5-2013

Connection through (Re)Use: Repurposing Kingsport, Tennessee's Industrial Landscapes

Patrick Nathan Osborne
posborn1@utk.edu

To the Graduate Council:

I am submitting herewith a thesis written by Patrick Nathan Osborne entitled "Connection through (Re)Use: Repurposing Kingsport, Tennessee's Industrial Landscapes." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Landscape Architecture, with a major in Landscape Architecture.

Brad Collett, Major Professor

We have read this thesis and recommend its acceptance:

Avigail Sachs, Tracy Moir-McClean

Accepted for the Council:
Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

Connection Through (Re)use: Repurposing Kingsport, Tennessee's Industrial Landscapes

A Thesis Presented for the

Master of Landscape Architecture Degree

The University of Tennessee, Knoxville

Patrick Nathan Osborne

May 2013

DEDICATION

This thesis is dedicated to my soon-to-be bride, Jessica. Without your love, support, patience, and smiling face, I would not be the man I am today. Something tells me this is going to be a good year.

ACKNOWLEDGEMENTS

I would like to thank my committee, Avigail Sachs and Tracy Moir-McClean for seeing potential in this idea at an embryonic stage. Your advice and support over the past several months has been enlightening. Thank you to my primary advisor, Brad Collett, for your devotion of countless hours and efforts to help make this thesis a success. My gratitude toward you for guiding me through this process, not to mention your leadership through the accreditation process as both professor and administrator, is immeasurable. Finally, a special thanks to the University of Tennessee Landscape Architecture faculty, both past and present, for taking a chance and accepting a computer-selling Spanish and World Business major into your program. You have changed my life.

ABSTRACT

This thesis seeks to promote industrial reuse and sustainable planning principles as catalysts for adaptive redesign of public space in Kingsport, Tennessee. During the middle to late decades of the 19th century, the southeastern United States experienced a period of extreme industrial acceleration, stemming from the mining, manufacturing, and transportation advances of the Industrial Revolution. Concurrently, a transatlantic transition toward utopian planning principles was being cultivated by Briton Ebenezer Howard under the Garden City movement. Garden cities were planned, carefully zoned communities, containing designated areas for commerce, industry, and living. In 1919, American landscape architect John Nolen developed a plan for Kingsport, Tennessee motivated by the principles of Howard's Garden City model. However, as the town's industrial, commercial, and residential centers expanded and its population increased, newly enacted zoning sanctions led to instances of sprawl and a digression from the core values on which the "Model City" was founded.

Today, in an era of post-industrialization, Kingsport's once thriving factories are now idle landscapes of social, economic, and geographic detachment, occupying valuable property that could be reclaimed as public space. The objective of this project is to create a new sense of place for Kingsport through the reclamation of derelict vacant lots and abandoned industrial space as landscapes of economic prosperity, environmental stability, and social and cultural connectivity. The redevelopment of abandoned industrial sites in downtown Kingsport as parks and public spaces has the potential to integrate isolated neighborhoods, revitalize a struggling downtown, and reconnect the city and its people to the industrial heritage and cultural diversity that helped shape it into the town that it is today.

PREFACE

As a native of Kingsport, Tennessee, the Appalachian region is an inherent part of who I am. Having lived in Kingsport for 18 years of my youth, I have a very deep connection with its people, places, and culture. The industrial qualities of the region's landscape are something I hold in great regard and aim to preserve. However, when these industrial landscapes no longer serve their intended purpose, and as a result lay idle as polluted sites, separate communities once reliant on their vitality, and detract from the beauty and spirit of a place and its people, action must be taken to mend these negatives impacts. Such is the case for the industrial landscape that lies just south of downtown Kingsport. An intervention must be made to reclaim this site as an integral component of the community.

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER I

BACKGROUND

Introduction

Located in the Appalachian Mountains in the northeast corner of Tennessee, Kingsport is a middle-sized city rich in Appalachian heritage and significant natural landmarks. It is predominantly comprised of a middle class caucasian population, with the majority of its residents living in one of several neighborhoods that fall outside the perimeter of the centrally-located downtown. Since its charter in 1917, Kingsport has flourished as an industry-driven city, with its most prominent industries currently being plastics and paper. While Kingsport's major industries, such as Eastman Chemical Company and Domtar, and their employees have sustained economic success over the last century, many less fortunate businesses and communities have suffered.

With so much economic emphasis resting on the shoulders of two major industries, many smaller commercial endeavors tend to fail, leaving behind a trail of abandoned and vacant industrial landscapes that ultimately disconnect the community's once contiguous districts from one another. The abandonment of these landscapes not only leads to community isolation and social fragmentation, but also inhibits the realization of their potential as zones of fiscal, environmental, and sociocultural opportunity. Kingsport's downtown district and surrounding neighborhoods are on life support, and need new air breathed into their lungs in order to be revived.

This project seeks to explore the reclamation and revitalization of industrial landscapes as this new air; creating areas of social, cultural, and ecological connectivity. Connecting socially fragmented communities through these revitalized landscapes may instill a new sense of community pride by illustrating the depth of Kingsport's industrial heritage as well as its natural beauty and citizenry. This renewal of the "Model City" through industrial reclamation has the potential to revitalize a stagnant downtown and

reintegrate formerly segregated neighborhoods through municipal co-operation and previously nonexistent social opportunities. Prior to an investigation into site design, however, Kingsport's history and background must be further examined to inform the proposed interventions.

Kingsport's Early History

During the middle to late decades of the 19th century, the southeastern United States endured an era of great turmoil, as it coped with the mayhem and disorder spawned by the American Civil War. The Civil War left East Tennessee in a state of economic and social deflation, stemming from the drastic shift from amiable business relationships and abundant commercial prosperity to a contentious and determined ferocity for survival that led to the abandonment of the commercial districts. In *Kingsport, The Planned Industrial City*, Howard Long summarizes the impact of the Civil War on one such community of the region:

> For four years the village of Boat Yard, or Kingsport, which for a long time had known only friendship and contentment, was torn by hatred, distrust, military raids, and the anguish of want, suffering and death. The plough stood forgotten in the furrow, the infant factories along the Holston, with the exception of the powder mills, stood idle and neglected, and forgotten too was the busy shipping industry on the river (Piquet, 20).

In addition to the industrial slumber of Kingsport, the Civil War had also sparked a neglect that much of the region's agriculture felt due to the newly enacted slave laws. Without the labor needed to work the fields, much of the farmland around Kingsport fell to ruin.

At the end of the 19th and beginning of the 20th centuries, the Appalachian region of Northeast Tennessee and Southwest Virginia began to witness a shift away from the depression of the Post Civil War Era. The introduction of the Carolina Clinchfield and Ohio Railroad (Figure 1) in the 1890's offered the ability for thousands of opportunistic

people to relocate throughout the midsouth with relative ease, leading to the founding of hundreds of cities throughout the Appalachian region. The 277 mile railroad, running from Elkhorn City, Kentucky, to the factories of Spartanburg, South Carolina, brought

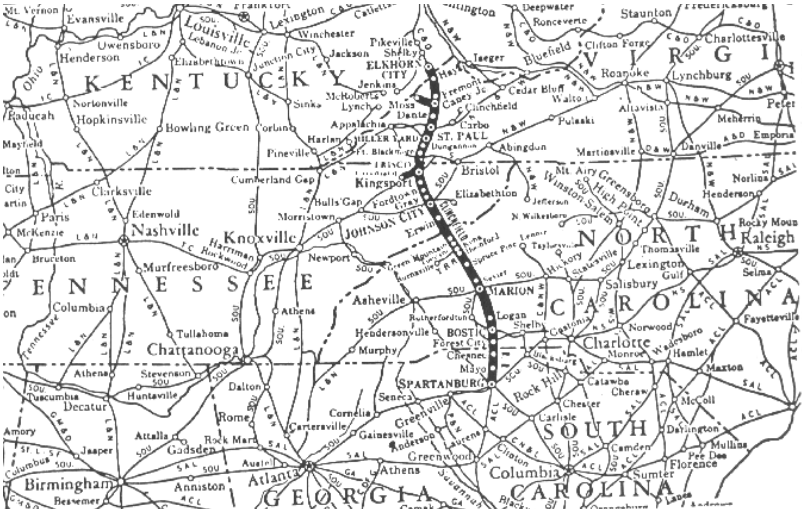


Figure 1: Carolina Clinchfield and Ohio Railroad.
http://www.wiringfordcc.com/clinch.htm

previously unavailable business opportunities to the southeast by allowing for the transport and further exploitation of the region's natural resources. An influx of affluent, business minded industrialists and their new and innovative technologies followed these rail lines to Appalachia, establishing coal mining, timber, shale, silica, limestone and plastics manufacturing industries throughout the region. At the heart of this commercial boom was the young industrial town of Kingsport, Tennessee.

Incorporated in 1917, Kingsport is situated on the convergence of the north and south forks of the Holston River. With its name derived from "King's Port", Kingsport was originally a major port for boats and ships navigating the waters of the Tennessee River Valley. By the 1920's, Kingsport had established itself as a multi-industry magnet, with a cement plant, a brick manufacturing facility, a pulp mill and paper manufacturer, a methanol distillation plant, a hosiery mill, a book manufacturing facility, and plastics

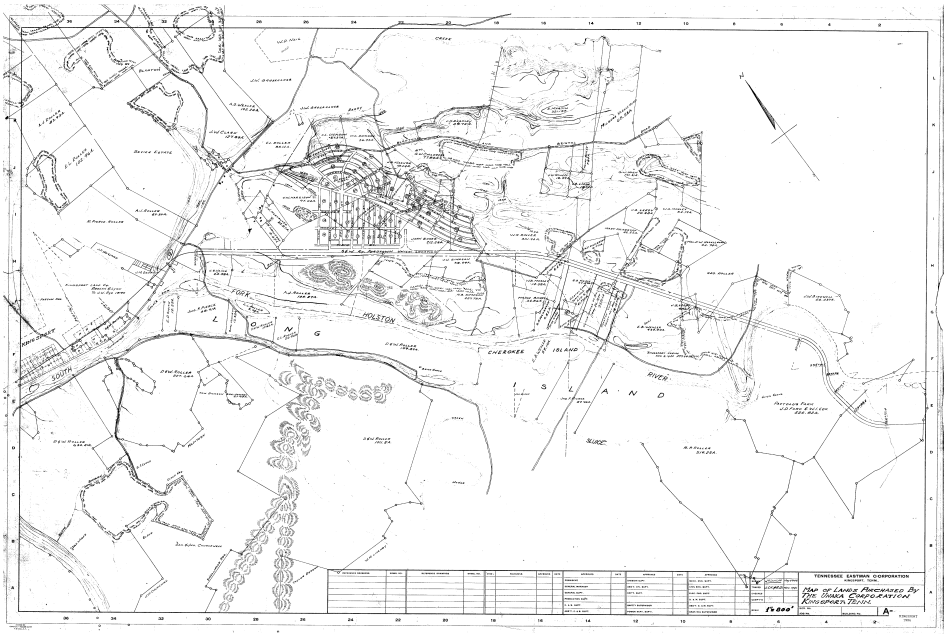


Figure 2: William Dunlap's 1906 Plan of Kingsport, TN.
Source: http://gis.kingsporttn.gov/maps

manufacturing factories, among others, weaving an industrial fabric throughout the landscape (28 and 29). For the first one hundred fifty years of their existence, the pre-industrial Appalachian settlers relied heavily on the exploitation of these natural resources that ultimately shaped Kingsport's industrial environment. Still, the citizens of this region embraced the rail lines and subsequent industries that brought employment opportunities and the comforts of modernization to northeast Tennessee. As Tom Lee explains in *The Tennessee-Virginia Tri-Cities: Urbanization in Appalachia, 1900-1950* the "country stores, two-lane roads, and cornfields would eventually give way to cities, multi-lane highways, and new housing" (Lee, 1). Urban planning pioneer and landscape architect John Nolen, along with Kingsport's business and political magnates, recognized this shift and identified Kingsport and the Tri-Cities as a region with unlimited potential.

Kingsport was planned in 1919 by Nolen, whose vision for the industrial town was to create a city layout "that would permit expansion for many years to come, without disturbing or distorting his original conception" (Piquet, 32). According to Margret Ripley

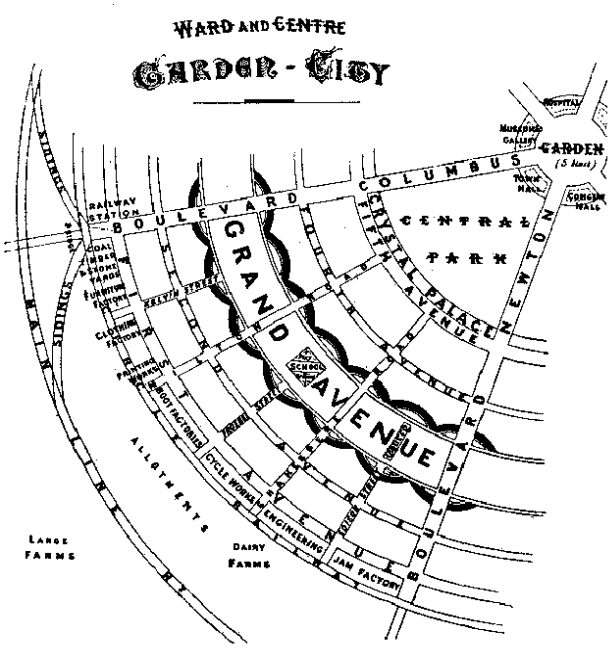


Figure 3: Ebenezer Howard's Garden City.
Source: http://www.sacred-texts.com/utopia/gcot/index.htm

Wolfe, Nolen "inherited certain proscriptive conditions, including the location of the railroad, the businesses and industries that had spring up along the Carolina Clinchfield and Ohio railroad, and the general scheme of downtown" (Wolfe, 43). The plan for the city, which was designed to accommodate a population of fifty thousand people, was based off of a drawing for downtown created by railroad engineer William Dunlap in 1906. Dunlap's plan, while arranging downtown's street grid and the radial network north of Church Circle, only incorporated a small portion of what is now considered to be Kingsport's downtown (Figure, 2). Nolen's adaptation of Dunlap's plan expanded on his idea, creating districts within downtown that followed a form and function heavily influenced by the values of Ebenezer Howard's 19th Century Garden City movement. Garden cities were planned, carefully zoned communities, containing designated areas for commerce, industry, and living (Figure 3). Commerce was typically located in the heart of the city, acting as a buffer between the residential areas to the north and the industrial areas to the south. These zones within the city limits were then surrounded by greenspace or "green belts", which

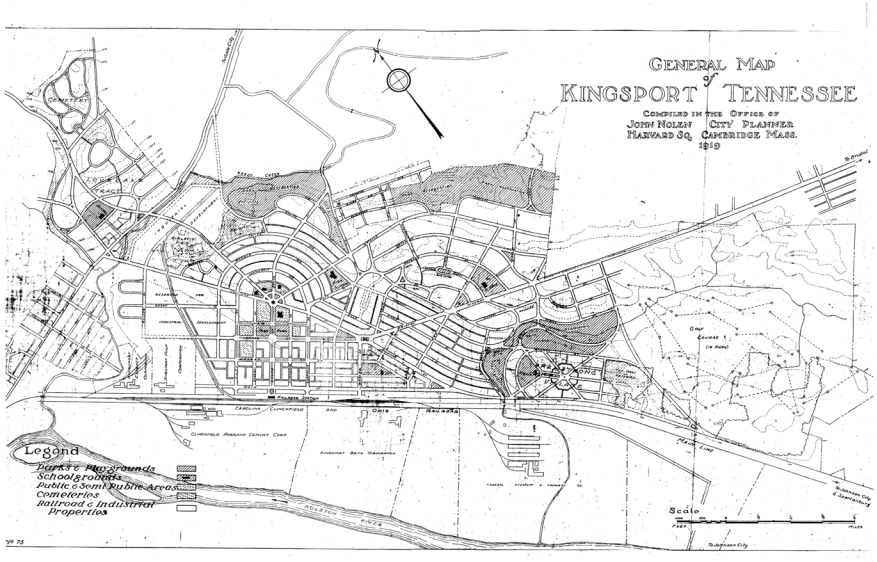
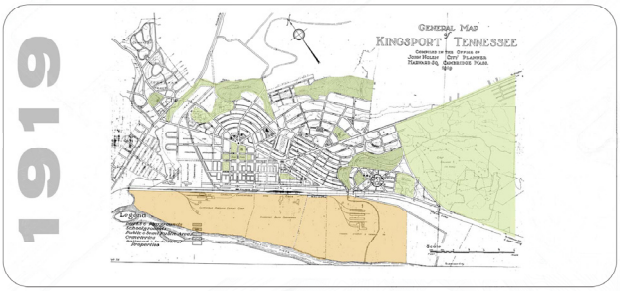


Figure 4: John Nolen's Plan for Kingsport, 1919.
Source: http://gis.kingsporttn.gov/maps

were intended to function as the community's connection to its pastoral roots. Nolen's incorporation of these models can be seen in his original plan for Kingsport, where he designated the space south of downtown as industrial, the area directly north as civic and residential, and included a northern border of park reservation (Figure 4).

