

URBAN FUSION

CREATING INTEGRATED PRODUCTIVE LANDSCAPES

by

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A REPORT

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abstract

Urban agriculture is an industry located within or in close proximity to a town, city or a metropolis, which grows, raises, processes and distributes a diversity of food to that urban area (Mougeot 2000). Traditionally, agricultural practices have been viewed as fringe or rural activities that do not belong in urban centers. As cities continue to grow, the distance between food production and consumers increases. On average, a meal eaten in America has traveled approximately 1,500 miles from field to plate (Hill 2008). This distance creates a system that requires food to be imported to cities and removes physical connections between urban populations and their source of food. Increased distances raise concerns of food security as urban areas are now dependent on outside sources. It will continue to be an issue in the future with fossil fuel depletion and the influence this will have on transportation costs and the cost of food. The quality of life in urban areas has also been compromised as centers grow. Individuals get lost in the fast-paced lifestyle of cities and lose the ability to interact socially. As urban populations continue to grow, it will be crucial to create centers that provide potential for a prosperous future. The placement of integrated productive landscapes in cities focuses food production locally while providing public spaces that encourage community interaction, helping transform the urban environment.

Like many cities, Kansas City, Missouri has created an urban structure void of food production, relying on food from outside sources. Additionally, the city lacks public spaces deterring community and social interaction. Integrated productive landscapes are presented as opportunities to introduce agriculture into the urban fabric using suitable sites located in the very heart of the city.

In this report, the Interstate 670 Corridor is re-envisioned as a productive landscape used to connect the community to local food and encourage social interaction. The corridor demonstrates the seamless integration of agriculture into Kansas City's urban core, creating a multi-functional productive space that fuses with the public realm in a way that can be appreciated by those who experience it.

urban fusion

creating integrated productive landscapes

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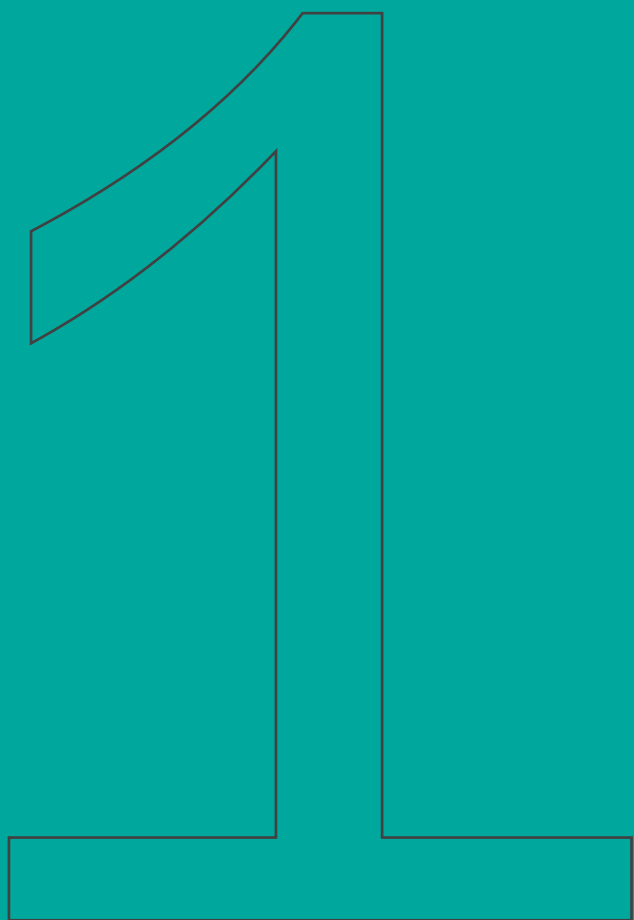
abstract

Urban agriculture is an industry located within or in close proximity to a town, city or a metropolis, which grows, raises, processes and distributes a diversity of food to that urban area (Mougeot 2000). Traditionally, agricultural practices have been viewed as fringe or rural activities that do not belong in urban centers. As cities continue to grow, the distance between food production and consumers increases. On average, a meal eaten in America has traveled approximately 1,500 miles from field to plate (Hill 2008). This distance creates a system that requires food to be imported to cities and removes physical connections between urban populations and their source of food. Increased distances raise concerns of food security as urban areas are now dependent on outside sources. It will continue to be an issue in the future with fossil fuel depletion and the influence this will have on transportation costs and the cost of food. The quality of life in urban areas has also been compromised as centers grow. Individuals get lost in the fast-paced lifestyle of cities and lose the ability to interact socially. As urban populations continue to grow, it will be crucial to create centers that provide potential for a prosperous future. The placement of integrated productive landscapes in cities focuses food

production locally while providing public spaces that encourage community interaction, helping transform the urban environment.

Like many cities, Kansas City, Missouri has created an urban structure void of food production, relying on food from outside sources. Additionally, the city lacks public spaces deterring community and social interaction. Integrated productive landscapes are presented as opportunities to introduce agriculture into the urban fabric using suitable sites located in the very heart of the city.

In this report, the Interstate 670 Corridor is re-envisioned as a productive landscape used to connect the community to local food and encourage social interaction. The corridor demonstrates the seamless integration of agriculture into Kansas City's urban core, creating a multi-functional productive space that fuses with the public realm in a way that can be appreciated by those who experience it.



introduction

industrial agriculture

Today's methods for food production have evolved into an industrialized system that functions at a global scale. The system is designed to be highly productive in terms of labor, making it possible for one farmer to produce food for a large quantity of people. This model provides individuals, especially in developing countries, with convenient access to abundant food at a low cost from all parts of the world.

While the industrial food system has produced a number of benefits, these are not obtained without consequences, which have begun to raise some major concerns. Too often the way we grow, process, and eat food contributes to detrimental effects on our social structure, environment, and public health. Costs are very strongly linked to the cost of oil and other petroleum-based products.

The delocalization of the food system has removed people from the production and processes associated with food. People are no longer concerned with where their food comes from (and food has begun to lose its cultural importance). The preparation of food, which once held much importance and was strongly associated with cultural traditions, today has been diminished to a process that on average lasts a mere thirty-one minutes, including clean-up (Pollan 2010).

The disconnection between people and food is the result of the industrial food system's attempt to create a more efficient network of fewer and larger farms and processing plants. As a result, the current system is one that consumes resources at unsustainable rates and is built on the abundance and low cost of fossil-fuels. It is a system that, after automobiles, uses more fossil-fuels than any other sector of the economy, roughly 19 percent (Pollan 2008). The energy intensive processes and methods used in the production of food impact the environment in various ways, including air and water pollution, soil depletion, and diminished biodiversity (Berry 1995). Industrial food production is also a major contributor to global climate change (Pollan 2010).

In addition, the industrial food system is a major concern to human health. Food plays an essential role in the growth and development of people. The chemicals used to boost food production such as pesticides, insecticides, herbicides, and fungicides are known to cause endocrine disruptions and cancer (Gauker 2009). At the same time, these chemicals are often applied to fields that focus on the growth of a single crop season after season, lowering the quality of the soil and in turn producing food with a lower nutritional value. Much of the food consumed today is processed and contains additives and unhealthy amounts of salt, sugar, and fats that result in improper cell metabolism, obesity, and intensify asthma symptoms (Gauker 2009).

The evolution of the food system over the past 50 years has created a system with the capabilities of producing an abundance of food. As a result, people are provided with access to a variety of inexpensive food options. Unfortunately, the methods for industrial food production consume resources at unsustainable rates, compromise the structure of social lifestyles, and too frequently provide food using ingredients and/or methods that directly and indirectly harm human health (Gauker 2009). As the economic, social, and environmental costs of food production increase it is important to consider how food can be produced in a more logical and responsible way. ▢



Figure 1.01: Industrial Agriculture: Wheat Combines



Figure 1.02: Industrial Agriculture: Circle Pivot Irrigation

sustainable alternatives

Concerns related to the industrial food system and its effects on social structures, public health, and the environment have created an interest in establishing a more sustainable method for food production. The transition to a sustainable food system focuses on using organic methods for producing food, creating smaller scale urban farms, and establishing local food networks (Gauker 2009).

Unlike industrial methods for food production, sustainable farming seeks to provide consumers with quality food rather than focusing on the quantity of food produced. The use of chemical pesticides and fertilizers are discouraged to reduce energy use and other impacts including the contaminating effect of chemicals on the environment and people (especially farm workers). As an alternative, organic matter is used to replenish soils and produce more nutritional food. This creates a process where the nutritional value of food takes priority (Gauker 2009).

Smaller urban farms begin to place food production closer to people. These farms focus on growing and providing a variety of products for consumers. The proximity of these farms provides consumers the opportunity to reconnect with food production and obtain fresher, more nutritious food. Urban farms act as an important component in establishing a local food system that integrates a number of components to bring fresh food to consumers. Local food systems are capable of creating jobs and stimulating the local economy thus, retaining money within the community (Berry 1995).



Figure 1.03: Chicago Urban Farm



Figure 1.04: Rooftop Farm

integrated productive landscapes

Integrated productive urban landscapes are intended to build on the current sustainable food movement, offering a conceptual framework for introducing agricultural components into the existing urban fabric. The concept seeks to create a network of spaces focused around the production of food and connecting urban populations with related processes. Integrating productive landscapes as key components to urban environments focuses on creating a localized system for the growth, processing, and consumption of food.

Designing for a cohesive and localized food system requires the incorporation of a number of elements. In an excerpt titled *Urban and Open Space Design for Food and Agriculture*, Clarke (2010) presents seven food system elements (production, processing, distribution, retail, consumption and celebration, waste recovery, and education) that should be a part of every project of this type. He states, “This integrated approach to design will make food the driving concept of the plan and eliminate the tack-on approach that typically happens” (141). The focus of implementing the food system element plays an important role in the success of the final design solution.

By conducting a study of the urban environment, sites can be identified that present an opportunity to create productive landscapes. With regards to the implementation of an urban design strategy, Andre Viljoen states “land will have to be allocated, reclaimed, recycled, or imaginatively found” (2005, 15). In “More space with Less Space: An Urban Design Strategy” Viljoen mentions that urban design strategies are most advantageous in those areas of the contemporary city which presently are given over to activities restricting space to mono- or non-use: for example car parks, roads, parking bays, shopping malls, warehouses, multi-story car parks (roofs), railway embankments, industrial wasteland, brownfield sites, etc. (2005). Using a set of criteria established by the author a total of eight underutilized sites have been identified in downtown Kansas City for the integration of productive landscapes. These sites are investigated to create a design solution that provides a productive landscape responding to the surrounding context.

Through the integration of productive urban landscapes, this project presents a more comprehensive urban design solution for repurposing underperforming voids within the urban fabric of cities such as Kansas City, Missouri. Voids are transformed into multi-functional spaces that focus on the production of food integrated with public spaces. An awareness of food is achieved through connections made between people and the food they eat. The design strategy creates spaces that demonstrate the ability to incorporate food production in a way that adds to the overall composition of urban environments. The seamless integration of agriculture with public urban spaces allows people to see the beauty in farming while providing the opportunity to experience, celebrate, and enjoy food.

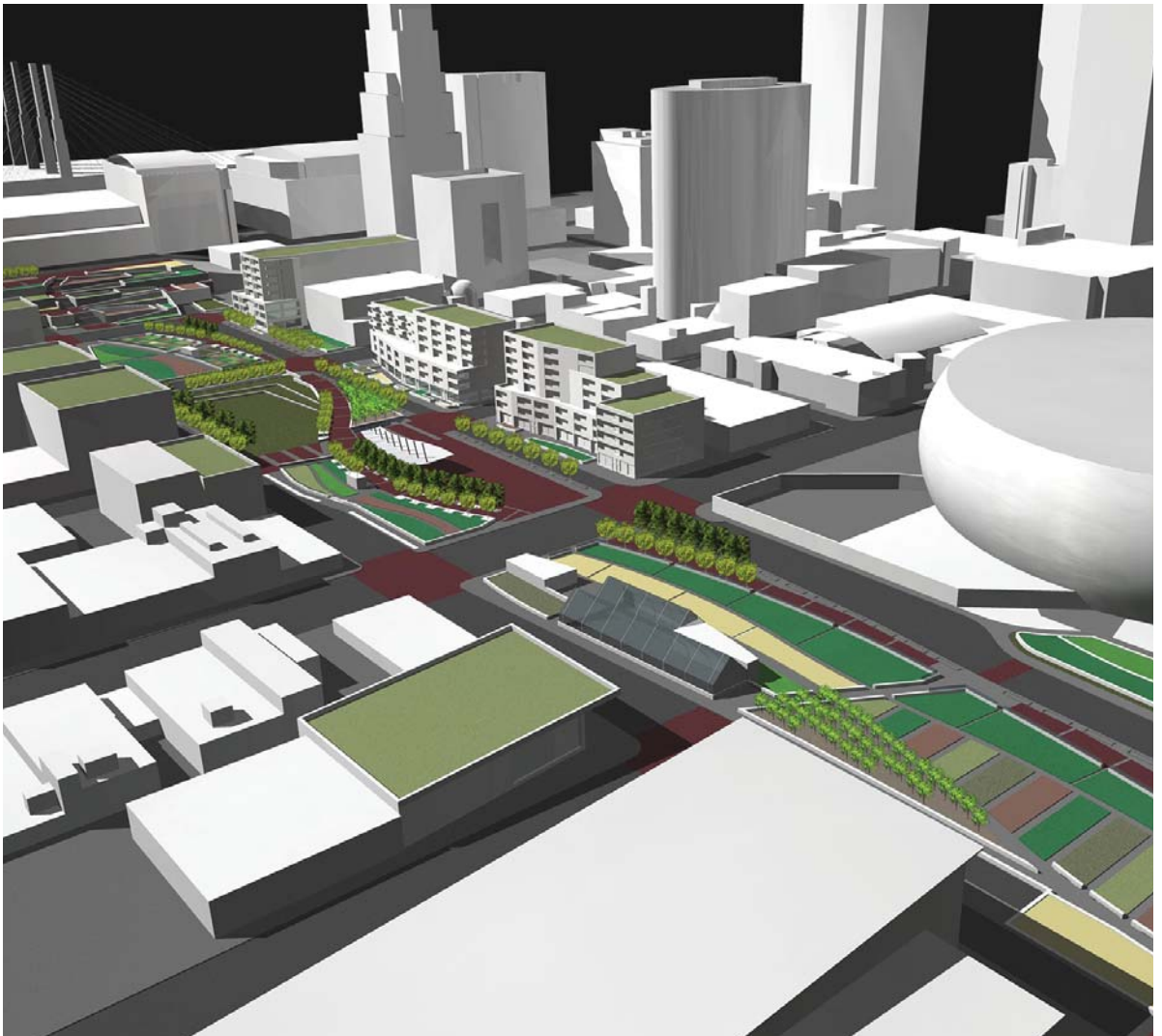


Figure 1.05: Integrated Productive Landscape: Interstate 670 Corridor



description & intent

dilemma

Urban agriculture is an industry located within or in close proximity to a town, city or a metropolis, which grows, raises, processes and distributes a diversity of food, (re-)using largely human and material resources, products and services found in and around the urban area, and in turn supplying human and material resources, products and services largely to that urban area (Mougeot 2000).

Agriculture is often thought of as a fringe or rural activity that does not belong as a component of urban environments. With continued growth of urban centers, more and more distance is placed between urban dwellers and their source of food. This distance has created a lessened interest in how food is produced and where our food is coming from. On average, a meal eaten in America has traveled 1,300 to 1,500 miles from field to plate (Hill 2008). As a result of increasing oil prices and related products the cost of basic goods has increased and individuals find themselves paying higher prices for food while long-distance shipping can compromise quality, freshness, and taste.

The increased separation between agricultural practices and urban environments has created the need for food to be imported into cities. Now cities around the globe depend on outside food sources as the way to feed their urban populations. This raises the issue of food security within urbanized areas and regional sustainability will continue to be a growing issue given the dual concerns of fossil fuel depletion and increased transportation costs.

The growth of urban environments has also degraded the overall quality of life for those that call these settings home. The fast paced lifestyle of cities has led to decreased participation in leisure activity, degradation of community and neighborhood structures, and decreased desire for social interaction. People begin acting as individuals rather than as a larger group or community (Dickens and Ferguson 1999).

Urban populations, without a doubt, will continue to rise. As of 2006, more than 50 percent of the world's population was living in urban areas and it is projected that by 2050 two-thirds of humanity will live in urban areas (Redwood 2009). With this in mind, it is important for us to ask ourselves if the evolution of agricultural practices and urban environments provide us with cities that have the potential for self-sufficiency and the capability to thrive as healthy, stimulating, and attractive places to live.

With consideration of the above information, in what ways can agriculture be integrated into the urban environment as a way to focus food production locally while creating spaces that encourage community interaction and improve the urban fabric?

thesis

Agriculture, introduced into the urban environment as integrated productive urban landscapes, provides the opportunity to focus food production locally while becoming spaces for community interaction and urban transformation.

Integrated productive landscapes demonstrate the incorporation of agriculture into the urban fabric while creating multi-functional productive spaces that fuse with the public realm in a way that can be both understood and appreciated by those who experience it.

key terms

integrated

a coherently planned and designed combination of systems that work together as a unit.

productive

causing or resulting in environmental, socio-cultural, and economic benefits, or profits (Merriam-Webster); environmentally, socio-culturally, and economically productive (Bohn and Viljoen 2005).

landscapes

the spatial and visual entity of human living space that integrates the environment, living systems, and the man-made. (Corner 1999).

project goals

The primary goal for this project is to re-envision underutilized urban voids into productive space that provide for the community and improve the urban environment. This is achieved by identifying voids in the urban structure and then transforming these voids into integrated productive landscapes or spaces for urban agriculture that fuse with the public realm. Goals and objectives were developed and used to guide the design of an integrated productive landscape and thus provide a solution to the project dilemma (Figure 2.01).

The goals used to structure this project focus on the re-localization of food production, allowing people to reconnect with food by making it an important part of their daily lives. Project goals are used to ensure the creation of a design that blends agriculture with the existing urban structure and providing public spaces that establish a local food system, strengthen urban communities, and enhance the urban environment.

integrated productive urban landscapes

1 introduce productive spaces

- 1. integrate a range of food system elements
- 2. produce and provide local food for the urban population
- 3. increase food security and availability
- 4. fuse agriculture as a critical component of the overall urban system

2 connect people to food

- 1. increase access to locally-grown food
- 2. reconnect people to food processes
- 3. increase local food awareness
- 4. facilitate healthy lifestyles with fresh food
- 5. make food visible

3 encourage community interaction

- 1. provide public spaces for the community
- 2. encourage meaningful community participation
- 3. educate people about food
- 4. create productive landscapes that can be understood
- 5. create a rich experience of food and agriculture within the city structure

4 improve the urban environment

- 1. improve the public realm
- 2. create opportunities that support and encourage future development
- 3. expand the city's parks and open space network
- 4. reconnect districts within the city
- 5. create a space that responds to the urban environment.

Figure 2.01: Project Goals and Objectives

project process and timeline

process

The design process, Figure 2.02, shows the conceptual path that the project followed. The overall project path is represented as an undulating path that moves in a sequential direction. This is intended to represent the movement of the project from origination to the completed final product, while focusing on major project components between. During the process, opportunities to reflect back and look forward are identified where relationships exist between major components.

timeline

The development of a project timeline was important to establish in the beginning stages of the project (Figure 2.03). This helped identify and organize the work that needed to be completed during the academic year and designate time for the completion of tasks. Key points throughout the year regarding submittals, reviews, and other simultaneous projects are noted and used to remain on schedule and assist in the best management of valuable time.

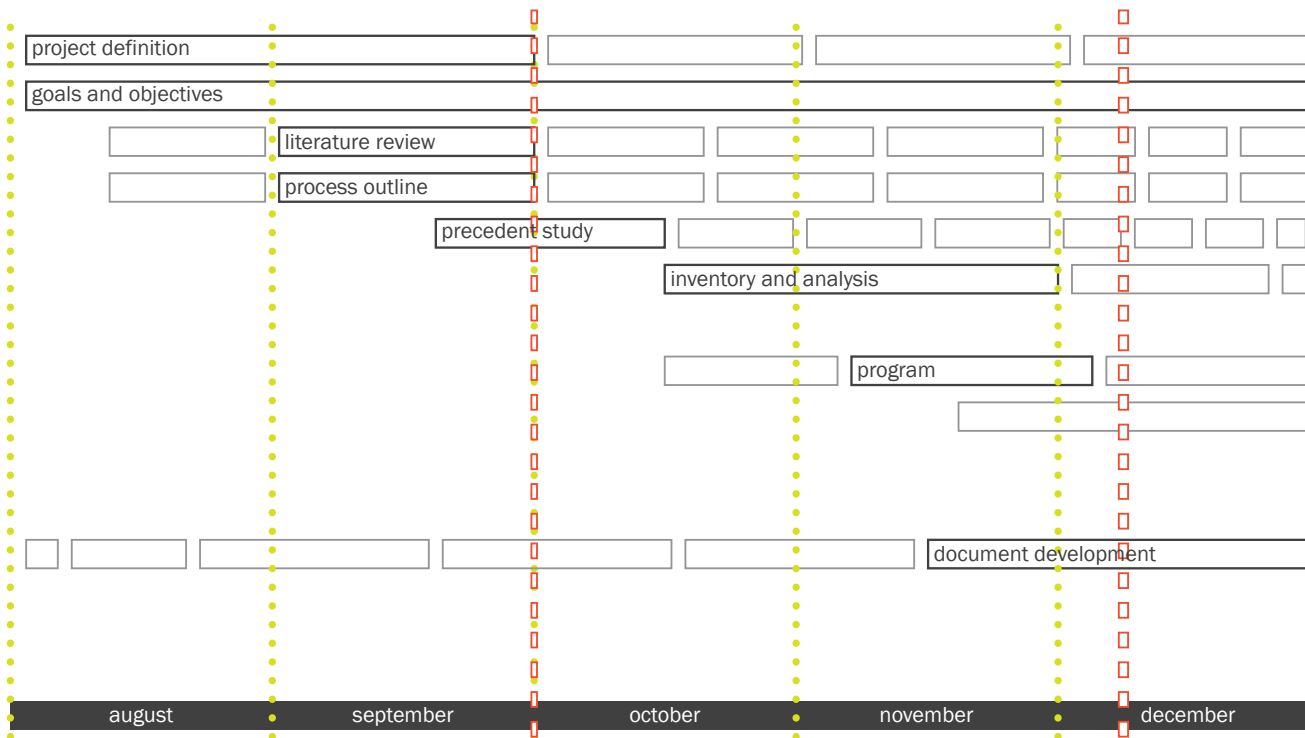


Figure 2.03: Project Timeline

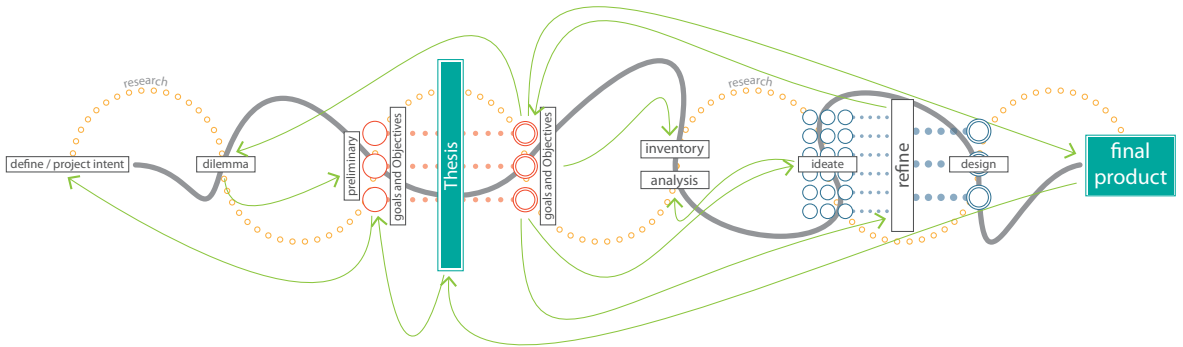
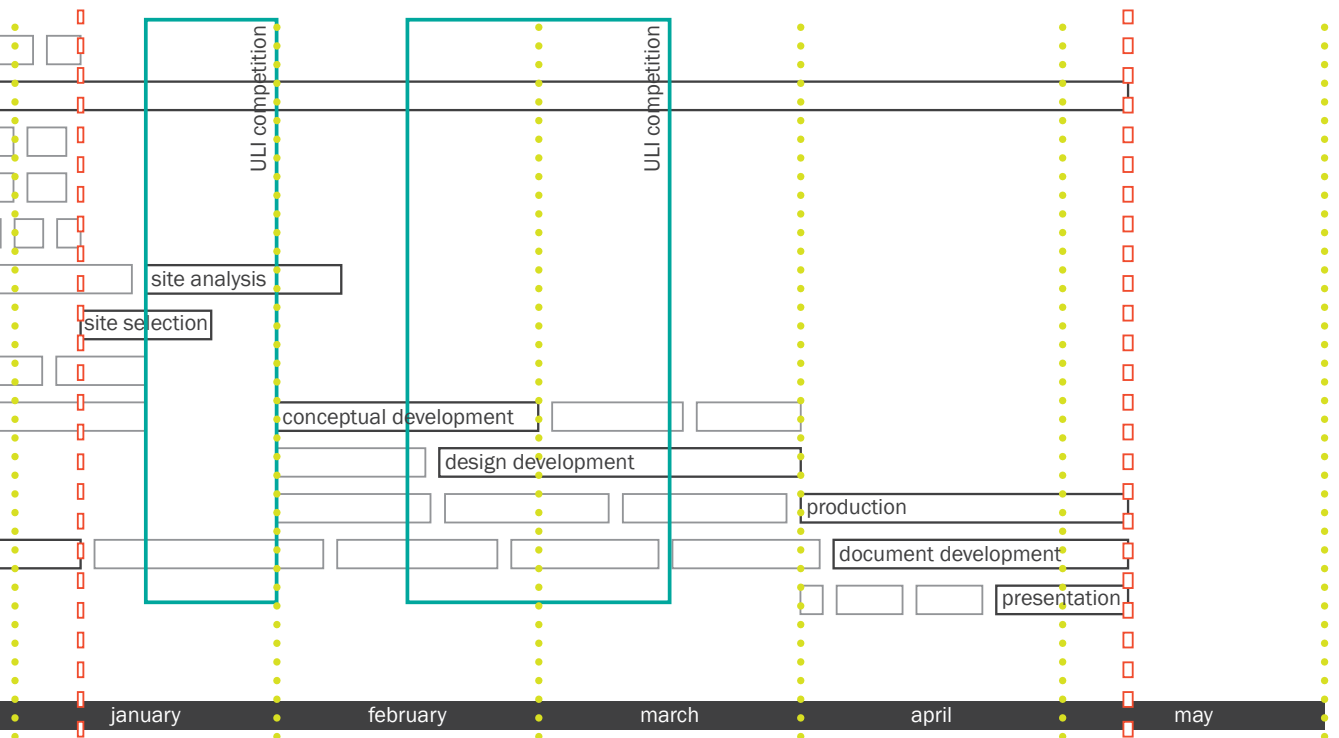


Figure 2.02: Design Process



project location

legend

- 1. Missouri River
- 2. City Market
- 3. Ermine Case Jr Park
- 4. Bartle Hall Convention Center
- 5. Barney Allis Plaza
- 6. Municipal Auditorium
- 7. Ilus W. Davis Park
- 8. Power and Light District
- 9. Sprint Center Arena
- 10. Kauffman Center for the Performing Arts
- 11. Crossroads Art District
- 12. Union Station

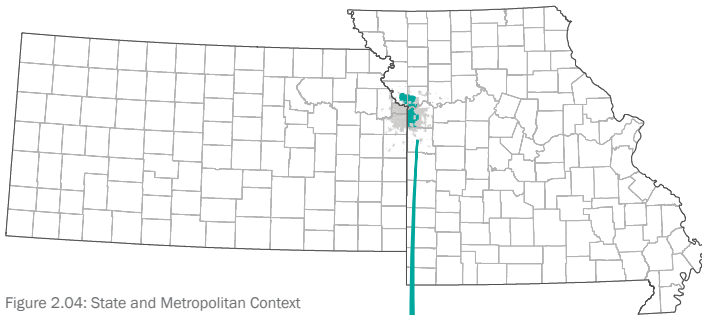


Figure 2.04: State and Metropolitan Context



Figure 2.05: Metropolitan and City Context

location of study area

The area subject to study is located in the downtown urban core of Kansas City, Missouri. The study area is approximately 1,100 acres in size and is bound by the Missouri River to the north, Interstate 35 to the west, Interstate 70 and Highway 71 to the east, and the Kansas City Terminal Railway right-of-way to the south.

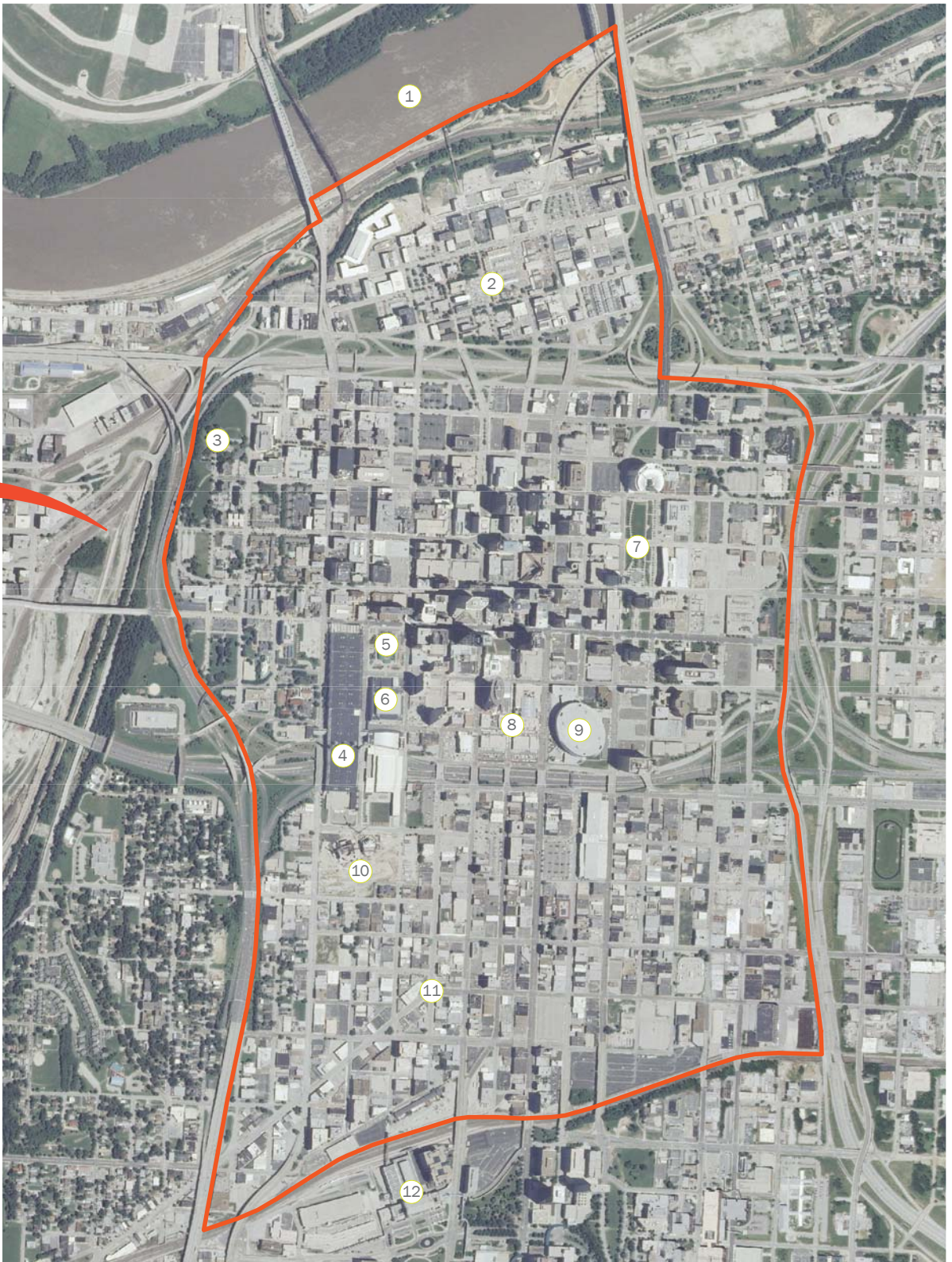


Figure 2.06: Study Area and Context



critical existing conditions

Kansas City, located east of the confluence of the Missouri River and Kansas River, is the largest city in the state of Missouri. The city was founded in 1838 and today encompasses 318 square miles with a population of 475,830 and a metropolitan area population of more than two million (US Census 2009).

