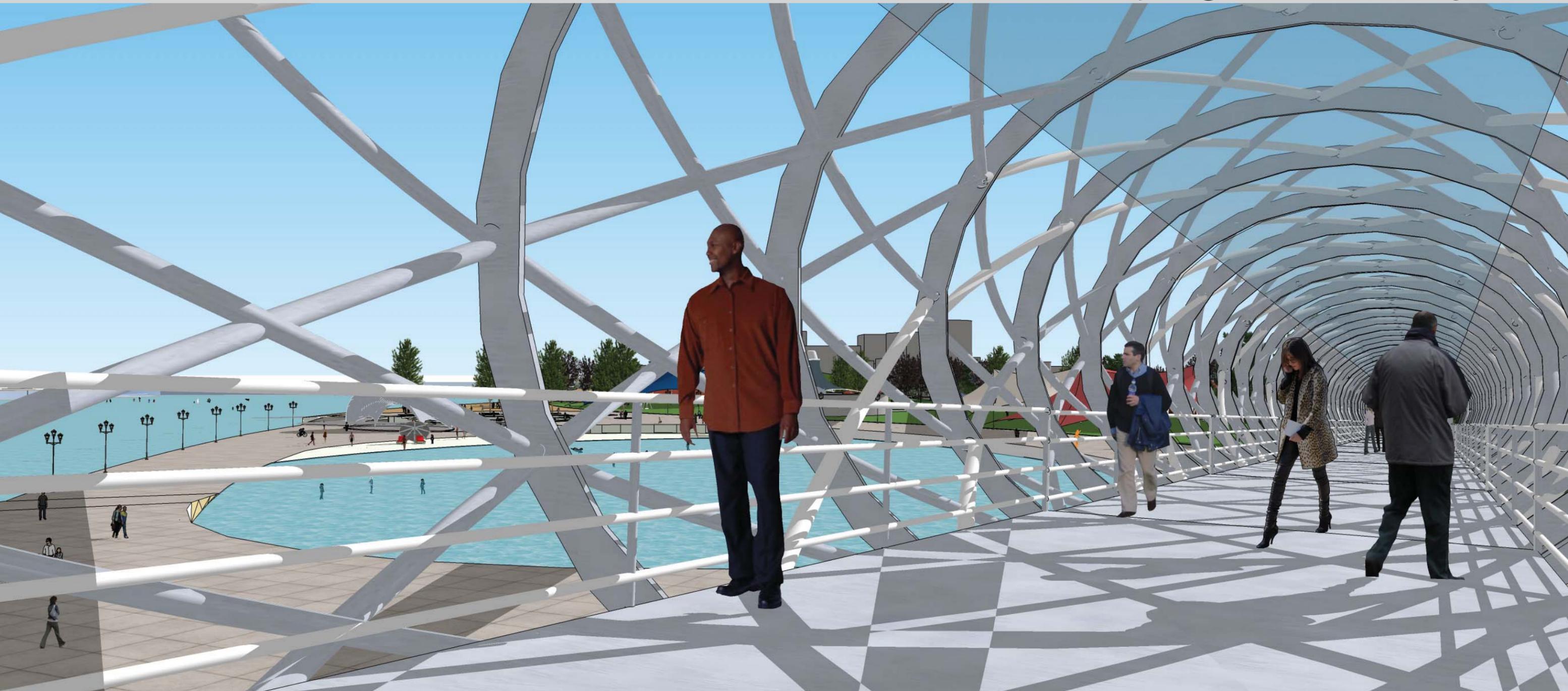


Developing Tulsa's Riverfront



Mthabisi Masilela 2011/2012

Developing Tulsa's Riverfront

The University of Oklahoma
Graduate College

Developing Tulsa's Riverfront

A Professional Project
submitted to the Graduate Faculty
in partial fulfillment of the requirements for the
degree of the

Master of Architecture

by
Mthabisi Masilela
Tulsa, Oklahoma
2012

Approved for the Urban Design Studio
of
The College of Architecture

by

Shawn Schaefer - Chair
Blair Humphreys
Meghan Wieters PhD
Showa Omabegho PhD

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Introduction

Developing Tulsa's Riverfront

The City of Tulsa issued a request for proposal for the redevelopment of its 88 acre properties on the west bank of the Arkansas River at West 23rd Street and South Jackson Avenue - the River West Festival Park, West Tulsa Park and the City Public Works Yard. Three private developers submitted their proposals which were evaluated by Tulsa County and River Parks Authority but the final selection was performed by the City Officials. The River West Festival Park houses the historic Reynolds floating stage, an open amphitheater and the annual Oktoberfest festival. The Starlight Band plays an annual summer concert at the amphitheater. Great views of the Downtown skyline are visible from the area. The GCC Midcontinental Concrete private property separates the City owned property along the river edge together with West 23 Street. To the north and west of the properties, three large apartment complexes are located: Westport, Riverview and Western Pines apartments do significantly increase the population density in the area compared to the few single family housing units. Besides the busy Skate park east of the West Yard, not much activity is located in the area to attract people. The Tulsa Rowing Club is located at the River West Festival site which has more direct easy access to the Arkansas River than the steeper edges on the east bank. The islands in the river have been declared as conservation areas for the natural habitat.

The refineries are the largest employers in the area while most of the businesses are along Southwest Boulevard and West 23rd Street houses a limited number of fast food outlets. Less than a mile to the west is the US-75/I-244, while the bridges at Southwest Boulevard and West 23 Street provide access to the city. A pedestrian bridge is also provided at 11th Street linking the east and west riverbanks. The slow moving river has patches which pose health concerns such as a bad odor and mosquito breeding areas due to the controlling of the dam levels up river by the engineers. In addition, the Reynolds floating stage area with the stagnant water deters people from the area. With the closed pool in the West Tulsa Park, there is less people presence around despite having the basketball courts and the play equipment for children.



Source: Information by www.cityoftulsa.org, image by author





Mayor Dewey Bartlett issues out the RFP for the West Bank property at a press conference on April 29, 2011 at the Arkansas River



View of the West Bank properties from across the Arkansas

Initially, the objective of this project was to work with the city planners to create a plan for what they envisioned in the development of the West Bank after the city officials rejected all the bids submitted by the private developers. After contacting the planners, I was informed of their commitment to other projects in the area and hence, no assistance could be provided. Consequently, the main objective of this project is to develop an urban design plan with social, cultural and economic considerations for the area. The research method includes liaison with the city officials, developers, professionals, community groups, conducting real estate market analysis to determine demand for new development, GIS mapping of demographic and statistical data, and review of selected case studies of successful riverfront development projects in other cities. Design studies, computer simulations, recommendations, development plans and possible funding sources will also be presented in this plan. Preliminary findings suggest that the west bank property development will require a public-private partnership for a successful riverfront development.



View of the islands from the East Bank



View of the West Yard Works

Objectives

- To create an urban design plan for the West bank RFP.
- Use case studies and real estate market demand to support a design program.
- Identify steps, challenges and draft a policy.
- Identify possible implementation, development strategies and financing opportunities.
- Provide the city officials with a waterfront development proposal.

Goals

- Bring people to the West Bank and the West Bank to the people.
- Enhance the views of the Downtown from the West bank.
- Enhance the West bank as a unique attraction and maintain the visual link.
- Create a high quality West Bank through innovative design, with a mix use of cultural events, arts, retail, restaurants, leisure and recreational.
- Provide an integrated network of open space and pedestrian links.
- Create points of interest nodes within the area.
- Create a place where people can meet and socialize.
- Attract and retain the young demographic from leaving Tulsa.
- Create green jobs.

Project Schedule

Developing Tulsa's Riverfront

August 2011	Goals Objectives Review literature	January 2012	Conceptual designs
September 2011	Site Analysis Photo surveys Observations ArcGis mapping	February 2012	Visualizations Renderings
October 2011	Case studies 1st Jury Presentation	March 2012	Design development 3rd Jury presentation Research Day poster design
November 2011	Real Estate market analysis Design program	April 2012	Begin work on project book Recomendations Defense
December 2011	Conceptual designs 2nd Jury presentation		

Parcels of Land



- 1. River West Festival Park – 23.87 acres
- 2. Tulsa West Park – 13.88 acres
- 3. Tulsa Public Works Yard – 38.99 acres
- 4. Tulsa Public Works Offices – 11.24 acres
- 5. Potential Mid Continent – 27 acres
- City Land 87.98 acres
- Available land – 114.98 acres

Key Dates

- Bid Issue - April 29, 2011
- Bid Submission Deadline - July 29, 2011
- Expected selection - September 29, 2011

Source: Information and images from www.cityoftulsa.org

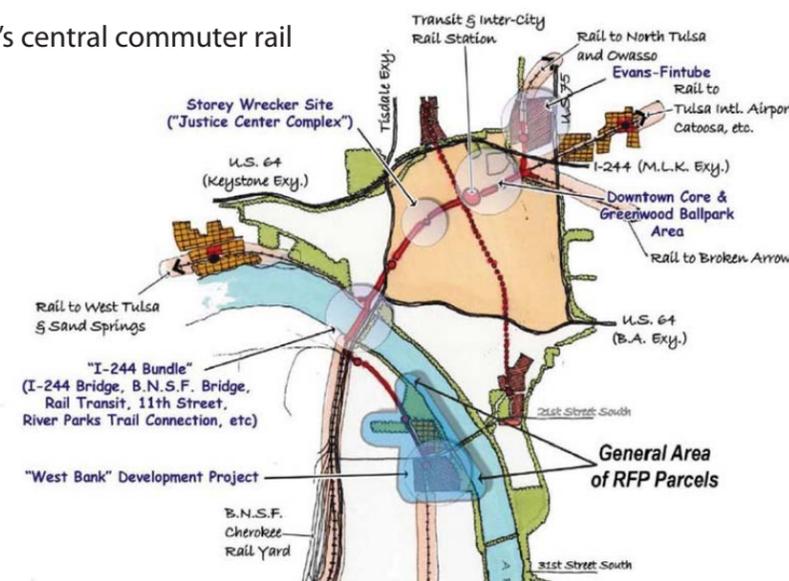
According to the City of Tulsa RFP proposal, the selection criteria will be based on the following considerations:

Uses: commercial, retail, office and residential

Create a destination element for Tulsa. The proposal should be of a unique nature that will bring visitors from all over the country or abroad in high attendance. Projected attendances, revenue and adequate parking must be provided:

- World Class Statute such as the Iwo Jima Memorial, Washington DC American Indian Culture site,
- Museum such as the Sydney Opera House,
- Family entertainment/ hotel amusement venue such as go-karts, water parks.
- Linkage/use of natural connection features such as kayaking, hiking, biking etc
- Landscaped gardens that promote wedding venues and photography such as the Dole Pineapple Garden Maze, Hawaii
- Synchronized water fountain and music presentation such as the Bellagio: Branson Landing
- The proposal should show plans for future access and connection to Site and green building technology such as LEED
- Architecture and design considerations such as context sensitive street design, pedestrian friendly
- Local Planning Guidance such as the Tulsa Comprehensive Plan, Downtown Area Masterplan

Tulsa's central commuter rail



Map of the Tulsa central commuter rail

Submitted Projects

Paula Unruh and Yvonne

- 700-800 foot Oil Derrick Replica
- Restaurants
- Shops

Tulsa Games Committee

- Olympic stadium with parking
- Olympic park
- Olympic and Native American sports and a big statue

Formation LLC

- Premier senior living accommodation
 - 100 senior lofts, 200 senior apartments, 60 senior homes
- Amusement Park
- Boutique hotel
- 24 hour medical clinic
- 300 room adventure hotel
- Spa health club
- Rerouting Riverside drive

