west bottoms 2048

GROWING AN URBAN DISTRICT THROUGH INTERMEDIATE NATURES

by

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A REPORT

submitted in partial fulfillment of the requirements for the degree

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ABSTRACT

The Kansas City downtown area is experiencing a population influx, which is projected to increase over the next few decades, requiring new residential areas and increased parkland in the downtown. The Kansas City West Bottoms, located between the downtowns of Kansas City Missouri and Kansas City Kansas, is an urban district plagued by vast tracts of underutilized land, poor connectivity, and vulnerability to flooding. To address the issues of the West Bottoms and the area's need for new urban development, this project proposes the implementation of a new urban park that both supports and is supported by a new urban district.

In order to transform the West Bottoms into a vibrant mixed-use community, the park and redevelopment will be phased in over a period of 33 years. Intermediate natures, landscapes that temporarily occupy and improve parts of the city undergoing transformation, will be used to preserve current open space, which will later transition into parkland as the district grows. Ultimately, West Bottoms 2048 will draw users and activity to the district while generating a lasting environmental and economic impact on the downtown area.

west bottoms 2048

growing an urban district through intermediate natures

william brett woodard

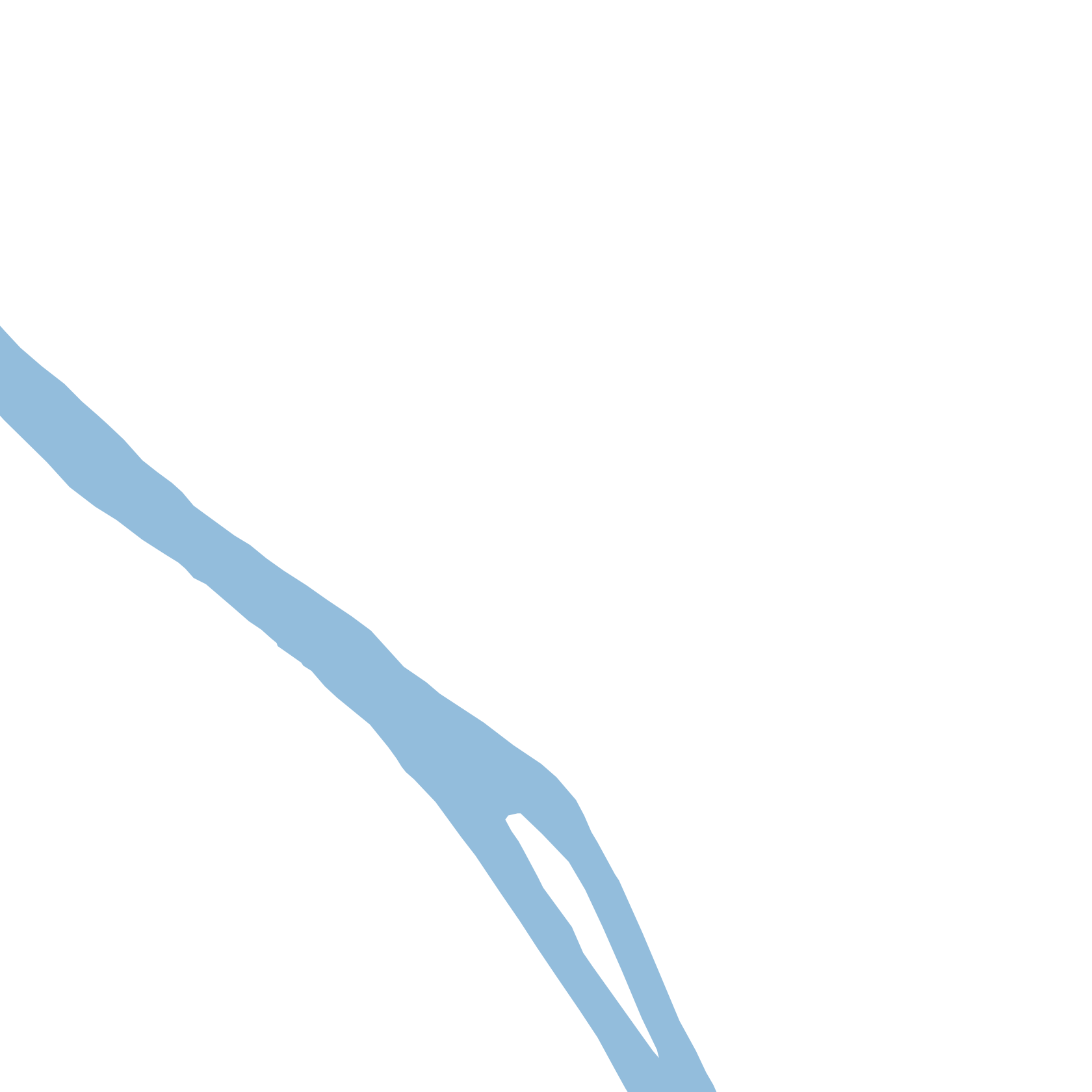

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Figure 0.02- 12th Street Viaduct (Woodard 2012).

prologue

acknowledgements

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To my studio friends, especially Dan, Jake, and Ninah. We've had great conversations and epic Union Runs in the past three years. Thanks for making studio a fun place to be; we survived Seaton Court's climate change!

And to Anne Denney, Bryan Zundel, and Sarah Flynn. Thanks for being there with random advice and kind words when I needed them most.

dedication

To my parents; thank you for your continued support and encouragement in my academic endeavours, even if you didn't know what exactly I was doing.

project location

This project operates on three scales: area, district, and site. The area of interest encompasses the downtowns of Kansas City Missouri and Kansas City Kansas and is referred to as the Kansas *Cities* Downtown Area, or KCDA (Figure 0.03). At the center of the KCDA is the West Bottoms District. Like the KCDA, the West Bottoms is bisected by the Missouri-Kansas state border. Within the West Bottoms is the project's site-scale focus. (Figure 0.04). In this project, Kansas City Missouri (KCMO) and Kansas City Kansas (KCK) will be referred to as the Kansas Cities.

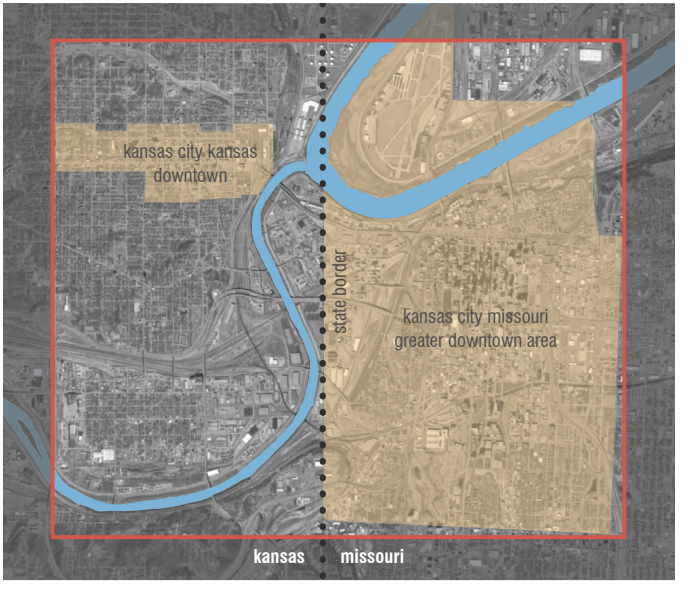


Figure 0.03- KCDA. Downtowns of KCMO and KCK within the Kansas Cities *Downtown Area (map by author).*

MO-KS state border
KDCA
rivers

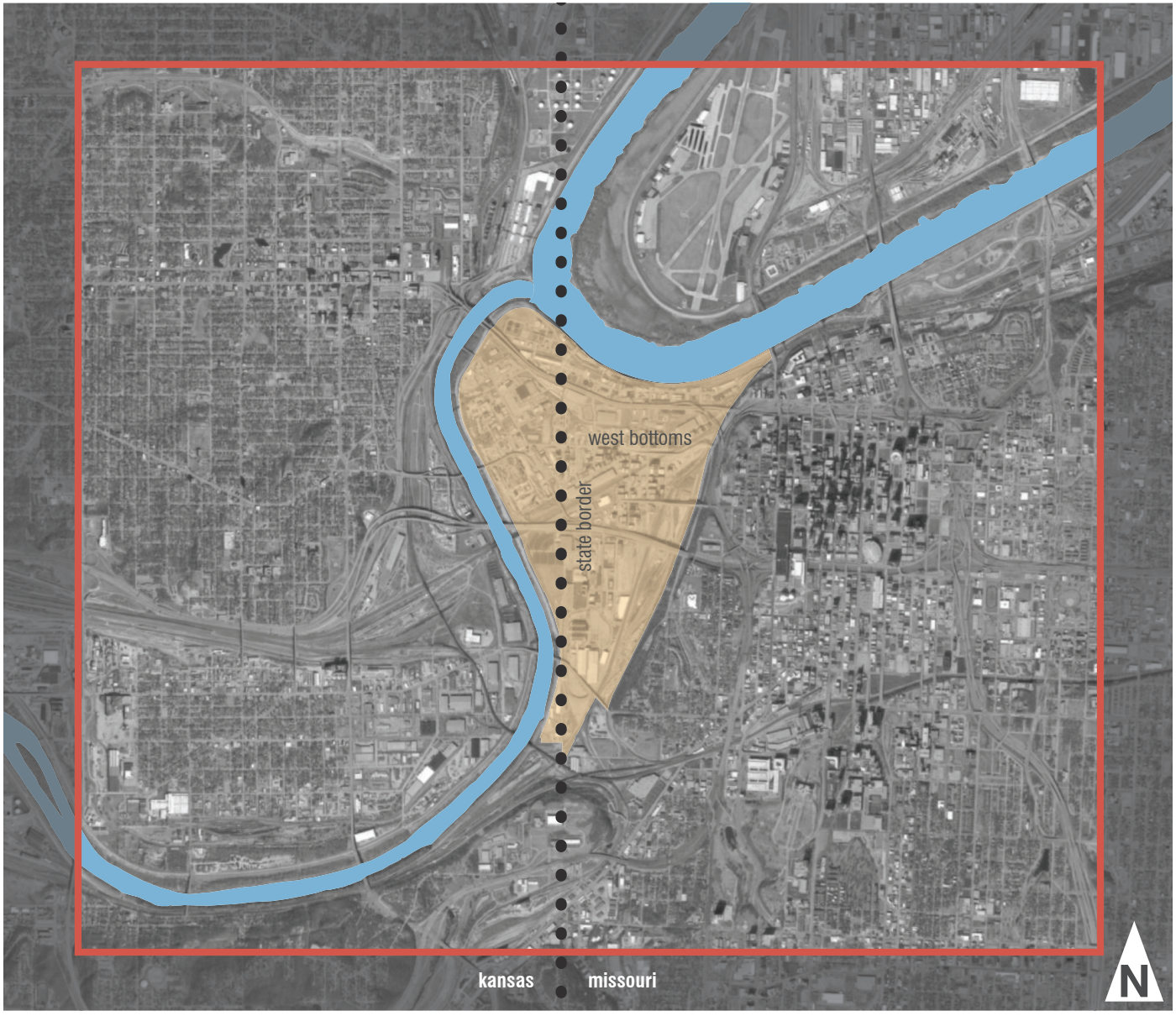


Figure 0.04- The West Bottoms District. The district, seen here in orange, is located at center of the Kansas Cities *Downtown Area. It is bordered on two sides by the Missouri and Kansas Rivers and the Kansas City Missouri Downtown (map by author).*

dilemma

Kansas City's downtown population is growing, putting pressure on an inadequate park system and increasing demand for new residential space. Currently there is an insufficient amount of parkland in the area surrounding the West Bottoms District and the neighboring downtowns of Kansas City Missouri and Kansas City Kansas. The area has only 8.2 acres of parkland per 1,000 people, nearly 70% less than the national benchmark of 25.38 acres (Traditions & Trends 2012, 13).

The West Bottoms is a prime geographical location for urban district revitalization. However, the area is plagued by numerous challenges including: susceptibility to flooding, negative perceptions, and the state border that bisects the land into two different political zones. In addition, the area lacks a cohesive development plan.

Thus, West Bottoms District is in need of a comprehensive vision that takes into consideration the area's need for parkland, a projected population increase, and the district's need for flood mitigation. Ultimately, the KCDA's population can be accommodated by the West Bottoms's underutilized land.

thesis

Through the implementation and phasing of intermediate natures in the West Bottoms district, constructed landscapes can temporarily occupy and improve parcels targeted for future parkland and redevelopment. As such, intermediate natures can transition into viable park space or other uses. Over time the park will trigger a restructuring of the district, stimulating new development that supports the park.

project goals

Main Goals

- preserve open space in the present so it is available for park space in the future
- develop a district-scaled framework to guide development based on hydrology

Secondary Goals

- improve connection and access into and within the West Bottoms
- mitigate local flooding

Tertiary Goals

- improve perceptions of West Bottoms
- provide a cohesive vision for the district's future

project interest

This project is two years in the making. In my 2011 Summer Studio I inventoried the programs of downtown Kansas City Missouri parks and noticed an insufficient availability of large outdoor sports facilities. This study stemmed my interest in open space programming and the downtown Kansas City park system (Figure 0.05).

I also became fascinated by the district we did not study during the studio: the West Bottoms. My affinity for post-industrial landscapes drew me to this place, and the apparent potential of the district's unused spaces held my attention (Figure 0.06).

That attention didn't assert itself until my introduction to the work of Michel Desvigne and his interest in intermediate natures (Figure 0.07). This theory exposed me to a new way to reinvigorate deteriorated urban core, and do so while making environmental improvements.

Figure 0.05- Columbus Park. A girl plays in a tree rather than play equipment in a Kansas City park (Wagner 2011).

Figure 0.06- Post-Industrial West Bottoms. A district with an abundance of underutilized land (Woodard 2012).

Figure 0.07- Intermediate Nature. A term developed by French landscape architect Michel Desvigne (Canfield 2012).

Figure 1.01- The West Bottoms Rail Lines (Woodard 2012).

PART I
SITE

Figure 1.02- Skyline Above West Bottoms (King 2013).

chapter one introduction

"Our cities exist, our land is occupied. It is a question of making them denser, changing their allocation, embellishing them."

- *Michel Desvigne,* Intermediate Natures

The Kansas City West Bottoms is an urban district located in the floodplain between the downtowns of Kansas City Missouri (KCMO) and Kansas City Kansas (KCK). The district and its surrounding context have many problems, including an insufficient amount of parkland. Parkland can be used as a medium through which other urban problems are solved while creating new opportunities in the KDCA.

kansas city west bottoms

The West Bottoms is the historic core of Kansas City and lies at the confluence of the Missouri and Kansas Rivers. In the 1800s, the West Bottoms was a commerce center, trading post, cattle stockyard, and railroad hub. A 1903 flood pushed residents and social amenities out of the district, leaving a large industrial presence. The West Bottoms's economy continued to flourish through World War II, but the war's end, and a 1951 flood, devastated district employment and commerce, a downturn from which the district has never recovered (West Bottoms Business District Association 2012). Past land use, rail line bisection, and elevated highways have left the West Bottoms with several social, environmental, and economic problems (Figure 1.03). These problems include a large amount of underutilized land, which is land that is unused or not used as completely as possible.

Figure 1.03- Historical Views of the West Bottoms (Missouri Valley Special Collections).

problems in and around the west bottoms

NOT ENOUGH PARK TO GO AROUND

The Kansas Cities Downtown Area lacks sufficient park space for the current and future downtown population. The KCMO Executive Summary of Traditions & Trends 2017 states that "KCMO has fewer total acres of parkland (11,800 acres) than the average [benchmark] (15,388 acres)" but has "the same number of acres of parkland [per] 1,000 population (25.26) as the average [benchmark] (25.38)" (2012, 13). The 11,800 total acres used in the report includes the 2,008 acres of KCMO's Boulevard System; streets characterized by their highly landscaped rights-of-way. But some of the "boulevards" have no landscaped space, and those that do offer little to no active recreation opportunities. The Boulevard System's acreage is misguidedly included in the City's parkland acreage, making the parkland acreage appear sufficient when it is not.

The KCDA also does not currently meet the 25.38 acres per 1,000 people benchmark. The approximate population of the KCDA, according to 2010 Census results, is 60,000 people (Bloch, Carter, and McLean n.d.). The approximate park acreage is 500 acres. In the KCDA, there are only 8.2 acres of parkland per 1,000 people, 68% less than the national benchmark. The park system does not sufficiently support the current population, a problem that stems from the system's original conception.

The first parks in the KCDA (Figure 1.04) were conceived and designed by George Kessler in the late 19th Century. The 1893 Kessler Plan includes grand boulevards connecting three large parks: West

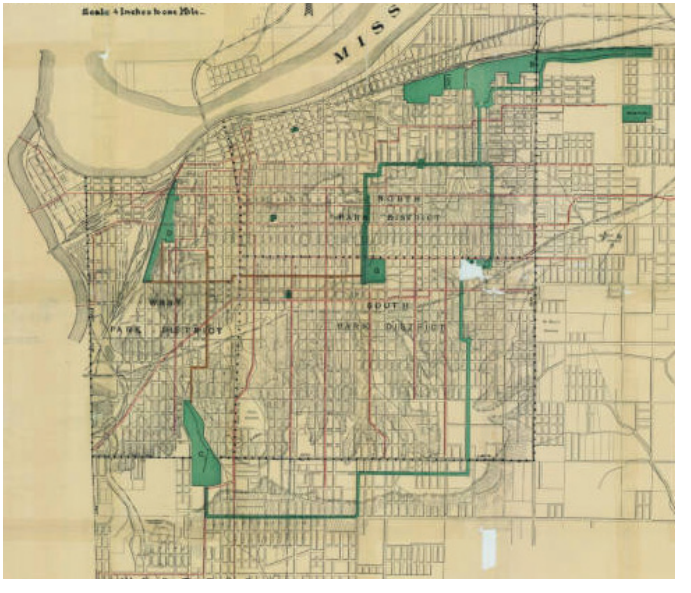


Figure 1.04- 1910 KCMO Parks and Boulevard System (Missouri Valley Special Collections).

Terrace Park (now Case Park, Mulkey Square Park, and Jarboe Park), North Terrence Park (mostly outside the KCDA), and Penn Valley Park. These parks had positive attributes, such as impressive views, but "their major attraction to Kansas City's Board of Park Commissioners was that "their land acquisition was relatively cheap…and removed relatively little developable property from the tax rolls" (Garvin 2002, 65). The land was not selected because it was adequate for park activities, but because it was not adequate for more profitable development. The parks' usability was severely limited because "location, shape, and topography made it difficult for them to affect more than a limited amount of surrounding territory" and they "did not have sufficient level territory for a great variety of activities" (Garvin 2002, 71). Despite their inability to support a variety of activities, West Terrace Park and Penn Valley Park are still approximately 40% of the KCDA parkland. The original limitation of the park system has never been addressed through parkland acquisition, and is masked by the inclusion of the boulevard system acreage in total parkland acreage. The result is an insufficient amount of parkland in the KCDA and parks with a limited capacity to accommodate a variety of activities.

DOWNTOWN POPULATION IS GROWING

There is not enough parkland to support the current KCDA population, and the population is increasing, meaning there is less parkland per person each year. The 2010 Census results show strong population gain in U.S. downtowns, particularly in the demographic of educated young adults between 25 and 34-years-old (Davis 2011). Similar to other U.S. cities, population is increasing in the Kansas City Metropolitan Area (KC Metro), specifically on suburban edges and downtown.

The Mid-America Regional Council (MARC) forecasts 750,000 residents will move into KC Metro by 2040 (Figure 1.05). This is in addition to over a half million residents that have moved into KC Metro since 1980 ("How Kansas City is Changing" n.d.). MARC anticipates a significant portion of this new population will settle in the KCDA. The Adopted Scenario, MARC's guide for future city planning, mimics the trends seen in 2010 Census results with increased infill in the downtown

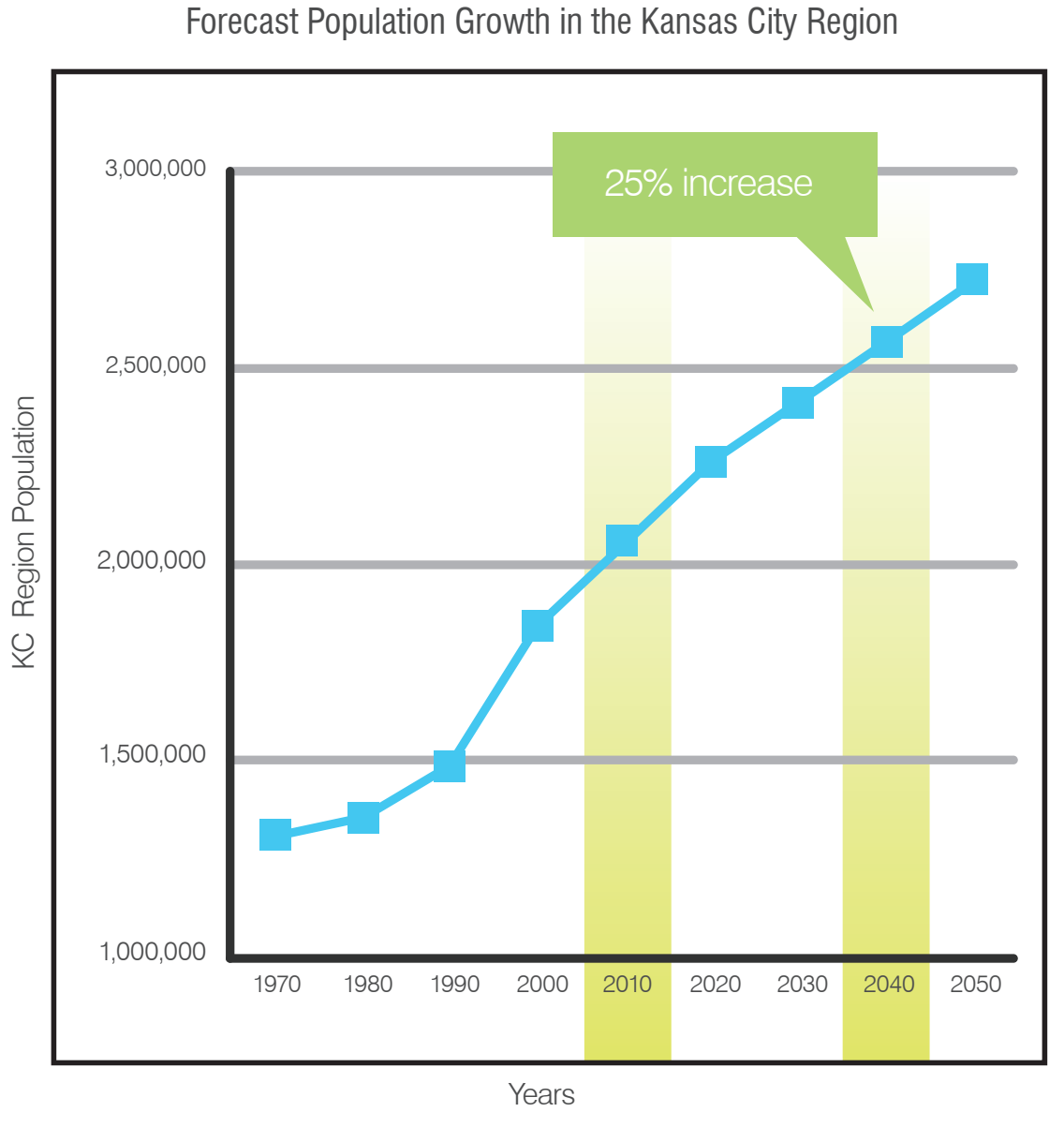


Figure 1.05- Forecast Population in Kansas City Region, 1970–2050 (adapted from www.marc.org/2040/About/Changing_Region/index.aspx).

("Adopted Forecast for 2040" n.d.). This population increase will put significant pressure on an already taxed park system, and begs the question: where will we put all these people?

UNDERUSED WEST BOTTOMS

The West Bottoms currently faces a problem that can become the solution for an increasing population. That problem is underutilized land, defined, by economics professor Alan W. Evans, as unused land or land that is used "but for an activity that utilizes it less intensively than might be expected" (2004, 53). Michael Pagano and Ann Bowman, in their article "Vacant Land as Opportunity and Challenge," state that over 15% of a U.S. city's land is vacant (2004, 19). This vacant, underutilized land can cause a negative stigma on its surrounding area based on actual negative attributes or the perception of negative attributes.

The West Bottoms has a large amount of underutilized land; the district has a floor area ratio (FAR) of 0.46, a suburban density despite adjacency to two downtowns (Figure 1.06). Underutilized land and the district's lack of residents have created the perception of an empty and inactive district (Urban Land Institute 2012). This perception has repelled visitors and businesses from going to the district.

However, underutilized land has the potential to accommodate urban infill, a reaction to population growth. In the long run, the KCDA's increasing population may be accommodated by West Bottoms's underutilized land.

Figure 1.06- Empty Land in the North West Bottoms. Much of the district is empty or unused land (Woodard 2012).

WEST BOTTOMS UNDER WATER

The West Bottoms contends with flooding, and climate expert projections identify flooding as an increasing national problem. In their book *Design for Flooding*, Donald Watson and Michele Adams state that in the 20th century, "floods were the most devastating natural disaster in the United States…in both damage and loss of life," and that the 2009 Global Climate Change Report calls the increased frequency and intensity of heavy rainfalls "one of the clearest precipitation trends in the United States," (2011, 49). Rain events are becoming less frequent but more intense, creating conditions for flash flooding and stormwater infrastructure failure. The Kansas City Metropolitan Area has seen this increase in high intensity storm events, and the area is projected to see further increase. Between 1998 and 2008, heavy precipitation events, defined as "the heaviest 1% of all daily events," increased by 31% in the Midwest and 15 % in the Great Plains; these two regions divide KC Metro, KCDA, and the West Bottoms (Watson and Adams 2011, 53). The West Bottoms is specifically threatened due to its depressed landform and its proximity to the Missouri River, Kansas River, and Turkey Creek. The district is a self-contained watershed, essentially a basin, that holds all water that falls or drains into it and makes low areas susceptible to flooding. Also, local and regional storm events impact the surrounding three water bodies, sometimes causing stormwater overflow into the West Bottoms.

Figure 1.07- The West Bottoms Under Water (Missouri Valley Special Collections).

solving area and district problems

USING THE UNUSED

The West Bottoms's underutilized land is the medium through which all four area and district problems (insufficient parkland, increasing population, large amount of underutilized land, and flooding) can be addressed. The Kansas Cities can strategically select underutilized parcels for transformation into parkland, filling a need for parks and providing a purposeful use for the land. Parkland can be designed to mitigate flooding and catalyze adjacent development, accommodating the incoming population that will support the park.

Currently, there is not a sufficient population in the West Bottoms to support an urban park. And a promise from the Cities that underutilized sites will become parks when demand occurs is not enough; city economics follow the path of least financial resistance, putting planned open space areas at risk of development if a more profitable opportunity arises. In order to ensure park creation on specific sites in the absence of demand, the Cities must do two things: 1) actively plan the area surrounding the sites to encourage demand to develop (through neighborhood creation) and 2) create a physical presence on proposed parkland to create resistance to other profitable opportunities (increase the cost of changing the plans for the site).

A design strategy that can be used in this situation is an "intermediate nature", a term derived from the work of French landscape architect Michel Desvigne. Dorothee Imbert, in her article "Aux Fermes, Citoyens!," states that "Michel Desvigne has made a case for a landscape infrastructure that precedes architecture,…one in which the landscape not only performs an ecological role in terms of stormwater management and biodiversity but more important creates a spatial framework for future urban development" (2010, 263). Intermediate natures are defined as landscapes that temporarily occupy parts of a city undergoing transformation in which many unknowns remain in order to immediately provide positive attributes to the sites while awaiting construction (Figures 1.08, 1.09). This landscape type provides use and structure for sites until the economy dictates what development should exist and performs social and ecological functions .

As Imbert mentions, one ecological function that intermediate natures provide is stormwater management. In the West Bottoms, intermediate natures can physically occupy underutilized land in the present, helping to mitigate localized flooding, while conditioning the land for future park use.

Figure 1.08- Intermediate Natures in Bordeaux France. French landscape architect Michel Desvigne coined the term intermediate nature when describing his work (Canfield 2012).

STORMWATER MITIGATION

Open space has increasingly been viewed as a form of infrastructure that can help solve urban hydrologic problems and act as an alternative to traditional infrastructure, such as stormwater pipes and street conveyance. In *Landscape Infrastructure: Case Studies by SWA*, the landscape architectural firm's Infrastructure Research Initiative (IRI) synthesized the limitations of traditional, gray infrastructure in the face of performance expectations, citing three main problems: 1) the system is hidden and possible failure often goes undetected until failure occurs, 2) the infrastructure is built in isolation of other infrastructure, leading to conflicts, and 3) the infrastructure is mono-functional, "engineered to maximum efficiency at a given time to fulfill a single purpose, but failing to provide a consistent level of efficiency throughout [its lifespan]" (2011, 16). Gray infrastructure cannot always be monitored since it is out of sight, can conflict with other infrastructures, and has one purpose that cannot adapt to changing conditions.

Landscape used as infrastructure, however, is a progressive, urban infrastructural type that incorporates environmental and social needs into its functions. The IRI defines three characteristics of landscape infrastructure: 1) it is temporal and "may quickly become obsolete, redistributed, and reinvented," 2) it is decentralized "where the need to address… stormwater…energy…or transportation [is] resolved at a local level," and 3) multifunctional, providing many functions that evolve over time (2011, 17). Compared to gray infrastructure, landscape as infrastructure is more dynamic, resilient, and useful.

Underutilized land at the West Bottoms's key hydrologic points can be acquired for stormwater mitigation use, and also function as parkland. This strategic move creates use for the land, adds recreation space to the KCDA, and mitigates the West Bottoms's flooding.

PARK AS CATALYST

Creating demand for a park in the West Bottoms will involve using the park itself to create the demand. The use of public funds for park creation has been and "still is an effective means of stimulating a desired private market reaction" if public funds are "spent in ways

that will reduce the risk of investing in surrounding property or in ways that will attract activity that will spill over into the areas surrounding parkland" (Garvin 2002, 73). Transforming underutilized land into parks that mitigate stormwater reduces risk to development (improved district perception, reduced flooding hazard) and attracts activity to the district (park programs and recreation). The park becomes a catalyst for development (Figure 1.09); development that supports the park by accommodating an increasing population.

But time must be taken into account. The projected population increase is 27 years away from fruition and public perceptions take time to change. Therefore, the park should not be built in full, but phased over time, encouraging surrounding development to grow with the park. Incorporating intermediate natures on underutilized land in the present will reduce risk of development in the area by improving the land. Over time, the natures will grow and recreation opportunities added. The culmination of the phased growth will be an urban park supported by a new district population.

Figure 1.09- Central Park Development (commons.wikimedia.org/wiki/File:Central_Park._Wollman_Rink.jpg).

sustainable parks

Assuming demand is created, what form and program should the park take? The Sustainable Park is an emerging park model that has become popular since the 1990s. The model is defined in Galen Cranz and Michael Boland's article "Defining the Sustainable Park: A Fifth Model for Urban Parks," which describes the American parks of the past: the Pleasure Ground, the Reform Park, the Recreational Facility, and the Open Space System (Table 1.01) (2004, 102). These park models are described as "dominat[ing] for 30 to 50 years," leading Cranz and Boland to "conclude that these models are generational" (2004, 104).

With these models in mind, Cranz and Boland studied parks featured in landscape journals published between 1982 and 2002 to see what types of parks were built. They concluded that a new model, the Sustainable Park, had emerged, and like the past park models, it had evolved to address what [are] considered to be pressing urban social problems of the times (2004, 102). Cranz and Boland believe Sustainable Parks evolved to address "ecological problems [which today] may be counted among our most pressing social problems" (2004, 102). They identified three principles that define the Sustainable Park: 1) resource self-sufficiency, 2) integration into the larger urban system, and 3) new modes of aesthetic expression (2004, 106).

Planning a park for a future state assumes the park model will be relevant at that future time; however, Cranz and Boland consider the park models generational. It can, however, be assumed the Sustainable Park will be viable in the future for two reasons. First, Cranz and Boland state that the historical park models are generational and relevant for 30-50 years. The Sustainable Park emerged approximately 1990, meaning it should be relevant until some date between 2020 and 2040 (2004, 103).

Second, the social issues Sustainable Parks address are based on fixing ecological damage, unlike past park models with issues based on human social beliefs and conditions. To be blunt, the human turnover rate is quicker than ecological restoration, and while typical human social issues can be drastically changed in a generation, ecological problems often take longer.

Therefore, the Sustainable Park model can break the generational cycle of past-park models because the issues it responds to take longer to alleviate. The Sustainable Park will be relevant in the future, so planning for it is not highly assumptive or unreasonable.