As Kingsport grew and its population expanded, designated areas for commerce, industry, and residential living became fully developed as Nolan had intended. However, much of the designated space intended for park reservation was acquired for expansion of these industries, businesses, and communities, leaving an absence of greenspace in downtown Kingsport. Nolen's originally planned green border is now relegated to small pocket parks (mostly soccer and baseball fields) and a seven mile linear greenbelt system, all of which fall outside the immediate proximity of downtown. This change in land use and development from the early twentieth century to 2010 is evident in the timeline shown in Figure 5. The park reservations (highlighted in green), have dramatically decreased over the past one hundred years to accommodate Kingsport's commercial and industrial

In W. Dunlap's plan, the property throughout the city was still under individual ownership. Though his initial design for downtown is reflected in Nolen's plan, the parcels had not yet been zoned for specific use.



By 1919, much of the land south of the railroad had been purchased by Clinchfield Portland Cement Corp (beige), Kingsport Brick Corp. (orange), and Federal Dyestuff and Chemical Co. (green), leading it to be zoned for industrial use. Nolen's plan made special reservations for land use, including industrial development, park reservation, commerce, and living.

In 1935, Nolen's plan was beginning to take shape, with Broad St., and Church Circle forming the center from which the city would grow. The industrial site (orange) south of the railroad was now very much in use, with shale and mineral mining notated in the plan.

By the 1960's , Kingsport had developed a more refined and complex street network along with a more intense industrial development south of the rail line. Sandwiched between the brick and chemical industries was the new factory worker community of Riverview (orange), which was established in the 1940's as Kingsport's segregated African American neighborhood.

By 2010, Kingsport's downtown had been fully developed, with designated areas for commerce, industry, and residential living as Nolen had intended. However, the lack of intended park reservation is noticeable as the majority of the site has been developed for alternate uses. The once thriving General Shale Brick Corp and Penn Dixie Cement plants (green) are now abandoned, leaving a potential reuse opportunity for park reservation in this area to accomodate Riverview (orange), downtown Kingsport, and to appease Nolen's original intentions.

Figure 5: Timeline of Development in Kingsport, TN
Source: Author and http://gis.kingsporttn.gov/maps

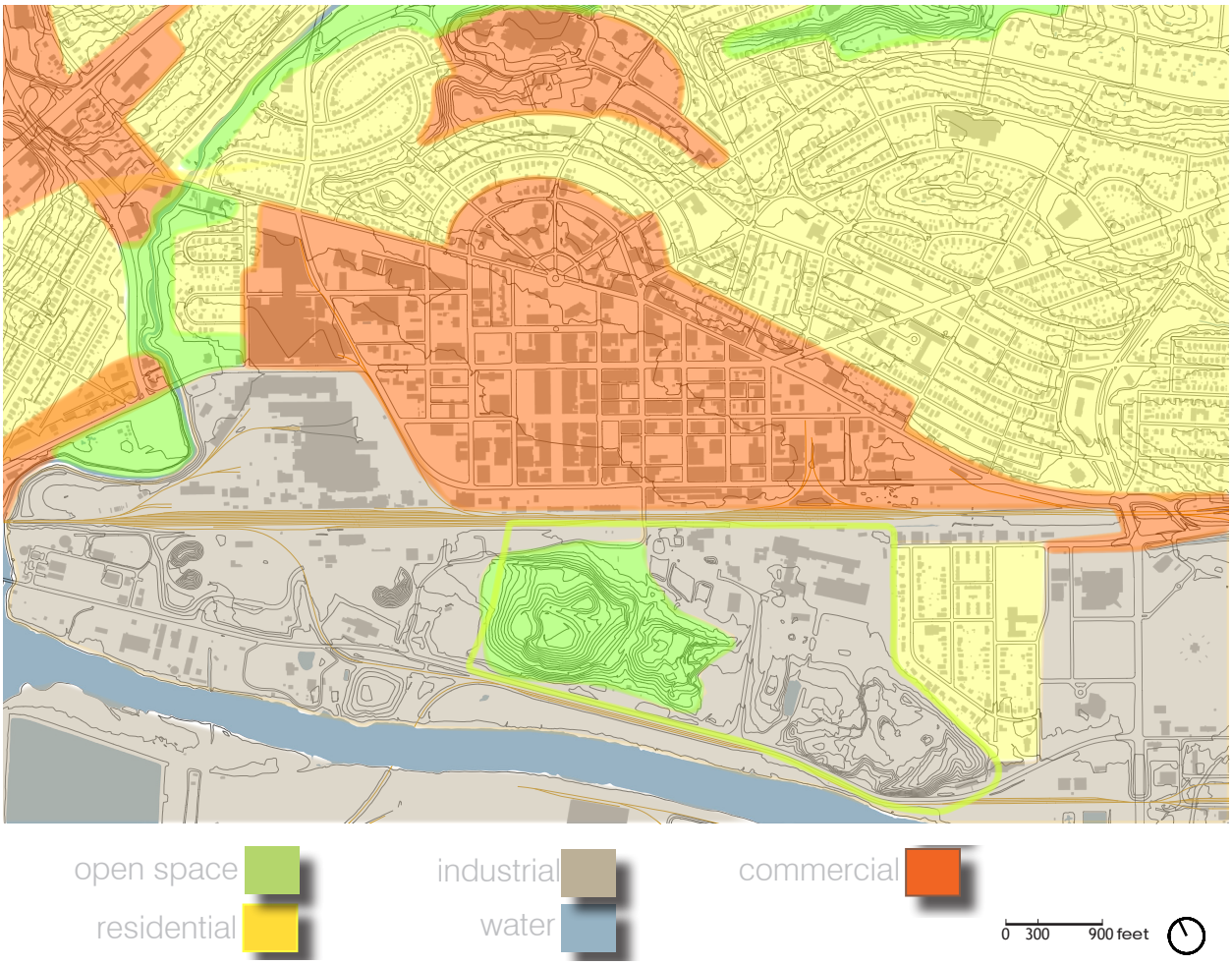


Figure 6: Land Use in Downtown Kingsport, TN. Present Day. Source: Author

expansion. This timeline does not capture, however, the economic struggles currently facing these commercial and industrial districts in and around downtown.

Presently, Kingsport's economic depression can be attributed to a number of factors. First, the Carolina Clinchfield and Ohio Railroad is no longer a major goods transportation line for the southeast. It has since been replaced by interstate cargo distribution, and more recently, air freight. Second, the shift of manufacturing jobs to Third World countries due to lower labor costs has had a powerful effect on the American manufacturing industry, from which Kingsport has not been immune. These factors have left Kingsport reeling in

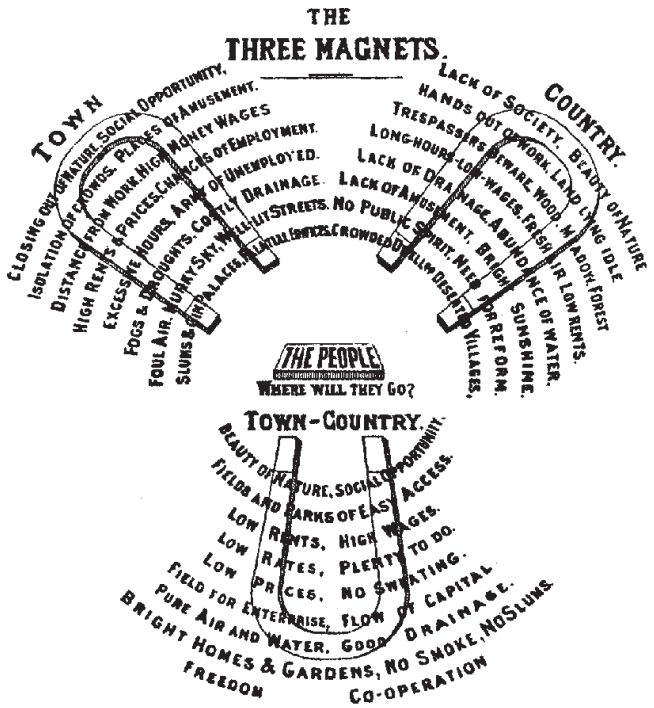


Figure 7: Ebenezer Howard's "The Three Magnets".
Source: http://architectureandurbanism.blogspot.com/2010/10/ebenezer-howard-garden-cities-of-to.html

a state of economic distress, leading to the closure of numerous businesses. The closure of these businesses, when combined with a lack of public greenspace, ultimately led to a struggling central business district that is an undesirable environment for commerce and social activity.

Theoretical Perspective of Future Opportunities

Ebenezer Howard's *To-morrow: A Peaceful Path to Real Reform* establishes a set of rules and guidelines to follow to create a Garden City, which is described in his book as a "Town-Country Magnet". The Town-Country Magnet is ideally comprised of the best of what the city and rural landscape have to offer, from social opportunities, low rents, high wages, and entertainment, to natural beauty, lack of pollution, freedom, and co-operation (Figure 7). This idea of the Town-Country Magnet stems from the utopian concepts addressed by Howard's mentor and predecessor Edward Bellamy in his novel *Looking Backward: 2000-1887*. In *Looking Backward*, the story's protagonist is sent

130 years in the future to a Boston city which has radically changed its political, social, and environmental landscape. The book clearly highlights the flaws of then present day 19th century cities and strives to illustrate the possibilities for reform in the urban environment. The tenets set forth by Howard under his Town-Country Magnet concept as well as Bellamy's utopian ideals can be directly applied to the enhancement of Kingsport's abandoned industrial landscapes. Refocusing on values such as environmental health and anti-pollution, adequate living arrangements, and community co-operation can help improve these areas.

Another major focus of both *To-morrow* and *Looking Backward* is that of economic reform, which highlights the fiscal potential of a new Town-Country lifestyle. This is done primarily to raise industrial leaders', governmental bodies', and private investors' awareness of these benefits, as these groups would have the financial means to fund such a planning endeavor. It also showed the means for a Garden City to be economically self-sufficient, appealing to those opposed to outside influence:

> It will be seen that the whole scheme of Garden City will make extremely few demands upon the resources of outside local authorities. Roads, sewers, schools, parks, libraries, etc., will be provided out of the funds of the new "municipality," and in this way the whole scheme will come to the agriculturalists at present on the estate very much like "a rate in aid" (Howard, 60).

When understanding the developmental history of Kingsport, it is important to recognize that the city was formed by private investors and industrial magnates as a major southern commercial hub for the production and distribution of various goods in the early 20th century. Appealing to this specific demographic was undoubtedly an important step in attracting investors that could potentially help Kingsport realize its potential as a Garden City.

It is important to recognize what makes a town and its composition appealing to its existing inhabitants and its potential dwellers. Thus, an important notion to understand is that of attraction. An attraction is not just a physical thing; a picturesque view, an employment opportunity, or a carnival sideshow. Attraction is very much a cognitive action, something deeply rooted in the essence of being human. For most of us, these emotional attractions are derived from a set of social, cultural, political, religious, or economic directives that have been handed down through generations of urban and rural living in a specific place.

Christian Norberg-Schulz, following the teachings and philosophies of Martin Heidegger, identifies this attraction as the genius loci, or, the "spirit of a place" in *Genius Loci: Towards a Phenomenology of Architecture*. While the phenomenology of a place is comprised of the tangible, "concretation," or the function of the work of art (as opposed to the "abstraction" of "science") (Norberg-Schulz 23), life is also made up of intangible phenomena like feelings, desire, and yearning to dwell in a place. These cognitive experiences are focused on a place as a result of its content or significance, along with the proper circumstances, such as "lighting, temporal rhythms, character, and cosmic order" (32). While the study of phenomenology may not have been fully recognized until the early twentieth century, the work of Howard and Bellamy holds a strong connection to this philosophy through their emphasis on the importance of point of view of the beholder and the tendencies of human nature as a whole. This is recognized in the orderly and deliberate planning of such early garden cities as Letchworth, Welwyn, as well as Nolen's plan for Kingsport. These towns and their planners recognized the social and cultural tendencies of the inhabitants, making spatial designations that pertained to the specific aspects of one's life.

One of these spatial designations was the development of neighborhoods in close proximity to the industries of Kingsport. These neighborhoods were created to provide

low cost, convenient, public housing for the factory workers that had relocated from the rural hills of Appalachia. Given that many of these workers were homeless or living in slums prior to the development of the neighborhoods, these industrial communities were attractive to them, regardless of the quality of the living conditions. One industrial neighborhood in particular, Riverview, and its adjacency to the now-vacant Penn-Dixie Cement Plant and General Shale Brick Plant, forms the basis upon which the opportunity for reconnection through industrial reuse and reclamation has been recognized.