The area within the Kansas City urban study boundary can be broken down into seven sub-districts. These sub-districts consist of office, commercial, government, industrial, and residential building uses. The study area also contains a large number of underutilized lots dedicated to surface parking or containing vacant buildings. The majority of these lots are located in the Crossroads Arts District. Transportation uses, including railroad and interstate/highway corridors, create barriers that provide harsh boundaries between the districts discouraging interconnection.

The disconnection created by physical barriers creates detached areas within the study boundary discouraging pedestrian movement and community connections. The study area contains few public green spaces or sites for recreation which further denies the city of sites for social interaction.

Kansas City experiences four distinct seasons throughout the year. The coldest days usually

occur in January with average daily temperatures of 29 degrees Fahrenheit. The warmest days usually occur in July with a daily average temperature of 78 degrees Fahrenheit. On average, Kansas City receives 36.88 inches of precipitation annually (NOAA 2008). The growing season for the Kansas City area, on average, contains 218 days and begins late March to early April and extends until beginning to mid-October (Midwestern Regional Climate Center 2010). This provides a climate that is conducive to production approximately six to seven months a year.

In recent years, Kansas City underwent a large effort to refocus growth downtown with renovations and new construction. This resulted in the creation of the Power and Light District which enhanced existing venues and created new venues for entertainment. In addition, these efforts plan to create 2.8 million square feet of office space and 2,649 new housing units. Current investments in the redevelopment of downtown exceed \$5.2 billion as of 2000, with the hope of providing more jobs, increasing the population, and ultimately revitalizing downtown Kansas City (Greater Downtown Area Plan 2010).



Figure 2.07: City Market in River Market District



Figure 2.08: Crossroads Art District



Figure 2.09: Surface Parking Lot



Figure 2.10: Urban Gap: Kansas City Terminal Railway Corridor



Figure 2.11: Kansas City Power and Light District



Figure 2.12: Residential Lofts



Figure 2.13: H&R Block Headquarters



Precedent Studies

introduction

The precedent studies play an important role in the development of the project. They provide examples of projects similar in topic that act as inspiration, help generate program elements, and influence further development of a design strategy. Precedents were explored that focus on incorporating agricultural components into design solutions using an integrative approach.

Analysis of the precedents studies are focused on the types of productive components and methods for integrating them. The connections that are made between the site and surrounding context, as well as, connecting people with the production of food are evaluated. The interaction of people with the site and elements that encourage participation are reviewed.

A synthesis of information gained from the precedent studies provides important components from each study. These components are then reviewed as potential elements for the development of a design solution for downtown Kansas City, Missouri.



shenyang architectural university campus

Figure 3.01: Shenyang Campus Rice Paddies



viet village urban farm

Figure 3.02: Viet Village Urban Farm Site Aerial



18broadway

Figure 3.03: 18Broadway

shenyang architectural university campus

location and size

Shenyang City, Liaoning
Province, China
80 ha campus, 3 ha (1.25 acre)
food production

date designed/planned

Designed 2003
Constructed 2004

designers

Turenscape and Peking
University Graduate School
of Landscape Architecture

Client

Shenyang Architectural
University

guiding principles

- sustainable land use
- food production
- cultural identity
- hybrid landscapes solutions
- education

history

Shenyang Architectural University has played an important role in educating architects and civil engineers in China since 1948. After years of increased enrollment the original campus, located in downtown Shenyang, became congested and overcrowded. This resulted in the need for expansion and ultimately led to the decision of relocating the entire campus in March of 2002 (Turenscape 2005).

As China moves towards modernization, the country faces two major issues: food production and sustainable land use. With a population of 1.3 billion people that contribute to an overwhelming urbanization process, China is expanding into a large portion of the country's arable land. Having only 18 percent arable land, China is at risk of depleting a resource that is both valuable and limited (Turenscape 2005). With this in mind, landscape architects are challenged to create innovative solutions in the form of hybrid landscapes like the one found at Shenyang Architectural University.

concept

The design concept for the Shenyang Architectural University's campus seeks to use rice, native plants and crops to keep the landscape productive while also fulfilling its new role as an environment for learning (ASLA 2005).

project goals (ASLA)

- **Create Hybrid Landscapes** - blend traditional and new uses in innovative ways.
- **Create Productive Usable Space** - provide a landscape that functions and provides in multiple ways.
- **Create an Environment for Learning** - integrate the processes of agriculture so they are transparent and accessible.
- **Raise Awareness of Land and Farming** - create a landscape that draws both students and faculty into the dialogue of sustainable development.
- **Demonstrate how inexpensive and productive agricultural landscape can become usable spaces** - create multifunctional innovative solutions via careful design and management,
- **Create Cultural Identity** - provide a source of identity for the new campus.

program elements (ASLA)

- **Campus Rice Paddy** - a portion of the campus has been designed as a completely functional rice paddy.
- **Native Dry Crops** - buckwheat grows in rotation across the campus annually.
- **Circulation Paths** - provide connections to the productive landscape and campus buildings.
- **Reading Rooms** - study platforms for student use away from the classroom.
- **Integrated Irrigation System & Wetland/Natural Area** - collect, filter, and re-use irrigation runoff.



Figure 3.04: Shenyang Campus Rice Paddies

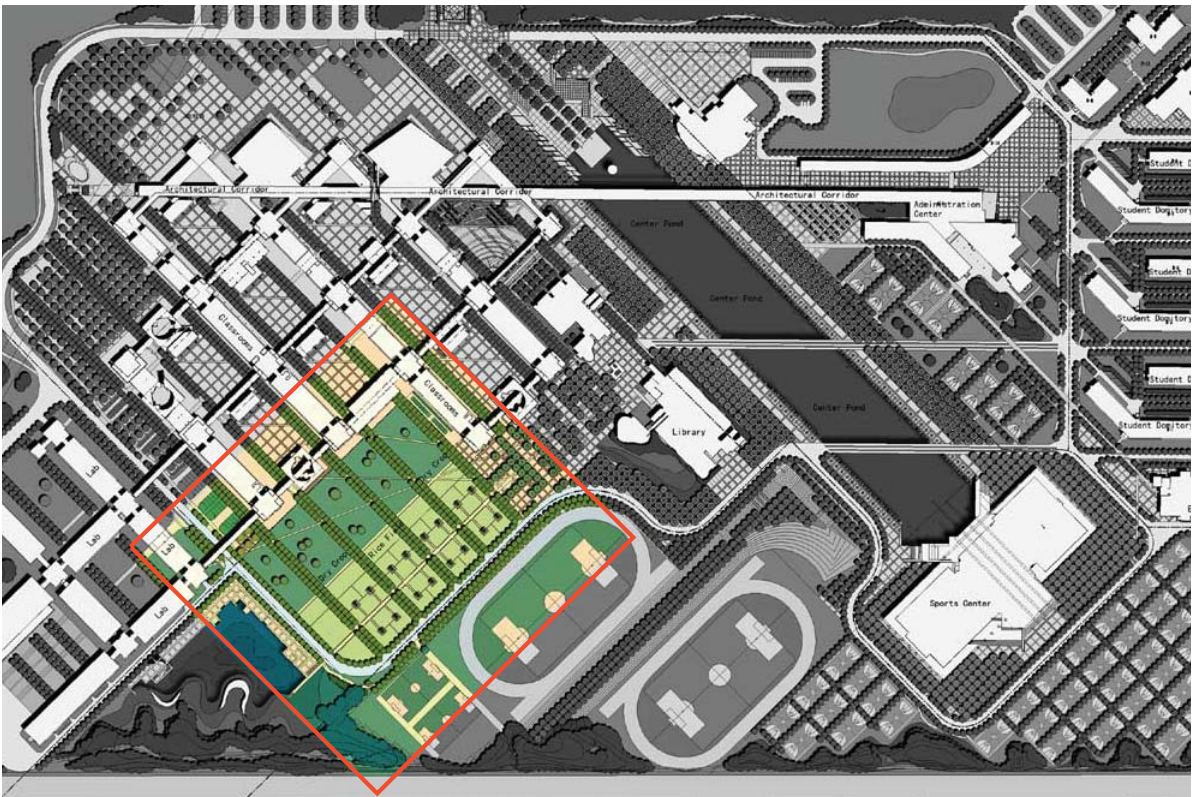


Figure 3.05: Shenyang Architectural University Campus Plan

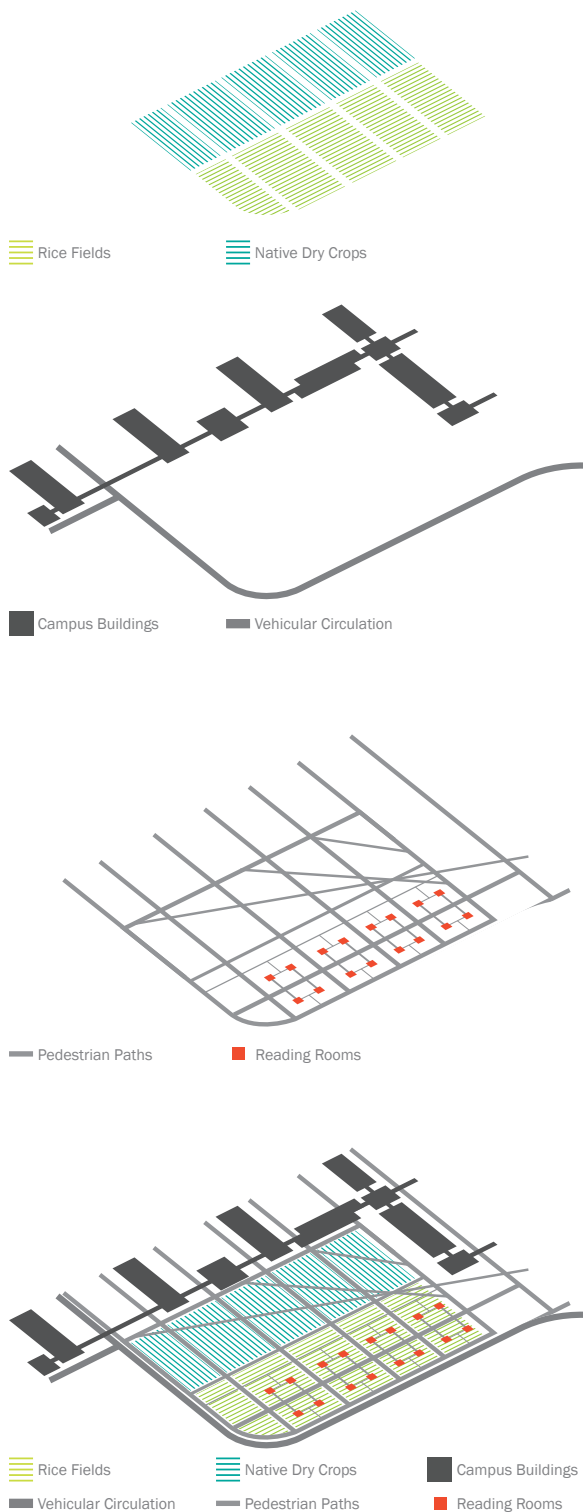


Figure 3.06: Integrated Design Components

is productive

With the creation of productive usable space acting as a preliminary project goal, agricultural fields were placed within the context of the campus. These fields create both comfortable and interesting green spaces and allow the campus to produce both rice and other dry crops native to the area. The rice, known as “Golden Rice,” has become an icon and source of identity for Shenyang Architectural Campus (Turenscape 2005).

increases awareness

Raising awareness of land and farming and the creation of an environment for learning were two other goals that influenced the campus design. The agricultural fields were placed adjacent to educational buildings and vehicular circulation routes. This action increased the project’s visibility by providing views of the fields. In addition, the project involves students and faculty with rice production through education, demonstration, and work days. The campus celebrates both a rice planting day and a rice harvesting day where students and faculty participate in the labors. These opportunities provide unique experiences in the long lost tradition of rice culture and have become a part of campus culture (Turenscape 2005).

connects

The project is also designed with a network of paths that provide circulation routes connecting students and faculty to the landscape and campus buildings. The intersecting paths are used to draw people into the dialogue of the landscape and demonstrate sustainable development and food production. There is a hierarchy of paths within the circulation network with paths for primary circulation, secondary circulation, and smaller paths for discovery and learning. The primary paths are the widest, lined with trees, and are intended for heavier traffic. Secondary paths are narrower and provide more direct routes between buildings adjacent to the project. The smaller paths provide the opportunity for individuals to touch, feel, and interact with the landscape. The network of paths, along with small nodes, provide opportunities for social interaction in the landscape. The nodes act as reading rooms or spaces for small gatherings to occur (Turenscape 2005).

creates integrated landscapes

The integration of a number of program elements has created a hybrid landscape solution that blends important traditional uses with new uses in an innovative way. The landscape acts as a multifunctional space, providing for the campus in numerous ways. Productive land becomes a part of the built environment through design, and demonstrates that there is beauty in farming.



productive landscape

Figure 3.07: Productive Landscape Components



awareness and education

Figure 3.08: Awareness & Education Components



connect

Figure 3.09: Connection Components

relevance to integrated productive landscapes

The design of Shenyang Architectural Campus shares a number of guiding principles and project goals as those identified in Integrated Productive Landscapes. Although the campus is not located within the urban core of Shenyang, being constructed on a greenfield site, it offers itself as great example of a hybrid landscape design integrating agriculture with usable public space.

The integration of agricultural fields into the campus context allows historic agricultural land to remain productive while still providing the campus with traditional educational elements. The landscape acts as an environment for learning, raising awareness in agriculture and sustainable land use. Placed within the campus, adjacent streets, walks,

and educational buildings are provided with views of the productive fields. An intersecting network of paths provide access to the fields allowing individuals to experience and understand the landscape.

Overall, Shenyang Architectural University campus demonstrates the integration of food production into a built environment. The design demonstrates the ability to inexpensively create productive usable space. The seamless integration of agricultural fields into the campus design allows the fields to become transparent and accessible in an elegant and simple way.

viet village urban farm

location and size

New Orleans, Louisiana
28 acres

date designed/planned

Designed 2007
Not yet implemented

designers

Mossop + Michaels
Tulane City Center
Urban Landscape Lab LSU

Client

Mary Queen of Vietnam
Community Development
Corporation

guiding principles

- assist in rebuilding the community
- strengthen community structure
- environmental infrastructure
- organic urban farming

history

Viet Village was established in the mid-1970's and today is a thriving Vietnamese-American community located in New Orleans East. The early Vietnamese established home-based gardens that they used to grow traditional fruits and vegetables that were not locally available. Gardens were scattered across the community taking advantage of vacant lots, edges along levees, and in backyards creating 30 acres of farmable land. In addition, a well-established tradition of informal markets had been developed as an opportunity for local growers to sell surplus produce (ASLA).

In 2005, New Orleans was struck by hurricane Katrina leaving this area a victim to the storms destructive path. In response, the design team of Mossop + Michales assisted the community with the design of an environmental infrastructural system to support an organic urban farming operation, the design of a market area to serve as a community resource and economic catalyst, and the development of a flexible, strategic plan for seeking funding and incorporating labor resources. The project represents an effort to reestablish the tradition of local farming in this community (ASLA).

concept

Viet Village seeks to create an environmental infrastructure system that supports urban farming while serving as a community resource and economic catalyst.

project goals (ASLA)

- **Reestablish the Tradition of Local Farming** - important with regards to rich history of gardening and used to promote social, economic, and cultural growth throughout the community.
- **Create an Urban Farm and Market as the Center of the Community** - act as a centerpiece for rebuilding efforts and a space for social interaction.
- **Bring Together Different Generations Within the Local Community** - pass down traditional skills and practices of the Vietnamese culture by generations of elders.
- **Establish a Certified Organic Farming Practice** - includes integrated pest management, composting, crop rotation, and cover cropping.
- **Become a Model of Low-Tech Sustainable Site Development** - bio-filtrate water resources and use alternative energy sources. (wind, passive, and active solar power)
- **Establish Relationships with Area Restaurants and Grocers** - provide locally grown produce as a part of the localvore food movement.
- **Create an Economic and Cultural Resource for the Community**
- **Create a Cultural Resource for the Vietnamese-Americans**



Figure 3.10: Viet Village Urban Farm Master Plan

program elements (ASLA)

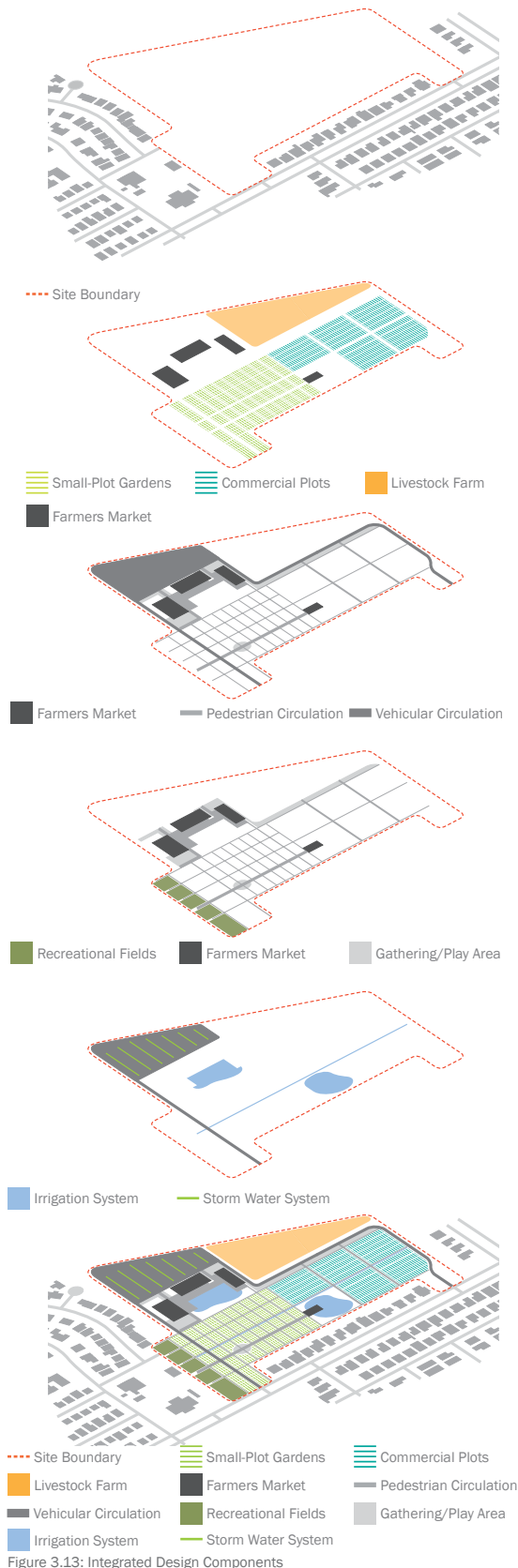
- **Small-Plot Gardening** - available to families for gardening and consumption of produce.
- **Larger Commercial Plots** - focused use to provide food to local restaurants and grocers in New Orleans.
- **Livestock Farm** - used to raise chickens and goats in a traditional Vietnamese way.
- **Market** - provides a location for individual farmers to supplement their income and serves as a central meeting space for the larger Vietnamese community. Based on the history of markets in the area, the site is designed and expected to handle 3,000+ visitors for weekend markets festivals.
- **Central Reservoir** - provides water for crops and acts as a collection point for irrigation runoff.
- **Central Bio-Filtration Canal** - used to filter and cleanse irrigation runoff while directing it to the central reservoir.
- **Secondary Stormwater System** - collects runoff during heavy rains to prevent the farm site from flooding and ruining the crops.
- **Green Parking** - located at the rear of the site near the market to limit impact on surroundings. Consists of low impact paving and bio-swales to handle runoff.
- **Recreational and Children's Play Area** - provide various spaces for community use to encourage community interaction.
- **Service Entrance** - provides access to the market and commercial plots.



Figure 3.11: Main Boardwalk Running Through Farm Plots



Figure 3.12: Viet Village Farm Plots



reclaims and transforms

The project reclaims 28 acres of undeveloped land in an urban context. The transformation of the space seeks to create a productive landscape to assist in the redevelopment of the surrounding community. (ASLA)

is productive

The project seeks to establish a certified organic urban farm and reestablish the tradition of local farming. Three types of agriculturally productive spaces are represented in the site design including small-plot gardens, commercial gardens, and a livestock farm. Integrating a range of productive spaces creates the opportunity to provide numerous products for a variety of consumers (ASLA).

connects

The site is design with a network of paths providing access and circulation throughout the space. Vehicular circulation routes provide both public and service access to the site. Public vehicular circulation occurs adjacent to the small-plot gardens making them visible upon arrival while service access is placed closer to commercial plots and towards the perimeter of the site. Primary pedestrian paths provide access to the site and facilitate movement through the site to destinations. Secondary pedestrian paths provide access to the small-plot gardens and allow uses to closer experience the landscape (ASLA).

provides recreation

In order to further ensure the creation of a center within the community, the design includes recreational fields, children's play areas, gathering spaces, entertainments spaces, educational areas, and a farmers market. These spaces are intended to draw the surrounding community into the site increasing local food awareness and providing opportunities for social interaction (ASLA).

establishes environmental infrastructure

The site includes an environmental infrastructure system used to collect, cleanse, and supply the site with water. The system is also used to control site flooding and ensure the health of the soil. Alternative energy sources (wind and solar) are also used to provide site energy demands. These methods are integrated into the site to create a model of low-tech sustainable site development (ASLA).

creates integrated landscapes

The design for Viet Village integrates a number of program elements creating a hybrid landscape that provides a range of uses and benefits to the surrounding community. Blending agricultural land with community amenities allows the project to provide social, economic, and cultural benefits while providing a source of fresh local food and increasing local food awareness in an innovative way.



Figure 3.14: Viet Village Urban Farm Aerial Rendering

relevance to integrated productive landscapes

Many goals associated with the concept of Integrated Productive Landscapes can be seen in the Viet Village Urban Farm project. The project demonstrates the ability to reclaim underutilized space, transform it into a multifunctional project blending numerous elements, and creating an asset for the surrounding community.

Through the reclamation of space within an urbanized setting, the project has provided the opportunity to reestablish the tradition of local farming in the community. A variety of productive elements are integrated into the site demonstrating the ability to provide a number of products to a range of recipients. The site is transformed into a productive landscape integrating food production with other uses that encourage community interaction. The design seeks to connect people

to local food by integrating production with community gathering and recreational spaces. The project also focuses on the importance of food distribution to the greater community through farmers market, and supplying local restaurants and grocers with fresh food. In addition, the incorporation of environmental infrastructure in numerous ways allows the site to become a model of sustainable site development.

Viet Village Urban Farm is a valuable example of a site design that transforms a vacant site into a beneficial space centered within a community. The multi-use site provides the community with a place for gathering, recreation, relaxation, and access to fresh local food. The design seeks to connect people to food production while providing a center for social, economic, and cultural growth for the surrounding community.

18broadway

location and size

Crossroads Art District
Kansas City, Missouri

date designed/planned

Designed 2009
Completed 2010

designers

360 Architecture
Patty Banks Associates

Client

DST Systems

guiding principles

- food production
- serve as an environmental showcase
- sustainable development
- integrated solutions
- influence future urban development

history

18Broadway is located on an urban site that, until recently, was occupied by a vacant warehouse. With the intention of constructing a commercial or residential building, the existing structure was demolished and the site was prepared for construction. Due to an unstable economic situation the development was canceled leaving the site available for alternative use (18Broadway 2009).

In the fall of 2008, rather than leaving the site vacant, the client, DST Systems, determined to develop the site into a series of rain gardens in spirit of Kansas City's 10,000 Rain Gardens initiative. Planners and designers at 360 Architecture aided in the evolution of this idea and arrived at the notion that the site could function as an environmental showcase and demonstration project (18Broadway 2009).

concept

The concept for 18Broadway envisions a place where water runs clear, food is abundant, shelter is resourceful, and energy is endless by means of a living laboratory where emerging technologies and best management practices are implemented and monitored (18Broadway 2009).

project goals (18Broadway 2009)

- **Create a Living Laboratory** - a place where emerging technologies and best management practices can be implemented, tested, and understood.
- **Demonstrate a Range of Green Building Practices** - integrate numerous practices to increase awareness and understanding of their purpose and benefits.
- **Stormwater Management** - implement a biofiltration system to capture, purify, and reuse water.
- **Integrate Agriculture into the Urban Context** - create a productive landscape that demonstrates the benefits of locally grown food.
- **Energy Independency** - Create a net-zero energy use site and demonstrate methods of on-site power generation.



Figure 3.15: 18Broadway Context Rendering

program elements (18Broadway 2009)

- **Demonstration Garden** - used to educate visitors of various home gardening approaches.
- **High-Production garden Beds** - raise produce tended by volunteers for local food banks.
- **Orchards** - clusters of fruit bearing trees.
- **Broadway Court** - small gathering space with seating and views of the site.
- **Educational Signage** - used to educate visitors on the possibilities of conservation and sustainable development related to water, food, shelter, and energy demonstrated throughout the site.
- **Mechanical and Maintenance Sheds** - provide space to store harvested produce and tools used to plant and harvest food. Encloses site mechanical controls.
- **Integrated Stormwater and Bio-filtration System** - a series of **rain gardens and bio-swales** are designed to collect and filter stormwater before storing it in a 40,000 gallon underground cistern. Collected water is then re-used to irrigate garden plots.
- **Solar Panels** - put power onto the city's electrical grid.
- **Wind Turbine** - powers sites perimeter lighting.

Future project phases

- **Alternative energy fueling stations**
- **Low-impact housing**



Figure 3.16: Education & Demonstration Garden Rendering

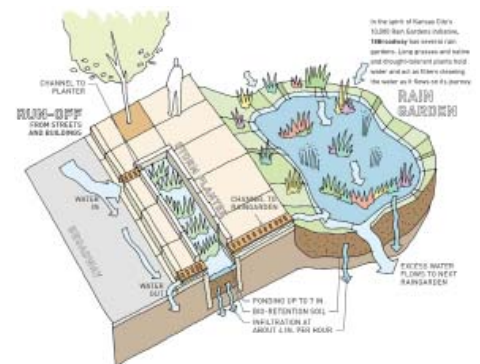


Figure 3.17: Stormwater Planter & Rain Garden Rendering

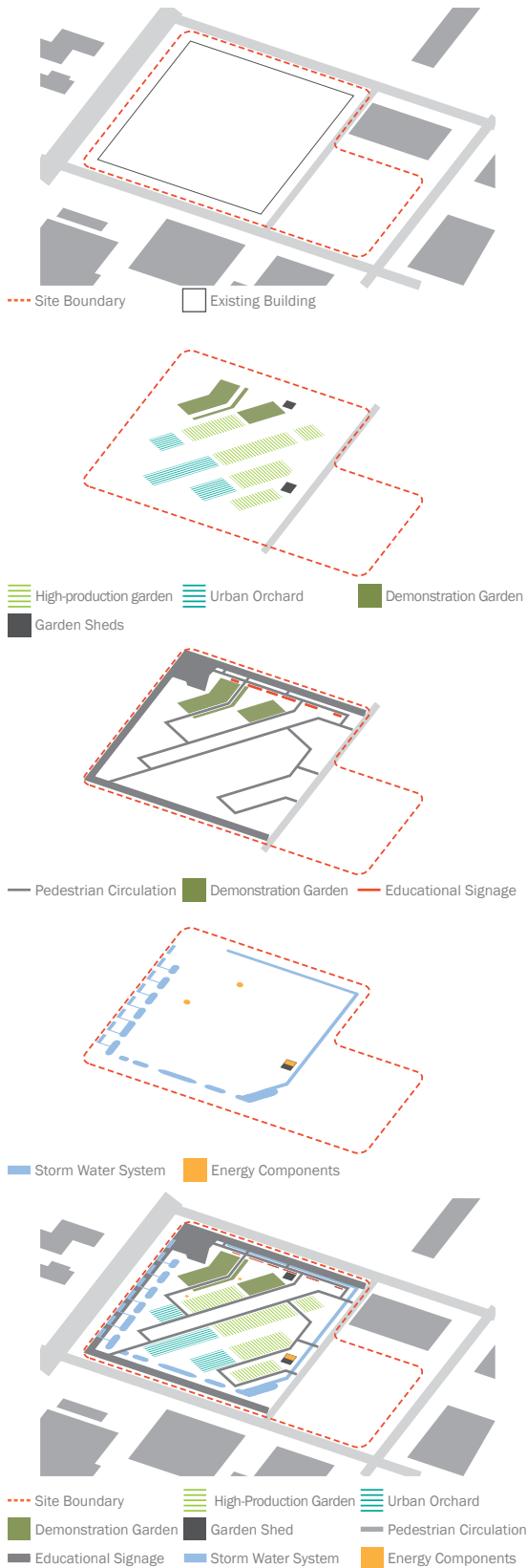


Figure 3.18: Integrated Design Components Diagram

reclaims and transforms

18Broadway reclaims a city block in the urban context of Kansas City, Missouri. A vacant warehouse covered a majority of the site creating a void in the urban fabric. As an effort to re-purpose the site the structure was demolished and the site was transformed into a productive demonstration landscape.

is productive

The project seeks to introduce agriculture into the urban environment through the creation of a community garden. The community garden includes high production garden beds, an orchard, and a demonstration garden. Mechanical and storage sheds are used to provide storage space for produce and tools. These components focus on production of food which is then donated to a local food bank.

connects

The site contains a number of elements that are intended to connect people to the project. Pedestrian paths along the street facilitate movement at the edges while a network of interior paths connect to perimeter walks and allow pedestrians to access the project. A small plaza provides space for gathering and offers shade, seating, and views over the entire project. The demonstration garden is located near the plaza and displays a variety of home gardening methods. Informational signs are incorporated to educate visitors on conservation and sustainable practices integrated into the site. Though the site is privately owned, it remains accessible to the public without barriers with the intention of increasing environmental and local food awareness.

establishes environmental infrastructure

A number of components included in the site demonstrate conservation and sustainable practices. An integrated storm water management system is used to collect, filter, and store runoff using rain gardens, bioswales, and a cistern. The water is then used to irrigate the gardens. Solar panels located on the mechanical shed and a wind turbine are used to offset energy consumption by the pump used to supply irrigation lines and perimeter site lighting.

creates integrated landscapes

18Broadway seeks to create a living laboratory through the integration of numerous program elements into one project. The site creates a space for the implementation of emerging and innovative practices into an urban setting. By providing public space and access the project becomes more visible and increases the awareness, understanding, and acceptance of new methods.



productive landscape

Figure 3.19: Productive Landscape



awareness & education

Figure 3.20: Awareness & Education



environmental infrastructure

Figure 3.21: Environmental Infrastructure

relevance to integrated productive landscapes

18Broadway is an example of a built project with similar goals and guidelines to the Integrated Productive Landscapes project. Introducing agriculture into the urban environment along with other innovative practices allows the site to function on a number of levels, providing greater benefits for the surrounding community.

