Diamonds in the Rough

Utilization of Open Space in the Mingo Creek Floodplain Project
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A Professional Project submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of Master of Science in Architectural Urban Studies

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Tulsa, Oklahoma
2012

Approved for the Urban Design Studio of The College of Architecture

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Acknowledgements:

Be it known that the following individuals during the course of my study, through personal sacrifice, selflessness, and without measurable reward, bestowed the support and understanding without which my graduation would not have been possible. I honor and recognize the confidence, devotion, guidance and assistance generously given by each of them in helping me obtain this important milestone in my life.

Shawn Schaefer – Director of the Urban Design Studio, University of Oklahoma
Dr. Showa Omabegho – Professor, University of Oklahoma
Blair Humphreys – Professor, University of Oklahoma
Dr. Meghan K. Wieters – Professor, University of Oklahoma
Mthabisi Masilela – Friend & Fellow Student
Alexis Shahadi – Friend & Fellow Student
Meagan Vandecar – Friend & Fellow Student
Kurt E. D’Amour – Friend & Frst Year Student
Becca Caldwell – Friend & Frst Year Student
David Allen Puckett – Life Long Friend
Ann Marie Curtis – Mother
Mary Elizabeth Sudberry – Grandmother
Amanda Elizabeth Lemon – Life Long Friend
Ronald J. Curtis – Father
Betty Curtis – Stepmother
Rodney & Gary Curtis – Brother & Sister-in-law
Brian & Lori Curtis – Brother & Sister-in-law
Stephanie & Travis – Sister & Brother-in-law
Samantha Jo Curtis - Sister
Bonner H. Sudberry - Uncle
Rosalie J. Lynch - Aunt

Tom & Suzy Walker - Family
Donnie & Mary Margeret Events - Family
Jonny & Cynthia Walker - Family
Curtis Family
Fanne Marsh - Friend
Dixie Buchanan - Friend
Judy A. Lasiter - Friend
The University of Tulsa College of Law Faculty & Staff
Vicki Jordan & Family - Friends
Jennifer Flexner & Family - Friends
Greg, Sharron, Scott, James Puckett & Family - Friends
Tony Quinn - Friend
Daniel Tideman - Friend
Thomas Conner - Friend
Jason Tharp - Friend

And Many Other People.........
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Due to the rapid expansion of housing into the eastern portions of the City of Tulsa during the 1970's though the early 1980's, there was little time to plan for flood control around Mingo Creek and its tributaries. Channeling was created to maximize the amount of land available to housing developers. Warning signs appeared in the 1960's and 1970's that the flood control system of the day was not adequate to support such the large amount of run off from improvises surfaces. It was not until Memorial Day, 1984 did a drastic event take place.

In the late evening hours of May 27th, 1984, a weather front had moved into the Tulsa, Oklahoma area bringing with it some much needed rain. As those who lived in Tulsa fell asleep to the sound of rain on the roof tops, they could not expect what would come. In the early morning of May 28th, people living within the Mingo Valley Basin were awoken by the sound of sirens going off, jumping out of bed to find their feet knee deep in water. The creek had swelled and flooded into neighborhoods. In a matter of hours a stalled rain front caused the Mingo Creek to become Mingo Lake.

On Memorial Day, 14 people were killed, 288 people injured, with damages totaling over 1.8 billion (in 2012 dollars). Swift response for future flood defense was demanded by the citizens of Tulsa.

The Tulsa District Army Corps of Engineers built 23 detention and retention structures along the Mingo Creek and its tributaries. Additional such structures were built by the city and new housing developments. In addition, areas of wetland have been set aside for natural use. This has created 3,745 acres of open space. Nearly six square miles within the sixty two square mile basin became quickly available for restricted recreational use. Nearly all of the newly constructed detention/retention structures were labeled park space by the City of Tulsa. In the early construction, designs for baseball fields, football fields, soccer fields, playgrounds, picnic tables, and miles of running track were to be created within the new walls created by the structures. Unfortunately little of these proposed improvements were to come into existence.