CHAPTER II

Rise and Fall of Kingsport's Industrial Landscapes

Site Selection

Founded in 1910, Penn-Dixie Cement Corporation (formerly Clinchfield Portland Cement Corporation and General Shale Products Corporation (formerly known as Kingsport Brick Corporation) were two of the first companies to establish themselves in Kingsport's landscape. Included in John Nolen's 1919 master plan, the location of these two corporations, along with Federal Dyestuff and Chemical Corporation (now Eastman Chemical Company) formed the backbone from which Kingsport would develop as a booming industrial town. Their location between the Carolina Clinchfield and Ohio Railroad and the Holston River allowed the corporations to ship and receive freight transported by both water and rail (Figure 8). At the peak of its manufacturing success,

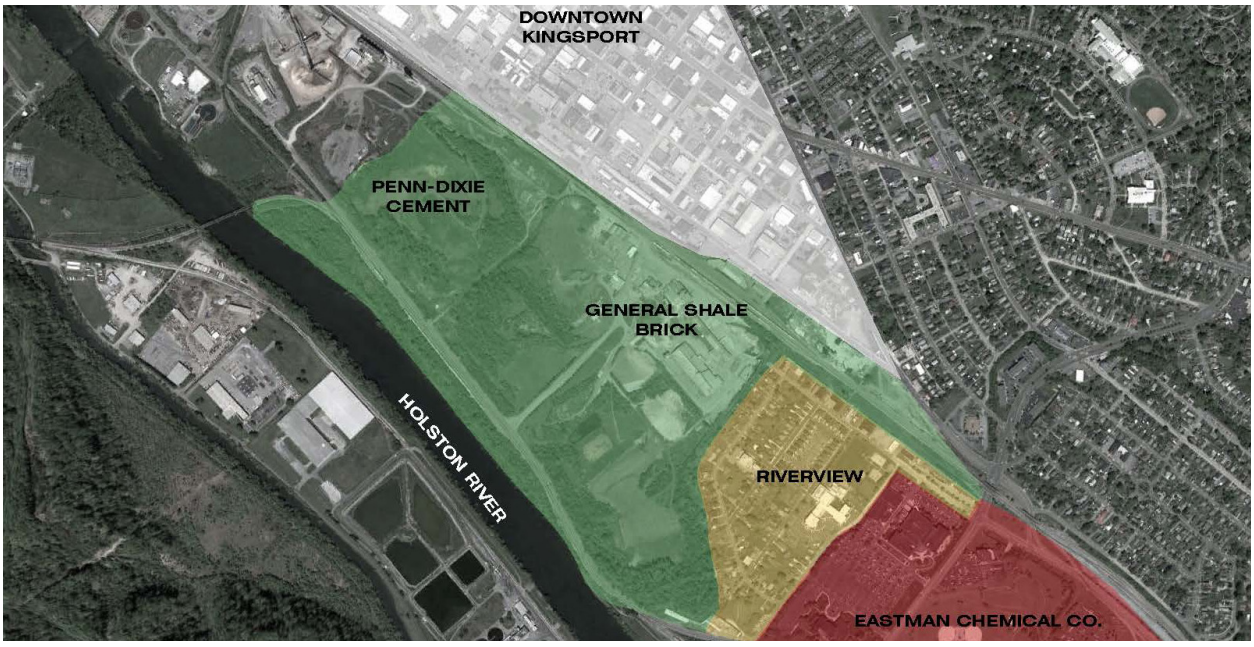


Figure 8: Proposed Site- General Shale Products and Penn-Dixie Cement
Source: Author and Google Earth

Penn-Dixie Cement Corporation was supplying much of the southeast with its concrete products, mainly those cities and states located along the rail line. During the 1930's and 1940's, the Tri-Cities area (Kingsport, Bristol, and Johnson City, TN) was the largest brick manufacturer in the United States, producing more than 1.2 million bricks annually at General Shale Products' Kingsport and Johnson City plants.

The high demand for employment at these corporations led to a population influx in Kingsport by way of the Carolina Clinchfield and Ohio Railroad, which in turn led to the development of many communities for different races and social classes. Kingsport's Riverview was one such community, developed between the 1930's and 1940's as a predominately African American working-class neighborhood. The City of Kingsport's proposed location for Riverview was one of both racial segregation and industrial centrality, distancing it from the affluent neighborhoods and situating it between the General Shale Brick plant, the Penn-Dixie Cement plant, and the Eastman Chemical Company. The

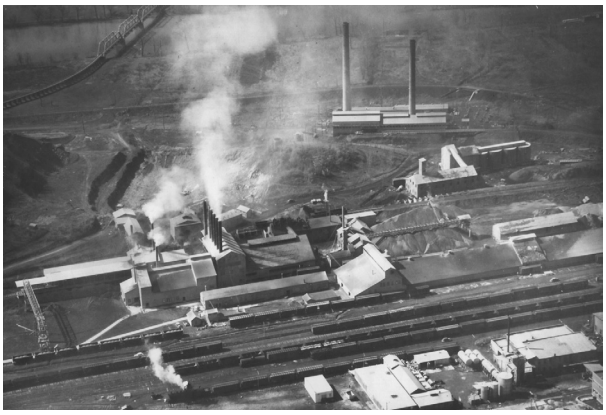


Figure 9: Penn-Dixie Cement, 1947
Source:http://tnsos.org/tsla/imagesearch/index.php?resultpage=52&find=aerial

Figure 10: General Shale, 1947
Source:http://tnsos.org/tsla/imagesearch/index.php?resultpage=52&find=aerial

Riverview site was not one of fluid egress and ingress, as it was flanked on the north by the Carolina Clinchfield and Ohio Railroad and the south by the Holston Ammunition Railroad and Holston River. The nearby active railroad created dangerous walking

Figure 11: Riverview and Eastman, 1947
Source:http://tnsos.org/tsla/imagesearch/index.php?resultpage=52&find=aerial

Figure 12: Cartwright Family, Riverview.
Source: http://riviervieworalhistories.blogspot.com/search?updated-max=2007-02-28T18:44:00-08:00&max-results=7

conditions as well as high levels noise, pollution, and air quality. Moreover, the land selected for Riverview's development was of poor quality, mostly consisting of marshland and poorly drained soils. While Riverview's close proximity to the local industries was considered one of the greatest benefits to the community, it would become its greatest detriment as these corporations fell into decline.

With the closure of the Penn-Dixie Cement plant in 1980 and the more recent closure of General Shale Brick in 2008, the property on which these corporations thrived for so many years is now vacant and lies in a derelict state (Figure 13). Acres of impervious surface plague the site, with a large majority of the property's softscape overrun by invasive species. Remnants of the site's industrial heritage remain, though many of the abandoned structures and infrastructure have been reduced to rubble. However, the site's vacancy now offers great reclamation potential, something from which the Riverview community and downtown Kingsport would mutually benefit.

The termination of these corporations led Riverview to experience even more social fragmentation and segregation from Kingsport than was originally planned. With the departure of these once abundant employment opportunities, combined with the

existing entrance

viewshed of bays mountain

manmade mining ridge

concrete cylinder remnant

brick factory and silo

brick warehouse

contrasting landscape

nature vs. industry

clinchfield train station

abandoned rail

derelict bridge

holston ammunition rail

Figure 13: Existing conditions of the Penn-Dixie Cement and General Shale Products Sites
Source: Author

downsizing of much of Eastman Chemical Company's factory workforce, unemployment rates in Kingsport have increased to nearly 8%, with much of the low-income population contributing to that number. The isolation created by the closure of these industries as well as its geographic location led to some of the highest crime rates in the city, including

theft, drug trafficking, and violent crimes. The abundance of crime in this area over the last 10 years has given Riverview a stigma as a dangerous and unattractive place to inhabit, leading much of Kingsport's middle and upper class to resist integration and interaction with the community.

Recently, Riverview has been adopted as a "Weed and Seed" Area, which is a government sponsored program to reclaim criminally vulnerable neighborhoods through community revitalization and crime prevention. Since the inception of the "Weed and Seed" initiative, Riverview has undergone a drastic transformation. The community has seen an extreme reduction in crime, making it one of the safest neighborhoods in Kingsport.

In addition to the "Weed and Seed" program, Riverview was also selected for the government funded Hope VI initiative (Figure 14). According to the U.S. Department of Housing and Urban Development, the HOPE VI program was developed "as a result of recommendations by National Commission on Severely Distressed Public Housing, which was charged with proposing a National Action Plan to eradicate severely distressed public housing. The Commission recommended revitalization in three general areas: physical improvements, management improvements, and social and community services to address resident needs"(portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/programs/ph/hope6). The HOPE VI effort in Riverview identified all ninety-two of its existing units as severely distressed, leading to their demolition. These housing units were then replaced by newly constructed housing that not only allowed for forty additional families to occupy the dwellings, they also improved the functionality and beauty of the community by providing more comfortable and appealing street conditions (www.kingsporthopevi.com). Additionally, a new community center and children's play area were added to the neighborhood, allowing for more opportunities of social interaction.

Though Riverview has undergone a substantial makeover both physically and socially over the past few years, many of these positive improvements have gone

Figure 14: Riverview Photo Inventory and Hope VI Data
Source: Author, http://www.kingsporthopevi.com/pages/hopevi_construction_gallerysh.php, http://douglassalumni.blogspot.com/2008_01_01_archive.html

unrecognized. It remains isolated from the greater Kingsport community and carries an historic stigma as an unsafe and unsavory destination. As such, the majority of the city's population has not witnessed these enhancements. However, the successful revitalization of Riverview gives promise that Kingsport's other desolate areas, namely the vacant

industrial properties surrounding Riverview, may also be revitalized.

Reclaiming the abandoned industrial corridors surrounding the isolated Riverview neighborhood and designing them as post-industrial landscapes of social, cultural, ecological, and economic connectivity not only provides recreation opportunities for the citizens of Kingsport and helps rediscover downtown Kingsport's genius loci, it can also help reintegrate the Riverview community and its inhabitants into Kingsport's urban fabric.

CHAPTER III

PRECEDENT STUDIES

After identifying the need for the revitalization of industrial properties south of downtown Kingsport, it is important to understand how such a revitalization has taken place on similar post-industrial sites. With service and technology sector economies increasingly pushing modernized societies into a post-industrial era, many abandoned factories and their landscapes are being reclaimed as areas of recreation, environmental remediation, economic vitality, and community interaction. Even though these spaces are no longer manufacturing goods and fulfilling their original purpose, they still have the potential to contribute a variety of offerings to a struggling landscape. The transformation of these industrial spaces can breathe new life into a region's economy and help redefine its identity as an area of progressive and innovative thinking.

The following precedent studies are of reclaimed industrial sites found throughout the world. Each study represents a unique approach to reuse that adheres to varying sets of guiding principles driven by the social, geographical, ecological, and economic context of each site. The different approaches found in the following case studies range from focuses on regional connectivity, industrial heritage, economic development, and environmental remediation. Each study provides a unique lesson as to how the industrial site south of downtown Kingsport can be repurposed to better serve the adjacent Riverview community, the city, and region as a whole.

The case studies that were investigated are Landschaftspark in Duisburg Nord, Germany (Latz + Partner), Westergasfabriek Park in Amsterdam (Mecanoo, Gustafson), The Netherlands, Evergreen Brick Works in Toronto, Canada (Du Toit Allsopp Hiller Architects, Diamond and Schmitt Architects), and Fresh Kills Park in Staten Island, New York (Field Operations).

Landschaftspark Duisburg-Nord: Duisburg Nord, Germany

Latz + Partner

Figure 15: Landscape Park Duisburg-Nord Panoramic.
Source: http://landarchs.com/re-use-abandoned-areas/

As a part of Germany's "International Building Exhibitions" (IBA) initiative of the late 20th century, Landschaftspark Duisburg-Nord serves as an excellent example of post-industrial reclamation in landscape architectural design. The IBA was created as a decade-long plan to revitalize the Emscher River corridor, a densely populated area of over 115 square miles of downtrodden industrial landscapes and disconnected communities. The intention of the IBA was to incorporate new site design guidelines and

Figure 16: Gardens and Viewing Platform.
Source: http://landarchs.com/re-use-abandoned-areas

best management practices (BMP's) that ultimately would lead to the improvement of the landscape's ecology while maintaining the industrial heritage of the region.

As a reflection of the IBA's overall objectives, Landschaftspark Duisburg-Nord integrates the abandoned industrial buildings of the Thyssen Steelworks manufacturing plant into a postindustrial public park with multiple functions and amenities. One of the primary functions of Landshcaftspark is to connect the fragmented towns along the Emscher River Valley through a unique and distinct recovered landscape. Circulation throughout the site as well as the region has greatly improved through the installation of numerous hiking and biking trails and through the renovation of existing commercial rail lines repurposed as commuter rail. As mentioned in the Danish Architecture Centre's website, "the park is composed of regenerated brownfields, reclaimed forests, and existing recreational areas that together provide a cohesive set of green infrastructure for the entire region" (sustainablecities.dk). Along with the ecological improvements made to the area, the reuse of abandoned industrial sites has led to many positive economic impacts to the Ruhr District by improving the quality of the surrounding underdeveloped

Figure 17: The Railway Park.
Source: http://landarchs.com/re-use-abandoned-areas/

Figure 18: Blast Furnace at Night.
Source: http://landarchs.com/re-use-abandoned-areas/

areas through the introduction of cultural, residential, and commercial uses to the existing landscape.

The redevelopment of Kingsport's downtown and industrial corridors can take multiple queues from the lessons taught by Landschaftspark Duisburg-Nord. Landschaftspark is a splendid model for reclaimed industrial landscapes that have maintained their historic identity while improving their bioregion's ecology and economy. The reuse of the existing architecture and industrial relics as a tool for both economic and environmental reform displays great attentiveness to the needs of the Ruhr District, and shows that a landscape's purpose can be multi-dimensional. Its function as a "green connector" for segregated communities is perhaps one of the most important takeaways, given the need for Kingsport's low-income communities to become spatially integrated with the city as a whole.