Located in the downtown urban context of Kansas City, Missouri, the project demonstrates the transformation of a vacant warehouse into an open green space. A void in the urban fabric is reclaimed and used to create a space that gives back to the community in various ways. With the introduction of agriculture, the site is converted to a productive landscape that integrates other innovative technologies. The incorporation of paths and a small gathering space are intended

to draw people to the site allowing visitors to experience the project while raising awareness related to conservation and sustainable development. The project presents a progressive alternative to urban land use and seeks to influence future urban development projects.

Overall, 18Broadway is an influential project that places a productive landscape in the urban context. By integrating a number of program elements, a multi-functional space is created that allows individuals to interact and understand the benefits of the project. The introduction of non-traditional land uses into the urban context increases visibility and presents new solutions for how individuals view urban open space and how they can better perform.

synthesis

The three precedent studies reviewed demonstrate projects that have been planned and designed with the integration of productive spaces as primary project goals. It is clear that reconnecting people with food and increasing awareness of food systems drove much of the decision making during the project programming phases. The projects demonstrate design solutions at varying scales, varying levels of integrated productive and social components, and varying levels of overall project aesthetics.

The examination of the three precedents and their design solutions provides a better understanding of components that should be integrated into the design. These components are used to aid in the generation of a program for integrated productive urban landscapes project goals (Figure 3.22). In addition, the precedent studies offer a range of methods for integrating designed spaces and encouraging community involvement. Through the investigation of the precedent studies, the concept of an integrated productive urban landscape can be further developed. In sum, creation of productive public spaces carries promising potential for success.

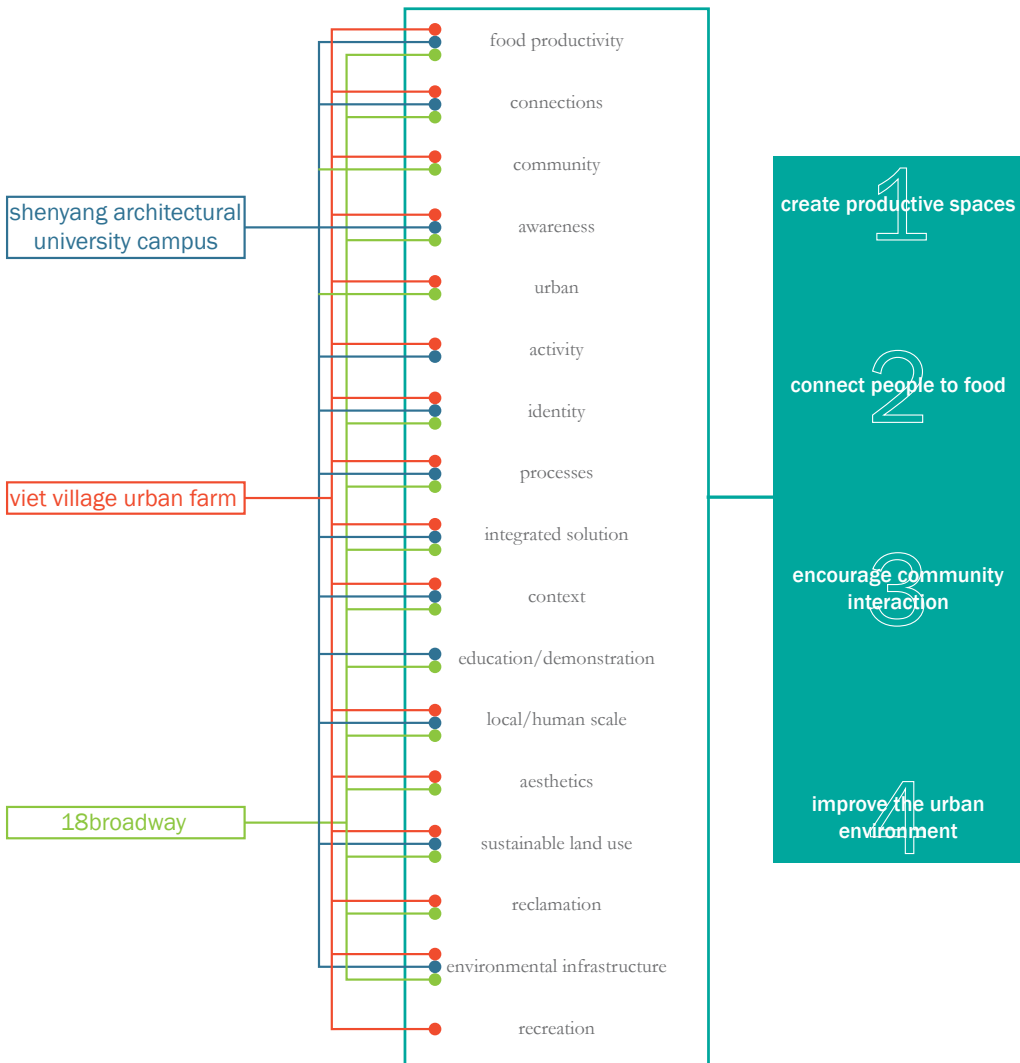


Figure 3.22: Precedent Synthesis



inventory & analysis

inventory and analysis process

The inventory and analysis process (Figure 4.01) for the implementation of an integrated productive urban landscape was structured into a two-step process.

The first step examined a predetermined urban study area to identify potential sites that were currently underutilized. Sites were then evaluated based on a set of criteria concerning size and proximity to other sites with potential. This process was used to eliminate smaller parcels and identify groupings of sites that created the opportunity for a larger, higher impact project. The collections of sites create larger project sites and a network of integrated productive landscapes. Once larger projects sites were delineated, an analysis was conducted to determine the suitability of sites related to their proximity to public destinations, visual profile, opportunity to expand on

the existing urban parks and green space network, proximity to urban populations, and the overall ability to improve the urban environment. The suitability study was then used to select a project site that was perhaps best suited for the first productive landscape in downtown Kansas City.

Once a site was selected for a productive landscape, the second step of the process led to a more in-depth evaluation of the site. An inventory of existing conditions on and adjacent to the site was conducted to better understand the site's limitations and opportunities. Information gained was then used to focus program elements and influence the creation of a design solution that provides for and functions with the surrounding urban context.

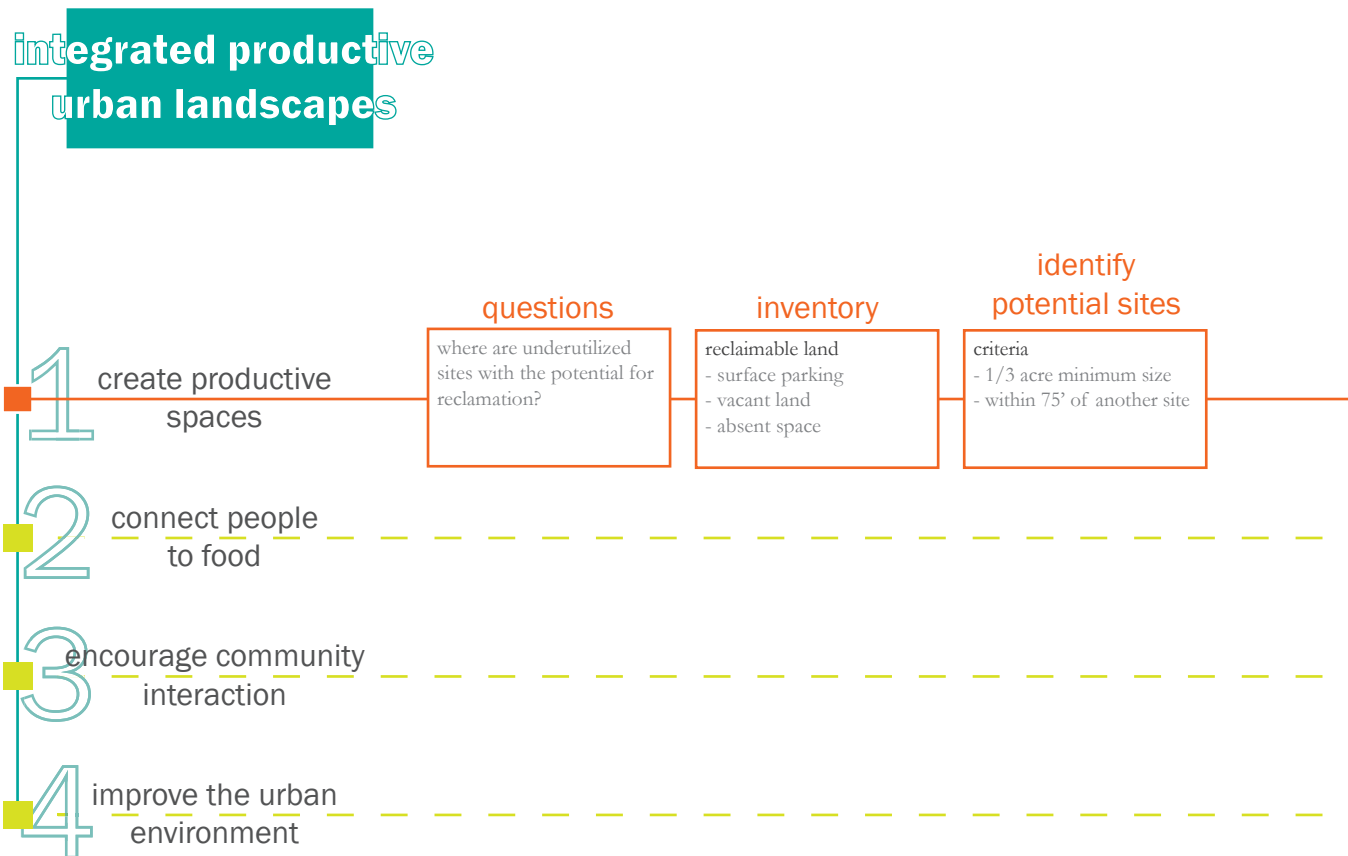
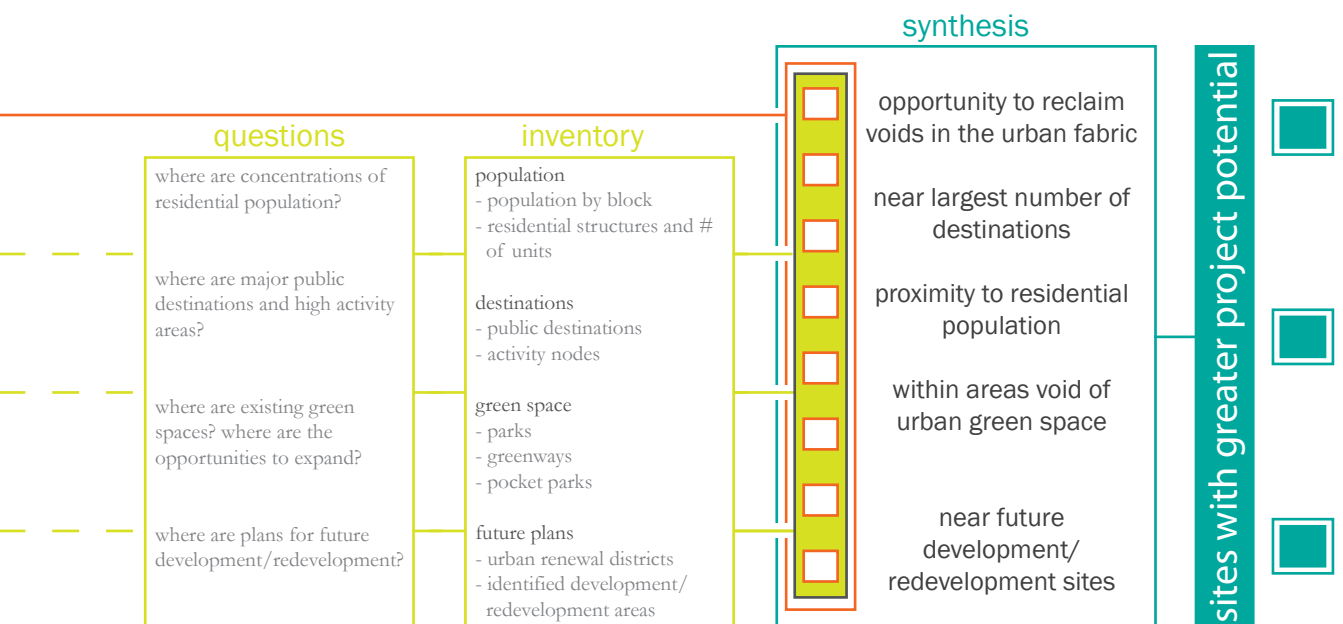


Figure 4.01: Inventory and Analysis Process: Urban Study Area



urban study boundary

underutilized sites

An inventory of the urban study area was conducted to locate potential sites for reclamation. The method for identifying sites was influenced by the urban design strategy of Continuous Productive Urban Landscapes presented by Katrin Bohn and Andre Viljoen, who state that land will have to be allocated, reclaimed, recycled, or imaginatively found. The process suggests sites restricted to mono- or non-use activities including: car parks, roads, parking bays, shopping malls, warehouses, multi-story car parks (roofs), railway embankments, industrial wasteland, brownfield sites, etc., hold more potential for the implementation of a design strategies (Bohn & Viljoen 2005).

In response, the urban study area was inventoried to locate parcels used as surface parking, vacant land, and absent space (space that current do not exist but offer potential through construction) (Figure 4.02). A total of 525 sites were identified, providing approximately 228.4 acres of underutilized space within the urban fabric. These spaces create voids and offer opportunities to reclaim land for urban improvements.

legend

- Study Boundary
- Surface Parking
- Surface Parking on Alternative Land Use
- Vacant Land
- Absent (Highway) Space
- Building Footprint
- Missouri River



Figure 4.02: Underutilized Sites

urban study boundary

potential project sites

In order to identify sites that offer the potential for a larger scale implementation and to create more of an impact, underutilized sites were evaluated using a set of criteria. The criteria was developed to identify sites that were a minimum of 1/3 acre in size and that were located, at maximum, 75 feet (the average width of a street right-of-way) from another lot that attains the minimum size requirement. Integrated productive urban landscapes are intended to incorporate a number of program elements that range in size and/or require larger parcels that can be linked through adjacencies since larger landholdings have greater potential to support urban farming (especially commercial production gardens) than smaller areas. After some sites were eliminated using the selection criteria, groupings of remaining sites were identified as potential project locations to apply integrated productive landscapes (Figure 4.03).

legend

- Study Boundary
- Surface Parking
- Surface Parking on Alternative Land Use
- Vacant Land
- Absent (Highway) Space
- Building Footprint
- Missouri River

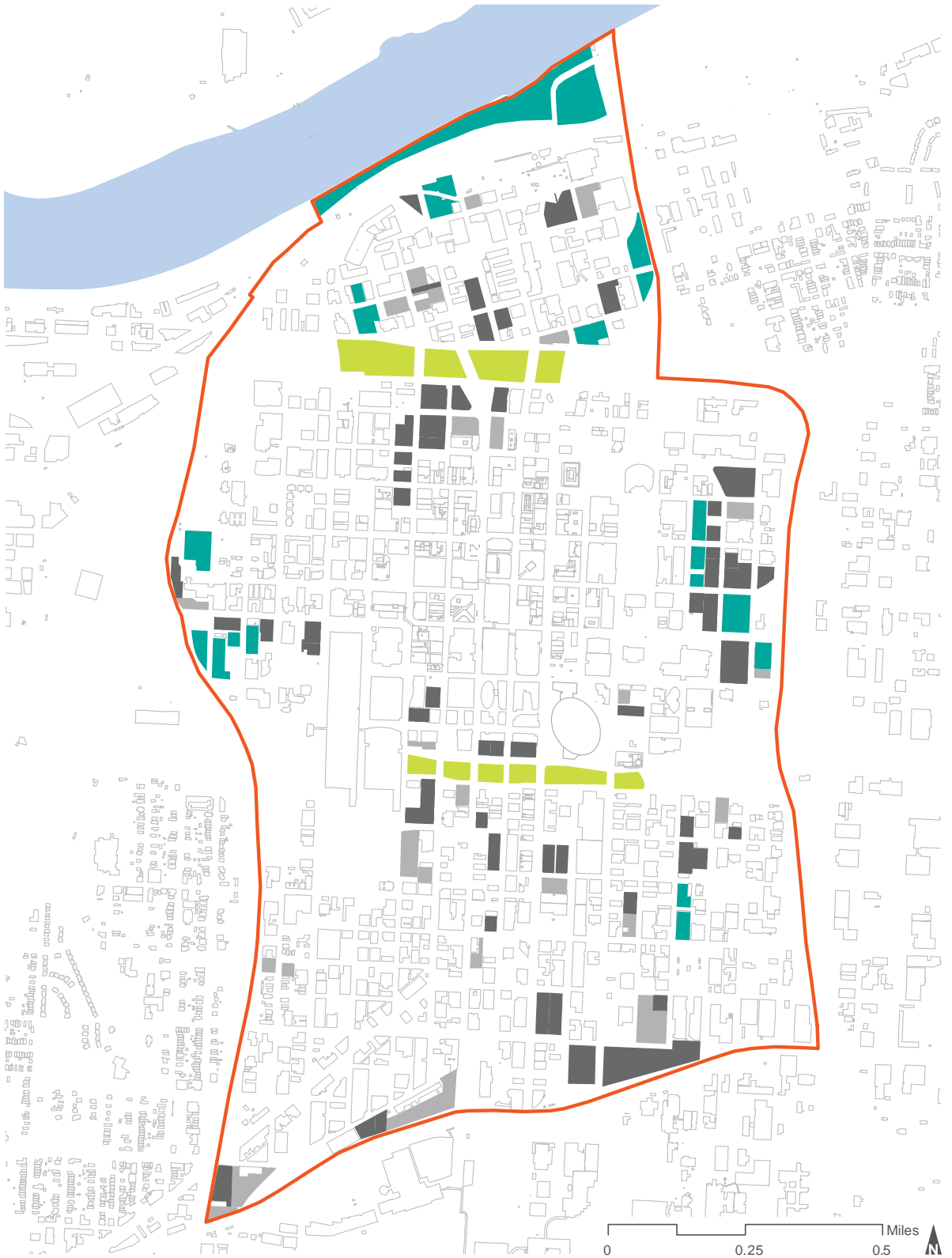
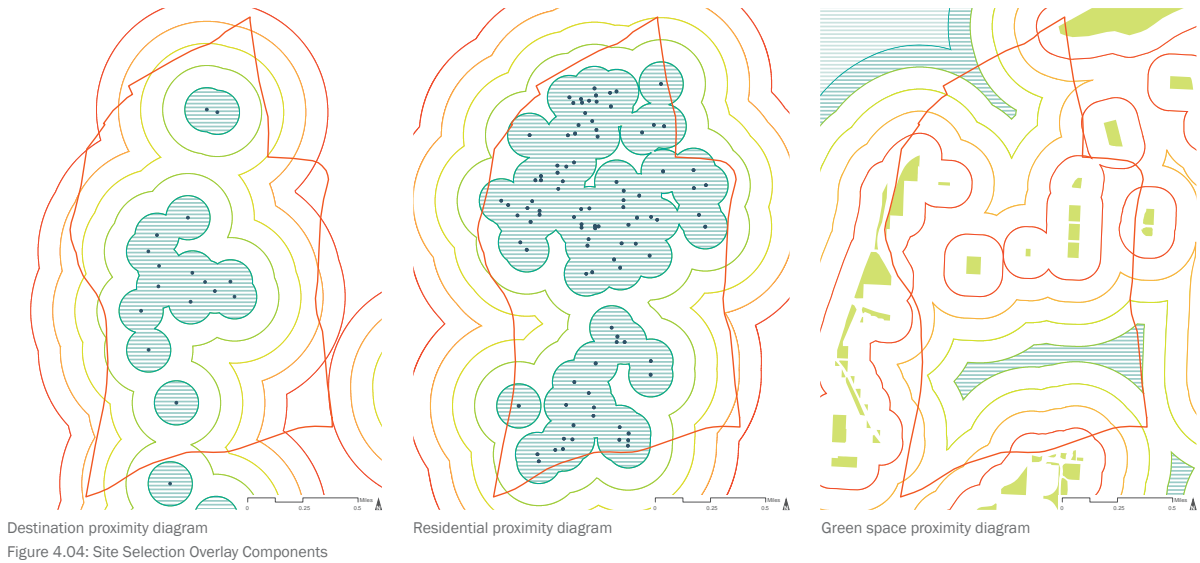


Figure 4.03: Potential Project Sites

urban study boundary



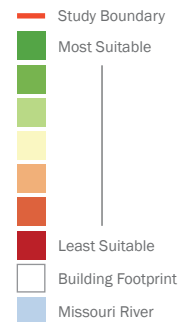
inventory and analysis: selected site(s)

A weighted overlay was used to identify project sites that were most suitable for an Integrated Productive Urban Landscape (Figure 4.04). The overlay evaluated the land use of available sites along with three spatial components that influence site suitability. Spatial components included proximity to public destinations, proximity to residential populations, and the distance from existing green spaces (Figure 4.05).

Each component used in the overlay was designated a “percent of influence” based on the ability to achieve goals developed for the project. Specific destinations were designated the highest percent of influence as destinations present the opportunity to increase a project’s visibility and provide connections to a large number of people. Proximity to residential populations influences site suitability due to the importance of creating easy connections between urban populations and their source of food. Existing parks and other green spaces were also used to influence the suitability of project sites. These helped identify sites in areas that lacked green space using the project site to expand and build on the Kansas City’s network of parks and green spaces.

Using the weighted overlay, potential project sites were further narrowed to identify which site or sites are best suited for the implementation of an Integrated Productive Urban Landscape. The results of the weighted overlay were then used to select a site for further examination of conditions and the development of a design solution.

legend



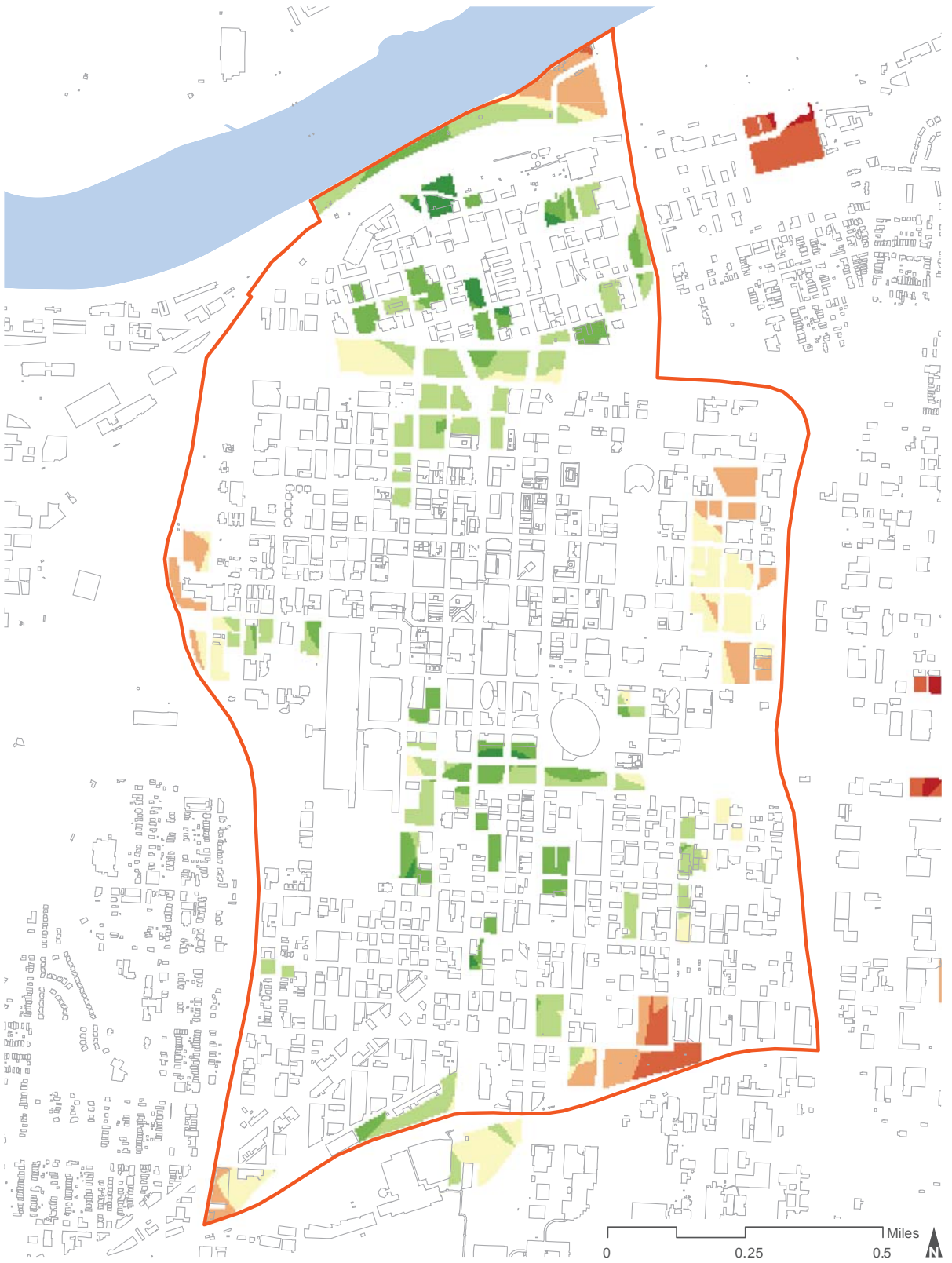


Figure 4.05: Site Suitability

urban study boundary

identified project sites

As a result of the weighted overlay and synthesis, eight sites were identified with the potential for supporting the implementation of an integrated productive landscape (Figure 4.06). These sites all hold the potential as a larger, higher impact project site but some have a higher level of suitability. Higher suitability is the result of a site's proximity to public destinations, residential population, and existing parks and green spaces. This does not suggest that these specific sites must be chosen for transformation. Figure 4.06 portrays the opportunity to link parcels creating larger landholdings and thus create larger projects that will result in a larger impact.

legend

- Study Boundary
- Potential Project Sites
- Surface Parking
- Surface Parking on Alternative Land Use
- Vacant Land
- Absent (Highway) Space
- Building Footprint
- Missouri River

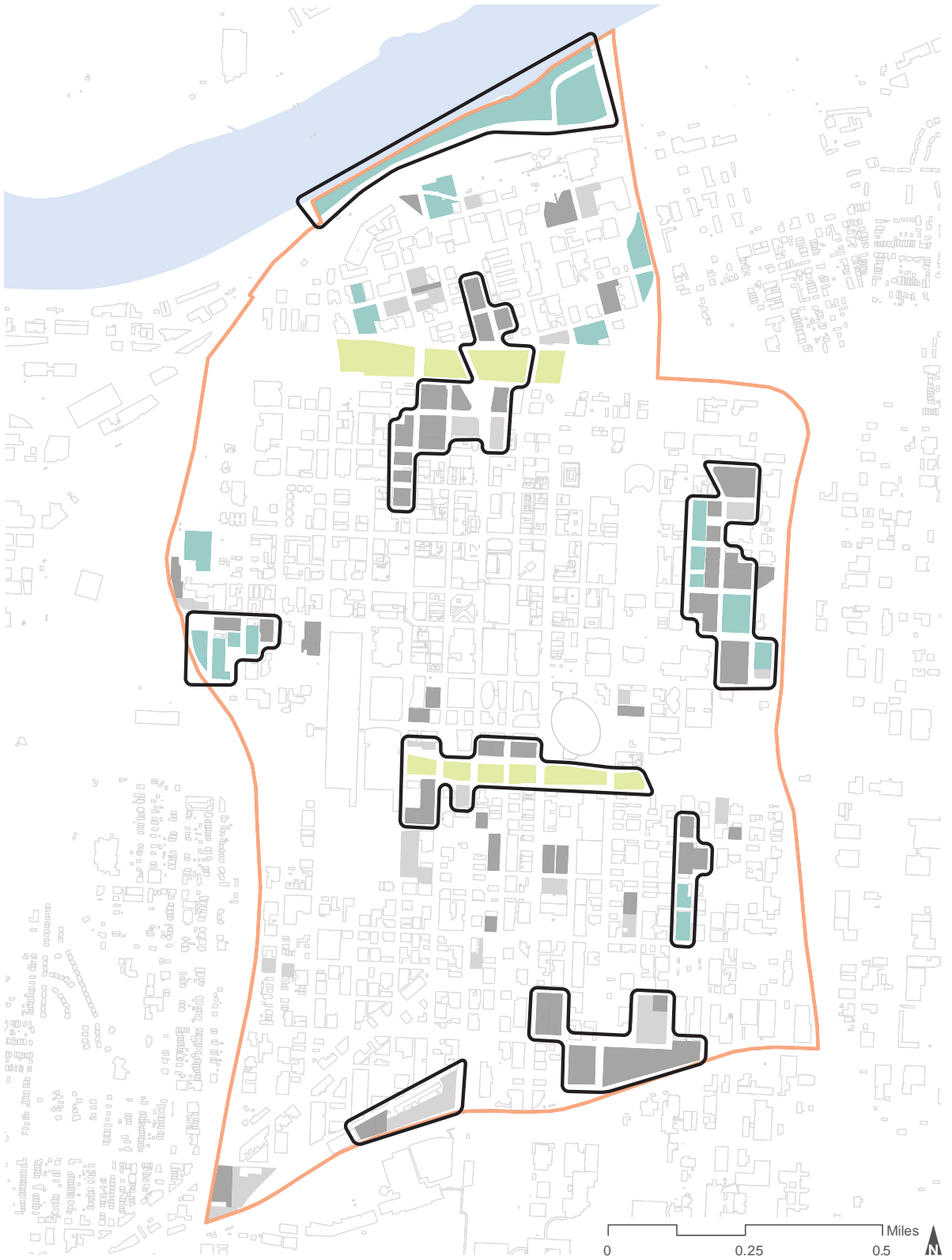


Figure 4.06: Identified Project Sites

interstate 670 corridor

The site selected by the author to demonstrate the concept of an integrated productive urban landscape is the Interstate 670 corridor.

Using the goals and objectives that were established at the origin of the project, the corridor presented itself as having the highest potential for achieving the integration of productive spaces, drawing people to food, increasing awareness of food production, encouraging interaction, and improving the urban environment. Selection of this site was greatly influenced by its proximity to major public destinations, the ability to expand on the city's parks and green space network, and the site's overall ability to improve the urban environment.

With the selection of a site, further exploration of existing conditions was conducted. Gaining a better understanding of the site, its context, and how it functions with its surrounding context influenced design decision and program elements.



Figure 4.07: Selected Site Location



Figure 4.08: Interstate 670 Corridor Site



Figure 4.09: Corridor View East from Bartle Hall Convention Center



Figure 4.10: Corridor View West

interstate 670 corridor




existing conditions

gap in urban fabric

The Interstate 670 Corridor bisects the study area creating a gap in Kansas City's urban structure. Approximately 20 feet below the surrounding grade, the corridor creates a significant distance between the Central Business District (including the Power and Light District) and the Crossroads Art District. The interstate, along with Truman Road (which runs parallel both north and south of the interstate), create a 300 foot vehicular right-of way that separates the two districts (Figure 4.11). In addition, development is limited adjacent to the corridor increasing the physical and functional gap in most locations.