Out of the 44 parks in the Mingo Valley Basin, only 15% are outside the floodplain. The remainders of the parks have had few improvements beyond a very limited number of soccer fields, running tracks, and trails, nowhere near the design level. This creates dead zones of activity where open space could be utilized to its fullest for the betterment of the community and the City of Tulsa.
Objectives:
- To create an urban design plan for the open spaces created by the Mingo Valley Project
- Use park master plans, city comprehensive plans and case studies to support a design plan
- Identify stages, modifications, and produce a new policy guide
- Ascertain implementation strategies and funding sources
- Provided the Tulsa Parks a guide for future development within the identified open spaces

Goals:
- Use the flood control network of detention and retention basins to their fullest potential
- Provide outlets to promote outdoor exercise and utility
- Quick reference on location of parks and park signage
- Provide adequate trails and connectivity to each park
- Create multipurpose fields for a range of sports
- Promote art and culture
- Provide a space or outdoor community activity
- Provide locations to support all three facets of life: Live, Work, & Play

Methodology
|-------------|-------------|--------------|------------|------------|---------|
| - Review Documentation  
- Finalize Study Objective and Make Needed Revisions to Study  
- Begin Research |  
- Define Site Selection Criteria  
- Begin Site Selection Review |  
- Select Sites for Recommendations  
- Select Suitable Recommendations for Sites |  
- Third Jury Presentation  
- Begin Work on Poster Design  
- Begin Work on Professional Project Book |  
- Compile Study Data  
- Present Poster to AAAS- SWARM  
- Complete Site Recommendations  
- Submission of Rough Draft of Professional Project Book  
- Final Jury Presentation |  
- Submission of Book to the OU-Tulsa Library |
| September 2011 | October 2011 | November 2011 | December 2011 | |
| - Design Search Map for Site Photos  
- Start Photo Survey  
- Case Study Search and Review  
- Creation of Objective, Goals, and Methodology |  
- Frist Jury Presentation  
- Continue GIS Mapping  
- Continue Research  
- Begin Initial GIS Mapping |  
- Begin Documenting all Detention, Retention, and Natural Space in the Mingo Valley Basin  
- Begin Demographic Research |  
- Second Jury Presentation  
- Continue Documenting all Detention, Retention, and Natural Space in the Mingo Valley Basin  
- Search and Selection of Icons or Other Representative Items |  
- |
The 2010 Tulsa Parks and Recreation Master Plan was created to meet the needs of the residents of Tulsa to sustain and improve the system's assets. The plan was created through both interactions with citizens, elected officials, staff, and committees, to enhance the services provided.

Tulsa Parks manages 135 parks covering over 6,000 acres including but not limited to theaters, golf courses, museums, swimming pools, sports facilities, playgrounds, tennis courts, water parks, skate parks, picnic areas, and over 20 community centers (Parks 2009).

A vision statement was created out of the planning process: “Tulsa will be known as a city that celebrates and preserves green space and beautiful environments, and enjoys outstanding recreational opportunities supporting the health and well-being of its citizens” (Parks 2009).

The study implemented door knob and online surveys. Eight thousand surveys were mailed at random throughout the city. An additional one thousand surveys were delivered door to door. Respondents were able to submit their forms by mail or via the internet using a one time only username and password. One thousand three hundred and six surveys were submitted representing a “very good response rate over all (Parks 2009).

The survey divided the city into four areas, North Tulsa, Midtown, East Tulsa, and South Tulsa. East Tulsa was found to be the smallest of the divisions. It was found that it generally had the lowest levels of Tulsa Parks facilities and programs (Parks 2009).

East Tulsa residents indicated that safety and security were their primary concern when using the park facilities. They also showed concern in needed improvements, more restrooms, programs, new facilities, user fees, maintenance, and customer service (Parks 2009).

East Tulsa residents showed more than any other survey area that outdoor facilities, trails and trail connections were in dire need of maintenance or creation, roughly 61%. Additionally playgrounds, community gathering spaces, amphitheaters, restrooms, athletic fields, dog parks, skate parks, and disk golf courses were highest on their list of priorities (Parks 2009).

In programing the residents of East Tulsa wanted Tulsa Parks to provide or assist in providing special events, adult athletic leagues, fitness programs, family programs, and cultural/arts programs. More than the other surveyed areas, East Tulsa residents stressed environmental education a top priority (Parks 2009).

