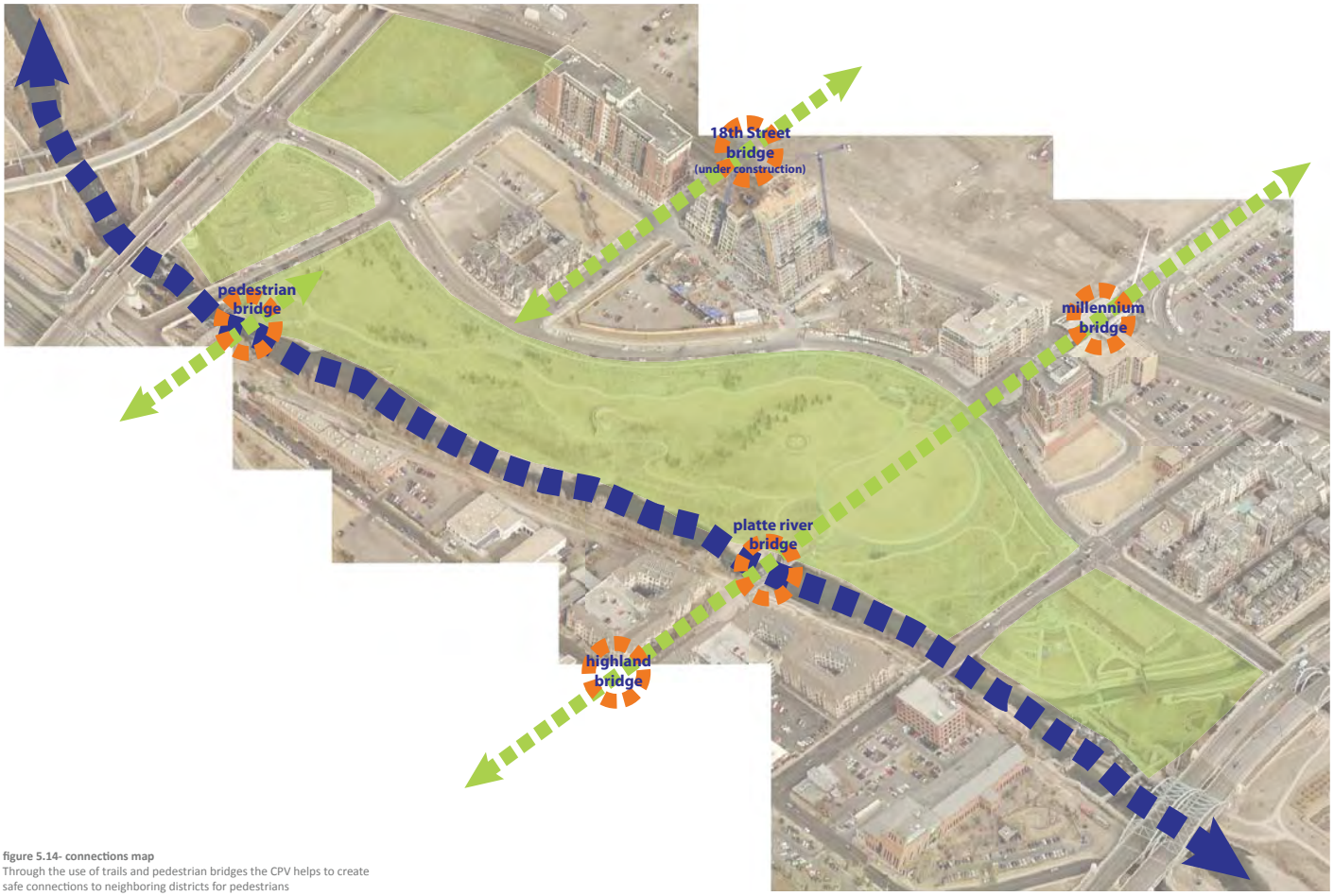


figure 5.14- connections map
Through the use of trails and pedestrian bridges the CPV helps to create safe connections to neighboring districts for pedestrians

figure 5.15- confluence park plaza

figure 5.17- denver skate park

figure 5.16- highland bridge

figure 5.18- millennium bridge

figure 5.19- kayak run

figure 5.20- proposed railyard dog park

figure 5.21- the lawn

figure 5.22- aerial of kayak run at confluence park

figure 5.23- designated swimming area at confluence park

application

After analyzing the Central Platte Valley five main categories were assessed that will be applied to the Arkansas River project to make it more successful.

Diversity of recreation- a valuable lesson learned when analyzing the recreational opportunities in the Central Platte Valley is that the opportunities are diverse in nature, giving the site a larger user group. The Denver Skate Park draws youth from all over the city to an “arena” for the fastest growing youth sport of this generation. At the other end of the valley is Confluence Park its many opportunities on the river. The kayak run provides recreation for boaters on the South Platte River. The access point across the river provides opportunities for fishing, boat launching, and just enjoying the river up close. On the Cherry Creek side of the confluence a swimming area has been designated where visitors can safely enjoy the water. Commons Park provides for more passive and relaxing activities. The lawn allows for active recreational activities such as frisbee, football, etc. The hill provides opportunities for views of the city as well as public art in the polished granite compass.

In conclusion, through using a diversity of recreational opportunities the Central Platte Valley receives more visitors than a site that simply focus on one activity and implements it throughout the site.

Spacing amenities- Possibly one of the most important design

strategies is the creation of nodes within a site. By successfully spacing amenities and elements with the Central Platte Valley the user is drawn through the site simply by curiosity of the unknown. The elements are far enough apart that from one you can begin to see the next but are not completely sure what it is. The average walking distance between these elements is about .35 miles or around a 6 to 7 minute walk. This ensures that visitors stay interested in the site without the feeling of walking long distances without any change.

Embracing the river- Confluence Park and Commons Park embrace the South Platte River through numerous points of access for visitors. Confluence Park has many elements that abut the river such as the plaza/ stairs, the kayak run, and many points near the confluence. Commons Park has a simple sidewalk that connects to a concrete pad that abuts the river but it still provides easy access to the river. This allows the visitors to utilize the sites major and most important landscape feature.

Pedestrian passage- Because the Central Platte Valley is in the middle of four major districts in Denver it is looked at to not only provide entertainment and housing but to provide connections throughout the city. The CPV does this through the use of pedestrian bridges and trails through greenways. The pedestrian bridges allow safe passage across river, busy streets and highways, and railways. The greenways provide access from district to district through scenic trails and detours major roads by trails under bridges or crosswalks.

Vegetation on the river- The strategy utilized within the Central Platte Valley is the implementation of native species. The native species allow the river to be more natural while promoting enhanced water quality along the river as well. Re-creation of the riparian corridor is also discussed in the City of Denver's Park Plan.

Art in the landscape- Art is not a widely discussed element when speaking about the Central Platte Valley. This is because art is simply and discretely introduced into the site. The granite compass on top of the hill or the fish and native grasses cutouts in the canopy structures are simple expressions of art that, while simple, provide an aesthetic quality to the site.

figure 5.24- aerial view of central platte valley

trinity river corridor

dallas, tx

figure 5.25- trinity river corridor
A model created of a section of the Trinity River Corridor showing the newly proposed bridge by Santiago Calatiava

trinity river corridor

an ecological solution to a failing riverfront

The Trinity River started becoming a major concern for Dallas and its surrounding residents in 1908 when 5 died and over 4,000 were left homeless when the river spilled its banks. Depths got to over 50 feet and the width was up to 1.5 miles in places. This started the major efforts to harness the river to make sure an event like the one of 1908 never happened again. However, it wasn't until late in 1998 that City officials began looking for an ecological approach that would maintain the river.

When planning the Trinity River Corridor Project flood control was the main issue to be addressed, however, a list of four other goals were developed. Environmental restoration, recreation, transportation, community/economic development were also to be addressed in the master plan for the 10,000 acre plan.

Currently the plans for environmental restoration and recreation are completed and phase 1 of these projects started construction in 2009. The restoration projects are expected to take quite a while longer to achieve, however, the first of the recreation projects are scheduled to be completed in 2011 with phase 2 starting shortly after.

The first wetlands are near the scheduled finished date and up to this point they, along with a system of levees, have done the job on controlling flooding.

timeline

May 1998 –Trinity River Corridor Project Bond Program passes

November 1998 – Master Planning for the Trinity River Corridor Project begins

March 2004 – Council adopts "Balanced Vision Plan" which provides new concepts for lakes, park areas and roadway

June 2007 – Hunt Petroleum gives $12 million to the Trinity Corridor Redevelopment Project

2009 – The Dallas City Design Studio was created to maintain and provide advice and support on the further development of the Trinity River Corridor

June 2009 – Final Plans are submitted, construction begins shortly after

size

The Trinity River Corridor Project encompasses over 20 miles of the Trinity River and over 10,000 acres of the river valley

designers

Hargreaves Associates (master plan)

Chan Krieger Sieniewicz Architecture and Urban Design (master plan)

Santiago Calatiava Architecture (bridges)

HNTB Infrastructure (flood control)

trinity lakes

Embracing the river

This part of the Trinity River Project was designed by Wallace Roberts and Todd. The Trinity Lakes is a 9 mile stretch of the river, encompassing over 2,200 acres dedicated to recreation on the Trinity River. The Trinity Lakes complex consists of “30 miles of trails, three off-channel lakes, a mile-long promenade, overlooks, plazas, pavilions, amphitheaters, playfields, and a whitewater run (WRTdesign.com).”

The landscape is based upon the North Texas Blackland Prairie ecosystem. Woodlands, wetlands, and native grasslands are all present within the Trinity Lakes complex.

figure 5.26- embracing the river
Diagram illustrating the TRC and the proximity of its amenities to the river and adjacent lakes

spacing amenities

When designing the Trinity Lakes complex WRT used the concept of nodes throughout the site to help pull visitors through the site. However, since the complex is 9 miles long the designers realized that not everyone would want to walk the complete distance of the park. Therefore, vehicular circulation has been incorporated with parking lots at many of the main elements within the park to make it more accessible to everyone.

The western portion of the site consists of a large meadow, an amphitheater, and recreational fields. The eastern portion of the park is more developed with the promenade, fountain plaza, downtown overlook, amphitheater, and the isthmus (the connection between Urban Lake and Natural Lake complete with kayak run and water maze.

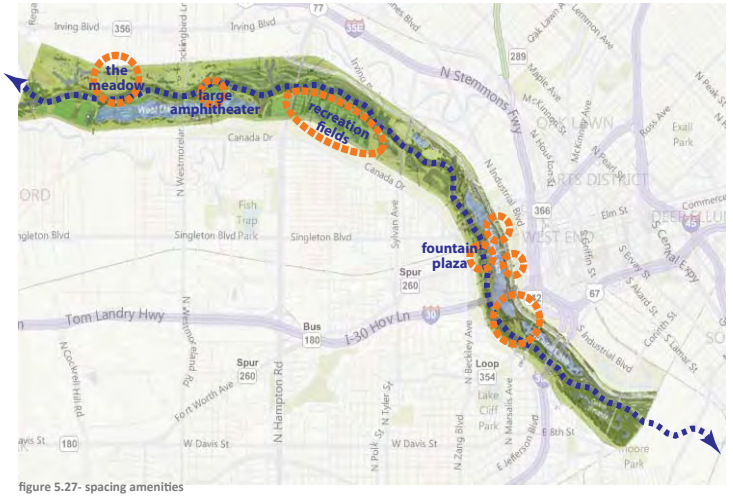


figure 5.27- spacing amenities
Diagram showing the spacing of amenities throughout the Trinity Lakes Complex

figure 5.28- standing wave course and santa fe train
The Santa Fe Trail utilizes an old railroad bridge to get pedestrians safely across the river. The standing wave is a white water course for kayakers to test their skills

pedestrian passage

The Santa Fe Trail Bridge is an ingenious idea to utilize an existing railroad bridge that was no longer in use to provide passage safely over the river for pedestrians who walk and bike the trail. This came about when the Santa Fe Trail was extended and the City made the decision to refurbish the bridge instead of tearing it down.

The standing wave course is a white water course that allows boaters and kayakers a chance to either enjoy the rougher waters of the course or to bypass the channel. The project will provide the standing wave structures, bypass channels, a kayak launch, access trails, parking and access from 8th street.

This provides pedestrian connects as well as recreational opportunities along the river for visitors to enjoy. The new Moore Gateway Park is planned to be built just down the river and will complement the Santa Fe trail and standing wave course.

figure 5.29- audubon center
The Audubon Center, designed by famed architect Antione Predock, serves as a gateway to the Great Trinity Forest

vegetation on the river

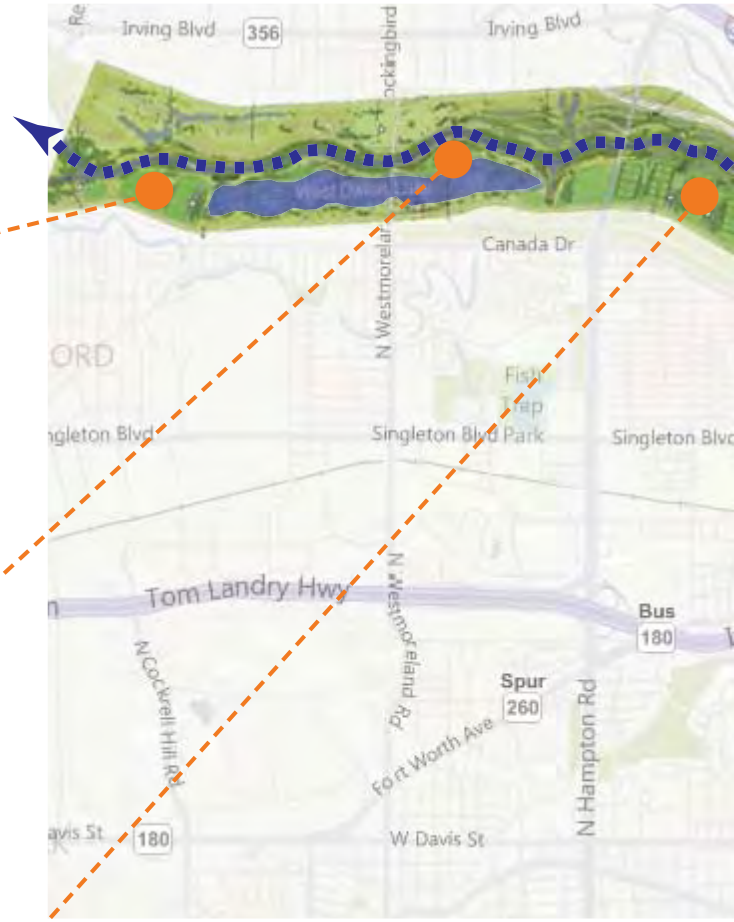
The newly designed Audubon Center serves as a gateway to the Great Trinity Forest. At 6,000 acres the Great Trinity Forest is the largest urban hardwood forest ranging from bottomland hardwoods, wetlands and grasslands. The Forest consists of hands on exhibits, the Children's Discovery Garden, and 4 miles of trails.

"The Trinity River Audubon Center, designed by 2006 AIA Gold Medalist architect Antoine Predock, will be the first LEED-certified building constructed by the City of Dallas Park and Recreation Department. Its green features include a vegetated roof, rainwater collection system, energy efficient systems, and recycled materials (trinityriveraudubon.org)."

figure 5.30- wetland boardwalk

figure 5.31- west dallas lake amphitheater

figure 5.32- athletic fields



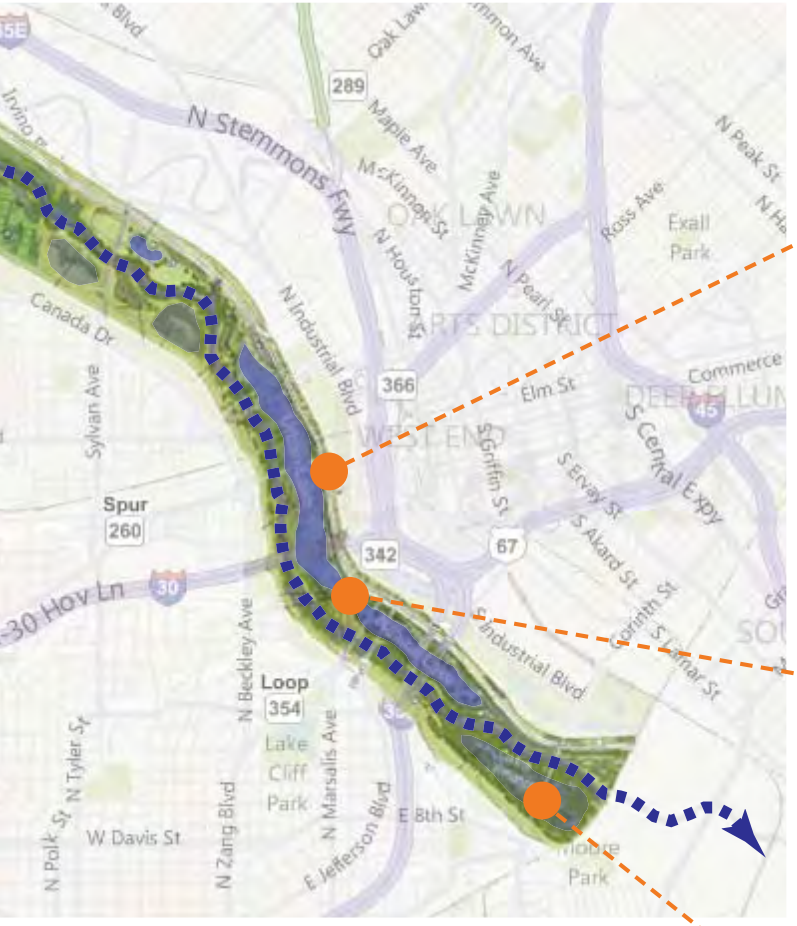


figure 5.33- fountain plaza

figure 5.34- isthmus

figure 5.35- overlook of corinth wetlands

figure 5.36- trinity river corridor plan
Map calling out three main areas of study within the TRC: the Audubon Center (Great Trinity Forest), standing wave course, and the Trinity Lakes Complex

figure 5.37- rowing on the lakes


figure 5.39- floating wetlands


figure 5.38- trc promenade


figure 5.40- water maze

figure 5.41- nature exhibits

figure 5.42- standing wave course

figure 5.43- wetlands surrounding audubon center

figure 5.44- hands on exhibits

application

After analyzing the Trinity River Corridor five main categories were assessed that will be applied to the Arkansas River project to make it more successful.