Westergasfabriek Park- Amsterdam, Netherlands

Mecanoo (architecture), Kathryn Gustafson (landscape architecture),

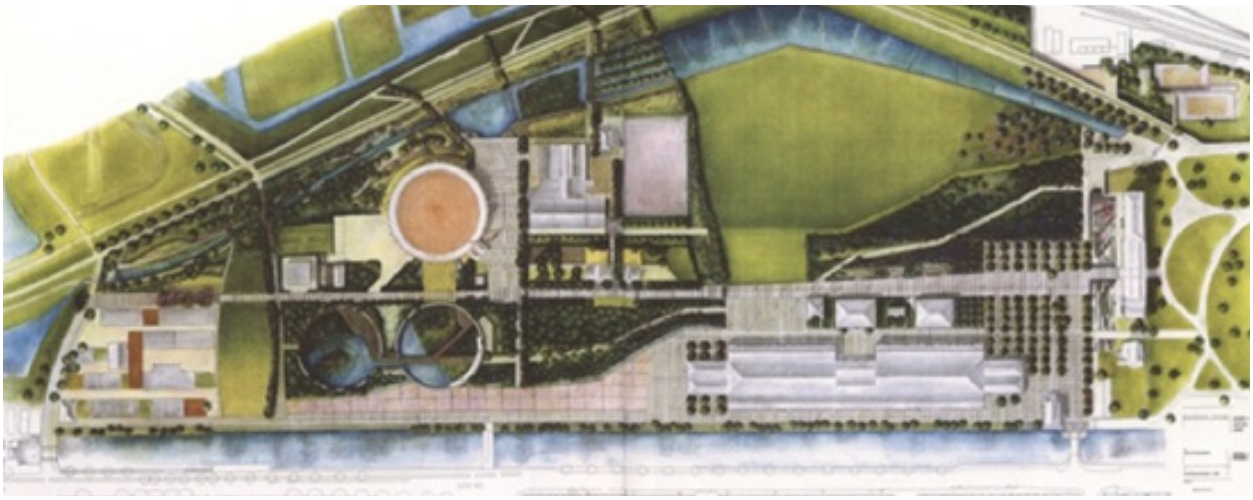


Figure 19: Site Plan. Source: utilityofspace.files.wordpress

Located along the edge of Amsterdam's Haarlemmertrekvaart canal, Westergasfabriek Park is a landscape urbanism project that aimed to remediate a former gasworks and brownfield site. The factory located on the site was a coal-to-gas conversion plant built in the late 19th Century. After operating for over 60 years, the gas plant was shut down in the mid 1960's and ultimately converted into an artisan housing community in the

Figure 20: Panoramic Photo. Source: utilityofspace.files.wordpress

1980's. Though the site had been reclaimed for residential use, it had not yet undergone brownfield remediation, forcing a new approach for redevelopment to be employed.

In 2000, a competition was held for new designs that focused on both site remediation and architectural preservation of the existing industrial buildings. The winning design by Mecanoo (Architecture) and Kathryn Gustafson (Landscape Architecture) is arranged on an axis that gradually transitions from a public, urban plaza to a more naturalized environment, symbolizing the gradual de-evolution of the space over the past century. Storm water remediation is also a major component of the design, incorporating a series of check dams and pools that serve as a natural filtration system.

The relevance of Westergasfabriek Park to the reclamation of industrial space in Kingsport is twofold. Mecanoo and his partners recognized the historical significance of the existing factory buildings on site, and elected to preserve them as historical markers throughout the landscape. This not only creates an interesting aesthetic contrast to the newly naturalized park and plantings, it also allows the space to in essence maintain the identity it has held over the last one hundred years. Essentially, the conversion of a brownfield site into a center for stormwater remediation provides a valuable lesson in landscape performance as well as the potential for adaptive conversion from a site's original purpose.

Figure 21: Boardwalk leading to Industrial Building. Source: utilityofspace.files.wordpress

Evergreen Brick Works- Toronto, Canada

Du Toit Allsopp Hiller Architects, Diamond and Schmitt Architects

Figure 22: Bird's Eye Perspective of the Project.
Source: http://ebw.evergreen.ca/

Located in the heart of Toronto's Don Valley, Evergreen Brick Works was Canada's pre-eminent brick manufacturing facility during the twentieth century. Since its closure, it has been transformed into a community environmental center created out of a collection of deteriorating buildings. Don Valley Brickworks operated from the 1880's to the 1980's, manufacturing more than 40 million bricks per year at its highest output. In the late 1980's, the site was acquired by the city due to its heritage as a brick making site and quarry as well as its adjacency to the Don River.

Now an engaging and vital component of Toronto's public space community, Evergreen Brick Works serves as a social center on multiple levels. The site is now used for active recreation, festivals, and interactive workshops on topics such as sustainability and ecology. Evergreen's mission reiterates this programming:

Figure 23: Don Valley Brick Quarry, 1908.
Source: http://iaintheurbanist.wordpress.com/2012/07/15/street-food-meets-gourmet-at-torontos-evergreen-brick-works/

Evergreen's mission is to bring communities and nature together for the benefit of both. Evergreen Brick Works is a centre for education programs that foster the relationship between nature, culture and community through experiential learning, collaboration and fun. School groups, families and individuals will be able to learn and then integrate these experiences into their daily lives to build a culture of caring for nature and our communities and building the relationship between each (http://ebw.evergreen.ca/about).


Figure 24: View of the Industrial Pad.
Source: http://meganrolph.wordpress.com/tag/toronto/

Evergreen Brick Works is an excellent precedent for adaptive reclamation of an abandoned brick yard where many similar approaches and elements can be applied to the restoration of the General Shale and Cement Hill sites in Kingsport. By adapting materiality found throughout the existing site to new landscape design interventions, the design team was able to reconnect the site with its industrial heritage. Furthermore, the programmatic elements of community integration, education, and recreation are also directly applicable. The most relevant takeaway from Evergreen Brick Works, however, is its development as an economic engine for the city of Toronto. Its transition from brick manufacturing to self-sustaining educational, retail, dining, and event space exemplifies how an industrial site can have an economic impact even after its days as a factory are over.

Freshkills Park- Staten Island, New York

James Corner Field Operations

Figure 25: Fresh Kills Before and After.
Source: http://nymag.com/realestate/features/2016/17149/

Opened in 1948, Fresh Kills landfill in Staten Island, New York has operated as one of the world's largest landfills for the last fifty years. Taking on nearly 29,000 tons of waste daily, the landfill is the largest man made structure on earth, spanning over 2,200 acres with a height nearly 75 feet taller than the Statue of Liberty. In 1999, Fresh Kills ceased to operate as a landfill, only to be reopened briefly in late 2001 as a sorting

Figure 26: Fresh Kills-the-Landfill.
Source: http://openbuildings.com/buildings/fresh-kills-park-profile-38959

ground for the remains of the September 11th attacks. The same year, New York City's Departments of City Planning, Parks and Recreation, and Sanitation held an international design competition to develop a master plan to transform Fresh Kills into a public park that responds to the natural and constructed history of the site.

In December 2001, it was announced that James Corner's Field Operations' design for Fresh Kills had won the competition for redevelopment. Field Operations' design concept looks to erase the stigma that comes from the degradation and decomposition

Figure 27: JCFO Site Plan.
Source: James Corner Field Operations

Figure 28: Perspective Drawing of Confluence.
Source: James Corner Field Operations

of materials in the landfill and replace it by building a park that acts as a symbol of rebirth and renewal. With the closing of the landfill and the introduction of the park, Corner and his advocates seek to instill a new sense of community pride in the Staten Island borough, while also creating a successful template for other post-landfill projects throughout the world.

Field Operation's analysis of the site's composition helped facilitate the rebirth of the land by identifying which areas are most suited for recreation, circulation, and conservation. They identified three primary land types on the site: the 6 landfill mounds, the dry lowlands, and the outlying wetland areas. Field Operations' program is based around this existing makeup of the landfill's terrain, with the mounds serving as the

primary recreation spaces, where each of the park's five main sub parks are located, and with the lowlands and wetlands programmed predominantly for circulation and ecological conservation.

While the diversity of activities, landscapes, and structures at the five sub parks help establish the new identity of Staten Island as a place to live, raise children, visit, and play, the development of the park is something that cannot take place overnight. Due to the sensitivity of the waste buried in the land mounds and the vulnerable state of the existing wetlands and lowlands, Field Operations' proposal was careful to not implement a park

Figure 29: Transformation of Biomatrix.
Source: James Corner Field Operations

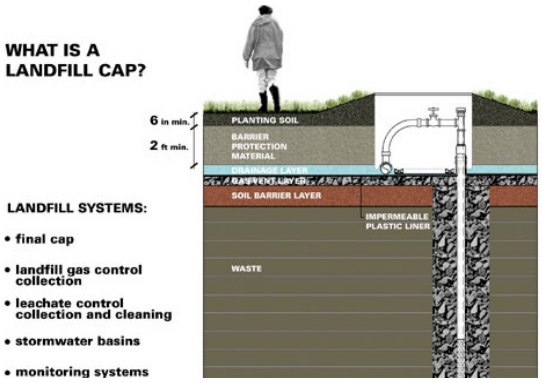


Figure 30: Landfill Cap Systems.
Source: http://www.nyc.gov/html/dcp/html/fkl/fkl3c.shtml

system before the site had an opportunity to stabilize. Over the next thirty years, Fresh Kills is expected to evolve ecologically into an established, self-sustaining biomatrix. The construction will take place in three distinct phases: in Phase One, which has already begun, the North and South Parks, the park drives, the Confluence area in the middle, and the 9/11 Recovery Monument in West Park are to be built. Phases Two and Three will integrate the East and West Parks while continuing the restoration and development of the ecological corridors.

Transforming the landfill into a park is an extensive process that must continue to manage the site's existing waste while the natural systems become established. Fresh

Figure 31: View Looking Over the Park.
Source: http://www.wnyc.org/fresh-kills/

Kills Park will still have to operate as a waste transfer area, but will not collect any additional garbage. Existing on-site facilities will be used for waste transfer, but will be segregated from the park and will operate separately from the public spaces. In terms of managing the landfill's existing waste, leachate and methane emissions are two major concerns. Landfill caps will be put in place and the methane will be controlled and collected to remove it from the earth. While this system will be carefully monitored and maintained on a routine basis, there is still a great potential for hazardous material to escape the landfill caps and cause harm to the surrounding area. This kind of maintenance will also prove to be costly, considering it will require near 24/7 monitoring.

Fresh Kills Park serves as an excellent precedent for how a severely polluted industrial site can be remediated and reclaimed as a center for community gathering, active and passive recreation, cultural development, and economic, environmental and ecological prosperity. Though some of the measures taken at Fresh Kills to remediate the landfill may not be necessary at the Penn-Dixie Cement Corporation and General Shale Products sites, what is learned is that even in the most extreme of polluted conditions, opportunities can still be found and the intrinsic qualities of a place can be exploited for the greater good.

CHAPTER IV

SITE INVENTORY AND ANALYSIS

From the precedent studies selected, it has been demonstrated that abandoned, historic, derelict, and polluted industrial sites have the potential for successful reclamation for alternate use. Given the similarities in the objectives of the aforementioned case studies and what needs to be accomplished in Kingsport, Tennessee, it is reasonable to conclude that a skillfully crafted industrial reuse proposal for the Penn-Dixie Cement and General Shale Products sites would lead to similar success.

Before an exploration of design interventions wass considered, a thorough inventory and analysis was executed to better understand the industrial, economic, geographic, and ecological context of the site. Understanding the innate qualities of the space better informed the appropriate design interventions proposed for the different areas of the site. Through a series of site visits performed between August 2012 and March 2013, a number of qualities were assessed through visual, spatial, and environmental reconnaissance. The following diagrams aim to give substantial definition to the space and to lay the foundation from which design can be effectively understood.

Regional Context

Kingsport lies in the northeast corner of Tennessee and shares its city border with southwest Virginia (Figure 32). With a population of 49,076, it is the largest city in Sullivan County and second largest city in the Tri-Cities, behind Johnson City with 63,000, and ahead of Bristol with 26,708 (www.city-data.com). Geographically, Kingsport resides in a ridge and valley system on the Holston River (Figure 33). Downtown Kingsport lies just north the proposed site and the Holston River (Figure 34).

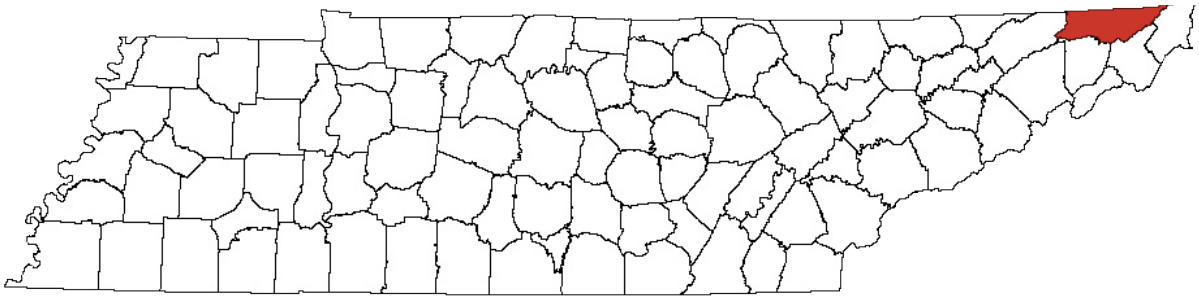


Figure 32: Sullivan County, TN
Source: https://commons.wikimedia.org/wiki/File:Map_of_Tennessee_highlighting_Sullivan_County.

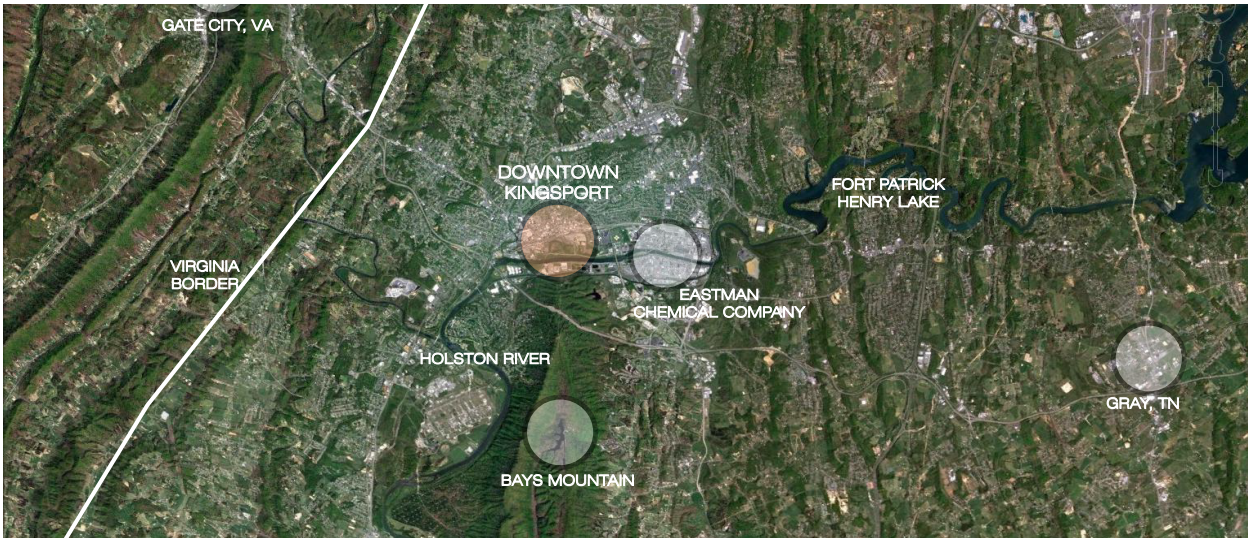


Figure 33: Kingsport and Surrounding Region. Source: Google Earth

Scale = N.T.S.

Figure 34: Aerial of Kingsport, TN. Source: Google Earth

Scale = N.T.S.