The survey showed East Tulsa had the lowest level of service in:

- Walkable Access to All Components
- Neighborhood Access to Indoor Facilities
- Neighborhood Access to Trails
- Neighborhood Access to Aquatics
- Access to Multipurpose Fields
- Access to Playgrounds

McClure Park

Central Park

http://arkansas.rvrrisd.net/precincts/596/38/projects/
In 2010, the City of Tulsa adopted a new comprehensive plan, PLANiTULSA. A comprehensive plan dictates public policy in terms of areas land use, transportation, housing, economic development, and recreation. It usually covers large geographic areas and a long-term time span. PLANiTULSA was a "once-in-a-generation opportunity" to design the future of Tulsa for the next 30 years (Planitulsa 2010). In 2009, Tulsans participated in the plan through several feedback processes including open meetings, workshops, and surveys. More than 5,500 responded though a city-wide survey on four separate scenarios. The four different scenarios were:

A. Trends Continue - Depicted the continuation of current growth and development trends, placing many new homes outside the city and a diminished role for downtown.

B. Main Streets – Placed new growth along the city’s existing corridors and downtown, creating a city of more vibrant main streets.

C. New Centers – Placed new growth in new complete communities and neighborhoods on vacant land inside the city.

D. Centered City – Concentrated growth around downtown and along the city's inner corridors.

The survey showed Tulsans were in strong support of Centered City, New Centers, and Main Streets and a poor support for Trends Continue. The “vision” for the new Comprehensive Plan was shaped around these values. The five focus areas centered on Land Use, Economic Development, Transportation, Housing, and Parks, Trails and Open Space (Planitulsa 2010). The six goals for the city of Tulsa from PLANiTULSA were to have:

- A vibrant and dynamic economy
- The ability to attract and retain young people
- An effective transportation system
- A range of housing choices
- Emphasis on preserving the environment and increasing sustainability
- A commitment to transparent, equitable decision-making

With the new Comprehensive Plan, five new land use categories were created: Downtown, Corridors, Center, New and Existing Residential Neighborhoods, and Employment Areas. Downtown focuses on the Central Business District. Corridors focus on main street and mixed-use corridors with average households between eight and nine. Centers focus on Neighborhood Centers and Town Centers with household average between five and fourteen. New and Existing Residential Neighborhoods continue and grow with an average household size of four. Employment Areas are structured around a job saturation rate of 19 jobs per acre of land (Planitulsa 2010).

Participants in the city-wide workshops produced over 200 maps representing their vision of Tulsa's future. The only survey question directly addressing the topic of parks and open space asked what would make it easy for them to access parks, the river and open space. They answered that a “Centered City” followed by “New Centers” would be the best scenario (Planitulsa 2010).

PLANiTULSA relied heavily on the Tulsa Parks 2010 Master Plan Survey for most of its data and proposed planning. Most pages in this section of the plan is nearly a direct copy from the Tulsa Parks Master Plan. Where PLANiTULSA does contribute is for the Arkansas River. It is viewed as a “vital lifeline through the city of Tulsa.” PLANiTULSA emphasizes to the point of neglecting other park land areas (Planitulsa 2010).
This map shows the Mingo Valley Basin is situated in Tulsa County with the greatest portion in the City of Tulsa. To the east of the basin are the cities of Catoosa and Fair Oaks. To the west are the Tulsa International Airport, Tulsa County Fairgrounds, and midtown Tulsa. To the north is the City of Owasso. To the south are the cities of Broken Arrow and Bixby with a portion of south Tulsa between them. The total area of the Mingo Creek Basin is about 63 square miles.

Mingo Creek flows from the South to the North, unusual for a creek in the State of Oklahoma. This map shows the Mingo Valley Basin is comprised of five sub-basins in order of highest to lowest point are the Upper Mingo Basin, Mingo High Tributaries Basin, Mingo Middle West Basin, Colley Basin, and the Lower Mingo Basin. The Upper Mingo Basin comprised of Alsuma Creek and South Park Creek. Mingo High Tributaries Basin is comprised of Bell Creek, Sugar Creek, and Brookhollow Creek. The Mingo Middle West Basin is comprised of Mill Creek and Tupelo Creek. The Cooley Basin is comprised of both Cooley Creek and the longer Cooley Creek Tributary. The Lower Mingo Basin is comprised of Douglas Creek, Eagle Creek, Quarry Creek, and Little Creek. The creeks in the Upper Mingo Basin form the beginnings of Mingo Creek, while the lower creeks add to the Mingo making it larger as it flows north.
This map shows both the 100 year in red and the 500 year floodplain in yellow. The largest area of flooding is located outside the basin to the Northwest around Bird Creek. But within the basin, Mingo Creek nearly follows Mingo Road the entire length of the floodplain. As the creek grows larger on its way to empty into Bird Creek, its flow grows in magnitude and possible flooding increases. Note that a number of unnatural shapes, mostly in a square pattern are located along the Mingo Creek. These are the locations of Retention and Detention basins along the creek.