	Pleasure Ground 1850-1900	Reform Park 1900-1930	Recreation Facility 1930-1965	Open Space System 1965-?	Sustainable Park 1990-Present
Social Goal	public health & social reform	social reform; children's play; assimilation	recreation service	participation; revitalize city; stop riots	human health; ecological health
Activities	strolling, carriage racing, bike riding, picnics, rowing, classical music, non-didactic education	supervised play, gymnastics, crafts, Americanization classes, dancing, plays & pageants	active recreation: basketball, tennis, team sports, spectator sports, swimming	psychic relief, free-form play, pop music, participatory arts	strolling, hiking, biking, passive & active recreation, bird watching, education, stewardship
Size	very large, 1000+ acres	small, city blocks	small to medium, follow formulae	varied, often small, irregular sites	varied, emphasis on corridors
Relation to City	set in contrast	accepts urban patterns	suburban	city is a work of art; network	art-nature continuum; part of larger urban system; model for others
Social Goal	public health & social reform	social reform; children's play; assimilation	recreation service	participation; revitalize city; stop riots	human health; ecological health
Order	curvilinear	rectilinear	rectilinear	both	evolutionary aesthetic
Elements	woodland & meadow, curving paths, placid water bodies, rustic structures, limited floral displays	sandlots, playgrounds, rectilinear paths, swimming pools, field houses	asphalt or grass play area, pools, rectilinear paths, standard play equipment	trees, grass, shrubs, curving & rectilinear paths, water features for view, free-form play equipment	native plants, permeable surfaces, ecological restoration green infrastructure, resource self-sufficiency
Promoters	health reformers, transcendentalists, real estate interests	social reformers, social workers, recreation workers	politicians, bureaucrats, planners	politicians, environmentalists, artists, designers	environmentalists, local communities, volunteer groups, landscape architects
Beneficiaries	all city dwellers (intended), upper middle class (reality)	children, immigrants, working class	suburban families	residents, workers, poor urban youth, middle class	residents, wildlife, cities, planet

Table 1.01- Sustainable Parks and Other Park Models. A Comparison of the Sustainable Park to Prior Park Types after Cranz (1982) (adapted from Cranz and Boland).

active parkland

PAST PARK STUDY

In addition to being a Sustainable Park, the new park needs to accommodate large-scale active recreation. During my Community Planning and Design Studio in the summer of 2011, I studied the parks of the Greater Downtown Area after community members expressed concern with the low supply of sports-programmed parks. I inventoried the parks and their outdoor sports facilities, and completed a list of the activities each park could accommodate based on current facilities and space (see Appendix). Nearly all parks excluded multiple large-scale sports because there was not enough level ground.

MY ACTIVE RECREATION PARK STUDY

I later expanded the summer study to the KCDA and its parks. The criteria used to determine the park's ability to contain large-scale active recreation is scale and slope, topography, and location (see Appendix). My study concluded that only three parks in the area were adequate for large scale active recreation (Figure 1.10). In fact, Kansas City Missouri "has fewer sports fields (37 fields) than the average [benchmark] (146.2 fields), as well as fewer outdoor sports fields [per] 1,000 population (0.084 fields) than the average [benchmark] (0.246 fields)" (Traditions & Trends 2012, 14). A lack of sports fields limits the local population's accessibility to organized sports. It also excludes KC Metro adult and youth sports leagues from using the urban core for their activities, sending their use, business, and focus to suburban areas that provide for their needs.

park ability to accommodate large-scale active recreation

cannot accommodate

can accommodate

parceled land

rivers

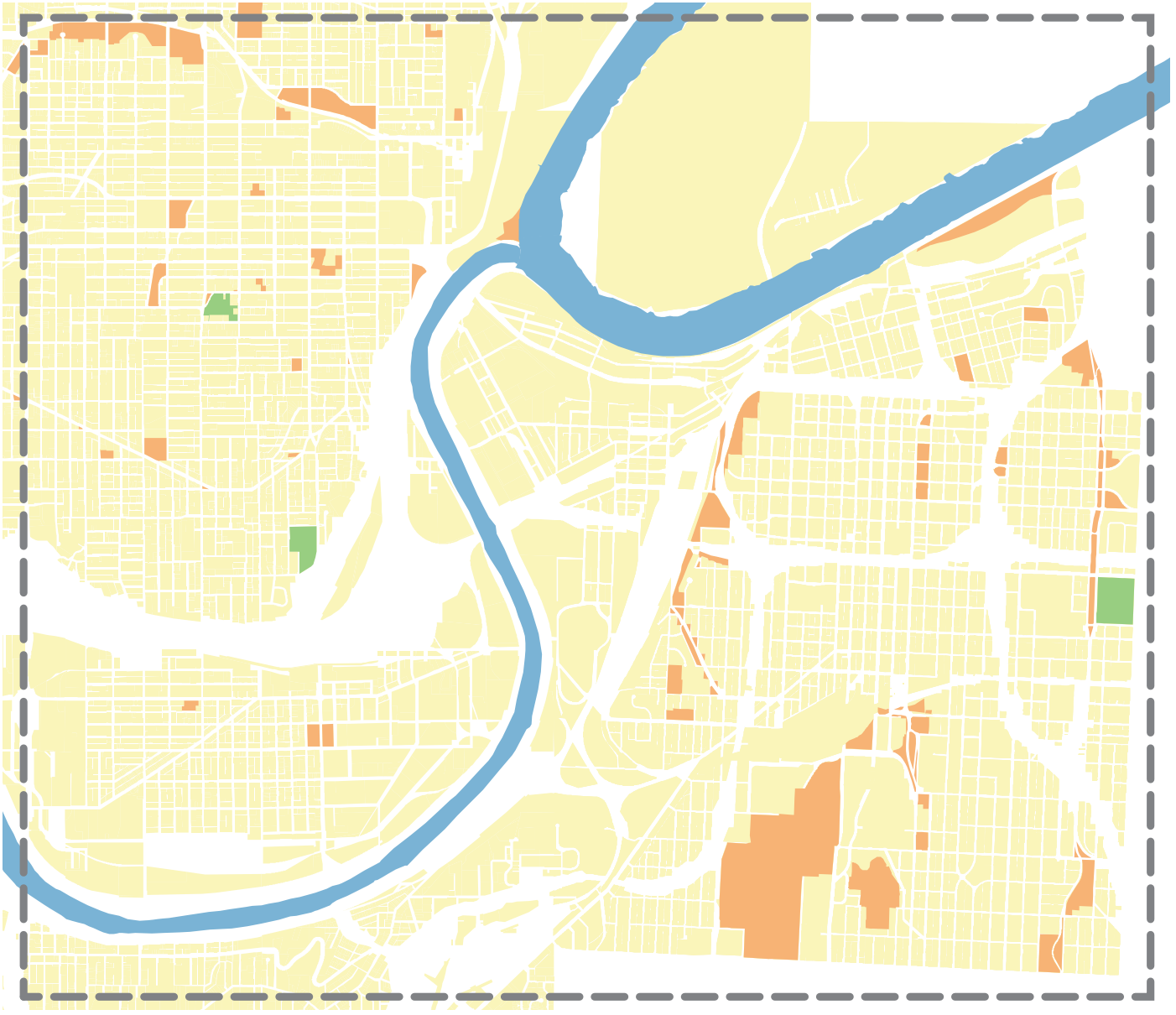


Figure 1.10- Large-Scale Sports Study. A study of the parks in the KCDA found that only three have sufficient attributes required for large-scale active recreation (map by author).

a new planning perspective

The West Bottoms has a strong historic connection to Kansas City, the railroad, and the American West. It is also the gateway to the Kansas Cities, prominently placed between the two downtowns. Yet the district has been regarded as a common industrial waterfront; an ill-perceived fly-over space devoid of population. The treatment of this place does not respond to what it is. Planning of the West Bottoms must shift from a "that's how it's always been" mentality and start responding to today's social, environmental, and economic reality. The district is not two parts, but a single place in two cities. The situation requires the Kansas Cities to realize that some problems do not recognize their common, invisible border. Moving forward, it is imperative the West Bottoms be seen as a unified whole.

Figure 2.01- Derailment Point in the North West Bottoms (Woodard 2012).

chapter two
understanding site

"The West End was what its dwellers liked to call it, but under any name, it was a part of Kansas City little known or understood by the people on the hills."

- *1919 newspaper account,* High & Rising

The West Bottoms was analyzed at two scales: a district scale and a site scale. The district scale helped identify the boundaries of the park site and the existing social, environmental, and economic systems. Further analysis at the site scale was conducted in greater detail to determine the park site's place within those systems. The opportunities and constraints the systems present within the park boundaries were also identified.

kcda park suitability

The West Bottoms needed to be determined suitable for a large park prior to further project planning. A suitability analysis was conducted to determine if the West Bottoms had the ability to accommodate active recreation opportunities in the KCDA in anticipation of growing downtown population. Four suitability criteria were applied to the KCDA: 1) topography adequate for large-scale active recreation, 2) accessibility to KCDA residents and KC Metro Area population, 3) amount of sellable floor space that would need to be removed for a new park, and 4) the presence of local hydrology issues a park could improve while providing recreational opportunities. Topography alone narrowed the search to the West Bottoms and East Crossroads (Figure 2.02). The West Bottoms's central location, lack of development, and hydrologic issues made it the clear choice for a new urban park.

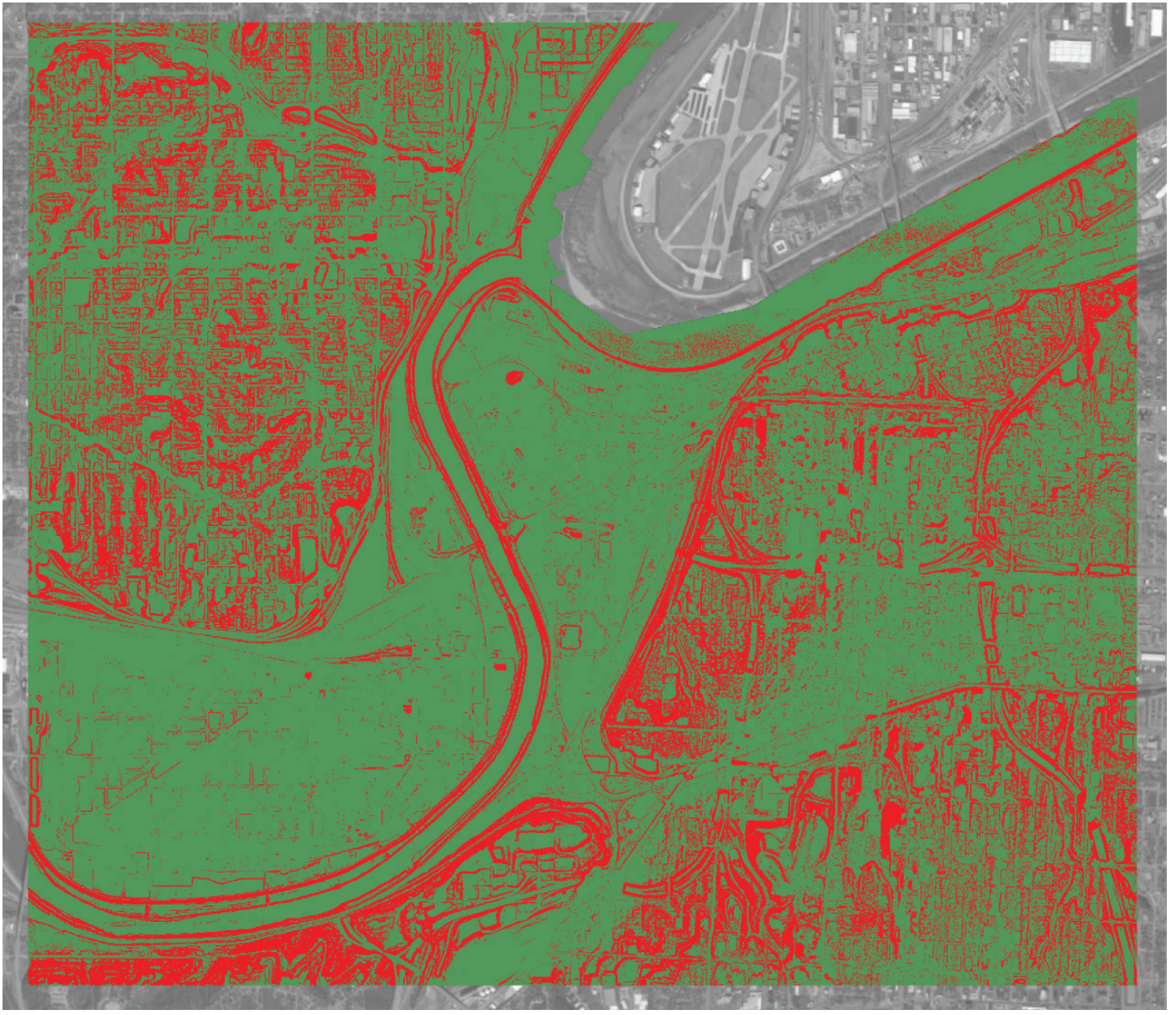


Figure 2.02- KCDA Topography. The West Bottoms and East Crossroads have the level ground adequate for large-scale active recreation. The West Bottoms's lack of density was a major factor in its selection for a large urban park (map by author).

past west bottoms studies

The West Bottoms's proximity to the downtowns of the Kansas Cities, the Missouri and Kansas River waterfronts, and populated neighborhoods in both states makes it a prime location for redevelopment. However, district redevelopment is challenging due to an array of political, economic, and environmental issues.

Several groups, including the City of Kansas City Missouri, the Kansas City Design Center, and the Urban Land Institute (ULI), have studied the West Bottoms, making recommendations and proposing design solutions. Many of the groups looked at both the Missouri and Kansas sides of the district as a single entity, though others observed the two parts separately. Typical recommendations are for small, low-cost interventions, such as signage, and an emphasis on organic growth.

In 2011-2012, the West Bottoms's problems were examined by the Urban Land Institute's Rose Center for Public Leadership, which selected Kansas City as one recipient of the Daniel Rose Fellowship. The fellowship is a "yearlong program of professional development, leadership, training, [and] assistance with a local land use challenge" (Urban Land Institute 2012). Within the target site of the West Bottoms, a panel, made up of public officials, leaders of architecture, engineering, and planning firms, and ULI Fellows, identified eleven challenges:

- image and perception as an unsafe and dead zone
- poor connectivity due to viaducts, railroad tracks, and topography
- how to blend industrial with new uses
- lack of cohesive vision for area
- seasonality of big events
- public realm needs and lack of infrastructure
- Kemper conundrum
- Jurisdictional issues (e.g. policing)
- brownfield sites
- weak overall real estate market
- access to capital

MY CONCERNS

Onsite observation was conducted as a pedestrian and driver to confirm the ULI's physical findings and identify additional district problems. On October 24th

and December 1st of 2012, I observed human activity, traces of past human activity, and the condition of pedestrian circulation infrastructure to identify where the West Bottoms is most active, what activities occur, and the condition of public right-of-way. The additional problems observed are:

- the presence of garbage on streets and sidewalks (Figure 2.03)
- a general lack of vegetation
- poor pedestrian connectivity due to: poor sidewalk/ crosswalk maintenance, physical barriers, parking on sidewalks, the lack of sufficient ADA ramps, and lack of sufficient paved sidewalks
- confusing vehicular circulation, due mainly to incurring viaducts, railways, and lack of street grid

Using site observation notes, geospatial data, and literature research, a site inventory and analysis was compiled for the West Bottoms.

Figure 2.03- Trash in the Public Right-of-Way. Trash observed in the same location on multiple site visits (Woodard 2012).

west bottoms inventory and analysis

SOUNDS

Transportation produces high levels of noise in the West Bottoms. Interstate highway traffic produces consistent, quite noise while trains and airplanes produce periodic, loud noise.

- opportunity for vegetated park amenities that function as noise buffers, such as alleles

SMELLS

Two sewer plants in the north West Bottoms produce offensive odors. During site visits, the odors were strongest in north West Bottoms but fluctuate depending on wind direction.

- buffer smells with vegetated screens
- introduce fragrant vegetation to mask odors
- direct large gathering spaces away from the district's northern most edge

VIEWS

Sites visible from the ground in the West Bottoms include the KCMO skyline, the KCK East Bluff, and the Missouri and Kansas Rivers. Due to its proximity to Wheeler Airport (across the Missouri River, planes can be seen periodically over the district.

- opportunity to leverage district views, in unison with other positive district attributes, when arguing for district improvements
- opportunity for large events to be held in the West Bottoms focused around air shows

LANDMARKS AND ARCHITECTURAL CHARACTER

The West Bottoms contains several historic buildings and landmarks, such as Fire Station No. 1, the Livestock Exchange Building, and the 12th Street Viaduct (Figure 2.04). The dominant architectural style is a "red brick Romanesque warehouse or factory…with high, arched windows and green painted trim" (Landmarks Commission 1977, 162). Many of the buildings are partially or fully vacant. In recent decades there has been an incursion of tin and / or cinderblock buildings into the district, diluting the historic architecture character (Figure 2.05). The district's buildings are highly visible from Interstate 70 and Interstate 670 and are iconic elements for passing travelers.

- opportunity to leverage the history and architectural character of landmark buildings to lure occupants

Figure 2.04- Historic Landmarks. Fire Station No. 1 and (top, King 2013) the 12th Street Viaduct (bottom, Woodard 2012).

Figure 2.05- Architecture. West Bottoms architectural style (top) and tin / cinderblock buildings (bottom) (King 2013).

TRAFFIC CIRCULATION

Over time segments of the West Bottoms's original street grid have been permanently closed and sold to private land owners. Also, rail lines break the street grid in many places (Figure 2.06). The selling and breaking of the street grid has eliminated all complete north-south connector streets; multiple streets and turns are needed for north-south movement. Rail lines create barriers to traffic and are the reason many disruptive viaducts exist.

- improve district circulation by working with rail line owners to create rail line crossing easements

HUMAN ACTIVITY CORES

Onsite observation revealed that activity areas are concentrated around district entrances: the I-670 off-ramps and 12th Street Viaduct. The farther the distance from these areas, the less activity I observed. Low activity areas correlate with the presence of security barriers, such as razor wire fencing, suggesting the presence of crime (Figure 2.07).

- opportunity to create destinations outside the current activity areas to increase district use and activity level

Figure 2.06- Existing Traffic Circulation. Rail lines exclude a true north-south street (map by author).

SEASONAL EVENTS

The West Bottoms does not have a frequent series of events and activities throughout the year. It has a few well-known seasonal events: the monthly First Fridays (Figure 2.07), the annual American Royal, and the annual haunted house season. The low activity level has created the perception of an empty district, and has caused many district businesses to be seasonal also.

- opportunity to hold current seasonal events more often to increase the time the district is active
- opportunity to add more seasonal events throughout the year and build on the number of events each year to increase the amount of time the district is active

Figure 2.07- West Bottoms Activity. low activity areas (top) and First Fridays (bottom) (Woodard 2012).

rail lines
streets
interstate highways
rivers

PEDESTRIAN CIRCULATION

Pedestrian circulation in the district is often degraded, nonfunctional, or absent. It has poor continuity, few pedestrian entrances / exits to the surrounding areas, is rarely ADA compliant, and is often used for parking (Figure 2.08). Poor pedestrian circulation prevents people from exploring the district, decreases foot traffic that supports businesses, and discriminates against the disabled citizens.

- opportunity for a pedestrian environment unique to the West Bottoms: install sidewalks next to raised loading docks to create a two-level pedestrian environment that is ADA compliant
- opportunity to use underutilized traffic / rail infrastructure for district pedestrian access
- repair and construct pedestrian infrastructure throughout the district

Figure 2.08- Pedestrian Circulation Issues. Sidewalk barriers (opposite top), raised loading docks (opposite bottom), parking (top left), botched sidewalk repair (bottom left), and lack of sidewalks (top and bottom right) (Woodard 2012).

LANDFORM

The West Bottoms sits in a basin, bordered by a natural bluff to the east, high infilled land to the north, levees to the west and north, and a high point at the district's southern tip. These barriers make movement in and out of the district difficult. The basin's floor is flat with a slight central ridge running through the center southwest to northeast. The land barriers provide no natural external drainage outlet, meaning all district stormwater drains to internal lowpoints. Stormwater drainage relies on subsurface drainage to prevent the lowpoints from flooding during storms.

- opportunity to use flat land for large-scale active recreation space
- opportunity to use barriers for recreational activities such as hiking and biking

HYDROLOGY

The West Bottoms has a long history of flooding; in both 1903 and 1951 it experienced floods that enveloped the entire district. The district is now protected by a levee system that can withstand the Missouri and Kansas Rivers's 500-Year flood level. Yet the district is susceptible to flooding in two instances other than the Rivers. Turkey Creek is south of the district, but when it floods its water can be pushed into the West Bottoms (Figure 2.09). Also, stormwater falls or drains into the West Bottoms basin. Because the water has no natural outlet within the basin, water can only be removed by subsurface drainage. If the amount of stormwater is too much for the subsurface system to accommodate, water backs up and floods the lowpoints of the West Bottoms (Figure 2.10).

- opportunity to introduce a landscape system that functions as stormwater infrastructure and as recreation space
- opportunity to use the floodplain as the basis for planning the district to remove businesses from harm's way

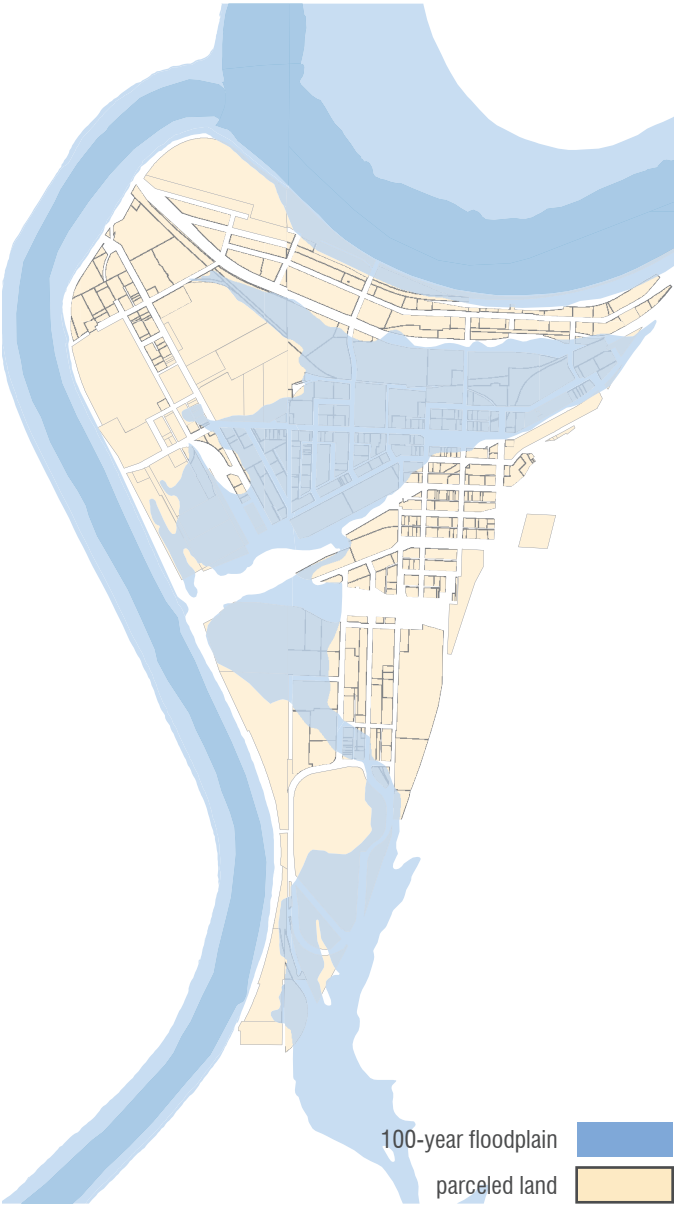


Figure 2.09- The FEMA 100-Year Floodplain. Water is pushed into the West Bottoms from Turkey Creek (map by author).

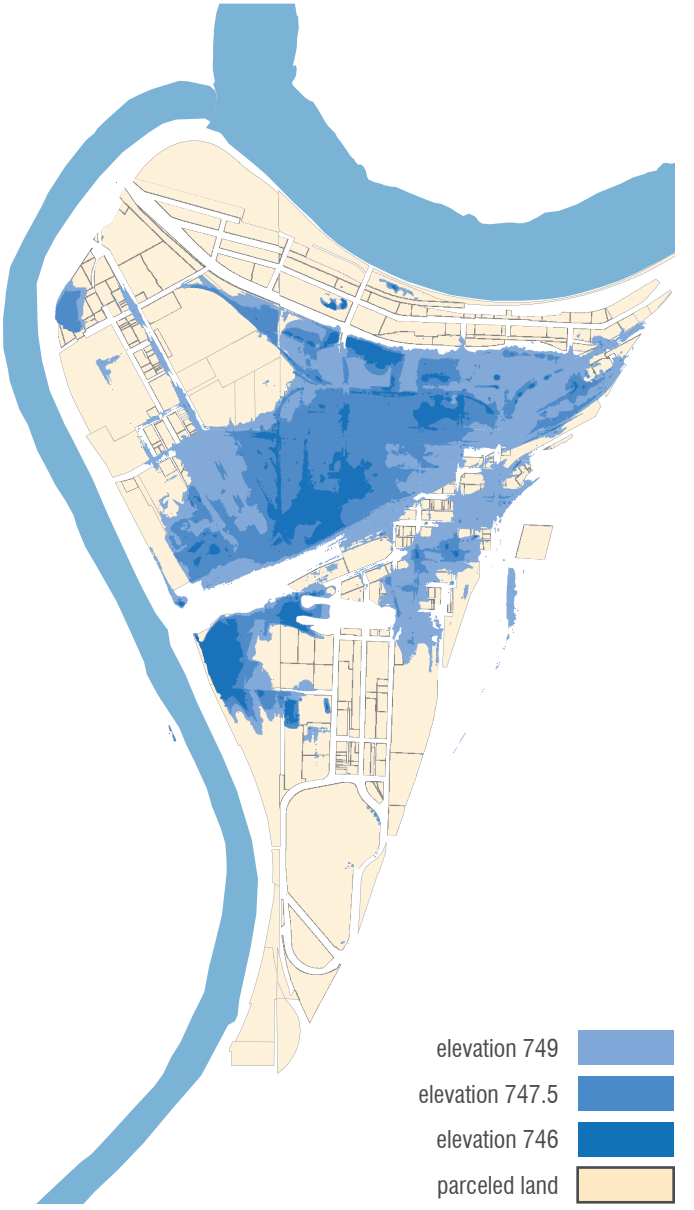


Figure 2.10- The Elevation 100-Year Floodplain. Water pooling at lowpoints reach 100-Year level over 3' (map by author).

WEST BOTTOMS'S SIZE

The West Bottoms is approximately 880 acres, comparable to Central Park in New York City. Yet the floor area ratio of the district is 0.46, a density typically found in suburbs. Also, the district has a population under 100, while the surrounding area supports tens of thousands of people.

- opportunity to use underutilized land to accommodate an increasing population's needs, such as housing and amenities

STATE BORDER DIVISION

The West Bottoms is bisected by the Missouri-Kansas state border, placing 66% in Missouri and 34% in Kansas (Figure 2.11). The border divides the West Bottoms's tax base, zoning, laws, planning efforts, and political authorities. Five governmental entities, excluding the federal government, have authority in the district: the State of Missouri, the Jackson County government, the City of Kansas City Missouri, the State of Kansas, and the Unified Government of Wyandotte County and Kansas City Kansas.

Figure 2.11- State Line Division (map by author).

- need for Cities to collaborate on district planning and zoning
- opportunity to create a separate governmental group charged with managing the district

LAND USE

The historic land use of the West Bottoms is industrial. Although it originally supported residents and commercial services, the core land uses of the district have been manufacturing, storage, cattle stockyards, railroad uses, meat packing, and freight (West Bottoms Business District Association 2012). Most of these uses have moved from the district due to flood events, changes in the economy, and decrease in transportation costs. Currently, the district contains storage, small businesses opened periodically throughout the year, transportation-oriented businesses, manufacturing, and some office space (Figure 2.12).

- opportunity to reuse remnants of past uses, such as abandoned factories and empty parcels, for adaptive reuse and urban infill

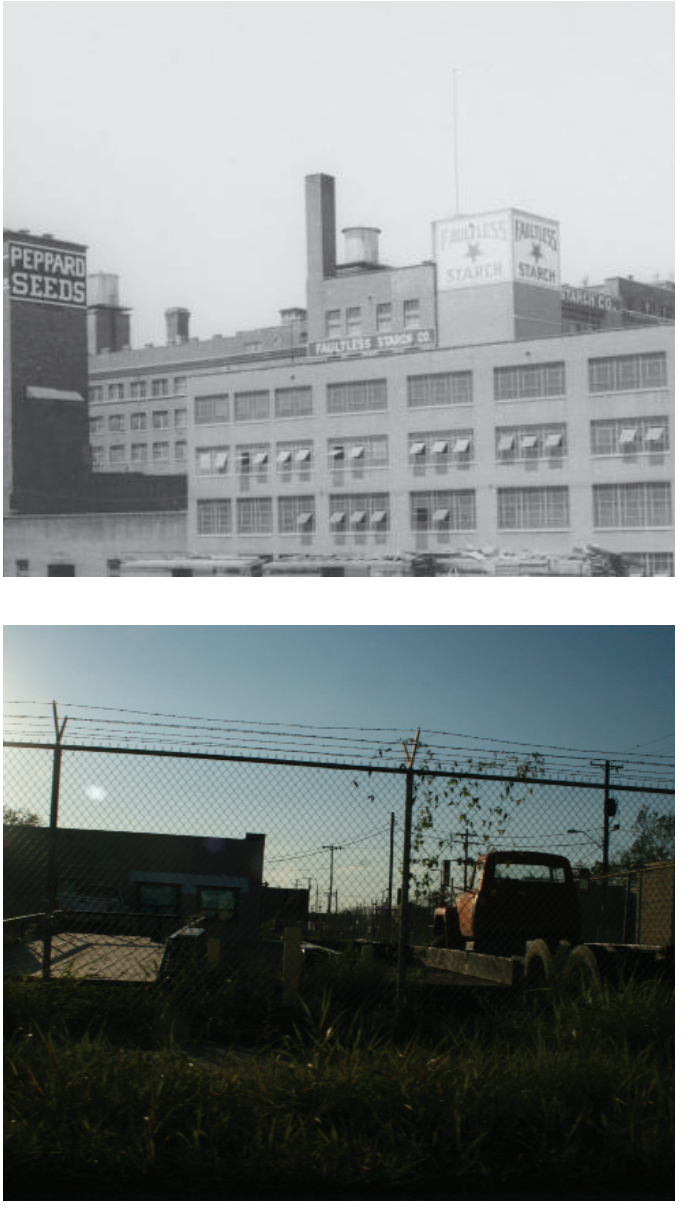


Figure 2.12- Land Use. Past land use (top, Missouri Valley Special Collections) and current land use (bottom, King 2013).

ZONING

Zoning in the West Bottoms differs by state (Figure 2.13). In Kansas, the district is zoned for heavy industry, or M3 ("Zoning Map" 2007). In Missouri, the district is zoned for manufacturing, or M2-b (City of Kansas City 2012). Kansas M3 zoning accommodates heavy industrial uses plus uses allowed in M2 and M1 zoning. Missouri M2-b zoning accommodates "warehousing, wholesale, and industrial uses" ("Zoning Map" 2007). It also allows residential household living in single purpose residential buildings if proper permission is attained from the City, but restricts all other forms of residential development.

The KCMO Greater Downtown Area Plan, adopted by the City Council March 11, 2010, specifies the Missouri West Bottoms south of I-70 as a Downtown Mixed-Use land use which allows "office, commercial, custom manufacturing, some light industrial, public, institutional and residential development" (2010, 14). The GDAP specifies a greater variety of uses for the Missouri West Bottoms than actual zoning allows.

- align the adopted land use with zoning code

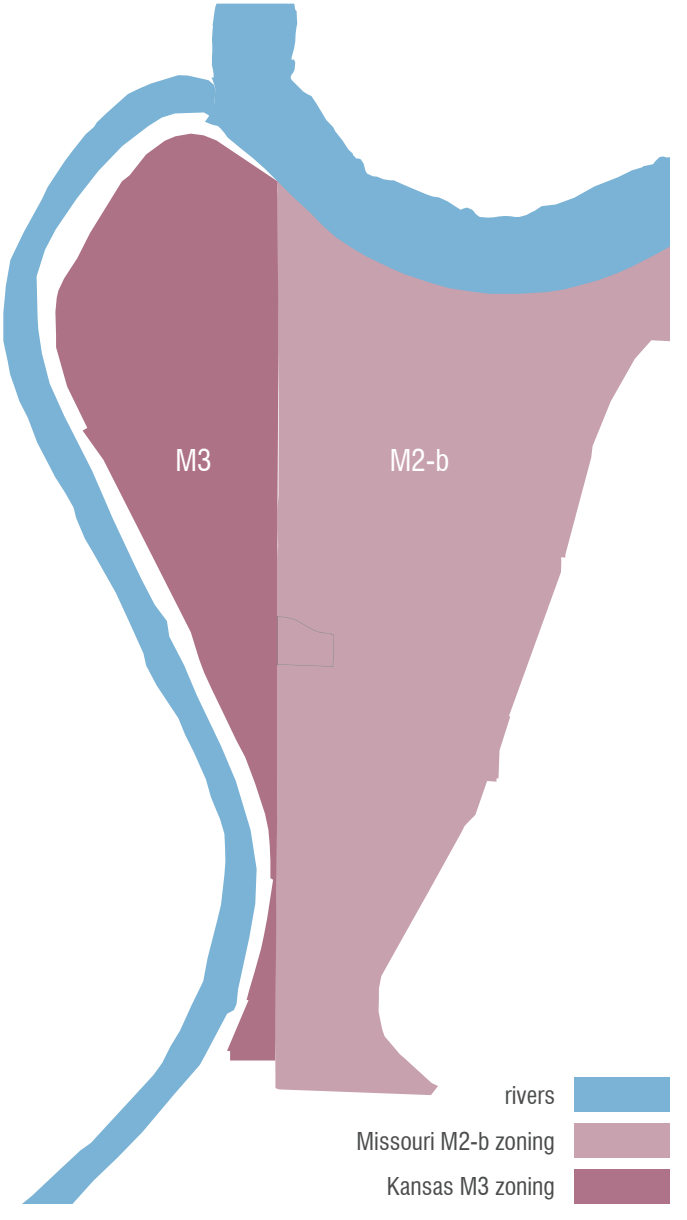


Figure 2.13- Zoning. Zoning in the West Bottoms is split by the state border (map by author).