Figure 35: Existing Zones within Site. Source: Author

Existing Zones within Site

Comprising nearly one hundred forty acres, the Penn-Dixie and General Shale sites cover nearly the same area as downtown Kingsport, though currently offer no benefit to downtown or the Riverview community. There are five primary zones found on the industrial site that can be considered for revitalization. The areas of focus span across both the General Shale Products and Penn-Dixie Cement property lines. The General Shale Products site has been subdivided into the Industrial Park, Shale Quarries, and Meadows and Forests, where the Penn-Dixie Cement site has been dissected into the Cement Hill and Clinchfield Rail Station spaces.

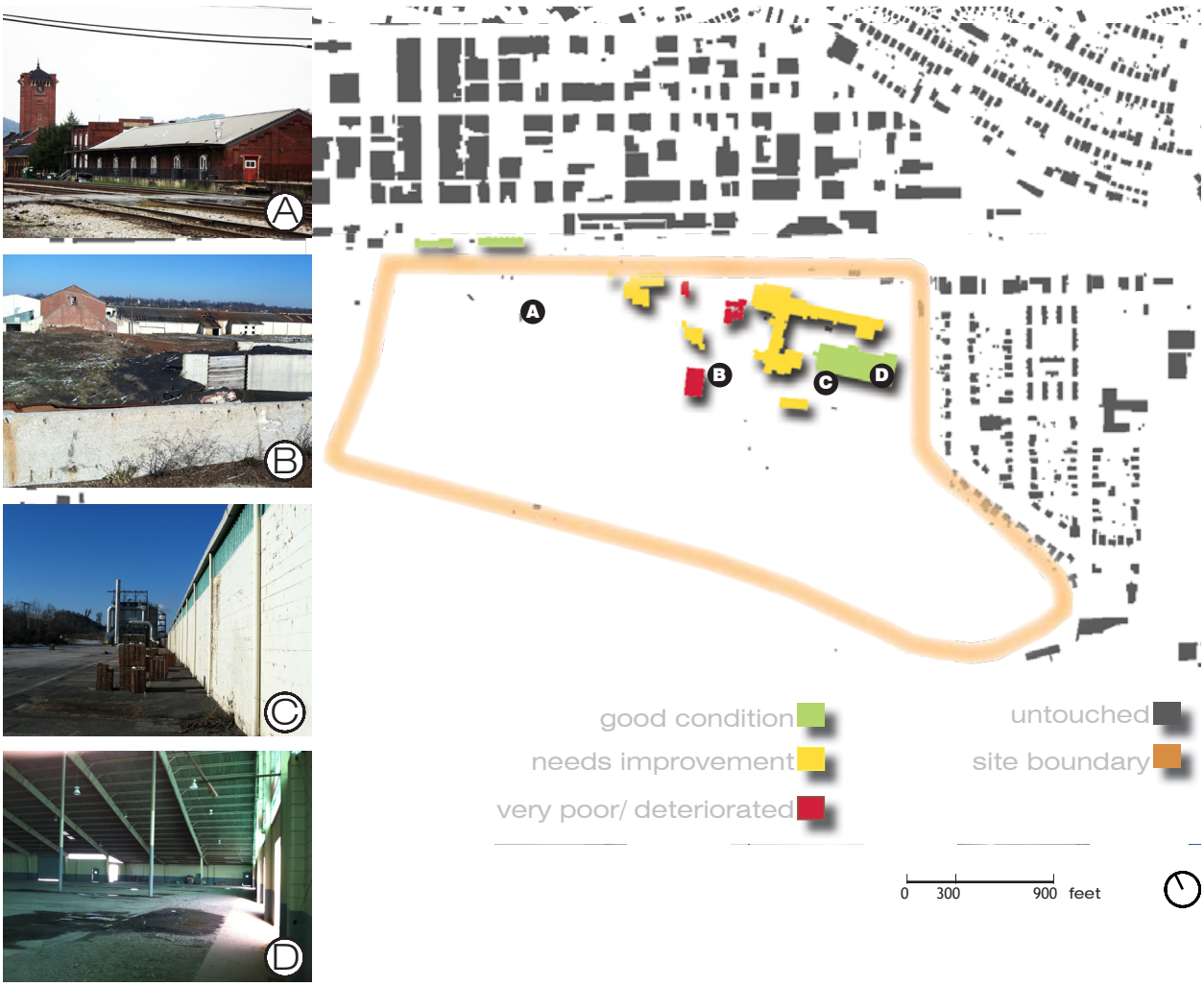


Figure 36: Existing Building Assessment. Source: Author

Existing Building Assessment

The existing industrial buildings on site offer a wide range of reuse opportunities based off of their condition and proximity to Riverview and downtown. These buildings are train stations, shipping and receiving warehouses, and brick manufacturing facilities, many of which are surrounded by silos and other industrial landmarks. Conversion of these buildings into social and cultural hubs will help boost economic development, connect isolated neighborhoods, and reintegrate segregated communities. Many deteriorated buildings, while potentially expensive to fully renovate, could serve as aesthetic relics on site.

Figure 37: Existing and Proposed Materials. Source: Author, www.tristatematerials.com. www.midwesthardscape.com, www.omcdesign.com, http://www.heathershimmin.com/adaptive-reuse-train-carriages

Material Cues

Much of the industrial and material heritage of the site provides design cues for hardscape material selection. Many of the existing materials could be salvaged and reused for site hardscape, such as trail gravel, permeable pavers, site furnishings, and paving for gathering spaces.

Figure 38: Economic Anchors. Source: Author and kingsportarchives.wordpress.com/

Economic Anchors

Reclaiming the Clinchfield Rail Station (A) and developing retail, commercial or cultural opportunities in and around Cement Hill (B) can help provide an economic anchor to Broad Street, increase visibility to the site and facilitate economic growth for businesses and spaces between Church Circle (C) and the railroad (D). The creation of additional anchors further into the site at the industrial warehouses (E) can generate income for the site and circulate pedestrian and vehicular traffic throughout the site as well as Riverview and downtown.

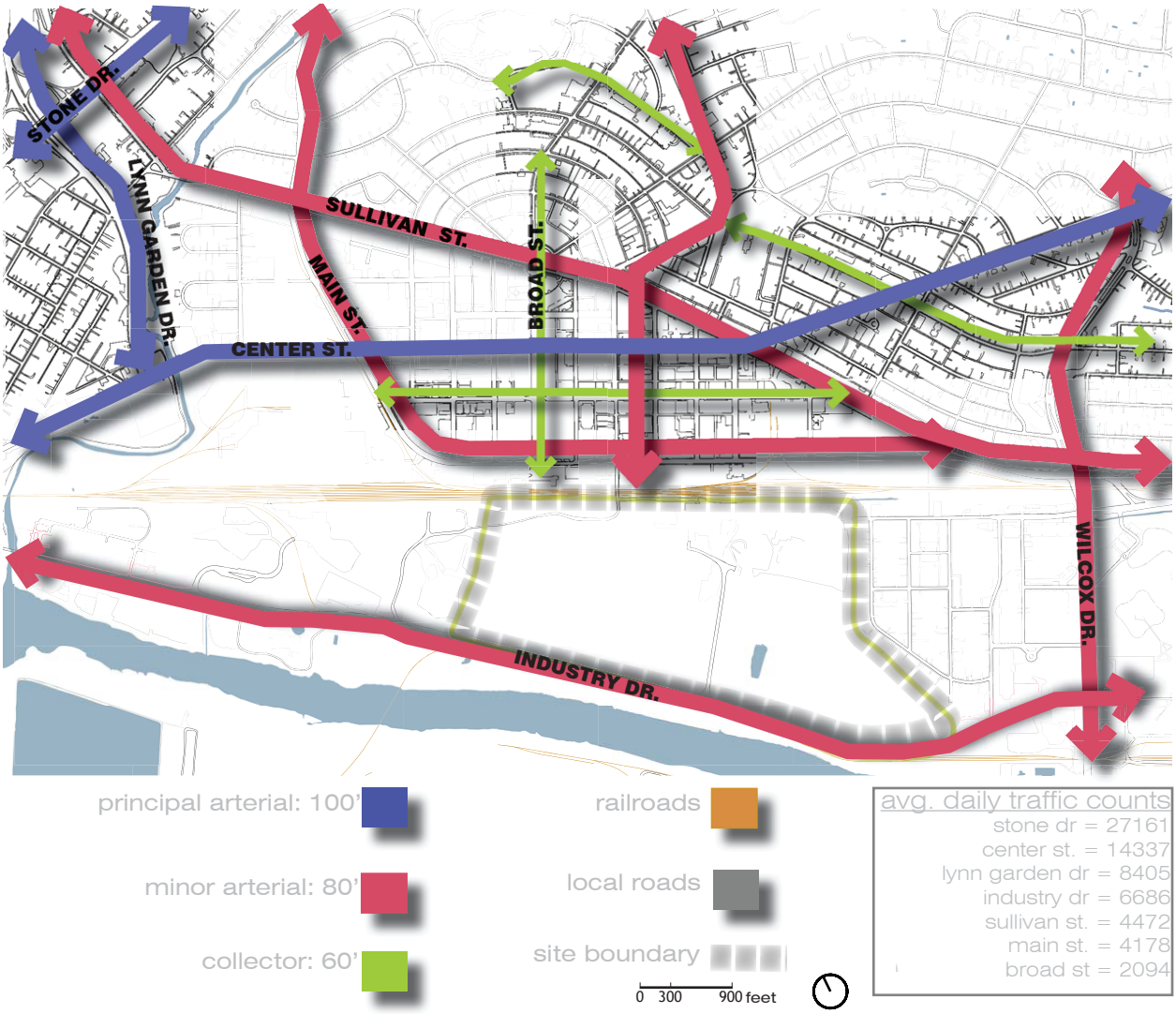


Figure 39: Major Street Plan. Source: Author, City of Kingsport, http://gis.tdot.state.tn.us/traffichistory/

Major Street Plan

The City of Kingsport Department of Transportation has put forth a major street hierarchy, designating certain roadways as principal arterial, minor arterial, collectors, railroads, and local roads. Understanding the traffic intensity and amount of use through average daily traffic counts can help drive decisions in terms of pedestrian safety and connectivity.

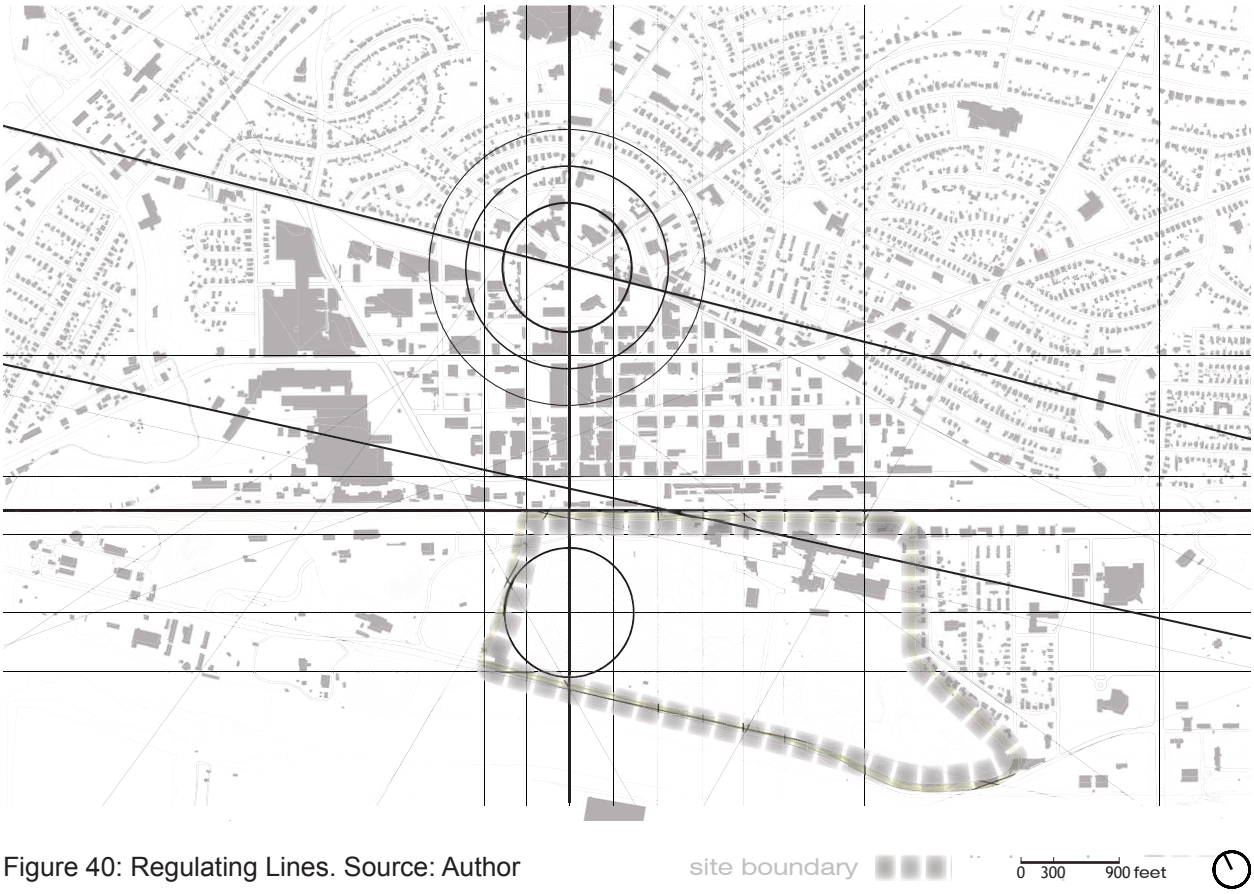


Figure 40: Regulating Lines. Source: Author

Regulating Lines

The site's context has an existing structure of regulating lines and shapes that are found in John Nolen's 1919 plan. These lines and shapes helped formulate a design parti.