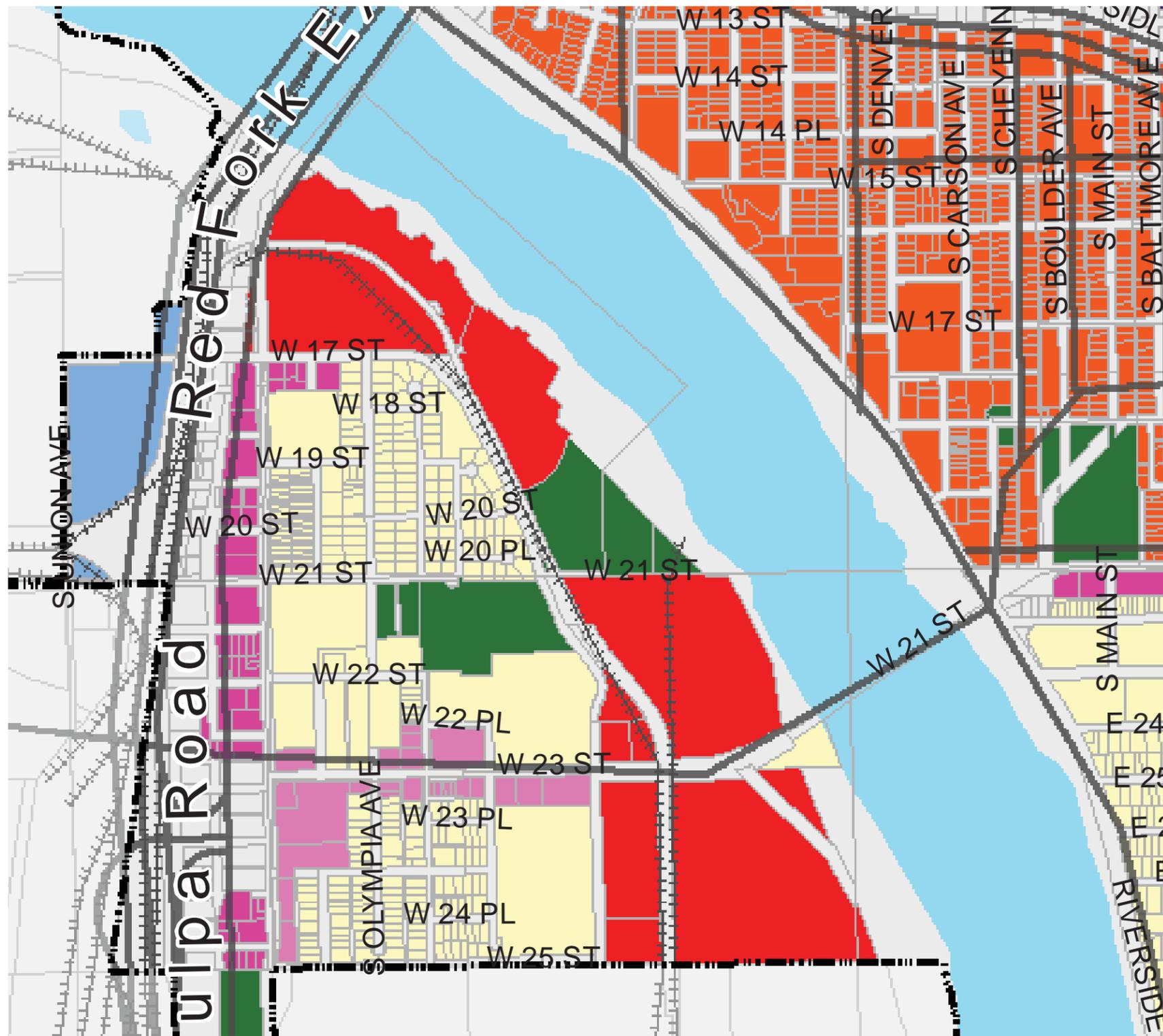
After the submission, the selection committee rejected all of them since they had not met what the bid demanded. The whole process came to a stand still.

Developing Tulsa's Riverfront

PlaniTulsa is an initiative that involved more than 6,000 Tulsans who participated in city wide planning workshops to draft a unified vision for the city. PlaniTulsa was adopted by the Tulsa Metro Area Planning Commission and approved by the Tulsa City Council in July 2010 to be the Tulsa Comprehensive Plan.

According to PlaniTulsa, the River West Festival Park and West Tulsa Park will remain as parks while the GCC MidContinental Concrete site and the West Yard are envisioned as a regional center. The regional center will consist of mid rise buildings of mixed-use development with large scale employment, retail, a possible transit hub and an entertainment area. High densities of 8 households per acre and 25 jobs per acre are proposed in this area. Workers from around the Tulsa Metropolitan Area are the main target market for employment. The Westport apartments have also been included in the center.

PlaniTulsa identifies West 23rd Street as a mixed use corridor. The mixed use corridors are high capacity transportation facilities with commercial, retail and housing uses. Southwest Boulevard will be a Town Center. The Town Center will be of medium scale one to five storey mixed use buildings with densities of 19 jobs and 14 housing units per acre. The City of Tulsa has prioritized three small area plans for southwest Tulsa at the Tulsa Hills retail center, North Tulsa and the mid-town Utica avenue corridor. Three planners were appointed by the city's planning department to start the implementation of the Tulsa Comprehensive Plan.

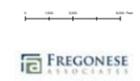


Land Use Plan Categories

City	Downtown	Neighborhood Center
County	Downtown Neighborhood	Employment
Parcel	Main Street	New Neighborhood
Streams	Mixed-Use Corridor	Existing Neighborhood
Open Water	Regional Center	Park
	Town Center	Open Space



Source: Information and image from www.planitulsa.org



Past Plans

Developing Tulsa's Riverfront



Map of the park location

Tulsa Riverfront

In 2011, The George Kaiser Family Foundation approached West 8 Architects to design a park at the Blair property at Riverside Drive and 31st Street. The conceptual design exhibits a monumental waterfront park that utilizes water management strategies while preserving the natural environment. Pedestrian trails, kayaking, rowing and fishing are the main activities while the scenic environment creates areas of interest.



Site plan



Aerial view from the west bank



Aerial view towards the Arkansas River



Water pools in the park



Aerial view of the park model

The open house at Tulsa Community College Center for Creativity in March 2012



Mapping and photo surveys displayed



MVVA team facilitating the open house



Tulsans viewing the site model

A Gathering Place for Tulsa

The George Kaiser Family Foundation commissioned Michael Van Valkenburgh Associates (MVVA) to design the park from the concept plan. Open house sessions were held on March 7 & 8 2012 at the Tulsa Community College Center for Creativity to get public input. In May 2012, conceptual ideas will be presented by MVVA to the public for feedback and finally, the plan will be unveiled in Fall 2012.

The park will be 55 acres and will cost almost \$150 million. The Blair Mansion will be moved to a suitable location and the two apartment complexes south of 31st Street will be demolished. The park will have water features, tree houses, zip line courses, coffee shops, nature walks and ancillary retail for park activities.

Source: Information & images from www.west8.nl, www.newson6.com and www.agatheringplacefortulsa.com

The Channels



Aerial view of the Channels in context with the Downtown



Aerial view of the Channels from the north



View of the apartments

In 2006, Tulsa business leaders commissioned a Vancouver architect, Bing Thom, to design the Tulsa Channels. A 40 acre artificial island would be constructed around the existing islands between 11th Street and West 23rd Street bridges. A large stone paved plaza for community events and a farmers market covered by a canopy with solar panels would be located at the focal point of the island. The \$788 million dollar development will include navigable canals, public parks, retail arcades, restaurants, cafes, a floating stage for performances, a marina, a large pool, low and high rise accommodation. A dam for hydro energy would be constructed at West 21st Street creating a 12 mile lake to Sand Springs.

Public financing of \$600 million was to be raised while the Tulsa Stakeholders - a nonprofit group would seek private sector funding of \$100 million and the sale of solar and the hydro dam's renewable energy would cater for the remaining \$88 million. The River Corridor Master plan Advisory Committee reviewed the project to determine if it would be included in the river master plan. The review focused on infrastructure, environmental impact, institutional and regulatory issues, financial, economic considerations, relationship to the river's master plan and implementation. Other projects in the river master plan would also be affected by the creation of the dam.

Public input meetings were held in October 2006 and the residents voiced their opinions on increase in river taxes for funding, flood plain safety management issues and altering the flow of the Arkansas River. According to the Tulsa County Election Board, more than 52% of the Tulsa County voters rejected the increase in river tax to fund the \$282 million development in 2007. This vote also rejected the \$117 million in private sector funding that had been allocated.



The farmers market at the central plaza



Aerial view from the west bank



Mixed use development lines the riverwalk

Source: Information and images from www.brandavenue.com and <http://www.tulsaworld.com>

The City of Tulsa Sustainability Plan

Mayor Dewey Bartlett envisions the City of Tulsa Sustainability Plan to be a tool that will drive Tulsa towards a leadership role in using methods that promote the utilization of clean energy and sustainability to stimulate economic growth as highlighted in the City of Tulsa's Office of Sustainability program. URS Corporation drafted the plan over a six month period conducting thorough data and information gathering from the city employees. A new section - the Department of Sustainability was created by Mayor Bartlett together with an Energy/Sustainability Advisory Committee which will provide strategies to the department.

A thorough focus on the City of Tulsa's assets is reviewed in the plan in relation to :

- Energy management
- Water management
- Solid Waste Management
- Sustainable Fleet Management
- Renewable Energy
- Economic Development



Clean energy resources



The plan highlights resource management techniques and outlines strategies how the City of Tulsa can lead Tulsa in efficient and effective resource management. The City of Tulsa Sustainability Plan won a Silver Award for URS Corporation at the Engineering Excellence Awards Competition hosted by the American Consulting Council of Engineering Companies in Texas. The plan was considered to be unique, a technical value to the engineering profession.

Clean Technology

Transformation from a high pollution, high carbon, waste intensive, and ecological disruption to low pollution, energy/resource efficient, and low carbon is the goal for clean technology. Clean Tech Clusters can either produce or distribute clean technologies.

Tulsa ranks 68 out of 100 metro regions for green jobs with 7,130 green jobs that constitute 1.7% of all jobs in the region and it is also ranked 8th fastest green job growth rate. (*Sizing the Clean Economy*)

Tulsa has one solid Clean Tech sub-Cluster of compressed natural gas CNG. The market for natural gas is expanding in North America and Tulsa Gas Technologies is the largest manufacturer of CNG dispensers in the nation. The plan provides strategies on how these industries can strengthen and improve.

Other Clean Tech Clusters

San Jose, California

Launched the Environmental Business Cluster as a non profit clean energy and environmental technology center. The goal was to assist other growing clean energy and environmental technology companies.

Boston, Massachusetts

Boston instituted policies in renewable energy efficiency. After California, they are the second in the nation.

Austin, Texas

Austin has been the hub in Texas for wind, geothermal, solar, fuel cell and biomass energy

San Francisco, California

San Francisco adopted a plan to become the first city to run entirely on renewable energy by 2020. Their investment in renewable energy and efficient technologies is remarkable.

Category of Clean Tech businesses

Category	Description	Segments
Clean Energy Sources	The production, storage and distribution of renewable or low carbon energy sources.	<ul style="list-style-type: none"> • Clean energy generation • Energy storage • Energy infrastructure
Energy Efficiency	Technologies and services that reduce the amount of energy consumed by different sectors of the economy.	<ul style="list-style-type: none"> • Building energy efficiency • Appliances and controls • Energy management
Green Production Practices	Enterprises that produce products and services or use production practices that reduce the consumption of natural resources.	<ul style="list-style-type: none"> • Transportation and logistics • Manufacturing and industrial • Materials and nano-technologies • Green construction • Agriculture
Pollution Mitigation, Conservation, and Restoration	Enterprises and technologies focused on reducing pollution or conserving and restoring natural ecologies.	<ul style="list-style-type: none"> • Water and wastewater • Air and environment • Materials recovery and recycling
Support Services	Consulting and other services that help enterprises develop and implement green and clean technologies.	<ul style="list-style-type: none"> • Advocacy and policy • Green business consulting • Green finance • Research and development • Education

Source: Information and images from www.cityoftulsa.org, www.enterpriseconnect.gov, www.ecopolitology.org and www.directindustry.com

Environmental Assessments

Phase I and II Environmental Assessments were performed on the City of Tulsa owned properties in 2007 by Enercon Services.

West Park: No chemicals were observed on site.

No storage tanks on site or underground.

No petroleum or hydrocarbons on the site.

Suspect Asbestos Containing materials on the pool house roof.

West Yard: A number of chemicals were stored on the site.

Petroleum underground storage tanks have been historically located on site.

Vent pipes for underground storage tanks were observed.

Above ground storage tanks currently exist.

Several pad & pole mounted transformers, no evidence of leakage.

Suspect Asbestos Containing materials were identified on site.