- opportunity to transition Kansas West Bottoms to mixed-use as well
- remove restrictions that prevent residential uses in mixed-use buildings

PARCEL SIZE AND OWNERSHIP

The West Bottoms has many large parcels, and parcel size can influence parcel use (Figure 2.14). Of the 481 parcels in the district, the average size is 12.66 acres; the largest is 43.46 acres and the smallest is 0.003 acres. Large parcel size, and price, excludes many small businesses that do not need and cannot afford large amounts of land. The large parcel size is conducive to industry and storage.

The 481 West Bottoms parcels have 216 private land owners, including the two Kansas Cities, which are the largest land owners. Of the 216 owners, 5% own 48% of the land, and 50% own 95% of the land

- opportunity to acquire large amounts of land while dealing with a limited number of landowners
- subdivide large parcels for mixed-use zoning

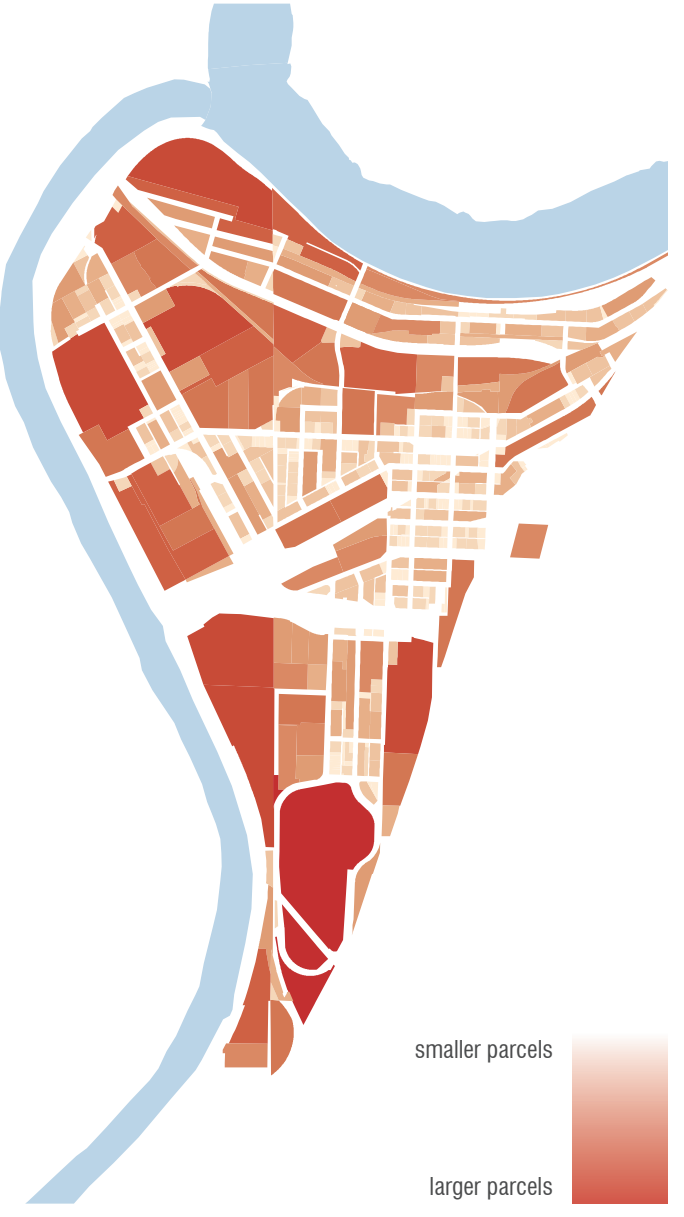


Figure 2.14- Parcel Size. The West Bottoms is made up of many large parcels (map by author).

site suitability analysis

To identify a proper location for a large park in the West Bottoms, suitability analyses were conducted for both development suitability and parkland suitability. Suitability was heavily influenced by landform and infrastructural elements. These two factors create the physical opportunities and constraints of the district and are the most restrictive on activities and development.

DEVELOPMENT SUITABILITY

Two development suitability analyses were conducted: the first using land and infrastructural elements (slope, elevation, interstate noise, and arterial street proximity) (Figure 2.15, Appendix) and the second using the same factors plus parcel size. Both suitability maps indicate low suitability for development in the northern area of the West Bottoms.

Figure 2.15- Land Development Suitability (map by author).

PARK SUITABILITY

Two suitability analyses were performed for parkland, each consisting of two parts. After suitability analysis was finished based on elevation, pedestrian access, and building density, a slope component was added that made all slopes over 10% unsuitable (Figure 2.16, Appendix). This was done to identify land that would not require much additional grading to make it ADA accessible. The second suitability analysis was conducted using the same method, but included parcel size with the first group of factors. Suitability for the parkland largely occurred where development was unsuitable, though there was overlap.

Figure 2.16- Park Development Suitability (map by author).

PARK BOUNDARY CREATION

The suitability analyses indicate the north West Bottoms is most suitable for parkland. To mitigate flooding, major lowpoints were to be included within the park boundary. Also, possible pedestrian access points to the district were identified; the streets between these access points and the suitable land were to be included within the park boundary. Finally, a boundary was drawn along parcel boundaries that included a large amount of suitable land, the lowpoints, and access streets (Figure 2.17). The boundary went through a final refinement to include connections to potentially important streets and exclude historic building groups whose rehabilitation would not be considered in the project. The final boundary, seen in Figure 2.18, defines the new James Park. The total boundary contains 138.5 acres.

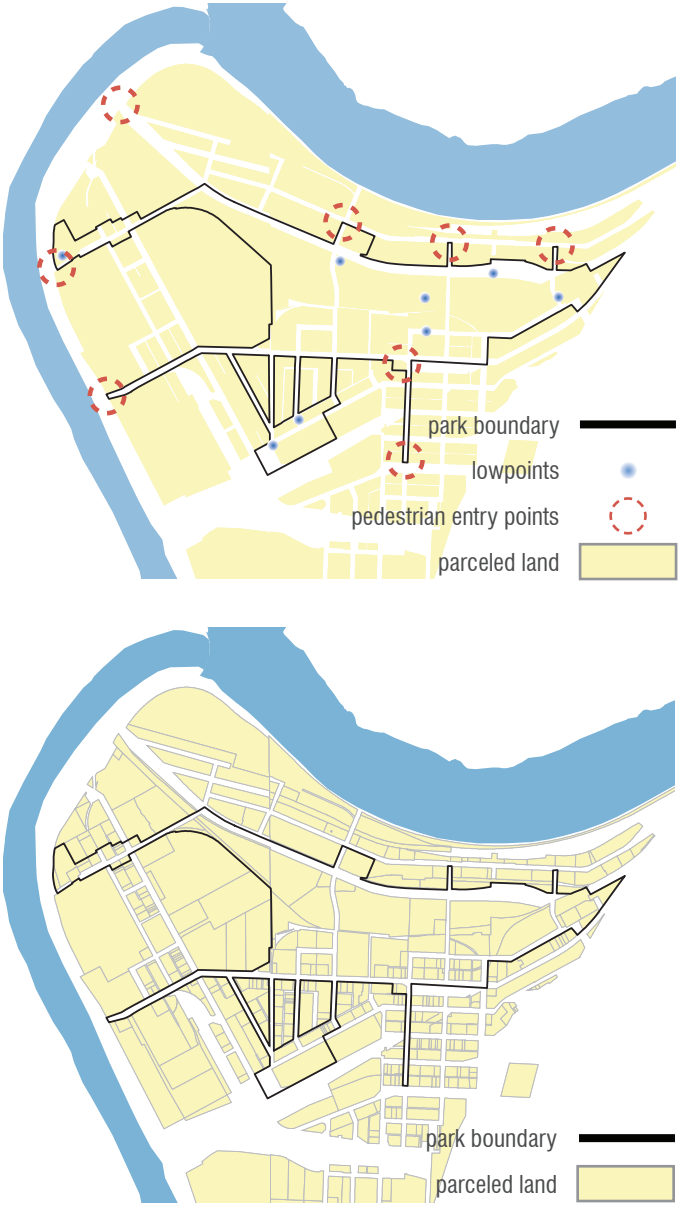


Figure 2.17- Park Suitability Diagrams. Park-defining elements (topo) and parcel boundaries (bottom) (maps by author).

Figure 2.18- Park Suitability and Border. A park boundary was determined by overlaying the park suitability map, parcel boundaries, lowpoints, and pedestrian entry points (map by author).

james park site inventory and analysis

BUILDINGS

The buildings within the park boundary are scattered and not of district character. Buildings only cover 22% of the private land, and many have tin and cinderblock facades that appear temporary and cheaply built (Figure 2.19). Most of the buildings that adhere to the district architectural character are dilapidated and vacant. The majority of businesses within the park boundary are housed in non-district architectural character buildings.

- opportunity to rehabilitate buildings of district architectural character, shift businesses into them, and remove non-district character buildings

SOUNDS, SMELLS, AND VIEWS

James Park has strong sensory elements. The park is adjacent to Interstate 70 and both sewer plants. The low building density allows direct views of the KCMO skyline and KCK East Bluff.

- buffer sewer plant smells from adjacent parkland
- opportunity to design park spaces to take advantage of views

TRAFFIC CIRCULATION

The current traffic circulation in and around the site divides the park but creates good access to its center (Figure 2.19). Wyoming Street and Mulberry Street create two north-south thoroughfares. Central Avenue marks the main park southern border, and one parcel connects to Woodswether Road to the north. Ohio Street is a northwest park connection and intersects James Street, which connects to KCK. Some street grid remains within the boundaries. Wyoming and Mulberry dissect the site into three parts. The east-west streets and James Street create connections to the KCK and KCMO downtowns, residential neighborhoods of north and south KCMO Greater Downtown Area, and the residential neighborhoods south of downtown KCK.

- opportunity to make James Park highly accessible to traffic by extending Wyoming Street to 12th Street
- remove in-park grid for unified park sections

Figure 2.19- Existing Parkland Buildings and Streets. Buildings cover less than a quarter of the park site (top), and the existing street system cuts the park into three large sections (bottom) (maps by author).

DRAINAGE AND STORMWATER

The park receives the majority of stormwater runoff from the area north of the central railroad lines and the Quality Hill area in the Loop District. This large watershed can be broken down into nine smaller watersheds, all draining to low points within the park boundary (Figure 2.20). Streets within the park convey most stormwater flow, and five of the seven lowpoints are on developed parcels. The sixth lowpoint is on a small vegetated parcel, and the seventh is on bare earth under the I-70 Viaduct. These lowpoints have no natural drainage outlet, so water pools unless subsurface drainage is present. Park watershed landcover causes an increase in the water volume draining to low points because the landcover does not allow for much soil infiltration. Using aerial photography, it was determined that the park site is composed of 20% grass, 15% gravel, 48% pavement, and 17% rooftop. The site is 35% pervious surface and 65% impervious surface. Using coefficients used in the Rational Method of stormwater calculations (Appendix), the volume of water that reaches each point was calculated based on rainfall from a 100-year, one-hour storm event. Two lowpoints, located at the eastern end and southern end of the site, receive the largest volume of water. Stormwater runoff to these lowpoints endangers businesses and infrastructure, damaging individual lives and the district's overall economy.

- opportunity for catchments at lowpoints that act as recreational amenities, such as boating and fishing
- opportunity for educational trails around lowpoint catchments with information on urban stormwater hazards, mitigation, and cleansing

Figure 2.20- Park Watershed. The park site's watersheds can be broken into nine sub-watersheds with seven distinct lowpoints (top). An analysis of the watershed landcover showed 65% of the watershed is impervious surface (bottom) (maps by author).

PARK SIZE

The introduction of a park in the West Bottoms will decrease the district tax base in the short term but cause a net increase in the future. James Park is a total of 138.5 acres, 66% private land (92 acres) and 34% public land (46.5 acres). Transforming 92 acres of developable land into public parkland removes a large amount of tax base from the West Bottoms's economy. However, using the area for parkland can increase surrounding site land value, attract consumers to the district that spills over into neighboring businesses, and densify the area. In the long run, the area's tax base will increase despite a short term reduction.

- develop a cost analysis of land values in and around park site to calculate tax base removed

LAND USE ANALYSIS

Over 50% of the park site is empty or unused. Using aerial photography from 1993-present, current land use was analyzed to determine the level of use (Figure 2.21). Active land consists of buildings or active outdoor storage, and underutilized land consists of empty land or long-term storage. To determine if land is active or long-term storage, past aerial imagery was analyzed to see the frequency of outdoor storage movement: if outdoor storage did not change drastically over time, it was determined to be long-term storage. Of the privately owned land within the park boundary, 47% is found to be activity used, while 53% is underused.

- opportunity to transform unused sites into productive parkland

BUSINESSES

Within the park boundary there are a variety of businesses. Business types range from a pallet supplier and construction company, to a photography studio and product design firm. Most businesses are office oriented, but some need outdoor space to operate. The businesses with the largest outdoor needs are those served by semi-trailers, which need large paved areas to navigate loading and unloading.

- consolidate business into a dense business area to open up land for large recreation spaces
- retain diverse business within the park boundary

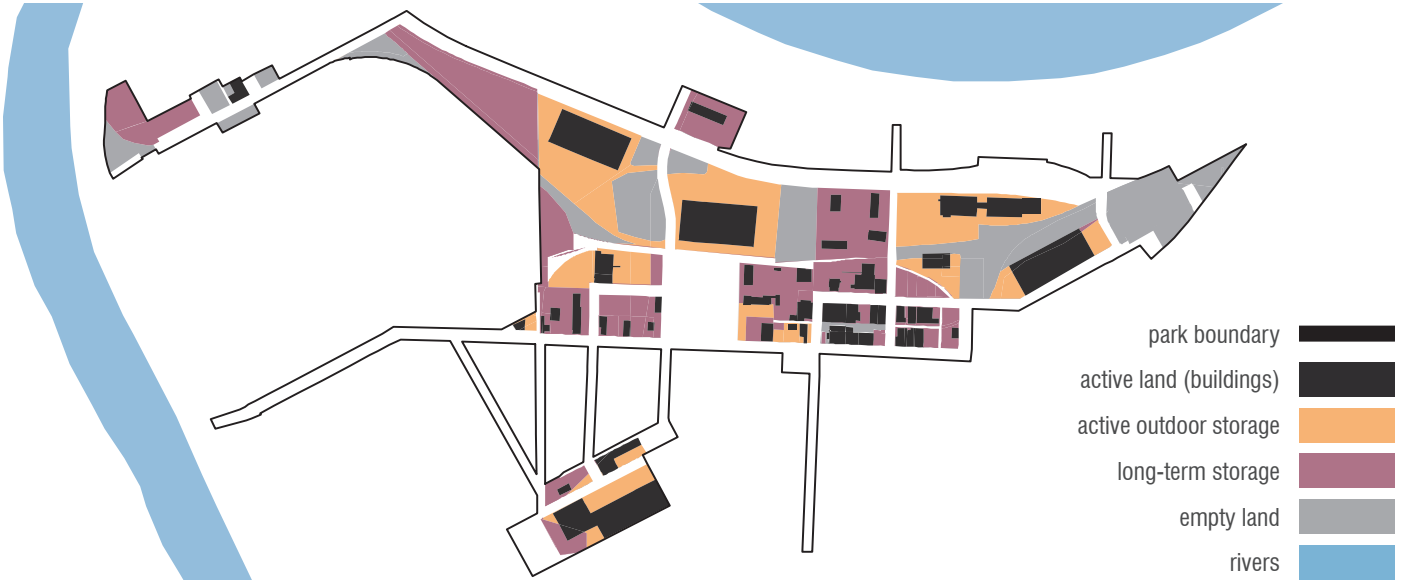


Figure 2.21- Private Park Parcel Land Use. An analysis of the privately-owned park land showed that less than 50% of the land is fully utilized. The site is characterized by empty parcels and long-term storage areas (map by author).

PARK SIZE

There are 85 landowners within the park boundary. 3.5% (3 owners) own 33.25% of the land, 8.2% (7 owners) own 58.67% of the land, and 22.3% (19 owners) own 88.88% of the land. Acquiring all the parkland will be difficult with 85 separate owners, but the large parcel size allows for nearly 90% to be purchased with few of the overall owners.

- opportunity to acquire nearly 90% of parkland by dealing with less than 25% of total landowners

CONCLUSIONS

Following the site inventory and analysis of the West Bottoms and the James Park site, the most significant opportunities and constraints were identified. The most significant opportunities are the ability to leverage hydrology issues to introduce parkspace, strengthen district identify by removing buildings of non-district architectural character, and to repurpose underutilized land to create parkspace and support incoming population. The most significant constraints are a restrictive and degraded circulation system, large parcels that discourage mixed-use development, and the lack of collaboration between the Kansas Cities to develop a common vision for the entire district.

The main lesson learned from the most significant constraints in the West Bottoms is that constraints cannot be addressed by small, low cost interventions or organic growth as recommended by past district studies. Both the repair and creation of the circulation system and the subdivision of parcels are major, expensive endeavors taken by municipalities. And organic growth works as a patchwork of grassroots revitalization, not a comprehensive vision for the future. To overcome the constraints in the West Bottoms, the Cities must be involved in its planning and progression.

Figure 3.01- Degraded Rail Line (Woodard 2012).

PART II
DESIGN

Figure 3.02- A Little Green in the West Bottoms (King 2013).

chapter three
growing place

"To remain sustainable, [cities] must be both stable and elastic, capable of holding the past and catalyzing change for the future."

- *Emily Waugh,* Recycling Spaces Curating Urban Evolution

Study of the West Bottoms translates into an informed set of design interventions that work with a changing district structure. These design interventions can be broken down into their temporal parts to see how they layer together over time. The culmination of the design can then be seen as a collection of individual spaces that work together to create a cohesive sense of place.

james park master plan

James Park is not just a public park, but a public park at the heart of the Kansas City Metropolitan Area. Large parcels of underutilized land are transformed into nearly 140 acres of parkland, featuring uninhibited views of the Kansas City skyline, over six miles of trails and pathways, and a diverse collection of recreational, educational, and cultural opportunities.

To appeal to a broad user group, it is necessary that the design connect to both the park's surrounding context and its larger region. All park areas are linked to the Central Woods circulation network that organizes the site as a whole while tapping into the regional Metro Green Network. The park is punctuated by an array of passive and active recreation opportunities that appeal to different user groups at different times, sustaining an active park seven days a week.

To the Kansas Cities, James Park offers an iconic landscape, catalyzing new development in the gateway district of the Cities and acting as a model for district renewal for the surrounding region.

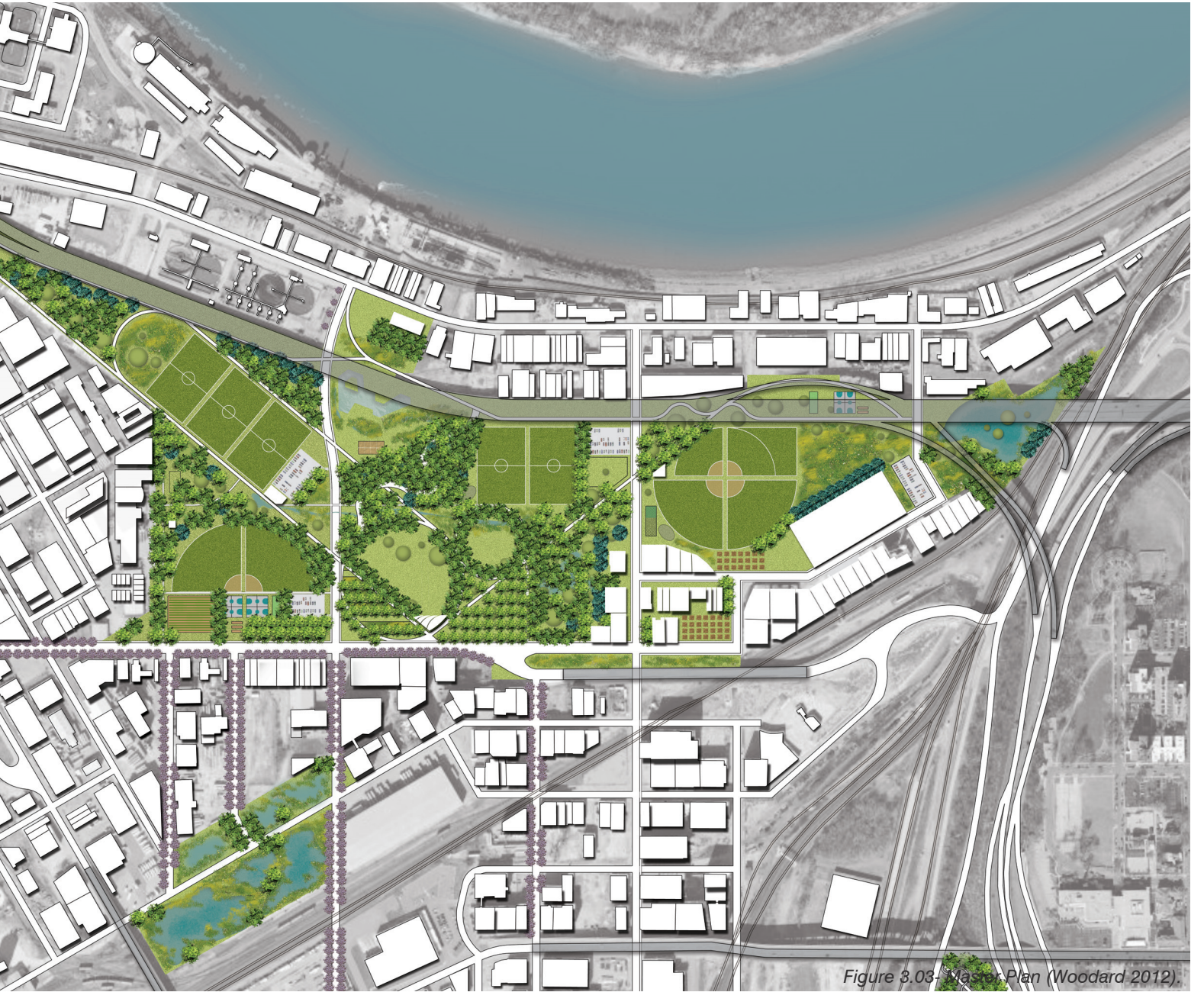


Figure 3.03: Master Plan (Woodard 2012).

district framework

PURPOSE AND PRINCIPLES

With the creation of James Park, the West Bottoms has the opportunity for a downtown catalyst that could not exist in other parts of the KCDA. But locating a large urban park within a deteriorated urban context requires a preliminary analysis at how the surrounding context might develop.

James Park must trigger changes in the district that builds support for the park and justifies its implementation. To justify the park, there needs to be a population and a tax base to support it. But currently there is no such population. The park must also benefit the district economically by encouraging development and increasing property values around it to justify the cost of implementation. The development can include residential, which accommodates a population that supports the park. To ensure the park's surrounding context will be developed in this manner, it needs to be planned. In response, I developed a district framework to guide development in a way that reinforces the park's purpose and use.

Five guiding principles were created during the framework development:

- Plan the West Bottoms as a Whole
- Form is Driven by Hydrology
- External Circulation Connects the District to its Surrounding Context
- Internal Circulation Encourages Mobility and Density
- Shift Density in a Phased Manner

These principles ensure the West Bottoms is planned as a single district that responds to its environment and grows into a significant urban district. Planning a park in conjunction with surrounding development is a strategy used on similar projects.

COMMONS PARK, DENVER COLORADO

A precedent applicable to my project is Commons Park in Denver Colorado. The Commons Park area and the West Bottoms have similar pre-park development conditions: high past railroad use, incurring viaducts, abundance of warehousing and storage, very low population, high amount of underutilized land, adjacency to a downtown core, proximity to a river, and flooding concerns. Both places' development goals are also similar: provide a recreational and aesthetic amenity and develop strong external circulation.

Due to the existing conditions, Commons Park had to be planned with its urban context so that redevelopment of the surrounding land justified the park's cost (Figure 3.04). Ultimately, "linking the site to the surrounding neighborhoods became the key to creating a new district that would thrive" (Moses 2007, 216). Since initial planning started in the early 1990s, development has risen along the Common Park's edge and the park itself is highly used.

Figure 3.04- Commons Park Development (commons.wikimedia.org/wiki/File:Denver_milennium_bridge3.jpg).

west bottoms framework plan- growing the district

The framework plan for the West Bottoms exists in three layers: density zones based on the 100-year floodplain, proposed street grid extensions, and external connections. These layers, when placed on top of existing conditions, create a new and enduring structure for the district. The goal of this framework is to support the creation of James Park, which will in return support the district.

EXISTING CONDITIONS

Current transportation infrastructure is an imposing element in the West Bottoms. Viaducts and rail lines divide the district and a dismantled street grid provides no true north-south connection. The levees protect against the 500-Year flood, but flooding remains a district constraint. The Wheeler Airport across the Missouri River restricts district building heights, and large parcels discourage dense development.

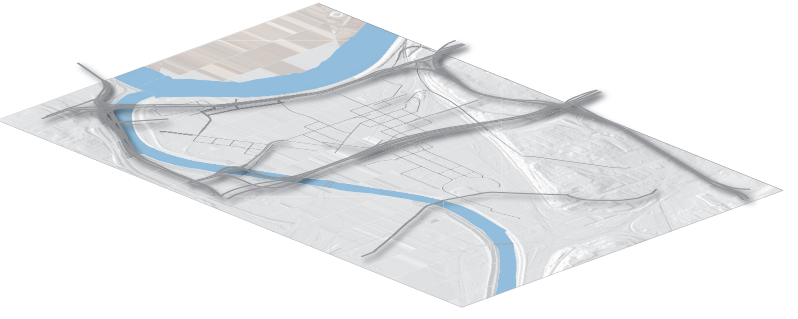


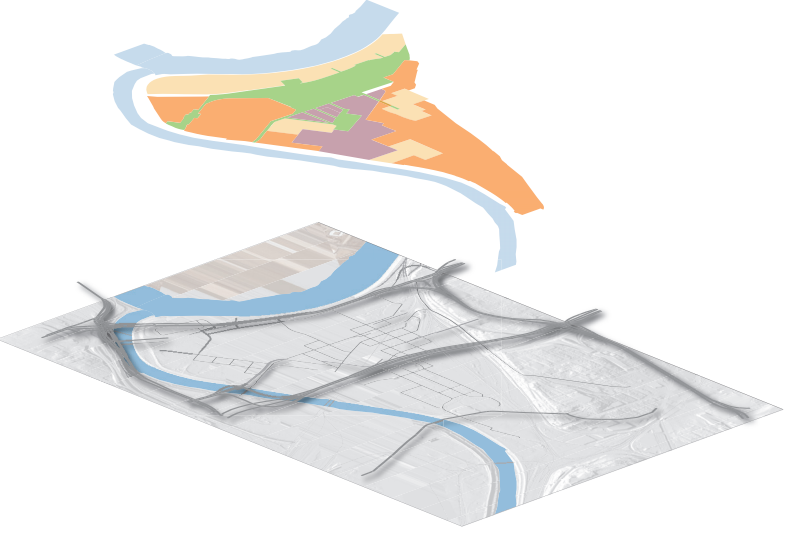
Figure 3.05- Existing Conditions (Woodard 2012).

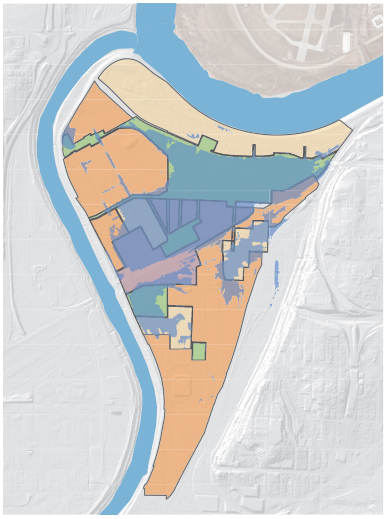
DENSITY ZONE LAYER

The Greater Downtown Area Plan specifies new floor area ratio and height restrictions for the West Bottoms's buildings. The GDAP specifies 5-10 FAR for the West Bottoms. To achieve this density, flood-prone areas would be developed with little space for stormwater mitigation systems. Therefore, the framework divides the district into small zones that specify lower densities.

The reallocation of district density places development of higher density and value on less flood-prone sites. This placement weakens a flood event's ability to destabilize district economy and livability. Development is allowed in the flood-prone areas, but its density is reduced so spacious best management practices (BMPs) can be implemented for stormwater mitigation.

An additional restriction on Low Density Zones is that no new buildings are allowed unless they are specifically designed to be flood resilient.





density zones by flooding

flood water
high density
medium density
low density
parkland
rivers

River Parcels
Current FAR 0.29
Proposed FAR 1.5-3

Park Parcels
Current FAR 0.35
Proposed FAR 0

James Street
Current FAR 0.14
Proposed FAR 3-5

James Lowpoint
Current FAR 0.41
Proposed FAR 1.5-3

Warehouse Lowpoint
Current FAR 2.70
Proposed FAR 1.5-3

Central Floodlands
Current FAR 0.80
Proposed FAR 0-1.5

Southeast Area
Current FAR 0.48
Proposed FAR 3-5

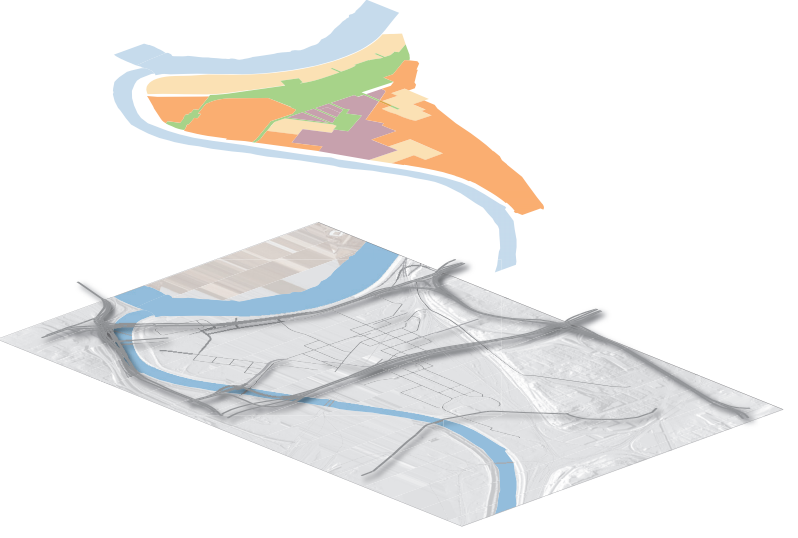
Livestock Lowpoint
Current FAR 0.67
Proposed FAR 1.5-3

Figure 3.06- Density Zones (Woodard 2012).

The GDAP also restricts building heights based on plane takeoff / landing paths from the Wheeler Airport. Building height is limited to 35'-75' north of I-670 and 130' south of I-670. Building height restrictions are partnered with density zones that follow airport restrictions and preserve important views in and around the West Bottoms.

The Riverfront Density Zone along the Missouri River is restricted to 1-2 stories to maintain views of the River from district neighborhoods.

Density zones within this framework provide only one level of breakdown. Within each zone is the opportunity for further breakdown of density and height that responds to future needs.



INFLUENCE ON THE PARK

The density zones allow tall, dense mixed-use development to grow along the park's edge. This new development provides living space for a population in the West Bottoms, creating a stable, daily interface with the park and supporting its programs.