This map also shows both the 100 year in red and the 500 year floodplain in yellow, but with an underlay of the city. Due to the expansion of the city eastward, the creek has become surrounded on all sides.

Legend

- 100 Year Floodplain
- 500 Year Floodplain
- Mingo Valley Basin
- Waterways
This map shows Detention Basins, Retention Basins, and Natural Floodway Spaces located within the Mingo Basin. A Detention Basin is a dry area of land surrounded by levees where extra stormwater is stored for a temporary amount of time until the water level drops with in the flooding channel (in this case Mingo Creek) slowly and safely drains away (Brays 2012). Retention Basins also store water in much the same way as Detention Basins, but allows for a portion of the water remain indefinitely (Brays 2012). Natural Floodways Space are natural formations of land where stormwater runoff can be reabsorbed though the soil or filtered through natural dry/wetlands (Open 2012). There are over 150 locations throughout the system totaling 3,744 acres or 5.9 square miles. These areas make up about 10% of the basin.

Within the Mingo Valley Basin are a total of 43 parks. The parks cover an area of 830 acres, or roughly 1.30 square miles. Some of these parks include swimming pools, sports fields, playgrounds, tennis courts, water playgrounds, picnic shelters, community centers, fitness facilities, gymnasiums, meeting rooms, and other attractions (Tulsa Parks 2009).
The far left map shows the march eastward as the city expanded. Between the 1960’s and 1980’s a large growth of new housing was built around the Mingo Creek.

The second map shows the current zoning ordinances in place for the City of Tulsa. The Mingo Creek touches each of these zoning types.

GIS Mapping - Year to Date Buildout & Zoning
The City of Tulsa has made strides to continue to grow its network of trails & bicycle systems. Included are multimode trails that accommodate walkers, joggers, and bicyclist. In addition, bike only trials and future development of trails are shown.

While a number of the detention/retention parks are on or near the Tulsa Transit bus system, most individuals do not know that the parks are there (Parks 2009).
To gather census data for the study area, thirty eight census tracks were used to target the population. On the far left map shows the census tracks used both in Tulsa County and in Rogers County.

The data gathered provide the opportunity to do a Population Density calculation showing the various levels of population equally compared to larger census tracks. The areas along the Highway 169 corridor between twenty-first and forty-first have high concentration of population.
The adjacent map displays detention and retention facilities that are also identified as parks. There are 28 detention / retention parks making up 652 acres (Central Park in New York City, NY has a total of 830 acres) or about 1 square mile. The 15 remaining city parks not located within a floodplain consist of 177 acres or 0.28 square miles. The detention / retention parks make up 79% while the remaining parks make up 21%. With exception of 4 (Bishop, McClure, Alsuma, & Hilti), most detention / retention parks are in a passive state. Example of passive recreations are walking, jogging, picnicking, and lounging. Active recreation is things like basketball, baseball, volleyball, soccer, and other sports (Daniels 2005).
The city of Tulsa lies along the Arkansas River at an elevation of 700 feet above sea level. The surrounding terrain is gently rolling. At a latitude of 36 degrees, Tulsa is far enough north to escape the long period of heat in summer, yet far enough south to miss the extreme cold of winter. The inuence of warm moist air from the Gulf of Mexico is often noted, due to the high humidity, but the climate is essentially continental characterized by raid changes in temperature. Generally the winter months are mild. Temperatures occasionally fall below zero but only last a very short time. Temperatures of 100 degrees or higher are often experienced from late July to early September, but are usually accompanied by low relative humidity and a good southerly breeze. The fall season is long with a great number of pleasant, sunny days and cool, bracing nights. Rainfall is ample for most agricultural pursuits and is distributed favorably throughout the year. Spring is the wettest season, having an abundance of rain in the form of showers and thunderstorms. The steady rains of fall are a contrast to the spring and summer showers and provide a good supply of moisture and more ideal conditions for the growth of winter grains and pastures. The greatest amounts of snow are received in January and early March. The snow is usually light and only remains on the ground for brief periods. The average date of the last 32 degree temperature occurrence is late March and the average date of the rst 32 degree occurrence is early November. The average growing season is 216 days. The Tulsa area is occasionally subjected to large hail and violent windstorms which occur mostly during the spring and early summer, although occurrences have been noted throughout the year. Prevailing surface winds are southerly during most of the year. Prevailing surface winds are southerly during most of the year. Prevailing surface winds are southerly during most of the year. Prevailing surface winds are southerly during most of the year.