Diversity of recreation- The Trinity River Corridor is so large that it is divided into three main areas that support different recreational opportunities within each area.

Starting in the northern reaches of the site, the Trinity Fields area has been developed as a soccer complex that features the Elm Fork Athletic complex. The new plans for the Elm Fork complex features a total of 19 soccer fields (14 lighted international play fields, 5 youth practice fields, and a lighted championship field with covered seating). The facilities include concessions, restrooms, ticket booths, referee rooms, offices and conference rooms, a first aid facility, parking, nature areas, and a playground (DallasCityHall, 2010).

Further south is the Trinity Lakes complex, the most diverse area within the corridor for recreational opportunities. This area is sub-separated into 3 smaller areas, all of which are surrounded by the existing wetland ecosystem. The first area consists of many natural spaces where the visitor can enjoy nature. Surrounding wetlands, the featured “meadow”, and connecting trails allows for scenic views and interaction with the surrounding environment.

The next area features 5 full sized soccer fields with parking, concessions, and restrooms. This area is focused on sports recreation with the soccer fields, competitive boating on the West Dallas Lake, and fishing.

The final area within the Trinity Lakes Park is the main public gathering spaces because of its location, easy access, and the types of elements. This area exhibits such features as the promenade, downtown overlook, fountain plaza, amphitheater, isthmus, and water maze.

South of Trinity Lakes in the Trinity Forest which boasts the Trinity Audubon Center, the standing wave course, and the Santa Fe Trestle trail along with numerous other trails. The Audubon Center contains exhibits on the river and its ecosystems, hands on models of the river and an interactive flood demonstration, as well as trails through the surrounding wetlands with educational opportunities.

In conclusion, the TRC project features a wide variety of recreational opportunities, set within larger areas and sub-areas due to the size of the site.

Spacing amenities- Because of the size of the site, designers were presented with an immediate problem when making the project pedestrian oriented. The solution was to create several areas which could be easily accessed with a vehicle and from these make smaller areas pedestrian friendly through the use of trails and bridges. This idea is similar to the concept of "nodes" within the Central Platte Valley; only implemented at a much larger scale.

Embracing the river- The TRC project embraces the river in many ways but one of the most ingenious and educational is the Trinity Water Maze. The Water Maze is a small scale replica of a section of the Trinity river that is 3" deep so the visitors can interact with the water and play in the river. Educational points are set up to allow the children to understand the rivers features, ecosystems, and processes at a scale they can comprehend.

Pedestrian passage- Due to the extreme size of the TRC project pedestrian circulation is broken down into several scales. Trails are the main form of pedestrian movement within the TRC project. For the ambitious travelers, trails extended the length of the entire project and can be navigated from the far northern end of the project to the southern end. Smaller trail loops are set up within the smaller sub-sections of the project for shorter, more manageable walks. Trails are also used to connect the smaller sub-sections within the TRC project.

Vegetation on the river- The Trinity River Audubon Center is tucked into the Great Trinity Forest, acting as an entrance to the 6,000 acre, largest urban hardwood forest that contains bottomland hardwoods, wetlands and grasslands. The restoration plans call for a redeveloped flood plain with constructed wetlands and a rebuilding of the riparian river corridor.

Art in the landscape- Designers took a three part approach when looking at art in the TRC project. The first part is temporary or site specific art that can be placed in parks or public spaces on a seasonal basis. The second part is in the design of council rings throughout the Fields, Lakes, and Forest area. These rings are intended for small gatherings, landscape interpretation, meditation, reading, and camping purposes. The third and final part of the art approach is a major work of art. While the details are yet to be set, the concept of a major piece of art designed by a renowned artist is planned for the Fountain Plaza area, possibly being the fountain itself.

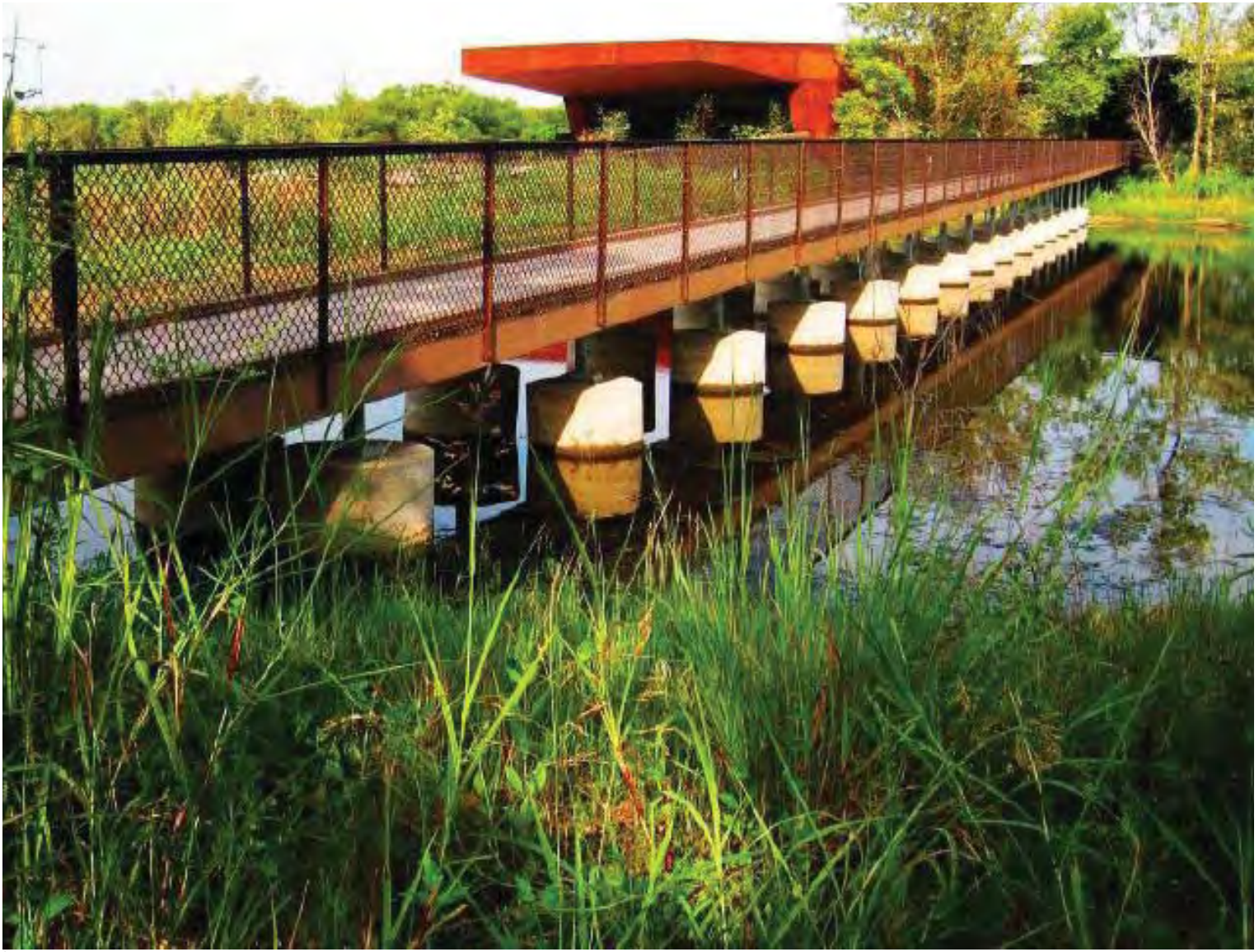


figure 5.45- bridge over wetlands to audubon center

[6] design

This chapter unveils the strategies applied to the river corridor, organized through the project framework. Designs are then revealed for the Delano Park and Lincoln street sites.

“Our ability to perceive quality in nature begins, as in art, with the pretty. It expands through successive stages of the beautiful to values as yet uncaptured by language.”

-Aldo Leopold

access + awareness

access + awareness goals

•create a single cohesive riverfront that flows through the wichita area

•connect existing districts adjacent to the riverfront to establish better riverfront access

•increase public safety by establishing pedestrian safe passages across harmful vehicular circulation

•connect destinations across the river that are not currently accessible to pedestrians on the opposite side

access + awareness program

Programming for this area is designed to provide connections along the riverfront and protect the pedestrians that utilize the area. Programming includes pedestrian bridges to establish major connections, trails, crosswalks, and lighting. Program elements include bicycle rentals, artistic lighting, parking, distance signage, and buffers from the major streets that bypass the site.

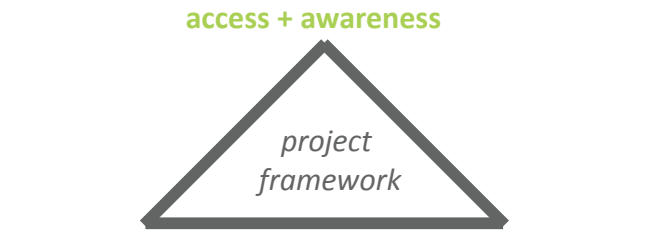


figure 6.1- access + awareness framework diagram

Connectivity

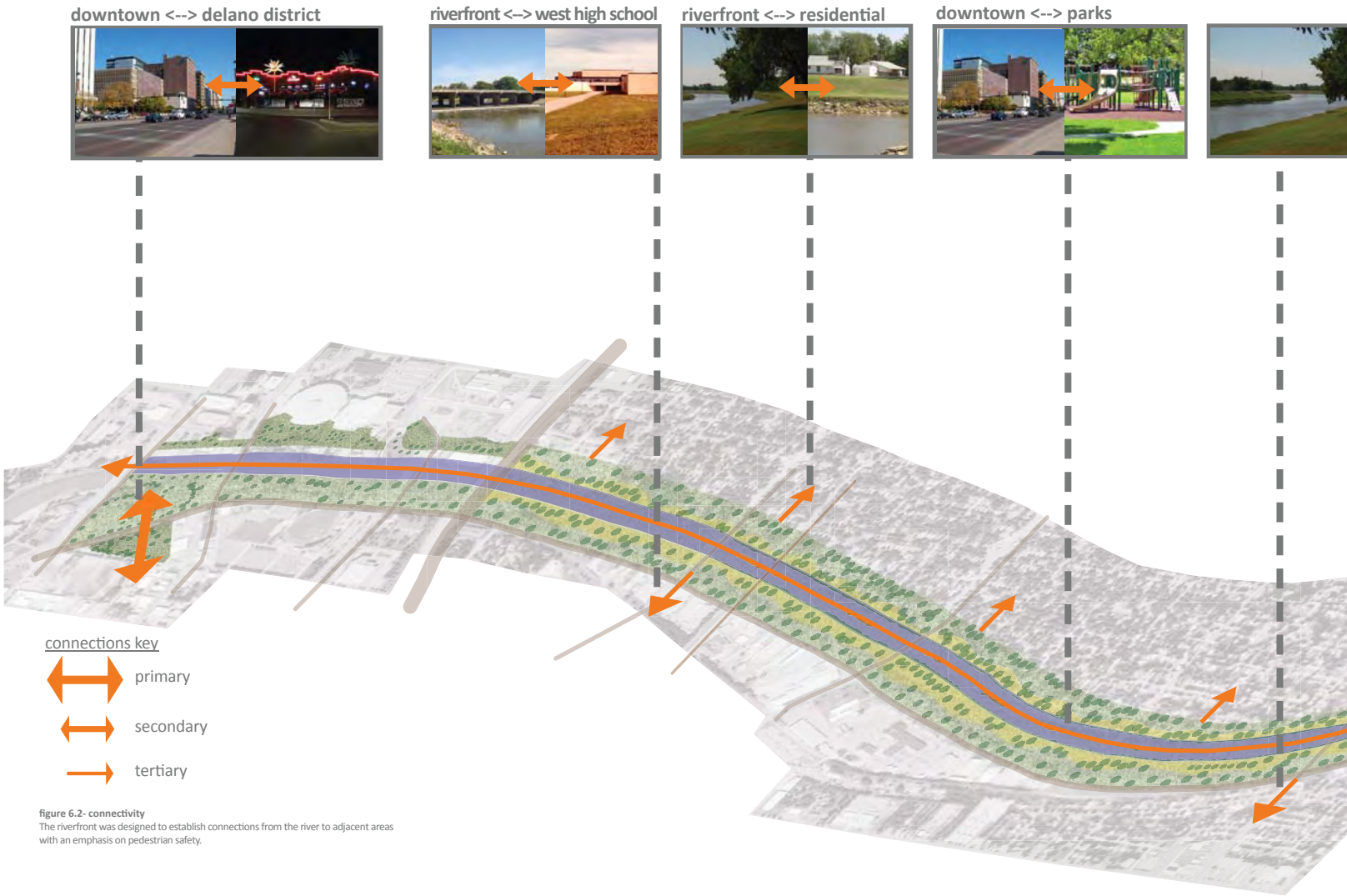
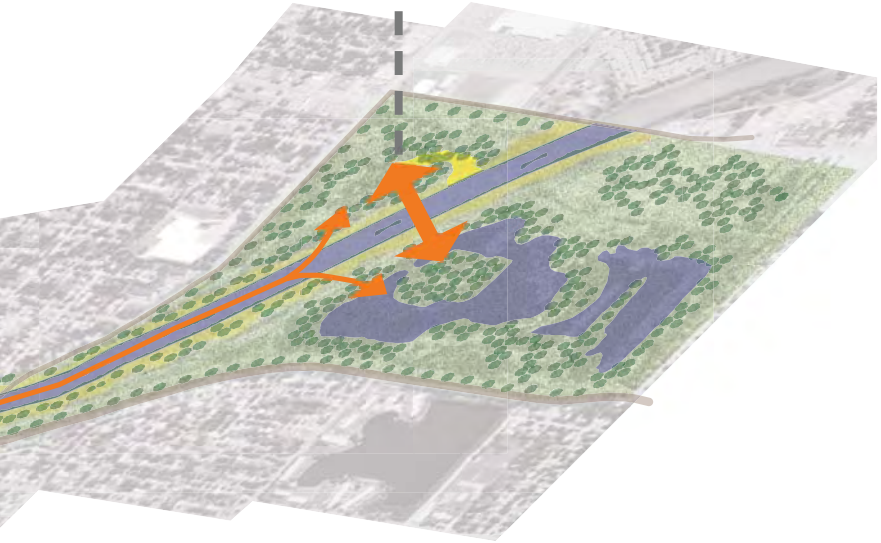


figure 6.2- connectivity
The riverfront was designed to establish connections from the river to adjacent areas with an emphasis on pedestrian safety.

riverfront <--> residential

o.j. watson park <--> herman hill park



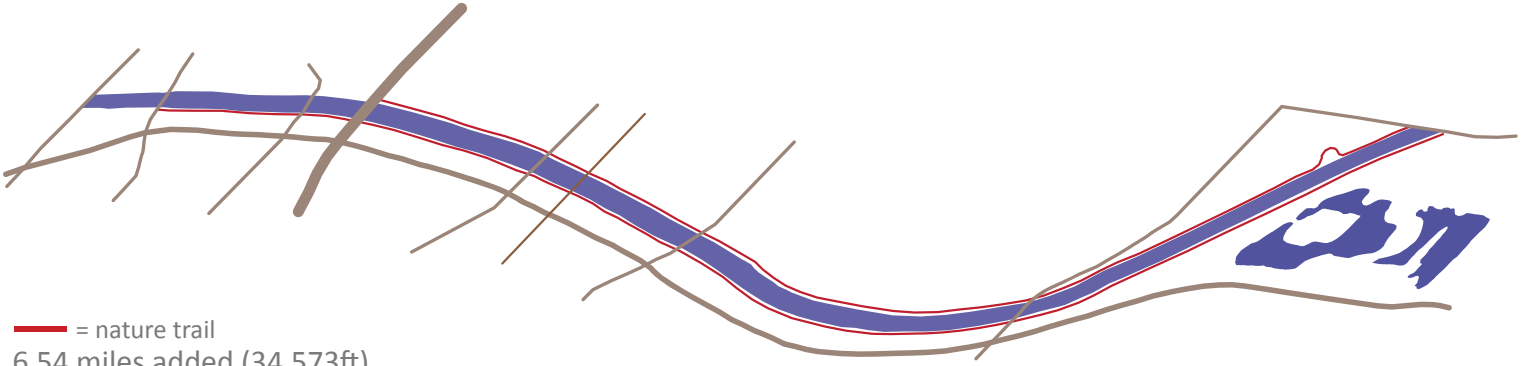
connectivity

The overall design of the Wichita Riverfront is orchestrated to promote connectivity at a variety of scales within the city. First and foremost the design connects the downtown area to O.J. Watson and Herman Hill Parks through the use of greenways and trails. This helps to establish connections between the active downtown area with its retail and entertainment districts, offices, museums, and parks with the predominantly residential southern part of the city.

The newly designed river also connects prominent districts within the city. Delano Park serves as a nexus to link the downtown area with the historic Delano District through the use of a pedestrian bridge to overpass the busy McLean Boulevard.

Finally the plan connects O.J Watson Park and Herman Hill Park by means of a pedestrian bridge that spans the river to promote easy access between the two disconnected parks.

Nature trails



= nature trail

6.54 miles added (34,573ft)

figure 6.3- nature trail location diagram
The nature trail experience was created along the riverfront to give visitors an escape from the surrounding urban environment. The red line represents the location of the nature trail throughout the corridor.