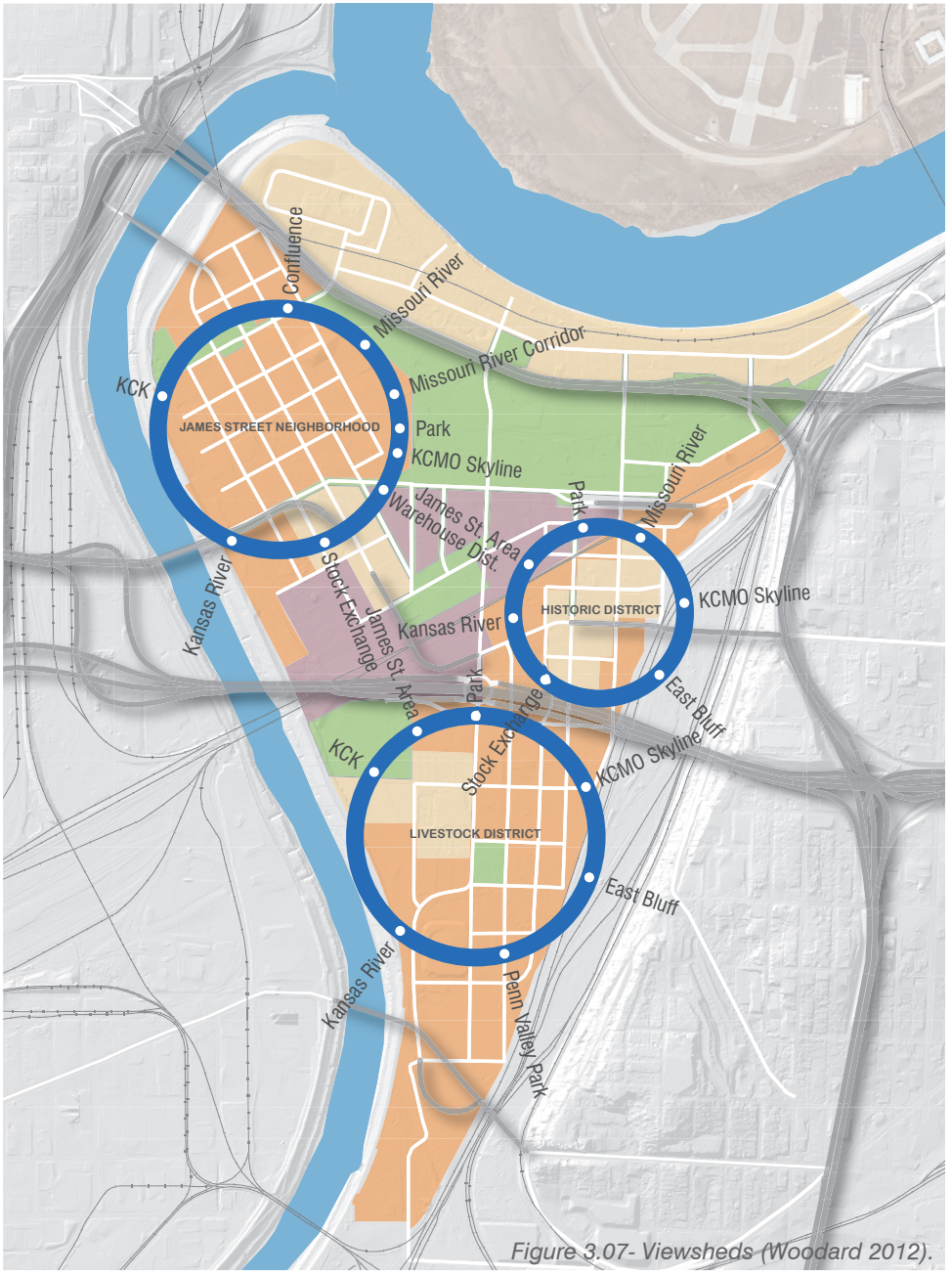


Figure 3.07- Viewsheds (Woodard 2012).

views from district neighborhoods

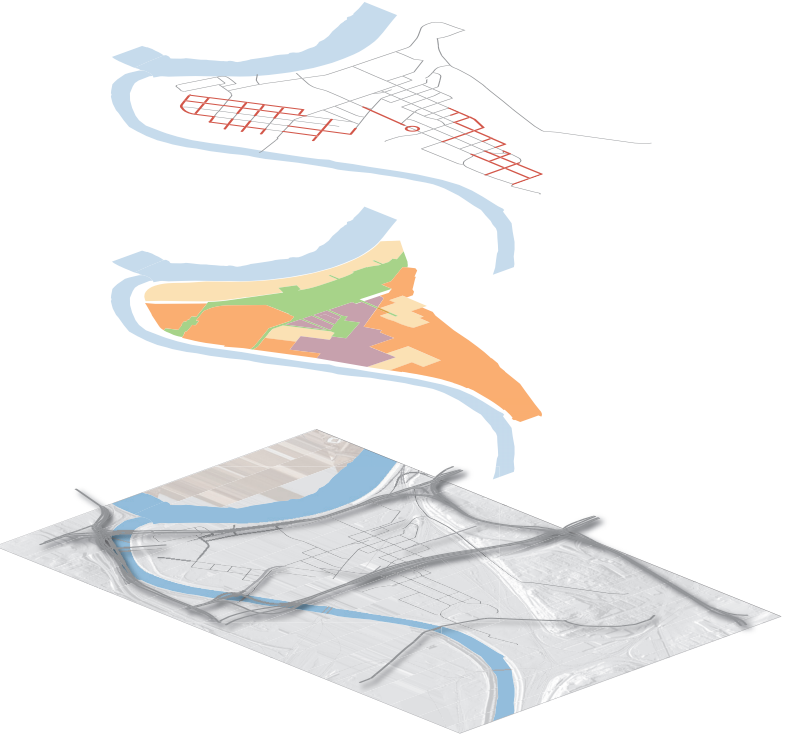
- district neighborhood
- high density
- medium density
- low density
- parkland
- rivers

PROPOSED STREET GRID LAYER

The West Bottoms's street grid has become fragmented over time as parcel size has increased. The consequences are restricted district mobility and exclusion of the dense, mixed-use development the GDAP has proposed. By reestablishing the grid system in strategic areas, circulation and parcel size can better accommodate mixed-use development. Wyoming Street also becomes a true north-south corridor hat improves district wayfinding and coherence.

INFLUENCE ON PARK

There was a conscious effort to keep Wyoming Street and Mulberry Street running through James Park. The park design plays off the access to these two streets. Wyoming Street becomes highly used for multiple transit modes and acts as the park's main entrance.



proposed grid by phase

- phase 01
- phase 02
- phase 03
- phase 04

- proposed streets
- existing streets
- interstate highways
- high density
- medium density
- low density
- parkland
- rivers

Figure 3.08- Proposed Grid (Woodard 2012).

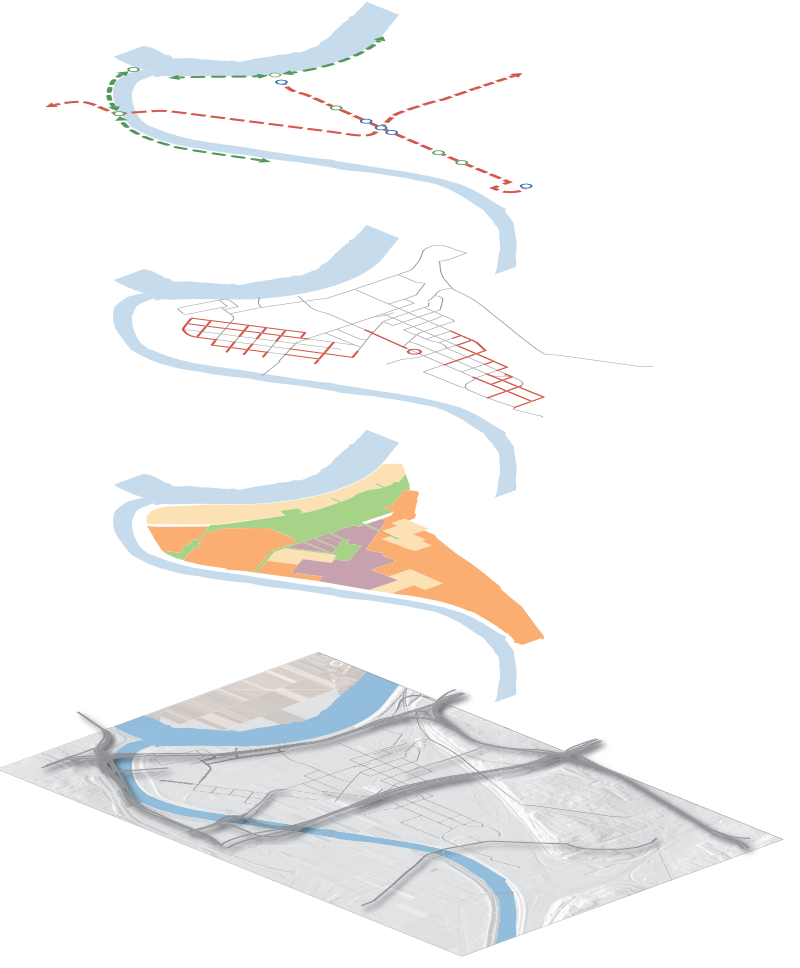
EXTERNAL CONNECTIONS LAYER

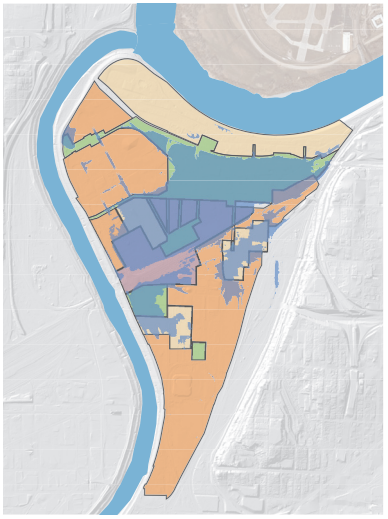
The newly emphasized Wyoming Street and 12th / James Street Corridor connects the West Bottoms to the outer area. Along Wyoming Street is the district's southern entrance, a regional traffic node, a local traffic hub, a rail connection, a multimodal transit node, and the district's northern entrance. Added to the transit strength of this corridor is a collection of historic and proposed regional attractions that impact development and district visitation. The 12th / James Street Corridor connects to the downtowns of the Kansas Cities, the proposed James Street Neighborhood, a Wyoming Street connection, and the historic Warehouse District.

INFLUENCE ON PARK

Like the emphasis on external connection that made Commons Park successful, James Park can become highly connected to its context and region. Wyoming Street's connections to local and regional transit networks make it very active. That traffic will move through the park, allowing the park to enjoy a high level of activity and accessibility.

When moving forward with this framework, it should be remembered that this is not a detailed planning effort, but rather the creation of key connections between the district and park and a shift of density to high ground in a flood-prone district.





density zones by flooding

- significant district node
- circulation node
- external / internal connections
- future river connections
- proposed streets
- interstate highways
- high density
- medium density
- low density
- parkland
- rivers

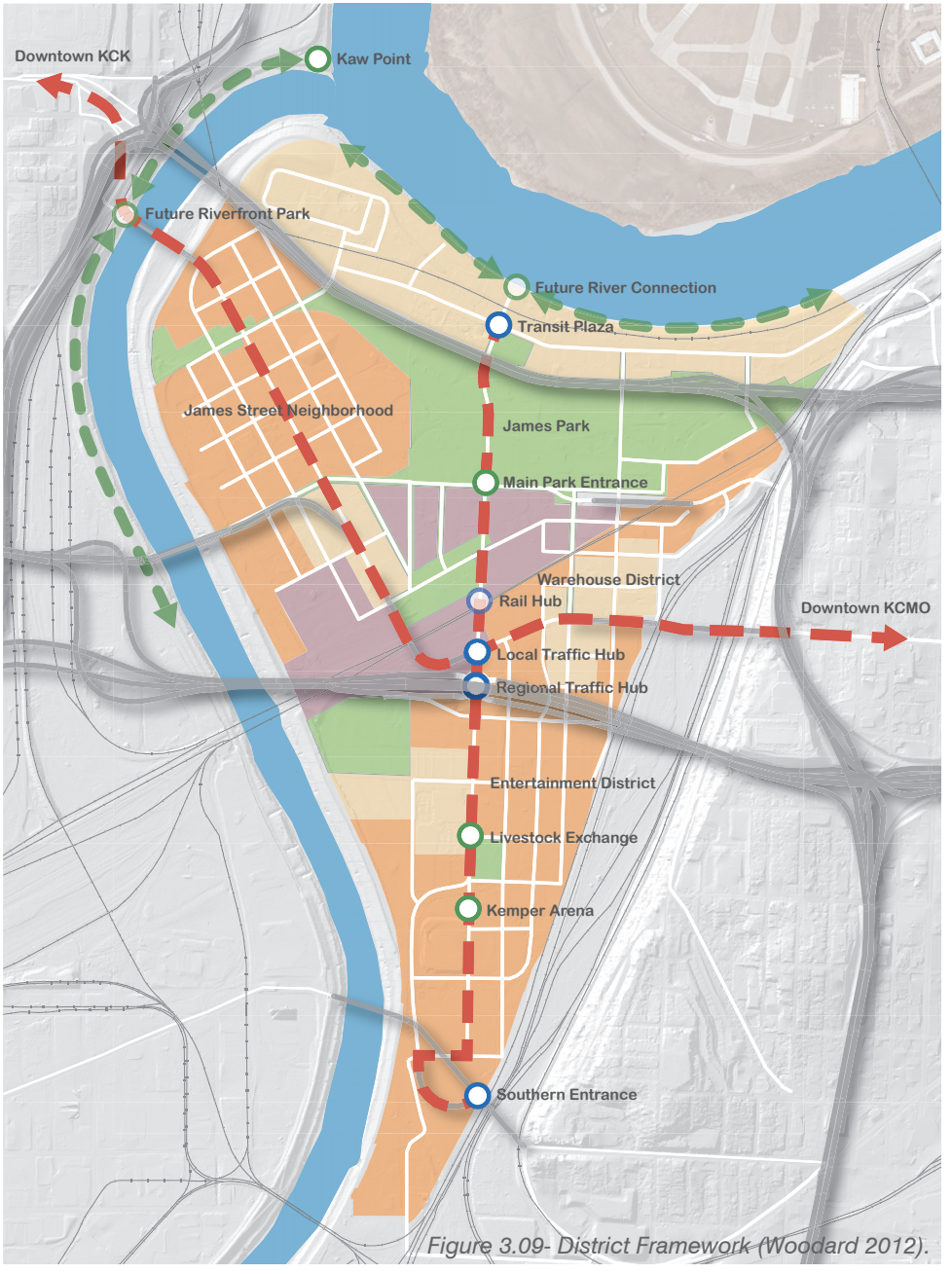


Figure 3.09- District Framework (Woodard 2012).

intermediate nature application and phasing

The phasing proposed below is not uncompromising; it is an ideal sequence of events based on phasing and performance goals. The phases can evolve as demand for certain amenities develops or fades.

PHASING GOALS

- Emphasize stormwater management in early phases
- Rely on existing infrastructure during early phases
- Establish pedestrian and bicycle infrastructure in early phases
- Preserve site businesses as long as possible
- Rely on trees grown on site for all tree planting
- Provide site amenities as soon as feasible
- Acquire land for large scale active recreation during middle phases
- Make physical changes visible and attractive throughout phasing

PERFORMANCE GOALS

ENVIRONMENTAL

- protect stormwater lowpoints from development
- increase vegetative cover by 50%
- add 200 trees to area streetscapes
- create catchments to hold high runoff

SOCIAL

- use 25% of parkland for active recreation space
- create 4 miles of bike trails
- make park 100% ADA accessible
- buffer elevated traffic by 50%
- buffer sewer plant smells
- provide 2 acres for urban agriculture

ECONOMIC

- provide streetscape improvements in area surrounding the park
- set aside 10% of parkland for development
- use vegetation to reduce heating / cooling cost for park buildings
- grow 90% of park trees within the site boundary

SITE CONDITIONING

The impermanence of intermediate natures and the site improvements they accomplish over time are ideal for James Park. They are part of a larger pre-phasing sequence that begins at the soil level.

James Park began as a silt floodplain, but has been altered by people for hundreds of years with the addition of foundations, new land, clay, stone, and pollutants. The soil must be studied and conditioned prior to planting.

SOIL CONDITIONING GUIDELINES

- acquire or borrow underutilized land
- test soil and assess needs (de-compaction, nutrients, remediation)
- break up soil with chisel plow (48")
- sow cover crop that supplements soil needs (further breaks down soil particle size, takes up pollutants, introduces nutrients)
- plow under initial cover crop for organic matter
- implement intermediate nature treatment

PLANTING SEQUENCE

The goal of the planting sequence is to determine early what plants thrive in the district and making an immediate, cost-efficient impact that naturally gives way to the long-term vision.

1. use low-cost "workhorse" plants for initial planting
   - species with immediate ecological functions, such as breaking up compacted soil
   - use low-cost saplings and seed rather than expensive nursery trees and sod
2. at the same time, grow nursery stock and create test plots on site
   - establish nurseries for medium and slow-growth trees to be transplanted on site
   - establish test plots to see what plant species thrive in the West Bottoms's microclimates
3. continue implementing on-site tree nurseries throughout phasing
   - continue to grow all medium to slow-growth trees on site throughout implementation phases
   - as nursery trees reach transplant age, intermix them with fast-growth trees from initial planting to transition from intermediate nature treatments to final vegetative treatments

intermediate nature treatments

There are three types of intermediate natures proposed for use in the West Bottoms: the **Grove-on-Grid Treatment**, **Table Meadow Treatment**, and **Meadow Carpet Treatment**. These treatments are meant to quickly create a vegetated presence while improving site conditions with minimal cost and maintenance. Treatments are designed to grow into a set of final vegetative treatments over time through the introduction of long-lived species. The placement of intermediate nature treatments are based on what final vegetative treatments will occupy each site in the future. Due to the lack of park site soil data, suggested species for each treatment must be verified as site suitable during the soil conditioning period. Plants were chosen for their speed of growth, adaptability to several site conditions, and ability to improve the site (break down compacted soil, introduce nutrients and organic matter, take up pollutants, control weed growth). Plant palettes are based on ideas gleaned from Gary Hightshoe's *Native Trees for Urban and Rural America*, seed mixes from Prairie Nursery's website, and Nigel Dunnett and James Hitchmough's *The Dynamic Landscape*.

GROVE-ON-GRID TREATMENT

This treatment consists of low groundcover species and fast-growth, short-lived tree species placed on a grid. The grid makes the planting look intentional and managed and the low groundcover allows visual permeability. The characteristics of control and visual permeability help dissolve the unsafe feeling associated with dark, naturally planted areas in cities. The tree species will depend on what medium and slow-growth trees are intended to be planted in the treatment area in the future (fast-growth trees should be naturally associated with the medium and fast-growth trees interplanted with them).

1. *THE PROCESS*

- Installation is by seed and spot planting for groundcovers and by saplings / whips for trees. Some random grid points will be left open for future long-lived tree species.

2. *THE PALETTE*

- willow species (*Salix sp.*)
- river birch (*Betula nigra*)
- silver maple (*Acer saccharinum*)

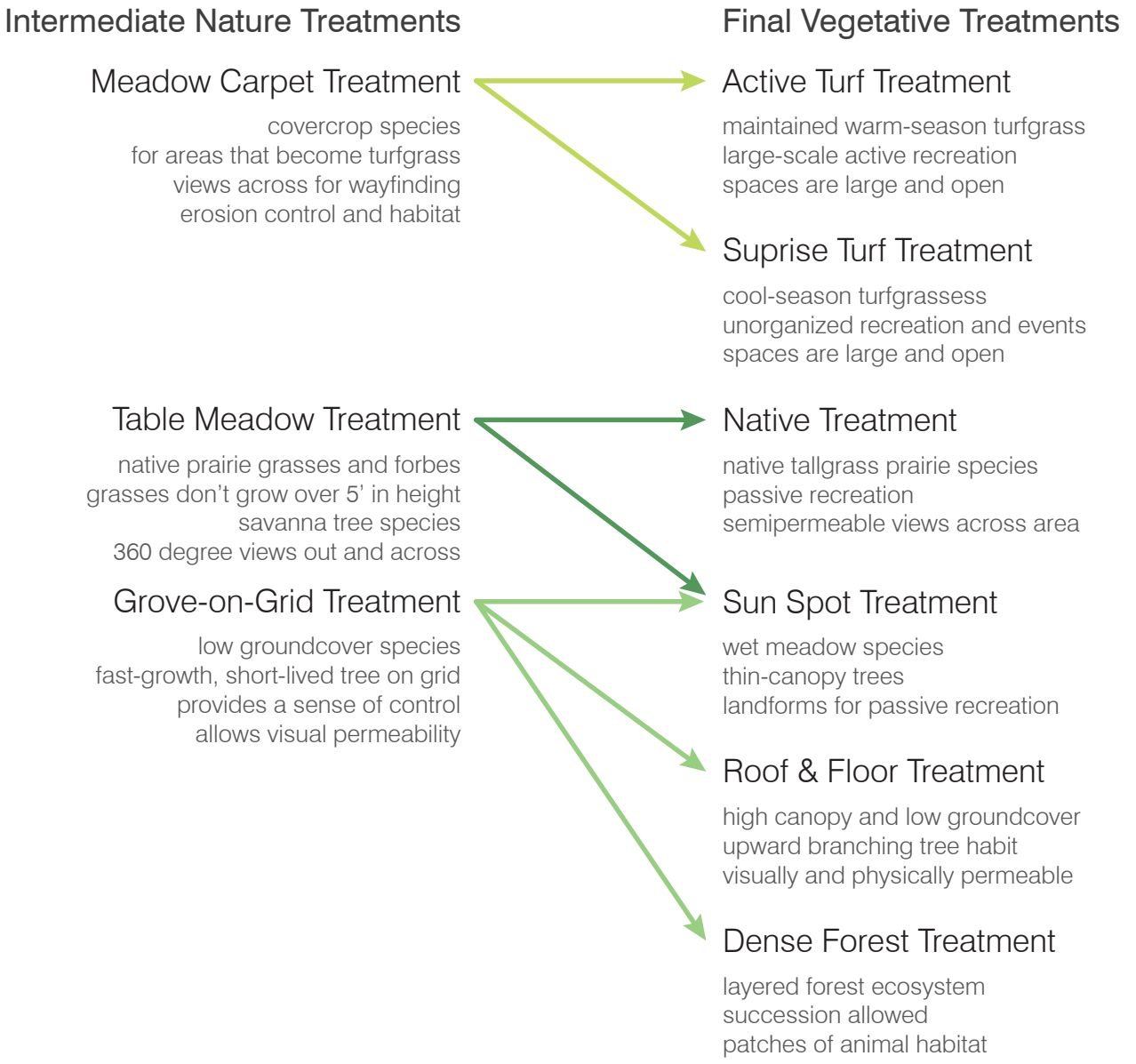


Figure 3.10- Intermediate Natures to Final Treatments. Initial intermediate nature treatments evolve into a group of final vegetative treatments over time. Some initial treatments are replaced by final vegetative treatments at specific times (diagram by author).

- white pine (*Pinus strobus*)
- eastern cottonwood (*Populus deltoids*)
- pennsylvania sedge (*Carex pensylvanica*)
- prairie dropseed (*Sorobolus heterolepis*)

3. *THE MAINTENANCE*

- Required maintenance includes collection of broken branches (to be mulched and reapplied to treatment areas) and mowing along treatment area edges for a maintained appearance. Spot irrigation will be needed during establishment.

TABLE MEADOW TREATMENT

This treatment consists of native prairie grasses and forbes that do not grow above five feet in height and savanna tree species that are kept to the edge of the treatment areas. The height of prairie grasses and forbes allow for 360 degree views out of the treatment area and open views across the treatment area for wayfinding purposes. The savanna tree species are naturally associated with the native prairie species, creating the area cohesiveness found in nature.

1. *THE PROCESS*

- Installation is by interseeding plants into existing turf or seeding reconditioned areas. Trees are planted balled and burlapped (B&B) in irregular groves or in rows; these trees will not be grown on site.

2. *THE PALETTE*

- bur oak (*Quercus macrocarpa*)
- white oak (*Quercus alba*)
- prairie crabapple (*Malus ioensis*)
- little bluestem (*Schizachyrium scoparium*)
- sideoats grama (*Bouteloua curtipendula*)
- prairie dropseed (*Sporobolus heterolepis*)
- fox sedge (*Carex vulpinoidea*)
- Virginia wildrye (*Elymus virginicus*)
- stiff goldenrod (*Oligoneuron rigidum*)
- golden alexanders (*Zizia aurea*)
- black-eyed susan (*Rudbeckia hirta*)
- prairie blazingstar (*Liatris pycnostachya*)
- purple coneflower (*Echinacea purpurea*)
- lanceleaf coreopsis (*Coreopsis laceolata*)
- bufferflyweed (*Asclepias tuberosa*)

3. *THE MAINTENANCE*

- Required maintenance for the prairie grasses and forbes includes mowing and raking annually in fall or spring, the removal of exotic species, and mowing along treatment area edges for a maintained appearance. Spot irrigation as needed.

MEADOW CARPET TREATMENT

This treatment consists of covercrop species for areas whose final vegetative treatment will be turfgrass. Covercrops allow views across the treatment area for wayfinding purposes while performing erosion control and creating animal habitat / food sources. Unlike other intermediate nature treatments, it does not evolve into a final vegetative treatment. Instead, the intermediate nature treatment is removed and the final vegetative treatment installed. However, before the Meadow Carpet Treatment is removed, it performs site improvements in preparation for the final vegetative treatment (specifically increasing organic matter and de-compacting soil).

1. *THE PROCESS*

- Installation is by seeding reconditioned areas.

2. *THE PALETTE*

- oats (*Avena sativa*)
- perennial wheat grass (*Thinopyrum intermedium*)
- common oak sedge (*Carex pensylvanica*)

3. *THE MAINTENANCE*

- Required maintenance includes mowing and raking annually in fall or spring, the removal of exotic species, and mowing along treatment area edges for a maintained appearance.

final vegetative treatments

Following the intermediate nature treatments are six final vegetative treatments: **the Active Turf Treatment**, **Surprise Turf Treatment**, **Native Treatment**, **Sun Spot Treatment**, **Roof and Floor Treatment**, and **Dense Forest Treatment**. The former two treatments are established after the removal of the Meadow Carpet Treatment while the latter four are designed to evolve from intermediate nature treatments. Plants in the following treatments are chosen for their growth habit, association to each other in nature, ability to improve the site, and longevity. The final vegetative treatments are meant to create spatial environments for recreation while accommodating site ecological processes.

ACTIVE TURF TREATMENT

This treatment consists of highly-maintained warm-season turfgrass used for large-scale active recreation such as soccer, lacrosse, and ultimate. The spaces are large and open, creating the possibility of various activities at various scales. The warm-season grass accommodates high foot traffic during high-use summer months and is not injured by winter activities.

1. *THE PROCESS*

- Installation is by sprigging warm-season grass over treatment area.

2. *THE PALETTE*

- zoysiagrass (*Zoysia sp.*)

3. *THE MAINTENANCE*

- Required maintenance is weekly mowing, biannual aeration and dethatching, fertilization in spring and summer, irrigation (when needed), and resprigging of bare spots.

SURPRISE TURF TREATMENT

This treatment consists of cool-season turfgrasses and the perennial Crocus plant for unorganized recreation and events. The cool-season grasses create a thick carpet for many activities. The Crocus will be planted in designed patterns along trails in the treatment area and emerge through the turfgrass in spring and / or fall. These treatment areas are large and open, typically ringed by trees of other treatment areas.

1. *THE PROCESS*

- Installation is by planting the Crocus bulbs in designed patterns and seeding the turfgrass.

2. *THE PALETTE*

- Kentucky bluegrass (*Poa pratensis*)
- tall fescue (*Festuca arundinacea*)
- perennial ryegrass (*Lolium perenne*)
- Crocus (*Crocus sp.*)

3. *THE MAINTENANCE*

- Required maintenance includes weekly mowing, biannual fertilization in spring and fall, irrigation (when needed), and reseeding bare spots.

NATIVE TREATMENT

This treatment consists of native tallgrass prairie grasses and forbes and associated savanna trees along its edges. The height of the prairie species, some reaching seven feet, allows semipermeable views across the treatment area. The concealing nature of the tallgrass prairie can cause an unsafe feeling. To offset this feeling, the surrounding areas should be high activity zones, putting eyes on the treatment area. The trees along the edge of the area create a large enclosure, partially secluding the area for a passive recreation experience and emphasizing the sky above.

1. *THE PROCESS*

- Installation is by interseeding tallgrass prairie species into existing shortgrass prairie and reconditioned areas. Trees are transplanted from onsite tree nurseries.

2. *THE PALETTE*

- bur oak (*Quercus macrocarpa*)
- white oak (*Quercus alba*)
- prairie crabapple (*Malus ioensis*)
- big bluestem (*Andropogon gerardii*)

- indiangrass (*Sorghastrum nutans*)
- switchgrass (*Panicum virgatum*)
- Canada wild rye (*Elymus viginicus*)
- stiff goldenrod (*Oligoneuron rigidum*)
- black-eyed susan (*Rudbeckia hirta*)
- prairie blazingstar (*Liatris pycnostachya*)
- purple coneflower (*Echinacea purpurea*)
- lanceleaf coreopsis (*Coreopsis laceolata*)
- smooth aster (*Symphyotrichum laevis*)
- bufferflyweed (*Asclepias tuberosa*)
- purple prairie clover (*Dalea purpurea*)
- smooth aster (*Symphyotrichum laeve*)
- heath aster (*Aster ericodies*)
- prairie dock (*Silphium terebinthinaceum*)

3. *THE MAINTENANCE*

- Required maintenance includes annual mowing and exotic species removal. Native species will need irrigation during establishment.

SUN SPOT TREATMENT

This treatment consists of wet meadow species along the base of landforms under a thin veil of trees. Used at park lowpoints, stormwater inundates the base of the landforms where the wet meadow species grow. Just above the wet meadow species are thin-canopy trees that allow enough sunlight for the wet meadow plants to thrive. With the landform bases heavily planted, the tops of the mounds are left open to the sun and covered with a native turfgrass mix. The sun spots are places for passive recreation while at the bases of the landforms stormwater is captured, treated, and infiltrated.

1. *THE PROCESS*

- Installation by seeding wet meadow species along landform base and transplanting trees from onsite tree nurseries.

2. *THE PALETTE*

- thornless honeylocust (*Gleditsia triacanthos inermis*)
- eastern redbud (*Cercis canadensis*)
- swamp white oak (*Quercus bicolor*)
- Virginia wild rye (*Elymus canadensis*)
- Canada wild rye (*Elymus viginicus*)

- switchgrass (*Panicum virgatum*)
- blue joint Grass (*Calamagrostis canadensis*)
- fox sedge (*Carex vulpinoidea*)
- bottlebrush sedge (*Carex comosa*)
- bebb's sedge (*Carex bebbii*)
- porcupine sedge (*Carex hystericina*)
- black eyed susan (*Redbeckia hirta*)
- prairie blazingstar (*Liatris pycnostachya*)
- stiff goldenrod (*Solidago rigida*)
- golden alexanders (*Zizia aurea*)
- blue flag iris (*Iris virginica*)
- red columbine (*Aquilegia canadensis*)

3. *THE MAINTENANCE*

- Required maintenance includes periodic mowing of landform tops, removal of exotic species, and mowing along treatment area edge for a maintained appearance. Trees and wet meadow species will need irrigation during establishment.

ROOF AND FLOOR TREATMENT

This treatment consists of high tree canopies and low groundcovers, creating high visual permeability and allowing light to pass through the treatment areas. The trees are chosen based on branching habit and aesthetic character of their trunks: low limbs that grow upward allow for the best permeability and do not conflict with nearby trails. One exception, the pin oak, has downward-growing branches and will be trimmed up to expose its venerable trunk. The groundcovers create a patchy forest floor good for passive recreation and seclusion. In high activity areas, typically in association with Surprise Turf Treatments, the groundcover is forgone and the London planetree and pin oak dominate.

1. *THE PROCESS*

- Installation is by seeding groundcovers and transplanting trees from onsite tree nurseries.

2. *THE PALETTE*

- London planetree (*Platanus x acerifolia*)
- pin oak (*Quercus palustris*)
- thornless honeylocust (*Gleditsia triacanthos inermis*)
- American sweetgum (*Liquidambar styraciflua*)
- pennsylvania sedge (*Carex pensylvanica*)

3. *THE MAINTENANCE*

- Required maintenance includes the removal of exotic species, cutting of overgrown plants, and periodic limbing of trees. Trees will need irrigation during establishment.

DENSE FOREST TREATMENT

This treatment consists of a layered forest ecosystem with tall, midlevel, and short plant species. The treatment area is densely planted with trees which are allowed to seed the area over time. Patches of shrubs fill the area beneath the canopy with gaps to allow movement off trails. Initial groundcovers are allowed to succeed naturally as the forest floor naturalizes over time. Eventually, a layered forest will exist that creates secluded spaces from high activity zones and habitat for local wildlife.

1. *THE PROCESS*

- Installation by seeding groundcovers and transplanting shrubs and trees from onsite nurseries.