Climatological Overview quoted from the National Weather Service Tulsa Oce webpage: http://www.srh.noaa.gov/tulsa/climate/tulcliover.html

Annual prevailing wind summary created with wind frequency analysis data provided by National Weather Service - Tulsa Office. Source: Anhoven on
Metcalf Park contains 63 Acres of land and water usage. Concrete and gravel walkways are within and around its perimeter. Their only forms of relaxation are two benches and the natural ground. A bridge connects Metcalf Park with the west bank and Mingo Trail. People arrive by walking, biking, or driving.

In order to become familiar with the Mingo Valley Basin, photos were taken for what would turn into a photo survey. Over 350 photos of various structures and spaces were taken. The exercise helped to better understand the Mingo Valley Basin.

**Detention Basins** are dry areas of land surrounded by levees where extra stormwater is stored for a temporary amount of time (Brays 2012).

**Retention Basins** also store water in much the same way as Detention Basins, but allows for a portion of the water remain indefinitely (Brays 2012).

**Natural Floodway Spaces** are natural formations of land where stormwater runoff can be reabsorbed though the soil or filtered through natural dry/wetlands (Open 2012).
Redford/Larry Lake Park, Retention Basin

36° 8'12.53"N  95°51'57.25"W
About East 21st Street & I-44

Redford/Larry Lake contains 38 acers of land and water usage. Concrete and gravel walkways are within and around its perimeter. The provided forms of relaxation are two benches and the natural ground. A walkway connects Redford Park to Metcalf Park. People arrive by walking, biking, or driving.

Entrance - View West

101st Street East - View North

Welcome Sign - View West

Open Space - View West

Open Space - View Southwest

Larry Lake - View Northwest

Larry Lake - View Northwest

Larry Lake - View Northwest

Larry Lake - View Northwest

Larry Lake - View Northeast

Open Space - View South

Open Space - View South

Open Space - View South

Larry Lake - View East
Brookhollow Park contains 38 acers of land usage. A gravel walkway are within and around its perimeter. The provided forms of relaxation are four benches and the natural ground. People arrive by walking, biking, or driving.
Tupelo Park contains 41 acres of land usage. A gravel walkway are within and around its perimeter. The provided forms of relaxation are four benches and the natural ground. People arrive by walking or biking.
RB-12 Park contains 47 acers of land usage. A gravel walkway are within and around its perimeter. The provided forms of relaxation are four benches and the natural ground. People arrive by walking, or biking.
Zeledyne Natural Park contains 35 acers of land usage. A natural walkway goes around its perimeter. The provided form of relaxation are fishing, two benches and the natural ground. People arrive by walking, or biking. It is located on private land.
Lower Mingo Basin consists of 1690 acers dry and wetland. People can arrive by walking, or biking.
McClure Park contains 57 acers of land and water usage. Concrete and gravel walkways are within and around its perimeter. It has multiple forms of relaxation including but not limited to swimming, basketball, baseball, and disk golf. People arrive by walking, biking, or driving.

Bishop Park contains 61 acers of land usage. A gravel walkway goes around its perimeter. Its forms of relaxation are soccer benches and natural ground. People can arrive by walking, biking, or driving using it’s parking lot.
Jones Detention Pond Park contains 17 acers of land usage. A gravel walkway are within and around its perimeter. The provided forms of relaxation are four benches and the natural ground. People arrive by walking, or biking.

UB-1 contains 9 acers of land usage. A gravel walkway are within and around its perimeter. The provided forms of relaxation are four benches and the natural ground. People arrive by walking, or biking.
Garden Ridge contains 15 acers of land and water usage. A gravel walkway are within and around its perimeter. The provided forms of relaxation are four benches and the natural ground. People arrive by walking, or biking.