The barrier created by the Interstate presents a number of opportunities to improve the urban conditions. The sunken condition of the interstate creates an opportunity to deck over the corridor and remove a major physical division within the urban core. The impacts of the auto-oriented corridor will be minimized and create a catalyst for future development in Kansas City.

legend



-  Sunken Interstate
-  Adjacent Building Edge
-  Urban Gap

adjacent public destinations

A number of public destinations are located within close proximity to the project site (Figure 4.12). Some of the most high use destinations include Sprint Center Arena, Power and Light District, Midland Theatre, Municipal Auditorium, Bartle Hall Convention Center, and the Kauffman Center for the Performing Arts (opening Fall 2011). These venues provide spaces for large events and gathering drawing people into the urban core of Kansas City.

The number of public destinations adjacent to the project site can be used to create connections to a large number of people attracted to these high activity spaces. These adjacent public spaces can be used to influence and organized pedestrian movement and visual connections to the project site. These connections can be used to increase the awareness and educate people about the project and the impacts of local food.

legend

-  Project Site
-  Public Destinations

circulation

Existing circulation for the corridor is currently focused on vehicular movement. As a result, minimal space is provided for pedestrian movement decreasing walkability and creating a poor user experience. Overall, conditions currently deter both pedestrian and bicycle use. On the other hand, the site is well serviced by public transit and provides access to local bus lines through Metro and MAX lines (Greater Downtown Area Plan 2010).

Poor existing pedestrian circulation presents the opportunity to improve connections within the corridor and in the larger urban context. The opportunity to reduce the disruption of high-speed and noisy vehicular movement will occur by covering the interstate corridor, removing its visual presence. In addition, vehicular use along Truman Road may be reduced by dedicating more space as pedestrian-oriented.

legend





-  Pedestrian Circulation
-  Public Transit Access
-  Vehicular Circulation
-  Interstate Circulation



Figure 4.11: Urban Gap

nts



Figure 4.12: Adjacent Public Destinations

nts

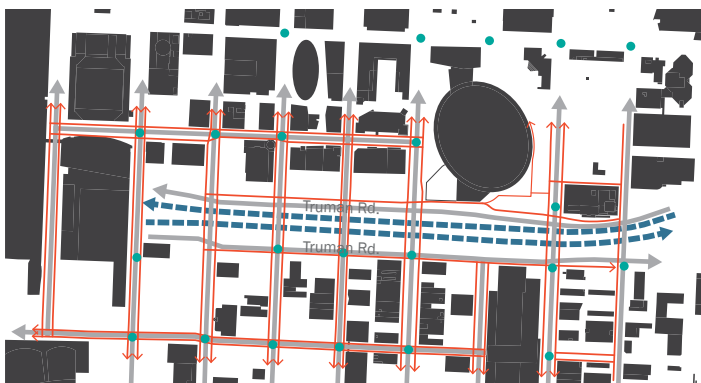


Figure 4.13: Circulation

nts



interstate 670 corridor

existing conditions

green space

A small amount of green space exists throughout the corridor but is generally lacking in quality and accessibility. Larger areas of green space along the corridor include areas to the south of the Sprint Center Arena and the expansion to the Bartle Hall Convention Center. A few small spaces exist between the interstate and Truman Road on both the north and south sides of the corridor. These spaces do not encourage pedestrian use and remain fairly inaccessible. The lack of pervious surfaces increases the urban heat island effect as well as stormwater runoff.

The transformation of the interstate corridor creates the opportunity to increase pervious areas and provide new green space in the urban context. The quality and accessibility of the space could be used to encourage public use and activate the space. The corridor could be used to mitigate surrounding urban conditions by creating this continuous public green space.

legend

 Green Space

drainage

The existing drainage patterns were studied to understand how water is collected and drained from the surrounding context. The streets provide the structure for drainage that collect and channel water to storm sewers in a network that removes water as quick as possible. Higher elevations are located to the north of the project site with lower elevations to the south.

The existing contextual drainage pattern and the grade of west bound Truman Road present the opportunity to collect stormwater runoff along the north edge of the corridor. Collecting and filtering stormwater creates the potential for water to be reused for irrigation on site.

legend

 Drainage

 Adjacent Low Point

adjacent development potential

A number of adjacent parcels are currently used for surface parking. These parcels would typically have an increased value given their proximity to the central business district but have not yet been able to fully reach their potential value (Greater Downtown Area Plan 2010). This is a result of their proximity to the interstate corridor and ultimately the area's lack of marketability.

The adjacent underutilized parcels present the opportunity for an initial transformation into productive gardens and an opportunity to begin activating the edges along the corridor. Decking over the interstate and creating a public green space would increase the parcel value and create the opportunity for the future residential mixed-use development.

legend

 Development Potential

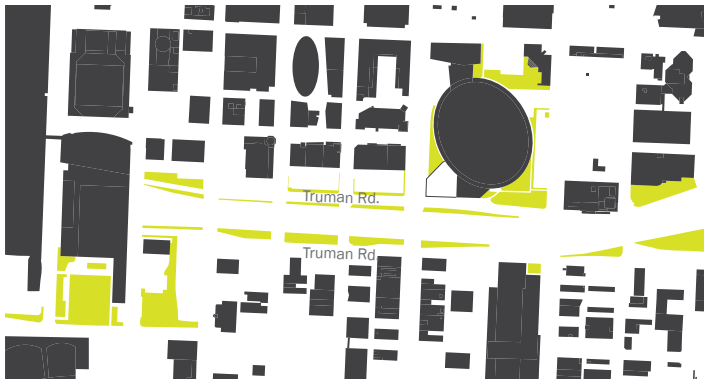


Figure 4.14: Green Space

nts

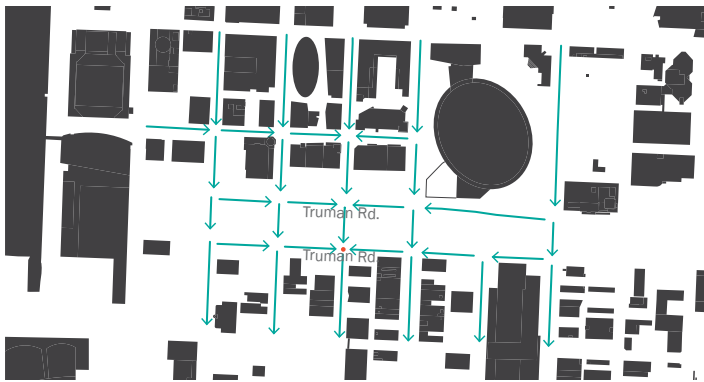


Figure 4.15: Drainage

nts

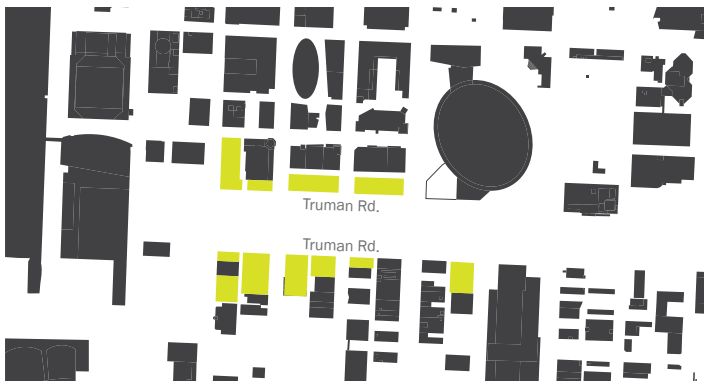


Figure 4.16: Adjacent Development Potential

nts



interstate 670 corridor

existing conditions

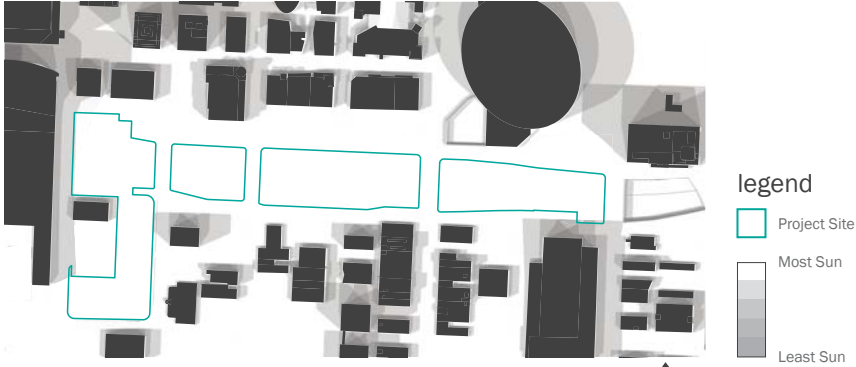


Figure 4.17: Shadow Patterns: March 20

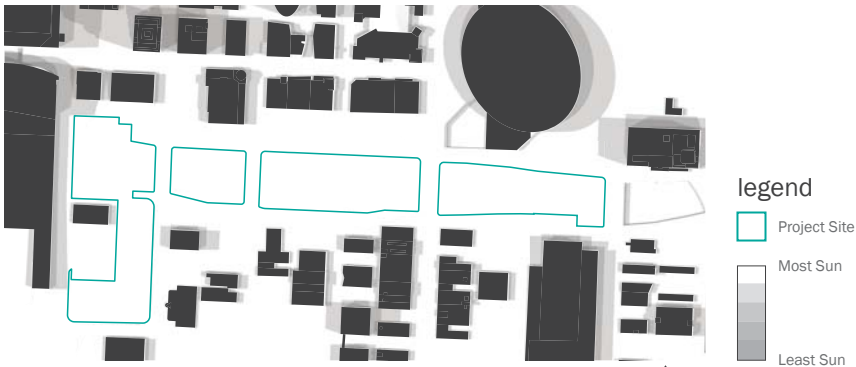


Figure 4.18: Shadow Patterns: June 21

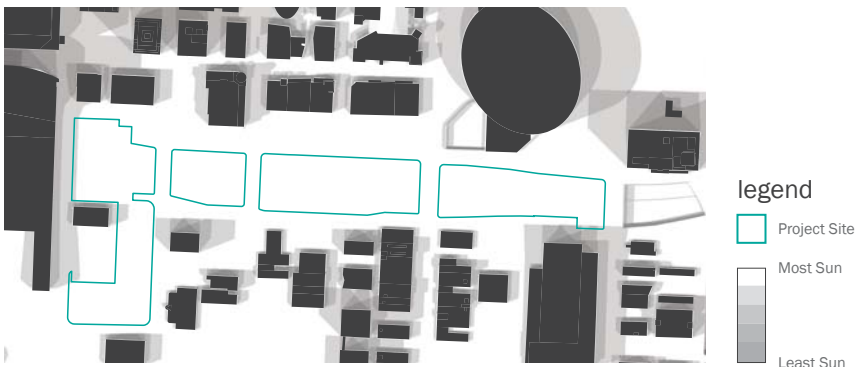


Figure 4.19: Shadow Patterns: September 22

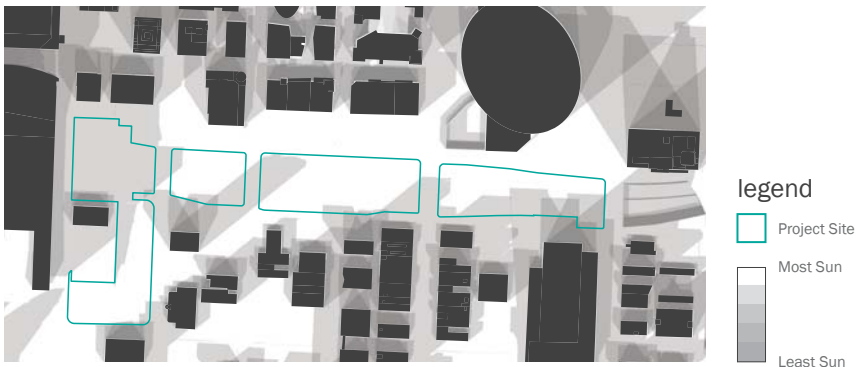


Figure 4.20: Shadow Patterns: December 21



existing sun availability

The integration of food production into the site requires the analysis of existing shadow patterns. This study is conducted to understand if there are any areas that lack sun availability throughout the year, and more specifically during the growing season. The study demonstrates that shadows would only reach the site during the winter while the majority of the site would receive full sun access during the growing season. Thus restrictions to the placement of food production components are not negatively influenced by the lack of full-sun conditions.

The study of existing shadow patterns can also be used to identify areas of the site that will receive shade during the winter months. This information can be used to influence the location of public space. Areas that would receive more winter sun would activate outdoor urban spaces and extend periods of use during colder months.

As possible development scenarios are tested over the course of final design and implementation, it will be important to consider additional shade studies to further understand the effects of proposed sun and shade patterns. Studies related to adjacent development and the effects of shadows on productive gardens and pedestrian environments will be important in determining issues such as structure height and selected crops and other vegetation.

legend

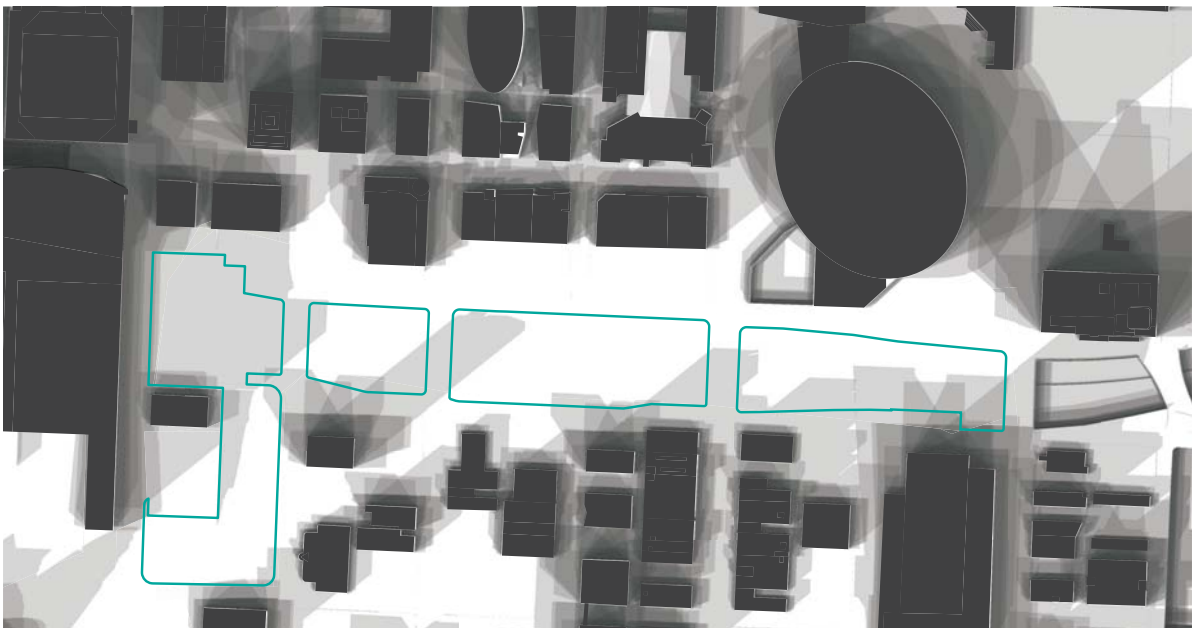
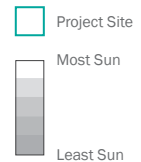


Figure 4.21: Shadow Pattern Synthesis

program

Program elements are developed and organized in association with project goals identified for integrated productive urban landscapes (Figure 4.21). Literature reviews and precedent studies influence the development of potential program opportunities for the project. Program opportunities may relate to more than one project goal and may be represented more than once. After program opportunities were identified, they were further defined using findings from the site specific inventory and analysis. This allowed the author to better focus the site's selected program elements (Figure 4.22).

The program elements included in the proposed design solution are incorporated to achieve the project goals and objectives in the most beneficial and successful manner. Program elements proposed in the design solution are further discussed in the design communication chapter which helps readers visualize the concept of an integrated productive landscape applied to the Interstate 670 Corridor.



Figure 4.22: Project Goals and Objectives

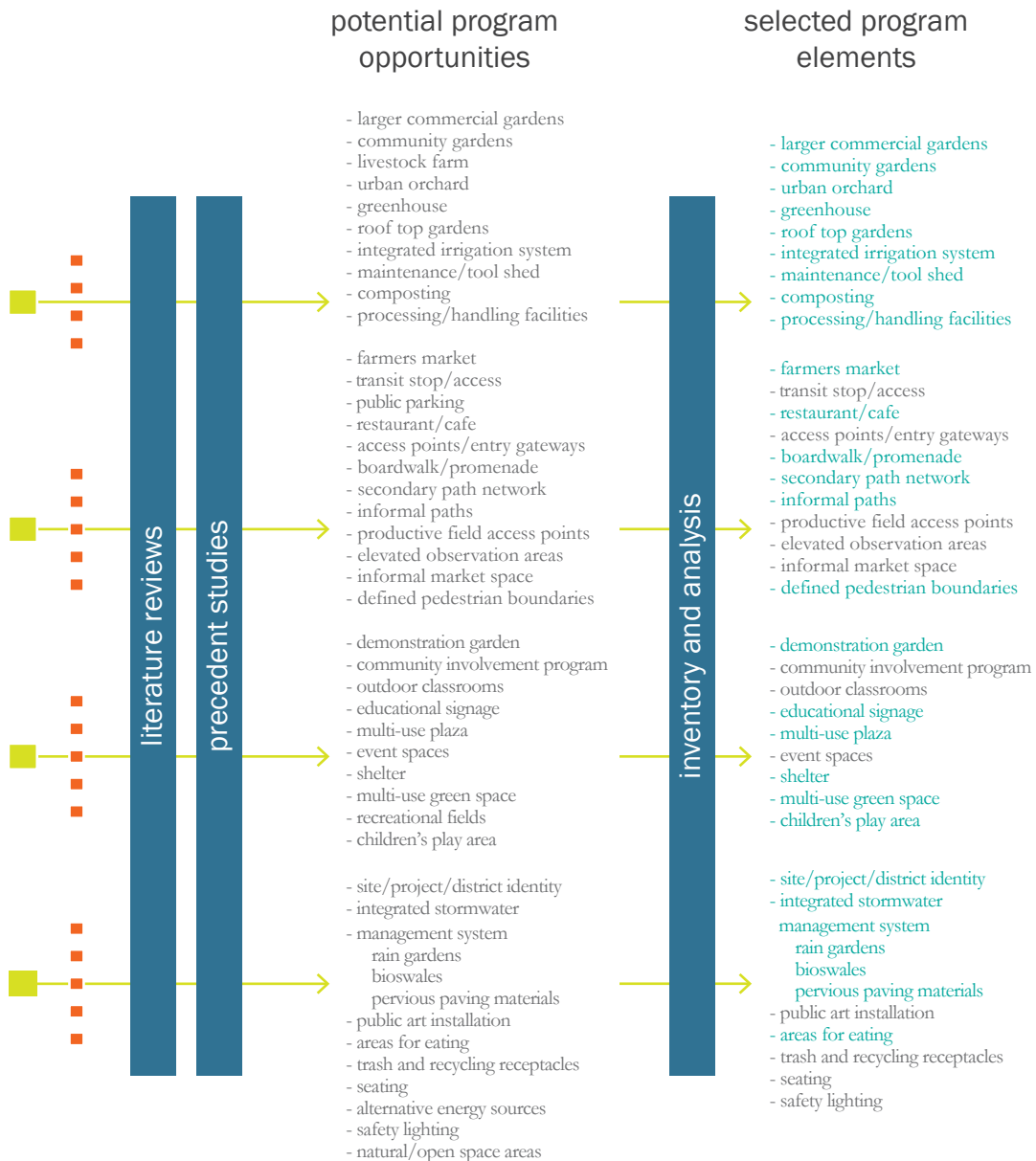


Figure 4.23: Program Development

*Green text indicate a higher importance for incorporation into the Interstate 670 corridor design



design communication

introduction

The Interstate 670 Corridor is strategized in response to four guiding principles: creating productive space, connecting people to food, encouraging community interaction, and improving the overall urban environment. The project goals were identified and further developed through literature reviews and precedent studies. Project goals directed the inventory and analysis of the urban study area, the selected site, and project programming decisions.

In response, this section presents the application of integrated productive urban landscapes to the Interstate 670 corridor in Kansas City, Missouri. The corridor is designed as a multi-functional productive space integrated with the surrounding context. The site is designed and programmed to include, make visible, and celebrate food and agricultural activities while still providing high quality social space for urban dwellers. With the intent of creating a place focused on people and the production of food, a priority is given to the structure of the gardens.

Using the projects goals as a guide, the transformation of the Interstate 670 corridor presents a solution to the dilemma through the creation of productive gardens that fuse with the surrounding urban environment by reclaiming voids in the existing structure. The following section demonstrates the opportunity to integrate agriculture seamlessly into Kansas City's urban core, by creating food gardens and associated spaces for people to gather, thus encouraging community members to connect in a safe, healthy, elegant, and productive landscape. The new vision for the corridor creates a seam that joins, rather than divides the community, and produces and transmits food while sustaining and influencing urban life in Kansas City.

design concept

The design concept for the interstate 670 corridor is based on the idea of contour farming. Contour farming was introduced as a solution to mitigate problems that resulted from standard farming practices. Contour farming introduced an improved method for farming that respects natural landform and topography (NRCS 2007).

Like contour farming, integrated productive landscapes observe the existing form of our urban environments and present a solution that transforms urban voids for transformation into productive spaces, thus offering an improved method for growing and delivering food to the urban core.

The flowing forms and structure used for the site design make it easy for pedestrians to flow into and through this activated urban space as part of their daily routines.



Figure 5.01: Design Concept Graphic

integrated productive landscapes



Figure 5.02: Integrated Productive Landscapes: Interstate 670 Corridor Master Plan

master plan



legend

- | | | | |
|---------------------------------------|----------------------------------|--|-------------------------------|
| 1. commercial urban agriculture plots | 6. community gardens | 11. stormwater bio-filtration planters | 16. farmers market plaza |
| 2. main pedestrian promenade | 7. community garden storage shed | 12. shade structure | 17. covered parking structure |
| 3. greenhouse | 8. restaurant gardens | 13. storage/composting area | 18. mixed-use garden units |
| 4. education & demonstration gardens | 9. rooftop gardens | 14. processing & distribution facility | 19. urban orchard |
| 5. education garden walk | 10. bartle hall plaza | 15. maintenance shed | 20. multi-purpose green space |



integrated productive landscapes

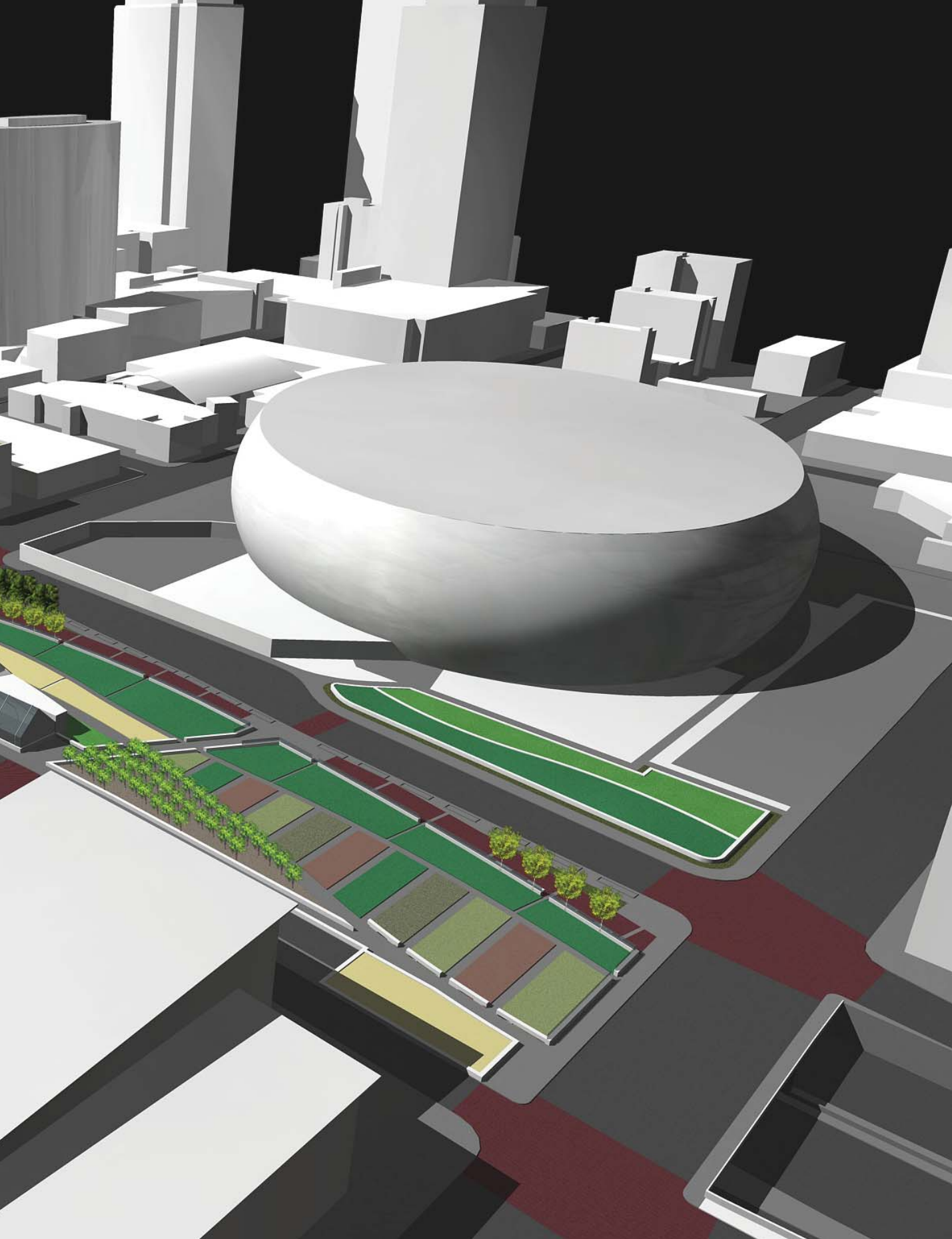
create productive spaces

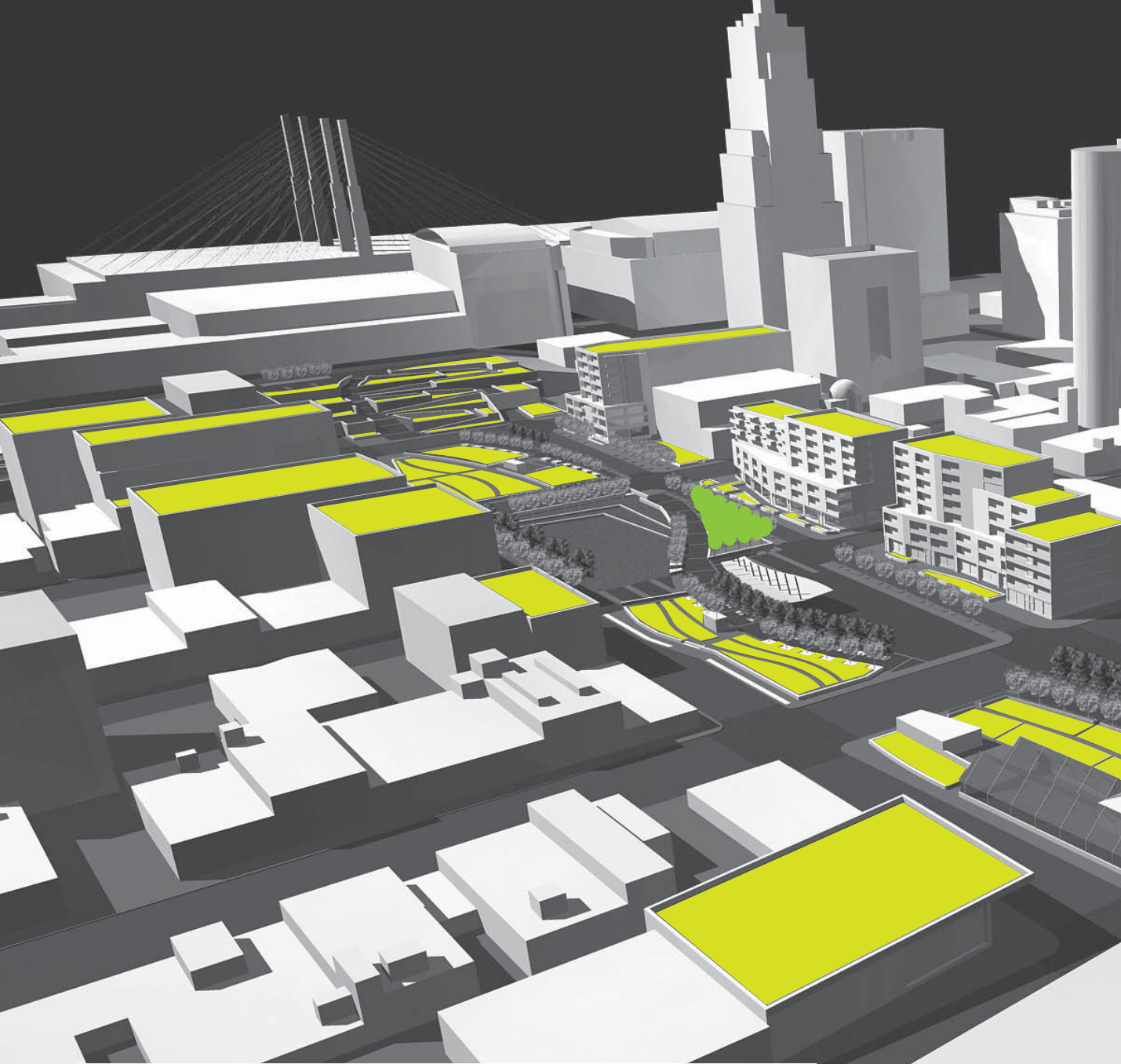
connect people to food

encourage community interaction

improve the urban environment

Figure 5.03: Integrated Productive Landscapes: Interstate 670 Corridor Aerial



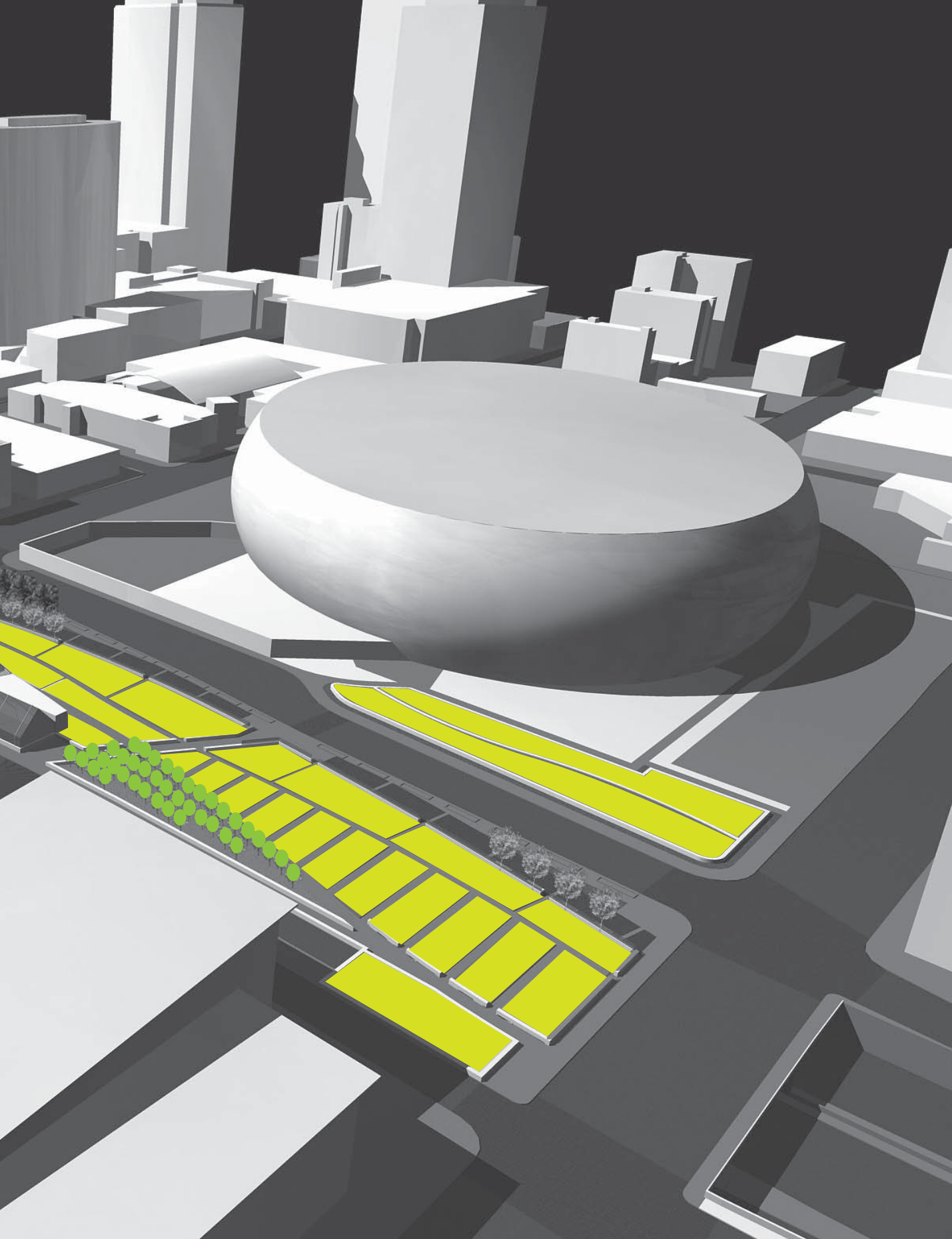


create productive spaces

OBJECTIVES

- integrate a range of food system elements
- produce and provide local food for the urban population
- increase food security and availability
- fuse agriculture as a critical component of the overall urban system

Figure 5.04: Create Productive Space Aerial



create productive space

productive components

The Interstate 670 corridor has been re-envisioned as a productive landscape that focuses on the integration of agriculture into the urban core of Kansas City. According to “Urban and Open-Space Design for Food and Agriculture” it is important to design using all seven food system elements: production, processing, distribution, retail, consumption and celebration, waste recovery, and education (Clarke 2010). It is also important to take an integrated approach when creating a food and agriculture system, thus promoting the greatest range of food system elements in every planning and design process or project (Salle and Holland 2010). Designed with the intent of producing food, the site incorporates a number of food system components.