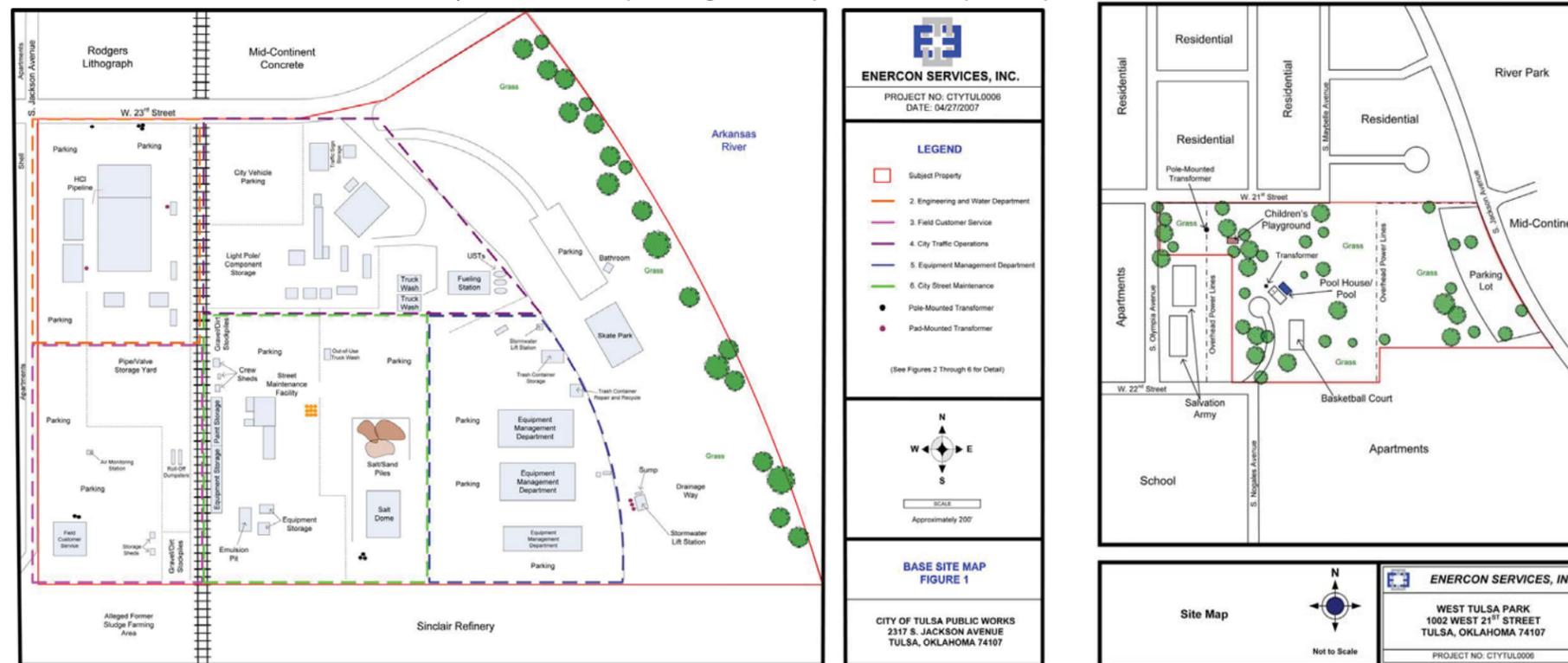
The approximate eastern portion of the site was historically used as a land fill.

According to site representatives, a vendor historically added Cyanuric acid to the sand stored on site.

History of the West Bank

North American cities started revitalizing their waterfronts around the mid 1950s and Tulsa joined the movement in 1974 when the River Parks authority was formed. The first project was the conversion of the Midland Valley railroad bridge at 29th Street and Riverside Drive to a pedestrian walkway. Tulsa has a long flooding history and the major responsive impact was during World War II in 1943 when an emergency national defense plan organized by U.S Army Corps of Engineers was put in place to build levees along the Arkansas river banks at the refineries. In 1964, the Corps completed the Keystone Dam 15 miles up the river. From 1970 to the mid 1980s, Tulsa experienced the worst floods and finally in 1983, the Zinc dam and lake were completed to control the flooding down stream. The floods resulted in 17 people losing their lives, 288 injured and over \$238 million in property damages.

In conclusion, site remediation efforts may be needed depending on the specific development plans.



Map of the West Yard property

Source: Information and images from www.cityoftulsa.org

After the dam and lake were complete, a 1986 flood forced the engineers to release water from the Keystone reservoir and downstream flooding occurred. One levee failed in the West Bank and a number of buildings were flooded. Since this flooding, the city has not been tested by any severe rainfall. In 1987, the City of Tulsa and the U.S Army Corps of Engineers implemented local flood control management.



OSU Campus at the north end



River Parks trail



The islands in the Arkansas River



Westport apartments



Tulsa Rowing Clubhouse



Rowing boat entrance to the Arkansas River



Reynolds floating stage



The amphitheatre area



View of the Downtown from the amphitheater



GCC Midcontinental Concrete at West 23 Street



View of the University Towers



Entrance to the West Festival Park

Source: Images by author



A bench at the West Tulsa Park parking lot



Former West Tulsa Pool



West 21 Street & Nogales Street



Riverview Park Apartments



West Mabee Boys & Girls Club



Eugene Field Early Childhood Center



Gas station at West 23rd Av & S Jackson Av



Play equipment at Tulsa West Park



City of Tulsa Engineering North



City of Tulsa West Yard



Western Pines apartments



River Skate Park

Source: Images by author

ArcGIS was used for creating maps and compiling geographic data provided by the Indian Nations Council of Governments (INCOG).

Figure ground
Transportation
Economic Development
Demographics
Topography
Land Use
Circulation and Parking

Larger commercial properties are concentrated along the west boundary on Southwest Boulevard. Much of the West Bank edge is under developed except for the Westport apartments which are surrounded by South Boulevard on the north boundary, the Arkansas River on the east, West Festival site on the south, the Tulsa Salpupa Railway Line on the west . Westport apartments' random pattern has a somewhat lineal alignment with views of the river.

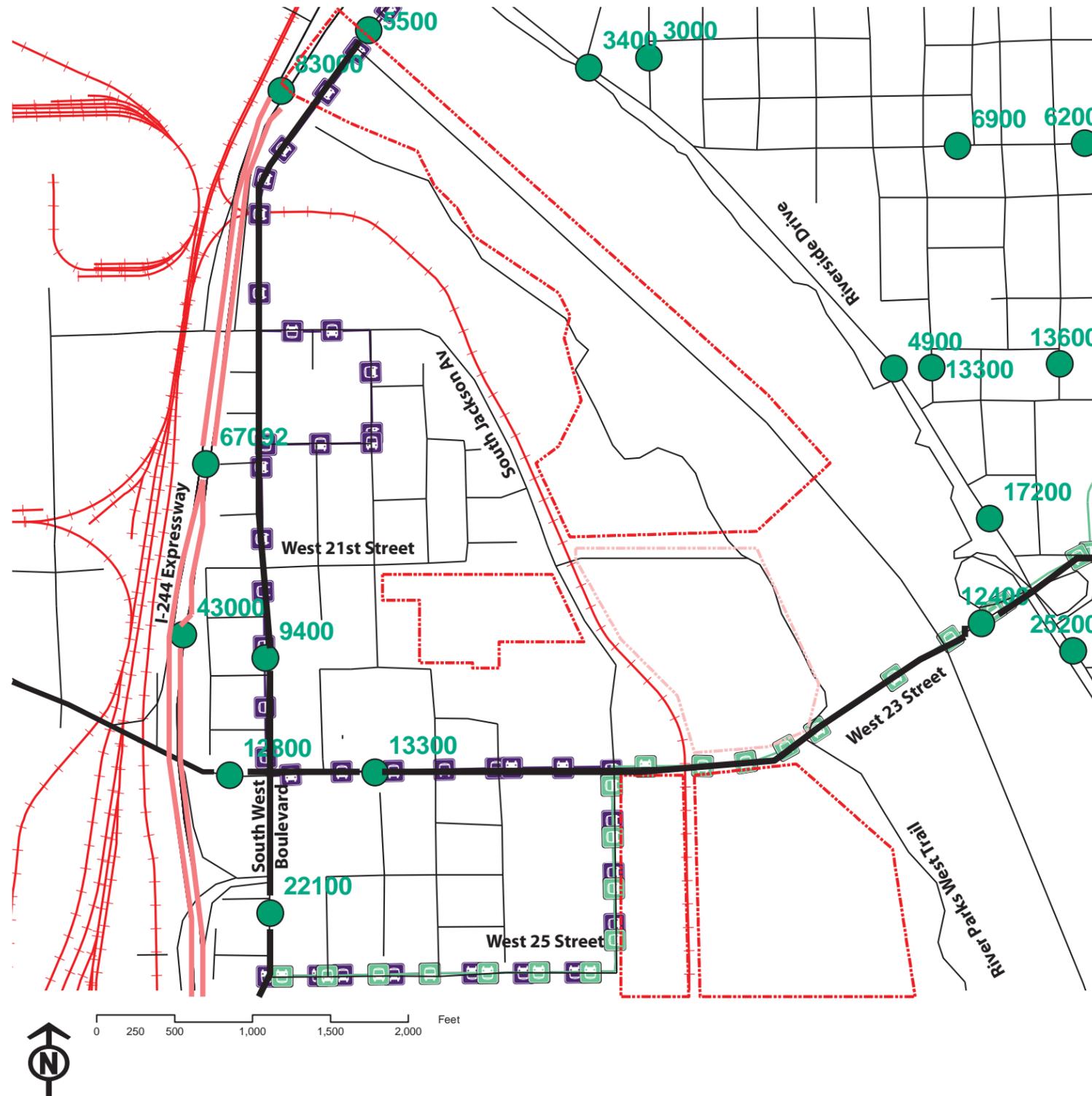
Single family housing neighborhoods are screened off from Southwest Boulevard commercial corridor by the apartment complexes. The immediate property south of West 23rd Street and Southwest Boulevard intersection does not have any building footprint. Much of the apartment complexes group around parking lots creating squares. Single family housing south of West 23rd Street has relatively smaller building foot prints than the neighborhoods up north.



Source: Map by author

Legend

- Buildings
- - - Site boundary
- Potential



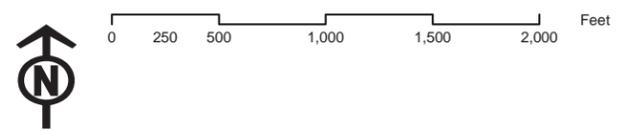
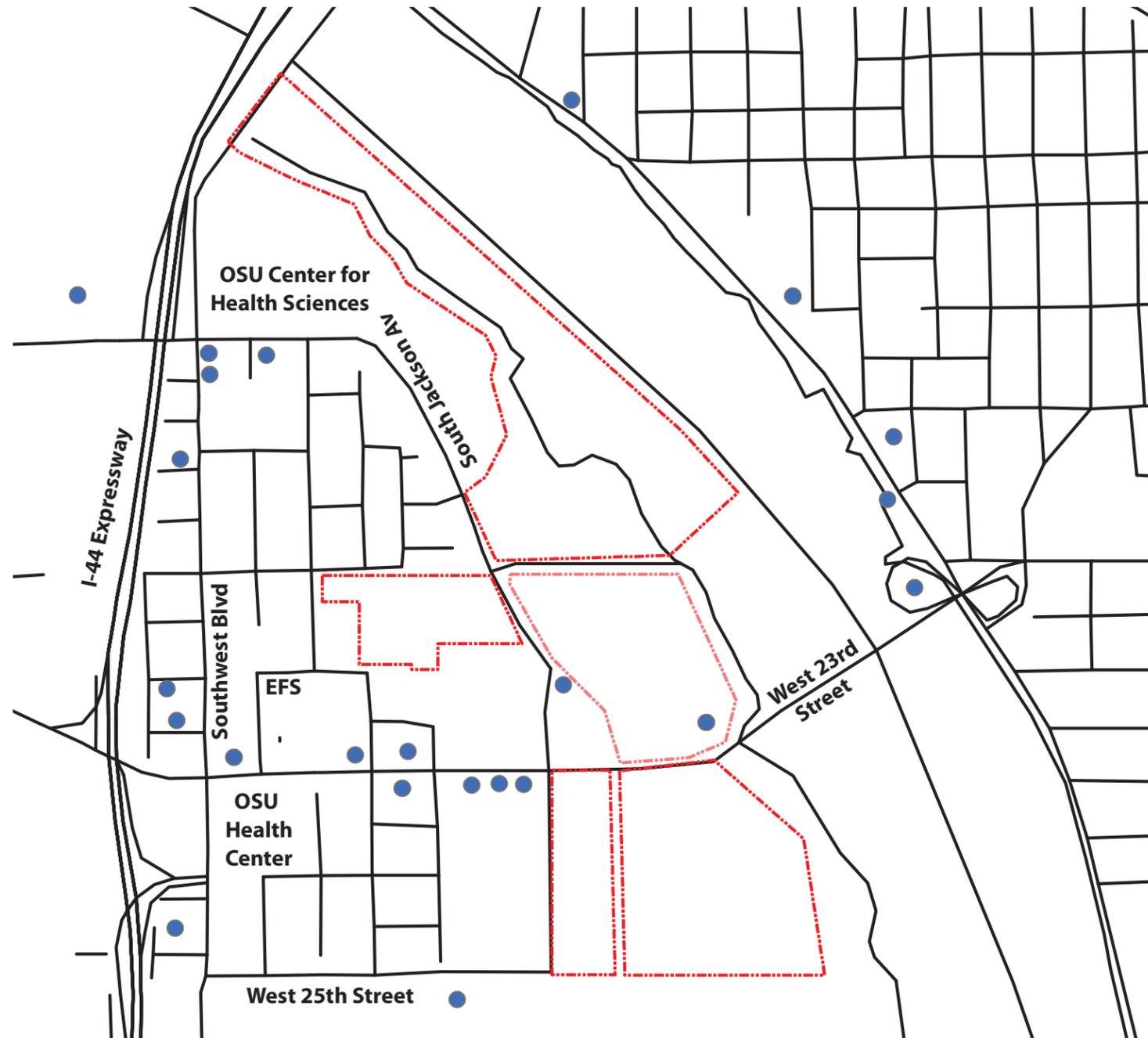
Inner residential streets have less connectivity due to cul-de-sacs in the neighborhood above West 23rd Street. Streets on the East Bank have a regular grid layout much like the rest of the city while the West Bank has individual blocks that define the neighborhoods. The Tulsa Sapulpa Railway Line is a boundary that separates the neighborhoods from the Arkansas River Edge. Southwest Boulevard and West 23rd Street are the corridors into the area with traffic counts that would barely register as medium to moderate numbers. Bus 117 links Downtown and Tulsa Hills through Southwest Boulevard while Bus 118 links the latter mainly through 33rd West Avenue.