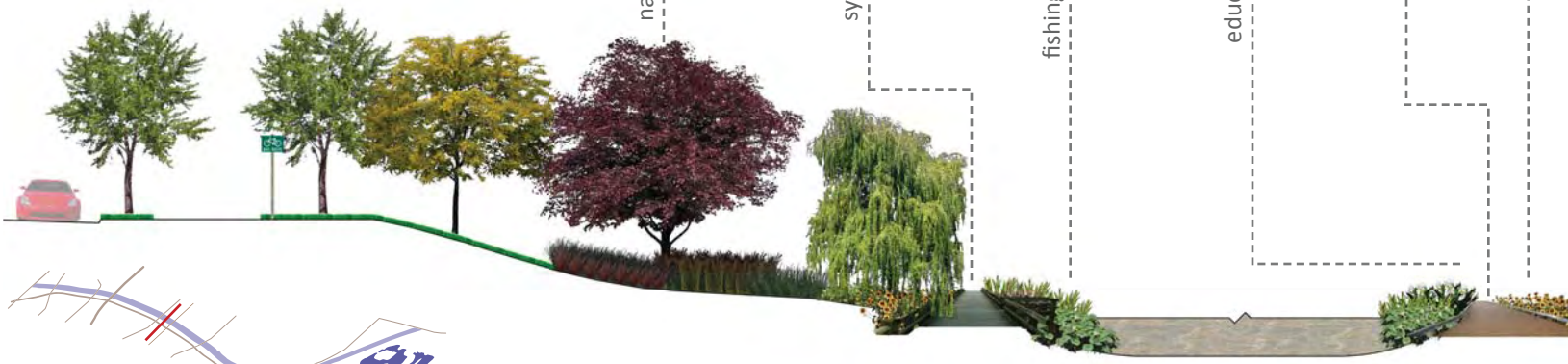
native vegetation

synthetic decking

fishing/ viewing dock

educational signage

flexi-pave



section key

seating

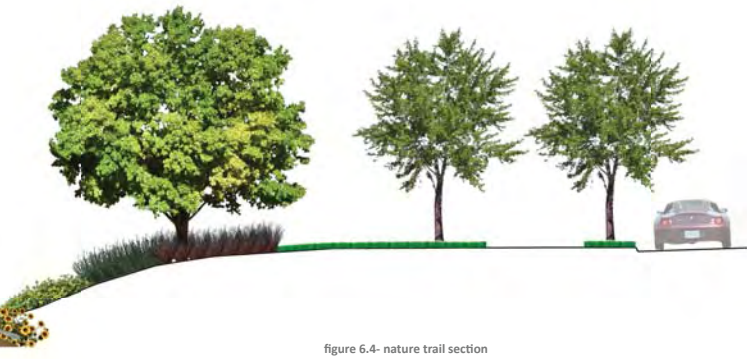


figure 6.4- nature trail section
The nature trail is located adjacent to the river, surrounded by vegetation to give it the feel of a natural environment within the urban context

nature trail amenities

native vegetation
Vegetation that has evolved in a specific region and is therefore more drought and disease resistant. Helps to filter stormwater before it is introduced into the river system and gives the river corridor a natural appeal.

synthetic decking
Made from recycled wood and plastic, synthetic decking has a longer life than a standard wood deck and requires less maintenance.

fishing/ viewing dock
Docks that extend out over the water offering opportunities for fishing or sightseeing. Provides viewers with the sense of being in contact with the water while not being able to directly touch it.

educational signage
Signs to educate the public on the history of Wichita and the Arkansas River as well as the ecological processes happening within the river corridor.

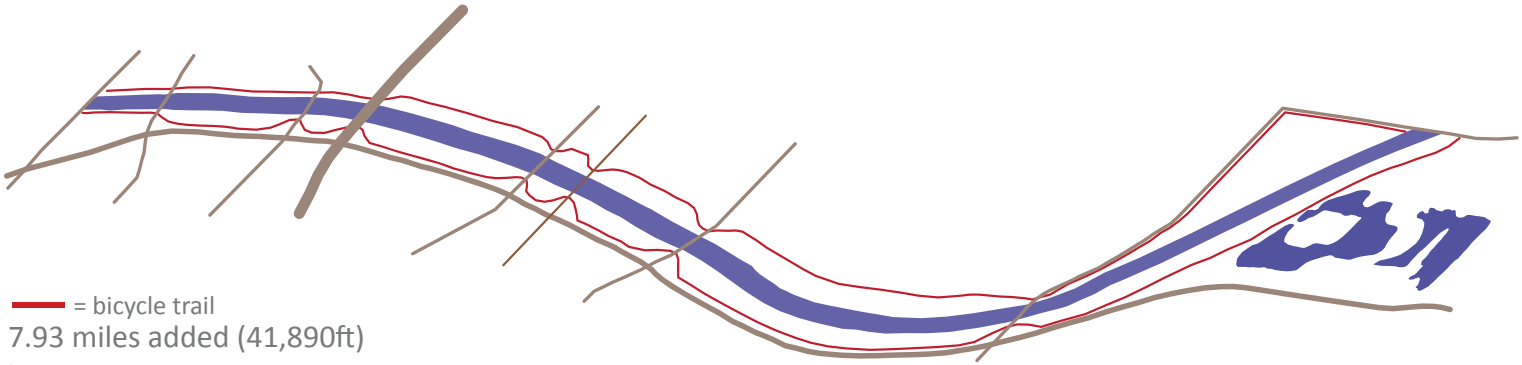
flexi pave
The flexi pave material is a porous, non-cracking material that is made of disposed tires. It is immune to freeze thaw and can withstand loads of up to 30 tons (KBI, 2011).

seating
Seating is incorporated with the fishing docks and along the trail to maximize user comfort.

experience

The Wichita Riverfront offers two different trail experiences; a nature trail and bicycle trail. The nature trail offers an escape from the surrounding urban context through the use of heavy vegetation and strategic materials. Certain amenities are employed along the trail system to provide comfortability and learning opportunities. Seating and fishing docks are cited to allow visitors to rest and enjoy the scenery of the surrounding river corridor. Educational signage is present along the trails to acquaint the public with facts about the history of the city and the river as well as to teach about the ecological processes at work within the river corridor.

Bicycle / Pedestrian trail



= bicycle trail

7.93 miles added (41,890ft)

figure 6.5- bicycle trail location diagram
The bicycle trail, represented by the red line, is located along the upper portion of the riverbank, adjacent to the road in most instances. The bicycle trail is intended to be a cohesive trail system that allows for non-stop traveling along the river

section key

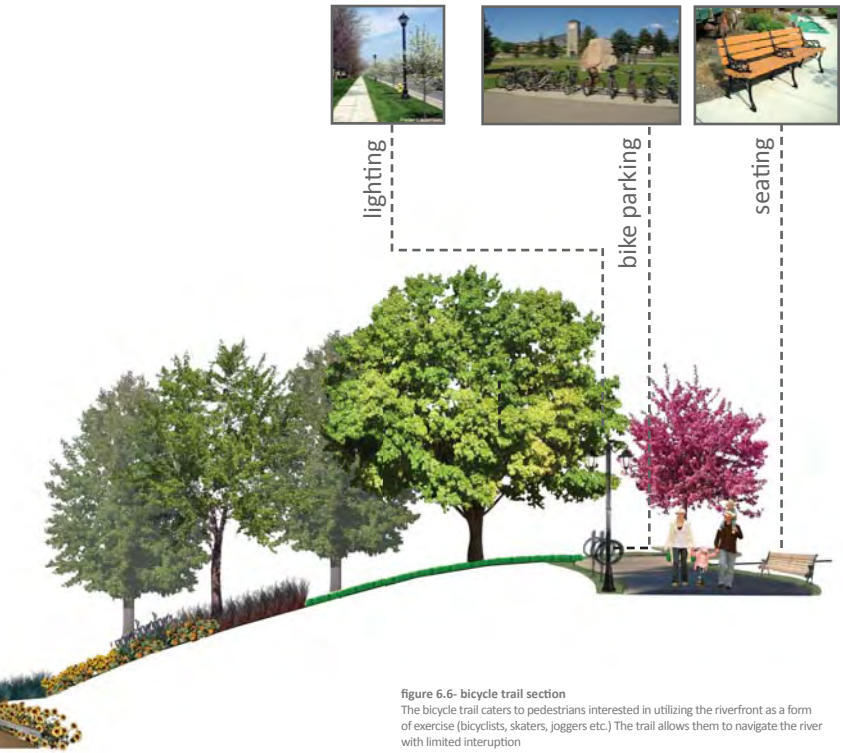


figure 6.6- bicycle trail section
The bicycle trail caters to pedestrians interested in utilizing the riverfront as a form of exercise (bicyclists, skaters, joggers etc.) The trail allows them to navigate the river with limited interuption

bicycle trail amenities

street trees
Trees along McLean Boulevard help to establish a vegetative wall to separate the pedestrian from the vehicles

paved paths
new, paved paths will be established for a smoother, safer ride for visitors enjoying the riverfront on wheels

trail markers
Markers will be introduced along the trails to communicate distances traveled by visitors from certain points. Signage will also be utilized to clearly mark when the bicycle path enters the nature trail to cross under bridges

lighting
Lighting will be incorporated along the riverfront to extend the hours of use, simultaneously making it safer

seating
Seating is incorporated within the 'nodes' set up along the bicycle trail to maximize user comfort.

bike parking
parking will be implemented to allow cyclists to safely lock up their bikes in the event they choose to rest or visit the river's edge

experience

The intent of the bicycle trail is to provide exercise opportunities for a number of users from bicyclist, roller bladders, skateboarders, etc. The trail is designed to be a cohesive link along the riverfront that minimizes the amount of stops. Due to a steep grade change along the river bank, the bicycle trail will be designed to traverse down the slope at 8%, enabling it to connect with the nature trail and safely pass under the overhead bridges. Intersections will be clearly marked to warn oncoming users, and paths will be divided into lanes to allow for seamless merging. 'Nodes' will be set up along the trail that provide comfort amenities to visitors such as water fountains, seating, trash and recycling receptacles, and shade structures.

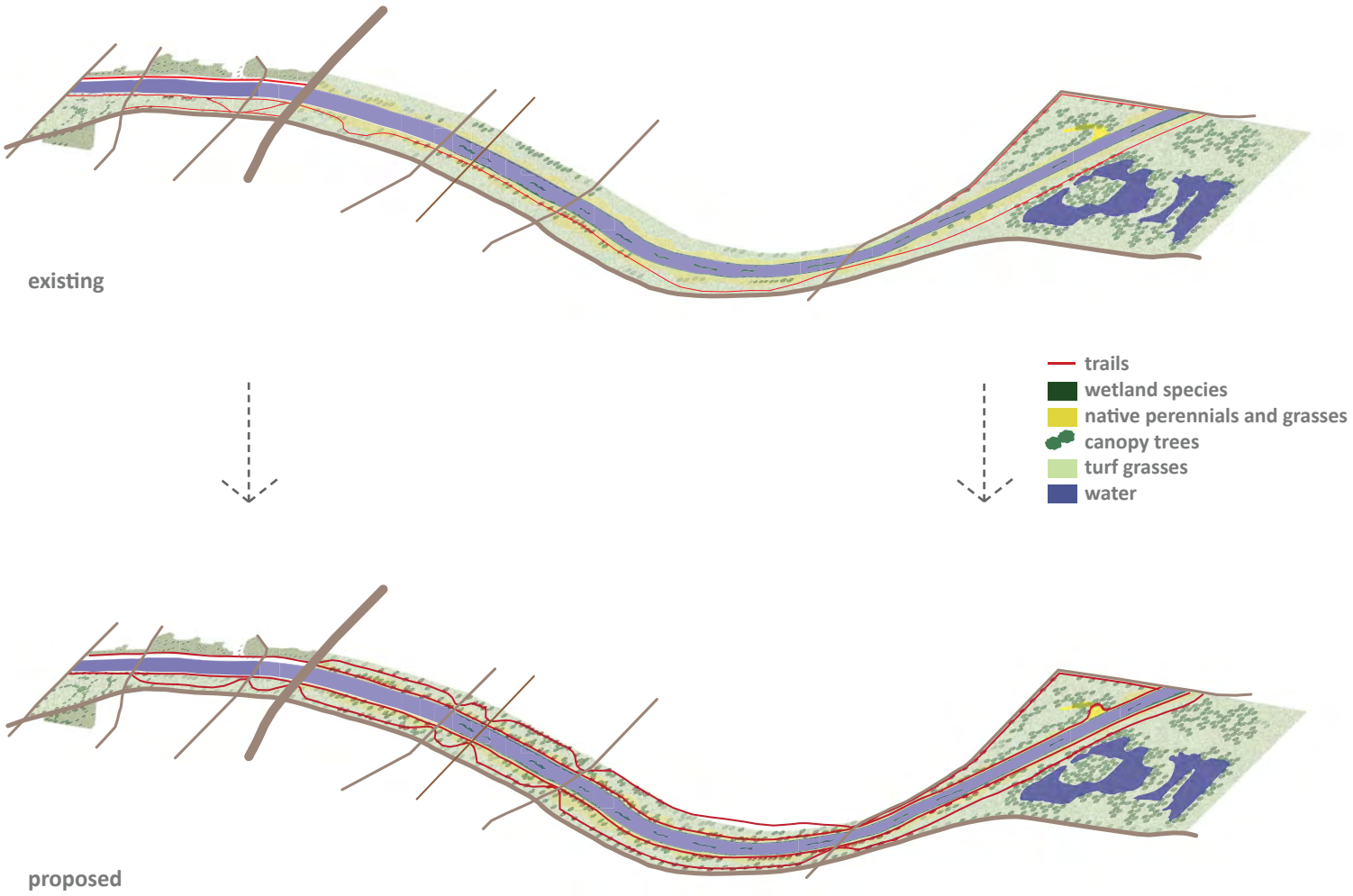


figure 6.7- proposed vs. existing trails
This diagram shows the additions in trails along the river corridor

trails

Due to the commonly deteriorating condition of the existing trails along the riverfront, new trails were implemented to promote safety, enhanced experiences, and stronger connections.

Education signage is implemented throughout the trail system, educating the public on the history of Wichita and the Arkansas River as well as the ecological processes of the river system.

The new trails comply to ADA (American Disability Act) standards, making the river corridor accessible to all.

recreational amenities

recreational amenities goals

•provide a diversity of recreational opportunities along the riverfront to activate a new section of the wichita riverfront

•increase interaction with the water through accessibility, recreational opportunities and education

•maximize the visitors experience along the riverfront through art, lighting elements, and history

•create spaces that encourage community interaction

•make the riverfront more comfortable by incorporating user amenities

recreational amenities program

Programming in this area is designed to give residents a reason to visit the riverfront. Programming includes a safe boat passage, promenade and river welcome center, boating and fishing opportunities, as well as nodes implemented to make the river more comfortable to visitors. Program elements will include boat launches, fishing docks, art, boat and fishing rentals, as well as amenities such as water fountains, seating, restrooms, trash and recycling receptacles.

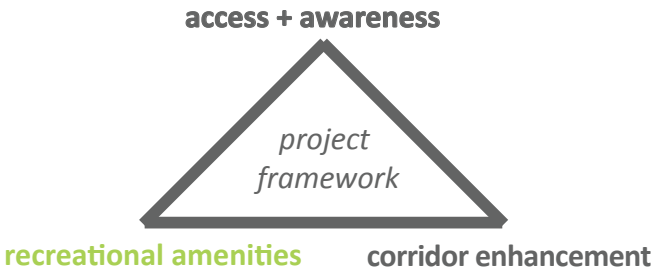


figure 6.8- recreational amenities framework diagram

Creating Nodes

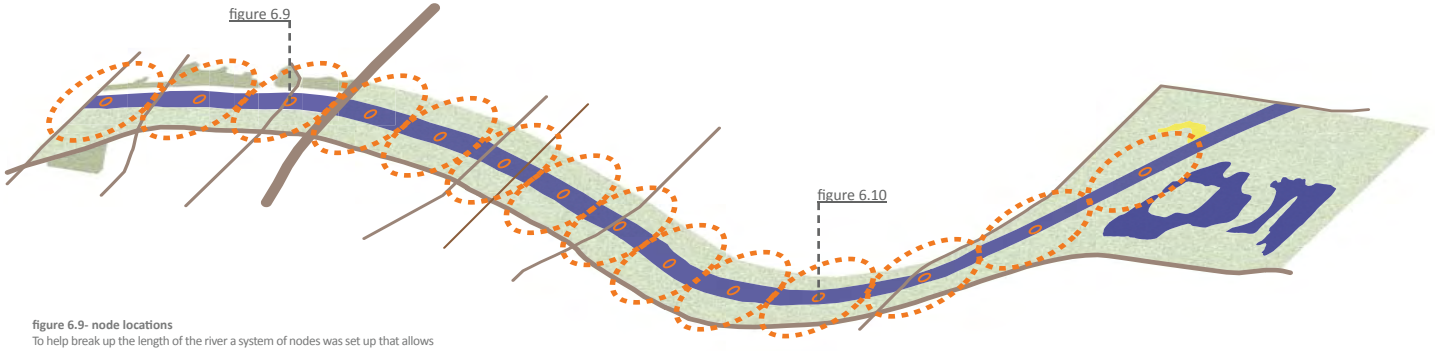


figure 6.9- node locations
To help break up the length of the river a system of nodes was set up that allows visitors to rest and enjoy the river