2. *THE PALETTE*

- limber pine (*Pinus flexilius*)
- red oak (*Quercus rubra*)
- white oak (*Quercus alba*)
- American Linden (*Tilia americana*)
- red columbine (*Aquilegia canadensis*)

3. *THE MAINTENANCE*

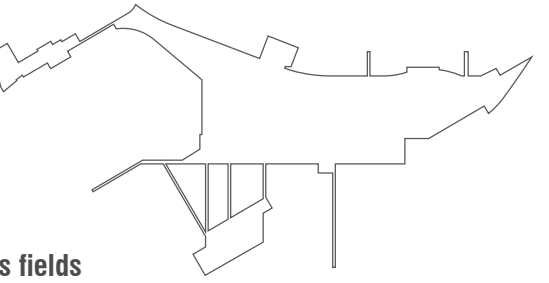
- Required maintenance includes removal of invasive spaces. Trees will need irrigation during establishment.

park phases

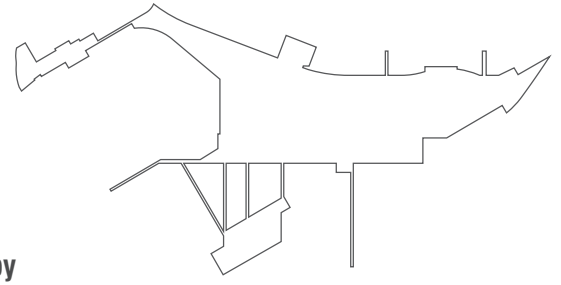
Application of intermediate nature and final vegetative treatments coincides with the introduction of new park amenities. Several park design elements, such as landforms and meadows, are implemented over multiple phases. Once treatments evolve to a certain point, new amenities can be added into the spaces the treatments create.

phase 00 (existing)

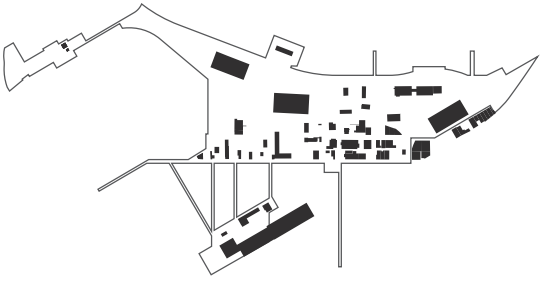
1. *COMMUNITY MEETINGS*
2. *CONTRACT NEGOTIATIONS*
3. *SOIL REMEDIATION IF NECESSARY*



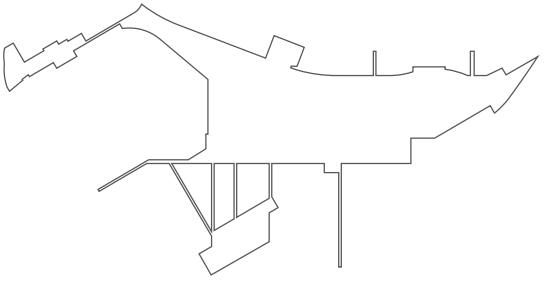
active sports fields



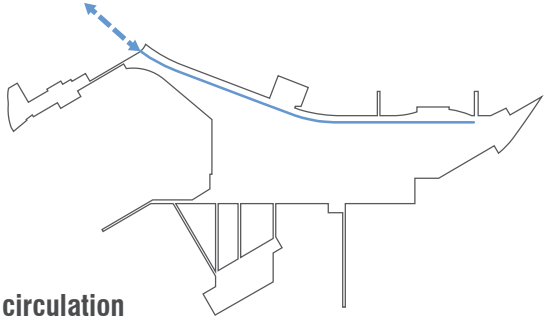
tree canopy



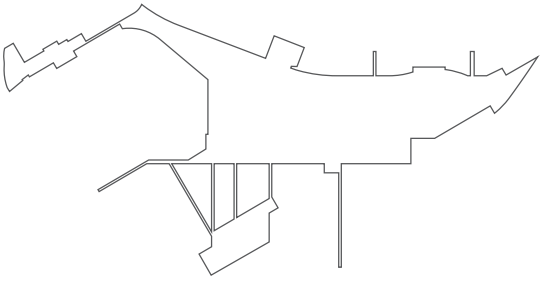
buildings



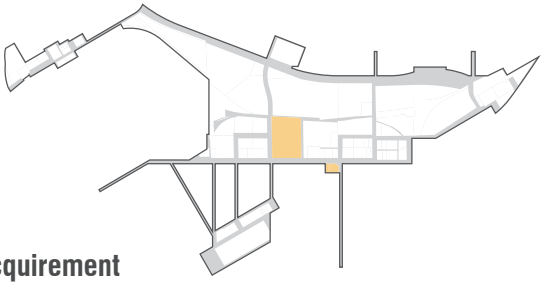
meadows



pedestrian circulation



landforms



city land acquirement

parceled land | land bought | past phase bought

Figure 3.11- P00 Diagrams (Woodard 2012).

A Parks Department Maintenance Facility

B Defunct Rail Bridge

C James Street Bridge

D Central Street Bridge

E Interstae 70 Viaduct

F 12th Street Avenue

G Heritage Trail

Figure 3.12- Plan P00 (Woodard 2012).

phase 01 (2015-2018)

MAJOR MOVES

1. *CREATE A CATCHMENT AT THE MAIN LOWPOINT*

- *WHY*: This lowpoint is where approximately ¼ of the West Bottoms stormwater drains. The lowpoint is developed and runoff either enters subsurface drainage or pools on the surface. This puts businesses in danger during flood events.
- *HOW*: Acquire the parcels and install retention basins and infiltration systems.

2. *ESTABLISH A PUBLIC / PRIVATE PARTNERSHIP WITH A WELL-KNOWN KANSAS CITY COMPANY (FAULTLESS STARCH BON AMI)*

- *WHY*: Partner with a park site business with large park site acreage, influence, and funding. The company can aid the Cities in negotiations with area businesses, and the Cities can use of some vacant company property in the area.
- *HOW*: Emphasize the benefits of the stormwater improvements around their headquarters, heating and cooling benefits the park can provide, increase in their property values, desire for a campus-like Business Park with them as the main entity.

3. *OPEN MULTIPLE PEDESTRIAN CONNECTIONS TO THE WEST BOTTOMS*

- *WHY*: To increase use and foot traffic in the district (increasing business) and to encourage first-hand experience by outside residents.
- *HOW*: Construct the Mulkey Staircase in Mulkey Square Park, repurpose the second level of the 12th Street Viaduct and of the Central Avenue bridge for pedestrian and bicycle use.

4. *INTERCEPT DOWNTOWN RUNOFF*

- *WHY*: Protect the site of the future business park from flooding, incentive for Faultless Starch / Bon Ami to partner with the Cities in this park effort.
- *HOW*: Acquire parcels and borrow Faultless owned parcels, install detention pond, overflow meadows, and infiltration systems.

5. *ESTABLISH TEST PLOTS AND TREE NURSERIES*

- *WHY*: Reduce future plant transportation costs, transplant shock, and determine the species that can survive before mass planting occurs.
- *HOW*: Buy for sale property and / or borrow vacant land from area businesses in different site conditions: dry plots, wet plots, gravelly plots, etc.

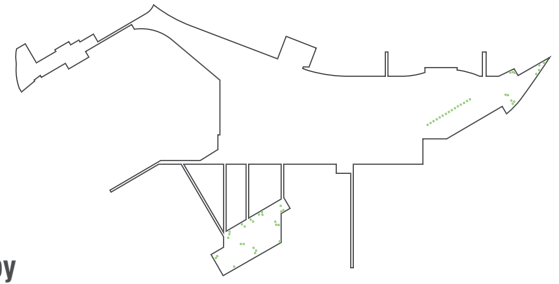
- A test plots
- B stormwater catchment pond
- C stormwater filtration areas
- D Mulkey Staircase
- E 12th Street Viaduct
- F Central Avenue Bridge
- G Heritage Trail
- H table meadow treatment
- I rail lines

Figure 3.13- Plan P01 (Woodard 2012).

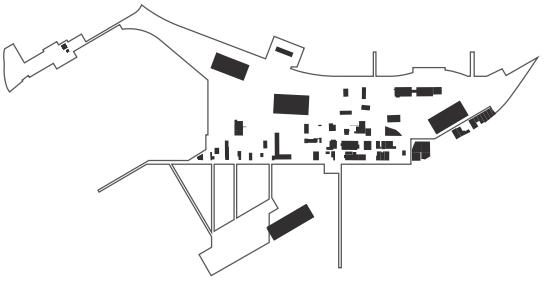
BENEFITS OF THIS PHASE

Phase 01 is intended to make significant improvements to the district that a have lasting environmental and economic impact. First, creating stormwater catchments at the two major lowpoints reduces flood risk to area businesses and improves water quality. Second, the repurpose of existing infrastructure creates two pedestrian access points into the district at a low cost. Experimenting with plants will reduce costs during future phases.

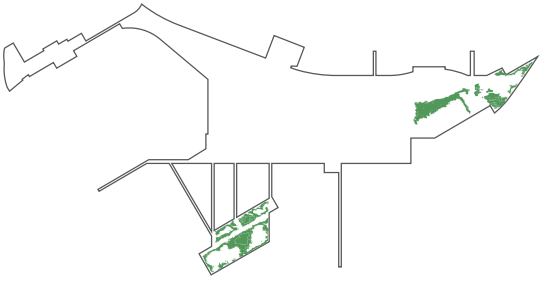
Figure 3.14- P01 Treatment (Woodard 2012).



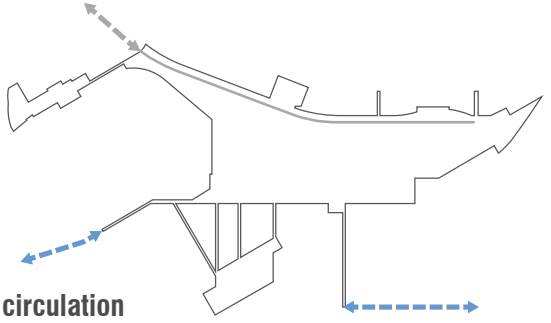
tree canopy



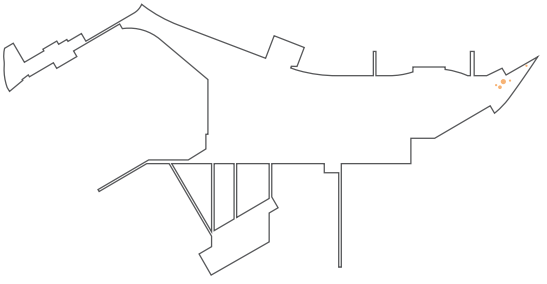
buildings



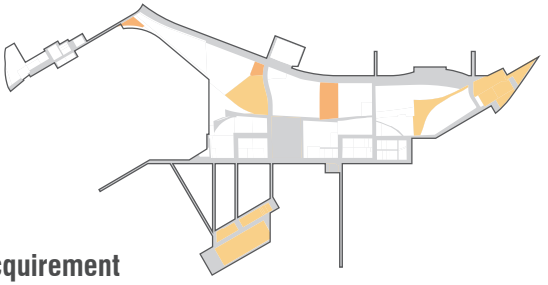
meadows



pedestrian circulation

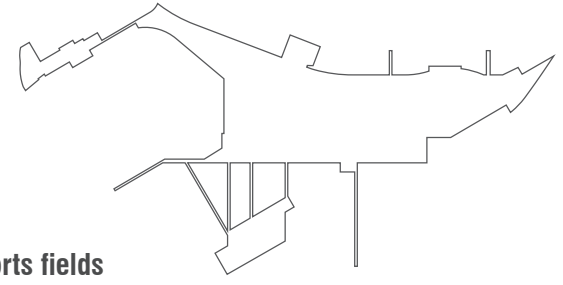


landforms



city land acquirement

parceled land
land bought
land borrowed
past phase bought
past phase borrowed



active sports fields

Figure 3.15- P01 Diagrams (Woodard 2012).

phase 02 (2018-2023)

MAJOR MOVES

1. *IMPROVE PEDESTRIAN ENVIRONMENTS AND CONNECTIONS BETWEEN WEST BOTTOMS'S PEDESTRIAN ENTRIES AND PARK*

- *WHY*: Attract people to the park site to witness its transformation, improve business frontage, improve district perception.
- *HOW*: Streetscape improvements on Hickory Street and Central Avenue: street trees, necessary BMPs, pedestrian and bicycle infrastructure.

2. *CREATE MAIN KCMO-KCK TRAIL THROUGH SITE*

- *WHY*: Provide an early amenity that gets people on the site to witness its transformation, encourage pedestrian exploration of district and its businesses.
- *HOW*: Acquire parcels along proposed trail path, utilize right-of-way and borrowed private land.

3. *TAKE CONTROL OF SECONDARY LOWPOINT*

- *WHY*: Removal of visible long-term storage to improve district perception, spaces for early tree nurseries and community garden plots.
- *HOW*: Acquire all parcels in two-block area, demolish vacant buildings for tree nurseries, leave all existing businesses, rejuvenate central swale.

4. *REHABILITATE BUSINESS PARK BUILDINGS*

- *WHY*: Create a business campus where businesses displaced by park creation can move retaining their business in the West Bottoms, attract new businesses, and create a 8 AM to 5 PM presence for the future park.
- *HOW*: Acquire parcels / buildings to be rehabilitated, work with developers and architects to renovate and market new office / residential space.

5. *ADD SMALL SPORTS UNDER VIADUCT*

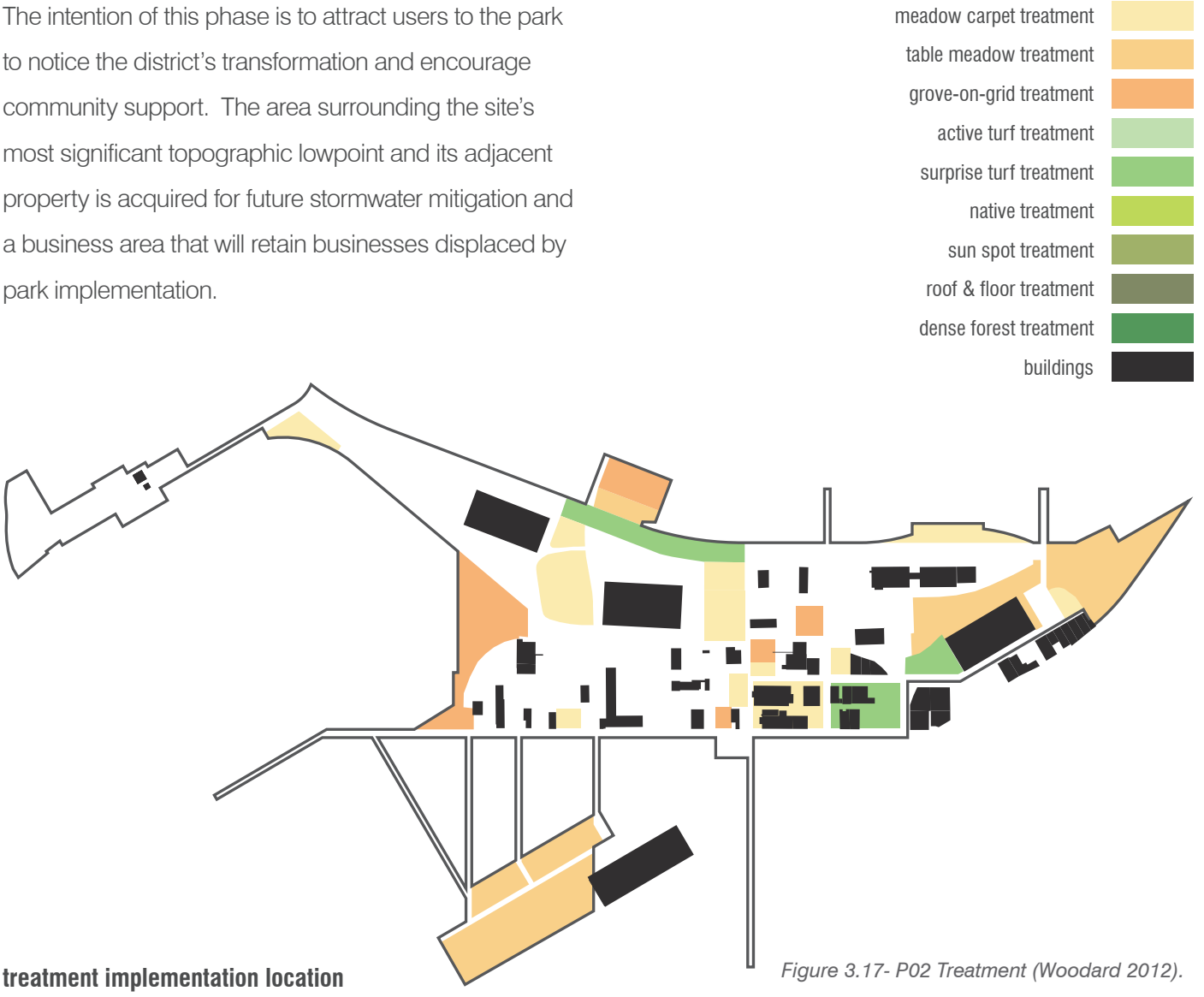
- *WHY*: Establish small amenities near the end of the Heritage Trail to encourage use under viaduct.
- *HOW*: Use public land under viaduct for basketball, bocce ball, and horseshoes.

- A maturing test plots
- B meadow carpet treatment
- C maturing native prairie
- D tree nursery
- E grove-on-grid treatment
- F KCMO-KCK bike trail
- G street improvements
- H small sports area
- I community garden

Figure 3.16- Plan P02 (Woodard 2012).

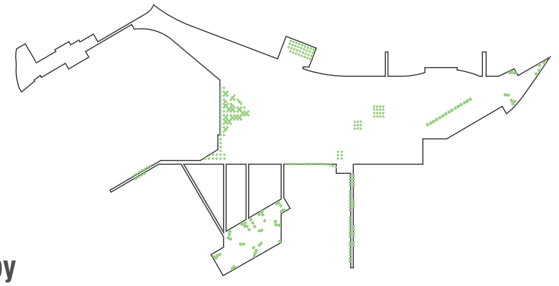
BENEFITS OF THIS PHASE

The intention of this phase is to attract users to the park to notice the district's transformation and encourage community support. The area surrounding the site's most significant topographic lowpoint and its adjacent property is acquired for future stormwater mitigation and a business area that will retain businesses displaced by park implementation.

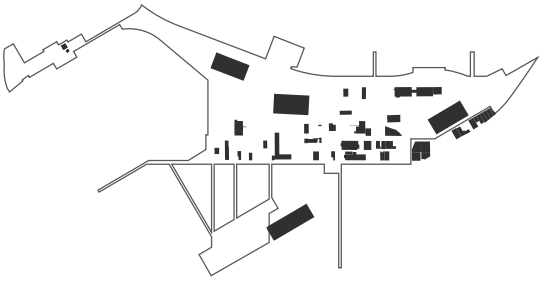


treatment implementation location

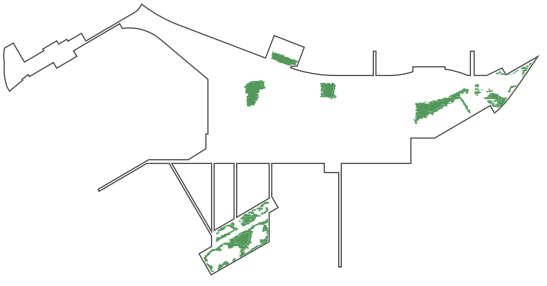
Figure 3.17- P02 Treatment (Woodard 2012).



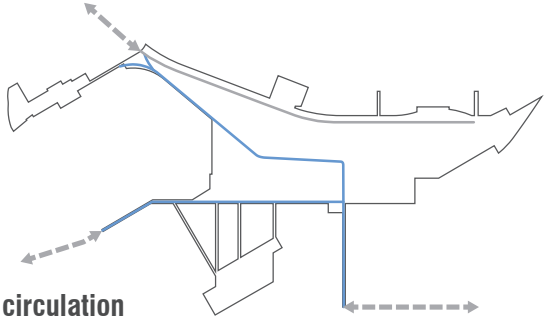
tree canopy



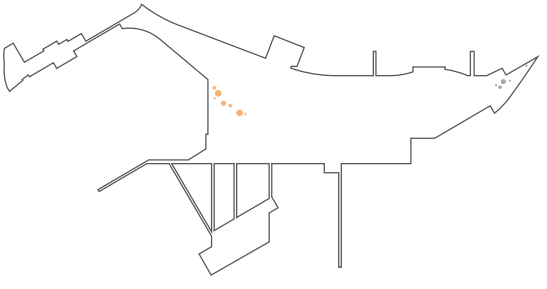
buildings



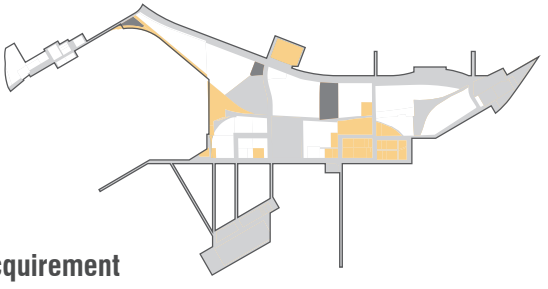
meadows



pedestrian circulation

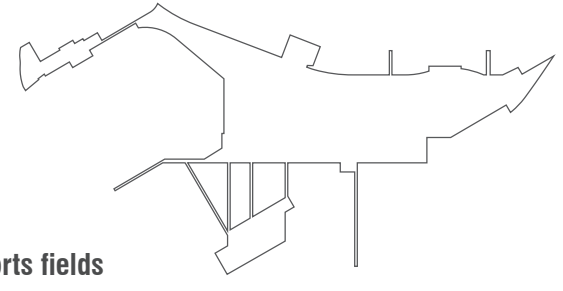


landforms



city land acquirement

parceled land
land bought
past phase bought
land borrowed
past phase borrowed



active sports fields

Figure 3.18- P02 Diagrams (Woodard 2012).

phase 03 (2023-2028)

MAJOR MOVES

1. *COMPLETE BUSINESS PARK REHABILITATION*
- *WHY*: Allow business to relocate from other park spaces and bring in new businesses for a new source of income for park construction.
- *HOW*: Offer incentives for park site businesses to move in as soon as possible, market to outside art studios, design firms, and small businesses.

2. *INSTALL LANDFORM WET MEADOW AT SECONDARY LOWPOINT*
- *WHY*: Take businesses out of harm's way, decrease pressure on stormwater systems and improve stormwater quality.
- *HOW*: Relocate remaining businesses, demolish newly vacated buildings, and install landform wet meadow concept using nursery trees from area.

3. *ACQUIRE LARGE AMOUNTS OF SITE LAND*
- *WHY*: Secure large amounts of land for large-scale active recreation.
- *HOW*: Acquire large parcels along viaduct and install the West Soccer Fields.

4. *INSTALL WET MEADOW AT TERTIARY LOWPOINT*
- *WHY*: Remove water hazards under viaduct along the Heritage Trail.
- *HOW*: Install small catchment and infiltration systems with landforms.

5. *BUFFER INTERSTATE SOUNDS AND SEWER PLANT SMELLS*
- *WHY*: Reduce noxious sounds and smells from the park site to make it a more pleasant environment.
- *HOW*: Install trees along viaduct length (heavily near sewer plants), introduce fragrant plantings to the area to mask smells.

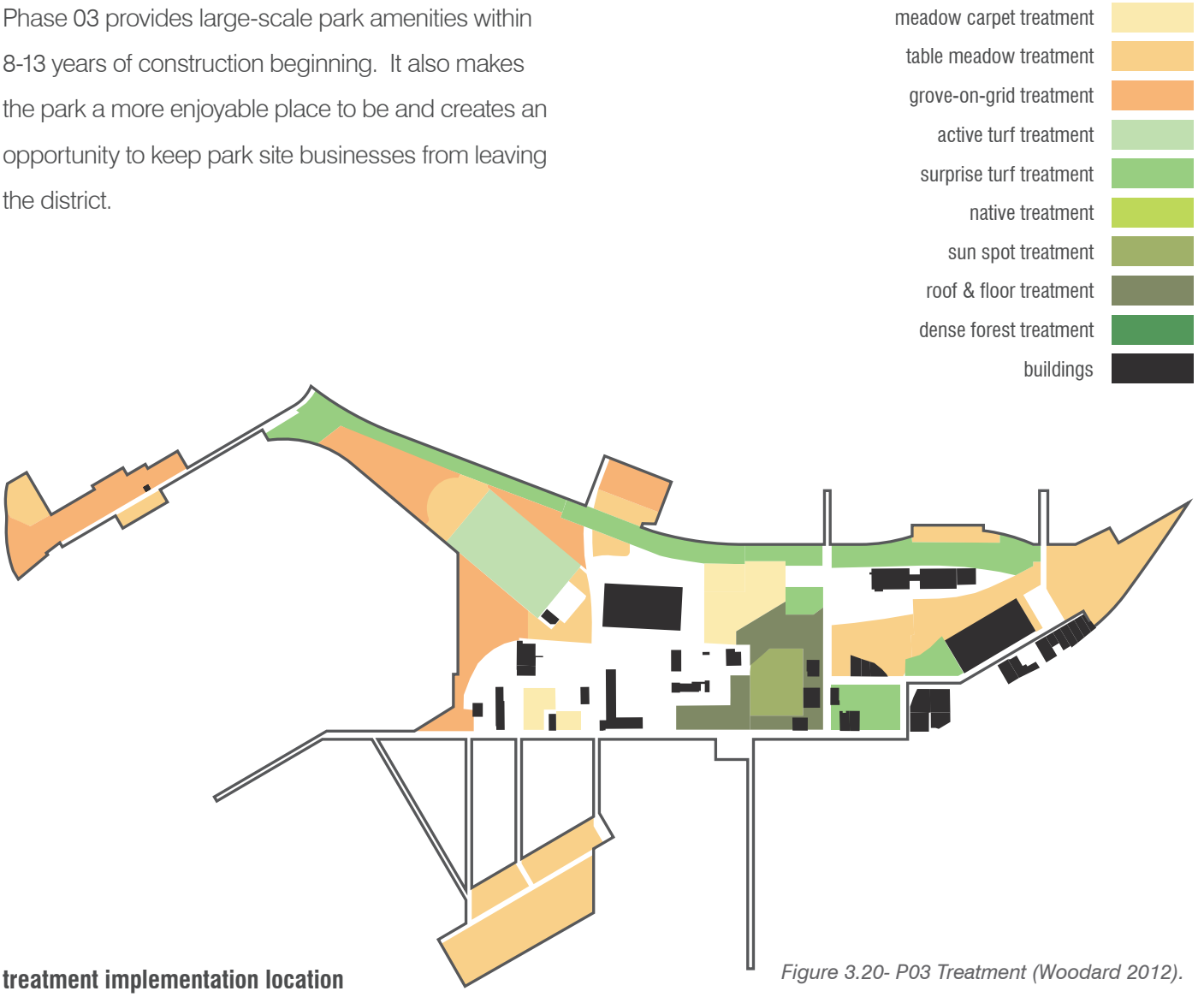
6. *EXPAND TRAIL SYSTEM*
- *WHY*: Expand a site amenity to make the site more useful to the population, begin branding the district as bicycle friendly.
- *HOW*: Rehabilitate Ohio Street, acquire parcels around Ohio Street to create a woonerf community, renovate and open defunct rail bridge for pedestrian use, install bike lanes on area streets (8' minimum).

- A landform wet meadow
- B meadow carpet treatment
- C redesigned Heritage Trail
- D tree nursery
- E grove-on-grid treatment
- F main bike trail extension
- G street improvements
- H fieldhouse
- I parking lot
- J West Soccer Fields
- K playground
- L dog park

Figure 3.19- Plan P03 (Woodard 2012).

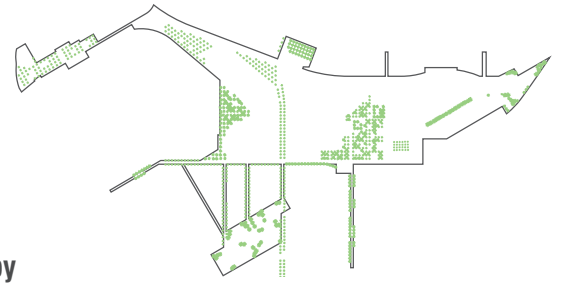
BENEFITS OF THIS PHASE

Phase 03 provides large-scale park amenities within 8-13 years of construction beginning. It also makes the park a more enjoyable place to be and creates an opportunity to keep park site businesses from leaving the district.

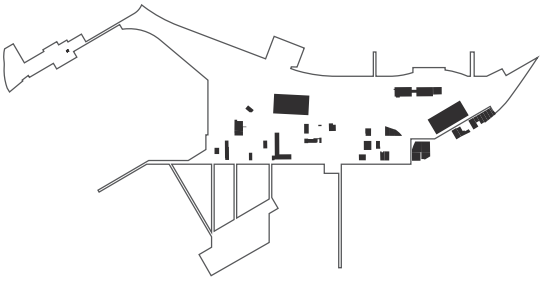


treatment implementation location

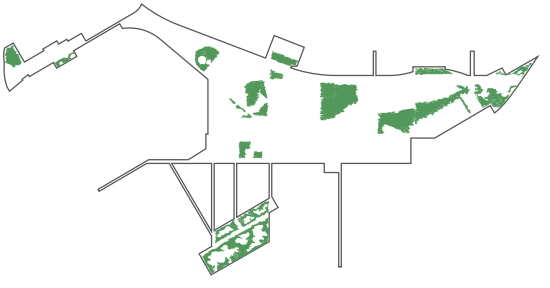
Figure 3.20- P03 Treatment (Woodard 2012).



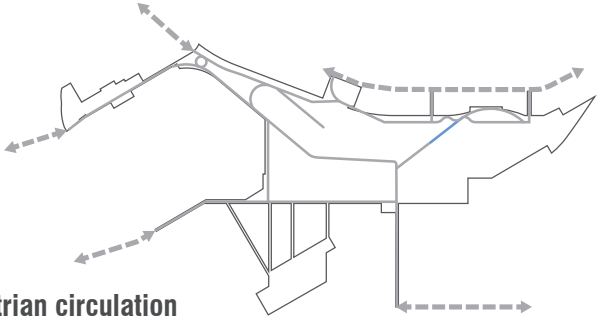
tree canopy



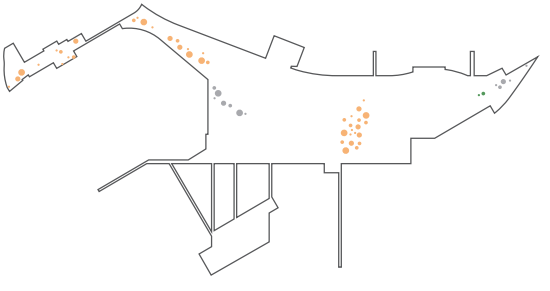
buildings



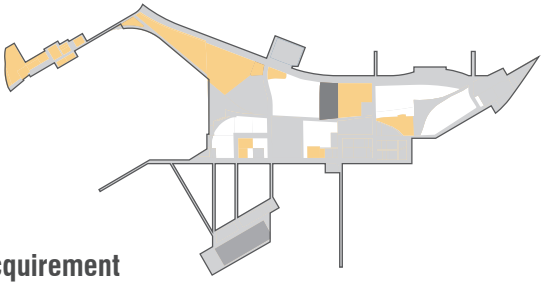
meadows



pedestrian circulation

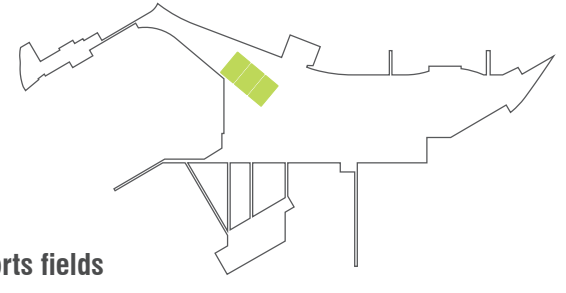


landforms



city land acquirement

parceled land
land bought
land borrowed
past phase bought
past phase borrowed



active sports fields

Figure 3.21- P03 Diagrams (Woodard 2012).

phase 04 (2028-2038)

MAJOR MOVES

1. *ESTABLISH PUBLIC PARKING AND PARK & RIDE PROGRAM*

- *WHY*: Allow better access to site for long-distance users and brand West Bottoms as a biking hub in the Metro Green system.
- *HOW*: Build parking lots in strategic places with security cameras and install bike share program.

2. *INSTALL EAST MEADOWS BASEBALL COMPLEX*

- *WHY*: Create a sports amenity that will attract regional groups such as adult softball leagues to the area, bringing their business with them.
- *HOW*: Acquire State owned property and demolish building, install baseball fields, fieldhouse, and batting cages.