Pedestrian and cycling trails are located along the river edge. Sidewalks are available through out the area and they do provide some level of connectivity for pedestrians. Freight is transported on the Tulsa Sapulpa Railway mainly by the refineries although there are future plans for a light rail train to link up Downtown and the West Tulsa area.

Legend

- Traffic count
- 118 Bus
- 117 Bus
- Railroad
- Street
- Arterial
- Highway
- Site Boundary
- Potential Site

Source: Information from INCOG, map by author



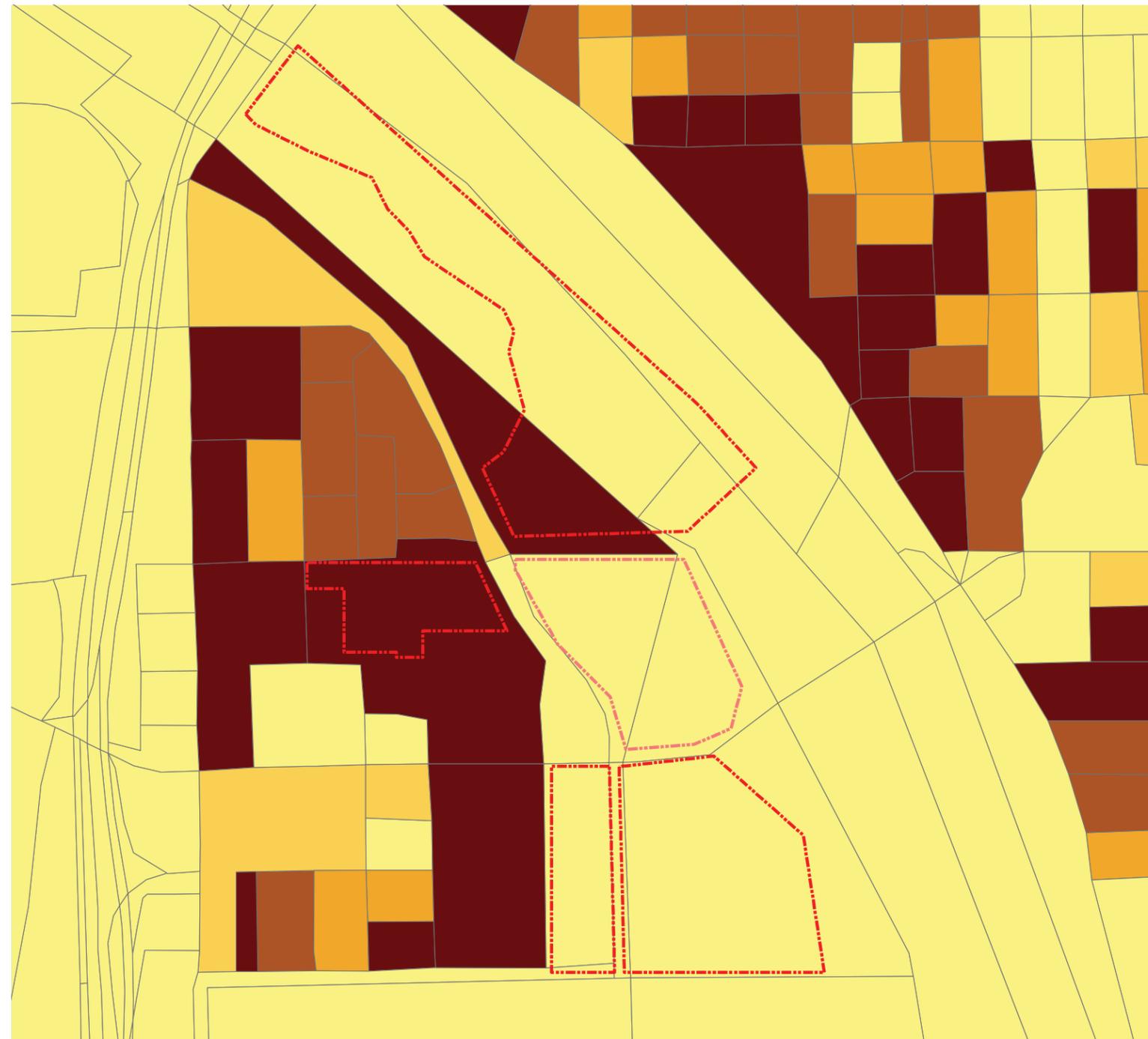
Source: Map by author

The Sunoco and Sinclair refineries at the south of the West Yard and north west of Oklahoma State University Center for Health Sciences are the largest employers in the area. Most businesses are located along Southwest Boulevard corridor while West 23rd Street has restaurants, a gas station and fast food cafes. Eugene Field Elementary Center and the Oklahoma State University Center for Health Sciences are the only education institutions in the area. In addition, these institutions employ a significant number of employees. The annual Oktoberfest Festival and the Starlight annual concert attract a lot of visitors to the River West Festival Park.

The area has no grocery stores and residents have to travel south to Tulsa Hills or across the Arkansas River. The median household income is lower than the city average and coupled with the relatively low population, there isn't much of demand for more goods and services in the area. Despite this negative outlook, the area has good views of the downtown area and the available RFP land has potential to revitalize the area through successful waterfront development.

Legend

- Businesses
- - - Site boundary
- · · Potential site



The map shows the population densities in the area of census tract 46. Majority of the population live in the multifamily housing apartment complexes. Areas with no people are along the Arkansas River, the Interstate I-244, the commercial areas such as the refineries, the GCC Midconcrete Continental, the fast food cafes West Tulsa Yard and Eugene Field Early Childhood and Elementary Schools.

- Population - 3,082
- Households - 1,364
- Median income - \$33,900.

In the year 2000, census tract 46 had a population of 3,147 people in 1,573 households. The area had a slight population decrease of 65 people since the last census. Much of the population density is in private apartments and the public housing complexes.

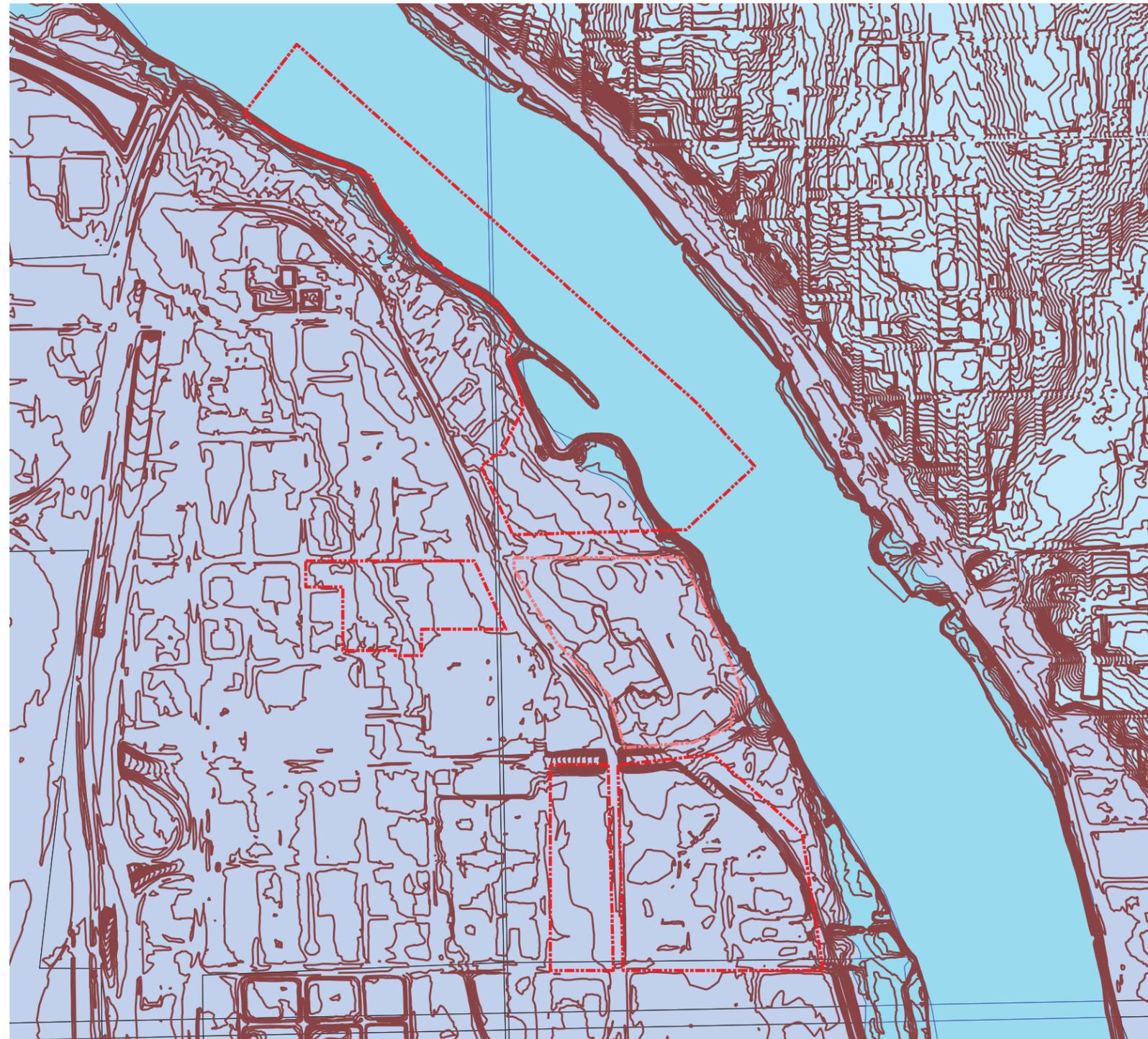
Legend

- 0
- 1 - 49
- 50 - 99
- 100 - 300
- + 300
- Site boundary
- Potential site



0 250 500 1,000 1,500 2,000 Feet

Source: Information from www.incog.org and www.censu.gov/, map by author



The map shows the floodplain and the contour lines of the area. West Tulsa is under the Federal Emergency Management Agency (FEMA) 500 year flood plain while the Arkansas River banks fall in the 100 year flood plain. At 646 feet above sea level, the RFP sites are relatively flat and the highest point is on West 23rd Street above the Tulsa Sapulpa Railway Line. In contrast, the East Bank is more contoured and is more elevated than the West Bank.

The inlet in the Arkansas River and the central islands are landmark features that highlight the West Bank. These central islands experience some moderate erosion by the river .