Current industrial methods for producing food have pushed production processes out of many individuals’ daily lives. Integrated productive urban landscapes seek to bring food production closer to consumers. Placing productive spaces in our urban environments brings urban populations closer to their source of food provides more nutritious food that tastes better.

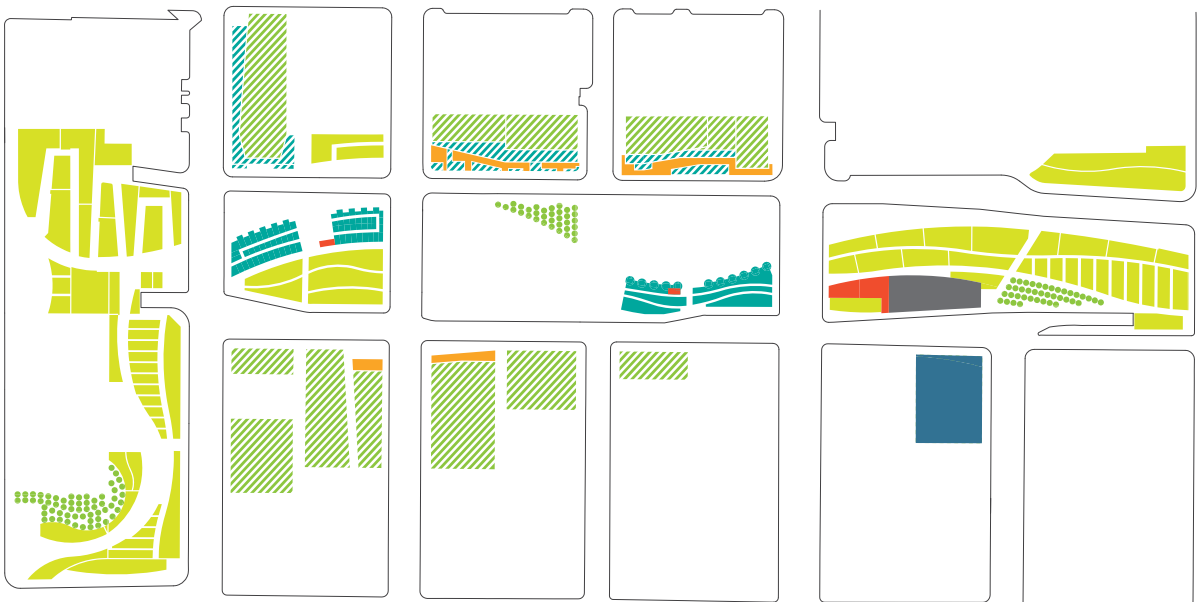











Figure 5.05: Productive Components

legend

- | | | |
|--|--|---|
|  commercial gardens |  urban orchard |  balcony & patio gardens |
|  community gardens |  roof top gardens |  processing & distribution |
|  greenhouse |  areas for eating |  maintenance and service |



create productive space

commercial plots

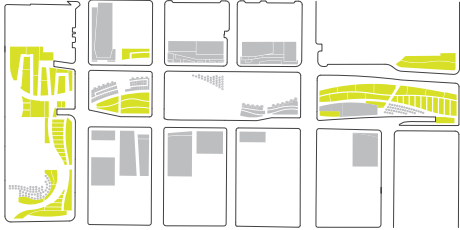


Figure 5.06: Commercial Urban Agriculture Plots

Production

- 3.24 acres of productive gardens
- Ability to support 65 people/year

Commercial urban agriculture plots are incorporated throughout the redesigned corridor. These gardens are focused on the production of food using intensive gardening methods. Food produced in the commercial plots are harvested and distributed to local restaurants, grocers, and other retail outlets. A portion of the food produced using commercial plots is used to support the on-site farmers markets.

With the intent of creating a public space focused on the production of food, levels of food security must be addressed. The public access of productive gardens plays an important role in the successful integration of food and creating a space for individuals to experience and learn about food. Public access may need to be monitored, limited, or restricted to commercial agriculture plots in the interest of food security. Commercial plots are designed with the ability to eliminate pedestrian access if security does become an issue.

The commercial plots are managed and maintained by an employed management team that is developed as a result of the project. The team will need to be familiar with high production garden management and they will be responsible for overseeing the productivity and marketability of the site.

community gardens

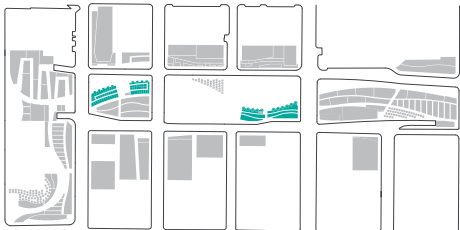


Figure 5.07: Community Garden Plots

Production

- .2 acres of productive community gardens
- 72 plots ranging in size (5'x10', 10'x10', 15'x10', and 20'x10')

Community gardens provide an opportunity for residents to garden within a higher-density area. These gardens are located on larger pieces of land that are subdivided into smaller plots for individuals to use. It is ideal to provide garden plots for 30-50 percent of the population in a high density area (Clarke 2010). Thus, integration of gardens into many residential apartment buildings multiple spaces (on the ground and rooftops) is essential in order for this ideal to be reached. The gardens do not require much space and in turn create an increased social connection to the park.

Generally, products are kept for the individual, but additional uses include growing vegetables for income sources and local food bank donations (Clarke 2010). In addition to providing benefits of fresh food, community gardens can provide areas with spaces for gathering and meeting people. In many cases community gardens become social assets that foster networks, build relationships, and reduce crime (Clarke 2010).

The proposed community garden is primarily intended to serve residential development along the south side of the Interstate 670 corridor. This is due to the lack of sun that the balconies on the north side of the building would receive unless the building was designed to allow all apartments a south-facing rooftop or balcony. If excess plots are available in the community garden, then they can be leased out to other residents in the area.

greenhouse

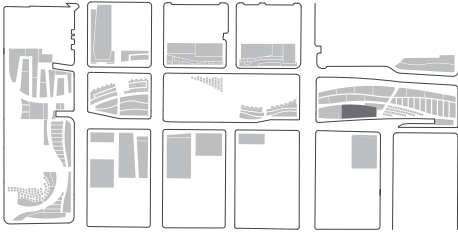


Figure 5.08: Commercial Greenhouse

A greenhouse has been incorporated into the project to demonstrate an additional method for the production of food. The greenhouse provides the opportunity to cultivate food year-round, which is key to maintaining profitability, and to grow species that traditionally would be incapable of growth within the Kansas City region during the winter and early spring. Tomatoes are a prime example. The year-round growing potential of the greenhouse is not intended for the growth of the same crop year-round, but rather for rotating crops to produce ones that may be more profitable during the off season.

In addition, the greenhouse is intended to be used as an educational component. Innovative technologies related to food production can be demonstrated using the greenhouse. Stormwater can be collected from the roof, treated, stored, and reused for the irrigation of crops. Compost can be used as a method for heating the greenhouse during the winter. These two methods demonstrate the reuse of resources rather than allowing them to waste.

When considering the placement of a greenhouse, it is important to consider the amount of light that will reach the structure. The shadows of trees and buildings should be avoided in order to maximize the amount of light received. The type of greenhouse used is a freestanding shed-type solar greenhouse suited for cold winters, in middle U.S. latitudes and year-round use. Solar greenhouses are oriented with the long axis running from east to west. Using this orientation and glazing the south-facing wall the optimum amount of solar energy can be collected. The north wall of the greenhouse should be well insulated and covered with a reflective material to reduce poor light distribution (Bellows 2008).

urban orchard

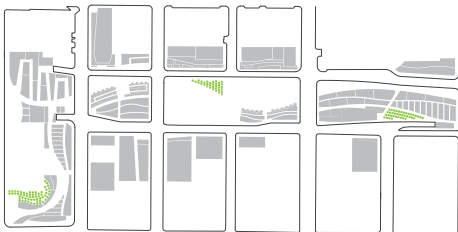


Figure 5.09: Urban Orchard

Urban orchards are another component used in the design solution for the production of food. The orchards are integrated throughout the site as three organized groupings or masses of small to medium sized trees. The trees provide the opportunity for the production of nuts and fruits and increase the diversity of food produced on the site. Public access to orchards may be restricted or allowed depending on concerns related to food security and the intended uses of food products. Publically accessible orchards provide open picking opportunities for individuals to obtain fruits and nuts.

create productive space

rooftop gardens

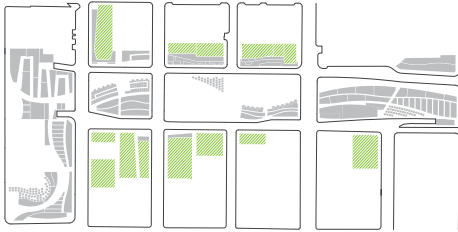


Figure 5.10: Rooftop Gardens

Rooftops of buildings can become significant opportunities for the production of food. In addition to productivity, the rooftops also provide spaces for social activities related to food. Whenever possible, rooftops should be designed to accommodate food and/or herb gardens for residents of the building. Rooftop of existing building's may be redesigned to include rooftop gardens. This requires an evaluation of the buildings envelope and structure to determine whether it is structurally capable of supporting a garden (Clarke 2010).

The rooftops of new structure are designed as gardens for the residents of the building to use as personal gardens. The residents will be responsible for the maintenance of these gardens.

balcony & patio gardens

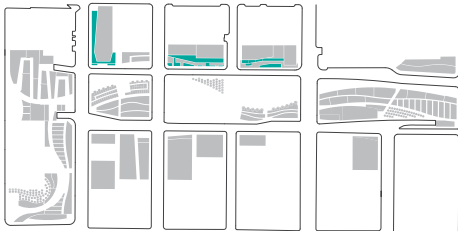


Figure 5.11: Balcony & Patio Gardens

Balconies and patios are included on residential buildings to provide space for occupants to grow their own gardens. Used in areas of higher density, these smaller private spaces can often hold a rich array of food gardens in addition to outdoor barbecues and eating areas (clarke 2010). These spaces also provide views that are oriented toward the larger gardens below and put “eyes on the gardens” below, thus providing additional surveillance and security of the productive landscape.

areas for eating



Figure 5.12: Areas for Eating

Spaces for dining are incorporated throughout the design solution. These zones are important because they provide areas for people to eat food, integrating and making visible another component of the food system. The proposed gardens provide informal spaces for individuals to eat. More formal dining areas are provided by restaurants adjacent to the gardens, north and south of the site. Patios provide outdoor dining opportunities that extend into the public realm, further increasing the profile of food in the local culture as well as activating edges along the street.

processing & distribution

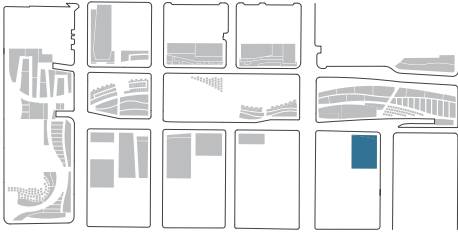


Figure 5.13: Processing & Distribution

A building is included in the design solution for small-scale food processing and distribution of products from the adjacent gardens. The facility is intended to act as an additional catalyst in the establishment of a local food network. The building will function as a handling facility, packaging facility, accommodate storage of excess food, and facilitate distribution. Food products will be distributed to restaurants, businesses, and institutions within close proximity of the site, increasing local economic activity and the profile of the food system. Location of the processing and distribution facility adjacent to where food is produced, combined with local distribution, reduces transit distances allowing the community to enjoy more flavorful and nutritious food. Additional opportunities for processing food within the adjacent context may include; home kitchens, community kitchens, restaurants, coffee shops, and bakeries (Clarke 2010).

service & maintenance

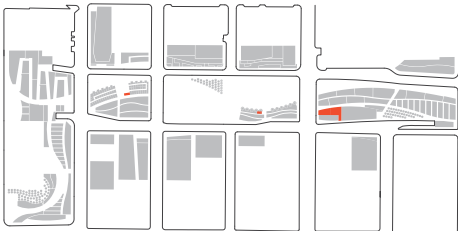


Figure 5.14: Service & Maintenance

In order to maintain the productivity of the gardens, service and maintenance components are integrated into the site. A small structure is provided for the storage of vehicles, necessary machinery, and tools used to plant and harvest the gardens as well as general site upkeep. Adjacent to the structure a small outdoor lot is provided for the collection of organic waste to be composted, soil, and mulching materials.

Additional services may include the implementation of an organic waste collection program with opportunities to collect organic matter from adjacent restaurants, businesses, and residents. A compost program would use the urban food waste as a method to sustainably amend the productive gardens and maintain healthy soils.

create productive space

plant selection

In order for the project to be successful from both a food production and economic sense, it is important to discuss the variety and quality of the products produced. The industrial model of agriculture focuses on the production of raw food material using a model made viable through massive scale production. Smaller agricultural operations cannot succeed using this same model. Small land parcels require a high-value and/or value-added product focus and the adjacency of an urban market makes this focus feasible (Salle and Holland 2010). Figure 5.15 provides a list of promising vegetables that may be grown in the Kansas City area. Generated using information in a report by Charles Marr, the diagram compares the amount of food each vegetable is capable of producing in a 100 square foot area and the amount of day until the vegetable is ready for harvest.

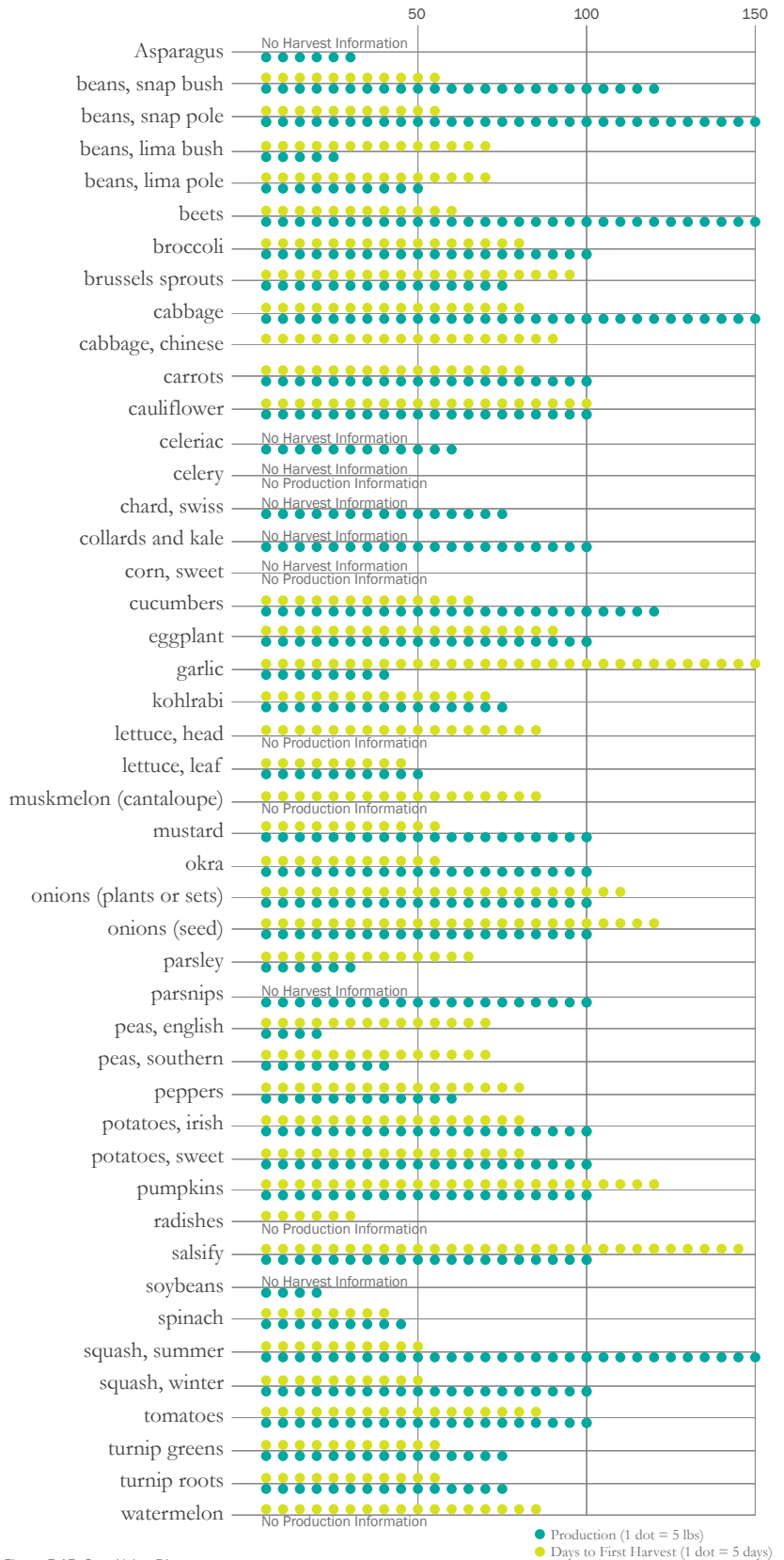


Figure 5.15: Crop Value Diagram

create productive space

water

Water plays a major role in the productivity of the site. The inventory of existing conditions identified the drainage patterns adjacent to the site and presented opportunities for the collection of rainwater for on-site use. Collection and reuse of water is strategically used to assist in offsetting irrigation needs for agricultural components.

A system of stormwater planters are placed along the north side of the site where collection opportunities are presented. The planters are used to collect and manage stormwater from adjacent streets, roofs, and other impervious surfaces. Water is conveyed through a series of constructed swales that begins to naturally filter and remove pollutants. Before used as a source for irrigation the water must undergo sufficient measures of remediation to assure the removal of toxins (Clarke 2010). Cisterns are then used to collect and store water until applied to the crops.

In addition, the stormwater planters are used to provide a visual amenity and to assist in maintaining the health of the area's groundwater, while recovering wasted urban stormwater into a shared resource. It should be noted that collection, filtering, and reuse of stormwater requires the development of appropriately designed tools and technologies as well as the regular maintenance of installed features and components throughout the project's lifecycle.

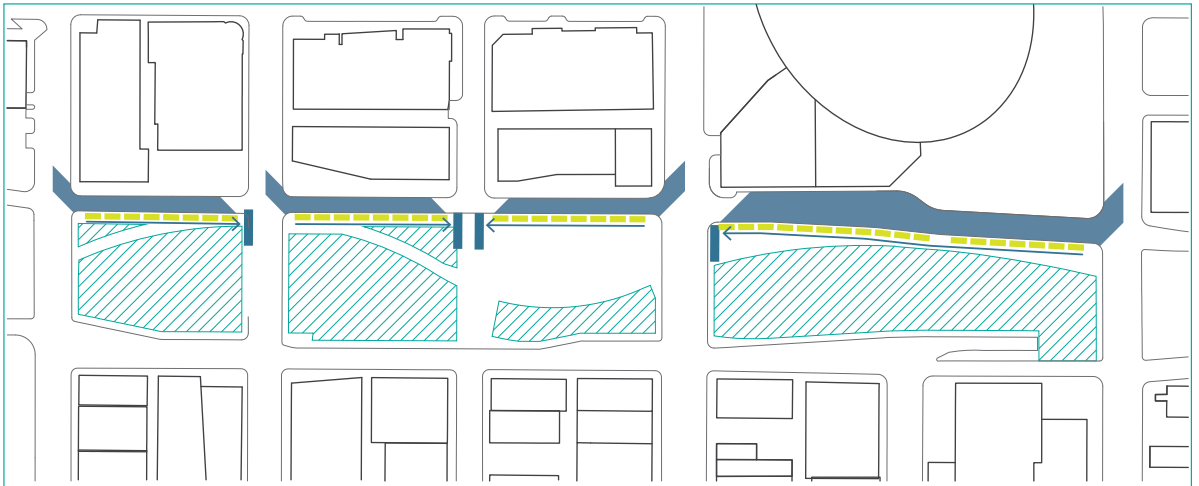






Figure 5.16: Hydrologic Diagram

legend



-  runoff collection watershed
-  vegetated bio-filtration planters
-  underground cisterns
-  irrigated areas

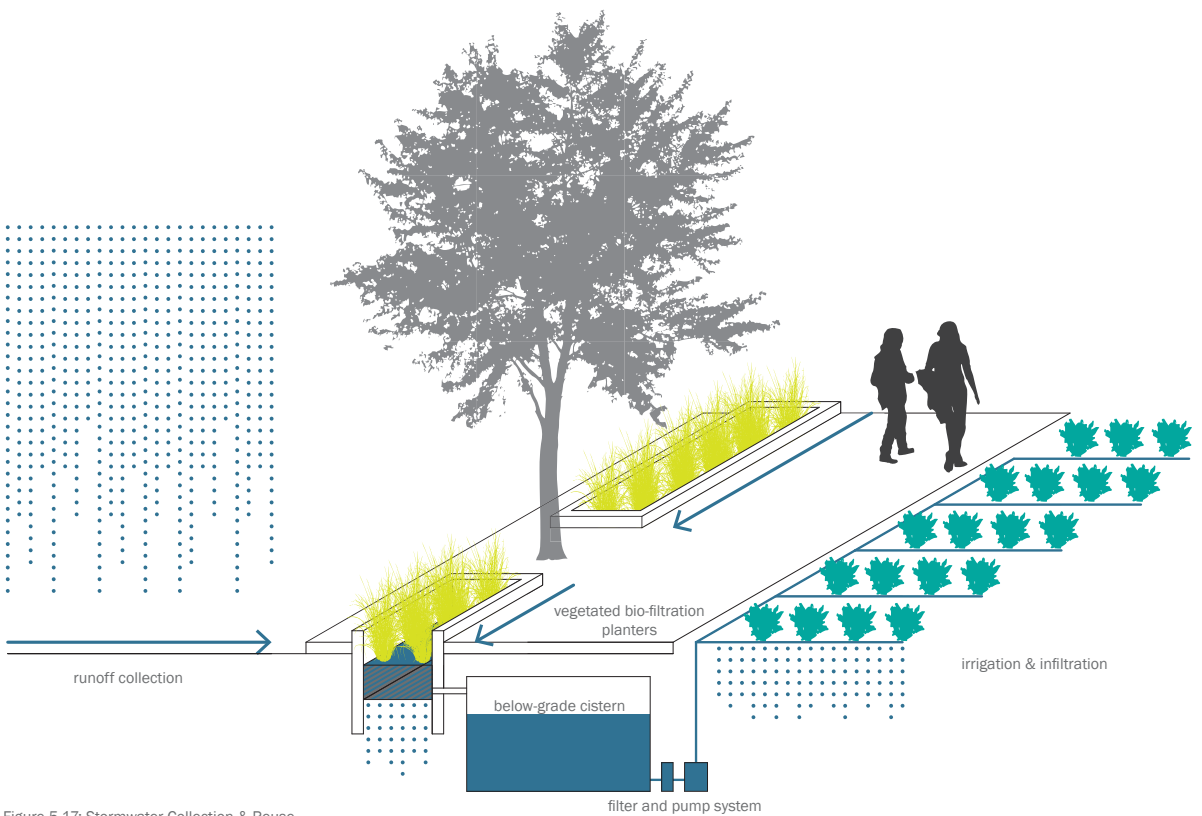
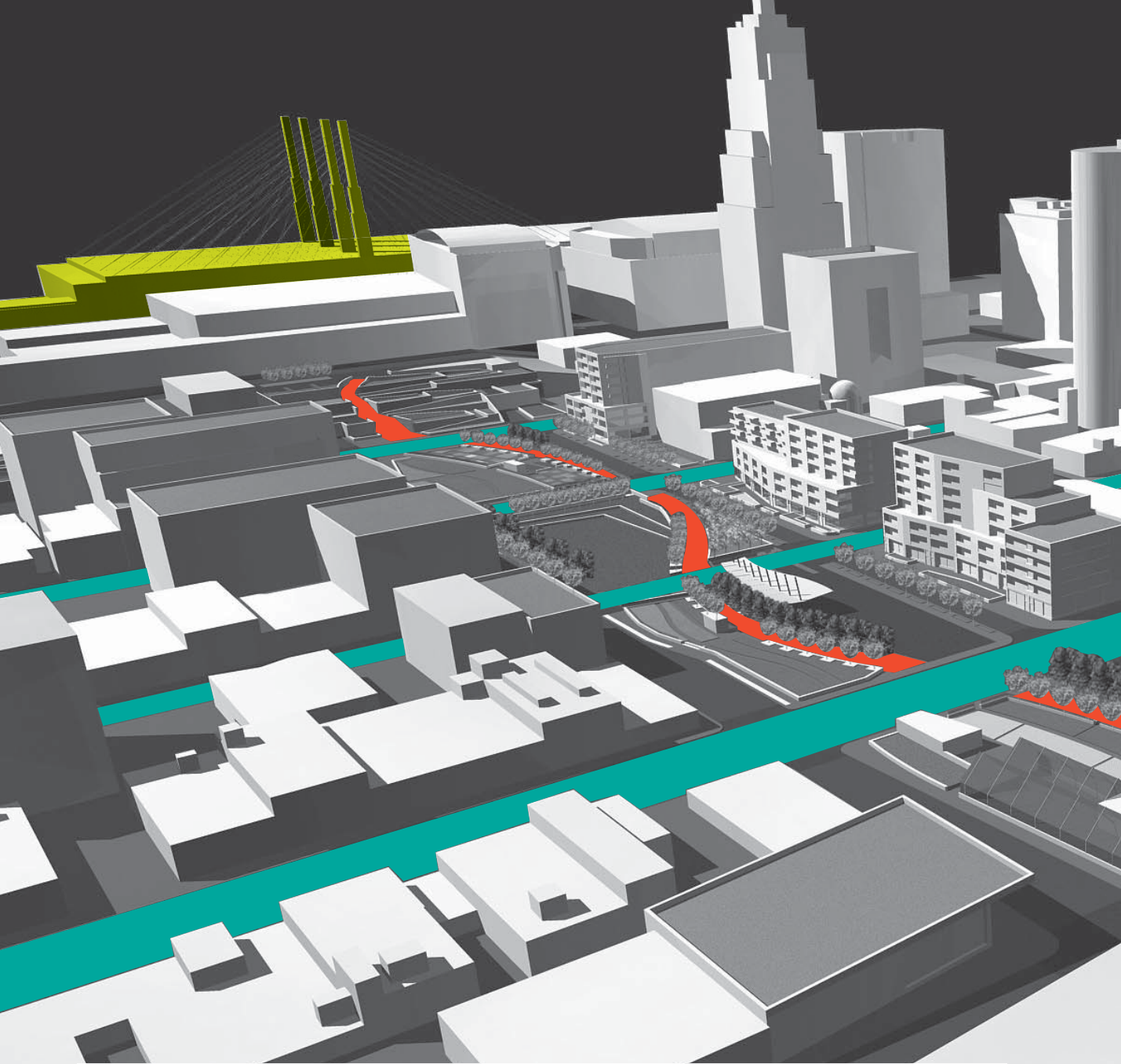


Figure 5.17: Stormwater Collection & Reuse

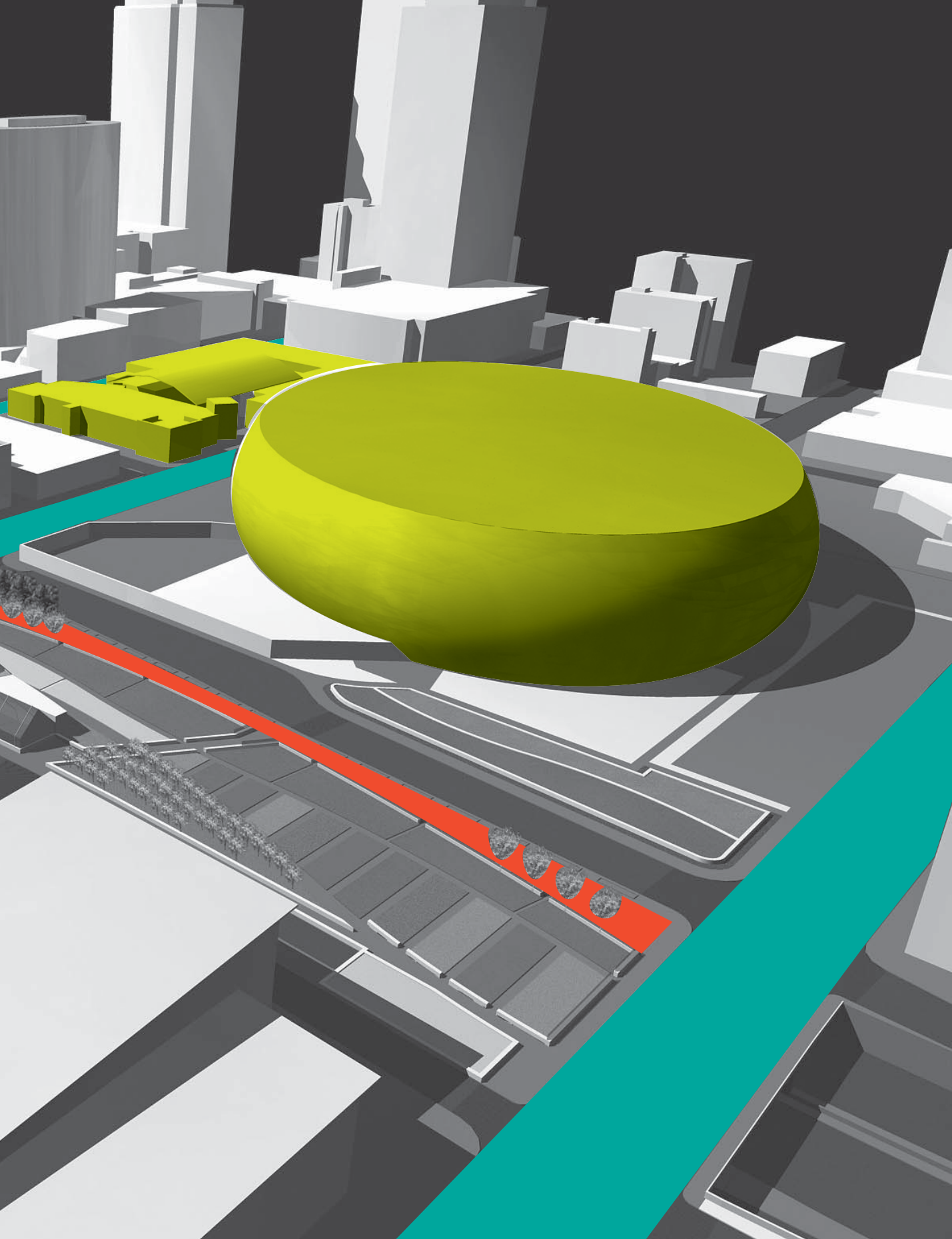


connect people to food

OBJECTIVES

- increase access to food
- reconnect people to food processes
- increase local food awareness
- facilitate healthy lifestyles with fresh food
- make food visible

Figure 5.18: Connecting People to Food Aerial



connect people to food

introduction

Integrated productive landscapes seek to establish and build connections between the community and food production processes. It is important to design and create an urban environment that activates and enhances all aspects of a sustainable food system through the integration, not separation of, people, their living environments, and food (Salle and Holland 2010).