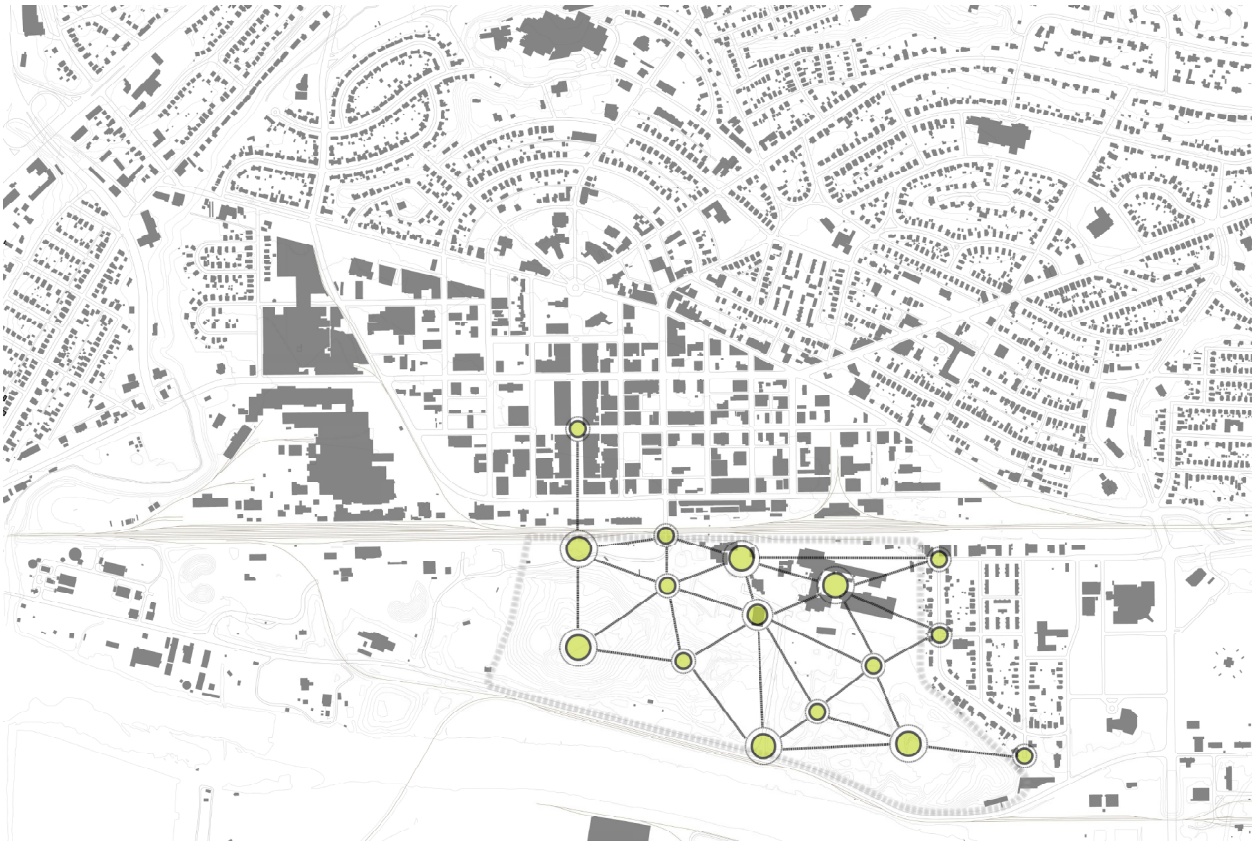


Figure 41: Connection of Nodes. Source: Author

Connection of Nodes

When creating vehicular and pedestrian trail networks, it is important to understand the spatial relationship between the different areas of importance found on site. These areas, including the train station, Cement Hill, the industrial warehouses, forests, meadows, quarries, as well as all of the points of entry to the site, are defined by their built, natural, and geographic significance. This understanding led to a more refined network that accommodates various user groups and experiences.

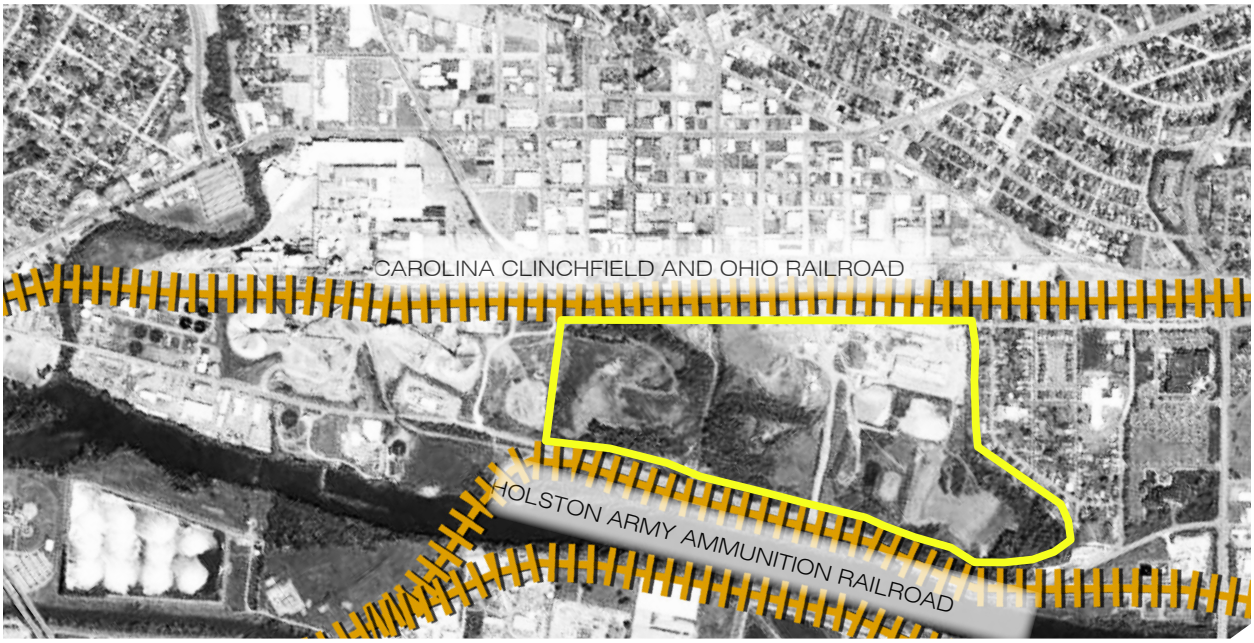


Figure 42: Existing Rail Corridors: Author and Google Earth

Existing Rail Corridors

While the existing rail lines that flank the north and south borders of the site provide a potential safety threat to the pedestrians of Riverview, they also provide excellent opportunities for reclamation and reuse. The old Holston Ammunition rail line, shown just south of the Holston River, is currently inactive and provides an opportunity for rail-to-trail reclamation that could help connect presently detached neighborhoods to each other. The active rail line north of the site serving Domtar could also incorporate a commuter rail system to attract user groups from other areas to downtown Kingsport.

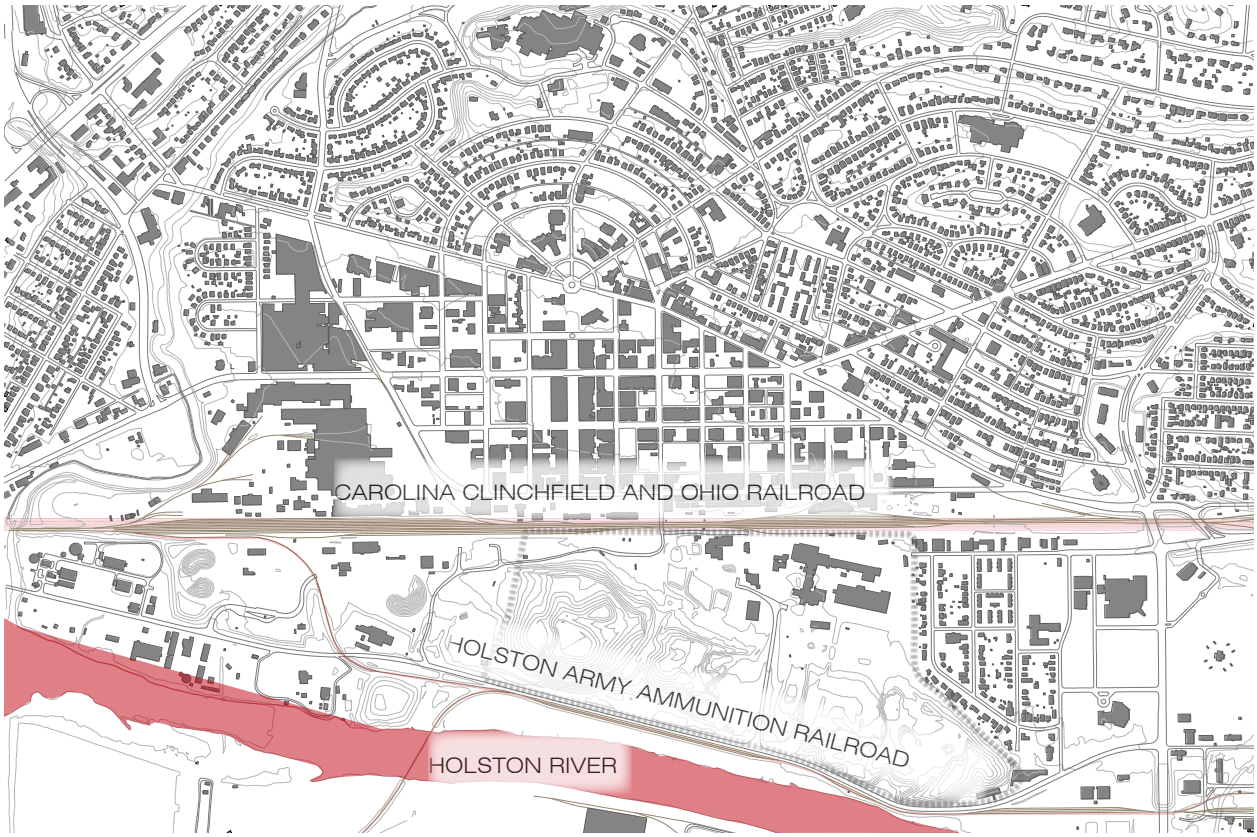
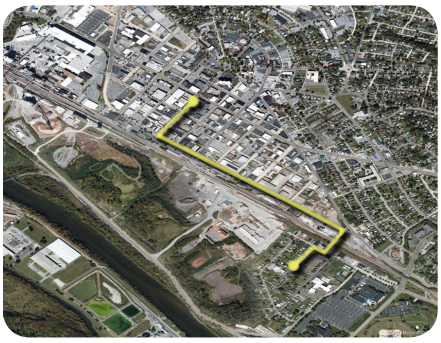


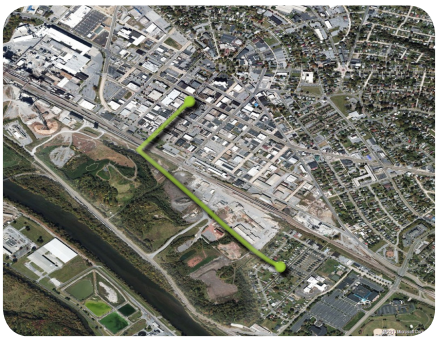
Figure 43: Existing Major Pedestrian Constraints: Author

Major Pedestrian Constraints

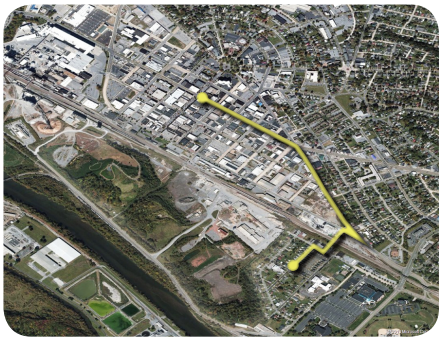
The Holston River and Carolina Clinchfield and Holston Ammunition rail lines currently create barriers for pedestrian movement to and from the site that need to be overcome to improve access from Riverview, downtown, and the greater Kingsport area. However, they do provide excellent opportunities for riverfront recreation, commuter transit, as well as rail-to-trail conversion. These amenities, when reclaimed and reused accordingly, will then provide previously nonexistent connection and circulation opportunities in addition to a reestablished sense of place to the area.



EXISTING ROUTE A- Main St.
- 1.15 miles
- moderate vehicular traffic
- lack of shade



PROPOSED ROUTE C- Through the Site
- 0.9 miles
- direct route
- low vehicular traffic
- heavy shade



EXISTING ROUTE B- E. Sullivan St.
- 1.07 miles
- indirect route
- heavy vehicular traffic
- lack of shade

Figure 44: Pedestrian Travel Routes to Downtown. Source: Author and Bing Maps

Pedestrian Travel Routes to Downtown: Existing and Proposed

A study of existing versus alternative pedestrian travel routes to downtown was performed to assess the benefit of access through the industrial site from Riverview to downtown Kingsport. The existing travel routes to Kingsport's center are along Main St. (A) and Sullivan St. (B), which are 1.15 and 1.07 miles long respectively, and also require the navigation of moderate to severe vehicular traffic. Additionally, the lack of street trees negatively impacts the pedestrian comfort level. A proposed route (C) through the site would be a more direct route at .9 miles long, would allow for heavy shade through existing and proposed tree canopies, and would reduce conflicts with vehicular traffic.

Figure 45: Topography. Source: Author

Topography

The topography on site varies greatly with rolling hills and valleys occupying space in close proximity to relatively flat industrial pads. The change in elevation between the high point atop Cement Hill (1,370') and low point in the Holston River (1,170') is approximately two hundred feet. Much of the topography on site is manmade from the cut and fill of mining practices. Additionally, Cement Hill was used as a cement dust collection point, which added to its height over time. The changes in the topography of the existing terrain allow for a variety of user experiences, including scenic overlooks, stormwater management systems, and varying walkabilities, to name a few.

Figure 46: Establishing Viewsheds. Source: Author and www.timesnews.net/blog/post/7969

Establishing Viewsheds

Throughout the site, a series of natural and manmade peaks, ridge tops, and overlooks are present. Currently, many of the viewsheds are not accessible or are overgrown with invasive species. Reestablishing these viewsheds will enhance the user experience by offering breathtaking views of Kingsport's industrial, commercial, and residential areas, as well as its surrounding natural environment.

Figure 47: Impervious Surfaces. Source: Author

Impervious Surfaces

Approximately forty acres of impervious surface is located on the General Shale Products and Penn-Dixie Cement sites. This impermeable surface area consists of paving and building rooftops. Opportunities for open lawn recreation, stormwater management, native wildflower meadows, and pervious pavers can help reinvent the concrete jungle as a sustainable site that allows for infiltration, reduces the heat island effect, and adds to the aesthetic beauty of Kingsport.