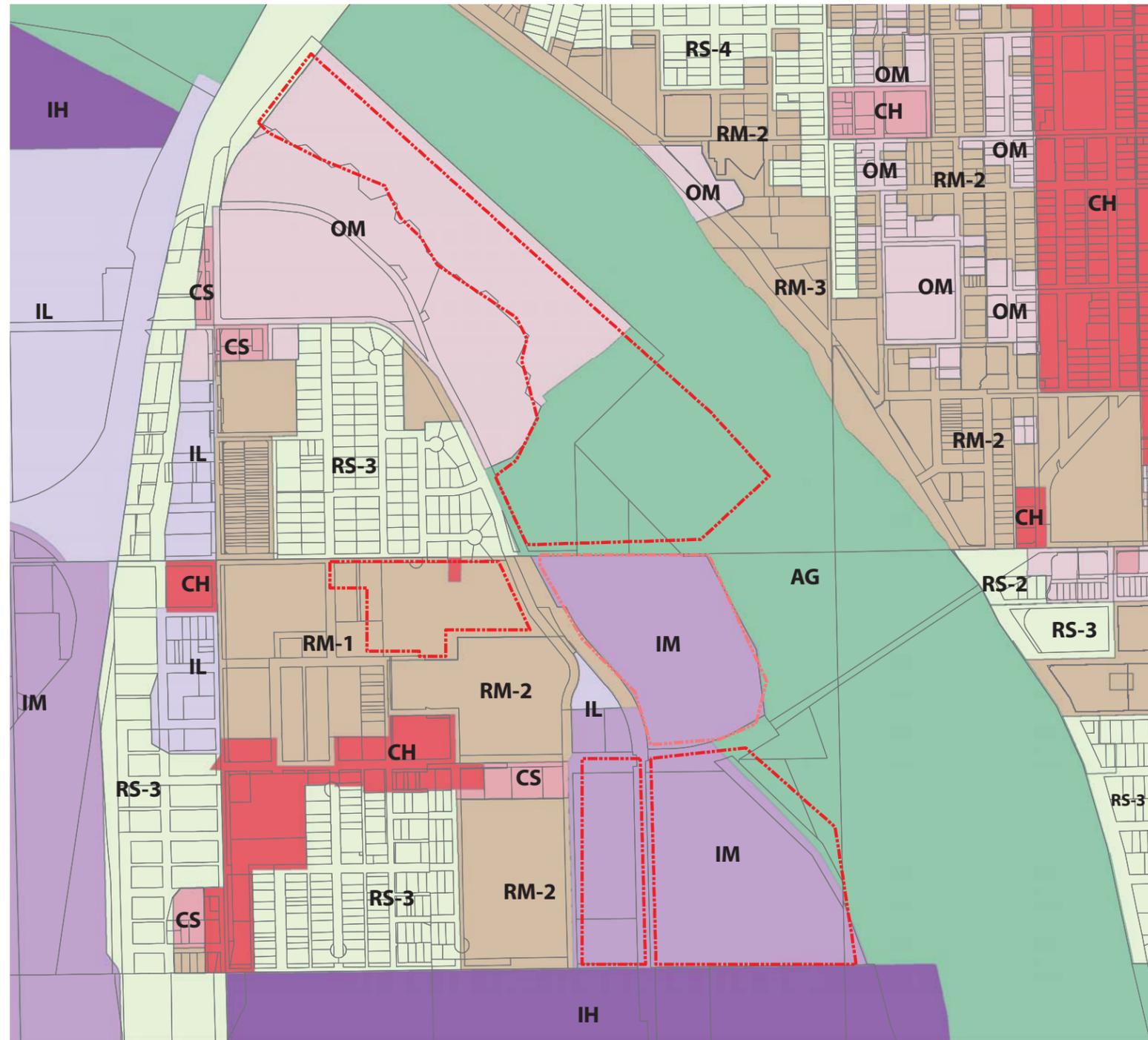
Legend

-  FEMA 100 Year Flood Plain
-  FEMA 500 Year Flood Plain
-  2 Foot Contour lines
-  Site Boundary
-  Potential Site



0 250 500 1,000 1,500 2,000 Feet

Source: Information and image from INCOG



Most of the land on the West Bank is zoned residential and industrial. Much of the residential areas are medium density, multifamily housing. Westport Apartments are in a commercial zoned area with the Oklahoma State University School of Health Sciences Center. Offices are located along Southwest Boulevard, in a multifamily housing and light industrial zoned area. West 23rd Street is a commercial corridor lined with light retail mainly restaurants.

The Tulsa comprehensive Plan will replace the current land use with a mixed use corridor along West 23rd Street and a Regional Center in the GCC MidContinental Concrete site and the West Yard.

Legend

- Agriculture
- Commercial/Office
- Industrial
- Single Family Housing
- Multi Family Housing
- Site Boundary
- Potential

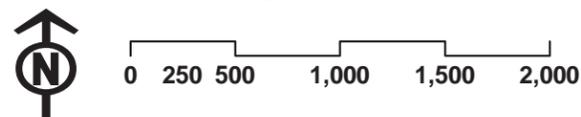
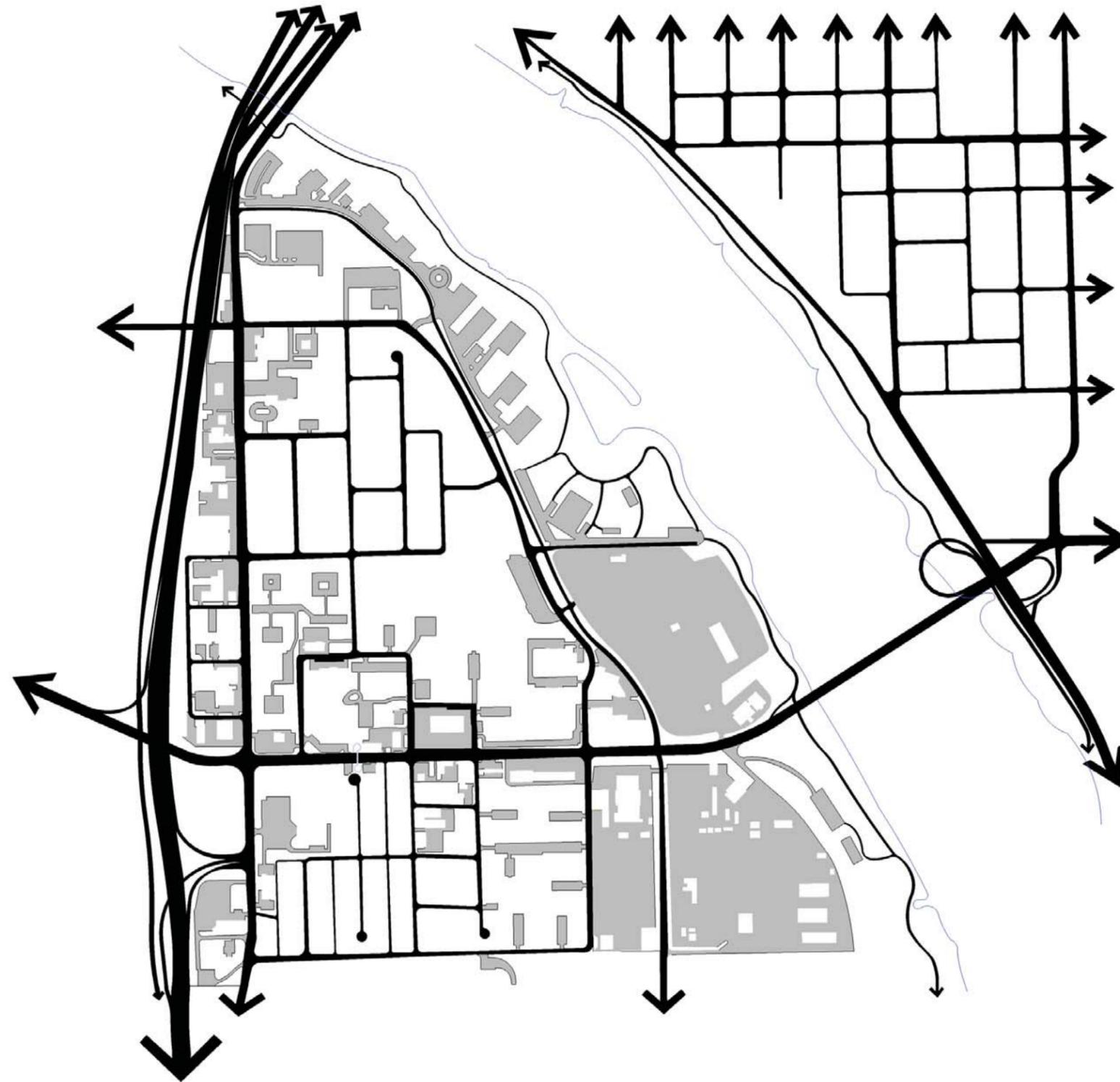


Source: Information and image from INCOG

The neighborhood west of Westport Apartments has few entry points with more defined block patterns and has more connectivity than the lower south neighborhoods which are characterized by long blocks and deep cul-de-sacs that impede pedestrian circulation. Sidewalks are provided in the neighborhood streets and the arterials for pedestrian use. The River Park trails have lanes that cater for cyclists and pedestrians along the river edge. Despite having adequate trails, pedestrians and cyclists still have limited points to cross the Arkansas River.

Parking and basketball courts are the impervious surfaces in the West Festival Park and are used for pitching tents during events. Much of the West Yard is a paved impervious surface like the GCC MidContinental Concrete site which increase runoff water. The single family neighborhoods are the only blocks that do not have the large parking islands that characterize the apartment complexes and much of the commercial corridor on Southwest Boulevard.

West 23rd Street and Southwest Boulevard are the access points to the area. The Interstate 244 expressway is a barrier on the west boundary that separates the central neighborhoods from the oil refinery while the Tulsa Salpupa Railway Line separates the connectivity to the Arkansas River edge. In comparison, the neighborhoods on the East Bank have more defined blocks which ease pedestrian connectivity.



Source: Information and image by author

Case studies on selected successful riverfront development cities would be reviewed to provide a guideline on the strategies used and challenges overcome. Lessons learnt will be used to provide a reference point in the recommendations and the design development program.

Portland, Oregon

Chattanooga, Tennessee

Toronto, Canada

Jenks, Oklahoma

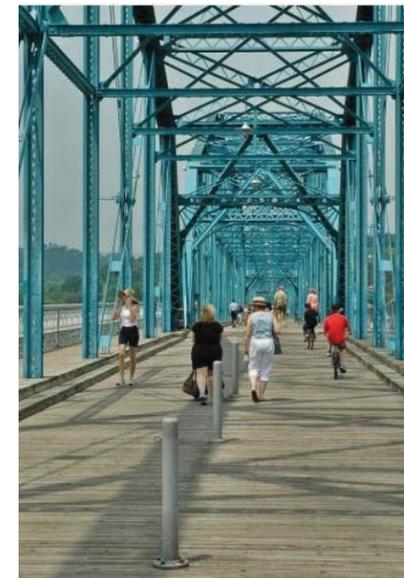
Pittsburgh, Pennsylvania



The Riverwalk



Access roads to the riverfront



114 year old pedestrian bridge



Tourist destination Tennessee Riverfront



The government funded museums



The water stairs

Objectives

- Combine community knowledge with professional expertise
- Focus on natural beauty that is green and "walkable"
- Commit to issues of conservation, archaeology, and history
- Develop a world-class tourist destination
- Maintain a natural attraction to the river, above and below its surface
- Appreciate art, both informal and formal, in natural settings

In 1983, a city and county appointed citizen task force was formed to facilitate a series of public participation through community wide brainstorming sessions to create a vision of what they wanted the riverfront to be. Vision 2000 was created and a year later, the RiverCity Company and Chattanooga Venture were established to contribute in major ways to the creation of the Riverwalk. ReVision 2000 was a second series of public participation meetings held in 1993 to strengthen their commitment to the river development. Public private partnerships were created through these meetings, foundation companies and non-profit developers all came on board to assist. Residents approved to 0.5% increase in sales tax to fund the development and hotel taxes were also sourced for funding. At 129 acres, the budget for the riverfront development was \$120 million.

Planners used public investment to be the catalyst for private development. The three museums, public parks and artwork were funded by the city and state governments while the river pier, residential, restaurants, cafes were funded by the private developers. Urban designers used the public's input to spur the riverfront development by designing a riverfront that was pedestrian oriented.

Lessons learnt

- A formation of a committee to create a unified vision through public participation and administering all riverfront development projects.
- Establishing private-public partnerships to fund the development.
- The water edge needs to be accessible to the public so as to attract investment.
- Provide activities and areas of interest at the riverfront to attract people.
- Create a tourist destination that will bring visitors from all over the nation

The attractive Tennessee River edges were inaccessible due to the terrain. The seven mile landscaped Riverwalk was constructed and it became the catalyst for developing the riverfront. Attractions such as fishing piers, parks, plazas, public art, pedestrian bridges, promenades, theaters, homes, offices, restaurants, and the Tennessee Aquarium are located in the development. Access from the elevated Hunter Museum to the river edge was not possible and the solution was to link the two areas with a translucent nonslip glass footbridge with views to the riverfront parkway beneath. In addition to improving pedestrian access, a 114 year old vehicle bridge was converted to be a pedestrian bridge connecting the river banks. A 100 year old carousel is located in a park giving it a historic nature.

Source: Information and images from www.hargreaves.com, www.newurbannetwork.com and Remaking the Urban Waterfront



People relaxing under the umbrellas



The two sections of the park



Rogers Center the CN Tower in the background



The park in context with the city



Park entrance

Toronto's waterfront stretches for 28.5 miles and it was originally used for docking ships. When the downtown grew, real estate values increased and the industry moved to more affordable land elsewhere. Consequently, much of the waterfront became unused and had environmental concerns. Private developers and the federal government came in and acquired the abandoned sites, erected high rise buildings blocking access to the waterfront and residents started objecting in the 1970s. Negotiations between the residents, private developers and the governmental groups finally led to the formation of the Harbourfront Corporation - an independent development agency. Harbourfront Corporation submitted projects to the city and the federal government for approval to acquire public funding. The public funds were used for infrastructure development, site remediation, and public right of way access to entice private developers. Long term leases were also provided for large developments. Harbourfront Corporation administered the development on the waterfront and ensued that proposals tied together to create a unified area which respected the views and accessibility to the water edge for people creating a tourist attraction in Toronto. Despite having a renowned waterfront, the elevated expressway is a physical barrier that disconnects it from the downtown.