Quick Trip/Apartment contains 10 acers of land and water usage. No walkway is available. It serves no recreation use.
The population that lives within the Mingo Valley Basin is 147,496 or 27% of the total population of the City of Tulsa. The Mingo Valley Basin is a very diverse community having a high Hispanic / Latino population, followed by Black or African American and some other races. Having a strong diverse population makes the Mingo Valley a unique place to live.
Land Size - Mingo Valley vs. City of Tulsa

- 63% 124 Sq. Miles
- 34% 63 Sq. Miles

Land Size - Mingo Valley vs. County of Tulsa

- 89% 524 Sq. Miles
- 11% 63 Sq. Miles

Mingo Valley vs. Other Oklahoma Cities

Land is most commonly associated with wealth. If this is the case, the people who live within the Mingo Valley would be some of the richest in Oklahoma. Taking up 63 square miles of space, Mingo Valley makes up the majority of the city at 34%. Compared to the County it makes up 11%. If the population within the area of the Mingo Valley were compared to the population of other cities within the State of Oklahoma, it would be third largest community surpassing Norman, Lawton, and Edmond.
Mingo Valley Housing Tenure

Mingo Valley Renter vs. Owner

Mingo Valley Vacant vs. Occupied Property

Demographics - Property
In the 1940s the City of Los Angeles channelized the Los Angeles River to promote flood control. By doing so, the United States Army Corps of Engineers lined the fifty-one mile long channel with concrete. The purpose of concrete channelization was to prevent flooding within the city while reducing the damage to the channel itself. In the end it more harm than good. Moderate rainy days made low level flows into fast raging currents while the channel divided neighborhoods and increased industrial building. Like highways and railroads, the back of properties overlooked the river making it an undesired and neglected infrastructure.

Adopted in 2007, the Los Angeles River Revitalization Master Plan targets a thirty-two mile section of the corridor to renew the environmental qualities through ecological and hydrological natural design. Through the redevelopment, the City of Los Angeles is extending the influence into adjacent neighborhoods to reconnect once river divided communities by trails, open space, repurposing vacant land, construction of new flood control basins for new parks and to hold clean stormwater. The citizens will have the opportunity to enjoy the river as sustainable, safe, accessible, and healthy place. It will provide outdoor environmental education and fitness opportunities to communities that currently lack these opportunities. Lat, the overall hope is the Master Plan will create value by the creation of an attractive place to live and work and a higher quality of life for the residents.
Goals-

- **Landscape Plan Project Initiatives**
  - Add 850 acres of new park land to create a linked park system connecting Memorial Park to the Turning Basin
  - Create Continuous publicly-accessible Bayou bank edges
  - Integrate landscape amenities and urban design elements with flood management infrastructure
  - Integrate neighborhoods in the park system through “green Streets”
  - Connect to metropolitan and regional greenway networks
  - Build 14 new and expanded boat landings
  - Offer excursion boat services

- **Access and Transportation Plan Project Initiatives**
  - Remove/reconstruct bridges that negatively impede floodwater flow
  - Upgrade East End boulevards and improve modes of transit along these corridors
  - Reclaim underutilized roadways to create new urban park space
  - Improve access to Bayou landings, coordinated with parking provisions
  - Extend hike and bike trails along both sides of the Bayou

- **Environmental Plan Project Initiatives**
  - Create “Green Fingers” to detain, filter and cleanse stormwater
  - Reduce erosion by stabilizing bayou embankments
  - Coordinate trash cleanup program
  - Convert brownfields to parks
  - Promote the use of low-impact development techniques
  - Expand and create wildlife habitat areas
  - Initiate demonstration projects to test long-term impacts of Bayou-related improvements
  - Develop a regional Eco-Park to expand rehabilitation efforts beyond Buffalo Bayou

- **Flood Management Project Initiatives**
  - Improve downtown floodwater flow carried by Buffalo and White Oak bayous by creating supplementary canals
  - Consolidate bridge crossings to reduce impediace to the flow of floodwater
  - Increase Buffalo Bayou conveyance capacity along critical reaches, particularly from Allen’s Landing to McKee Street

The City of Houston was founded by the Allen brother in 1836. Buffalo Bayou was essential to Houston’s commerce by providing a shipping way to coastal waters. To continue to build on the success it has with the Bayous current function, the city adopted the Buffalo Bayou Master Plan to create a deeper relationship between city and nature.