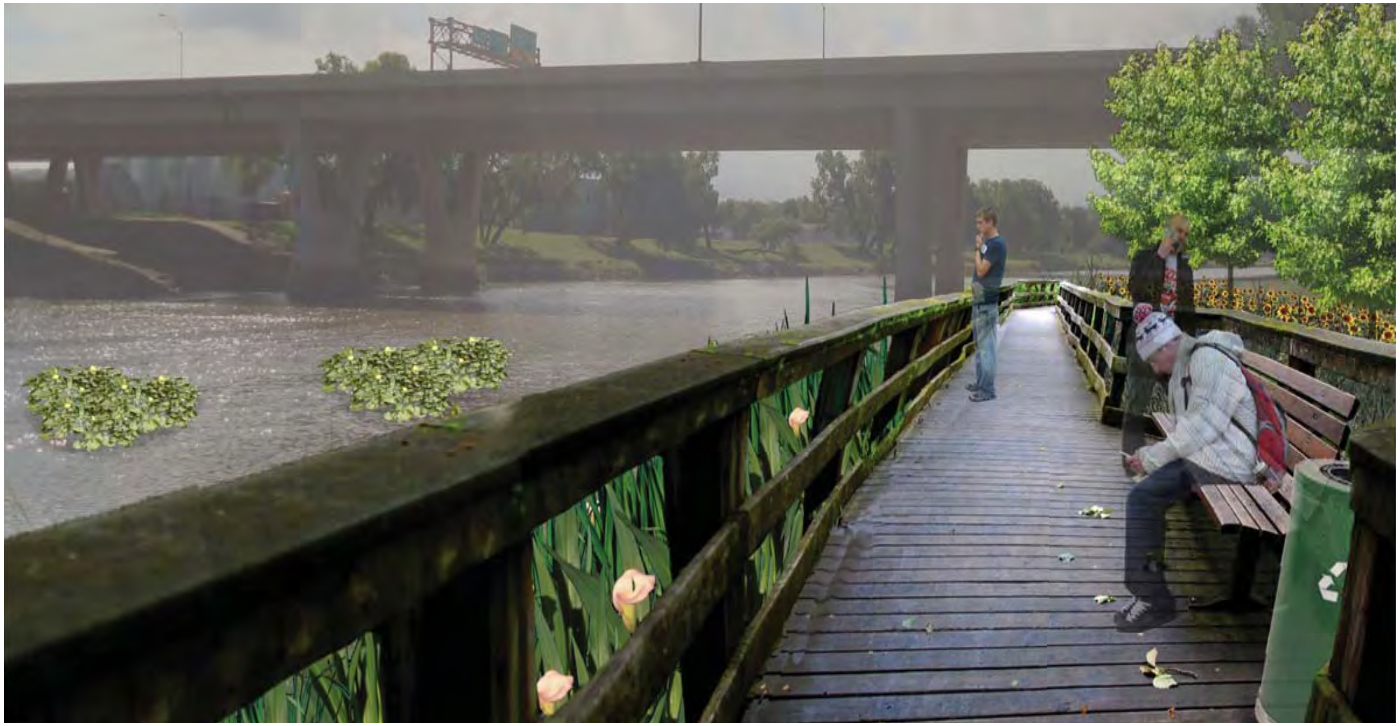


figure 6.10- rest node
Comfort amenities such as seating, overhead structures, water fountains, and trash and recycling receptacles are integrated into nodes to enhance the comfort of visitors on the riverfront

node amenities

seating

Seating was a very strong inclusion in the creation of nodes to provide visitors with a form of rest along the riverfront. The single greatest criticism when residents were asked about this portion of the riverfront was the lack of seating. The lack of seating made the riverfront seem long and daunting

shade structures

Shade structures are incorporated in two forms to protect against the intense Kansas summer sun. Trees are utilized when possible to add to the effect of the natural riverfront as well as promoting a healthier riverfront. Shade structures are the second alternative to provide safe haven from the sun

water fountains

Fountains will be implemented to provide refreshment for visitors and their pets along the riverfront to allow them to stay safely hydrated in the hot summer months.

receptacles

Trash and recycling receptacles will be incorporated with the node systems to promote sustainability and a cleaner waterfront. Educational signage will also help visitors see the impact that garbage and pollution can have on the riverfront.

figure 6.11- amenity node

Amenity nodes along the riverfront allow visitors to rest every 1/4 mile

creating nodes

As seen through the precedent studies, the spacing between amenities along a corridor is the central focus for the creation of nodes. According to a TOD study done by Calthorpe Associates, the average distance a pedestrian is willing to walk is a ¼ mile. Therefore, nodes shall be set up in ¼ mile increments, allowing visitors to rest along the trails, maximizing comfortability along the riverfront. The nodes will start at Delano Park and continue to the Watson and Herman Hill Park area with the Lincoln Street site at the halfway point.

The nodes will be divided between the nature and bicycle trails and will provide easy access from either trail system. The nodes will be equipped with water fountains, seating, trash and recycling receptacles, and shade structures.

User groups

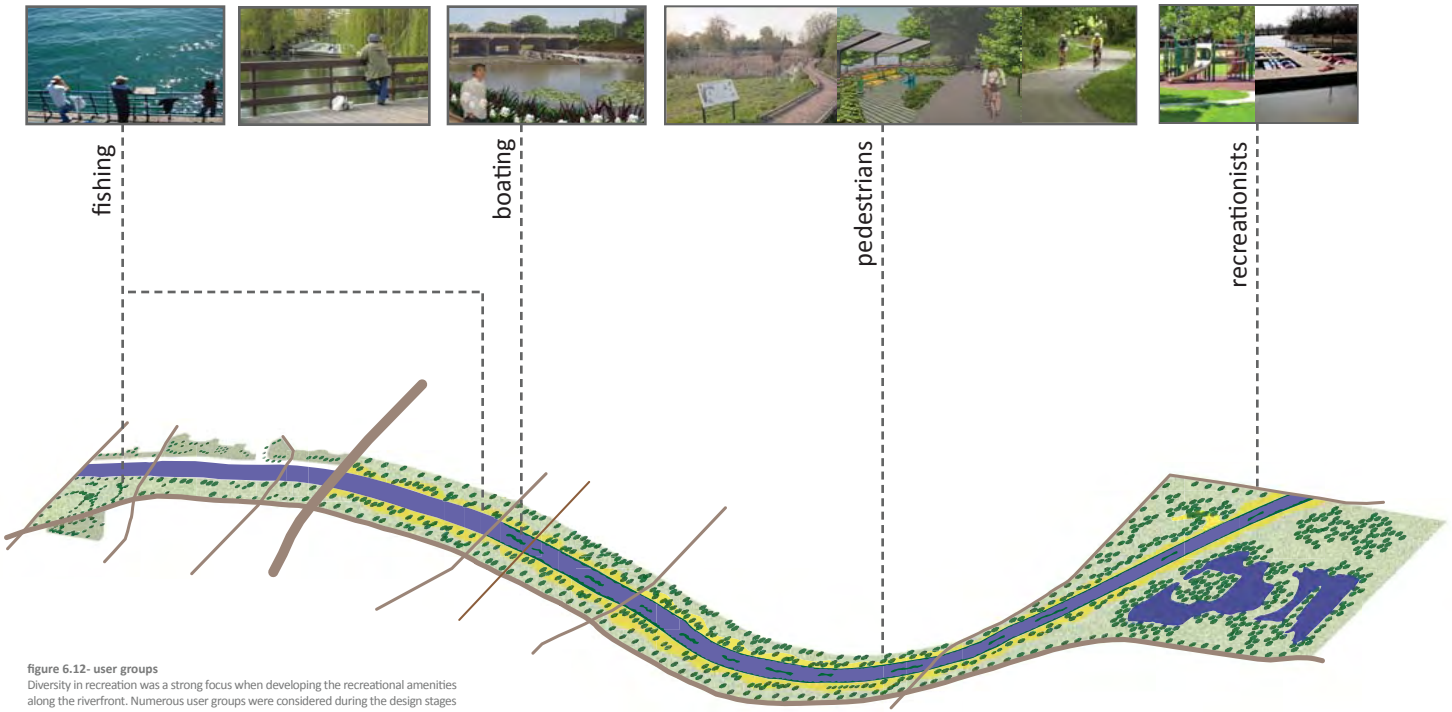


figure 6.12- user groups
Diversity in recreation was a strong focus when developing the recreational amenities along the riverfront. Numerous user groups were considered during the design stages

user groups

pedestrians

This group of users includes bicyclists, skateboarders, roller bladers, joggers, etc. and focuses on utilizing the riverfront as a means of exercise. These visitors employ the trails, most commonly the bicycle trail, along the riverfront. Amenities available to this group include smooth paths, distance markers, seating, water fountains, and bicycle parking.

fishing

The visitors who come to fish on the riverfront have several locations available to them. The Lincoln St. Bridge was designed with a large fishing platform on the north side to accommodate those wanting to fish below the dam. The Bridge features shade structures, fishing rod holders, stools, and viewing platforms for those not fishing.

Several small docks are located along the riverfront, just off the nature trail, that enables visitors to fish in an uncongested environment. These docks also feature seating elements and fishing rod holders.

Users may also visit the Arkansas River Center in Delano Park to rent fishing equipment and purchase bait.

boaters

For visitors piloting the river an important aspect is to have access to a safe and easy means of launching and docking. Located in several places throughout the riverfront are boat launches that allow fluid launching and docking.

The Lincoln St. Dam features a safe boat passage that consists of several small pools that create a series of drops over the eight feet of grade change. Boat launches are located above and below the passage for users who do not feel comfortable with the series of drops.

The Arkansas River Center, located in Delano Park, offers canoe and kayak rental for visitors wishing to navigate the stretch of river from Delano Park to O.J. Watson Park.

recreationist

For those who come to the riverfront looking for recreational opportunities they can find them within Delano Park or O.J. Watson Park. Delano Park features large, open spaces, an interactive fountain, a playground, an amphitheater, the river promenade, and the Arkansas River Center.

O.J. Watson Park features fishing opportunities, paddle boats, pony and train rides, picnic sites, a playground, mini-golf course, and volleyball pits.

corridor enhancement

corridor enhancement goals

•protect and create views within the river corridor
•protect the river from harmful run-off due to on-site stormwater and stormwater day-lighted into the river through pipes
•protect natural systems of the river
•protect existing and create new habitats for flora and fauna that reside with the river corridor
•educate the public on river corridor protection and how they can make positive contributions

corridor enhancement program

Programming for this area is designed to protect the river from current stormwater issues, educate the public, and improve the environment quality of the river corridor. Program elements consist of wetlands, observation areas, educational signage, an interpretive water feature, fish ladder, and habitat creation through wetland areas and trees.

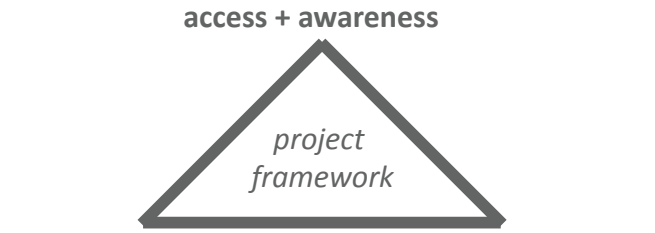


figure 6.13- corridor enhancement framework diagram

Existing vs. Proposed Vegetation

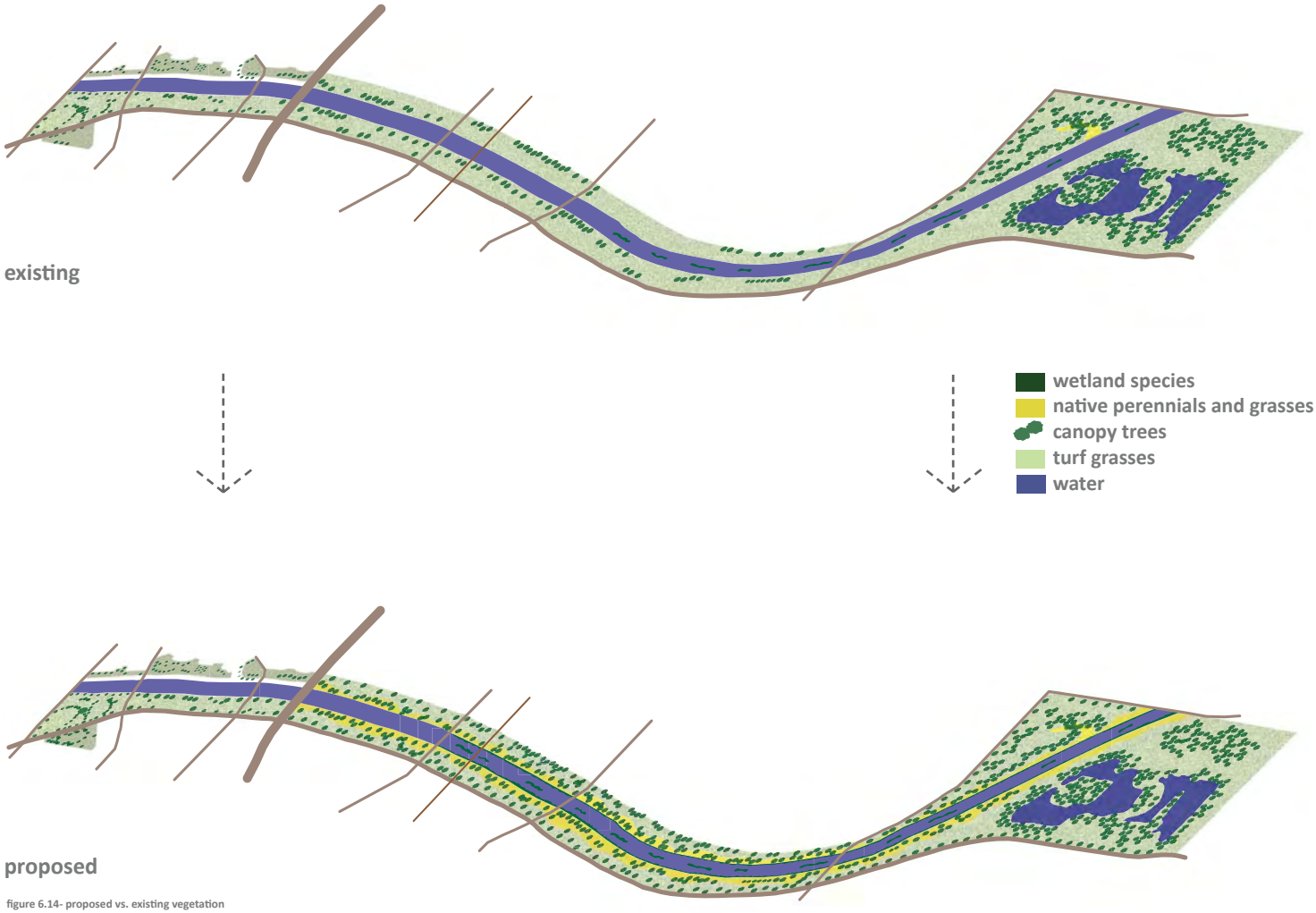


figure 6.14- proposed vs. existing vegetation
This diagram shows the additions in vegetation along the river corridor. Native species, wetlands, and trees were added to help repair the riparian corridor

species selection

Numerous species were taken into consideration during the design of the riverfront. The following species are taken from a list of water-wise plants compiled by the K-State Research and Extension Office of Sedgwick County.

Wetland Species

Dogwood
Spike Rush
Southern Blue Flag Iris
Blue Flag Iris

Native Grasses

Little Bluestem
Prairie Dropseed
Blue Grama
Hairy Grama
Sideoats Grama

Riparian Woodland

American Elm
Shumard Oak
Swamp White Oak
Willow Oak
Northern Catalpa

vegetation

Existing vegetation along the river consists of drought tolerant buffalo grass that is mown on a monthly basis with sparsely placed trees along the river's edge. This creates a riverfront that creates a feeling of desolation, especially in the hot summer months.

An emphasis was placed on repopulating the river's edge with canopy trees, recreating the riparian corridor that was once a part of the Kansas prairie landscape. By doing this, a naturalist riverfront was created that acts as a safe haven of nature from the surrounding urban development.

Native grasses and wildflowers were also introduced to the riverfront to assist in the recreation of a prairie riverfront. These grasses and wildflowers, while providing to the aesthetics of the riverfront, help to filter stormwater that is not only collected on site, but also stormwater that is piped into the site. Throughout the site, 75.53 acres of native perennials and grasses were added along the river's edge.

Wetland plants were introduced along the river to clean up the river's edge. Wetland species will be planted over the rip-rap along the water to mask the unpleasant look of the concrete blocks as certain wetland species can grow root systems through the cracks in the blocks and flourish in the subsoil.

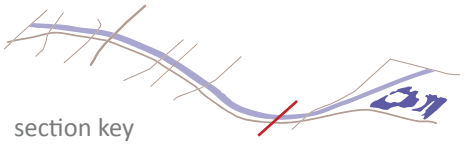
Vegetation Zones

Street Trees

Riparian Woodlands

Native Grasses & Perennials

figure 6.15- vegetation zones
To promote biodiversity within the river corridor, plant zones are implemented that group similar species of vegetation such as native plants, woodlands, and wetland plants



section key

Wetlands

Open Water

plant zones

Five planting zones were established across the site. The first zone consists of street trees which are located on the highest portion of the riverbank, between the bicycle trail and the street. This zone begins the transition from the urban environment to the more natural feel of the river while simultaneously creating a barrier between the busy street and the pedestrian utilizing the bicycle trail.

Next is the riparian woodland, which extends from the lower side of the bicycle trail to the nature trail. This zone provides the riverfront with a secluded feeling as well as providing shade for visitors.

The native species zone falls in the same location as the riparian woodland zone. The purpose of the native zone is to provide a diversity of plants for increased habitat, filter stormwater, and provide to the aesthetic value of the riverfront.

The wetland zone and open water zone are similar in plants and function. These zones treat the river's edge and improve water quality through the use of wetland plants and floating wetlands on the river itself.