Lessons learnt:

- Maintain the river edge as public property.
- Formation of a riverfront group to lead and oversee all riverfront development.
- Submitting projects to the federal and city officials for public funding.
- Create a unique tourist attraction to attract visitors at both national and international level.
- How brownfield sites can be reclaimed successfully and sustainably.
- Restoring natural habitats for attracting people to an area.

Designers: Janet Rosenburg + Associates Landscape Architects, Claude Cormier Architects Paysagistes Inc

HtO Park is an urban beach attraction next to the Harbourcenter with an open space for gathering. The park is in two sections with the eastern section next to a fire station while the western section is next to a condominium building. A beach with yellow umbrellas provides a place for visitors to sit sun bathe while viewing the unusable water. The park provides a green space around the concrete and asphalt section of the downtown area for people to experience and small cafes line the site edges to provide the users with refreshments. Toronto's HtO Waterfront Park used to be an industrial brownfield site that lay unused for a long period. Without an idea for the land, the City of Toronto held an international design competition for the site in 2003. After selecting the award winning entry, the Harbourfront Parks Steering Committee held the HtO Community Open House to get public participation. The original design was changed after extensive public consultations. The HtO name represents the changes that will occur between the Toronto and the waterfront. Trucking the soil to a disposable site was costly so capping the polluted areas with clean soil was preferred. Systems for on site storm water management were installed to infiltrate water through. Lake water is used to irrigate the lawn instead of drinking water. Fish habitats were restored along the water's edge. Recycled concrete was used during the construction of the project. Funding came from City of Toronto and the federal government for the project.

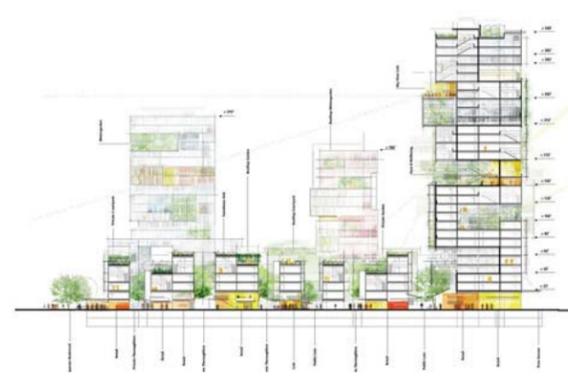
Sources: Information and images from Remaking the Urban Waterfront, www.toronto.ca, www.waterfronttoronto.ca, www.urbantoronto.ca, www.asla.org



Cafes on the water edge



View of the Cultural District from across the river



Cross section of the development

River Parc Development

Located on a six acre site along Three Rivers Park is the RiverParc Cultural District Riverfront Development . The complex comprises of seven residential buildings, a street of townhouses, public parks, green spaces, a hotel and a performing arts venue. At a cost of \$460 million, the project is for a non profit organization Pittsburgh Cultural Trust which was appointed to lead the development of an economic and cultural area in the downtown for arts, and residential accommodation.



People at the riverfront



Aerial view of the city



Aerial view of the river walk

More than \$4 billion in public and private funds has been invested through cleaning the industrial sites and construction work. More than two-thirds of the Three Rivers Park has been completed and the 13 mile riverfront trails. Currently, 65 acres of green space are accessible to the public in the Downtown waterfront area.

Pittsburgh like the rest of the nation, lost jobs, population and the industries that were based on the waterfront. The city has been struggling to reuse the water edge. In 1999 the Riverlife Task Force: a non profit public-private partnership of developers, business leaders and influential property owners was appointed by the mayor to revitalize the waterfront. Since appointment, over 120 community participation meetings have been held to ensure that the vision created was in line with what the interest groups had. The Riverlife Task Force monitored the development closely.

A Vision Plan for Pittsburgh's Riverfront

Pittsburgh riverfront is shaping out to be a leader in waterfront development. The strategies employed have provided results unlike any other city has done before.

Objectives

- Insist on interconnected linear waterfront development with broad public access
- Create synergy between office, retail, residential and recreational use of key waterfront sites
- Protect and enhance the natural riverfront environment
- Reclaim Pittsburgh's' identity as one of the world's great river cities

Lessons Learnt

- Formation of public-private partnerships groups to lead riverfront developments.
- Community participation from conceptual stages through development
- Public-private partnerships to remediate brownfield sites.
- City wide vision for riverfront development

Sources: Information and images from www.planphilly.com, www.riverlifepgh.org, www.americancity.org, Remaking the Urban Waterfront



Riverwalk crossing amphitheater



Cafes, restaurants at the Crossing



Arial view of the Jenks Riverwalk Crossing



High end retail development for the area



Village on the main



River Spirit Casino

River District in Jenks was mainly started by the construction of the Oklahoma Aquarium in 2003. Afterwards, then came the hotel with the conference facilities for visitors. Riverwalk Crossing was opened shortly after with a variety of retail amenities such as shopping, cafes, restaurants, a movie theater and an amphitheater for performances. The River Spirit Casino attracted more visitors to the area bringing more night life activities .

River Walk Crossing experienced viability concerns with a high tenant vacancy rate, the City of Jenks attaching a lien on the property and finally entering foreclosure in February 2012. The Creek Nation purchased the property for \$11.5 million in an auction in April 2012. The failure could be attributed to various reasons such as its location in South Tulsa where people have to travel to get there, economic meltdown of the market, stiff competition from Tulsa improvements such as the Utica Square or the vibrant Blue Dome District, private development without public participation, its location along the sand bars, tumble weeds and stagnant Arkansas River.

The Growth of the River District initially was planned to extend by an additional 300 acres at a cost of \$1 billion dollars but the River District Development Group had to scale down to a 45 acre phase one project costing \$120 million. Funding constraints and the economic down turn forced the development to slow down. While the River District scaled down, a new development - the Village on the Main will be constructed. The 9.6 acres of retail, restaurants, office space, a hotel, a healthcare facility, residential units.



Village on the main - 100 residential units will be provided

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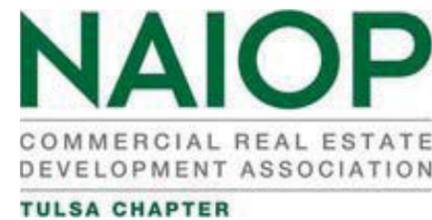
Sources: Information and images from www.tulsaworld.com, NAIOP Tulsa Trends, www.villageonthemain.com, www.tulsa-riverwalk.com

Lessons learnt

- A riverfront development organization needs to be created to oversee all development.
- Public-private partnerships need to be created for funding projects.
- The dam upriver needs to be controlled to release water and clean up the stagnant areas.
- Private development projects need public participation to be successful.

The real estate market analysis of Tulsa's industrial, office, retail and multifamily markets is carried out to observe how the market is responding to the trends over the last years. This analysis will be used to determine what demand is available in the market to support a design program.

Tulsa's real estate market has gone through challenging times just as the rest of the nation experienced. According to Steve Walman of Walman Commercial Real Estate Development, he noted that the increase in property sales did not entirely signal a stable economy but the availability of capital would for both the investor and tenant will be critical to the viability of the industry. In addition, the uncertainty of the market relies on the outcome of the political environment which could have outcome on the confidence of investors in the market.



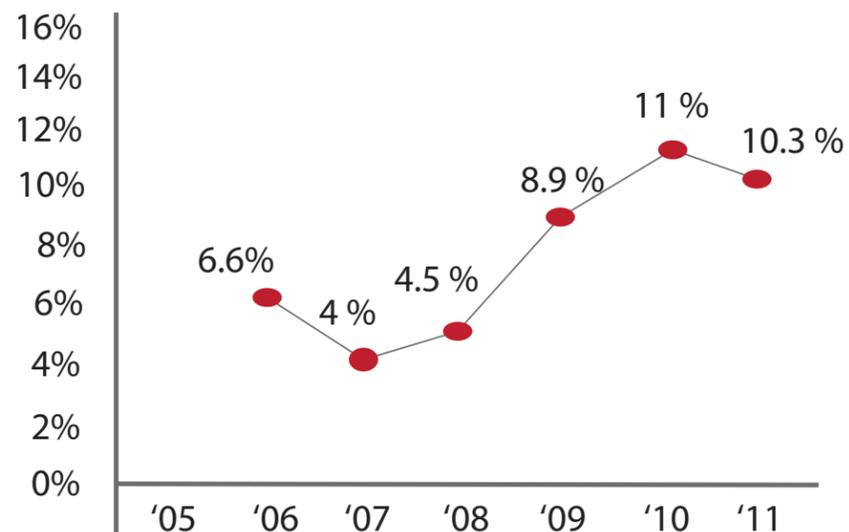
Industrial Market

Tulsa was built on the business of energy with over 50% of manufacturing in oil, gas and refinery equipment. (Green Fleener, NAI Commercial Properties) The industry is skeptical for the renewable & non-renewable energy based jobs in the city which look forward to the outcome of the energy policies drafted by the federal legislators. The smaller warehouse lease spaces ranging from 0 to 4,000 and 4,000 to 12,000 square feet have seen the most activities while the larger warehouses from 20,000 to 150,000 square feet have been more vacant. The central location of the city together with the interstate expressways is ideal for transporting, manufacturing and warehousing equipment on a national level.

Warehouse sizes

SF range	vacancy rate	average lease rate
0 - 4,999	2.61%	\$5.14
5,000 - 9,999	6.21%	\$5.12
10,000 - 19,999	9.12%	\$4.86
20,000 - 39,999	14.79%	\$4.69
40,000 - 59,999	13.58%	\$4.02
60,000 - 99,999	7.83%	\$4.02
100,000 +	11.89%	\$4.51

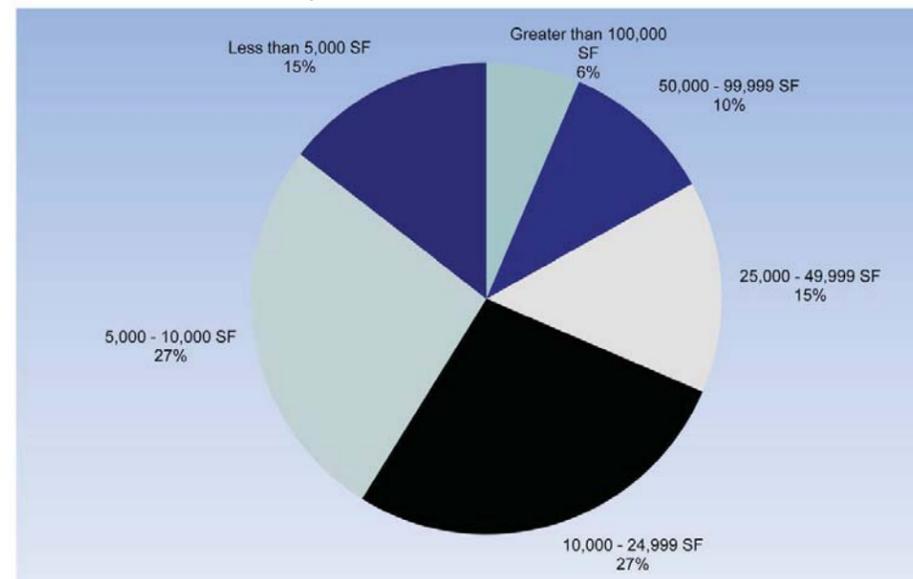
Total vacancy rate for the city



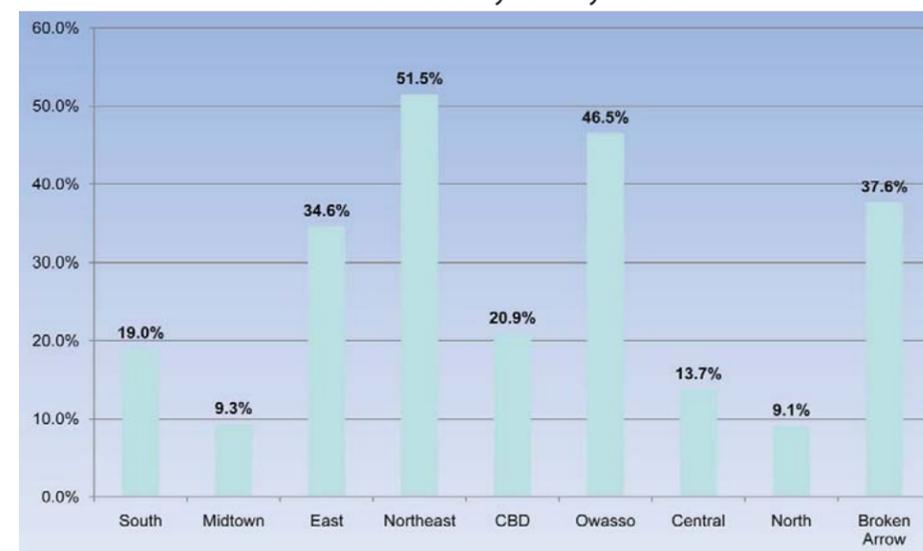
The industrial market has been performing significantly above average at 89.7% occupancy for warehouses. Smaller warehouses are the market leaders with 97.4% occupation rate while the largest over 100,000 square feet spaces have 88.2% occupation.