- A East Meadow Baseball Complex
- B meadow carpet treatment
- C table meadow carpet treatment
- D batting cages
- E dog park
- F main bike trail extension
- G community pavilion
- H fieldhouse
- I parking lot
- J playground

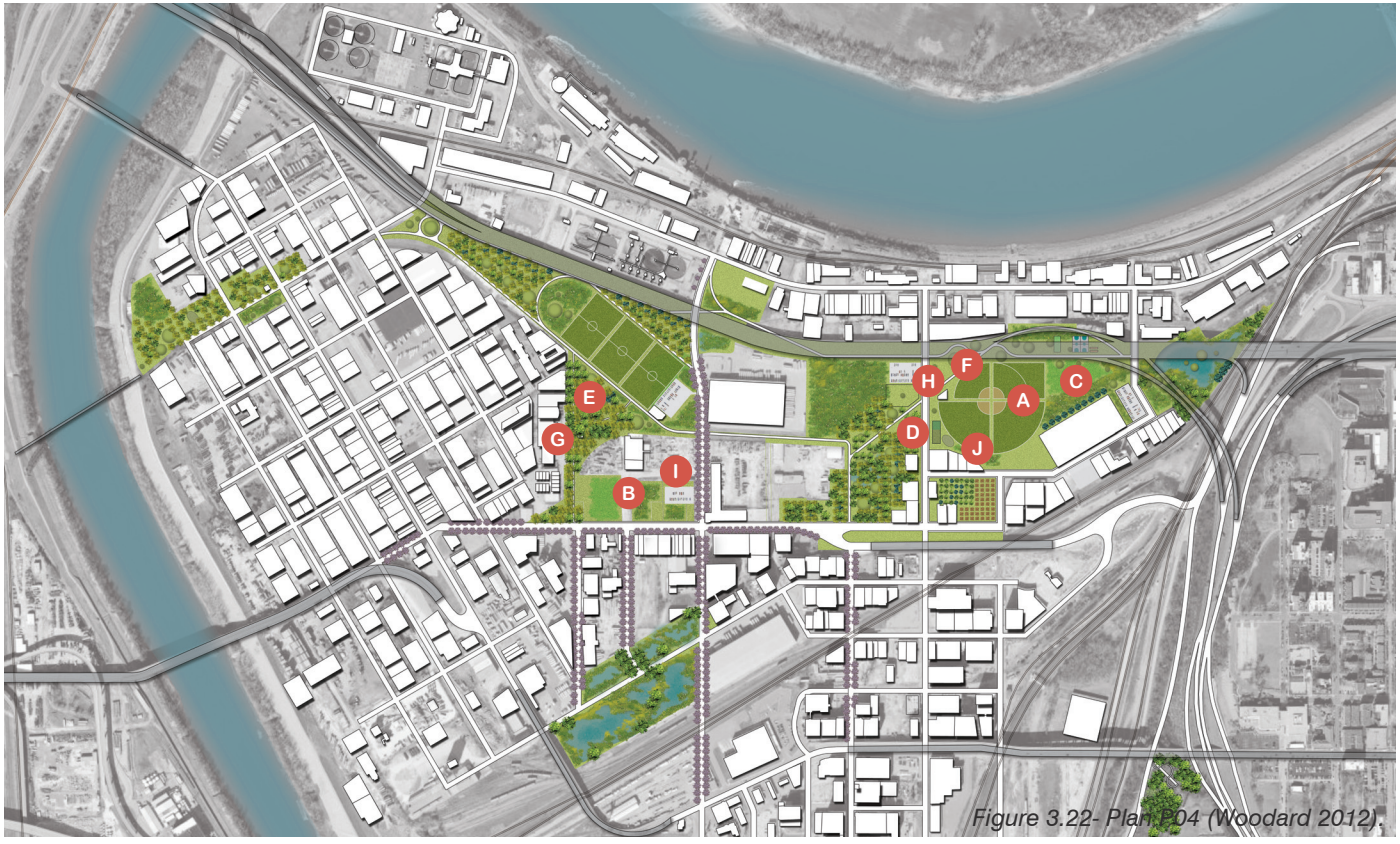
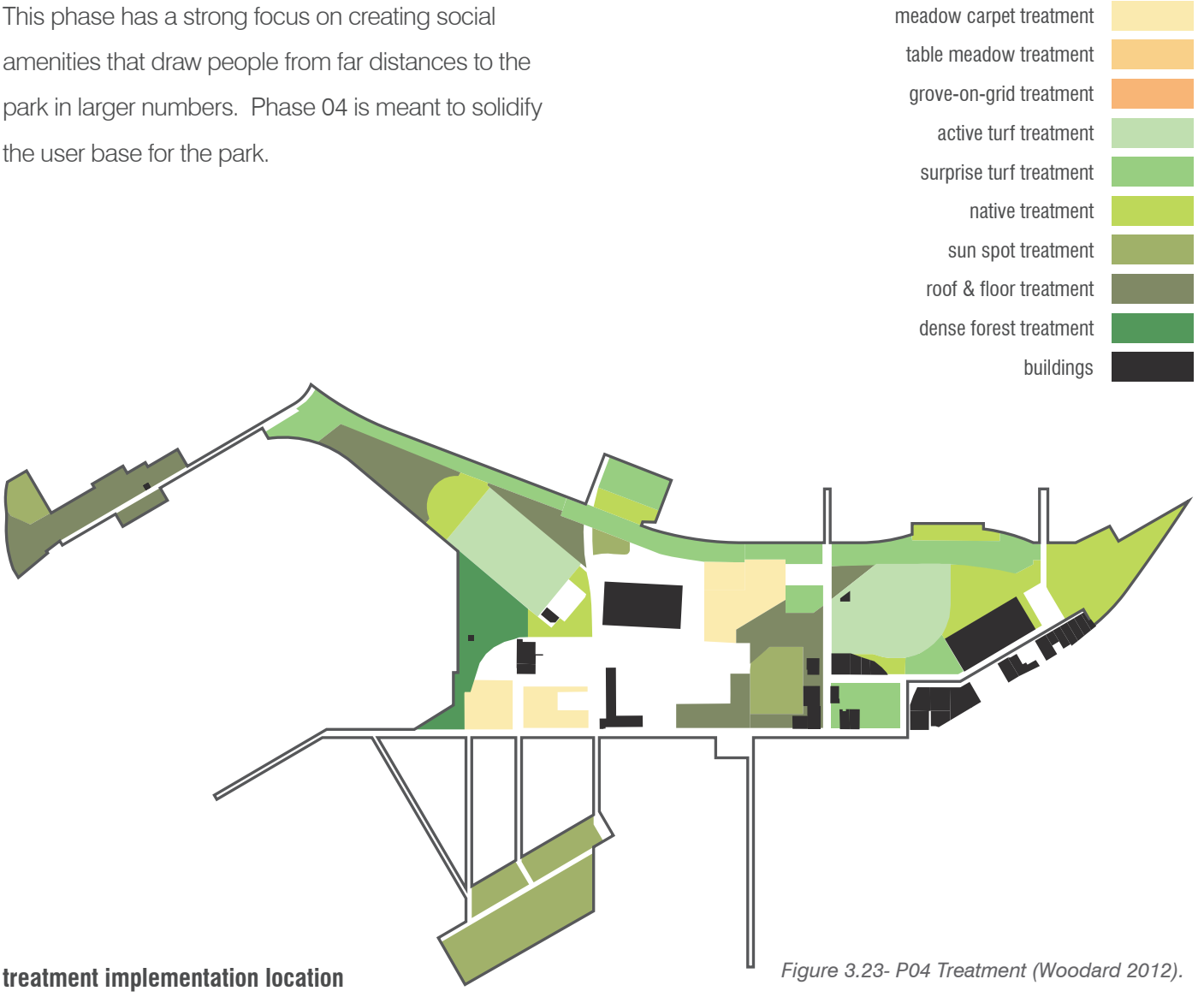


Figure 3.22- Plan P04 (Woodard 2012).

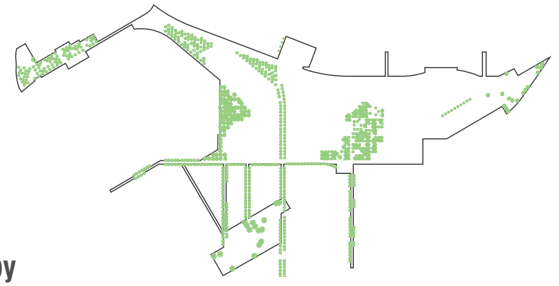
BENEFITS OF THIS PHASE

This phase has a strong focus on creating social amenities that draw people from far distances to the park in larger numbers. Phase 04 is meant to solidify the user base for the park.

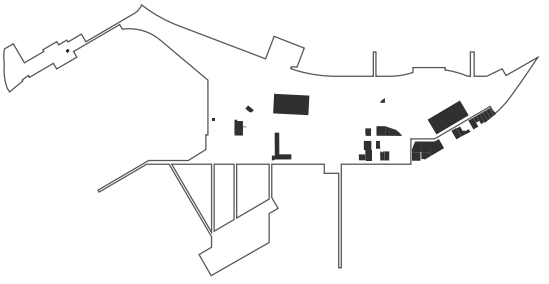


treatment implementation location

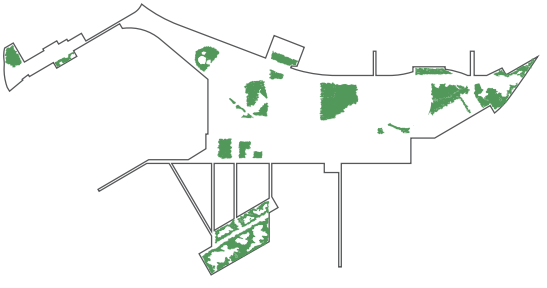
Figure 3.23- P04 Treatment (Woodard 2012).



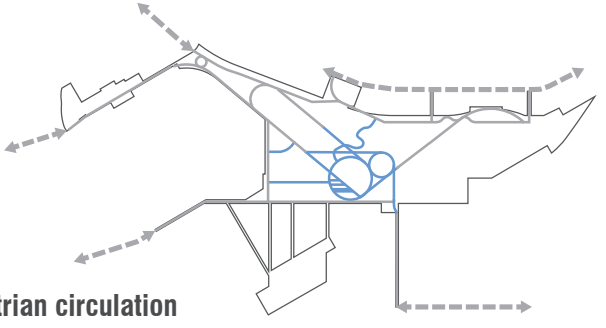
tree canopy



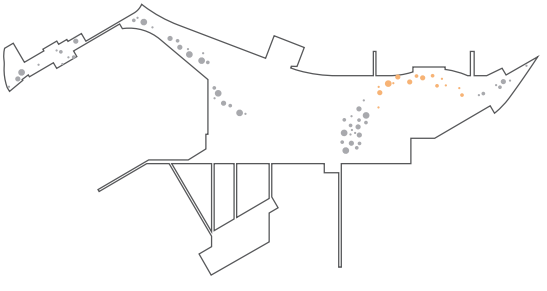
buildings



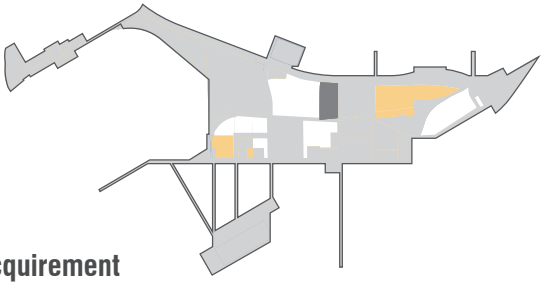
meadows



pedestrian circulation

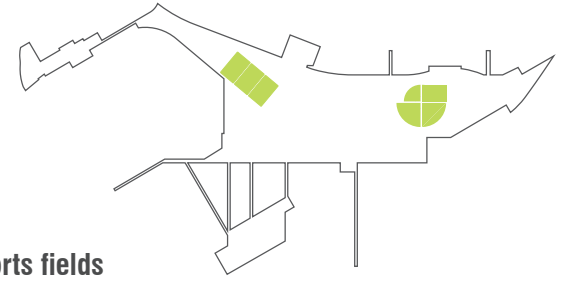


landforms



city land acquirement

parceled land
land bought
past phase bought
land borrowed
past phase borrowed



active sports fields

Figure 3.24- P04 Diagrams (Woodard 2012).

phase 05 (2038-2048)

MAJOR MOVES

1. *REMOVE ALL REMAINING BUILDINGS NOT WITHIN THE BUSINESS PARK*

- *WHY*: Make all parkland available for construction.
- *HOW*: Take over land of remaining businesses, preferably at the end of a long-term agreement for this transition.

2. *INSTALL EVENT LAWNS AND SPRING GARDEN*

- *WHY*: Provide event and gathering spaces near new main park entrance that have not been available thus far.
- *HOW*: Transition of park construction headquarters and neighboring parcel into expanded trail system that frames the event lawn areas.

3. *INSTALL FALL PROMENADE*

- *WHY*: Introduce a public space for art, passive strolling, and picnics.
- *HOW*: Build promenade and partner with area art studios to display works of art in a public setting.

4. *INSTALL FOUNTAIN PARK*

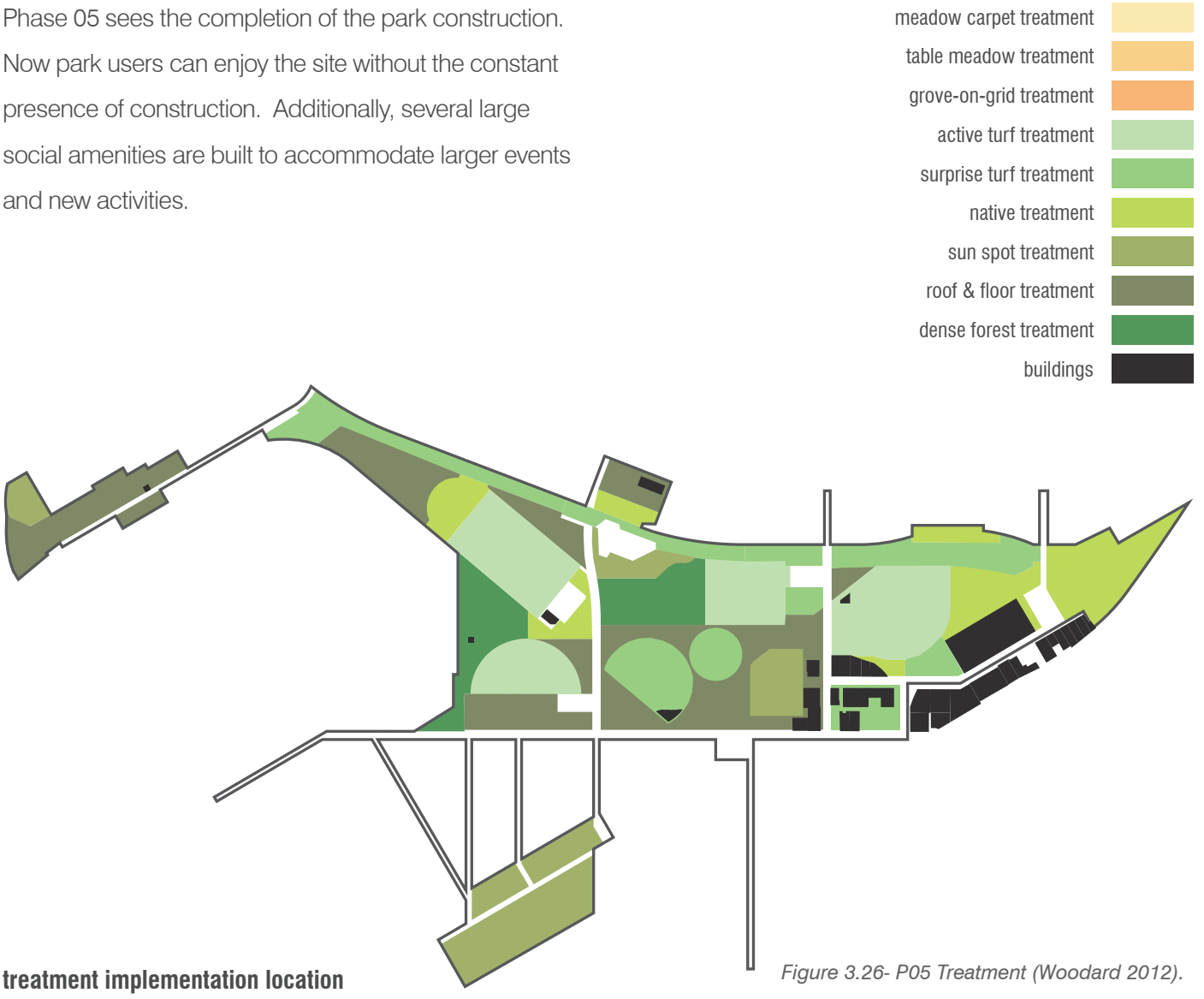
- *WHY*: Create a recreational amenity that connects to Kansas City's identity as the City of Fountains. Also, water vapor from the fountain mitigates smells from the nearby sewer plant, and the sound of falling water echoes off the viaduct, drowning out traffic noise.
- *HOW*: At the lowpoint next to the viaduct, cut the fountain out of the retaining wall. The fountain will be partially under the viaduct, creating an interface with the space. Install a swale system uphill from the fountain to capture stormwater.

- A Central Soccer Fields
- B event lawns
- C Spring Garden
- D community gardens
- E Fall Promenade
- F main bike trail extension
- G Park Pavilion
- H volleyball courts
- I Fountain Park
- J small sports area
- K urban agriculture field
- L playground
- M West Ball Fields

Figure 3.25- Plan P05 (Woodard 2012).

BENEFITS OF THIS PHASE

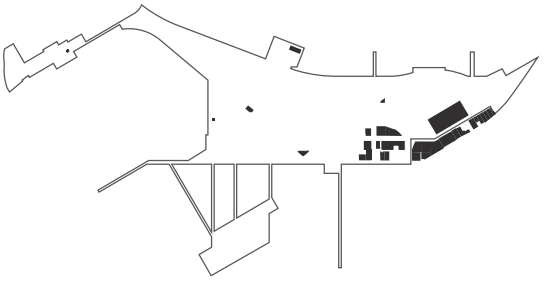
Phase 05 sees the completion of the park construction. Now park users can enjoy the site without the constant presence of construction. Additionally, several large social amenities are built to accommodate larger events and new activities.



treatment implementation location

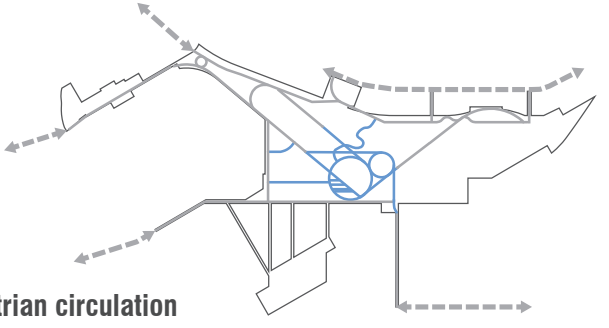
Figure 3.26- P05 Treatment (Woodard 2012).

tree canopy

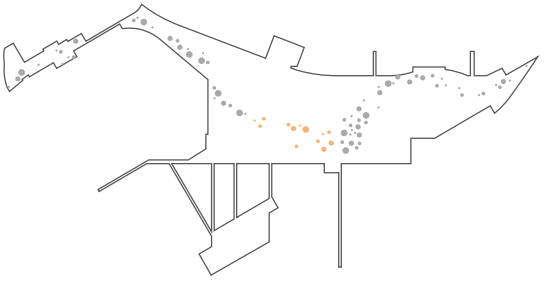


buildings

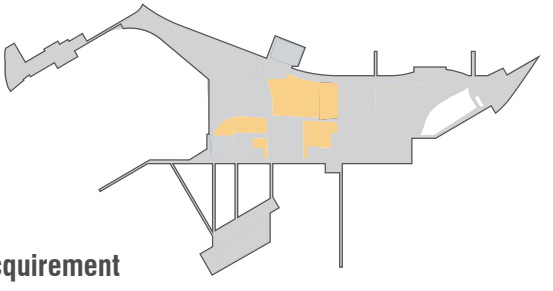
meadows



pedestrian circulation

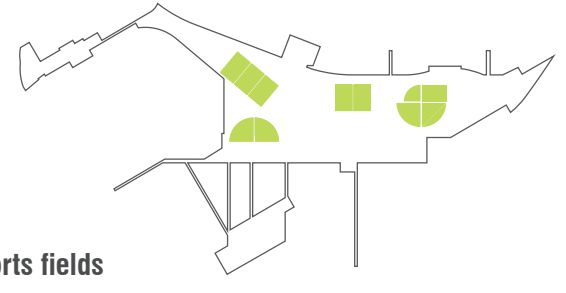


landforms



city land acquirement

parceled land
land bought
past phase bought
land borrowed
past phase borrowed

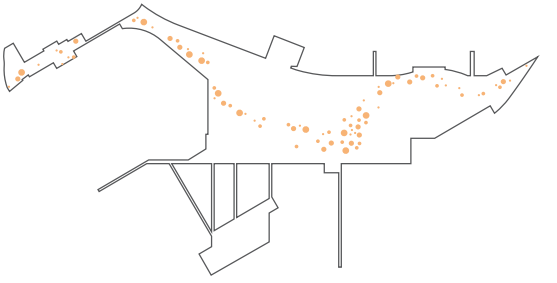


active sports fields

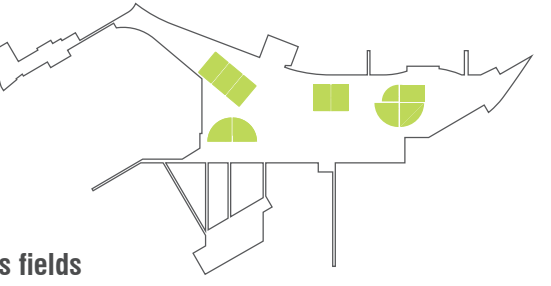
Figure 3.27- P05 Diagrams (Woodard 2012).

final outcome (2048+)

After 2048, the park still has years of growth left. This is a time to establish a strong maintenance program to keep the park successful and safe. It is also a time for possible expansion. Connections made near the rivers can become access points, allowing Kansas Citians to embrace their waterfront. There is also the possibility for bi-state transit hubs in the park along Wyoming Street. In time, the presence of the park may even change the development of the Quality Hill District on top of the bluffs for grand views of the park below.

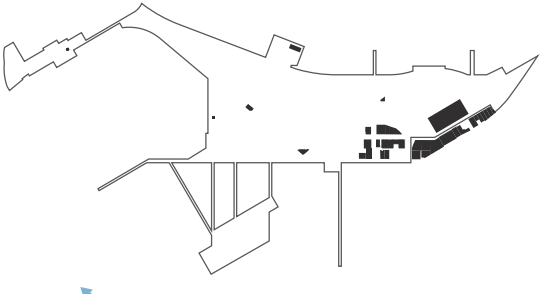


landforms

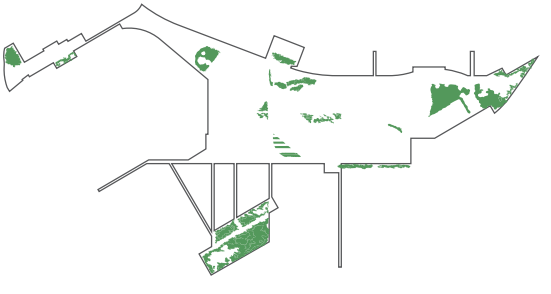


active sports fields

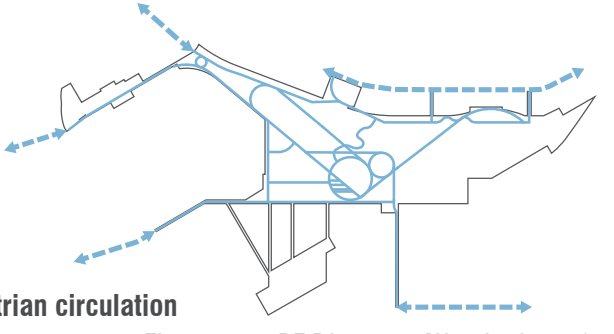
tree canopy



buildings



meadows



pedestrian circulation

Figure 3.28- PF Diagrams (Woodard 2012).

A future transit hub

B future river connection

C future rail connection

Figure 3.29- Plan PF (Woodard 2012).

Figure 4.01- Intersection of Hickory and Central (Woodard 2012).

chapter four
park spaces

"My intent was not to create something to look at, but to participate in."

- *Lawrence Halprin,* Where the Revolution Began

Programming of James Park is influenced by past Kansas City park analysis, a citizen survey, and sustainable park characteristics. Studies of the existing KCDA parks show the exclusion of multiple large-scale sports. Additionally, the Trends and Traditions 2017 Consultant Team found that Kansas City Missouri lacks sufficient sports fields in relation to the current population (2012, 14). In response, nearly 15% of James Park is dedicated to large-scale active recreation.

- baseball fields (6): baseball, softball, cricket, etc.
- large-scale multi-use fields (5): soccer, ultimate, etc.

Many of the KCDA parks are small or have limited space for activities. Their is not much room for unprogrammed open space and activities. James Park contains several areas for unstructured play.

- groves
- open lawns
- forest promenade
- dense wooded spaces

The 2017 Consultant Team found Kansas City does not meet the national benchmark for urban rails . A citizen survey conducted by the Team found that trails are the most preferred outdoor amenities (Traditions & Trends 2012, 3). James Park adds nearly 6 miles of new trails to the KCDA.

- biking trails
- running tracks
- pedestrian foot paths

A characteristic of Sustainable Parks is the use of stormwater management systems as park amenities. Major stormwater systems are required in James Park and offer recreational opportunities while mitigating and filtering stormwater.

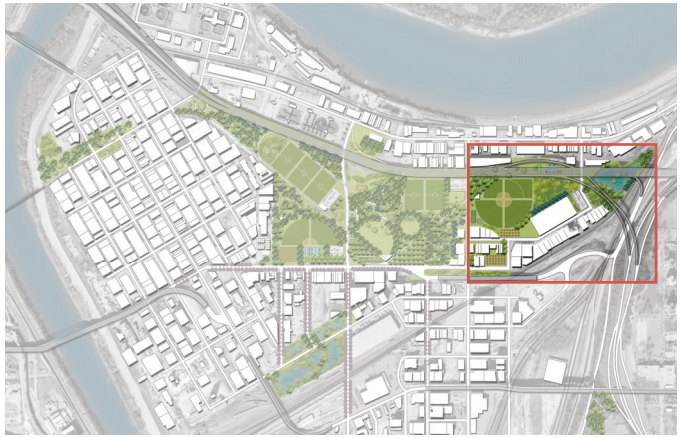
- urban stormwater management education
- boating and fishing
- recreational trails

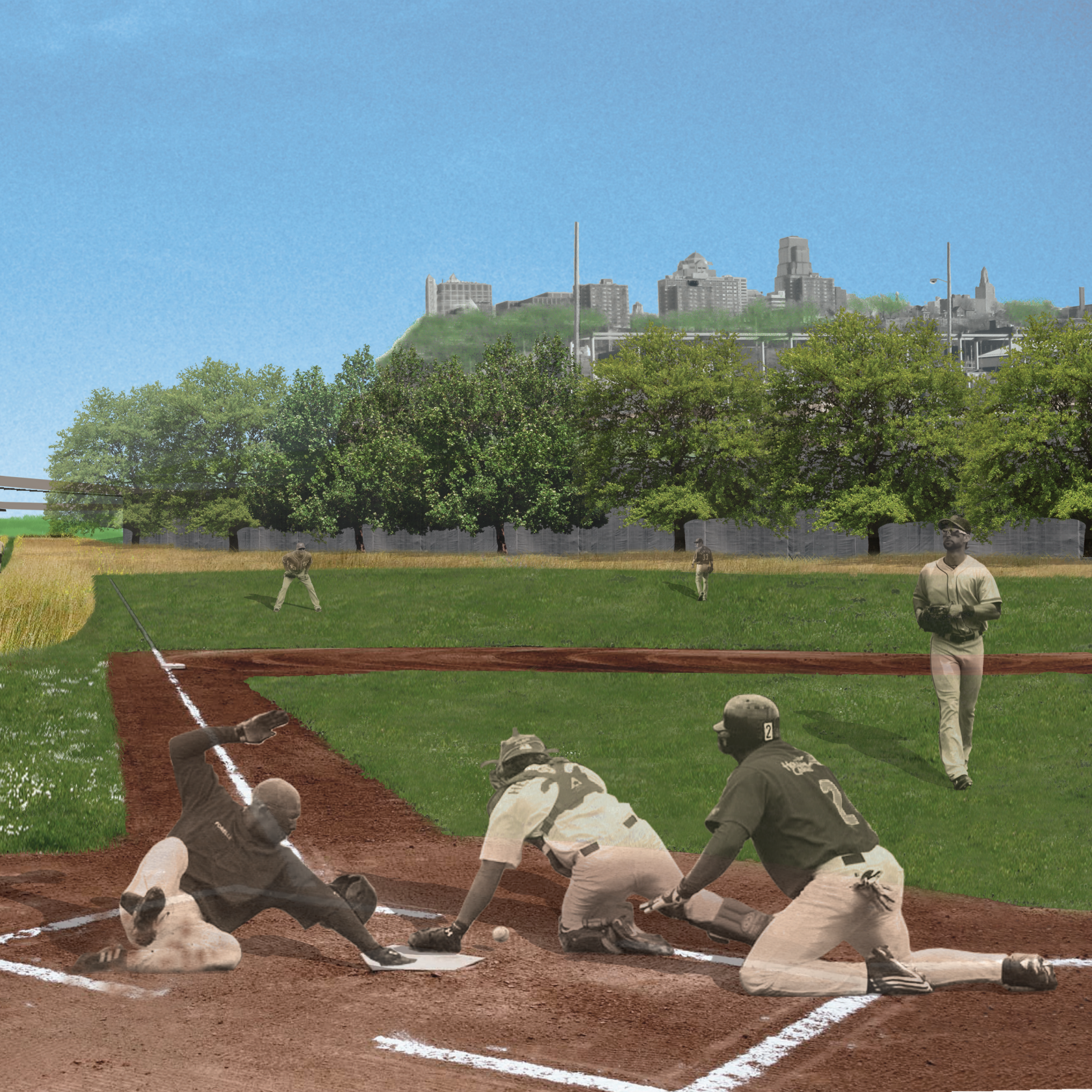
Figure 4.02- Master Plan (Woodard 2012).

the east meadows

The East Meadows is the section of James Park east of Mulberry Street. Elevated highway infrastructure and the Bluff isolate this section from human activity in the district. Due to its physical isolation, a design goal for the East Meadows is to include amenities that allow the space to remain active during the day and evening. The consistent activity keeps the area from becoming an empty and unsafe place. Also, it is important to make the space under the viaduct part of the outside activity so it does not remain devoid of use.

Figure 4.03- East Meadows Ball Game (Woodard 2012).



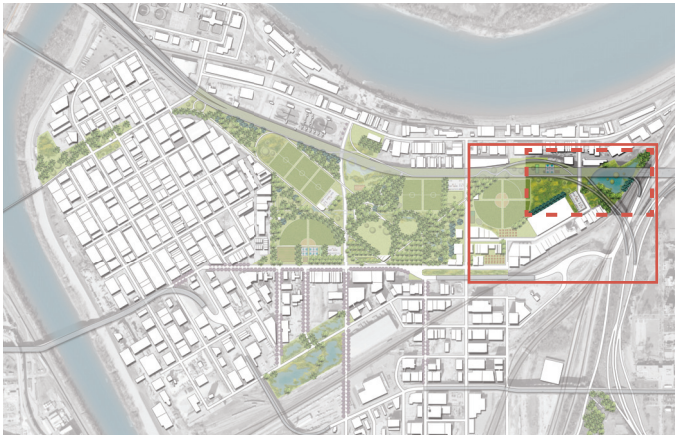


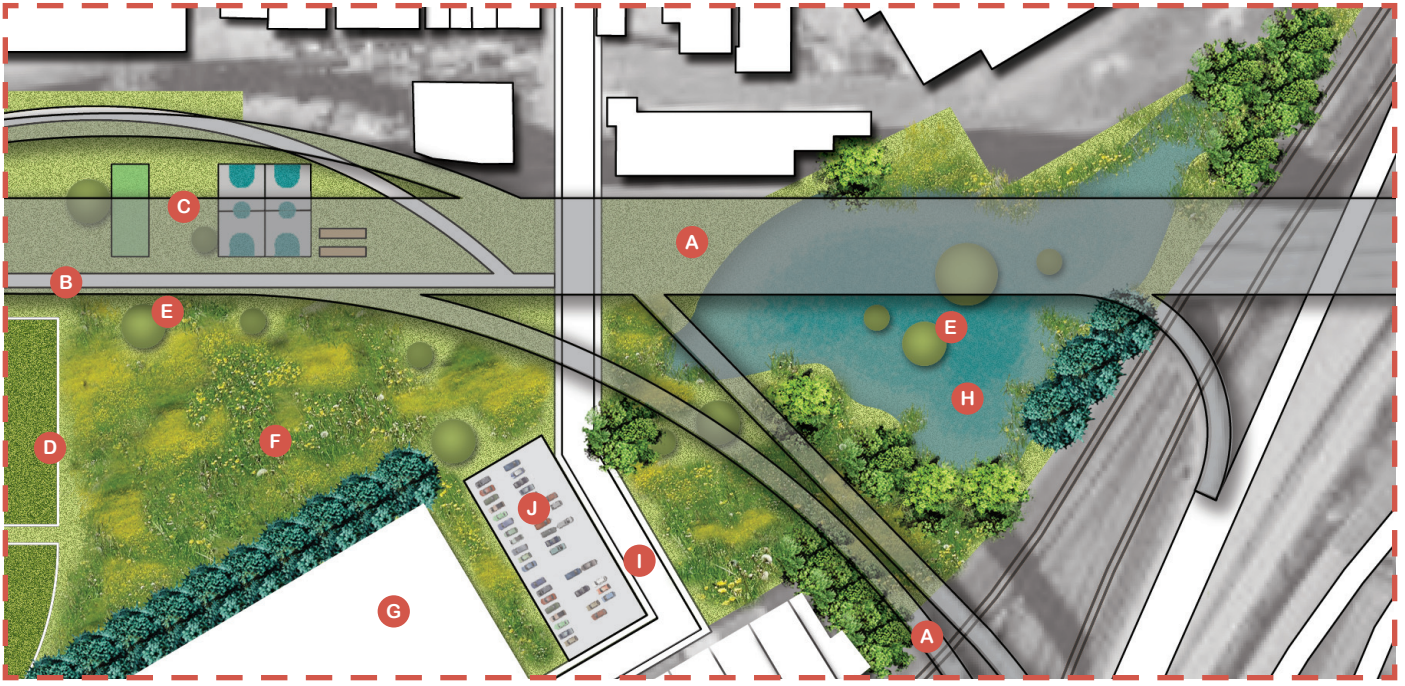
tallgrass learning trail

The Tallgrass Learning Trail links users with the site's natural systems and the regional ecosystem. The design includes native tallgrass prairie learning trails, a stormwater pond, and a small-scaled sports area. Learning trails that teach prairie ecosystem variations, the history of the Missouri-Kansas prairie, and local stormwater management practices can elevate awareness of local history and sustainable design approaches. The stormwater pond captures runoff from the Bluff and is intended to support non-motorized boating activities. The prairie acts as overflow space for the pond during high intensity storm events, preventing floodwater from damaging adjacent businesses. The grasses and forbes also flow under the I-70 viaduct, were basketball, bocceball, and horseshoe facilities encourage activity in the space.