The Interstate 670 corridor provides the opportunity to connect with a large number of people. Direct and indirect connections are created through project location, a network of integrated pedestrian circulation, visual connections from adjacent structures, and local food retail outlets.

The design solution creates connections between existing urban components, connects districts and communities, and increases walkability within the urban core while bringing people into the processes of food production. It is important to integrate the community into as much of the productive space as possible, because through these interactions the community can build a relationship and appreciation for the gardens.

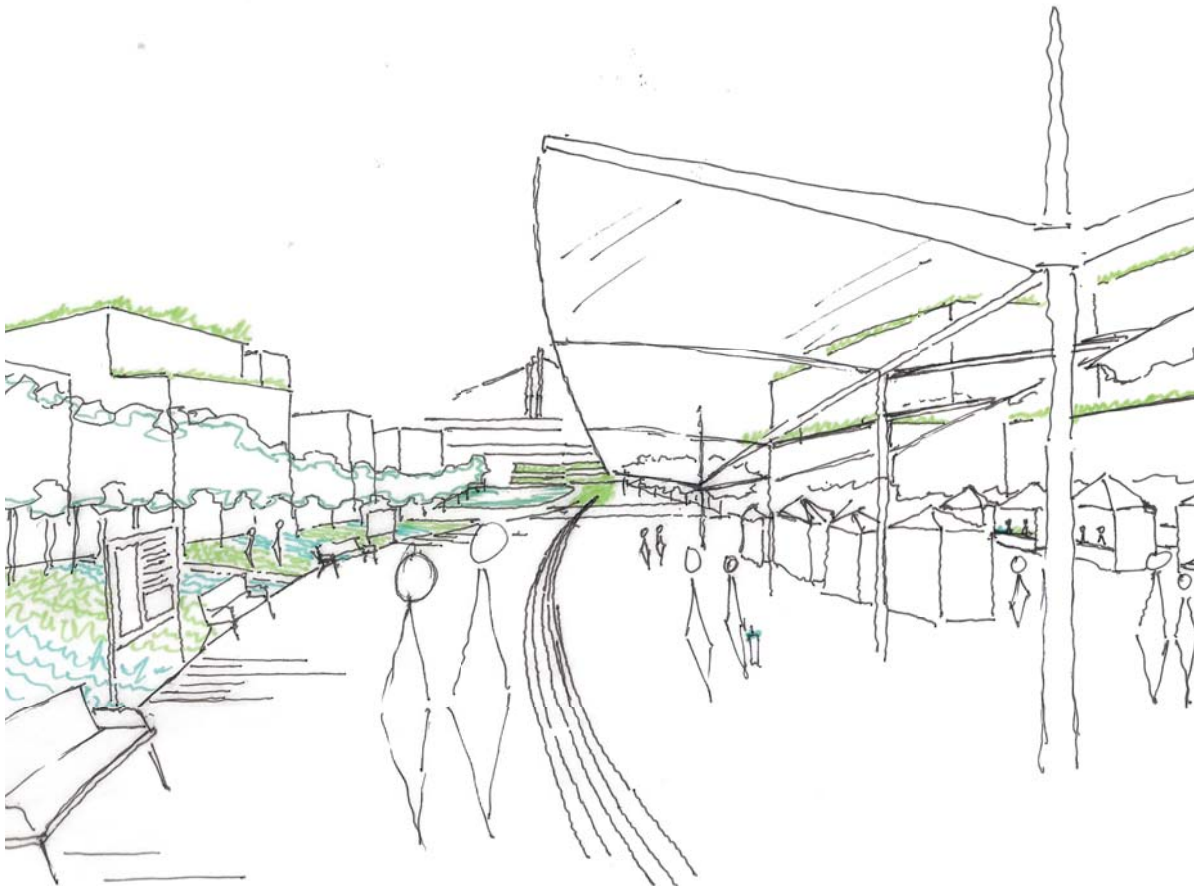


Figure 5.19: Connecting People to Food: Conceptual Sketch

connect people to food

direct connections

circulation

The design solution creates a network for pedestrian circulation that is used to enhance pedestrian movement and increase walkability (Figure 5.20). In addition, the paths provide connections between users and productive spaces throughout the site. Integrating walks and other recreational amenities presents a way to better connect the community with food (Clarke 2010). Connecting people using the network of paths activates the space while bringing people into the process of growing food. These connections are accomplished using a primary pedestrian promenade, secondary and perimeter walks, and informal paths.

legend

- █ promenade
- █ secondary & perimeter walks
- informal paths

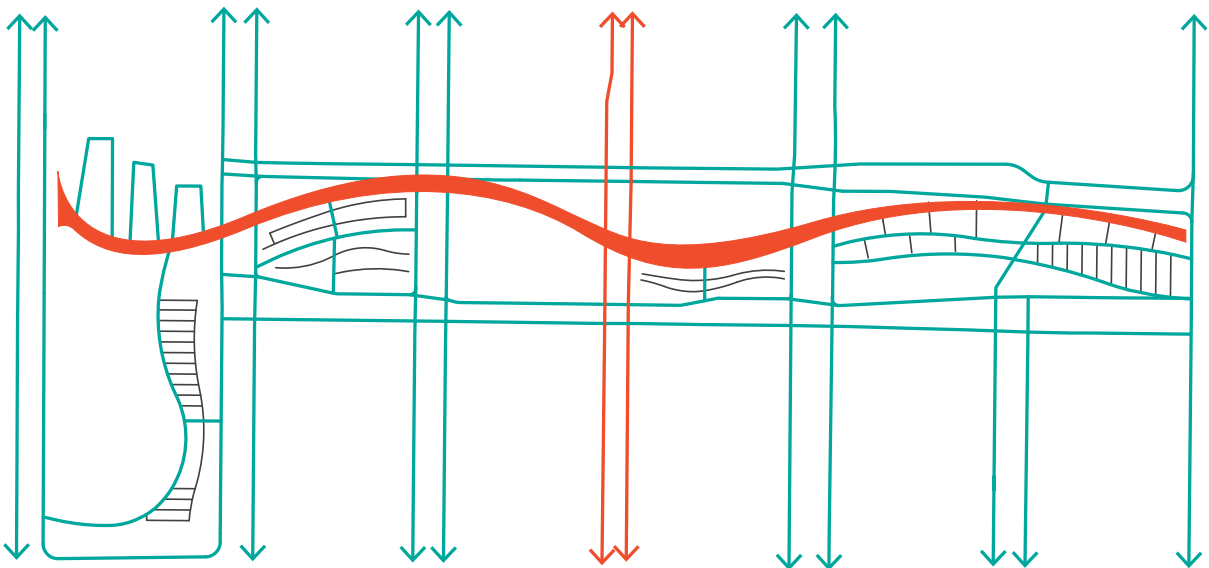


Figure 5.20: Pedestrian Circulation



pedestrian promenade

The pedestrian promenade acts as a structural element for the organization of project components. A series of community activity nodes and productive spaces are organized along the promenade. This walk allows users to view and connect with a range of productive spaces. The promenade varies from 15 – 20 feet in width and facilitates major pedestrian movement.

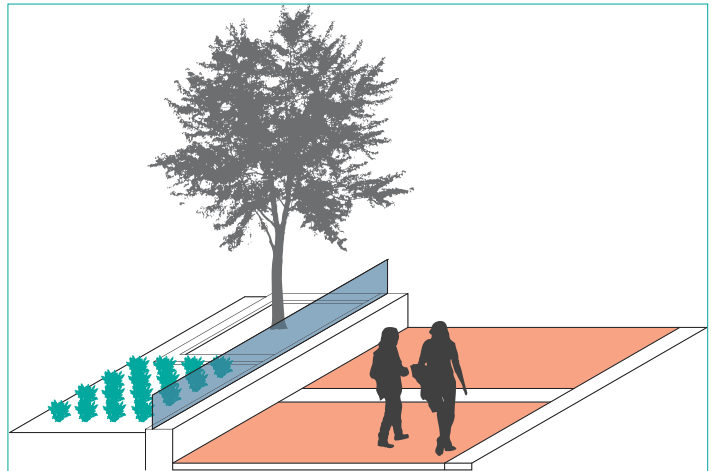


Figure 5.21: Pedestrian Promenade

secondary/perimeter walks

A network of secondary and perimeter walks are incorporated into the productive landscape. These smaller paths provide connections between the surrounding urban contexts and the site facilitating pedestrian movement. In addition, these walks provide the public with a connection to productive spaces within the site. These paths, ranging from 8 – 10 feet are designed to accommodate vehicular access for necessary service and maintenance purposes.

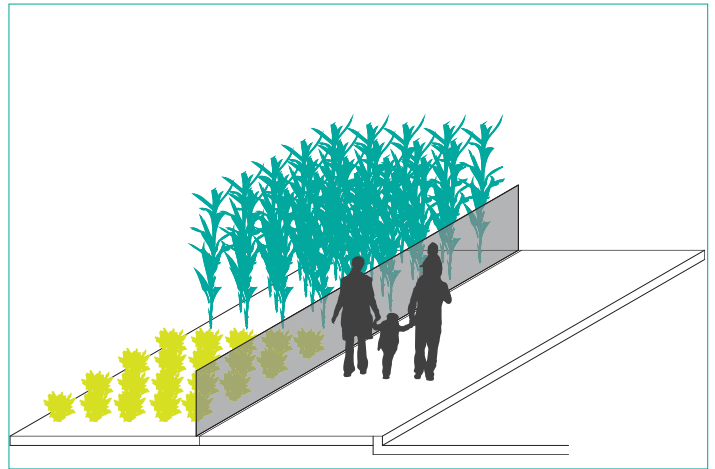


Figure 5.22: Secondary/Perimeter Site Walks

informal paths

Agricultural components of the site use informal paths to make the gardens accessible. These paths are used to bring people into the gardens allowing them to interact with the productive spaces. The narrow paths, between 2 – 5 feet wide, are less intended for circulation and more so intended for users to experience the gardens and build an appreciation for their beauty and products. Informal paths also support maintenance activities.

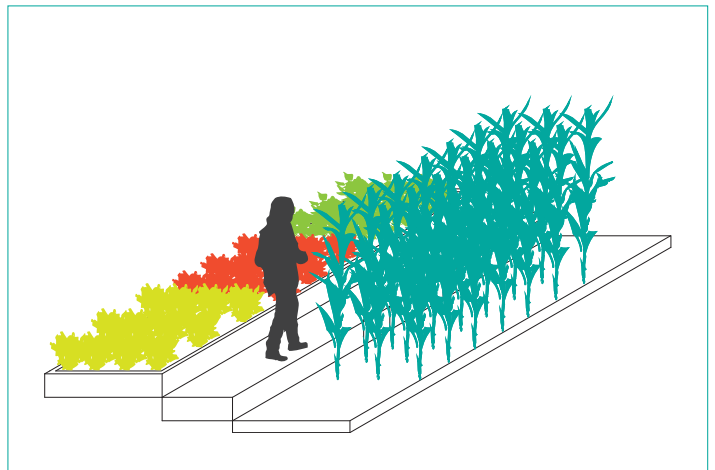


Figure 5.23: Informal Paths

connect people to food

direct connections





Figure 5.24: Pedestrian Promenade with Views of Community Gardens

connect people to food

direct connections

visibility

Visibility plays an important role with regards the implementation and success of integrated productive landscapes. In most cases, people like to see fields, observing food as it is being grown and watching while their food is being prepared (Salle 2010). The Interstate 670 Corridor presents the opportunity to bring productive gardens into the urban environment and create a corridor that makes all of the process of the food system visible for people to experience and observe. Visual connection from the surrounding context to the productive landscape should be accentuated, improved, and created. Increasing views of agriculture and food system activities enhance the genuine experience of a place (Salle 2010). Allowing views into the site can be used as a way of increasing one's curiosity, pulling residents and visitors into the site.

In addition, views into buildings can be used to demonstrate food system activities within. Urban design at the edge of streets should purposely include places to see food being processed, sold, and consumed (Clarke 2010). Glazing the façades of building creates a transparency providing views between interior and exterior building activities. The transparency between interior food-related activities and the sidewalk adds significant interest to the public realm (Clarke 2010). In addition, the views provided from adjacent buildings of the agricultural landscape are important to consider. The design solution provides views to the site from important surrounding public destinations. This allows the project to connect with a larger audience and used to further increase local food awareness.

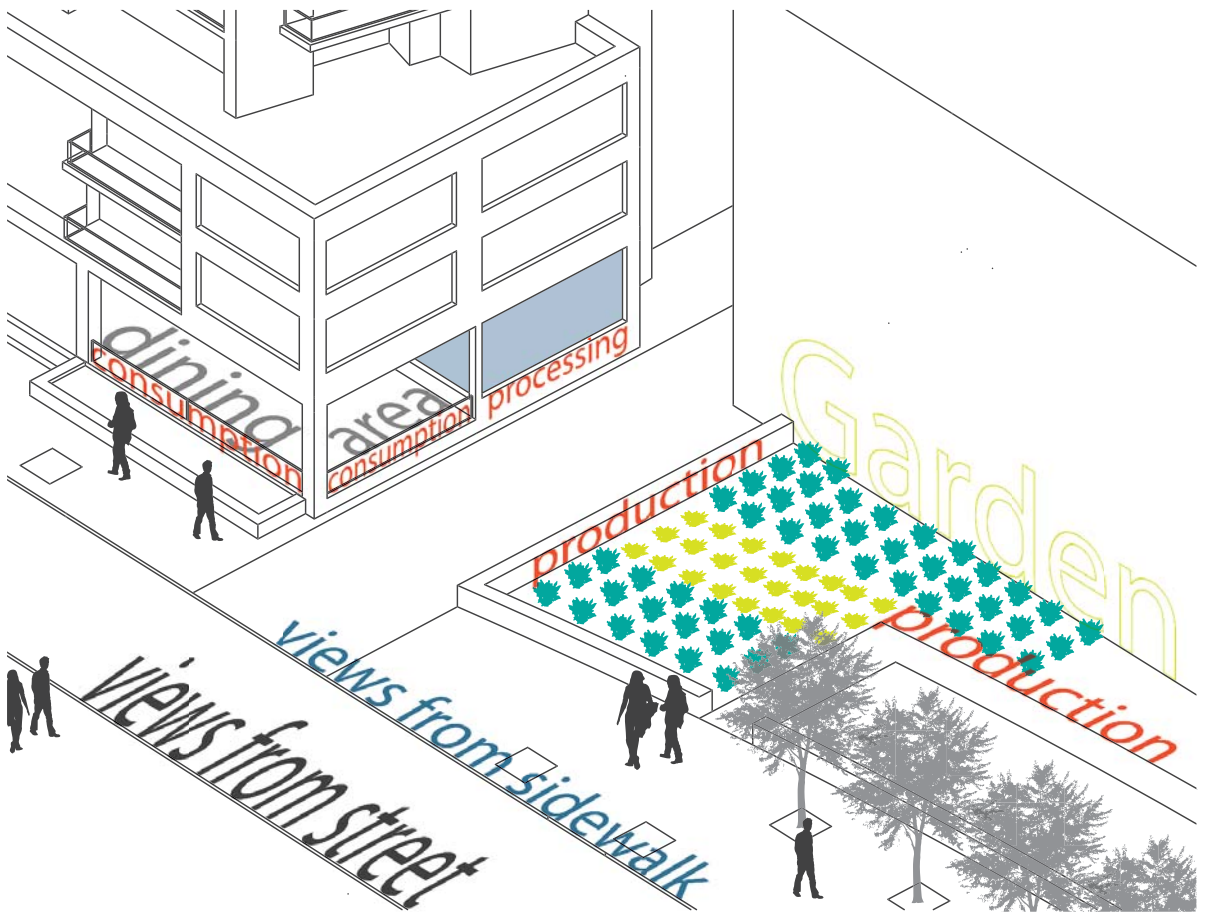


Figure 5.25: Visual Connections to Food Processes

connect people to food

direct connections





Figure 5.26: View of Commercial Urban Agriculture Plots from Sprint Center Arena

connect people to food

direct connections

levels of public access

The site is integrated into the urban fabric as a productive landscape, but equally as important, the site is intended to be a public space for the surrounding community and a space where people can come to see food produced in an urban corridor. Placement of the site is important to the project's success related to connecting with people, educating people, and creating opportunities for the community to get involved. It is important to provide access to the site's productive components, but it is also important to consider the levels of security and access to the gardens. The amounts of public access are divided into three levels. These access levels are used to demonstrate a number of methods that can be used to restrict access completely, minimally, and to allow full public access.

legend

- maximum access
- reduced access
- limited access



Figure 5.27: Levels of Public Access

limited access

Limited access spaces include gardens throughout the site that remain closed off or are monitored while access is allowed. In some cases these spaces may be open for access in order to further connect site visitors with the processes associated with food production. Spaces that maintain a level of limited access include commercial garden with crops distributed to local retail outlets and community gardens.

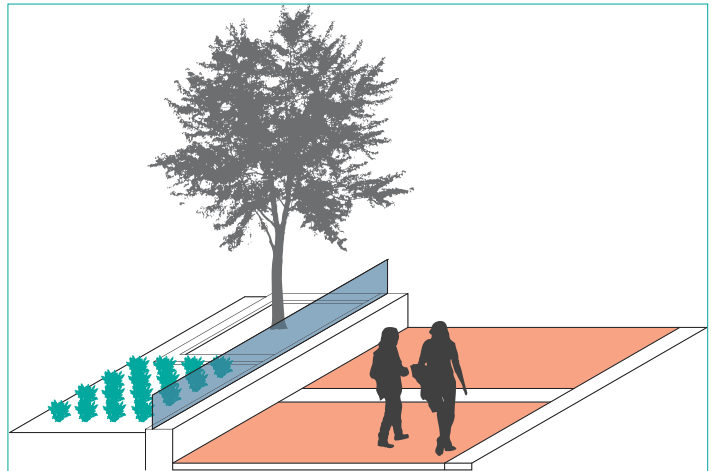


Figure 5.28: Limited Access

reduced access

Locations on the site that maintain a level of reduced access function similar to those of the commercial gardens but may be left accessible for longer periods of time and may not require supervision. These spaces include commercial gardens that do not get distributed to local retail outlets. These spaces are intended to remain accessible but may be closed to public access if concerns related to food security become an issue.

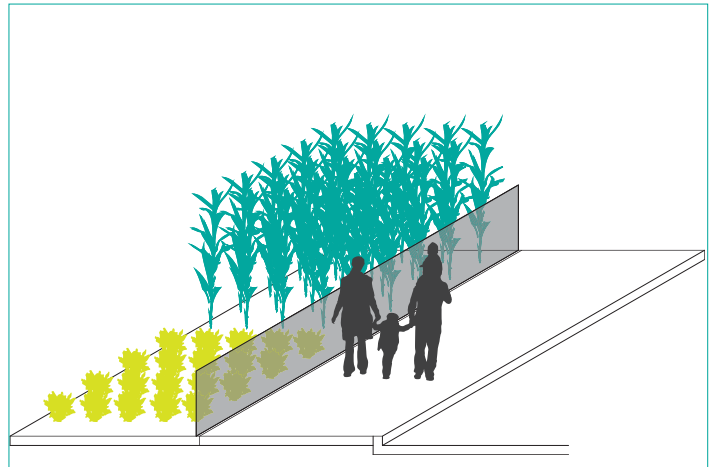


Figure 5.29: Reduced Access

maximum access

A number of areas within the site are designed to provide full public access. This approach is used to ensure the site remains active and available to users. Productive and non-productive site elements are easily accessible to encourage individuals to interact with the gardens. Areas that provide full access include the pedestrian promenade, plaza spaces, green spaces, the education garden, and urban orchard adjacent to the larger plaza and green space.

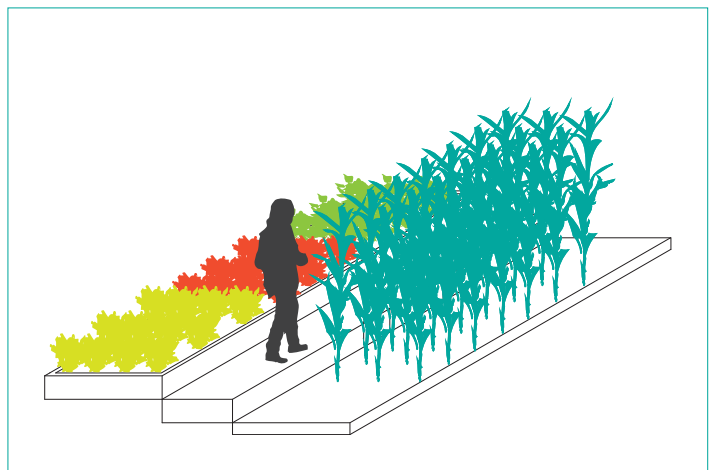


Figure 5.30: Maximum Access

connect people to food

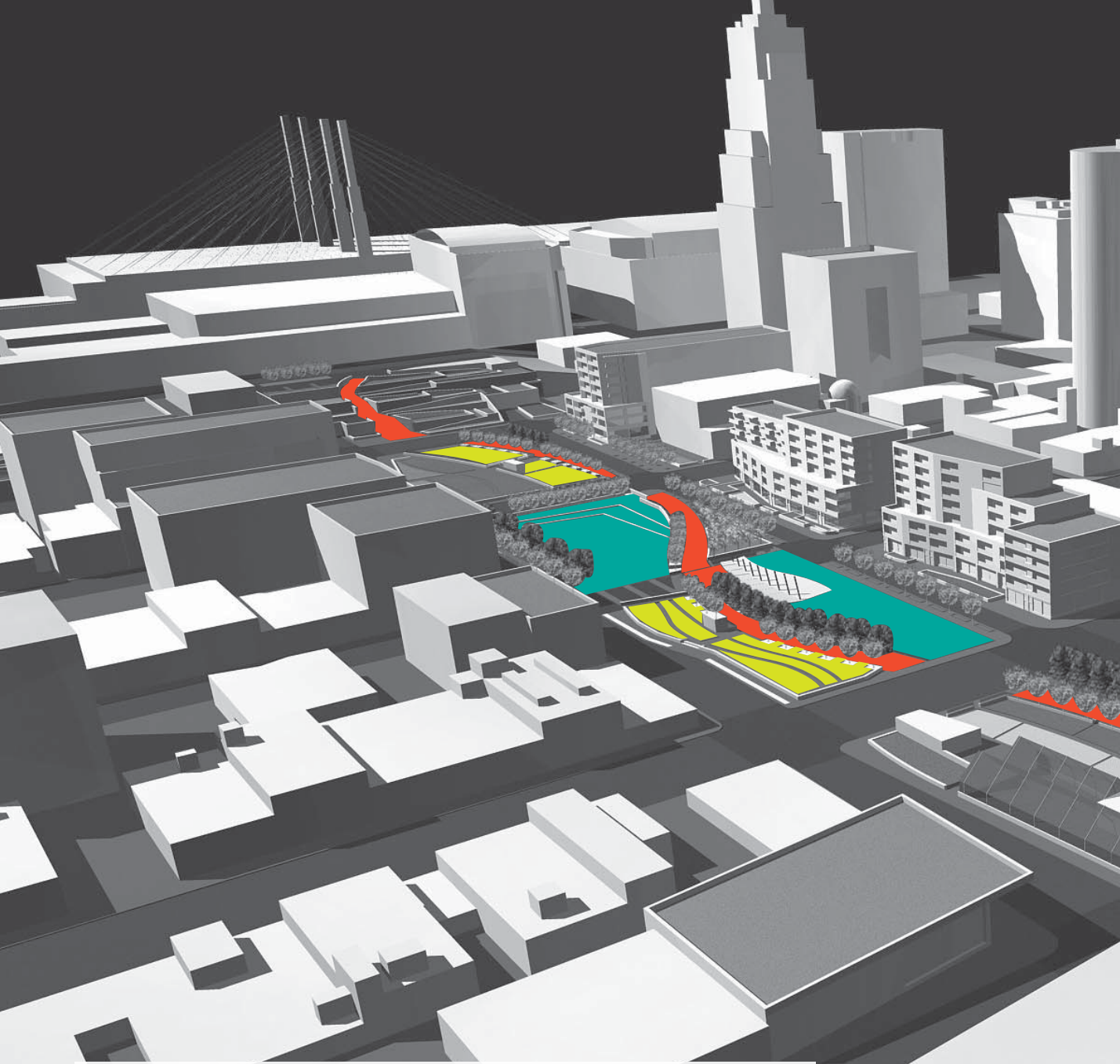
indirect connections

local food network

Commercial urban agriculture plots located throughout the corridor provide food to adjacent food retail outlets with the establishment of a local distribution network. The network creates opportunities for people to enjoy the products of the productive landscapes without visiting the site. In “Agricultural Urbanism in a Nutshell,” Janine de la Salle and Mark Holland discuss the importance of planning for a wide range of land uses related to food to accompany any agricultural areas, including processing, retail, restaurants, educational institutions, and festivals or events. They note that this approach will increase the local food economy and support the business case for urban agriculture (2010, 33). Establishing relationships with adjacent restaurants, grocery stores, office buildings, and event centers allows the site to provide a larger impact than its immediate boundaries (Figure 5.31). Connections between adjacent outlets provide fresh, nutritious food to urban populations in addition to people visiting the Kansas City area. The implementation of integrated productive landscapes begins to establish a local food source and network for Kansas City and, with continued integration of these spaces, may greatly reduce the city’s need for outside food products.



Figure 5.31: Food Distribution Opportunities

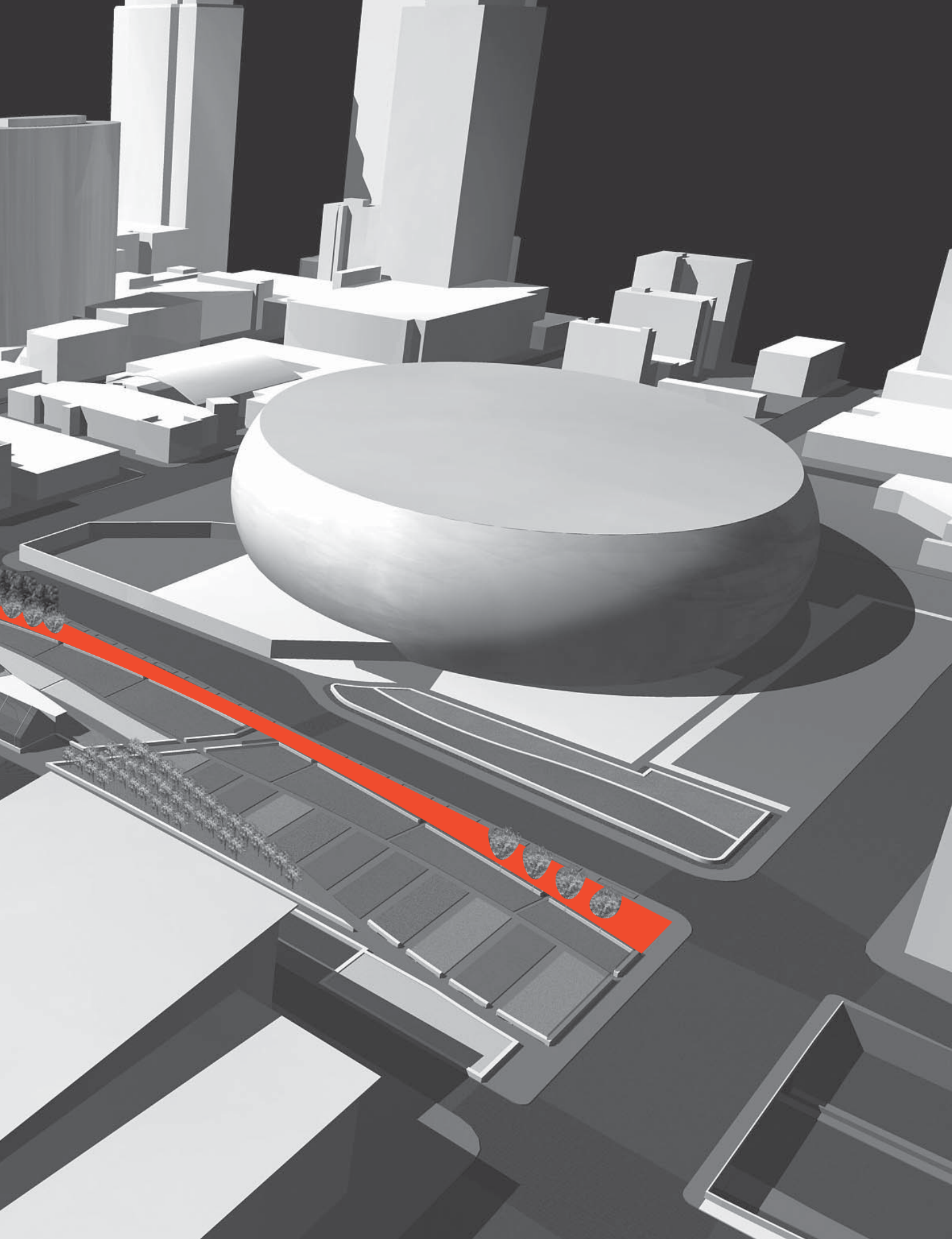


encourage community interaction

OBJECTIVES

- provide public spaces for the community
- encourage meaningful community participation
- educate people about food
- create productive landscapes that can be understood and appreciated
- create a rich experience of food and agriculture

Figure 5.32: Integrated Productive Landscapes: Encourage Community Interaction Aerial



encourage community interaction

introduction

Integrated productive landscapes place productive public spaces within the urban context not only to produce food but also to encourage interaction within the community. Community involvement plays an important role in the success and complete integration of productive landscapes. According to the “Charter for Agricultural Urbanism” it is important to design and plan the productive spaces so they become an essential component to the overall community experience (Salle and Holland 2010). Creating a space that engages the community and improves the experience may be achieved through the incorporation of a range of food and non-food related spaces. In order to stimulate interaction, a number of passive recreational components, educational elements, and community involvement and outreach programs, are integrated and/or associated with the site.