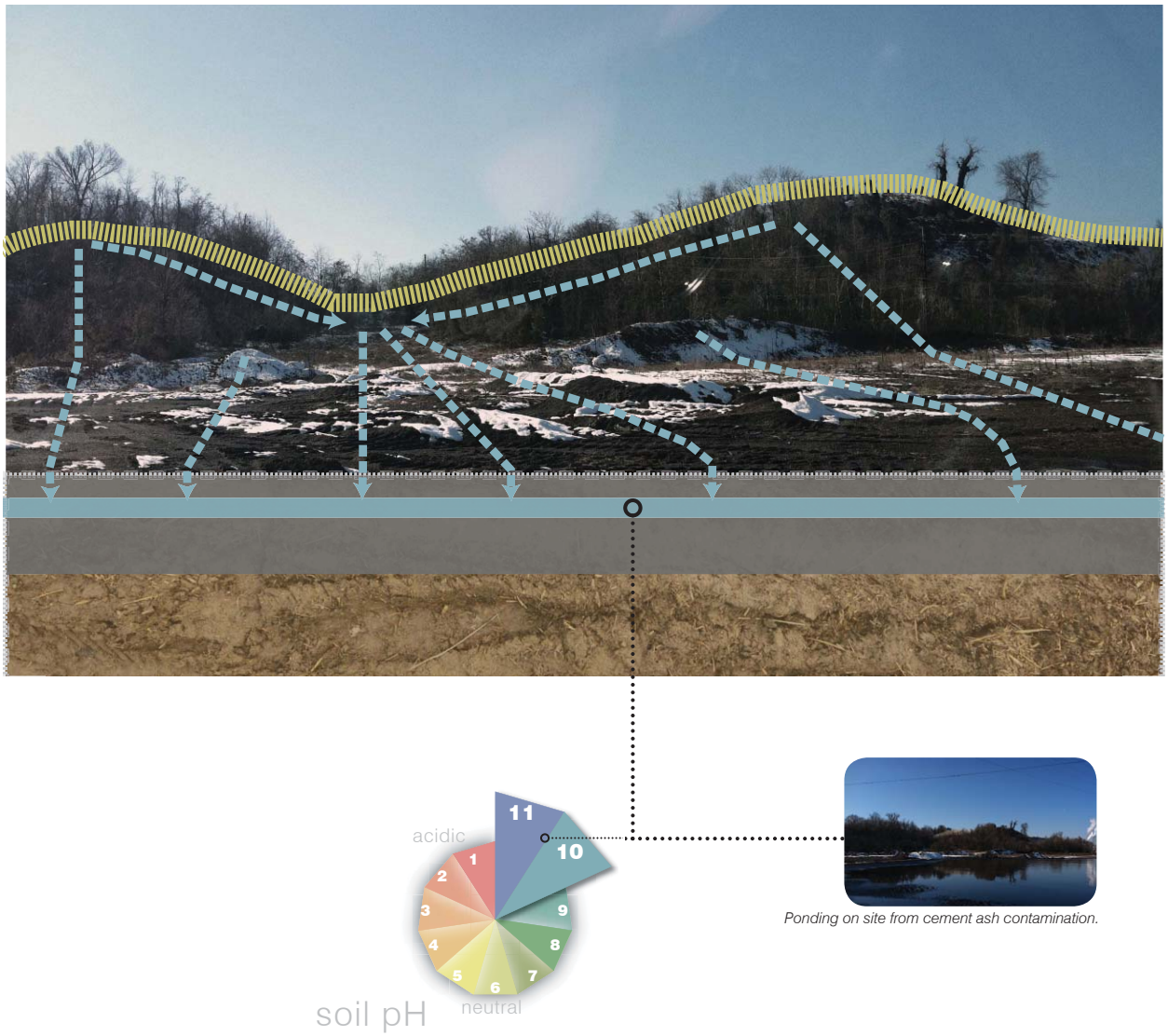


Figure 48: Cement Dust Contamination. Source: Author

Cement Dust Contamination

The cement dust by-product of the Penn-Dixie Cement plant's manufacturing process contains salts such as calcium, magnesium, sodium, chloride, and sulfate. These contaminants can alter the pH of a soil to be highly alkaline. Portland cement is comprised of limestone (lime is used to cure acidic soils). Alkaline soils can severely impact surface infiltration through the root zone if left untreated, leading to ponding and impaired plant growth. Drainage is required in order for alkaline soils to leach beneath the root zone.

Opportunities and Constraints

After an introductory site analysis had been completed, a list of opportunities and constraints provided by the site was developed. These opportunities and constraints helped formulate design guidelines from which a detailed program and specific design elements can be tailored. Eight areas have been assessed by their provided opportunities and constraints which can be seen in the Opportunities and Constraints diagram below (Figure 49). The areas summarized in this analysis are Church Circle and its connection

Figure 49: Summary of Analysis. Source: Author

to the site, the Clinchfield Railroad and Station, Cement Hill, the Holston Ammunitions Rail Line, Open Industrial Space, Industrial Buildings, the Riverview Community, and the General Shale Brick Quarry.

1. Church Circle

Constraints- Church Circle is the recognized center of Kingsport, with much of the city's activity moving through its radial network, rather than along the railroad. This leads people to tend to bypass Main Street, the road directly north of the site, as a major daily thoroughfare for circulation.

Opportunities- Cement Hill and Clinchfield Railroad Station fall directly on axis with Church Circle, creating natural focal points and potential economic anchors for downtown.

2. Clinchfield Railroad and Station

Constraints- The Clinchfield Railroad Station is currently occupied by Citizens Bank and provides no pedestrian access south of the railroad. Additionally, the railroad creates a barrier between downtown Kingsport, the industrial sites, and Riverview.

Opportunities- The building's history, previous use, and central location make it an attractive place for a transit center. Its recognition as a unique structure and iconic landmark by the city of Kingsport makes it an architectural asset for the site. A lack of adjacent buildings allow for uninhibited construction opportunities around the site.

3. Cement Hill

Constraints- Layers of cement dust and invasive plant material overgrowth could make restoration and construction a challenge on site. Additionally, the perception of contamination or pollution could potentially deter visitors from the site.

Opportunities- Cement Hill serves as a reminder of the site's industrial heritage. This fact, when paired with the hilltop's panoramic views of downtown, the industrial sector, and Kingsport's neighborhoods, could provide programmatic opportunities that facilitate economic growth and community engagement.

4. Holston Ammunition Rail Line

Constraints- The Holston Ammunition Rail Line runs parallel to Industry Drive and provides a barrier for pedestrian access to the Holston River. The rail line passes through water treatment and chemical manufacturing industries, making it a potential health hazard for recreational use.

Opportunities- The southeastern portion of the rail line is currently out of service, offering potential rail-to-trail opportunities that would allow for riverfront access and connect Kingsport's existing Greenbelt and more distant neighborhoods to the site.

5. Open Industrial Space

Constraints- A lack of tree cover and abundance of impermeable surfaces make dealing with water runoff a challenge. Like Cement Hill, a perceived presence of pollution could discourage recreational visits to the site.

Opportunities- The open industrial space's proximity to the existing site entrances and its "blank canvas" provide opportunities for parking or open lawn recreation.

6. Industrial Buildings

Constraints- The deteriorated condition and large sizes of the buildings could make their renovations to a habitable condition difficult and costly.

Opportunities- The industrial character of the buildings can provide an aesthetic that is reminiscent of the site's history.

7. Riverview Community

Constraints- Currently only one pedestrian point of egress exists from Riverview to downtown. Though the neighborhood is currently undergoing restoration efforts, crime

and poverty are still an issue.

Opportunities- Riverview could serve as a template for modern, low income revitalization with the support of a park system. Riverview's proximity to the park could help instill community pride and foster social and spatial connectivity.

8. General Shale Brick Quarry

Constraints- Ponding, flooding, and instable mounds in and around the quarry's low point make high impact construction very difficult. Additionally, its isolation from the rest of the park could make it less accessible for some visitors.

Opportunities- The manmade ridges and valleys offer a reminder of the clay mining process while offering the potential for the implementation of stormwater management techniques. Also, its adjacency to Riverview provides both an active and passive amenity for the population that lives in the southern portion of the neighborhood.

CHAPTER V

GUIDING PRINCIPLES AND PROGRAM

The programmatic and design intent for the Cement Hill and General Shale Brick site was to create a new sense of place and to reconnect people and places through the redevelopment of the industrial space adjacent to Kingsport, Tennessee's downtown. After analyzing the existing condition and synthesizing opportunities and constraints provided by the site, it was determined that three guiding principles would most effectively drive the design interventions set forth. These guiding principles are community connectivity, economic development, and environmental placemaking (Figure 50). These three guiding principles are considered the organizing elements of design and each are comprised of programming goals that help form the space. While each principle in itself is compelling, the aggregation and integration of all three principles is what distinguishes this proposal at all levels.

Community Connectivity

The site serves as a convergence not only of circulatory networks, but as a connection point for social and cultural interaction. As much as this proposal is about creating connections between downtown, Riverview, and the greater Kingsport area, the cultivation of relationships and community integration and involvement is equally as important. The diverse programmatic elements found throughout the site seek to encourage an equally diverse range of user groups, bringing all residents of Kingsport together through similar interests and attractions. Community connectivity is satisfied by:

- Creating safe and pedestrian friendly access from the Riverview Community to downtown.
- Introducing pedestrian bridges, tunnels, and crosswalks where appropriate.
- Proposing complete streets that consist of pedestrian, bike, and vehicular

throughways. Paving patterns and on-street markers shall delineate the complete streets from existing roads.

- Incorporating a light rail system and repurposing the Clinchfield Railroad Station as a transit hub.
- Incorporating multi-modal trails for hiking, biking, walking, and running.
- Integrating improved and efficient way finding throughout the park and trail network.
- Reclaiming unused rail lines as greenways under “rail-to-trail” principles.
- Connecting the proposed trails and greenways to the existing greenbelt network.
- Creating a space that can be enjoyed by all, regardless of income or heritage.

Economic Development

Having a positive economic impact on downtown Kingsport and the surrounding communities is critical to resuscitating the fading district. The potential benefits of a revitalized central business district would affect all of Kingsport. The implementation of a reclaimed industrial space would not only have a direct effect on the economy of Kingsport through revenue generated inside the park, it would also spawn indirect economic impacts such as increased property values, a new and more diverse user group attracted to downtown, and potentially new home buyers, all of which can help revitalize a struggling commercial sector (www.openspacesf.org/node/39). Economic prosperity and vitality is facilitated by:

- Creating a heritage center located in Cement Hill that emphasizes the industrial history of Kingsport.
- Establishing a community arts center and gardens within the reclaimed industrial buildings.
- Incorporating mixed use development, including shops and restaurants, that shall be located in industrial buildings.

- Introducing a large event lawn for social gathering, festivals, vending, and mixed recreation.
- Designing an amphitheater for concerts, plays, assemblies, and educational use.
- Portions of the park shall be made available for large public gatherings and for rent for private events.
- Including on-site amenities such as water fountains, rest rooms, and places for eating and resting.
- Parking space for 50 vehicles shall be included.
- Adhering to OSHA standards regarding occupancy requirements.
- Project phasing in conjunction with the revitalization efforts in Riverview and Downtown Kingsport.

Environmental Placemaking

Thirdly, a focus on industrial reclamation and environmental placemaking helps the site take on a specific shape that responds to its industrial heritage and its existing ecological status. Having worked as an industrial site for nearly a century, the ecological systems in place have been significantly altered to respond to such disturbance. This unique relationship between the built and the natural can be strengthened through appropriate design proposals that recognize and demonstrate the affect man has had on nature, and vice versa. The integration of sustainable planning principles and adaptive reuse methods shall be executed by:

- Focusing on the reclamation of vacant lots and abandoned industrial corridors as spaces of public gathering or landmarks.
- Identifying unusable industrial buildings as landmarks and aesthetic backdrops to the park.
- Capping, dredging, and stabilization of contaminated soils when necessary.
- Reintroducing native plant material that is suited to potential soil contamination

through the inclusion of wildlife meadows, forests, and wetlands.

- Removing invasive and exotic species on site, including kudzu, honeysuckle, vinca, and english ivy.
- Reducing the amount of impervious surfaces found on site.
- Managing storm water runoff through pervious surfaces and constructed wetlands.
- Establishing viewsheds along the top of “Cement Hill” and other high points throughout the park.
- Providing wildlife observatories and scenic overlooks that will provide the visitor a connection to the environment.

These guiding principles of community connectivity, economic development, and environmental placemaking are realized through the integration of these programmatic elements and the people that will ultimately inhabit the space. The design proposal that follows demonstrates how these elements are incorporated within the site.

guiding principles for design

community connectivity

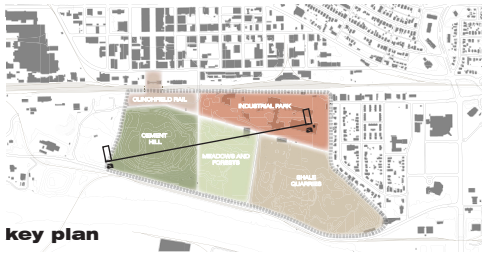
- Connect detached neighborhoods through green belt and complete street networks.
- Create safe and pedestrian friendly access from the Riverview Community to downtown.
- Pedestrian bridges, tunnels, and crosswalks shall be introduced where appropriate.
- The complete streets shall consist of pedestrian, bike, and vehicular throughways.
- Paving patterns and on-street markers shall delineate the complete streets from existing roads.
- Incorporate a light rail system and reintroduce the Clinchfield Railroad Station as a transit hub.
- Reclaim unused rail lines as greenways under “rail to trail” principles.
- The proposed trails and greenways shall be connected to the existing greenbelt network.
- Incorporate mixed use trails for hiking, biking, walking, and running.
- Integrate improved and efficient way finding throughout the park and trail network.

economic development

- Design a heritage center located in Cement Hill that emphasizes the industrial history of Kingsport.
- Establish a community arts center and gardens within the reclaimed industrial buildings.
- Mixed use development, including shops and restaurants, shall be located in industrial buildings.
- Introduce a large event lawn for social gathering, festivals, vending, and mixed recreation.
- Design an amphitheater for concerts, plays, assemblies, and educational use.
- Include on site amenities such as water fountains, rest rooms, and places for eating and resting.
- The number of site amenities shall adhere to OSHA standards regarding occupancy requirements.
- Parking space for 50 vehicles shall be included.
- Project phasing in conjunction with the revitalization efforts in Riverview and Downtown Kingsport.
- Portions of the park shall be made available for rent for public gathering and private events.

environmental placemaking

- Focus shall be placed on the reclamation of vacant lots and abandoned industrial corridors.
- Unusable industrial buildings shall remain as landmarks and aesthetic backdrops to the park.
- Environmental remediation of soil in brownfield sites shall be considered.
- Capping, dredging, and stabilization of contaminated soils shall be considered when necessary.
- Reintroduce native plant material through the inclusion of wildlife meadows, forests, and wetlands.
- Remove invasive and exotic species on site, including kudzu, honeysuckle, vinca, and English ivy.
- Drastically reduce the amount of impervious surfaces found on site.
- Effectively manage storm water runoff through pervious surfaces and constructed wetlands.
- Establish viewsheds along the top of “Cement Hill” and other high points throughout the park.
- Wildlife observatories and scenic overlooks will provide the visitor a connection to the environment.



case studies

Figure 50: Guiding Principles for Design. Source: Author

CHAPTER VI

DESIGN PROPOSAL

The design proposal for the redevelopment of the General Shale Products and Penn-Dixie Cement site south of downtown Kingsport provides the schematic intent for the spaces of intervention within the site. The proposal and the design elements incorporated within it reflect the guiding principles of community connectivity, economic development, and environmental placemaking, all while preserving the industrial heritage and cultural integrity of the site.

The form of the plan is both formal and informal, delineating the built environment from the naturalistic (Figure 51). The formal, straight lines of the vehicular circulation network take their cue from Kingsport's downtown grid pattern, while the naturalistic areas mimic the organic form of the park reservations found in Nolen's 1919 plan. This form fosters a seamless blend between downtown and the Holston River, integrating the park and its spaces into the existing landscape.

As will be discussed in further detail, the intent of the space is to maximize user experience and serve as an attraction for the people of northeast Tennessee and southwest Virginia. The variety of amenities on-site serve a broad range of user groups, offering opportunities for recreation, education, and commerce throughout the property.