Maintenance

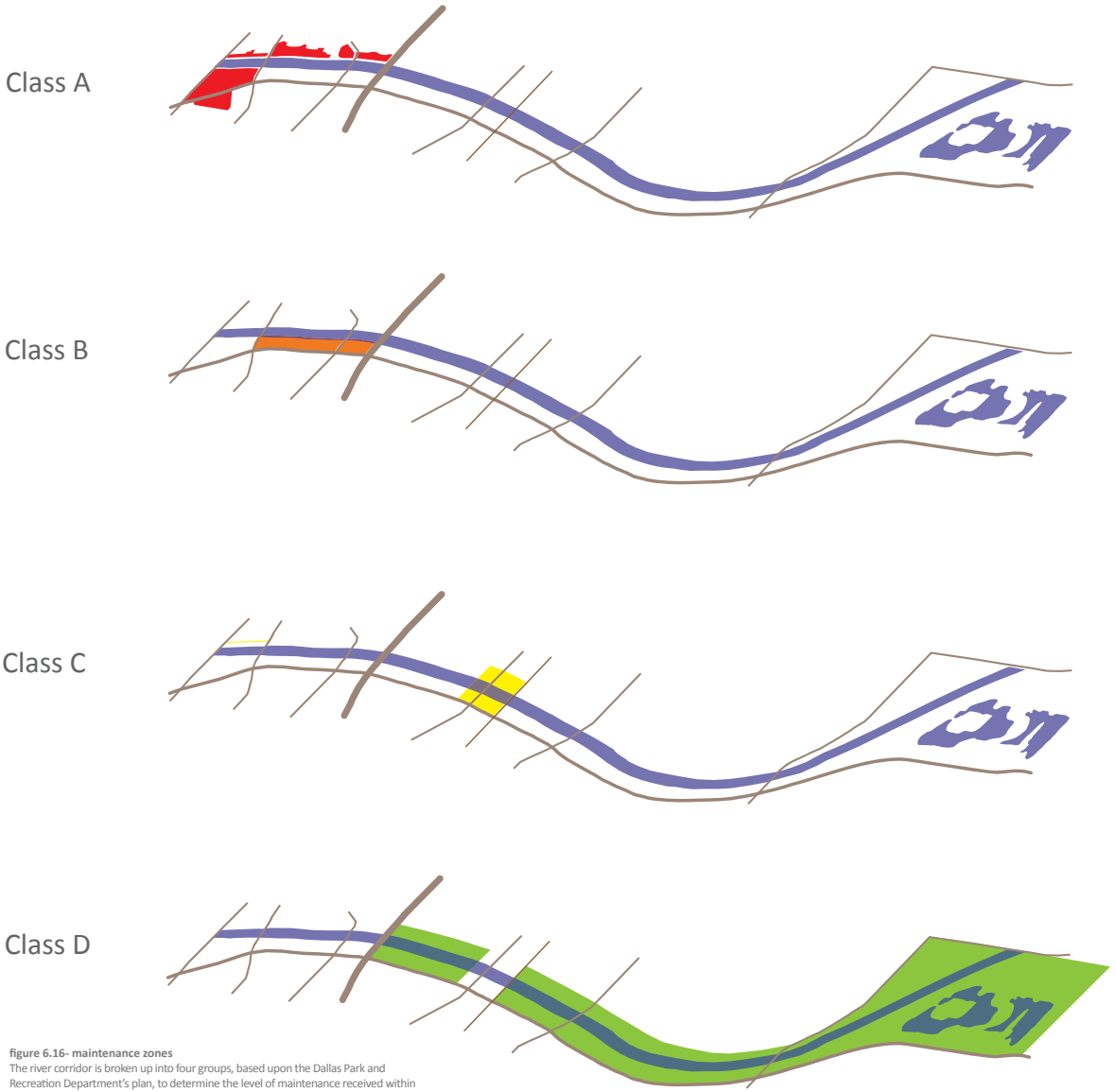


figure 6.16- maintenance zones
The river corridor is broken up into four groups, based upon the Dallas Park and Recreation Department's plan, to determine the level of maintenance received within each section

maintenance

A park maintenance standard has been adopted from the Dallas Park and Recreation Department. The Dallas P&R Department has created a set of guidelines that groups parks into one of four classifications. The classifications, A, B, C, or D, are groups that represent the amount of maintenance that the park receives. The Wichita Riverfront has been analyzed and assigned a category based upon the level of maintenance it is projected to receive.

categories

Class A

1. Horticulture Program-Represents annual or color beds that require a considerable amount of maintenance in the form of hand cultivation, chemical weed control, disease control, fertilization, periodic renovation, etc.
2. Well landscaped with trees and shrubs-requiring a considerable amount of manual labor for proper maintenance.
3. Well developed turf grass-requires much maintenance in order to supply the quality that is desired both aesthetically and for the support of recreation programs.
4. Complete irrigation system, automatic or quick coupler-meaning the system covers the entire Class A area.
5. Extensive development of park facilities recreation buildings, tennis courts, swimming pools, multi-use courts, picnic shelters.
6. Receives regular and intensive litter control.
7. Receives regular tree maintenance.
8. Mowed with hydraulic reel -2-12 day interval

Class B

1. Park is normally well landscaped with trees and shrubs requiring a considerable amount of manual labor for proper maintenance.
2. Well developed turf grass requires much maintenance in order to supply that quality that is desired both aesthetically and for the support of recreation programs.
3. Complete irrigation system, automatic or quick coupler meaning the systems covers the entire Class B area.
4. Extensive development for park facilities-recreation building, tennis courts, swimming pools, multi-use courts, picnic shelters.
5. Often a permanent job station for park caretakers during the growing season.
6. Receives regular and intensive litter control.
7. Receives regular tree maintenance.
8. Mowed with hydraulic reel- 5-12 day interval

Class C

1. No irrigation system.
2. No horticulture program.
3. Mowed with rotary mower on a 10-18 day mowing
4. Receives minimum landscaping in the form of trees must be watered by a water truck.
5. Receives regular scheduled litter control.

Class D

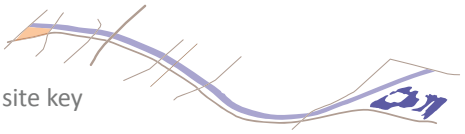
1. Regular litter control.
2. Limited mowing, only in strategic locations, such as, along roadways, or perhaps parking areas- (Once or twice per year)
3. Normally designated as nature areas or greenbelt property.
4. Encourage native grasses, wildflowers and native trees and seeding trees to develop naturally.

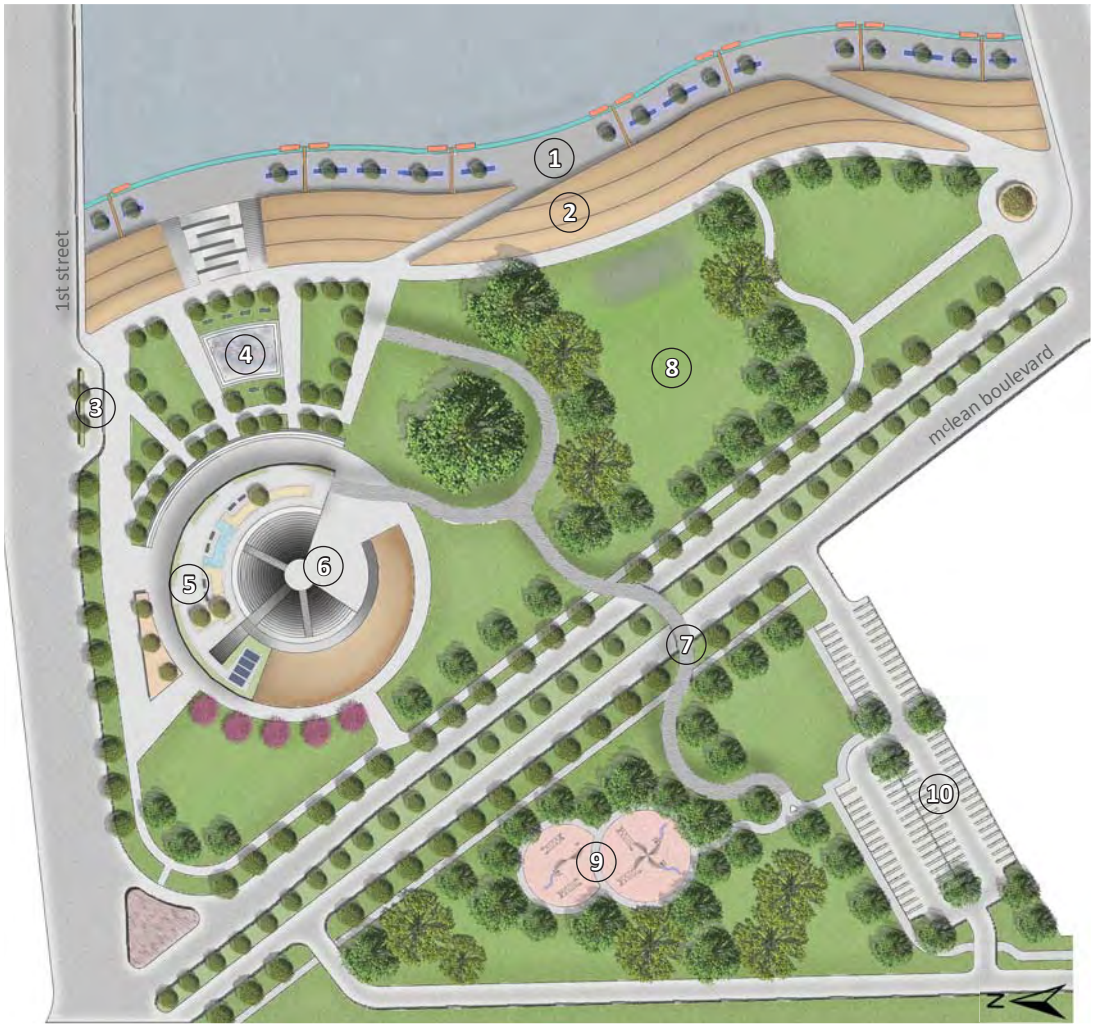
*Plan adopted from Dallas Park and Recreation Department

delano park

delano park
Delano Park is to be designed as a nexus that provides safe connections over the surrounding high traffic streets that currently border it. Slopes will be utilized in the design to create spaces and opportunities for views. Native species will be used to allow for bank stabilization to prevent erosion problems on site. Recreational amenities will be implemented to promote social interaction and human health along the riverfront.

figure 6.17- delano park context map
This map shows the existing Delano Park and its surrounding context





key
1. river promenade
2. bioswale walls
3. transit stop
4. interactive fountain
5. river center
6. amphitheater
7. pedestrian bridge
8. the lawn
9. playground
10. parking lot

figure 6.18- delano park design
This plan shows the design for the Delano Park redevelopment. A supplemental key calls out important features within the park

Delano Park

access + awareness

Delano Park serves as a nexus, connecting major districts and serving as a major access point to the riverfront. A pedestrian bridge is implemented to ensure visitors can safely navigate to the east and west portions of the park, which is split by McLean Boulevard. Once on the west side of the park visitors can access the Delano District, where they can enjoy shopping, restaurants, and other forms of entertainment. With the Delano Pedestrian Bridge and either the 1st Street or Douglass Bridges, connections from the Downtown area are made to the Delano District.

Delano Park also serves as a major access point for users interested in accessing the riverfront via vehicle. A parking lot that can accommodate approximately ninety vehicles is located south of the playground on the western portion of Delano Park. Visitors can utilize this parking lot and safely cross the Delano Pedestrian Bridge and have access to the riverfront.

Lighting has been added to Delano Park to ensure safety during the evening hours. Street lamps have been placed throughout the park as well as an artistic feature dividing the promenade.

recreational amenities

Delano Park is to be the home of the Arkansas River Welcome Center. The River Center provides educational opportunities, boat and fishing rental, a gathering space, and a display for local art. The river center has a green roof that allows visitors to access sensational views of the Wichita skyline and enjoy private, relaxing spaces. The interactive fountain in the River Center plaza provides cooling activities from the summer sun while simultaneously educating users on the route and key features of the Arkansas River.

Built into an existing hill and connected to the backside of the River Center is an amphitheater that can hold approximately ninety to one hundred guests. The amphitheater is designed to be a multi-use space that skaters can utilize when the amphitheater is not in use.

Across the street, accessible by a pedestrian bridge, is a playground, tucked into a grove of trees to separate the space from the adjacent McLean Boulevard. Fencing is also used around the playground to ensure children cannot slip away from their parents view.

runnels

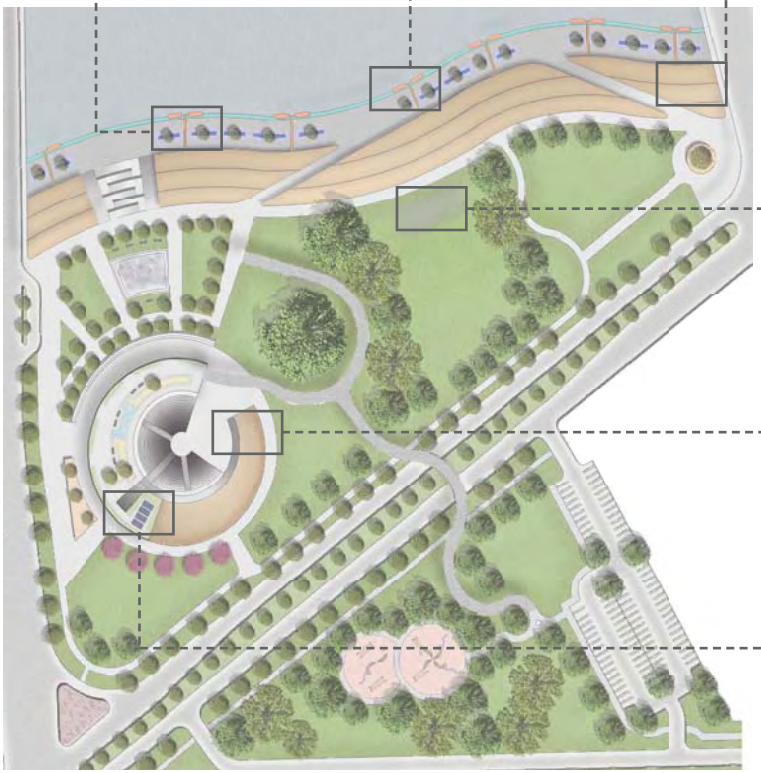
runnels help to transport filtered water from the bioswale walls to the river itself. Water can be seen moving through these open channels and, along with supporting signage, will help to illustrate the process of creating a cleaner river corridor

shade structures

the solar powered shade structures offer night fishing opportunities with minimal energy consumption. The solar panels collect energy during the day time hours and then utilize that energy to provide lighting during the night time hours for fisherman

bio-swales

the bioswale retaining walls take on-site stormwater and allow it to be filtered through the vegetation and give the water opportunities for infiltration. The water is then distributed into the river through the runnel systems



grasscrete

grasscrete will be implemented within a small area of the open lawn area. This area can be utilized by the Park and Recreation Department to park their portable stage in the events of concerts on the river, while not tearing up the lawn and allowing water to percolate

native species

native species are implemented throughout Delano Park and the river corridor for numerous reasons. Having adapted to this region native species require less water, have a defined root system which helps with stabilization of slopes, and require less maintenance/ pruning

green roof

the green roof of the Arkansas River Center is implemented for numerous reasons. The plant material helps to reduce the urban heat island effect on what would otherwise be asphalt or shingles as well as creating a usable space with supreme views of the downtown area

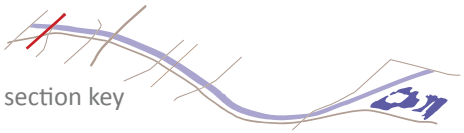
figure 6.19-bmp diagram
BMP's (Best Management Practices) are implemented throughout Delano Park. The above diagram calls them out and gives a description and the benefits of the BMP

corridor enhancement

Delano Park employs several BMP's (Best Management Practices) throughout the park to help enhance the river corridor.

1. Bioswale terraces are used to treat the eighteen to twenty foot grade change along the river's edge. These terraces, with native plants, collect and filter stormwater allowing for infiltration before the stormwater is released into the river system.
2. Grasscrete blocks are utilized on the large performing lawn in a small area just off the walkway. When large events are to take place, as they do during the Wichita River Festival, the Park and Recreation Department can place their portable stage on said area. Grasscrete creates green spaces that are reinforced with stone pavers to allow for high traffic while simultaneously allowing water to percolate into the soil instead of running off a paved surface.
3. The Arkansas River Welcome Center features a green roof that is accessible to visitors. Not only does the green roof provide sensational views of the river and the Wichita skyline, but also it helps to reduce the urban heat island affect by minimizing the amount of paved surfaces.
4. Native grasses are used throughout the park. The bioswale terraces use native species to help filter stormwater before it enters the river system. Native grasses are also planted along the backside of the amphitheater to help stabilize the steep slopes. Native species provide an advantage as they have already adapted to the region and have sizably larger root structures, making them more drought tolerant.
5. Educational signage is added throughout the park to compliment the monuments to Wichita history that Delano Park already offers. Signage is intended to educate the public on the processes of the water cycle and the river, filtration by vegetation, habitats, and the history of Wichita and the Arkansas River.
6. Solar power shade structure are implemented along the rivers edge to create opportunities for night time fishing while minimizing energy use throughout the park. The structures store energy during the day and utilize that energy during the dark hours to provide light

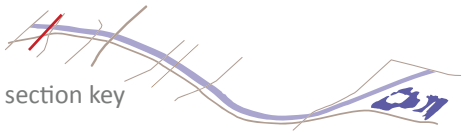
figure 6.20- delano park cross-section
This section illustrates the relationship of features from one end of the park to the other end.



Playground

Pedestrian Bridge

figure 6.21- river center and plaza
This section shows the Arkansas River Center and the adjacent river plaza in relationship to the rivers edge



Amphitheater

River Center


River Center
River Center Plaza
Bioswale Walls
Promenade


River Center Plaza

figure 6.22- playground
A playground is located on the west side of McLean Boulevard, accessible from the main park via pedestrian bridge. The playground is surrounded by trees and a fence to provide a buffer from McLean

figure 6.23- promenade
The river promenade is designed as a circulation space that can support recreational opportunities. Seating, boat launches, and fishing areas are located along the promenade

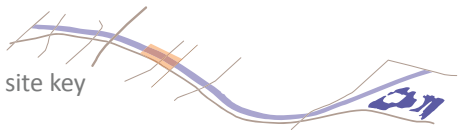
lincoln street

lincoln street
Lincoln Street is to be designed as a spot where residents can continue to fish under the dam. A kayak run and fish ladder will be implemented to combat the change in grade created by the dam. Native species will be used to combat erosion problems along the steep sections of the riverbank. Safer connections will be established to connect the riverfront to the adjacent areas.

figure 6.24- lincoln street context map
This map shows the existing lincoln street site and its surrounding context

figure 6.25- lincoln street design
This plan shows the design for the lincoln street site. A supplemental key calls out important features within the park

key
1. nature trail
2. bicycle trail
3. fishing platform
4. dam
5. fish ladder
6. safe boat passage
7. boat launches
8. parking
9. wetland areas



lincoln st. dam

access + awareness

The Lincoln St. Dam Site was designed with the concept of breaking urban and environmental barriers. The environmental barrier, being the Lincoln St. dam, is broken through the implementation of a safe boat passage and fish ladder.

The safe boat passage consists of a series of twenty-five feet by twenty-five feet pools that drop in increments of one and a half feet which allow boaters to safely pass around the dam without having to exit the river and portage around the dam. This passage creates a cohesive river for boaters, allowing them to navigate the river without any interruptions.