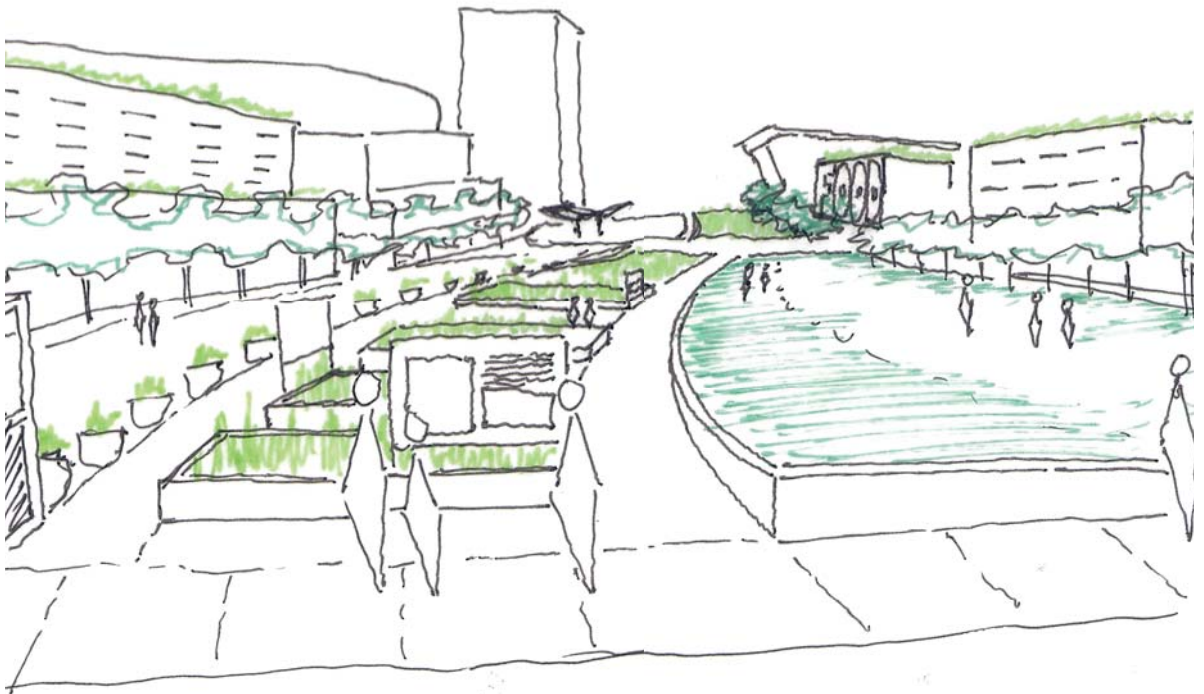


Figure 5.33: Encourage Community Interaction: Conceptual Sketch

encourage community interaction

create a space for the community

The site is activated and encourages interaction with the incorporation of multiple community spaces. Including passive recreation opportunities in agricultural areas is seen as a great way to increase the experience of agriculture for communities (Salle 2010). These spaces are organized along the pedestrian promenade among or adjacent to productive areas. In addition to the promenade, community spaces incorporated into the design include a number of plazas of different sizes, as well as open green spaces, and community or public gardens. The placement of these elements within the site responds to “Urban and Open-Space Design for Food and Agriculture” which states farming and recreation should be integrated wherever possible (Clarke 2010). The integration of these spaces is intended to provide opportunities for community use, further connecting people to the site and food related processes. In addition, the adjacencies of these elements will demonstrate the ability for productive gardens to successfully work within the urban context. The integration of community spaces is expected to help build acceptance of productive gardens within the urban context and create a space that is appreciated by the surrounding community.

legend

- pedestrian promenade
- plaza
- community gardens
- multi-purpose green space

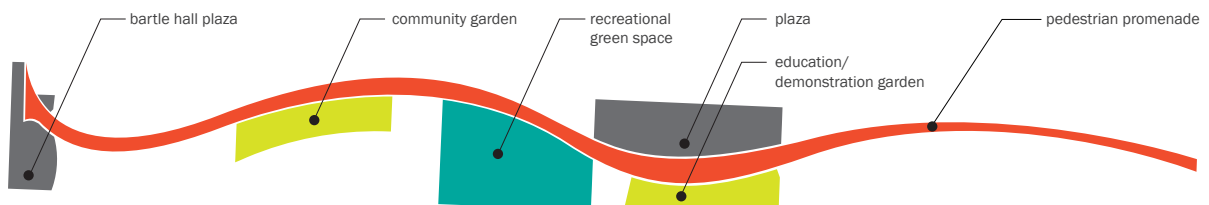


Figure 5.34: Community Spaces



Figure 5.35: Farmers Market

encourage community interaction

education

Education is incorporated into the design and program of the site as an opportunity to increase public interaction with the site. Educational elements are also used to enhance the experience of users, providing them with information about the site and increasing public awareness of the project and explicitly educating people about food production, processing, and transport. It is important to embed formal and informal education opportunities around food and agriculture (Salle and Holland 2010). Formal and informal methods for education are integrated into the design solution through a number of elements.

Formal methods for education include education and demonstration gardens, community gardens, and an informative educational walk. The education/demonstration garden and walk provide park uses with educational opportunities where people can learn about food preparation, cooking, preserving, planting, pruning, and harvesting (Clarke 2010). These spaces provide park users the opportunity to get involved and interact with the productive components of the site. Community gardens maintain an increased level of security to ensure the protection of gardens but still provide education opportunities. These gardens provide a space for gardeners to grow, share, and learn about food with other urban gardeners (Clarke 2010). In addition, the placement of community gardens and the treatment of their edges can be used to increase curiosity of gardens and increase awareness of food production.

Informal education methods are incorporated throughout the corridor using interpretative and informative signage. Signs are used to communicate the purpose, functions, and benefits of the integrated productive landscape in addition to specific components within the site. Educational signage is incorporated throughout the site to provide information related to the productive components of the site. Signs are also included in adjacent buildings to demonstrate elements of the food system or indicate views of the productive landscape.

legend

- formal education
- informal education
- pedestrian promenade
- project site

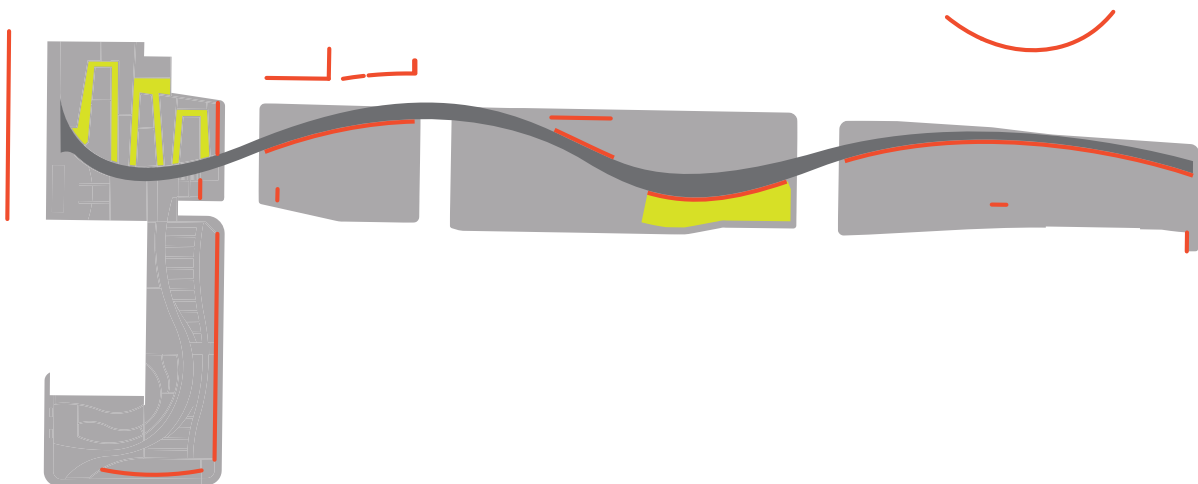
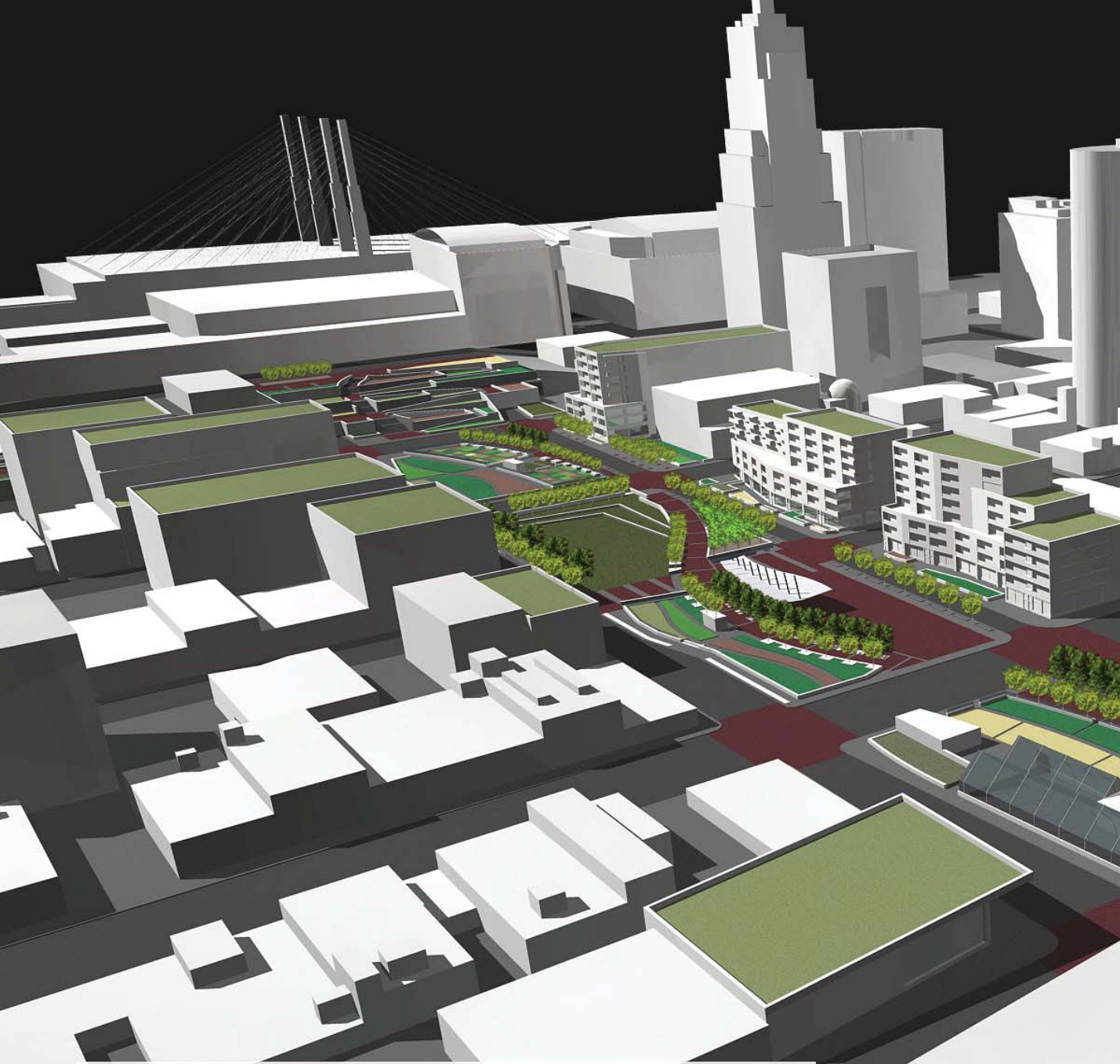


Figure 5.36: Education Opportunities



Figure 5.37: Demonstration & Education Garden

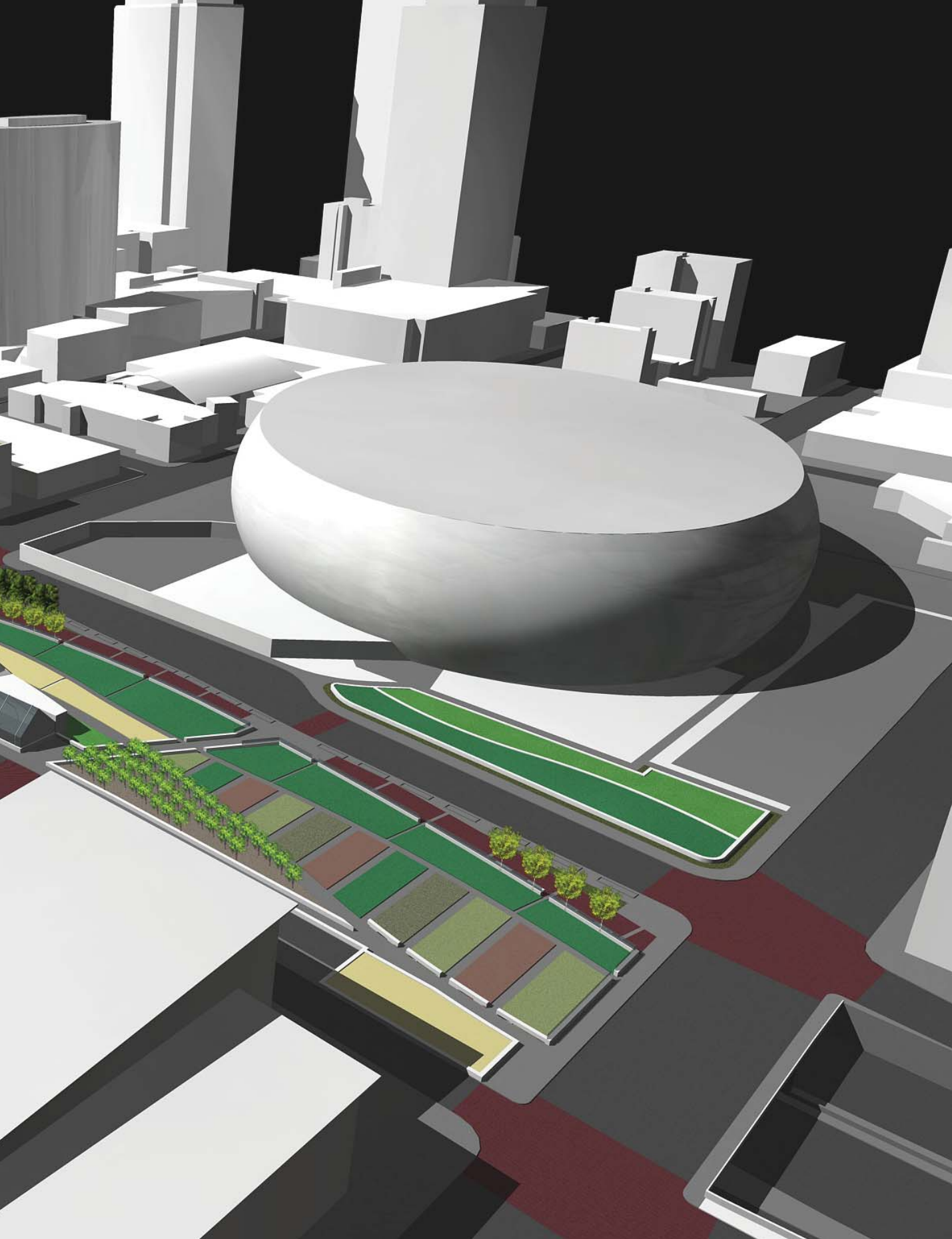


improve the urban environment

OBJECTIVES

- improve the public realm
- create opportunities that support and encourage future development
- expand the city's parks and open space network
- reconnect districts within the city
- create a space that responds to the urban environment

Figure 5.38: Integrated Productive Landscapes: Improve the Urban Environment Aerial



improve the urban environment

expand the parks and green spaces network

The implementation of integrated productive urban landscapes presents the opportunity to expand on the existing parks and green space network that currently exists within the urban study area. Current conditions within the study area present large areas that are underserved by public open spaces (Figure 5.39). In “Artisan Agriculture,” Janine de la Salle and Mark Holland discuss that farms (or urban agriculture) are part of the visual and experiential open space that is needed to offset the intensity and lack of natural areas that characterize a city (62). This further supports the integration of productive public spaces into the urban context as a method for mitigating and enhancing urban conditions.

The transformation of the Interstate 670 corridor provides itself as an expansion to the parks and green space network creating a public open space in the center of Kansas City’s urban core (Figure 5.40). Continued implementation of integrated productive landscapes using suitable sites identified during the analysis process can be used to further expand the Kansas City’s green space network. The transformation of all eight of these sites would greatly decrease the space within the urban study area that is under-served by parks and open spaces (Figure 5.41). The new network of spaces would increase the urban population’s access to needed green spaces and improve the overall quality of Kansas City’s urban environment.



Figure 5.39: Existing Parks & Green Spaces



Figure 5.40: Interstate 670 Corridor Expansion



Figure 5.41: Complete Implementation of Integrated Productive Landscape Sites

improve the urban environment

project phasing

The transformation of urban voids allows integrated productive landscapes the opportunity to focus new development within the existing structure of Kansas City. In the “Charter for Agricultural Urbanism,” Janine de la Salle and Mark Holland discuss the importance of focusing new development in existing areas (where possible) through infill and intensification strategies, to (re)develop compact, complete communities (2010, 176).

The placement of productive landscapes can be used as a method to support and encourage development growth in Kansas City’s core. Project phasing, demonstrated in Figure 5.42, plays an important role in the realization of integrated productive landscapes. The project is divided into five phases, beginning with an initial installment of urban gardens through the completed decking of Interstate 670 and adjacent developments.

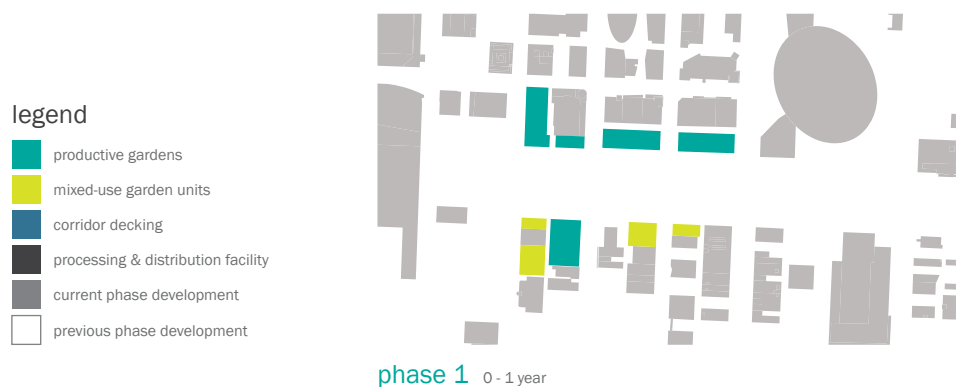
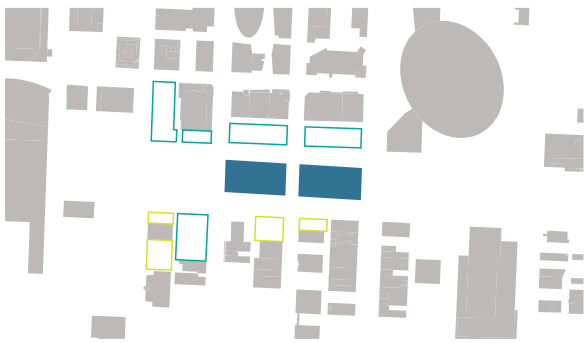
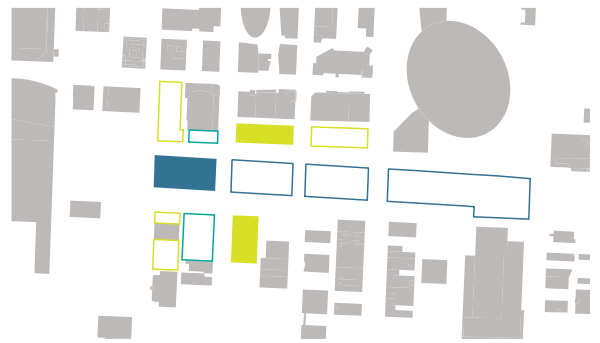


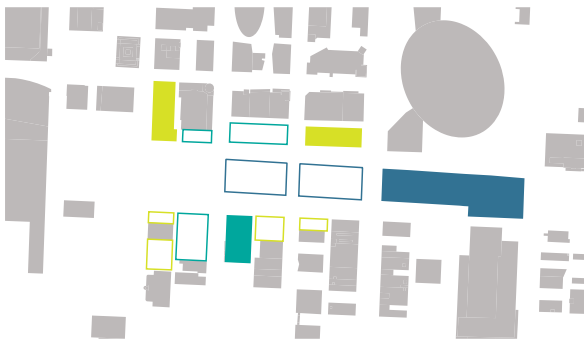
Figure 5.42: Project Phasing



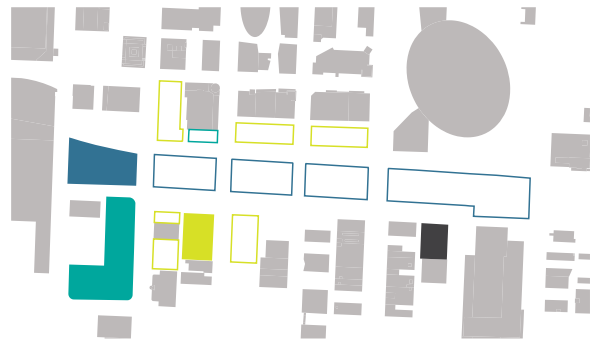
phase 2 1 - 3 years



phase 4 5 - 6 years



phase 3 3 - 5 years



phase 5 6 - 7.5 years

improve the urban environment

create a new garden district

The application of integrated productive landscapes to the Interstate 670 corridor is used to create a node in the core of Kansas City that is focused on the production of food and related systems. The incorporation of and emphasis on food creates a space that fuses food system elements into the urban environment and offers a cohesive and seamless solution to re-localizing food production. Integrating various types of agriculture can create a new character for an area (Salle and Holland 2010). The presence of agricultural components establishes a new identity for the corridor and the creation of a garden district.

This garden district provides a space where users may experience food in a number of different ways. A culture is created that celebrates food and those who grow it. The new district creates a space that informs people about food and the importance of the local impacts. The integration of productive landscapes transforms a previously underutilized urban void into a district that provides great urban space for the surrounding community and creates a place where local food is grown, experienced, and enjoyed.



Figure 5.43: Integrated Productive Landscapes Aerial



Figure 5.44: View of Commercial Urban Agriculture Plots from Sprint Center Arena



Figure 5.45: Demonstration & Education Garden



Figure 5.46: Farmers Market



project reflection

project summary

The development of an industrialized food system has removed many aspects of food from the lives of urban populations over the past 50 years. Urban Fusion presents a process for identifying sites within the urban context to be transformed into productive spaces and creates a set of guidelines for integrating these spaces creating productive public spaces.

Existing urban environments contain underutilized spaces that provide little to no benefits to the urban structure. Transforming these voids into productive landscapes creates public spaces focused on the production of food. The integration of agriculture and public spaces within the urban context allows people to experience with the food they eat.

Integrated productive urban landscapes offer the opportunity to reevaluate and restructure the current food system and the structure of our urban environments that will continue to grow into the future. Productive landscapes can provide components crucial to the development of our urban environments creating public spaces and starting the process of bringing our food back to a localized scale. Given the efficiencies of existing industrial agricultural infrastructure it will be hard to compete without capitalizing on niche markets and successfully integrating these systems into the urban fabric (physically, environmentally, economically, and socially). This will take time, resources, and creative action.

This project begins to paint a picture of what productive landscape could provide our urban environments when incorporated. In order for this to occur we must first understand the full potentials and limitations of an integrated productive urban landscape through further exploration and research of necessary components. This report is intended to help start that creative exploration.

limitations

The concept of integrated productive landscapes and its application to the Interstate 670 corridor are presented in this report as a successful response and solution to issues in the project's dilemma. Limitations related to the feasibility and application of this design solution were revealed over the duration of this project. Limitations affecting the project include time constraints, limited access to necessary information related to the project study area and the specific site, and the lack of communication with the number of professionals needed for the success of this kind of project. These limitations restricted the availability of information and the amount of research that could be conducted and used to influence the proposed design. Many more experts would need to be consulted and/or made part of the project team in order for these ideas to be successfully implemented. As such, this report represents a vision and concept of what might be. Much more detailed analysis, engineering, and design-thinking are needed.

further research

The economic costs and justification for the implementation of an integrated productive landscape were not addressed in any real depth, especially with concerns to the costs involved in decking over the Interstate 670 corridor. Further exploration and understanding of the costs and associated benefits are essential to fully realize the potential and challenges associated with this application of the local-urban-food ideal.

Integrated productive landscapes seek to integrate food production as public space into the existing urban fabric. In response to the project's intended location within the urban core of Kansas City, the potential effects of urban conditions on the production and quality of food have not been included in this report. It would be important to understand the specific urban conditions that may influence food production, and what the resulting effects would be on food products and their quality and marketability.

Site productivity plays an important role in establishing a local system for food distribution. The specific methods for food production and amount of food products produced were only briefly discussed in this report. Further research should be conducted to understand the best methods for food production in this type of urban setting. Additionally, the site should be studied to realize potential production quantities the site is capable of producing.

concluding thoughts

The information and ideas presented in this report can be viewed as an informed and innovative vision for future methods of incorporate agriculture with existing urban structures.

In order for integrated productive landscapes to create an impact on urban food systems they will need to be applied at a large scale and create a network of spaces where food is produced and prepared for both market and home use.

a

appendix a: glossary

glossary

100-mile diet

eating regime that exclusively or predominantly includes food produced and/or raised within 100 miles of the point of consumption. (Holland and Salle 2010)

agriculture

the science, art, or practice of cultivating the soil, producing crops, and raising livestock and in varying degrees the preparation and marketing of the resulting products. (Merriam-Webster 2011)

agricultural urbanism

an emerging planning, policy, and design framework for integrating a wide range of sustainable food and agriculture system elements into a community at a site-, neighborhood-, or on a city-wide scale. In short, it is a way of building a place around food. (Holland and Salle 2010)

artisan agriculture

the type of agriculture that is compatible in and around cities. (Holland and Salle 2010)

biodiversity

the variety and variation among plants, animals, and microorganisms, and among their ecosystems. The concept of maintaining biodiversity holds that civilizations should preserve the greatest possible number of existing species so that a highly diverse genetic pool, which can be tapped for useful and beneficial characteristics, will be available into the future. (Faith 2008)

community

an interacting population of various kinds of individuals in a common location. (Merriam-Webster 2011)

community gardens

community gardens are large lots of land that have been divided into smaller plots for each household's use. These lots can be owned by a municipality, an institution, a community group, a land trust, or private ownership. (Brown and Carter 2003)

delocalization

processes in which food varieties, production methods, and consumption patterns are disseminated throughout the world in an ever-increasing and intensifying network of socioeconomic and political interdependency. (Pelto 1983)

food access

both geographical and monetary degree of access to food; determined by income, supply, transport, public provision, storage, and other factors. (Bohn and Viljoen 2005)

food desert

an urban area that has no or grossly insufficient access to healthy, affordable, and culturally-appropriate foods for local residents. (Holland and Salle 2010)

closed-loop

a self-sustaining system whereby wastes / outputs of one system element is used as a resource/input for another system element (Holland and Salle 2010)

food miles

the distance food has been transported between primary production and consumption. (Bohn and Viljoen 2005)

the distance food travels from the location it is grown to the location where it is consumed, or from farm to plate. (Hill 2008)

food security

defined as giving populations both economic and physical access to a supply of food, sufficient in both quantity and quality at all times, regardless of climate and harvest, social level and income. (World Food Summit, 1996)

food shed

the geographic areas that feed population centers. The concept of a foodshed has been presented both as a tool for understanding the flow of food in the food system and as a framework for envisioning on-going debate about local food but could ultimately be applied to larger questions of food system sustainability. (Peters 2009)

food system

all processes related to the growing, harvesting, transformation, packaging, transport, marketing, consuming, and disposing of food and food packaging. The system exists within and is influenced by social, political, economic, and natural environments. (Cornell University 2004)

greenhouse gas (GHG) emissions

components of the atmosphere that contribute to the “greenhouse effect.” Some greenhouse gases occur naturally, while others come from activities such as the burning of fossil fuel and coal. Greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxide, and ozone. (Holland and Salle 2010)

groundwater recharge

the natural process of infiltration and percolation of rainwater from land areas or streams through permeable soils into water-holding rocks that provide underground storage. (Holland and Salle 2010)

human-scaled agricultural system

farming systems that are planned and designed to be operated through human labour and small machinery. (Holland and Salle 2010)

integrated

a coherently planned and designed combination of systems that work together as a unit

glossary

landscape

the spatial and visual entity of human living space that integrates the environment, living systems, and the man made. (Corner 1999)

organic agriculture

type of agriculture based on strict respect for the natural relations and balances between soil, plants, and animals, and prohibition against the use of synthetic chemicals. The term “organic farming” is generally regulated and/or subject to standards defined by the industry. (Holland and Salle 2010)

organic food

food grown without the use of artificial fertilizers and pesticides. (Bohn and Viljoen, 2005)

placemaking

a design strategy to create public spaces that are attractive, interesting, and vibrant. Architecture, landscape, and connectivity to surrounding areas play an important role in placemaking. (Holland and Salle 2010)

productive

causing or resulting in environmental, sociocultural, and economic benefits, or profits (Merriam-Webster 2011)

public realm

publicly owned streets, sidewalks, right-of-ways, parks, and other publicly accessible open spaces, and public and civic buildings and facilities. (Holland and Salle 2010)

soil nutrient depletion

refers to all nutrient losses from a soil through both natural and human-induced processes. Dynamically, it is the process by which the soil nutrient stock is shrinking because of continuous nutrient mining without sufficient replenishment of nutrients harvested in agricultural products, and of nutrient losses by soil erosion and leaching. (Lal, Tan, and Wiebe 2005)

stormwater conveyance system

a system for treating and dispersing stormwater. (Holland and Salle 2010)

sustainable agriculture

seeks to optimize skills and technology to achieve long-term stability of the agricultural enterprise, environmental protection, and consumer safety. Agricultural and food system practices do not compromise the ability of future generations to meet their food needs. The goal of sustainable agriculture is to minimize the adverse impacts to the immediate and off-farm environments while providing a sustained level of production and profit. (USDA 2006)

traceability

the ability to interact with the person who knows how the crop or animal has been treated throughout its entire life. (Holland and Salle 2010)

urban

of or relating to cities and the people who live in them (Merriam-Webster 2011)

urban agriculture

an industry located within or on the fringe of a town, city or a metropolis, which grows, raises, processes and distributes a diversity of food, (re-)using largely human and material resources, products and services found in and around the urban area, and in turn supplying human and material resources, products and services largely to that urban area. (Mougeot 2000)



appendix b: literature review

More Space with Less Space: An Urban Design Strategy

Katrin Bohn and Andre Viljoen (2005)

Katrin Bohn and Andre Viljoen present Continuous Productive Urban Landscapes as a new design strategy for creating sustainable cities. He begins by providing a future image of Continuous Productive Urban Landscapes as spaces that provide recreational space between agricultural fields and offer opportunities to purchase fresh food from local farmers markets. They are spaces that have encouraged urban redevelopment on adjacent land and increase walkability and access to urban open space. They create spaces that cleanse the urban air and collect stormwater for reuse. And provide grounds for leisure, public gathering, and entertainment.