Office Market

Total space available in Tulsa

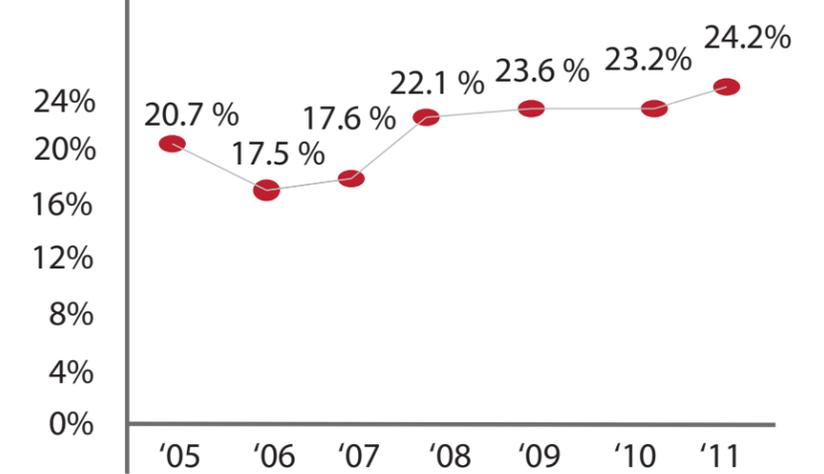


Tulsa office vacancy rate by market



Source: Information and images from www.cbre.us, www.levybeffort.com, www.cbre.us and NAIOP Tulsa Trends conferences

Office vacancy



At 75.8% office occupancy, Tulsa has surpassed the lowest level recorded of 75.7% in 1991. According to Morgan, president of Coury Properties, the office market has seen the slowest growth in the real estate market mainly due to the job losses and slow job growth. A substantial job creator in the market will be the catalyst to improve the growth in the office market. A positive outcome for tenants is that while vacancy rates may have gone up, lease rates have been steady especially for the Class A type.

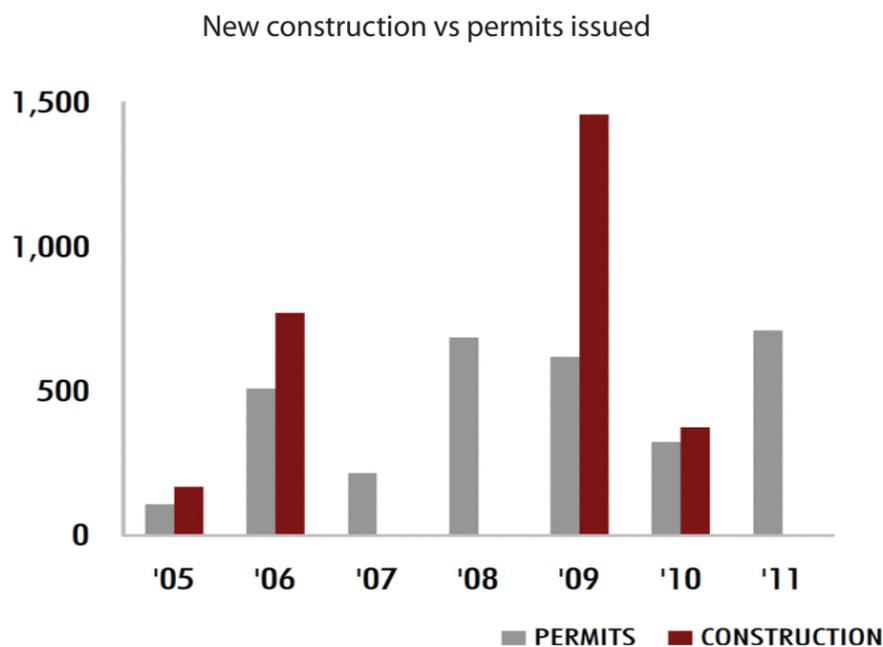
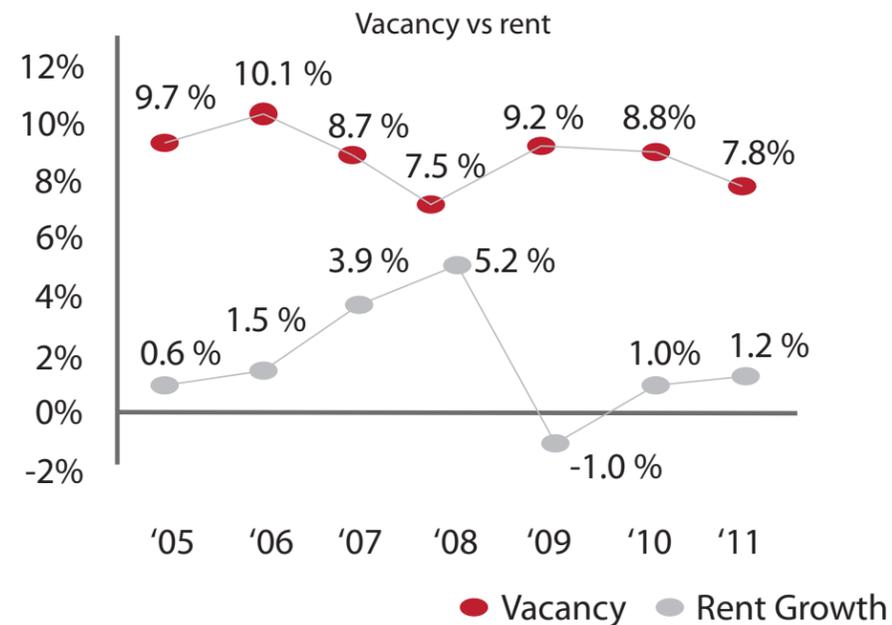
Types of office class vacancies

- Class A 9.3%
- Class B 25%
- Class C 18.5%

Developers have been upgrading properties from class B to Class A which has a higher demand amongst tenants.

Multifamily Market

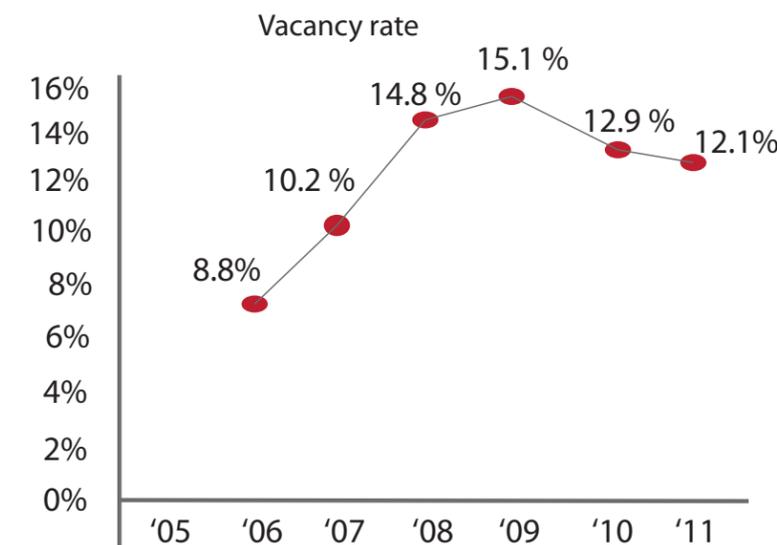
The multifamily market has the best occupancy rates in the city with a 92.2 % occupancy rate compared to the other market sectors.



The multifamily graph on the left shows the vacancy rates in comparison the rent growth over the last seven years in the city. From 2006 to 2008, there was 2.6% drop in vacancy rates and consequently, the rent increased by 3.7% due to the demand. As the vacancy rate increased over the following year, the rent dropped significantly by 6.2% and has managed to stay relatively level for tenants. The demand of apartments led to new construction in the same period when the economic recession hit a melt down in the home ownership market. At this period, homeownership dropped to that of the 1960s level and foreclosures increased in Tulsa. The lending criteria for money lenders became more restrictive and the low interest rates drove the prices of houses higher.

Retail Market

The retail market has an occupancy rate of 87.9% occupancy rate.



The retail market in Tulsa had lower vacancy rates before the economy recession in 2008 and it suffered heavily when consumers reduced their spending on non essentials. Over the last three years, the market has been slowly recovering and some positive growth is showing at 87.9% occupation level from a lower 84.9 % in 2009.

Lease Rates



The lease rates have been fluctuating in relation with the vacancy rates. According to Walman Commercial Real Estate Development, the Retail market has had slow growth with exception to Tulsa Hills which has a strong anchor and co-tenancy partnerships. Tulsa still has a drug store and fast food demand with tenants constantly investing in this market segment. Start up costs in this segment are relatively low and coupled with the city's central location in the nation, it makes an ideal pair.

Total Available Retail Space
 2,200,000 square feet March 2011
 2,300,000 square feet October 2011

The retail vacancy has been having a relatively stable market mainly due to vacant property being converted into office space. Class C type of retail have the highest vacancy rates.

Source: Information and images from www.gbrproperties.com, www.capitalassets.com and NAIOP Trends conferences

Design Program

After reviewing the photo surveys, GIS mapping, case studies and relating it to Tulsa's real estate market, it provided the basis for a design program that will have a demand.

Clean Technology Cluster light industrial park

- 809,800 square feet (SF) of buildings
- 17 Lots
- Type 1 - 35,000 SF lots
- Type 2 - 75,000 SF lots
- Type 3 - 85,000 SF lots
- Type 4 - 105,000 SF lots
- 2 railway sidings for transportation

Residential accommodation

- 590,000 SF
- Condominiums, lofts, apartments, townhouses

Infill housing

- 40,650 SF
- 16 houses

Retail

- 68,000 SF
- grocery stores, book stores, restaurants, cafes

Light rail transit station

- 13,800 SF

Community center

- 17,280 SF
- sports facilities
- gymnasium

Recreation

- a board walk along the water edge
- landscaped parks
- sports park

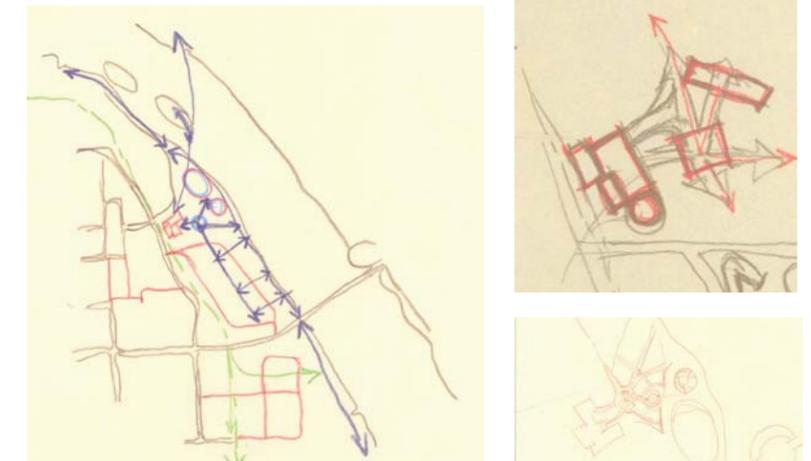
Pedestrian bridge linking the river banks

Total Building coverage - 1.5 million SF

Conceptualization

- A mixed development with pedestrian corridors in the spaces between the buildings which link up to the water edge promote walkable environments with social and healthy lifestyles.
- Plazas with days for farmers markets, informal performances, cafes, restaurants with nightlife create activity areas with the mixed use development.
- The light Clean tech industrial park will be at the south end of the development currently the City of Tulsa West Yard. It will provide a buffer zone between the refinery to its south and the mixed use development to the north.
- Currently, this part of West Tulsa doesn't have much diversity in multifamily accommodation and a medium to high end apartments will increase the desirability to move into this part of the city.
- Accommodation will need retail as much as the recreational activities of the riverfront
- With the planned light rail transit system linking the Downtown to the West Tulsa, a transit station in the West Festival Park will be able to transport visitors and employees into the westbank river front.
- A boardwalk along the river edge will promote social activities and fishing areas.
- A more user friendly sunken amphitheater will be designed in the West Festival Park area to host performances and events.
- The landscaped area next to the amphitheater will be an attraction for photography, picnics and will have provisions for hosting the annual Oktoberfest Festival.
- A splash pool/urban beach at the Reynolds floating stage area will be an attraction to the city. In addition, it could be converted to an outdoor ice skating pad in the winter season
- An unique pedestrian tube linking the east and west banks will greatly improve movement.