Landscape is urged as the primary resource and key for recreational use. It will provided public access and infrastructure for both land and water activities. The Bayou will become a transportation system connecting east and west sections of the city through both trails, and roadways. To rehabilitate the natural banks and ecosystem, the plan will integrate low impact structures, natural filtration systems and “Eco-Parks. While improving the environmental quality, the project will also increase flood management systems by reducing the amount of bridges, flow pattern, and increase capacity. Expected completion of the project is within the year 2015.
The research methods used include historical research, review of the 2010 Tulsa Parks and Recreation Master Plan and the City of Tulsa Comprehensive Plan (PlanTulsa), case studies, community demographics, statistical data, GIS data mapping, recent recorded water activity, and current utilization evaluation of over 150 detention, retention, and natural space sites within the study area.

Once these steps have been followed, three sites within the Mingo Valley Basin were selected to be used as examples for similar facilities that fit their profile. Using the adjacent flowchart, raw data from variables and research were carefully sifted through to select the best possible candidates for site selection that would represent the bulk of the Mingo Valley Basin open space. Along with these icons were used to represent the best function for each location in the open space. These icons simplify the review process and easily displays each usage.

With the recommendations complete a full conclusion for all of the Mingo Basin can be formulated.

Site Selection Methodology
Metcalf Retention Park is one of the largest parks in the City of Tulsa. At 63 Acres, it provides large grounds of open space. Amenities include Metcalf pond, trails, one picnic table, two benches, and parking lot. Trees are the predominate form of vegetation, though a few varieties of tall grass are spread throughout the park. The park has no signage and so it is difficult to find. Without any form of structured recreation, this park is mostly passive providing visitors the opportunity for personal or family relaxation or the option to fish out of its pond.
Based off of research and processes, Metcalf Park needs public transportation provided directly to the park for easy access to all that live within the basin. Within the park, new picnic tables and cooking grills needed to be added to provide enjoyable passive recreation for all citizens. A new playground for children recreation needs to be added for both activity and health benefits. Stocking the pond with fish and adding two water fountains to aerate and provide moment of water for algae and mosquito prevent will add active aquatic use for the community. Low cost and maintenance restrooms need to be added for sustained usage of the park. Sports fields including soccer, football, and baseball will add active use throughout the year. The continued growth and maintenance of the trail system around Metcalf will add to the health benefits and connective for the community.
Brookhollow Detention Park consists of 38 acres of land. It was constructed next to Brookhollow Creek in order to provide as an emergency overflow during flood conditions. Square in shape its weir is located on the northeast corner of the facility. In repeated site visitation, very few individuals use this facility for more than jogging along a track that encircles the park along the levee. Once used for soccer and football practice, this use has long been abandoned leaving only one rusting soccer goal in place. The potential for Brookhollow is considerable considering its direct access to 31st Street East and ample parking. But, due to its current neglect, future growth for usable open space is at a standstill.
Based off of research and processes, Brookhollow Park needs public transportation provided directly to the park for easy access to all that live within the basin. The park would also be an excellent site for Urban Agriculture Study for both local high school and colleges. A community Garden would add food growth, health benefits and community coordination. Noted within the study is the need for an active art seen and so an Amphitheater would provide a form. Low cost and maintenance restrooms need to be added for sustained usage of the park. A new playground for children recreation needs to be added for both activity and health benefits.
The Lower Mingo Basin wetlands provide an excellent opportunity for flood waters to be naturally filtrated by the nearly four square miles marsh, creek shrubs, and other naturally preserved landscape. Most of this area is inaccessible by means of motor vehicle or bicycle. Only by foot can one go into the natural wetlands of the Mingo Valley. Bound by the Tulsa International Airport to the west, Bird Creek to the north, and Highway 169 to the east it has continued to be a expected barrier to let nature run its course.
Based off of research and processes, the Lower Mingo Basin should be left alone for flood control and natural filtration of contaminates the flow into the system due to improve surfaces. Nature Trails maybe added to the area where possible as long as it would not impact the ecosystem that is already in place.
The recommendations for each research site can be used as an example for their respective type of space. Because of the Mingo Creek and Park Space has to do with riparian, the transfer of park responsibility to Tulsa River Parks is strongly recommended. Just like the Arkansas River provides many forms of healthy and recreation activity, so can the parks in Mingo Creek. Tulsa River Parks has had decades of knowledge of working along a water system and would be more experienced in molding the detention, retention, and natural spaces into usable active/passive spaces.