Continuous Productive Urban Landscapes are described as a design strategy that overlays the concept of productive urban landscapes with that of continuous landscapes to create urban spaces that combine agriculture and other landscape elements using continuous open space linkages (11). These open landscapes placed in the urban fabric become economically, sociologically, and environmentally productive. CPUL's will be open spaces that run continuously through the built environment, green, natural, healthy, and socially active. They will build upon characteristics of the city by overlaying and interweaving multiuser landscapes to present and reclaim open space. CPUL's will be designed for pedestrians, bicycles, engine-less and emergency vehicles to increase connection and access (11). Apart from connectivity, the main design implication of Continuous Productive Urban Landscapes will be the introduction of agricultural fields into the contemporary city (12).

Bohn and Viljoen explain why Continuous Productive Urban Landscapes can be used to create sustainable cities. CPUL's are about urban food growing and local consumption focusing mainly on organic vegetable, fruit and trees, planted in rows, planted in groups, fields, patches, etc. (12). In addition, the environmental, social, and economic productive aspects are mentioned:

- Environmental: local food, greenhouse gas reduction, improving air quality and air humidity, noise filtering and biodiversity.

- Social: urban concepts will involve cultural, educational, and leisure activities, shopping habits or diet and health concerns.
- Economic: provoke new strategic socio-economic thinking and change local employment and product-cash flow patterns (15).

As a result, this will provide an innovative and diverse concept for the use of our cities and urban environments.

Implementation of this design strategy requires land that will have to be allocated, reclaimed, recycled, or imaginatively found. With this in mind, it is important to determine the scale and ambition for CPUL infrastructures. CPUL's could take any shape and occupy virtually any space in the city – big, small, horizontal, sloped, vertical, rectangular, triangular, irregular, on brownfield sites, on greenfield sites, in parks, on reclaimed roads, on spacious planes or squeezed into corners (15). It is also stated that CPUL's will be most advantageous in those areas of the contemporary city which, at the moment, are given over to activities restricting space to mono- or non-use: car parks, roads, parking bays, shopping malls, warehouses, multi-story car parks (roofs), railway embankments, industrial wasteland, brownfield sites, etc. (15). Despite concerns with costs and time-intensive solutions, CPUL's will always have the advantage of being environmentally sensible in addition to providing urban and socio-cultural benefits, ultimately, enriching urban environments.

In conclusion, Bohn and Viljoen present the concept of Continuous Productive Urban Landscapes as new design strategy for cities. With the goal of creating sustainable urban environments, Continuous Productive Urban Landscapes combine concepts of productivity and connectivity creating a new urban design strategy. The integration of agriculture into urban open spaces and the linkage of these spaces continually within the urban fabric are identified as being capable of having environmental, social, and economic benefits for cities around the world.

Home Grown: The Case for Local Food in a Global Market

Brian Halweil (2002)

Brian Halweil discusses the importance of local food and its role in our current food system that requires people to depend increasingly on food from distant sources. In the United States, food typically travels between 2,500 and 4,000 kilometers from farm to plate, up to 25 percent farther than in 1980. In the United Kingdom, food travels 50 percent farther than it did two decades ago (5). Advances in technology have encouraged this food system to sprawl using four times the energy and producing up to four times the greenhouse gas emissions (5). Other issues identified with this expansive food system include eroding social structures, a lacking of food security for cities and urban areas, the loss of farmland to suburban development, and a lower quality of food.

As more people reside farther from where their food is produced, Halweil suggests, cities need to try and secure as much of their food as possible from farmland within and near urban areas. With the public slowly becoming aware of long-distance food issues a growing interest in local food has begun to occur. This can be seen through the increase in farmers markets and community supported agriculture. By introducing farming into cities, a source of fresh food is provided, food businesses are developed, and it can provide urban areas opportunities to cope with a range of ecological, social, and nutritional challenges.

Local food is presented as a way to restructure our current food system. Unfortunately, food is still considered a rural issue by many politicians, businesses, and city planners therefore it does not demand the same attention as housing, crime, or transportation. In reality, farming in the urban environment offers of a range of benefits, including:

- Rebuilds the diversity of crops and food businesses which then benefits diets and the ecology of local landscapes
- Money spent on local food stays in the community longer, creating jobs, raising incomes, and supporting farmers.
- Local food is often cheaper with lower transport costs and fewer middlemen. (6-7)

These benefits can be appreciated with the development of a successful local food system. To establish a local food system, Halweil discusses the need for farmers to work together, the importance of raising local food awareness, and that farmers and food businesses should capitalize on freshness, variety, how the food is produced, and opportunities to develop social bonds. Location acts as another influence. For example, the UN Food and Agriculture Organization suggest that local retail markets should be strategically located along bus routes or major business centers (52). It is also necessary to create links between local food and local businesses to provide outlets for local food. Some potential outlets suggested include school cafeterias, restaurants, government offices, and households.

In conclusion, Halweil suggest local food and urban farming as a way to restructure our long-distance food system. A new system focused on local food can provide fresh, nutritious food and increase self-reliance by creating food security while enhancing urban areas ecologically, economically, and socially.

Greater Downtown Area Plan: Kansas City

The City of Kansas City, Missouri (2009)

The Greater Downtown Area Plan for Kansas City acts as an important piece of literature to familiarize myself with and consider as a foundation is established for my project. The plan acts as a collective vision for the Greater Downtown Area that is intended to strengthen the city core. Presented in the plan are solutions to improve the quality of life, protect precious natural capital, and strengthen economic vitality. These were developed with the goal of positioning Downtown Kansas City as the region's cultural, economic, and activity center. In recent years, efforts to revive residential growth combined with the construction of major community anchors and commercial development have begun to transform the downtown area, creating a place to live, work, and play. This has stimulated an economic development boom that has exceeded \$5.2 billion since 2000 (2).

The Plan acknowledges the current transformations and success in the downtown area and emphasizes the importance of sustaining this growth. Strategies to maintain success are provided presenting solutions for the unique needs for the downtown area and surrounding neighborhoods addressing concerns related to ecological systems, the need to strengthen the local economy, and quality of life.

Extensive community outreach influenced the development of the plans core principles. A vision statement was created through numerous public workshops, steering committee meetings, and the planning team's observations.

The vision plan underlined the importance of connecting neighborhoods, creating a strong urban community, increasing diversity, promoting business, maintaining historic identity, and creating a safe, vibrant and healthy downtown.

As a result, a plan is created that creatively blends community values with technical analysis.

The plan identifies a set of goals that support the vision statement and act as the core principle of the document. The goals are important in achieving the plans vision and provide a guiding framework for the project. Primary goals include:

- Creating a walkable downtown
- Doubling the population downtown
- Increasing employment downtown
- Retaining and promoting safe, authentic neighborhoods
- Promoting Sustainability

These goals are then applied and used to influence a number of components related to the downtown area including land use development, the public realm, transportation, infrastructure, housing and neighborhood identity, revitalization and economic development, and education. Recommended strategies are then provided, related to these components, to assist the community in realizing its long range vision for the future.

The Greater Downtown Area Plan provides itself as a great piece of information providing the guiding principles and recommendations that have been suggested and are important for the continued success in the revitalization of downtown Kansas City. It is important to understand the goals in order to create a project that acknowledges and aligns with the overall guiding framework of the city.








appendix c: inventory & analysis

public destinations analysis

Destinations play an important role with their potential to attract people and should be considered in the location of a project site. The study boundary includes a range of public destinations including museums, entertainment centers, and public and performing arts venues (Figure C.01). The proximity and connection of these destinations to the project site could create greater benefits as urban agriculture is viewed and experienced by larger amounts of people. Education and awareness also become an important aspect of the project that seeks to change the notion of agriculture amongst the public.

legend

-  Study Boundary
-  Major Public Destinations
-  Destination Buffer - 1000' radius
-  Building Footprint
-  Missouri River

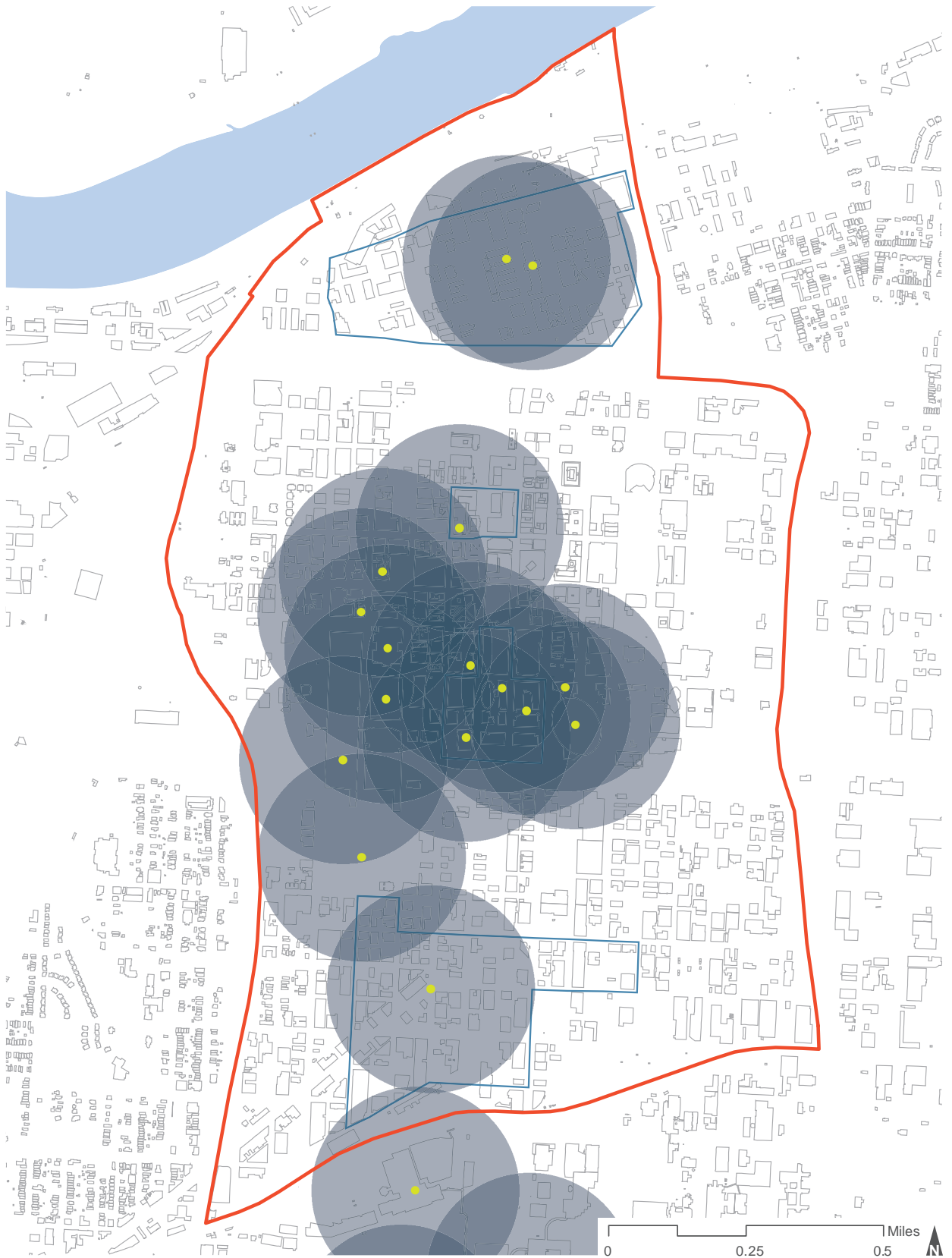











Figure C.01: Public Destinations Analysis

density of population analysis

The residential structures and units were studied to provide an idea of where the current residents within the study boundary live (Figure C.02). The majority of the residence are located north of Interstate 670, in the northern half of the Downtown Loop and the River Market District. It is important to consider the relationship between the project site and the current residences living in the study boundary as they will likely be the regular visitors and community gardeners. The surrounding residence will greatly contribute to value of the site and the social activity. The project can also have a great influence on the surround residential neighborhoods with the ability to strengthen the overall sense of community.

legend

-  Study Boundary
-  Residential Structure (2-28 units)
-  Residential Structure (29-68 units)
-  Residential Structure (69-134 units)
-  Residential Structure (135-224 units)
-  Residential Structure (225-395 units)
-  Weighted Overlay Buffer - .25 mile radius
-  Building Footprint
-  Missouri River

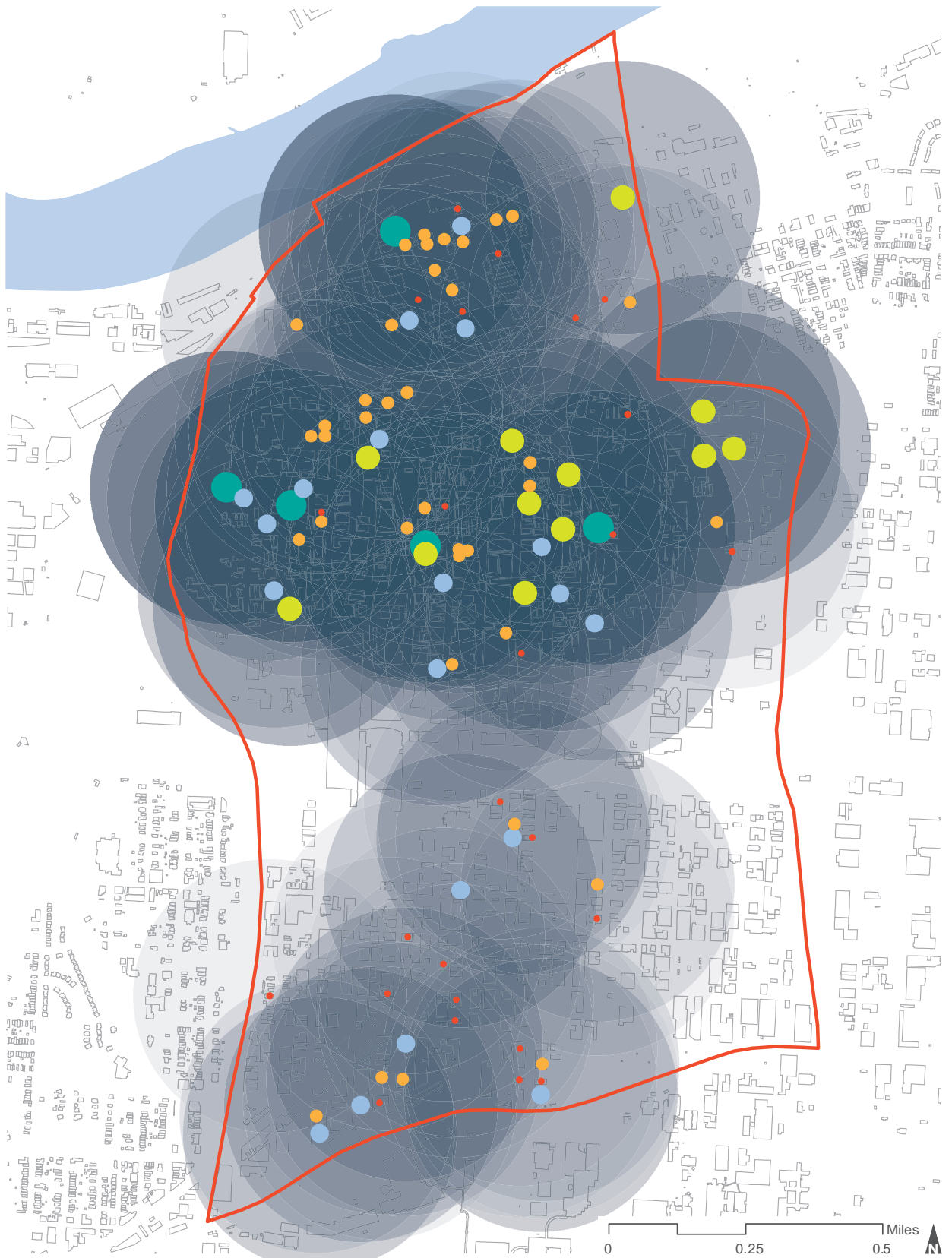


Figure C.02: Density of Population Analysis

parcs & green space analysis

An inventory of existing parks and green space was conducted for the urban study area. This information was used to gain an understanding of the existing structure within the urban context. This information was used to identify areas in the urban study area that are currently under served or void of public open spaces (Figure C.03). The urban study area contains a total of six parks/green spaces (Ermine Case Jr Park, Barney Allis Plaza, Ilus W. Davis Park, Oppenstein Brothers Park, Garment District Place, and Admiral Plaza) providing limited space. The parks that do exist are located with the Central Business District leaving the Crossroads Art District and River Market District without any parks or public green space.

The information presented through this inventory can be used to influence the site selection process for the implementation of an integrated productive landscape. With the intent of building upon the existing parks and green space network, these spaces can be used to provide needed public open space and recreational areas within the urban context. Providing these spaces for urban populations and the expansion of the parks and green space network provides the opportunity to enhance the urban structure of Kansas City.

legend

-  Study Boundary
-  Parks & Green Space
-  Parks and Green Space Buffer - 1000' radius
-  Building Footprint
-  Missouri River








Figure C.03: Parks and Green Space Analysis

development opportunities

The project should take into consideration areas within the city that provide opportunities for development. There are six locations inside the study boundary that have been identified as opportunities for development (figure C.04). These areas have been identified in the Greater Downtown Area Plan as having the potential for larger development projects. These projects are either currently underway, being planned, or locations for important connections or critical gaps should be filled. The project could be located in or near the identified development areas. The project could work with existing plans for a development, provide an incentive to expedite development of a site, provide important connections, or fill gaps in the urban fabric.

legend

-  Study Boundary
-  Development Opportunities
-  Building Footprint
-  Parks and Green Space
-  Missouri River

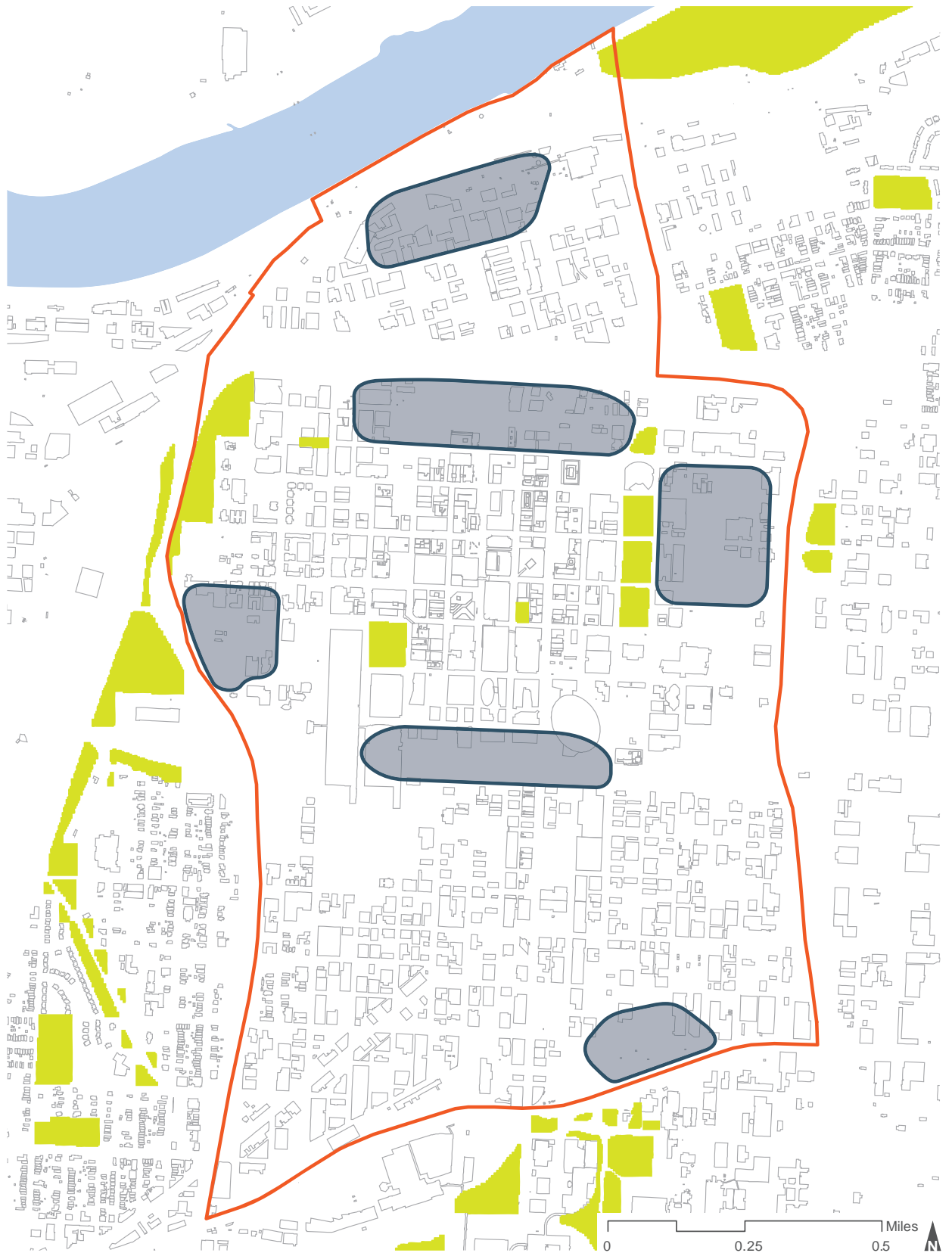


Figure C.04: Development Opportunities

connectivity barrier

The study boundary currently suffers from a sense of disconnect to both its surrounding context and a number of districts within the boundary. The study area is bordered to the north by the Missouri River, 71 Highway to the east, the Kansas City Terminal Railway corridor to the south, and Interstate 35 to the west. These corridors make connections outside of the study boundary difficult. In addition to barriers around the perimeter, three transportation corridors bisect the study boundary including the Burlington Northern Santa Fe Railway to the north, Interstate 70, and Interstate 670. The interior interstates create disconnect on the interior and make connections between the north and south difficult. The River Market District and the Crossroads Art District both lack connection to the downtown loop. It is important to consider the barriers as a potential opportunity to increase connectivity of downtown Kansas City.

legend







-  Study Boundary
-  Interstate/Highway Corridor
-  Railroad Corridor
-  Missouri River
-  District Boundaries
-  Street network



Figure C.05: Connectivity Barriers

references

references

- 18Broadway. 2009. DST Systems.
- ASLA. 2005 Professional Awards. Shenyang Architectural University Campus. in American Society of Landscape Architects [database online]. 2008 [cited October 3 2010]. Available from <http://www.asla.org/awards/2005/05winners/090.html> (accessed October 3, 2010).
- ASLA. 2008 Professional Awards. Viet Village Urban Farm. in American Society of Landscape Architects [database online]. 2008 [cited October 5 2010]. Available from <http://www.asla.org/awards/2008/08winners/411.html> (accessed October 5, 2010).
- Bellows, Barbara. 2011. Solar greenhouses. (February 25, 2011), <http://www.attra.org/attra-pub/solar-gh.html> (accessed March 21, 2011).
- Berry, Wendell. 1995. *Another turn of the crank*. Washington D.C.: Counterpoint Press.
- Bohn, Katrin, and Andre Viljoen. 2005. *Continuous productive urban landscapes: Designing urban agriculture for sustainable cities*. Boston: Architectural Press.
- . 2005. *More space with less space: An urban design strategy*.
- Brown, Katherine A., and Anne Carter. 2003. *Urban agriculture and community food security in the united states: Farming from the city center to the urban fringe*. Venice California: Community Food Security Coalition, , <http://www.foodsecurity.org/PrimerCFSCUAC.pdf> (accessed 2011).
- Clarke, Steven. 2010. Urban and open-space design for food and agriculture. In *Agricultural urbanism: Handbook for building sustainable food and agricultural systems in 21st century cities*, eds. Janine de la Salle, Mark Holland, 122. Chicago, IL: Green Frigate Books.
- Cornell University. 2004. *A primer on community food systems: Linking food, nutrition, and agriculture*. , <http://foodsys.cce.cornell.edu/primer.html> (accessed 2011).
- Corner, James. 1999. *Recovering landscape: Essays in contemporary landscape architecture*. (accessed February 12, 2011).
- Crawford, Margaret. 2010. Productive urban environments. In *Ecological urbanism*, eds. Mohsen Mostafavi, Gareth Doherty, 142. Germany: Lars Muller Publishers.
- Dickens, William T., and Ronald F. Ferguson. 1999. *Urban problems and community development*. Washington, D.C.: The Brookings Institution.

- Faith, Daniel P. Biodiversity. in *The Stanford Encyclopedia of Philosophy* [database online]. 2008 [cited March 8 2011]. Available from <http://plato.stanford.edu/archives/fall2008/entries/biodiversity/> (accessed March 8, 2011).
- Gauker, Codi. 2009. The impacts of sustainable and industrial agriculture on human health. , http://www.sustainw.org/data/org/11/media/doc/8102_food_impacts_on_health.pdf (accessed February 13, 2011).
- Greater Downtown Area Plan. 2010. Kansas city, Missouri.
- Halweil, Brian. 2002. Home grown: The case for local food in a global market, ed. Thomas PrughWorldwatch Institute.
- Hill, Holly. 2008. Food miles: Background and marketing. ATTRA - National Sustainable Agriculture Information Service, .
- Imbert, Dorothee. 2010. Aux fermes, citoyens! In *Ecological urbanism.*, eds. Mohsen Mostafavi, Gareth Doherty, 256. Germany: Lars Muller Publishers.
- Lal, R., Z. X. Tan, and K. D. Wiebe. 2005. Global soil nutrient depletion and yield reduction. *Journal of Sustainable Agriculture* 26, (1) (2005), http://pdfserve.informaworld.com/916058_731203451_904312463.pdf (accessed April 10, 2011).
- Mares, Teresa M., and Devon G. Pena. 2010. Urban agriculture in the making of insurgent spaces in Los Angeles and Seattle. In *Insurgent public space: Guerrilla urbanism and the making of contemporary cities.*, ed. Jeffrey Hou, 241. New York: Routledge.
- Marr, Charles. 1992. Vegetable garden planting guide. Kansas State University Agricultural Experiment Station and Cooperative Extension Service, , <http://www.ksre.ksu.edu/library/hort2/MF315.PDF> (accessed March 10, 2011).
- Merriam-Webster. Agriculture. in Merriam-Webster, Incorporated [database online]. 2011 [cited September 18 2011]. Available from <http://www.merriam-webster.com/dictionary/agriculture> (accessed September 18, 2010).
- . Community. in Merriam-Webster, Incorporated [database online]. 2011 [cited January 28 2011]. Available from <http://www.merriam-webster.com/dictionary/community> (accessed January 28, 2011).

references

- . Productive. in Merriam-Webster, Incorporated [database online]. 2011. Available from <http://www.merriam-webster.com/dictionary/productive?show=0&t=1305861852> (accessed January 28, 2011).
- . Urban. in Merriam-Webster, Incorporated [database online]. 2011. Available from <http://www.merriam-webster.com/dictionary/urban> (accessed January 28, 2011).
- Midwestern Regional Climate Center. Historical climate data: Growing season summary. 2010 [cited 12/2 Available from http://mcc.sws.uiuc.edu/climate_midwest/historical/grow/mo/234358_gsum.html.
- Mougeot, Luc J. A., ed. 2005. *Agropolis: The social, political and environmental dimensions of urban agriculture*. London: Earthscan.
- National Oceanic and Atmospheric Administration. Kansas city annual precipitation 1889-2009. in United States Department of Commerce [database online]. 2008 [cited 12/2 Available from <http://www.crh.noaa.gov/eax/localclimate/seasrank/annualpcpn.php>.
- Natural Resource Conservation Service. 2007. Contour farming , <http://soilwater.okstate.edu/CCA/StudyGuide%20pdfs/NRCScontour%20farming.pdf> (accessed April 3, 2011).
- Nordahl, Darrin. 2009. *Public produce: The new urban agriculture*. Washington DC: Island Press.
- Pelto, Gretel H., and Perti J. Pelto. 1983. Diet and delocalization: Dietary changes since 1750. *Journal of Interdisciplinary History* 14 (2) (Autumn 1983): 507, <http://www.jstor.org/stable/203719> (accessed January 28, 2011).
- Peters, Christian J., Nelson L. Bills, Jennifer L. Wilkins, and Gary W. Fick. 2009. Foodshed analysis and its relevance to sustainability. *Renewable Agriculture and Food Systems* 24, (1), <http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=4290516> (accessed March 27, 2011).
- Pollan, Michael. 2010. The food movement, rising. *The New York Review of Books* (May 20, 2010).
- . 2008. The food issue: Farmer in chief. *The New York Times*. October 9, 2008.
- Redwood, Mark, ed. 2009. *Agriculture in urban planning: Generating livelihoods and food security*. Ottawa, ON: International Development Centre.

- Running dry: The world has a water shortage, not a food shortage. 2008. *The Economist Newspaper Limited*, Sep 18, 2008, 2008 (accessed March 25, 2011).
- Salle, Janine. 2010. Thoughtful transitions: Integrating food & agriculture in cities. In *Agricultural urbanism: Handbook for building sustainable food and agricultural systems in 21st century cities*. 1st ed., 157. Chicago, IL: Green Frigate Books.
- Salle, Janine, and Mark Holland. 2010. Agricultural urbanism in a nutshell. In *Agricultural urbanism: Handbook for building sustainable food and agricultural systems in 21st century cities*. 1st ed., 30. Chicago, IL: Green Frigate Books.
- . 2010. Artisan agriculture. In *Agricultural urbanism: Handbook for building sustainable food and agricultural systems in 21st century cities*. 1st ed., 60. Chicago, IL: Green Frigate Books.
- . 2010. Charter for agricultural urbanism. In *Agricultural urbanism: Handbook for building sustainable food and agricultural systems in 21st century cities*. 1st ed., 176. Chicago, IL: Green Frigate Books.
- Turenscape. Shenyang architectural university campus. 2007 [cited October 5 2011]. Available from <http://www.turenscape.com/English/projects/project.php?id=324>.
- U.S. Census Bureau. 2009 population estimates. 2009 [cited September 14 2011]. Available from <http://factfinder.census.gov/>.
- USDA. Sustainable agriculture: Definitions and terms. in United States Department of Agriculture [database online]. 2006. Available from http://www.nal.usda.gov/afsic/AFSIC_pubs/srb9902.htm.
- World Food Summit. Food security. in World Health Organization [database online]. 2011 [cited February 12, 2011 2011]. Available from <http://www.who.int/trade/glossary/story028/en/> (accessed February 12, 2011).
- Wright, Julia. 2009. Sustainable agriculture and food security in an era of oil scarcity: Lessons from cuba. London: Earthscan.