Due to the number of threatened and endangered species of fish within the Arkansas River identified by the Kansas Department of Wildlife, a fish ladder was implemented to help protect these species. The fish ladder utilizes the same concept as the safe boat pass, only allowing fish to navigate upstream if they desire. The fish ladder consists of five feet by five feet engineered pools that ascend in one foot increments. This creates heights that are more manageable to allow the fish to leap from pool to pool and eventually navigate around the dam.

The prominent urban barrier is McLean Boulevard which separates the adjacent neighborhoods and West High School from the riverfront. It was decided that the quantity of visitors coming from this area did not necessitate the use of a pedestrian bridge. Therefore, the existing stoplights are used along with improved signage to implement a crosswalk that is much safer for pedestrians.

recreational amenities

The Lincoln St. Bridge was designed to preserve and advance the possibilities for fishing within the area. The newly designed bridge features a fishing platform that allows visitors to cast off and fish just below the dam. The fishing platform provides shade structures, rod holders, stools, and viewing platforms for those not fishing. Smaller docks are also located throughout the site that allows users to fish in a less populated environment.

Boating becomes a large recreational amenity with the inclusion of the safe boat passage. By designing a series of twenty-five feet by twenty-five feet pools that drop in increments of one and a half feet, small, non-motorized crafts can safely navigate around the dam without portaging. Safety rope and buoys have been placed above the dam to make sure stray kayaks cannot run over the dam and capsize. Boat launches are placed above and below the dam for those who would prefer to portage rather than run the course.

The Lincoln St. Site also features grassy hills where visitors can enjoy passive forms of recreation such as relaxing, sunbathing, or enjoying a picnic lunch.

figure 6.26- lincoln street
The lincoln street site features the safe boat passage, a fish ladder, fishing platform, and spaces for relaxation

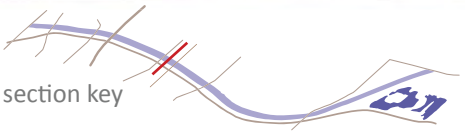
corridor enhancement

Above the dam the grade change from the street to the river's edge averages twelve feet, while below the dam the grade change increases dramatically to around twenty-two feet. Native grasses and wildflowers are implemented on the riverbanks to help stabilize the steep slopes and filter stormwater runoff. The native plants large root structure helps stabilize soils and hold them together, preventing erosion in large stormwater events.

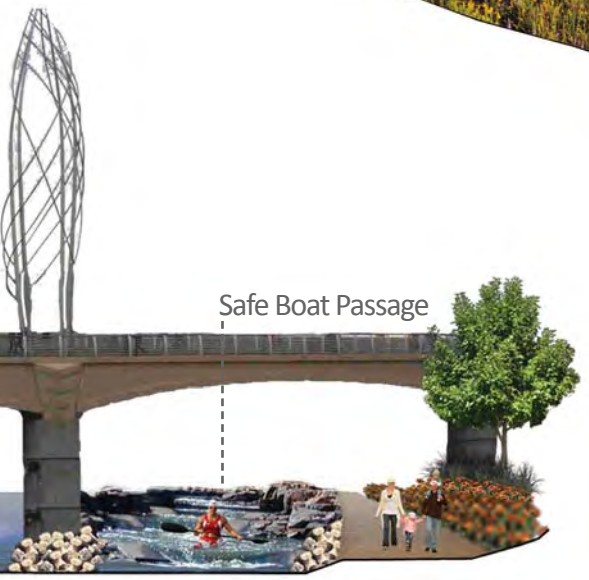
Due to large grade changes below the dam, small islands are found within the river, largely in part to the decreased water level. Wetlands species have been installed to help establish improved water quality in the river as well as providing visual aesthetics to the river corridor. Floating wetlands will be implemented throughout the river corridor as well.

figure 6.27- street to river's edge
This section illustrates the grade change from the street to the river's edge

figure 6.28- fish ladder and boat passage
The fish ladder and safe boat passage help to break the barrier of the lincoln street dam



Nature Trail



Project phasing

Phase 1- nature trails

Phase 2- vegetation

Phase 3- bicycle trails

Phase 4- delano park improvements

Phase 5- lincoln st. improvements

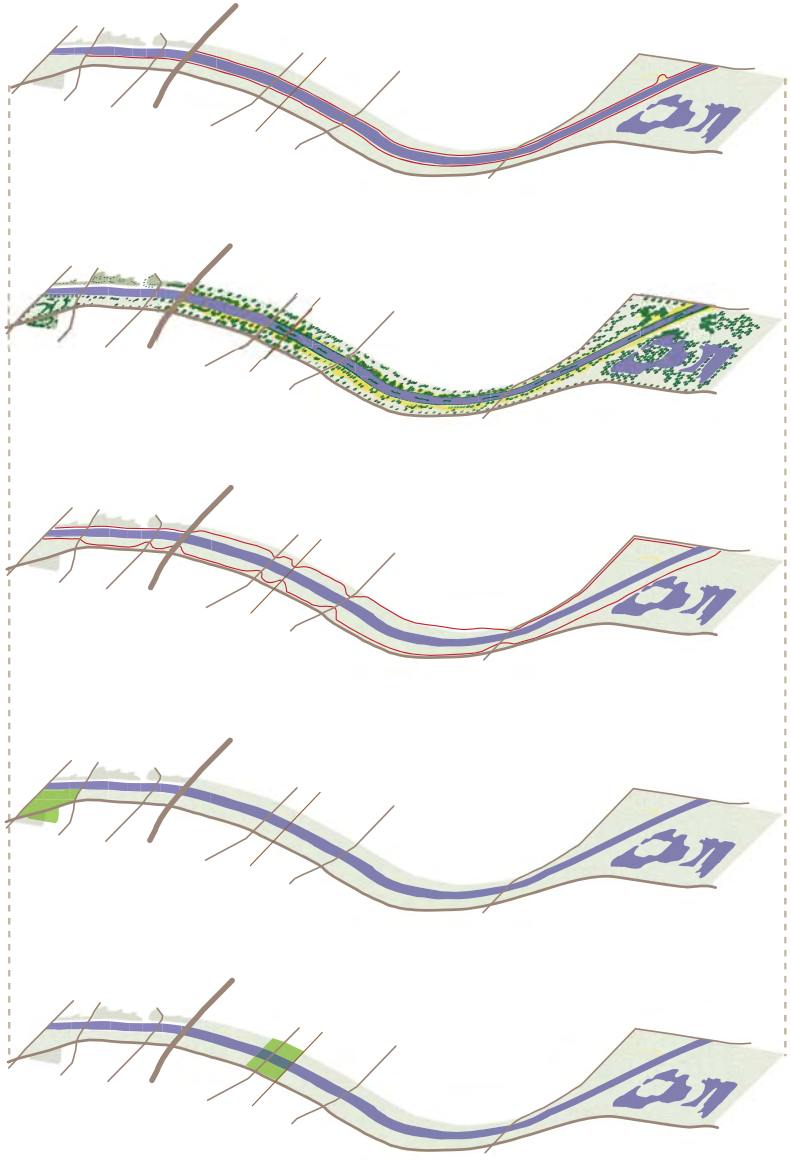


figure 6.29- phasing
The phasing of the riverfront breaks the project up into manageable pieces that can be paid for one at a time

phasing

Phasing was created to break the project into manageable pieces that could be paid for at one time. The phasing was strategically broken up to create spaces that can immediately begin to draw visitors to the riverfront, compounding through each additional phase. The phasing begins with the nature trail, creating connections and bringing residents to the rivers edge. Proposed vegetation is implemented next to enhance the river corridor as well as completing the nature trail. The bicycle trail is implemented next to give residents a route along the river with minimal interruptions. Finally the delano park followed by the lincoln street sites are developed to give residents spaces to recreate.

[7] reflection

This chapter reflects on the master's report and identifies its successes and its shortcomings. The process and framework are analyzed to determine if the project goals laid down at the beginning of the project are achieved

“We learn more by looking for the answer to a question and not finding it than we do from learning the answer itself.”

-Lloyd Alexander

reflection

This chapter reflects on the process and success of the framework for the master's report. It discusses the successes and shortcomings of several aspects of the project and provides suggestions for alternative options that could be implemented to make a stronger report.

process

Throughout the project an underlying framework was utilized in the research, inventory, and design to create a strong end product that focused on several key aspects. In the end the shortcomings of the framework set up for the Wichita Riverfront was its late development in the project. Due to project refinement throughout the first semester, the framework was not fully developed and applied until the beginning of the second semester. While a general sense of the framework was apparent in the first semester, the work done in that time did not fully comply with the final, refined framework. This problem is hard to avoid, as project refinement was necessary to ensure that the project was headed in the direction desired. A possible solution would have been to emphasis the underlying concepts early on, to assure that the project is developed around these principles.

access + awareness

Creating connection along the riverfront became difficult due to the business of McLean Boulevard. Connections were to be established from the river, across McLean, to the adjacent neighborhood and West High School. However, crossing McLean posed several problems. Current crosswalks do exist, yet due to the large quantity of traffic and the speed at which it travels the crosswalks still seem unsafe to residents. Unfortunately, there is not enough pedestrian traffic in this area to warrant the building of a pedestrian bridge.

This aspect of the access + awareness category was a shortcoming that was not addressed in detail within the project due to a lack of solution. An afterthought to the problem was that increased visibility could potentially help to solve the problem. While there are crosswalks located at intersections, drivers are not always aware of them, possibly due to fact that they are poorly marked or the relatively little use they receive. Increased visibility, such as flashing lights, could help to draw attention to crosswalks, making them safer to utilize.

recreational amenities

Diversity of recreational opportunities was a concept that was enforced early on the project through literature reviews, research, and precedent studies. The greater the diversity in recreational opportunities, the broader the visitor base that accesses the site becomes. Through the inclusion of this concept into the Wichita Riverfront project the recreational amenities portion of the thesis was resolved. Residents of Wichita now have numerous reasons to visit the riverfront, and can enjoy the site as an amenity for numerous years to come.

corridor enhancement

Erosion concerns on site were addressed through the introduction of native grasses and perennials. The root structure of the native species helps to stabilize and hold together the soil on the steep riverbanks. What wasn't taken into consideration with the inclusion of the native species was the public's view of the grasses and native perennials. In some instances the public has been known to see these plants as sloppy and messy. Often times they are mistaken for weeds. While this aspect was not considered when designing several aspects were integrated into the design that could potentially solve the problem. A maintenance plan was adopted from the Dallas Park and Recreation Department that will help to contain the native species and make certain they are not neglected. The second aspect was educational signage implemented along the riverfront. Similar to the Landscape Architect's appreciation for native plant material through his/ her education on the material,

framework

After reflection on the framework and the implementation of the different framework categories it became apparent that the framework was meant to work as a single unit. To create a successful riverfront project all aspects of the framework need to be implemented at the same time. The inclusion of recreational amenities will go unused without safe connections along the riverfront so visitors can safely access them and vice-versa.

[8] appendix a: literature reviews

This chapter reflects on the master's report and identifies its successes and its shortcomings. The process and framework are analyzed to determine if the project goals laid down at the beginning of the project are achieved

ARCAP: (Arkansas River Corridor Access Plan)

History and Purpose

"The Arkansas River Corridor Access Plan was developed to evaluate the possibility of creating recreational opportunities by utilizing existing access points and assess possible future access points. The river corridor extends from the Rice and Reno county line downstream to the city of Oxford, Kansas."

The Master Plan called for three types of access points:

1. "*Primary access points*- are expected to have high use rates and recreational amenities including boat ramp, extensive parking, and restrooms. These could also include camping, showers, and electricity"
2. "*Secondary access points*- include an access path, up to 10 parking spots, boat trailer parking and restrooms"
3. "*Primitive sites*- are in rural and natural areas where reasonably safe access is available including a trail to the River, off road or pull over parking for a few cars, and possibly a place for a boat trailer. These sites would be in solitary reaches where minimal disturbance of the natural setting would be expected"

Kansas ranks near last nationally for public land. The Ark River is one of three public waterways in the state and the only one in its region. The developers of this plan decided it was time to use this public waterway as an asset for the communities to utilize.

Goals of the Plan

The overall goal of the ARCAP is to establish the Arkansas River as a primary recreational opportunity. To do this they

1. "Protect the natural amenities and character of the Arkansas River corridor"
2. "Develop a Master Plan for recreational river access"
3. "Develop access points for recreation"
4. "Design access point types and supporting facilities"
5. "Develop prioritized list of access points"
6. "Build public awareness and support for the Project Vision"

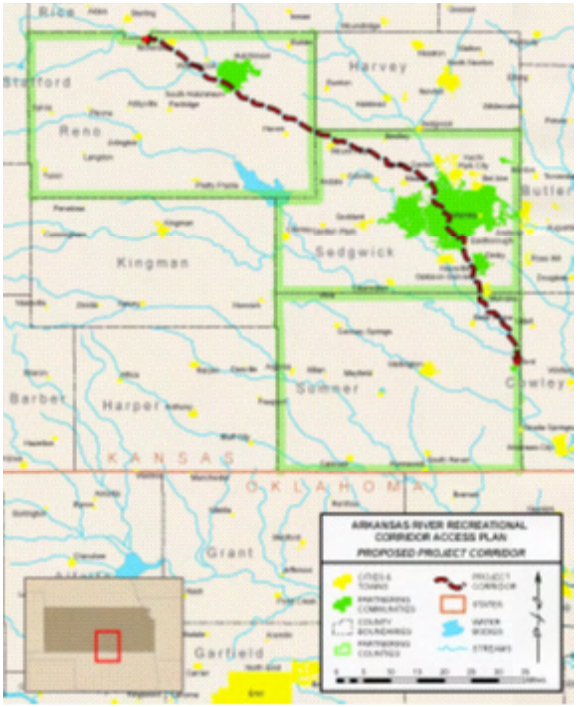


figure 8.1- proposed corridor
Proposed corridor for the Arkansas River Corridor Access Plan

Site Selection
The committee invited the community as well as local and state officials to sit down to a few public meetings where opinions where sought and designers mingled with the "future users" to distinguish what the public desired. After these meetings the design team came up with a method for site selection and began the site

figure 8.2- site selection criteria

Implementation
After site selection factors were analyzed and a suitability assessment was completed the committee took the information and based on maximizing recreational use chose 13 different areas to implement several strategies. The 13 areas are as follows:

21st Street recreational transition:
Description: This consisted of a safe passage over the dam obstruction
Objectives:

1. "Design and construct a recreational transition that provides safe passage over the dam obstruction"
2. "Develop enhanced access upstream and downstream of the transition to accommodate increased numbers of users"
3. "Design and construct streamside observation and picnic areas for those watching family and friends floating the reaches and participating in events"
4. "Signage is needed for both warnings and information. Signs are needed upstream from each site as warnings of rapids and that portage is required to avoid them"

Lincoln Street recreational transition
Description: This consisted of a safe passage over the dam obstruction. Similar concepts and objectives as the 21st transition

Mile 782, 151st Street
Description: The terminus of a long reach without paddle access.

Mile 772, Kingsbury Tract
Description: Access point will be included in development of the future Kingsbury Park

ARCAP continued

Mile 767, the Tubes Takeout along with Kansas Department of Wildlife and Parks
Description: A portage site upstream from the Tubes, a hazard for inexperienced boaters

Mile 767, 21st Street, Wichita
Description: This consisted of a safe passage over the dam obstruction. Similar concepts and objectives as the 21st transition

Mile 764, Sim Park
Description: An essential portage site around the Lincoln Street dam. Also a launch site for passage over the dam

Mile 763, Gander Mountain
Description: Funding and promotional resource

Mile 762, Lincoln Street Takeout and Launch Points
Description: Establish portage at dam obstruction

Mile 760, Watson Park
Description: Alternative take out downstream from transition at Lincoln St. dam
Mile 760, Herman Hill Park
Description: Alternate take out downstream from transition at Lincoln St. dam

Mile 758, Garvey Park
Description: Enhancement to existing site

Mile 751, 71st Street
Description: Take advantage of greenspace for native landscapes and added amenities

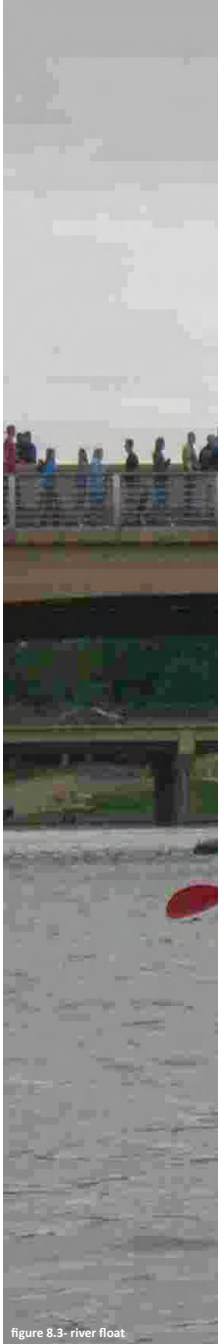


figure 8.3- river float

Images of America: Wichita (1860-1930)

by Jay M. Price

History of Wichita

In 1803, by putting pen to paper, United States President Thomas Jefferson doubled the size of the newly formed country. The Louisiana Purchase secured the better part of 13 states from the Rocky Mountains to the Mississippi River from the country of France. As the newly purchased land was explored many traders, merchants, and buffalo hunters congregated at the confluence of the Big and Little Arkansas. A settlement was established by the U.S. government during the Civil War that quickly gathered in number. After the Civil War the Native Americans (namely the Wichita Indians) where relocated to present day Oklahoma. The population began to increase as pioneers started to settle the area and plant crops. A number of cattle and railway trails were established, most famously the Chisholm Trail, through the Wichita area. It wasn't long after that James R. Mead and William Greiffenstien realized the potential and formed the current day city of Wichita.

Arkansas River Confluence

Flowing from the Rocky Mountains to the Mississippi River, the Arkansas River was a major trading route for the Native Americans. Being a nomadic tribe, several tribes of the Wichita Indians took up residence at the confluence of the Little and Big Arkansas River for part of the year. The tribes found that the fertile soil in the area was opportune for harvesting crops.

In the 1830's, a few decades after the Louisiana Purchase, settlers began to migrate to the area to trade with the Indians. During the Civil War the Indians were relocated to the area by the U.S. Government to separate them from the southern activists. After the Civil War the Native Americans were then relocated to Oklahoma so the settlers took over the area.