Interstate 70 Viaduct A
Heritage Trail B
Basketball, Bocce Ball, Horseshoes C
Baseball Complex D
Landforms E
Native Tallgrass Prairie F
Business Park G
Stormwater Pond H
8th Street I
Parking J

Figure 4.04- Native Meadow Plan (Woodard 2012).



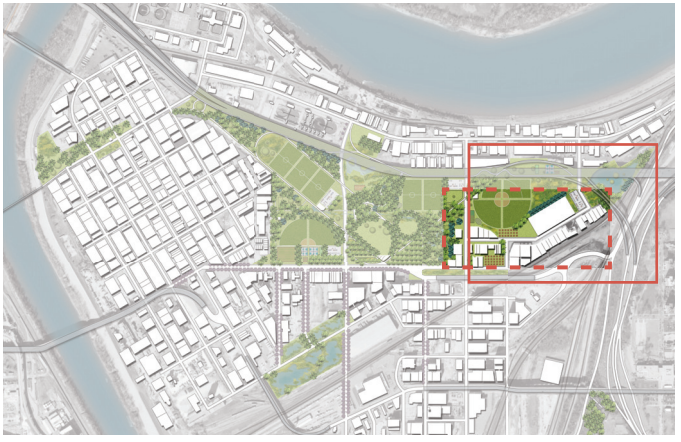


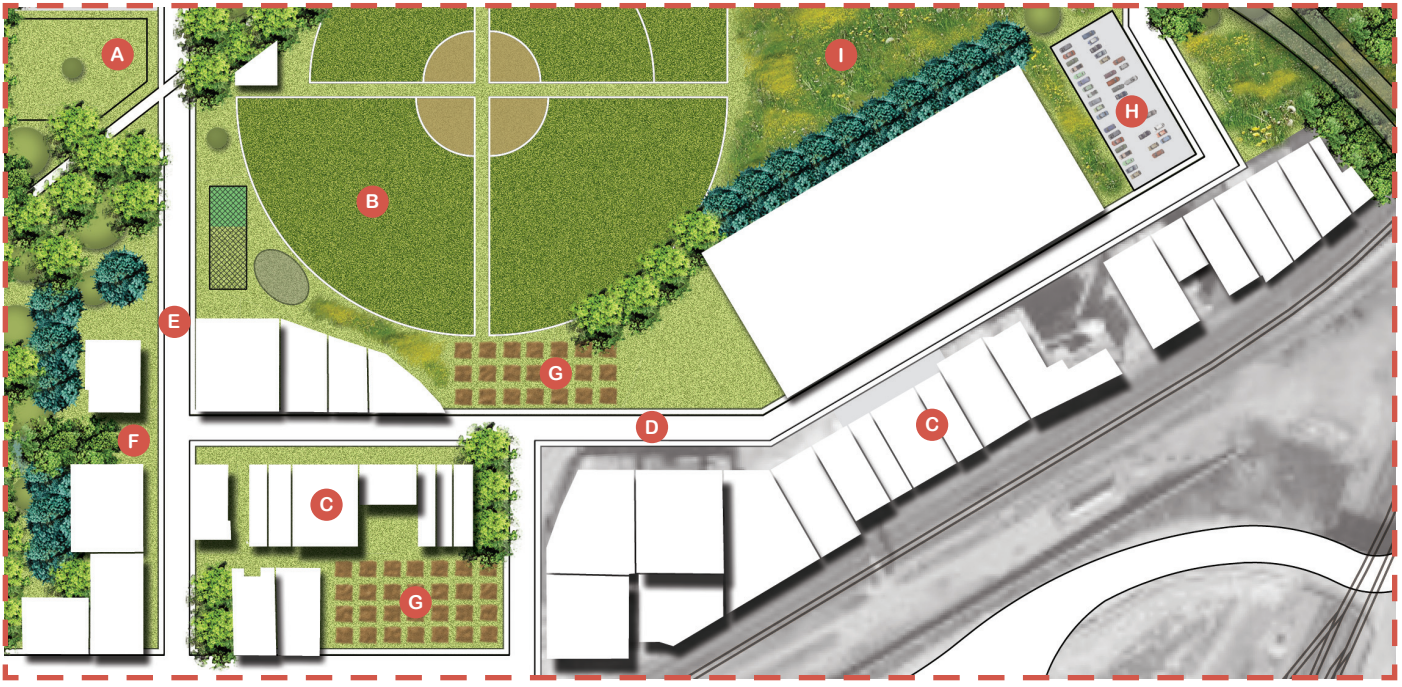
business park

The Business Park, encompassing both park and private land, builds a new community interface. Attracting employees, customers, residents, and jobs, the Business Park responds to the Kansas Cities' rising diversity with a mixture of commercial and industrial businesses and urban agriculture. Businesses offset parkland tax base and can attract employees who value a lifestyle with proximity to park amenities, biking to work, and locally grown food. Accessibility, storage sheds, and child gardening programs enrich the urban gardens to support more year-round activity and a diverse group of gardeners. On any given day, the Business Park streets are activated by factory workers, designers, retirees, and craftsmen. The programs create a day and evening presence in the East Meadows, seven days a week.

Dog Park A
Baseball Complex B
Business Park C
8th Street D
Mulberry Street E
Business Park Plaza F
Community Gardens G
Parking H
Native Tallgrass Prairie I

Figure 4.05- Business Park Plan (Woodard 2012).



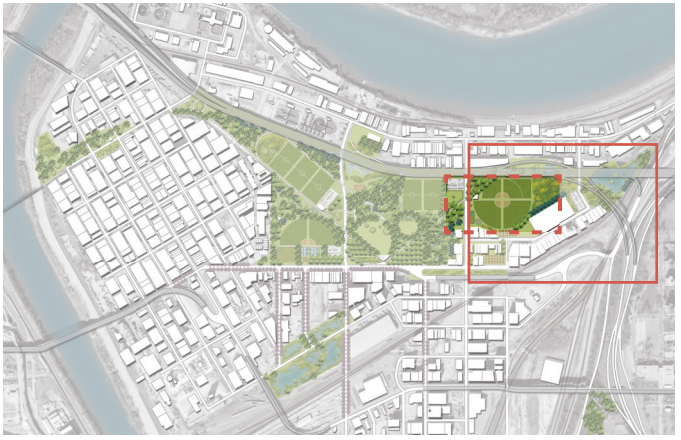


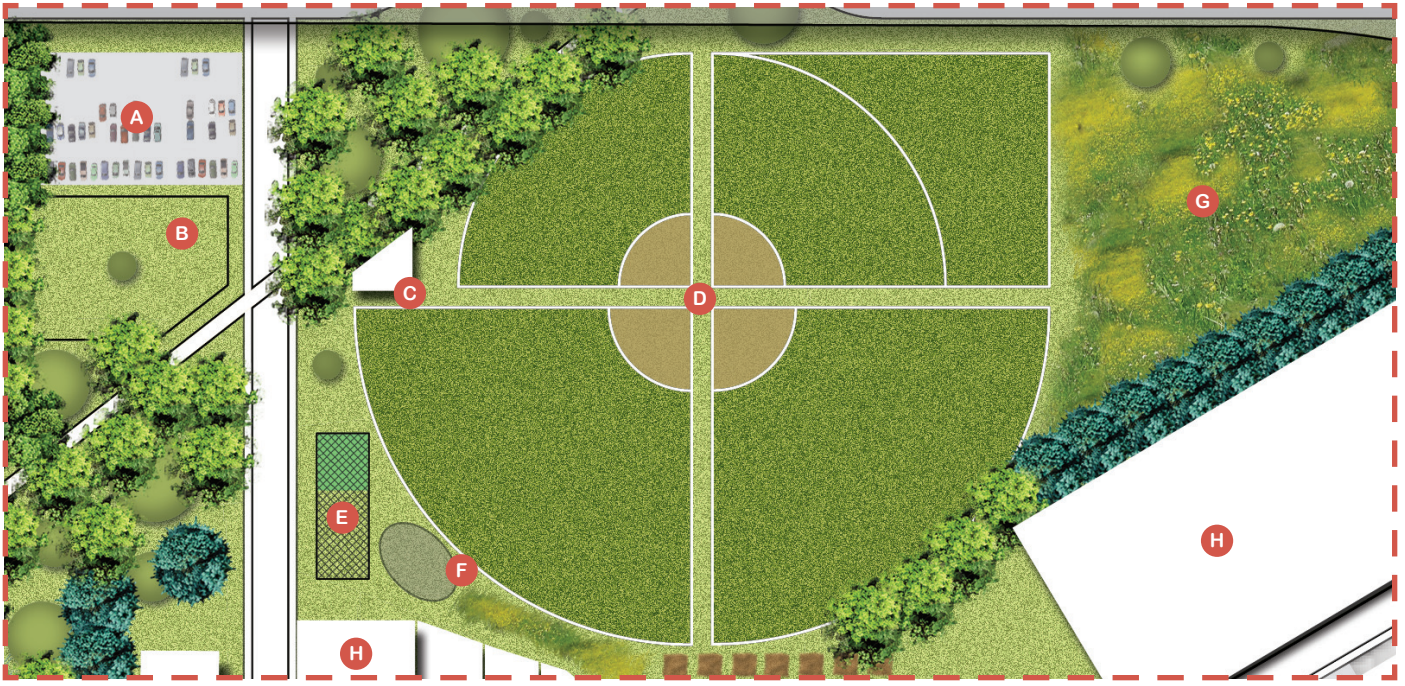
east meadows baseball complex

The Baseball Complex consists of four baseball fields / one cricket field, batting cages, a playground, and a fieldhouse. The size and number of baseball fields lure large area tournaments to the downtown, ranging from adult softball leagues to college level events. Outfield space accommodates large-scale active sports when no baseball games are scheduled. The playground and batting cages provide activity space for young children. Sports gear rental and storage, concession stands, and restroom facilities are provided in the fieldhouse.

Parking A
Dog Park B
Fieldhouse C
Baseball Fields D
Batting Cages E
Playground F
Native Tallgrass Prairie G
Business Park H

Figure 4.06- Baseball Complex Plan (Woodard 2012).





the central woods

At the heart of James Park is the Central Woods. This area is bordered by Wyoming Street to the west, Mulberry Street to the east, and connects to Woodswether at the north. There are several stormwater lowpoints in this portion of the park. Design goals for the Central Woods are to create a pedestrian / bicycle nexus, and to use stormwater capture as a site amenity.

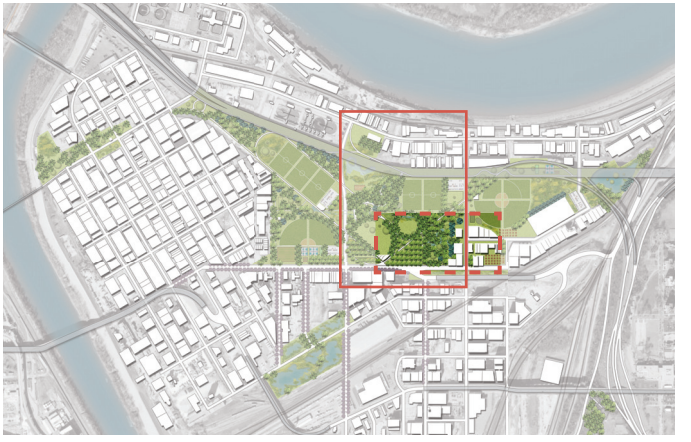
Figure 4.07- Afternoon at the Central Lawn (Woodard 2012).

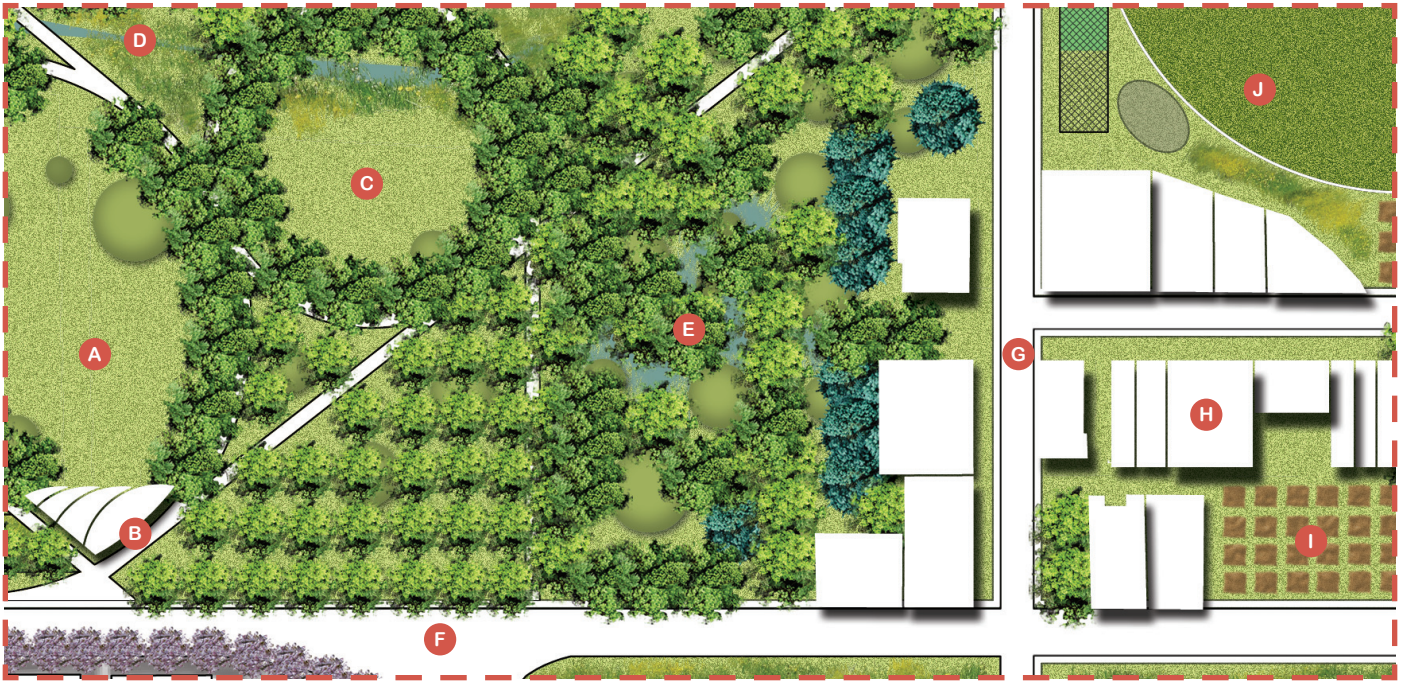
landform wet meadow

The Wet Meadow responds to a topographic lowpoint in the park, providing biofiltration for stormwater and increased flood protection for the adjacent Business Park. Landforms lift out of the meadow to create dry islands that offer passive recreation and quiet spaces. Wet meadow plant species and trees are kept to the base of the landforms, creating sun spots on landform tops to enjoy a good book or sunbath. Tree species have a thin canopy, allowing enough light for wet meadow species and partial shade for users to enjoy.

Large Event Lawn A
Pavilion B
Small Event Lawn C
Central Swale D
Landform Wet Meadow E
Central Avenue F
Mulberry Street G
Business Park H
Community Gardens I
Baseball Complex J

Figure 4.08- Wet Meadow Plan (Woodard 2012).



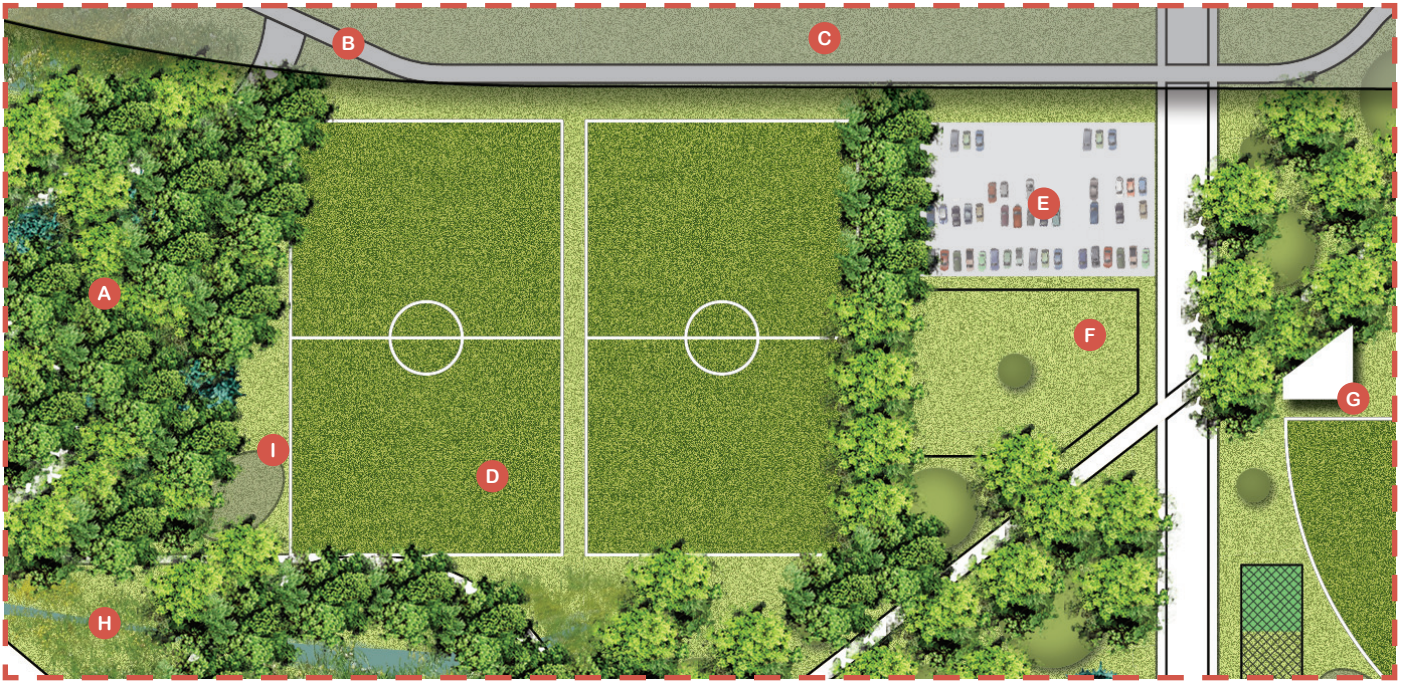


central soccer complex

The Central Soccer Complex has been designed to include two full soccer fields, a dog park, a playground, and public parking. The fields' design remains open and flexible to accommodate other field configurations and a variety of other large-scale active sports. In conjunction with the West Soccer Fields it has the capacity to hold large regional tournaments. Alone it will host many activities and programs, including monthly drive-in movies. The large dog park attracts people from different backgrounds, race, cultures, and income levels based on their common love of their dogs. The Complex reaches in under the viaduct where mobile grandstands sit adjacent to the Heritage Trail.

Fall Promenade A
Heritage Trail B
Interstate 70 Viaduct C
Central Soccer Fields D
Parking E
Dog Park F
Fieldhouse G
Central Swale H
Nature Playground I

Figure 4.09- Central Soccer Plan (Woodard 2012).

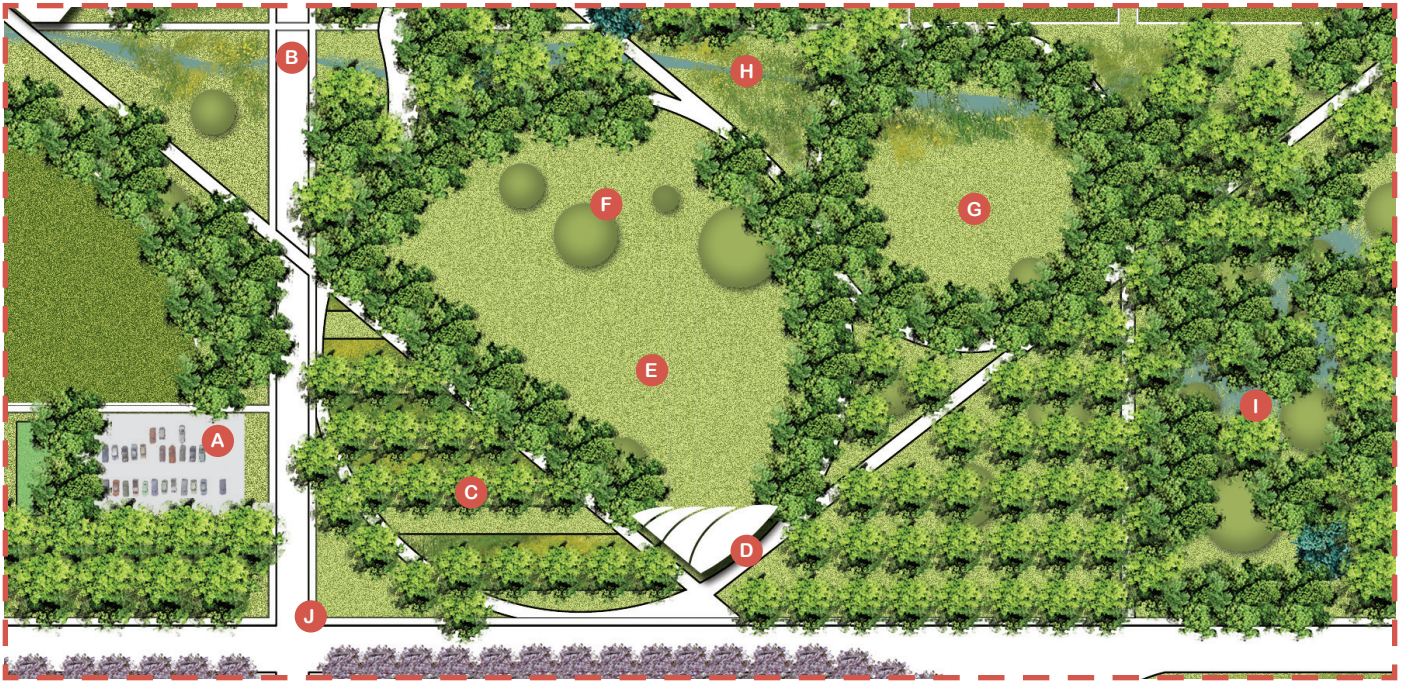


event lawns and spring garden

The most pastoral areas of James Park are the Central Lawns and Spring Garden. They are the front door to the Park and a hub of visitor activity within a scenic setting. The large Event Lawn acts as the Cities' backyard; its design is open and flexible to allow for a wide variety of activities and events to take place. The smaller event lawn is more secluded but equally as flexible with its programs. Trails thread around the lawns, acting as a hub on the regional bike system and eventually familiar connectors for residents and regional bikers. Visitors to this section of the park will enjoy strolling, biking, morning runs, skating, and taking in views of the Kansas City Missouri skyline. The Spring Garden is a formal place for arrival with alternating strips of paved plazas, high canopy trees, and vegetated gardens. Each spring the Garden bursts into a colorful display of narcissus and quince.

Parking A
Wyoming Street B
Spring Garden C
Pavilion D
Large Event Lawn E
Landforms F
Small Event Lawn G
Central Swale H
Landform Wet Meadow I
Main Park Entrance J

Figure 4.10- Event Lawns Plan (Woodard 2012).

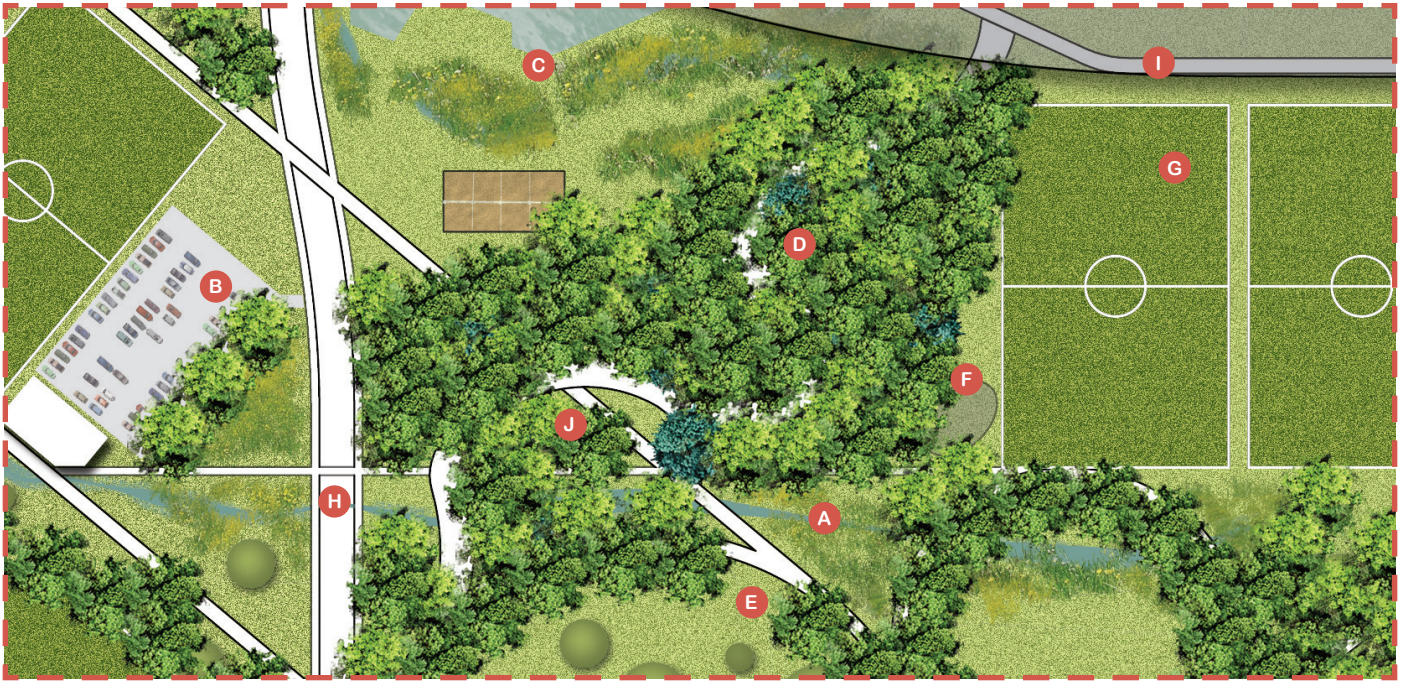


fall promenade

The Fall Promenade is a winding trail that widens and narrows throughout its length. The heavily forested area offers intimate groves and quiet spaces to spend time by yourself or in small groups. The groundplane consists of paving and short vegetation, encouraging movement off the beaten path while remaining ADA accessible. The trail is a venue for local outdoor sculpture, art, and artifacts from West Bottoms's past such as old railroad equipment, symbolically connecting the park to its cities and district. In the fall, the surrounding dense forest covers the promenade in foliage, initiating leaf-pile jumps and enjoyment of autumn smells.

Central Swale A
Parking B
Fountain Park C
Fall Promenade D
Event Lawns E
Nature Playground F
Central Soccer Fields G
Wyoming Street H
Heritage Trail I
Sculpture Garden J

Figure 4.11- Fall Promenade Plan (Woodard 2012).

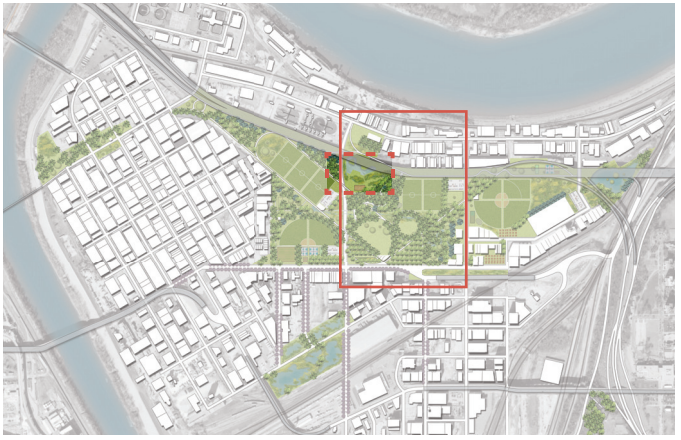


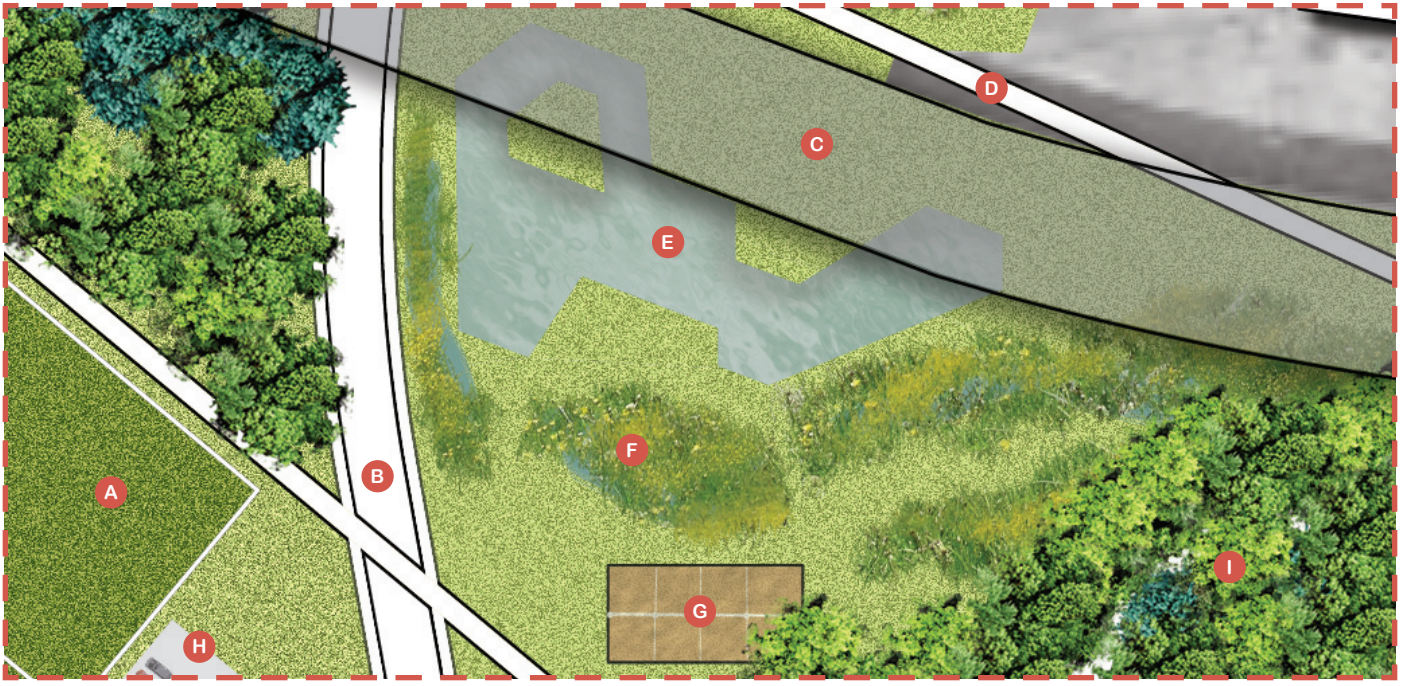
fountain park

The Fountain Park combines two types of water: potable water for play and stormwater for capture and infiltration. At the lowpoint adjacent to the viaduct and Wyoming Street, a high waterfall is partially cut from under the viaduct, its roar echoing off the highway above and drowning traffic noise. The water vapor produced from impacting a large splash pool mitigates smells of the nearby sewer plant. Children and adults intermingle along the water's edge and along the bioswale system uphill from the fountain. The bioswales capture stormwater before it reaches the fountain, and becomes an educational amenity teaching visitors about urban stormwater.