Concept 1



- Purple shows the pedestrian movement
- Red shows the vehicular movement
- Green shows the Tulsa Salpura Railway line

Concept 2



Green arrows show the pedestrian nodes

Prime riverfront land will be north of West 23rd Street along the Arkansas River edge where the GCC MidContinental Concrete and River West Festival Park are located. The river edge will be lined by a boardwalk with access to the public while the GCC MidContinental Concrete area will be mixed use development of residential accommodation, retail, plazas, restaurants, cafes and associated activities. Low rise, medium rise and high rise buildings will step back from the river edge in that order. Green roofs will encourage outdoor community gardens, play and rest areas. In addition, the green roofs will also tie in with the landscaped park.

The recreational activities in the park will create interest nodes along the river edge. The sports park will serve the existing neighborhoods and the riverfront development as a communal area with a multipurpose hall, a gymnasium and a community center for residents to interact. South of West 23rd Street will be a light industrial park for Clean Technology initiatives that will buffer the mixed use development from Sunoco Oil Refinery together with a row of indigenous trees.

Legend

- 1. River Parks trail
- 2. Pedestrian tube
- 3. Splash pool
- 4. Amphitheater
- 5. Fountain
- 6. Pedestrian promenade
- 7. Festival area
- 8. Boardwalk
- 9. Mixed use development
- 10. Clean Technology light industrial park
- 11. Light rail transit station
- 12. Community center
- 13. Sports park
- 14. Infill housing





Aerial view from the north

The top image shows a visualization of the development in context with the existing neighborhoods. Much of the property in front of Westport apartments will have minimal development so as not to obstruct the views of the residents. However, the trail will be landscaped to complement the boardwalk at the mixed use areas. A boardwalk will line the water edge, with seating areas where people can rest and interact. Buildings will be close to the boardwalk with outdoor cafe seating. First floor level will be retail, restaurants, cafes while the upper floors will have residential apartments, lots and condominiums with green roofs.

The lower image shows the Clean Technology industrial park in context. Industries such as recycling, information technology, warehousing renewable energy ancillary supplies and micro chip warehousing will be housed in the cluster. Trees will line the south boundary of the site providing a green buffer from the refinery. The existing skate park which was east of the West Yard will be moved to the West Tulsa Park where other sporting activities will be located. Railway sidings will be provided for the industries which transport heavy goods.



Aerial view from the east



Interior view of the pedestrian walkway



The tube in context

A pedestrian tube will span across the Arkansas River linking the east and west banks. The Eastbank access point connects with South Houston Avenue providing a link to the surrounding neighborhoods and the Downtown. The convenient width of the tube will provide adequate accommodation for both pedestrians and cyclists.

At an elevation of 19 feet, the tube will not impede activities on the ground. Generous views of the surrounding areas will entertain the users while promoting walkable environments that create healthy lifestyles. Successful riverfronts are characterized by the presence of pedestrians and they should be able to access the West bank with ease.



The amphitheater

The old amphitheater was replaced with a more user friendly new one. Plays, concerts and celebrations will be hosted and large attendances can overlap into the surrounding areas. Lighting will provide access to night performances. The indigenous trees provide shade from the hot summer sun.

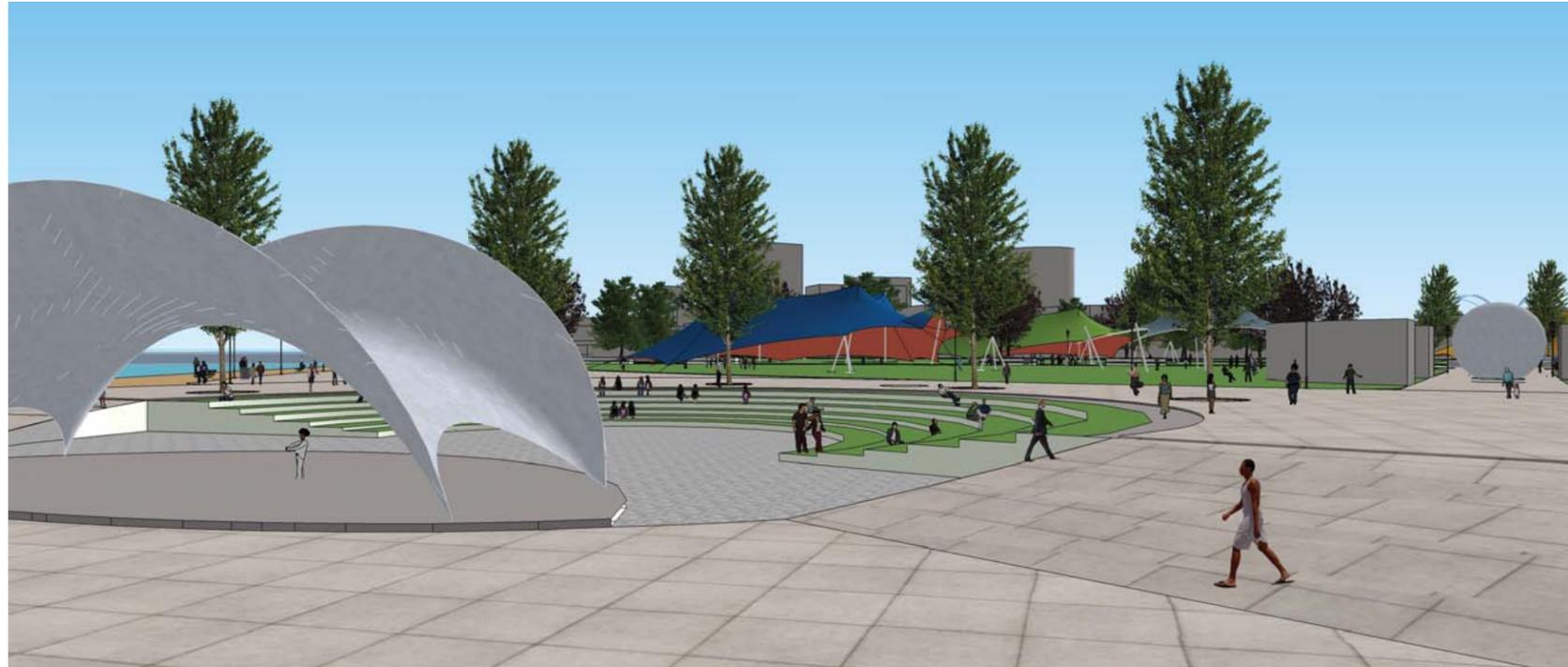


The urban beach

The urban beach feature will become a destination element bringing people to the area since it will be unique feature in the region. During the winter, it can be converted to an ice skating facility providing all year round utilization.

Visualization

Developing Tulsa's Riverfront



Access from the park level to the lower amphitheater and the beach area will be through ADA compliant ramps. The changing and rest room facilities are provided along the pedestrian promenade next to the entertainment area.



The boardwalk will provide riverfront access for the public while the plaza, restaurants and cafes that line it will provide a cultural, social and entertainment areas. Benches will provide rest areas while some points can be designated fishing areas where people meet and socialize. Restaurants and bars will provide day and night life to the river front.



View of the fountain



Pedestrian promenade from the fountain to the river edge

The Festival park will have a fountain at the central area where the pedestrian promenades from the boardwalk, mixed use development, transit station and the amphitheater meet. Park benches will provide seating around the perimeter of the water fountain. Red Oak and Maple trees will provide shade from the weather elements. Festival tents will be set up in the green spaces of the park where annual events such as the Oktoberfest will be hosted. Adequate LEED lighting will be provided for evening walks around the park providing safety for users.

Indigenous plants such as the Hydrangea flowers will be planted in the vegetation islands located in the pedestrian promenades. Timber boards will be attached to the islands to provide seating along the promenades. Sprinkling systems will irrigate the plants and the green spaces. The park will be an area for leisurely walks, cycling and other recreational activities.



The pedestrian promenade in the mixed use development



Pedestrian streets connecting to the riverfront

Vehicular traffic will be confined to the perimeter of the mixed use development and parking areas while the interior streets will be for pedestrians and cyclists. On street parking and parking garages will be provided for public parking promoting a walkable area. Indigenous trees and the buildings will shade the promenades from the hot summer sun.

The interior streets connecting to the river edge will be lined with retail on the first floor with book stores, shopping stores and cafes. LEED street lighting will provide illumination for the users. Green spaces in between the buildings will provide resting areas.



Aerial view of the 88 acre development in context



The site section is taken from the north down through the festival park, through the mixed use development area and through the light industrial park. The 32 storey University Club Tower in the background gives scale to the high-rise buildings.



The map shows the private and public property development. The boardwalk, pedestrian promenades, amphitheater, festival park, utilities, streets, community center and the sports park are public investments. These public investments will attract visitors and private developers to the West Bank since they create points of interest. The old amphitheater and the Reynolds floating stage will be torn down while the Arkansas River inlet will be sealed off creating an enclosure that can be controlled and converted into the urban beach.

Private developers will construct the mixed use development of retail, residential accommodation and the light industrial park. Such a development would have to be constructed in different phases over a lengthy period of time after securing funds from the public and private sector. After analyzing other riverfront development projects of this scale with similar design programs from landscape architects and urban designers in Sacramento, Portland, New York, Seattle, Cleveland, Cincinnati, Toronto, Chattanooga and Pittsburgh, the following costs were averaged:

- 50 - 65 acres mixed use development \$540 million - \$1.7 billion
- 40 - 60 acres parks, \$120 - \$150 million

The total cost of the West Bank development could range from \$660 million to \$1.82 billion. As costly as the development will be, the job creation and the increased tax base will benefit the city. This development will occur over a long period of time and over a number of phases due to its scope of intensity.

Legend

- Public property
- Private property
- New building
- Existing building

Source: Information from <http://www.t9ontheriver.com/>
<http://www.cityofsacramento.org/econdev/development-projects/>
<http://www.unitedfundadvisors.com/projects.php>
<http://www.flatseast.com/>
<http://www.abramsonassoc.com/disposition.htm>

Recommendations for the City

Infrastructure

- To assist development, the city may have to lay out utilities such as sewer lines.
- The city could landscape the public areas while developers construct the private development.
- The development will bring many people to the riverfront, hence the city will need to provide public parking.
- For the development to be attractive, water should be controlled from the river gate to allow the Arkansas River to flow so as to avoid having stagnant water patches.

Land

- To entice development, the land could be sold instead of the proposed 99 year lease. With land ownership, developers may then have collateral for finance.
- Due to the contamination, the land will need remediation especially the removal of the petroleum underground tanks.
- The city will have to purchase the GCC MidContinental Concrete property and include it in part of the development.
- The RFP property could be separated into smaller RFPs for different developers or encourage teams of developers to work together.

Regulations

- A taskforce group which oversees all riverfront developments should be established to monitor and enforce a unified vision for the Arkansas River.
- Rezoning of the area will be required and zoning leniency may be offered to developers.
- For this plan to be successful, a public private partnership needs to be established to ensure effective and efficient development.
- Enforce building setbacks and height restrictions for appropriate building masses in the mixed use development.
- Provide incentives for a Clean Technology cluster to start the implementation of the City of Tulsa Sustainability Plan.

Finance

- Tax incentives should be offered for development such as the creation of TIF districts.
- The city could be a lender or guarantor for a developers bank loan.
- The public-private partnership can mobilize funds from state and federal resources.

Recommendations for the Developer

- Developers must leave the riverfront open to the public to keep it vibrant.
- Nightlife activities such as restaurants and bars should be present to maintain a constantly vibrant environment.
- Promote parking garages instead of parking lot islands which alter the urban fabric.
- Developers should form partnerships and invest collectively so as to share the risk and avoid collapse like the Riverwalk Crossing saga.
- Identify possible funding sources and leverage them for finance.

In conclusion, the city has to step in and fully take the lead rather than assigning the responsibility to the private sector. Private developers are profit driven and such a development is a big investment for them to finance without the assistance of the public investments. A catalyst is needed to start the West Bank development and the city has to take the first step of laying the foundation work. Public participation is vital for the successful development and they need to be involved from the onset and informed of the benefits it will bring to the community. Public-private partnerships work successfully under the guidance of an elite task force of professionals and citizens set up by city officials to manage and coordinate all riverfront development projects to ensure that they conform to a unified vision.

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