The Wichita Eagle wrote an article illustrating the fact that from the 1870's to the 1880's many settlers used the river to travel from Colorado to Wichita by navigating up and down the river except for a few months during the fall when the river was low.

This continued until the state of Colorado developed and required more water to sustain its endeavors. After blocking the river the water level dropped and made the river non-navigable by barge. However, by this time the city of Wichita had already developed and had reliance on other resources than navigability of the river.

By the later 1860's focus on the region's major industry changed from buffalo to cattle. With this industry change brought a large focus on agricultural endeavors. As technology developed into the 20th century major companies such as Coleman and Cessna helped shape Wichita into what it is today.

Recreation and Tourism as a Catalyst for Urban Waterfront Redevelopment

by Stephen Craig-Smith and Michael Fagence

Root of the Problem

Water has long been an attraction for the development of cities. In the early stages of a developing city a major river can provide a means of transportation, shipping for materials and food, a line of defense, a source of drinking water and a means of power if harnessed. Urban waterfront renewal emerged in the 1970's after many waterfronts became unused and dormant due to changing methods of transportation.

The book identifies two groups that utilize the river; the group that uses the waterside as a means of residence, place of work, or recreation and the group who view the river as a public resource.

Each group has its own focus, for example, if the principal consideration for the river is recreational use the factors may be accessibility, parking, variety of open space facilities, and quality of the water and sports areas, mainly environmental quality. However, both groups search for similar solutions to the problem. Planning for the redevelopment of our urban waterfronts require creating solutions that incorporate different principles from traditional land-use planning concepts.

Case Studies

Baltimore- Baltimore is a city that was founded along the headwaters of the Patapsco River. Baltimore flourished because it could export tobacco, wheat, iron, and copper so easily. Baltimore saw the height of its industrial capacity around the time of World War II. Since then Baltimore has been facing industrial decline and it was the business community that decided something needed to be done. The community agreed that the project was too large to be undertaken all at once. The first part of the waterfront to be undertaken was a 32-acre site called the Charles Center. A high priority for this redevelopment was focused on recreation. Throughout the whole waterfront over 87 acres was dedicated to open space. A wide promenade was constructed connecting a series of recreation areas which included playing fields, stands for over 4,000 spectators, picnic sites, and open parks. The U.S. frigate Constellation, which is the oldest fighting war ship of the United States, was displayed in the Baltimore harbor for visitors to view.

The City of Baltimore hit a snag in 1971 when they were hit with cutbacks of federal funding.

To counter the City started an aggressive campaign to attract visitors to the site using fire-boat displays, concerts, boat races and parades.

The Baltimore City fair attracted over 1.5 million visitors to the waterfront in 1973.

However, Baltimore was still not content with their waterfront. In 1981 the $21 million Baltimore aquarium was opened and soon after Congress designated the newly open attraction the National Aquarium.

To date, over 2.5 billion dollars have been invested in the successful waterfront. My observations of this project are that the city government has to invest money into the waterfront and find creative solutions to draw visitors to the site.

Liverpool- In the 1970's Liverpool began facing problems similar to those in Baltimore. Industrial decline was evident as advancement was moving from the ever dominant north to the southern parts of the country. Decentralization was a contributing factor as well, with many residents picking up and moving to the suburbs and smaller towns.

In November of 1980 the central government of the United Kingdom unveiled plans to form an establishment outside of the city government and charge them with the redevelopment of the Liverpool Waterfront. The groups first major project was to establish an international Garden Festival in the Riverside district similar to those held in Germany.

Work began toward the end of 1981 and in less than two and a half years the waterfront had been turned into a beautifully landscaped environment. The Garden Festival was a success, drawing over 3.4 million visitors to the site. In turn, the Liverpool waterfront went from seeing virtually no visitors prior to 1984 to receiving upwards of 4 million per year.

The Merseyside Tourism Board conducted a study in 1990 which showed that 70 percent of its visitors where domestic and 30 percent from overseas. Of those visitors over 78 percent made a second trip to waterfront.

From the Liverpool analysis four key points were deduced:

1. Large scale investment, like that in Baltimore, was needed to jumpstart the site and begin attracting visitors (in both cases this was started by the local government)
2. Although the event itself draws many visitors, the key success to the site is its close relation to the city center
3. By seeing that their city does indeed have something to offer the citizens of Liverpool have a boosted self-esteem and pride for their city
4. Tourism has played a pivotal role in the success and regeneration of this waterfront. Because of tourism many of the historic dock buildings were able to be preserved and utilized

Sydney- Sydney differs from the previous two examples in that it had not faced economic decline. In fact, it was quite the opposite as Sydney was basically the economic capital of Australia. Sydney was formed in 1788 by a group of about 1,000 British settlers and grew slowly over the following years. It wasn't until the 1830's, when gold was discovered in the area that the population began to take off.

Because of the terrain and neglect of functional design proper roads and drainage systems were hard to come by near Sydney's waterfront. In 1900, because of the poor infrastructure, an outbreak of the Bubonic Plague stemmed from this area and began to spread through the city. To eradicate the disease many of the old buildings where burned and destroyed and the waterfront was forgotten and abandoned until the 1960's.

In 1969 the New South Wales Government launched the Sydney Cove Redevelopment Authority with hopes of restoring the area.

The major focus area of redevelopment was the "Rocks" where the plague started. The plan was to utilize the historic buildings still in place and turn the area into Sydney's art district.

After years of redevelopment and construction of the new Museum of Contemporary Art, the "Rocks" district was a success. After being abandoned in the early 1900's the area now receives over 11 million visitors per year, the second most in Sydney (the Sydney Opera House ranks 1st).

Another portion of the waterfront that was in need of redevelopment was the Darling Harbor. Unlike the Rocks, the Darling Harbor was a dying industrial area that had relatively no historical buildings. Because of this complete redevelopment was the goal with an emphasis on recreation and tourism.

In June 1986, work began on the 130 acre site and was completed in 1988 for the nation's bicentenary. The Darling Harbor consisted of new, high-technology family entertainment, a hotel and casino, an aquarium, and Exhibition and Convention center, the Harborside Festival Retail Market, the Waterfront Promenade, a maritime museum, and many parks and gardens. After a survey of the area was conducted it was discovered that in half a year, from June 1989 to January 1990, the site saw over 13.5 million visitors. The Darling Harbor is also adjacent to the city center and the Opera House, making this a new hotspot for visitors.

Analysis of Case Studies

Through observing these case studies the eight following tips for waterfront design can be deduced.

1. All three cases required large scale redevelopment to resuscitate the area
2. To achieve successful redevelopment the local or state government needs to be involved, either as with financial support or as the development agents
3. Instant results can't be expected from these projects as they are long term developments. The average amount of time to see results is 10 years
4. Site location is a critical factor. Locations adjacent to city centers have the greatest chance for success. Baltimore is an example of a site that was near the city center but was cut off due to vehicular circulation. The city put high priority on high-level walkways to connect the waterfront and the city center, making the site a success
5. The community needs to be involved for the site to be a success, because in the end it is the community that utilizes the space
6. Historical building should be saved and redeveloped if possible. These buildings are something the community can relate to and it gives the area a sense of identity
7. Recreation and tourism is a legitimate possibility to find reuse of old, redundant buildings
8. The more diversity in uses applied to the waterfront the greater the success. A wide variety increases the users that utilize the site

Sustainable Urbanism: Design with Nature

by Douglass Farr

The book Sustainable Urbanism by Douglass Farr covers a wide variety of topics that all together support the idea of sustainable design in urban areas. My literature reviews pull from sections of the book that are relevant to my capstone project.

Biophilia: Connecting Humans to Nature

The term Biophilia is defined by Douglass Farr as the "love of nature based on the intrinsic interdependence between humans and other living systems." This section speaks to our reliance on nature as a race. The earth receives sunlight, makes oxygen, cleanses water, and grows plants that support human and animal life alike. Because of this reliance on nature human life is not worthwhile and human health is basically not possible.

It is estimated that at the time of Columbus's arrival to the North Americas there was between 1 million and 12 million people spread out across the continent. This means that the population was spread out over the undeveloped wilderness and very intermingled with nature's cycles.

This was a common happening before the privatization of land. The privatization of land concept came from Europeans who settled in North America. This was the catalyst for urbanization. The privatization of land began the creation of colonies and settlements. Then as the industrial ages took affect the settlements and towns expanded into cities. With the expansion and growth of cities land was cleared, swamps were drained, streams and rivers were put into pipes, and because of the price of land parks were discouraged. Runoff and untreated sewage was pumped into streams and rivers, polluting our sources of water.

As the cities grew out, reliance on the automobile began to increase. With this new dependence river corridors and parks were virtually forgotten. As a consequence nature has been suppressed in our everyday life and people have come out of contact with natural systems.

Throughout the past few decades city government and communities have tried to counter this suppression through the development of new parks, waterfronts, and city beautification projects.

The concept of Sustainable Urbanism emphasizes connecting people back to nature, even in dense urban areas.
Sustainable Urbanism addresses the social aspects of greenspaces and provides fact to back up the theories. Such as people are three times more likely to walk along a pedestrian route if it is landscaped in some way. Mature trees can encourage outdoor activities by cooling extreme outdoor temperatures by up to 5 to 10 degrees as well as increase real estate values by 3 to 6 percent. Studies have also proven the willingness of home buyers to pay up to a 24 percent for a lot facing a park or natural area.

Biodiversity Corridors

Another important concern of Sustainable Urbanism is the livelihood of nonhuman species with habitats close to or in urban areas, such as a riverfront through the heart of a city. It is no lie that human encroachment has destroyed many habitats. Sustainable Urbanism seeks to interweave riparian and wildlife corridors through neighborhoods and other urban areas.
When designing for such areas three goals are set up in Sustainable Urbanism to make sure the corridors are successful.

1. Large, high-quality, and well-connected habitat patches capable of supporting sustainable populations of native and rare species
2. Well-designed habitat corridors to connect otherwise isolated larger remnant habitat patches
3. Wide and vegetated buffers to minimize edge effects on habitats and protect water quality and stream habitat conservation thresholds should be set up in sensitive ecosystems such as riparian corridors and wetlands to prevent degradation of these areas.

This section also gives five tips to reclaiming or establishing a biodiversity corridor:

1. Determine the locally important and rare species and habitats in need of protection. Many states have wildlife protection plans in effect for threatened and endangered species. This can be supplemented by consulting with a local biologist to tailor the plan more towards the region being designed for.
2. Use local biological information and knowledge on landscape context to determine the amount and location of land to conserve. The surrounding area needs to be considered and evaluated when choosing land to conserve to make sure the maximum flora and fauna are protected.
3. Preserve large connected habitat patches. When preserving areas one should minimize the degree of isolation between patches and use habitat corridors to connect said patches.
4. Use local biological information and knowledge on landscape context to determine buffer size and structure. Roads, trails and other developments should not occur in the buffer.
5. Consider the regional context of local planning efforts. Regional impacts of local land use should be addresses before locating biodiversity corridors.

One drawback to Biodiversity in urban areas is that depending on the business of the area and surrounding roads buffers need to be set up to deter animals from the vehicular circulation which could conflict with their lives.

Open Space

Parks and plazas are important parts of the designed environment. They provide social interaction between the public, provide stormwater opportunities, and the building of social capital. The sustainable urbanism theory provides 5

standards when designing areas:

1. Parks or high quality open space should be within a three-minute walk of every dwelling
2. The minimum park area should be 1/6 acre
3. The minimum average size of all neighborhood parks should be ½ acre
4. All parks shall be bounded on at least two sides by public rights-of-way
5. Parks may be fenced and locked at night, if necessary, for security purposes

This section of the book also calls out 5 different types of open space as listed below:

1. Sports fields- an open area specifically designed and equipped for large scale recreation. Sports fields should be confined to the edges of major open spaces are their size is disruptive
2. Green- a medium-sized public space available for unstructured recreation, circumscribed by building facades, its landscape consisting of grassy areas and trees, naturalistically disposed, and requiring substantial maintenance
3. Square- a public space, seldom larger than a block at the intersection of important streets. A square is circumscribed spatially by frontages; its streetscape consists of paved walks, lawns, trees and civic buildings
4. Plaza- a public space at the intersection of important streets set aside for civic purposes and commercial activities. A plaza is circumscribed by frontages; its landscapes consisting of durable pavement for parking and trees requiring little maintenance
5. Community garden- a grouping of garden plots available for small-scale cultivation, generally to residents of apartments and other dwelling types without private gardens

Public Darkness

Public lighting is a vital asset to provide public safety and also to make the site accessible at all hours. Decorative lighting has the potential to bring new life to a space in the nighttime hours. However, it needs to be carefully implemented to prevent light pollution and excess lighting that wastes taxpayer's dollars.

Recently, the Wichita Eagle featured an article about the dangers of paths along the river and the major contributing factor was lack of lighting along the path. One city official was quoted as saying, "The lights along the river look like survivors of a World War II bombing." Because of this residents feel uncomfortable and lack a sense of safety, so they simply refuse to use the path. This sense of safety can be restored by simply adding adequate lighting to the riverside paths. Decorative lighting can draw people to the site but care needs to be taken when implementing this. Overuse of lighting has been proven to harm flora and fauna. As Americans we overuse lighting as well. According to the IEA (International Energy Agency) North America leads the world in consumption of light with 101 megalumen-hours, while Australia comes in second with 62 megalumen-hours.

Ecological Riverfront Design: Restoring Rivers, Connecting Communities

by Betsy Otto, Kathleen McCormick, and Michael Leccese

The book Ecological Riverfront Design covers a wide variety of topics that all together support the idea of sustainable and ecological design along the riverfront. My literature reviews pull from sections of the book that are relevant to my capstone project.

General Principles

Ecological Riverfront Design provides numerous sets of guidelines and principles to plan and design a successful riverfront. The first set is 5 general principles for ecological riverfront design.

1. Ecological Goals and economic development goals are mutually beneficial

Development that brings people to the waterfront builds a sense of connection and community. When people are attracted to the riverfront they are likely to eat, shop, and possibly live in the area thus stimulating the local economy.

2. Protect and restore natural river features and functions

River systems provide natural benefits that must be protected. For example by building in and around the floodplain we increase stormwater runoff which pollutes our rivers and increases erosion, both reducing water quality

3. Regenerate the riverfront as a human realm

Riverfronts need to be designed to service all types of people in the community. To do this political, social, and economic barriers may have to be overcome, but as a result the riverfront will see a wider variety of visitors and in turn be more successful.

4. Compromises are necessary to achieve multiple objectives

Focusing on one strategy, such as economic development, seldom works when designing riverfront. Goals need to be split up; for example striving for economic development as well as balancing social and ecological concerns.

5. Make the process of planning and designing riverfronts broadly participatory

The majority of the visitors to the riverfront are going to be the surrounding communities. Therefore when designing and setting up the program for the site the community should be involved to make sure they are satisfied with the final results.

Planning Principles

The books names 5 planning principles that should be integrated into master plans and implemented through zoning, building codes, and site designs.

1. Demonstrate characteristics of the city's unique relationship to the river
2. Know the river ecosystem and plan for a scale larger than the riverfront
3. Because rivers are dynamic, minimize new floodplain development
4. Provide for public access, connections and recreational uses
5. Celebrate the river's environmental and cultural history

Design Principle

The following principles are guidelines to consider when designing along the river. Allowing development and then trying to bandage it with BMP's is no substitute for protecting the existing river system

1. Preserve natural river features and functions
2. Buffer sensitive natural areas
3. Restore riparian and in-stream habitats
4. Use nonstructural alternatives to manage water resources
5. Reduce hardscapes
6. Manage stormwater on site and uses nonstructural approaches
7. Balance recreational and public assess goals with river protection
8. Incorporate information about a river's natural resources and cultural history into the design of riverfront features, public art, and interpretive signs

Benefits of Restoration and Redevelopment

In summary the book compiles a list of 9 benefits of restoring and redeveloping a riverfront after using the ecological riverfront guidelines.

1. Improves water quality and reduces cost
2. Curbs flood damage and lowers the cost of flood control
3. Decreases stormwater management costs
4. Reduce sprawl and related infrastructure costs
5. Revitalize the downtown riverfront with new housing and business opportunities
6. Provide jobs for residents in construction and commercial business
7. Offer recreational opportunities, open space, and park amenities
8. Raise property values and generate new tax revenues
9. Attract state and federal funding , volunteers, and broad financial

Complex Relationship Between Landscape and Recreation

by Dick van der Zee

When talking about recreation in the landscape the term "recreation" first needs to be defined. Meriam Webster defines recreation as "a pastime, diversion, exercise, or other resource affording relaxation and enjoyment." Contrary to the stereotype recreation is more than just sporting events. It can consist of picnicking, playing in an interactive fountain, or even just soaking up some sun on a grassy hill.

People leave their homes to enjoy a park or riverfront because they want a type of recreation that can't be provided to them at their homes. Therefore, when considering recreation in the landscape the activities and elements that are incorporated should be unique. The more creative and atypical the site is the more visitors the site will receive just for the fact that people will travel from farther distances to experience the new form of recreation.

Many times the landscape can provide features that function as a form of recreation. In this instance the river provides for a number of recreational possibilities that range from fishing to boating to swimming. When the landscape offers up a form of recreation such as a river that is not a very common occurrence it should be utilized. When discussing recreation it is important to know that there are two main categories, natural and man made. Natural recreation would be rivers, mountains, and beaches. To enhance these man made objects are added to them. For example, a mountain may add a ski lift and resort so skiers and snowboarders may access the mountain with comfort and ease.

With all recreational opportunities, the economy can play a pivotal part in the development. When a natural resource can be harnessed and utilized for recreation, business opportunities open up. The key to this concept is finding a compromise between the two and focusing on the experience of those visiting the site. So many times developers can become greedy and over develop an area, simultaneously destroying the source of recreation.

Application

Dick van der Zee lays out multiple ways to select a site to be utilized for recreational opportunities. The following will apply his site selection methods to the Wichita, KS region.

There are many different ways to evaluate a particular region for its best recreational opportunities. The first of these is to look at the available resources in the area.

When looking at dominant landscape features in the Wichita area I would list the Arkansas River, Cheney Reservoir, and the surrounding Great Plains Landscape as the top 3 opportunities because of the number of visitors and attention they receive.