West Soccer Fields A
Wyoming Street B
Interstate 70 Viaduct C
Heritage Trail D
Waterfall Fountain and Splash Pool E
Bioswale System F
Beach Volleyball Courts G
Parking H
Fall Promenade I

Figure 4.12- Fountain Park Plan (Woodard 2012).

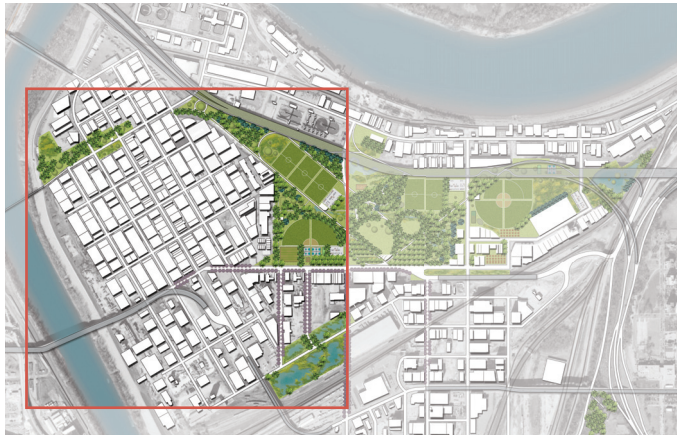




the west fields

The West Fields is the section of James Park west of Wyoming Street, and along Ohio Street and St. Louis Avenue. The land is fairly flat and drains to the St. Louis Avenue Catchment. It is also adjacent to the James Street Neighborhood, part of a daily interface between the residents and James Park. The main design goals for this area are the creation of a large scale active sports area and establishment of a semi-privatized neighborhood park within the larger James Park.

Figure 4.13- Summer Fields (Woodard 2012).

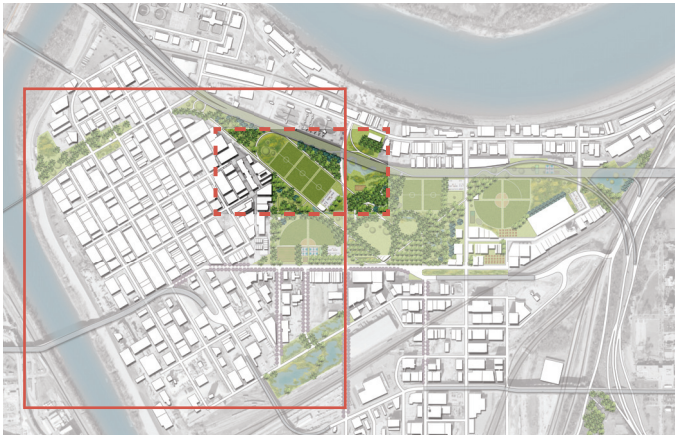


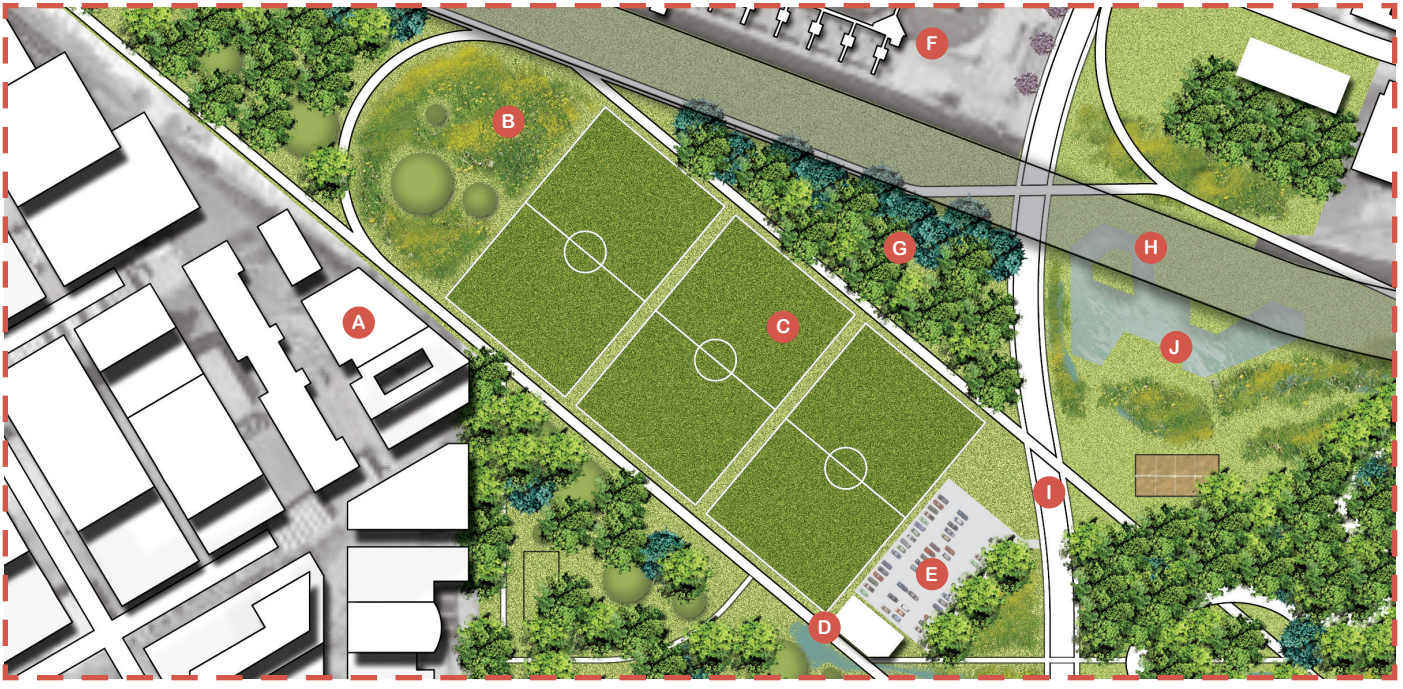
west soccer fields

The West Soccer Fields consist of three fully lit soccer fields, a loop multi-use pedestrian path encircling the fields, a fieldhouse, parking, and a native prairie. Mobile grandstands allow the fields to be reconfigured for different sports and different scales. The Fields have ample space for impromptu gatherings and wide views of the Kansas City Missouri skyline. The trails are main thoroughfares for bikers between Kansas City Missouri and Kansas City Kansas and keep the field edges active. The large grove north of the fields is lite by ground lighting, illuminating the Fields and under the viaduct while also buffering smells from the nearby sewer plant. The landforms in the native prairie adjacent to the James Street Neighborhood allow for picnics overlooking the prairie, a soccer match, and the skyline.

James Street Neighborhood A
Native Prairie B
West Soccer Fields C
Fieldhouse D
Parking E
Sewer Plant F
Tree Buffer G
Interstate 70 Viaduct H
Wyoming Street I
Fountain Park J

Figure 4.14- West Soccer Fields Plan (Woodard 2012).



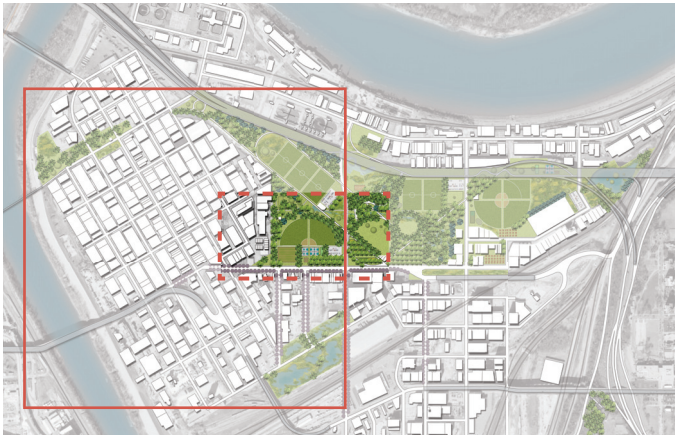


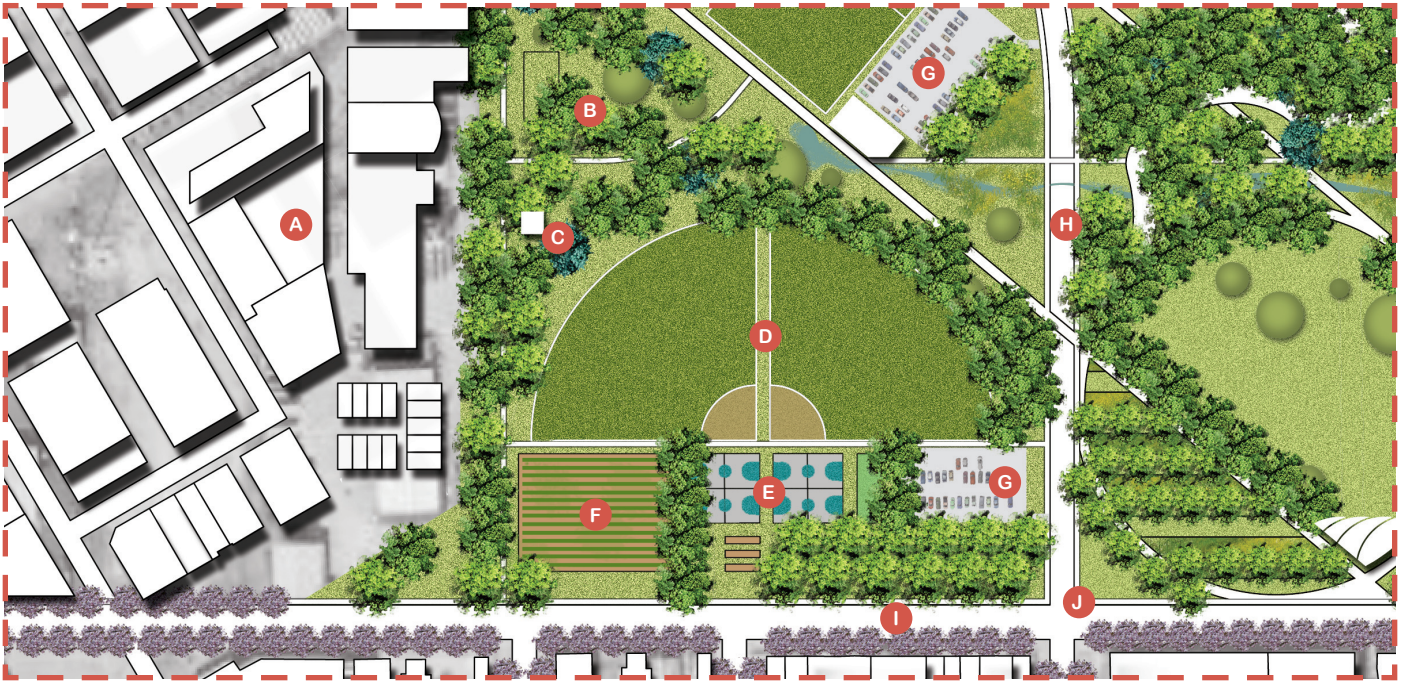
neighborhood park

Nestled against the James Street neighborhood, this park within a park consists of a dog park, pavilion, playground, two baseball fields, an urban agriculture field, four basketball courts, bocce ball courts, and horseshoe pits. The area accommodates the increasing numbers of children and families settling in the area and draws in visitors. This interface area is a critical element of the connective tissue that will tie the daily life of neighboring residents to the events of the larger James Park. A permeable barrier of trees and landforms along the West Soccer Fields makes area somewhat privatized. The privatized feel is meant to encourage daily use by the residents who activate the area on weekdays but make deeper excursions into the larger park on weekends.

James Street Neighborhood A
Dog Park and Playground B
Pavilion C
Baseball Fields D
Basketball Courts E
Urban Agriculture Field F
Parking G
Wyoming Street H
Central Avenue I
Main Park Entrance J

Figure 4.15- Neighorhood Park Plan (Woodard 2012).



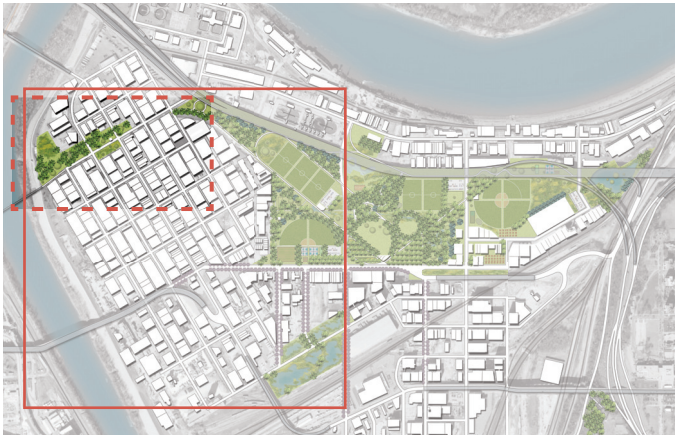


ohio street community green

The Green on Ohio Street is unique in the district. It dead ends at a multi-use pedestrian bridge, and is a designated woonerf, or pedestrian-first street. The renovated railroad bridge connects to Kansas City Kansas across the Kansas River, making Ohio Street a formal entry into the district but also a pass through space. The community enjoys play and picnic areas, landscaped lawns, and landforms that invite residents to relax in an intimate neighborhood setting. Landforms and groves on the Green block views into resident homes and the landforms provide views of the Kansas River, the Kansas City Missouri skyline, and the Kansas City Kansas Bluff.

- Pedestrian Bridge (A)
- Stormwater Lowpoint (B)
- James Street Neighborhood (C)
- Woonerf (D)
- KCK Utility Building (E)
- Playground (F)
- Bicycle Roundabout (G)
- Ohio Street (H)
- James Street (I)
- Kansas River (J)

Figure 4.16- Ohio Street Plan (Woodard 2012).



st. louis avenue catchment

The Catchment area is the most important stormwater element of the park. With nearly ¼ of the West Bottoms draining to this point, filtration systems have been installed along streetscapes and parcels north of St. Louis Avenue. South of St. Louis Avenue is the main catchment that stores and infiltrates area runoff. A trail system loops through the space and allows first hand interaction with filtration systems. Over time, as the proper BMPs are implemented in district density zones, less drainage will reach the catchment, and it can transform into a wetland habitat.

Main Catchment A
Biofiltration System B
Streetscape BMPs C
Rail Lines D
James Street Overpass E
Wyoming Street F

Figure 4.17- Catchment Plan (Woodard 2012).

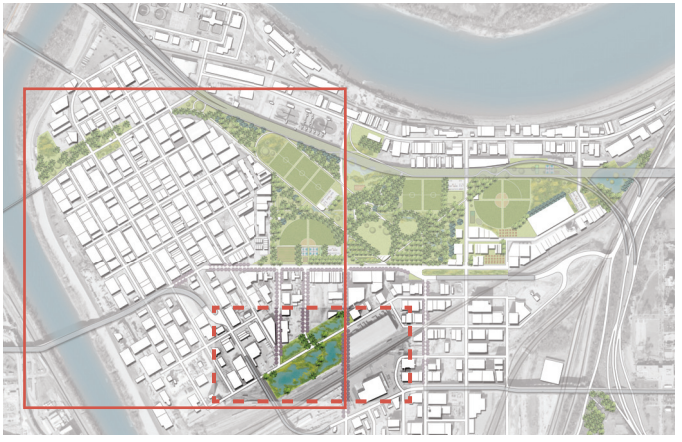


Figure 5.01- West Bottoms Back Alley (King 2013).

chapter five
conclusion

"I have tried to probe the basic elements...so as to establish a foundation for design and human form-making which would have inherent rightness."

- *Lawrence Halprin,* Where the Revolution Began

There are many possible futures in which the West Bottoms can grow into a productive urban district. But what the West Bottoms needs now is a vision that can move it toward one of those futures. This project has provided the Kansas *Cities* Downtown Area with much needed parkland and simultaneously improved the West Bottoms. The foundation is set, but the work must be furthered to have a tangible impact of the district.

project implications and moving forward

This project's most significant implication is its potential to change municipalities' minds about the West Bottoms's land use. Recent land use changes in the West Bottoms have remained focused on industry. But this project makes a case for a mixed-use district with the potential to be more profitable for the Cities. This project also suggests implementing new uses based on elevation in the floodplain rather than traditional planning methods. There could be merit to shifting dense, high-value development to higher ground in a flood-prone district. The shift specifies less hazardous land for development, reducing the risk of investing in district property and the risk of district economic destabilization due to the flooding of lowland businesses.

Another important implication of this project involves the discrepancies found while analyzing the Kansas Cities Downtown Area parks. The Traditions & Trends 2017 Consultant Team suggests KCMO meets the national benchmarks for parkland acreage by population (2012, 15). But a lack of sufficient park acreage is masked; some parks have many acres that cannot support recreation and the acreage of the Boulevard System, which provides limited or no recreation opportunities, is included in the total parkland acreage. In future planning of the KCDA, it should be noted that the area lacks sufficient parkland.

Future study of the West Bottoms should more thoroughly explore district hydrology and take into account subsurface drainage systems to identify areas threatened by flooding. This research should be conducted over the entire district. Understanding what areas are threatened during specific storms can lead to more educated planning of district densities and development type. It can also show where open space can be incorporated for stormwater management and recreational purposes.

Another idea to push forward with is the establishment of a public private partnership in the West Bottoms. Whether for a new urban park or district planning, both cities partnering with district businesses is imperative for district redevelopment. Bi-state collaboration is needed to deal with environmental factors not hampered by the state border, and the support of private landowners is needed to realize the Cities' planning proposals.

challenges

The compelling challenge of this project is programming park space for a future population. It is typical in landscape architecture to respond to the needs expressed by an existing population. In this project, needs must be met for an existing and future population, and it is unknown if both groups' needs will be the same. Due to this challenge it was necessary to rely on human needs that do not change with time, such as the need to move from place to place, get out of the sun, or interact with other people.

Another challenge facing this project is the acquirement of park site property from private land owners. The Cities' intent to build a park in the West Bottoms would be a public matter. Landowners within the proposed park boundary could refuse to sell their property to the city knowing its value would increase with an adjacent park. Strategies for land acquirement by municipalities, such as offering private landowners slightly more money than the land is worth, may not work in this situation. And the Cities' ability to use eminent domain is highly discouraged, but could be used on property whose flooding poses a public safety hazard.

limitations

The most significant limitation of this project is the reliance on a certain set of assumptions specifically pertaining to current subsurface stormwater infrastructure. The major assumption of this project is that subsurface drainage systems in the West Bottoms could be overwhelmed and fail at some point in the future. Limited knowledge of subsurface systems led to this assumption. Many of the lowpoints identified in this project as dangerous flood zones may not flood due to current infrastructure.

Lack of soil data was another limitation that led to further assumptions. Not having soil data from field soil tests limited educated plant palette selection. Regrettably, all plant selection was based on factors other than site suitability. For a project based on vegetated spaces, it is a glaring limitation. Additionally, all geospatial data pertaining to soil in the West Bottoms was split by the state border; the data erroneously showed each state with its own soil type.

The state border became a significant limitation of this project. Site analysis using geospatial data was difficult due to all data being split along the state border; in some cases, like the soils data, the data on either side was falsely shown as different. The state border also frustrated area research because documents such as area master plans, citizen surveys, and zoning restrictions ended at the border. In order to confirm that information pertaining to one side of the district applied to the other side, additional and time-consuming analysis had to be performed.

final thoughts

In closing, this project has made a case for a revitalized West Bottoms that solves the district's and surrounding area's problems, namely an insufficient amount of parkland, an increasing population, flooding, and underutilized land. Despite these problems, the West Bottoms has the potential to become a vibrant part of the Kansas Cities' urban fabric and a model for urban renewal is America's degraded urban districts.

Figure 6.01- Kansas River Levee Trail (Woodard 2012).

PART III
ARCHIVE

Figure 6.02- District Graffiti (Woodard 2012).

chapter five
reference

appendix

PAST PARK STUDY

In 2011, I studied the parks of KCMO's Greater Downtown Area to determine what activities were currently available. Each park was analyzed and its activities listed. I then divided the parks into three categories based on the space needed for different activities: large-scale activities, medium-scaled activities, and small-scale activities. Parks were put into one or more categories based on park topography and spaces that could to hold full-size sports fields. The final map labels each activity currently available in the parks. The parks are color-coded to show the scale of activities each park could accommodate (Figure 6.03).

During this study, I recognized that parks that could accommodate large-scale activities could not accommodate *multiple* large-scale activities *simultaneously*, either of the same or different sport.

MY ACTIVE RECREATION PARK STUDY

In 2012 I expanded and refined my park study from 2011 to include all parks in the KCDA. The criteria used to determine a park's ability to contain large-scale active recreation is scale and shape, topography, and location. In order to be determined suitable for large-scale active recreation, a park had to be able to hold two 225' x 360' soccer fields. These two soccer fields allow for simultaneous play of large-scale sports and can be broken into smaller fields. Using ArcGIS, criteria were overlaid to determine park suitability (Figure 6.04).

SCALE AND SHAPE

Scale and shape determines if a park has the physical space to hold the two soccer fields. A park must have the acreage to fit both fields (162,000 ft^2) but also the shape to accommodate the fields' rectangular shape.

TOPOGRAPHY

Topography determines if the park has the proper slope needed to play large-scale active sports. Parks were excluded where extensive grading would be required to implement the soccer fields.

LOCATION

Location determines if a park is accessible to a large number of people that large-scale active recreation attract. Parks that were difficult to locate from interstates or were deep within residential neighborhoods were excluded from suitable parks.

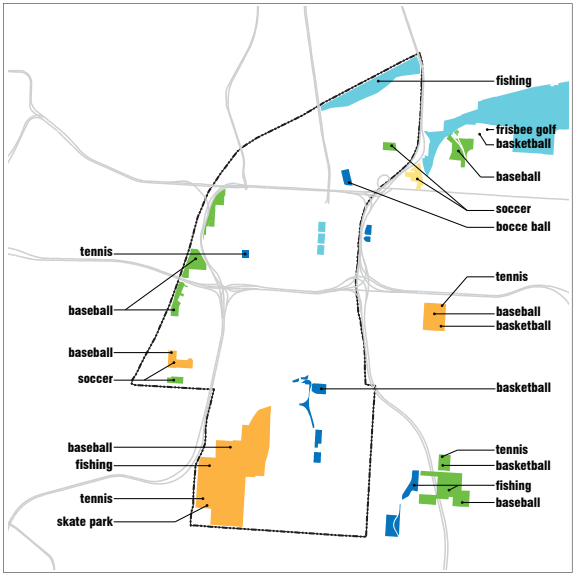


Figure 6.03- Sports Programming. My 2011 map of activities existing and possible in GDA parks (map by author).

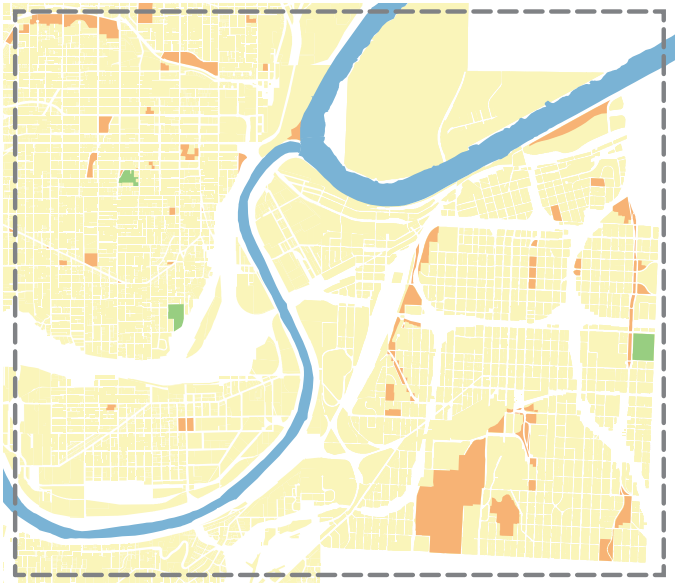


Figure 6.04- Large-Scale Sports Study (map by author).

DRAINAGE AND STORMWATER

In order to make educated design decisions for James Park, I calculated how the park would function during an extreme storm event. My calculations began with the Rational Method, an equation used to determine peak runoff from storm events. The Rational Method uses coefficients for different landcovers to calculate how much runoff each landcover creates. For example, concrete has a coefficient of .10, meaning 10% of water that falls onto concrete infiltrates or evaporates and 90% runs off. My goal was to determine how much water pools at James Park lowpoints during the storm event; so I used reversed coefficients to determine the volume of water than reaches the lowpoints.

The first step was to determine the landcover of each of James Park's sub-watersheds. I used aerial photography and site photos to identify and map different landcovers and their square footage within the watersheds (grass, gravel, impervious surface, and roof) (Figure 6.05). I then used the reversed coefficients to calculate the amount of runoff that would reach the lowpoint based on landcover (Table 6.01).

COEFFICIENTS

- Grass 0.50
- Gravel 0.85
- Impervious 0.90
- Roof 0.90

The volumes calculated for each lowpoint were used to determine the size and type of BMPs needed within each of the nine watersheds. The results of my calculations are only rough estimates, and were not used to make precise stormwater BMP recommendations.

Figure 6.05- Park Watershed. The park site's watersheds can be broken into nine sub-watersheds with seven distinct lowpoints (top). An analysis of the watershed landcover showed 65% of the watershed is impervious surface (bottom) (maps by author).

Watershed 1					
LANDCOVER	AREA (sq. ft.)	RAINFALL (ft.)	VOLUME (cu. ft.)	COEFFICIENT	RUNOFF (cu. ft.)
Grass	621435.66	0.31	191609.33	0.50	95804.66
Gravel	1332001.50		410700.46	0.85	349095.39
Pavement	997555.13		307579.50	0.90	276821.55
Roof	354437.20		109284.80	0.90	98356.32
TOTALS	3305429.49		1019174.09		820077.93

Watershed 2					
LANDCOVER	AREA (sq. ft.)	RAINFALL (ft.)	VOLUME (cu. ft.)	COEFFICIENT	RUNOFF (cu. ft.)
Grass	46869.14	0.31	14451.32	0.50	7225.66
Gravel	545512.29		168199.62	0.85	142969.68
Pavement	1660386.62		511952.54	0.90	460757.29
Roof	391419.50		120687.68	0.90	108618.91
TOTALS	2644187.55		815291.16		719571.54

Watershed 3					
LANDCOVER	AREA (sq. ft.)	RAINFALL (ft.)	VOLUME (cu. ft.)	COEFFICIENT	RUNOFF (cu. ft.)
Grass	1170505.34	0.31	360905.81	0.50	180452.91
Gravel	658316.73		202980.99	0.85	172533.84
Pavement	2238084.70		690076.12	0.90	621068.50
Roof	733551.25		226178.30	0.90	203560.47
TOTALS	4800458.02		1480141.22		1177615.73

Watershed 4					
LANDCOVER	AREA (sq. ft.)	RAINFALL (ft.)	VOLUME (cu. ft.)	COEFFICIENT	RUNOFF (cu. ft.)
Grass	93509.00	0.31	28831.94	0.50	14415.97
Gravel	448659.06		138336.54	0.85	117586.06
Pavement	869579.61		268120.38	0.90	241308.34
Roof	602554.77		185787.72	0.90	167208.95
TOTALS	2014302.44		621076.59		540519.32

Watershed 5					
LANDCOVER	AREA (sq. ft.)	RAINFALL (ft.)	VOLUME (cu. ft.)	COEFFICIENT	RUNOFF (cu. ft.)
Grass	484922.95	0.31	149517.91	0.50	74758.95
Gravel	138885.31		42822.97	0.85	36399.52
Pavement	772709.60		238252.13	0.90	214426.91
Roof	287860.29		88756.92	0.90	79881.23
TOTALS	1684378.15		519349.93		405466.62

Watershed 6					
LANDCOVER	AREA (sq. ft.)	RAINFALL (ft.)	VOLUME (cu. ft.)	COEFFICIENT	RUNOFF (cu. ft.)
Grass	66518.87	0.31	20509.98	0.50	10254.99
Gravel	0.00		0.00	0.85	0.00
Pavement	524122.09		161604.31	0.90	145443.88
Roof	128246.62		39542.71	0.90	35588.44
TOTALS	718887.58		221657.00		191287.31

Watershed 7					
LANDCOVER	AREA (sq. ft.)	RAINFALL (ft.)	VOLUME (cu. ft.)	COEFFICIENT	RUNOFF (cu. ft.)
Grass	214488.80	0.31	66134.05	0.50	33067.02
Gravel	27491.00		8476.39	0.85	7204.93
Pavement	637638.79		196605.29	0.90	176944.76
Roof	211241.62		65132.83	0.90	58619.55
TOTALS	1090860.21		336348.56		275836.27

Watershed 8					
LANDCOVER	AREA (sq. ft.)	RAINFALL (ft.)	VOLUME (cu. ft.)	COEFFICIENT	RUNOFF (cu. ft.)
Grass	82404.85	0.31	25408.16	0.50	12704.08
Gravel	65963.96		20338.89	0.85	17288.05
Pavement	281283.77		86729.16	0.90	78056.25
Roof	107333.53		33094.50	0.90	29785.05
TOTALS	536986.11		165570.72		137833.44

Watershed 9					
LANDCOVER	AREA (sq. ft.)	RAINFALL (ft.)	VOLUME (cu. ft.)	COEFFICIENT	RUNOFF (cu. ft.)
Grass	1623390.04	0.31	500545.26	0.50	250272.63
Gravel	68662.65		21170.98	0.85	17995.34
Pavement	2398903.16		739661.81	0.90	665695.63
Roof	991076.21		305581.83	0.90	275023.65
TOTALS	5082032.06		1566959.89		1208987.24

Table 6.01- Watershed Calculation Tables. Each sub-watershed's landcover was analyzed to determine infiltration rates during a 100-year, one-hour storm event. This knowledge was used to determine water volume draining to lowpoints (tables by author).

SUITABILITY ANALYSIS

Site suitability for development and parkland was determined using ArcGIS and suitability tables developed by Professor Howard Hahn of Kansas State University (Table 6.02). The adjacent tables show the influence of each factor on suitability and way each factor was used.

Rational of Development Suitability Criteria
KSU notes on topography suitability
based on floodwater rise model (ArcScene)
based on 70 db(A) at 300 ft. figure from David Coate Consulting, typical conversation levels is 60-65 dB(A), 90-95 dB(A) over the long term can result in hearing loss
Property owned by Kansas City Missouri and Kansas City Kansas are designated in the Moderate section because of the public process necessary to turn over public land to private ownership.
distance is approximately the width of blocks around the West Bottoms and the Downtown

Rational of Park Suitability Criteria
based on floodwater rise model (ArcScene)
based on approximate short-side of city block in the West Bottoms and KCMO Bike Map
based on Point Density Tool in ArcGIS, with a point placed on each building and the density of points accessed

Table 6.02- Suitability Tables. Suitability analyses were done for both development and park suitability (tables by author).

			Development Suitability Rating			
Suitability Scale for Development			0 No Development	1 Low	2 Moderate	3 High
Weight	Weight as %	Analysis Layer	Exclusionary	Least favorable <---------- (or protect)	----------	----------> Most favorable (or free to alter)
1	0.10	*Slope*	0-1%, 10.01+%	1.01% - 2%	4.01% - 10%	2.01% -4%
5	0.50	*Elevation*	0-746'	746.01'-747.5'	747.51'-749'	749.01+' (out of 100-Year)
1	0.05	*Interstate Noise Buffer*	0-100'	100.01-200' (90 dB(A))	200.01-300' (80 dB(A))	300.01+' (70 dB(A) and less)
3	0.30	*Ownership*	NA	< 1 Acre	1-5 Acres	> 5 Acres
1	0.05	*Proximity to Arterial Streets*	NA	660.01-990'	330.01-660'	0-330'
	0.00					

10

			Park Suitability Rating			
Suitability Scale for Development			0 No Development	1 Low	2 Moderate	3 High
Weight	Weight as %	Analysis Layer	Exclusionary	Least favorable <---------- (or protect)		----------> Most favorable (or free to alter)
4	1.00	*Elevation/100-Year Flood*	749.01+' (out of 100-Year)	747.51'-749'	746.01'-747.5'	0-746'
2	0.20	*Existing Ped/Bike Trails*	750.01'+	500.01-750'	250.01-500'	0-250'
4	0.40	*Building Density*	Specimen trees to be protected	Groves/screen rows to be largely preserved	Orchard trees and scattered non-specimen trees	Grasses and low value trees/shrubs
	0.00					

10

			Park Suitability Rating Iteration Two	
Suitability Scale for Development			0 No Development	1 Development
Weight	Weight as %	Analysis Layer	Exclusionary	Unlimited
10	1.00	*Slope*	10.01+%	0-10%
	0.00			

10

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01 INTRODUCTION

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