The next step is to analyze the selected resources and determine which one would best attract visitors that would spend money on goods and services in the surrounding area and stimulate the region's economy. The Cheney Reservoir is located about 25 miles outside of Wichita and the closest town would be Cheney which is still 10 to 15 miles away. The Great Plains landscape, to be completely natural and untouched would have to reside away from development. Therefore, because of their locations outside of the city, the Cheney Reservoir and the Great Plains landscape would fail to stimulate an economy. The Arkansas River happens to wind right though Wichita and flows next to the downtown area. This would be the most opportune resource to draw "spenders" to the area. This method is called the tourist approach.

After this method the selected site is analyzed to see what form of recreation would best fit the area. This can have many factors such as the community that occupies the area, the nature of the resource, or the climate. A thorough Inventory and Analysis of the riverfront will help to make an accurate suggestion for a program that will draw visitors to the riverfront and create a successful recreational opportunity.

Glossary

Biophilia- The concept that humans love nature based on an interdependence between humans and other living beings

BMP- Best Management Practice refers to the practice considered most effective to achieve a specific desired result for protection of water, air, and land and to control the release of toxins

Built environment- The urban environment consisting of buildings, roads, fixtures, parks, and all other improvements that form the physical character of a city

Character- The image and perception of a community as defined by its built environment, landscaping, natural features and open space

Compactness- The process of designing for high density use through minimizing the floor area ration (FAR) and building up. In residential areas increasing the number of dwelling units is crucial for the promotion of other sustainable practices such as mass transit

Circulation- The movement of individuals through a site whether it be motorized, bicycle oriented, on foot or any other sort of transportation

Drainage - The running off of water from a land surface or subsurface, such as through sewers or natural means

Ecological Riverfront Design- Designing specifically for the unique conditions of the given site while protecting and restoring the natural river features and functions to ensure a healthier riverfront environment. This includes minimizing development in floodplains, buffering natural areas, restoring riparian areas, managing on site stormwater, and educating the community about the rivers natural processes to promote awareness

Ecosystem- The species and natural communities of a specific location interacting with one another and with the physical environment

Endangered- Species that are in danger of extinction. These species denote protection due to the federal law (Endangered Species Act)

Environmental impact - The change to an area's natural resources, including animal and plant life, resulting from use by man. Some projects may require conducting of an "environmental impact study" before development can proceed

Flood Plain- The nearly level are adjacent to a water body, subject to inundation under heavy rain or blockage condition

Greenway- A linear open space, a corridor composed of natural vegetation; can be used to create connected networks of open space including natural conservation areas or parks

Impervious Cover- Anything that stops rainwater from soaking into the ground, including roads, sidewalks, driveways, parking lots, swimming pools and buildings

Infrastructure- Water and sewer lines, roads, urban transit lines, schools, and other public facilities needed to support developed areas

Open Space- An area set a side or reserved for public or private use with very few improvements. Types of open space include: golf courses, agricultural land, parks, greenbelts, and natural preserves

Pedestrians- An individual who is traveling on foot

Reclamation - Any attempt to restore to beneficial use land that has lost its fertility and stability; reclaiming a river that is un-utilized and restoring it to it's natural context with

Recreational Greenway- A corridor of protected open space that is maintained for the community to utilize for conservation purposes, recreation, and non-motorized transportation

Redevelopment- The conversion of a building or project from an old use to a new one

Riparian Area- Vegetated ecosystems along a body of water through which energy, materials, and water pass. Riparian areas characteristically have a high water table and are subject to periodic flooding

Runoff- The water that flows of the surface of the land, ultimately into streams and bodies of water, without being absorbed into the soil

Stormwater Management- Managing or controlling the water in a storm event in such a way that filters pollutants and distributes the water into the existing stream or river as not to degrade or destroy the channel

Walkability- The ease at which the pedestrian can move throughout the site comfortably. This takes into consideration obstacles such as vehicular circulation and lack of paths as well as distances the pedestrian has to travel

Wetlands- An area having specific hydric soil and water table characteristics supporting or capable of supporting wetlands vegetation

Wildlife Habitat- Is an ecological or environmental area that is inhabited by a particular species of animal, plant or other type of organism (A Dictionary of Biology)

figure 8.4- wordle diagram

[9] appendix b: site visits

This chapter reflects on the master's report and identifies its successes and its shortcomings. The process and framework are analyzed to determine if the project goals laid down at the beginning of the project are achieved

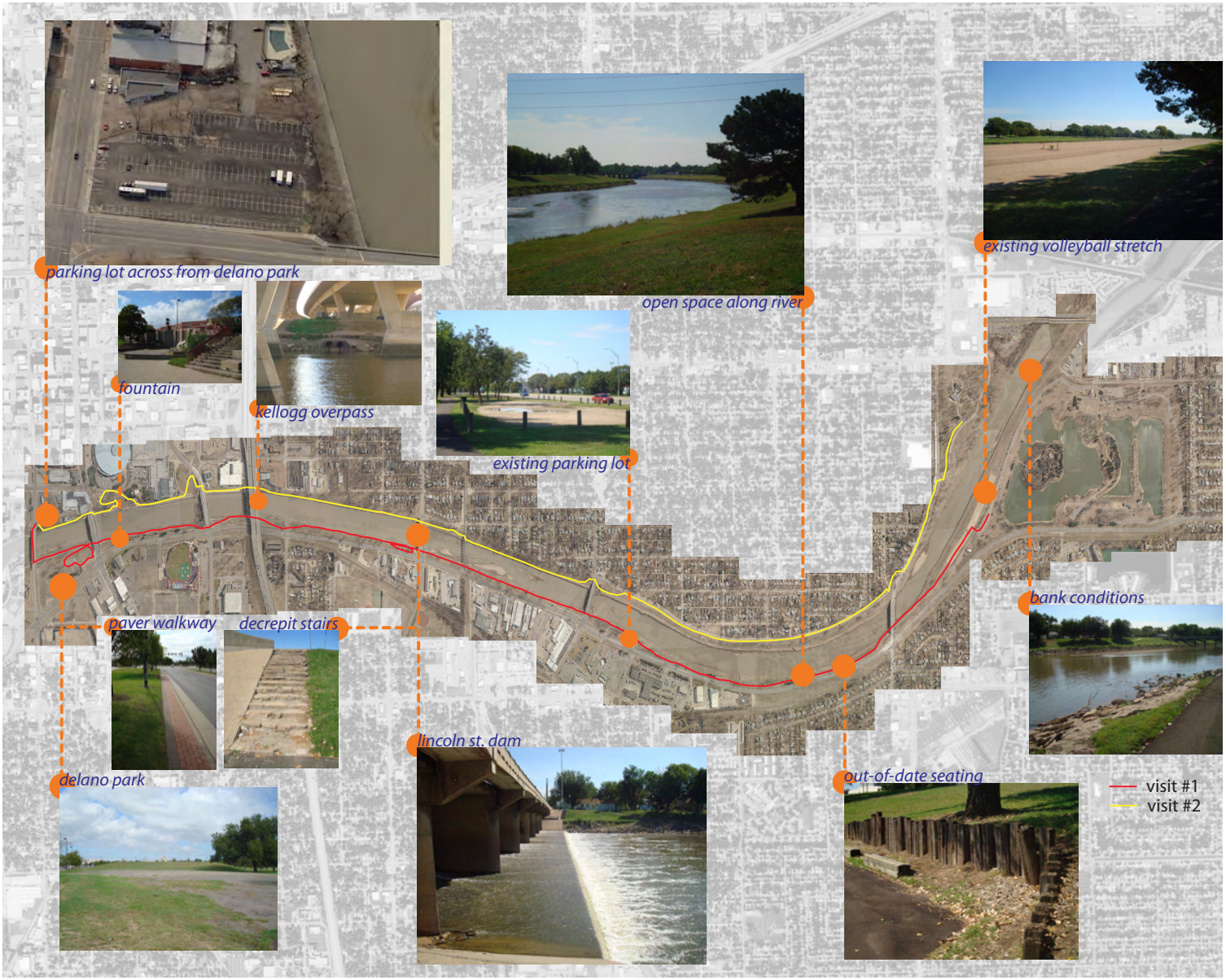


figure 9.1- site visit map

Site Visit 1

(longboard)

My first site visit began on Saturday September the 4th around 11 a.m. on a nice sunny day of about 85 degrees with a nice breeze. The weather excited me because I imagined this would be a perfect day to catch Wichita residents interacting and enjoying the river. However, they weren't. This was the first thing that occurred to me as my mom and I arrived at Delano Park to begin our trek; no one was around.

To assess the condition of the trails along the river I brought my longboard along and planned on skating down the river from Delano Park to Watson Park. This wasn't as easy I had originally thought and I ended up carrying my board quite often.

We embarked on our trip, starting with Delano Park. Unfortunately, while Delano Park is open to the public there is limited access to it. There is a large existing gravel parking lot but there is no way to access it due to the fact that curb and guttering surround the whole site. We parked across the river and made our way to scope out the area. I soon realized that the accessibility problems didn't end with vehicular entry. The circulation throughout the park was incomplete and would be extremely difficult to navigate in a wheelchair. The south end of the park had nice 5 foot sidewalks that were in great condition but unfortunately they terminated and left the north end of the park navigable by grass and gravel.

The northern section of the park was once home to the famous west bank stage. However, ten to fifteen years ago the stage was removed due to stability issues. Currently all that exists in this area is a large hill were the stage once set, a sign for west bank stage, flag poles, and a set of stairs that looked dangerous. The stairs are railroad ties set into the side of the hill that could have been part of the original construction. The wood is beginning to deteriorate and crumble as you step on the stairs.

figure 9.2- delano park sidewalk

figure 9.4- chisholm trail

figure 9.3- chisholm trail

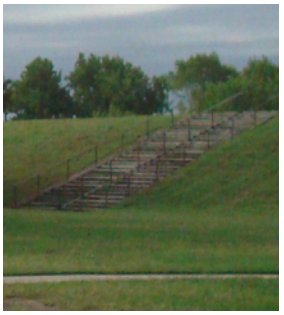


figure 9.5- chisholm trail

The southern end of the park is the complete opposite of its counterpart. 4 monuments, such as the Ben F. McLean and the Chisholm Trail marker are present to commemorate Wichita's rich history. At the south-west corner, near the intersection of McLean and Douglass, there is a circular planting bed with benches and a monument that commemorates Ackerman Island. Delano Park, while it is very rough and bleak, has amazing potential to be a major node for citizens to gather and enjoy the river and the rich history that Wichita has to offer.

We moved down the river and I began to notice the same trends, namely an undeveloped rivers edge with very few amenities and a very unaesthetic riverbank. The riverbank on this side of the river consisted of rip-rap and the trash that go caught in it with weeds that grew freely.

Seeing this made me realize why nobody was enjoying the riverfront. There wasn't much to enjoy.

Further down the river we ran into an unexpected surprise.

A fountain that made me think of Lawrence Halprin was set into the riverbank, completely unused. The fountain brought a very artistic feel to this part of the river that is a rarity along this stretch of the river. In my time with the Wichita Parks Department I had never heard of this particular fountain or seen it on the preliminary database with the other fountains. This made me wonder if it had possibly traded hands and belonged to public works and was being shut off to save money. Regardless, I feel that this fountain has great potential and can hopefully be saved and implemented into my design.

As we continued on the riverbank only seemed to get more unappealing and desolate as we passed under Kellogg Ave. After Kellogg seating began to pop up every now and then. Unfortunately, the seating consisted of railroad ties lain down along the path and these too were began to age horribly.

So far the path to this point had been acceptable for walkers and bikers, but not quite fit for a skateboard. Patches of the asphalt trail system got rough and began to crumble leaving potholes for wheels and trucks to fall into and eject the rider.

The next thing we came upon was the Lincoln St. Bridge and Dam. The dam has been utilized in Wichita for many years to control the water level in the downtown area. However, recently the city has made plans to remove and relocate the dam downstream and reconstruct the bridge. I plan on implementing this into my project, but with a similar design of my own.

Unfortunately the rest of the riverfront didn't get any better. We continued past the dam on to Watson Park which was a roughly 2 mile walk that took 40 minutes.

figure 9.6- unutilized fountain

figure 9.7- seating along the river

figure 9.8- erosion problems

Throughout this time we experienced no change expect for another set of railroad tie benches and a gravel parking lot that could hold about 15 cars maximum. Of course the sun was out in force so we had been drinking plenty of fluids and really could have used some user amenities along this section of the river. Instead we had to tough it out and make it to Watson Park.

Vegetation along the river was somewhat bleak, consisting of a few large trees. While these fully matured trees where great for the shade they did offer there was just not enough of them. A few of the trees along the river where being threatened due to stormwater outlets. Water is captured on McLean and outletted along the banks of the river. Many of these outlets send water shooting straight into trees or eroding away the earth around them. I feel stormwater can be better managed to protect the existing rivers edge and the vegetation along it.

The rest of the riverbank consisted of mown grass and unmown weeds at the banks edge. In conclusion I feel that the west side of the river suffers from a lack of amenities, poor stormwater management, and an unaesthetic rivers edge.

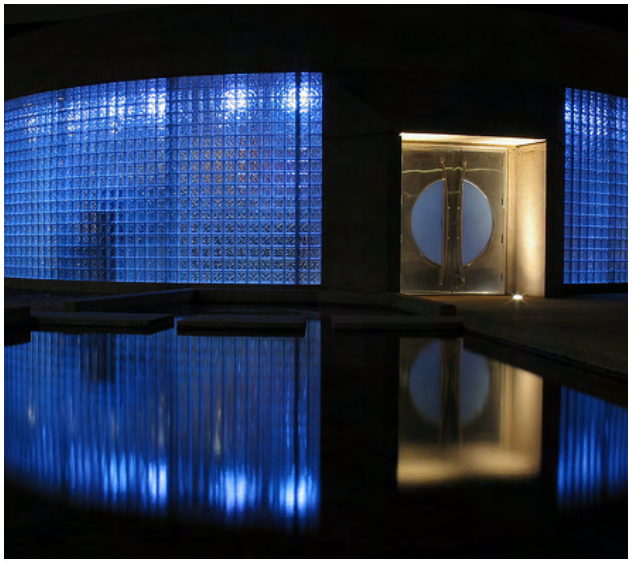


figure 9.9- water center

figure 9.10- herman hill park

Site Visit 2

(on-foot)

The second visit took place on the same day as the first visit, only around 6 p.m. that evening. The temperature was lingering in the 80's with a breeze that made being outside comfortable.

We started on the south-end, across the river from where we had finished our previous site visit. The start point was Herman Hill Park were to my surprise we found a couple enjoying their dinner on a picnic table while their children played on the nearby playground.

Herman Hill Park is the site for the City of Wichita's Water Center. The water center is probably the second leading educational tool for the river, behind the discovery center. Goessen Livingston got the bid to do the designs for the Water Center in the early 00's and the project was opened in 2003. The Water Center is responsible for cleaning and filtering the surrounding areas water. The center also focuses on education to teach the public about the water processes, flora and fauna on the river, the natural environment of the river and much more through the use of hands on exhibits, small scale models, and live exhibits.

The Water Center is a tremendous asset for traveling Herman Hill Park and the Arkansas River. After Herman Hill park we began to move north towards the downtown area. Things began to get interesting when after traveling about a fifth of a mile the sidewalk ended. From here on out the site visit turned into a glorified game of frogger with some trespassing thrown in I'm pretty sure.

We continued on down the river on the rivers edge with no sidewalk and witnessed much the same as the other side. We came up upon Pawnee St. and this is where the games began. Because Pawnee makes a sharp curve to cross the river and there is no sidewalk there is no crosswalk. We took our chances and ran across the busy street. After Pawnee St. we continued for a mile along the river witnessing nothing but a rivers edge that was polluted with trash and weeds, a scarcity of trees, houses across the street (S. Greenway Blvd) all without a sidewalk to walk on.

At this point we came up on Harry St. were, like Pawnee, we had to take our chances with one of Wichita's busiest streets. We made it safely across without the help of a crosswalk and proceeded another half mile to the railline where a trail came in from the neighborhoods to the east. We crossed safely under the railway bridge, happy to be on a sidewalk again, and proceeded down to the Lincoln St Bridge. The Bridge and Dam were in much the same condition as it was on the other side of the river. However, because of minimal parking along the adjacent street the majority of the fishers like to hang out on the east side of the river.

We began moving and just when we got used to the sidewalk again it terminated on the north side of Lincoln St. So we continued our walk along the rivers edge on the grass again and still saw no change except for an increase in trees. Soon we approached Kellogg Ave and made our way under the overpass where the sidewalk began again and the scenery drastically changed. The first thing you see is the back of Gander Mountain with its property landscaped using shrubs, trees, and retaining walls. The rivers edge changes from this point on from rip rap to a sea wall application which gives the river a clean, approachable look.

Further down from Gander Mtn. is the Wichita Boathouse with an old sail boat on display in front of the large gathering center. An elegant set of stairs lead up to the boat house for those who want to meander off the river.

figure 9.11- rip-rap along river's edge

figure 9.12- gander mtn. landscaping

figure 9.13- water wall

As you cross under the Lewis St. Bridge the first thing you see coming out the other side is the looming Hyatt Regency Hotel and its outstanding water wall. The water wall is a small part of what the Hyatt offers to the river. The whole parcel that is owned by the hotel is beautifully landscaped, drawing people from the rivers edge to discover the elegant layout.

After the Hyatt, A. Price Woodard Jr. Park sits like a park designed by Lawrence Halprin. The geometries and the fountain remind one of a simplified Lovejoy fountain in Portland. The park has ample seating for visitors from downtown to enjoy their lunch of simply take a break.

Continuing down the river you cross under the Douglass Bridge and come upon the old Broadview Hotel that is currently undergoing a renovation by the City of Wichita.

Beyond the hotel however is where the beauty comes to a halt. A large surface parking lot that abuts the river services the hotel and surrounding buildings. After walking around the parking lot I found two large parking garages that can possibly be utilized for the hotel in order regain a portion or all of the lot for greenspace.

My conclusion of the east side of the river is that south of Kellogg Ave there are no amenities and no circulation, however, north of Kellogg is developed nicely and seems to attract visitors from the downtown and adjacent areas.

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