There are three primary zones of intervention found on site. The areas of focus are that of the Industrial Park, Cement Hill and Clinchfield Rail Station, and the Quarry, Forest, and Meadow Trails. The following renderings communicate these spaces in the form of plans, sections, and perspectives. The objective of this proposal and the renderings are to appropriately convey the proposed design features located on site and for one to become intimate with these planned areas. Lastly, a phasing plan that highlights the proposed timeline for development is included, applying a real-world feasibility to this project that could be used by the City of Kingsport for planning purposes.

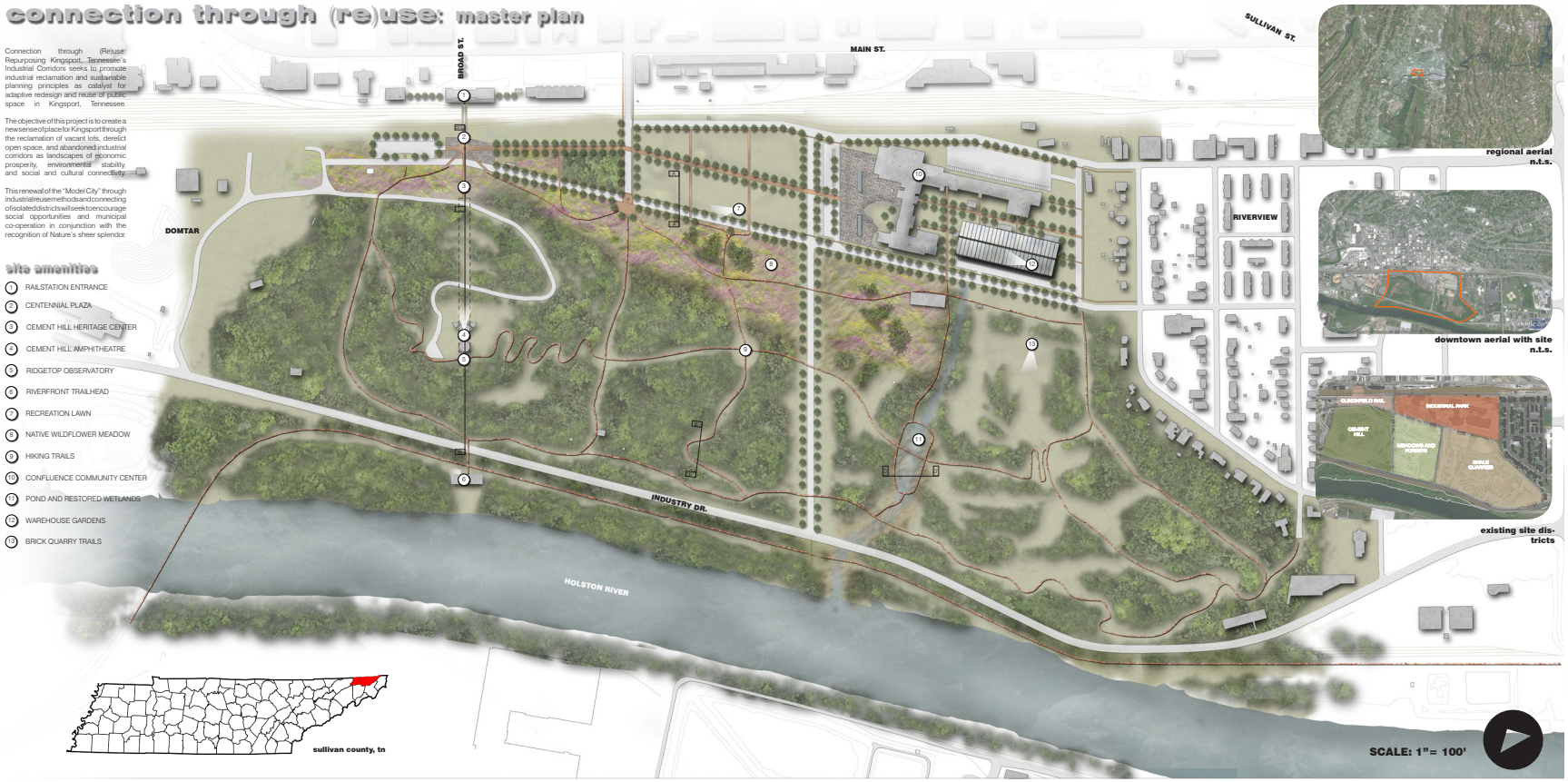


Figure 51: Master Plan. Source: Author

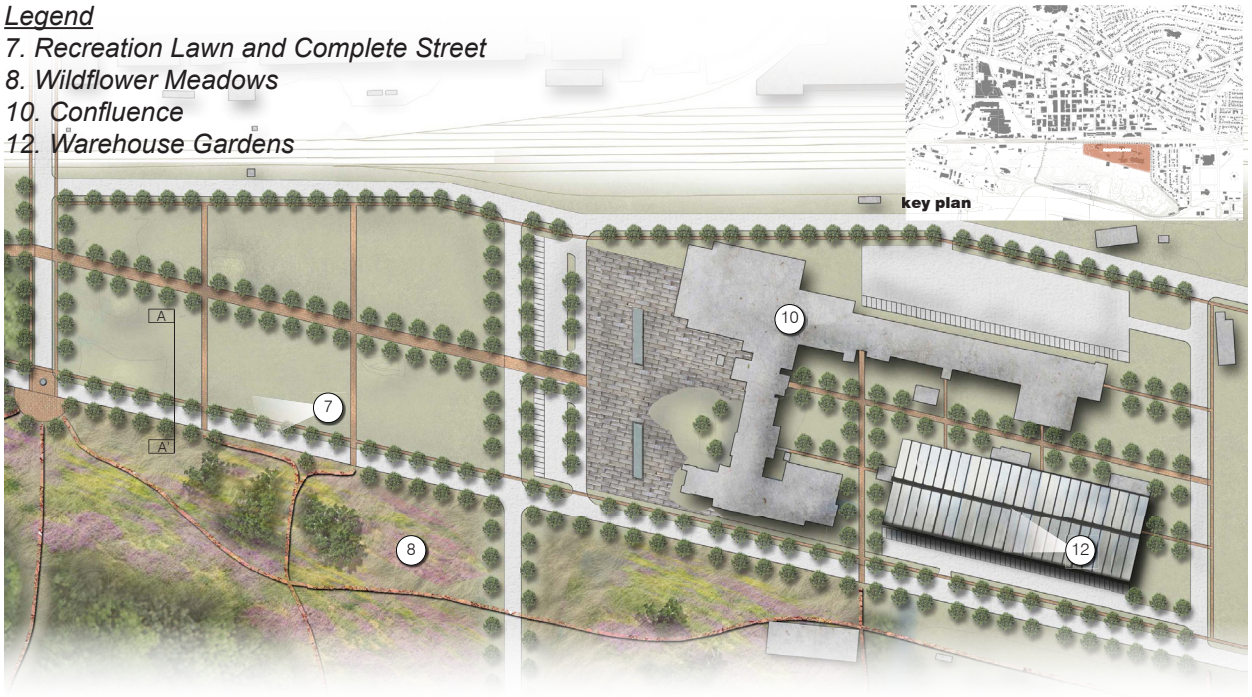


Figure 52: Industrial Park Plan. Source: Author

Industrial Park

Industrial Park is located in the northeast corner of the site, just south of the Clinchfield railroad and west of Riverview (Figure 52). Located on the General Shale site, the park in its existing condition is dominated by vast expanses of concrete and derelict buildings as well as a severe lack of flora and fauna. In its proposed state, Industrial Park serves as the cultural and economic engine of the park. The goal for this space is to drive commercial advancement both inside the park and throughout the adjacent Riverview and downtown areas. This is accomplished through a fusion of cultural and artisan amenities, retail space, and community involvement. The two main economic drivers of the Industrial Park are the Confluence and Warehouse Gardens.

The Confluence falls just south of the rail line and is the epicenter of economic and cultural activity. Inside the rehabilitated building, the Confluence showcases community arts programs, including artisan centers, galleries, and performance venues, as well as

locally owned retail and dining opportunities. With much of this space being previously used as the manufacturing facility for General Shale, many of the former gritty industrial relics, including brick kilns and abandoned rail cars are now converted into spaces of social and economic prosperity. The main plaza entrance to the Confluence falls directly on axis with the pedestrian boulevard, and is reminiscent of the industrial concrete swath that previously inhabited the space. However, the pedestrian plaza is now comprised of permeable brick pavers and incorporates newly designed large water features, while at the same time retaining one of the large industrial mounds in front of the building.

Figure 53: Warehouse Gardens Perspective. Source: Author

The Warehouse Gardens, located in the large distribution warehouse just south of the rail line, will serve as an educational and economic center for horticulture and

sustainable practices (Figure 53). Responding to the guiding principles of environmental placemaking and community connectivity, the Warehouse Gardens will house a series of trial community gardens that can be used for educational outreach, social interaction, and food and flora propagation. The worn down aluminum paneling that is on the building's roof will be removed and replaced with transparent glass, allowing for natural sunlight to penetrate the space. This space will not only help educate the community on the importance of native plants and local ecosystems, but it can also provide social integration opportunities for the people of Riverview through volunteer efforts and youth development programs.

The Recreation Lawn falls in between the main pedestrian and vehicular connections of Riverview and downtown Kingsport (Figure 54). Previously an expansive concrete desert, the recreation lawn serves as a social and civic space, allowing for public gatherings such as concerts, festivals, and other large events, making it a center for economic development and social interaction. Community connectivity is accomplished through the adjoining of Riverview and downtown by pedestrian promenades. Comprised

Figure 54: Recreation Lawn and Complete Street Perspective. Source: Author

Figure 55: Circulation Diagram. Source: Author

of brick pavers, these promenades, along with the large, monolithic concrete benches that run parallel to them, are reminiscent of the manufactured materials from the industries' operating past.

As shown in the circulation diagram above (Figure 55), these walkways act as efficient connectors not only from Riverview to downtown, but also to the trails and roadways south of the lawn. The vehicular circulation adjacent to the recreation lawn also allows for bike and pedestrian traffic, as it has been designed under complete street principles. The design of the lawn and industrial park's circulation takes its form from the regulating lines of the existing street grid of downtown Kingsport, creating an extension of Nolen's 1919 plan This also creates a spatial connection from Riverview to downtown with the formal promenades and complete streets connecting into the existing street network.

Figure 56: Recreation Lawn and Complete Street Section. Source: Author Scale = N.T.S

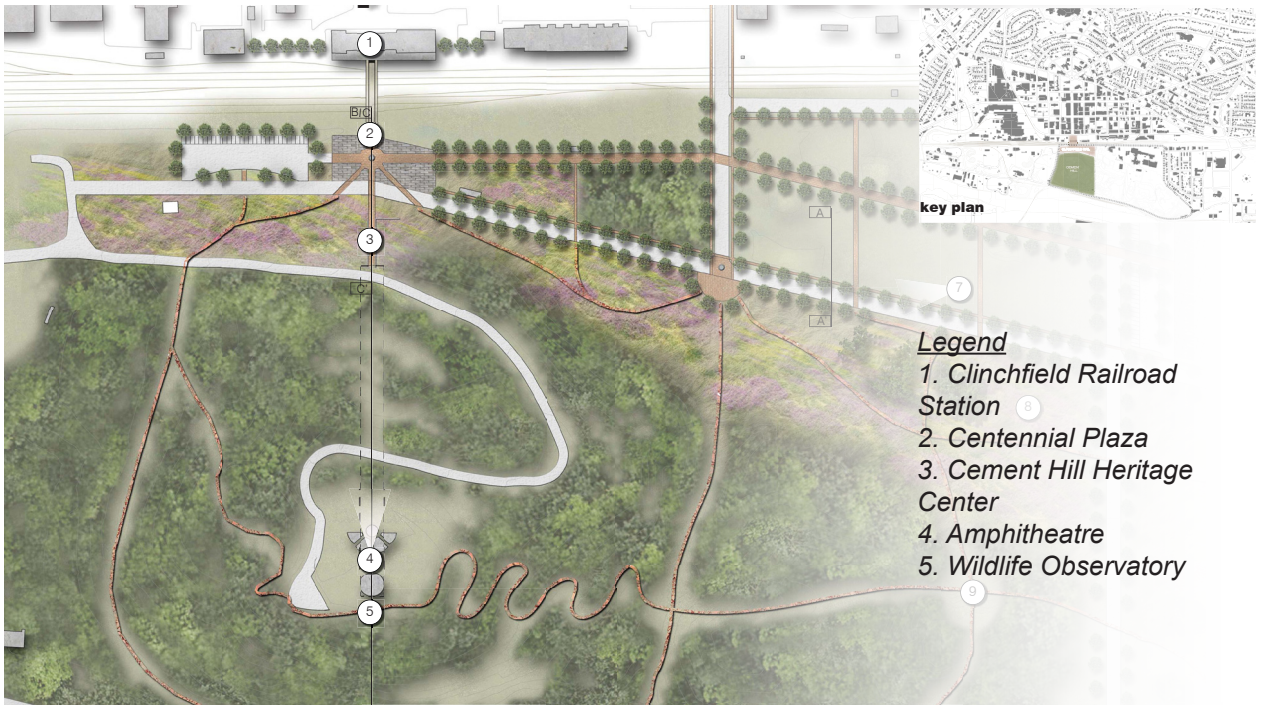


Figure 57: Cement Hill and Centennial Plaza Plan.
Source: Author

Cement Hill and Centennial Plaza

The areas of Cement Hill and Centennial Plaza offer some of the most diverse programmatic elements found on site (Figure 57). Located just south of the historic Clinchfield Railroad station, Cement Hill and Centennial Plaza fall on axis with Church Circle and the Broad street connector. Their location as an anchor on Broad St. could help revitalize the economic development of Kingsport's central and struggling boulevard by stimulating pedestrian and vehicular trips. Centennial Plaza is a large, multiuse pedestrian event space that would be dedicated in 2017 for Kingsport's 100th anniversary. The form of Centennial Plaza mirrors that of Church Circle, with radiating lines moving out from the center as connectors to trails and other site amenities. This space will also serve as an area for economic development through its ability to be rented out for public and private affairs. Another important element of Centennial Plaza is its function as a commuter rail stop.

Responding to the guiding principle of community connectivity, reincorporating the Clinchfield Railroad Station as a transit hub could help increase visitor traffic to the park as well as downtown by offering an alternate means of transportation for the Kingsport population and the surrounding Tri-Cities. (Figure 58). The plaza can be accessed from

Figure 58: Centennial Plaza Section. Source: Author Scale = N.T.S.

the train station by bridge or rail crossings, improving the safety and connectivity of the pedestrian on site.

Moving south from Centennial Plaza is the Cement Hill Heritage Center. Cement Hill is a large, partially manmade hill which used to be a collection area for kiln dust from the early to mid 20th century. Instead of dumping its waste into the Holston River, the Penn-Dixie Cement Corporation deposited its waste on this hill over time. Cement Hill is now an ever present reminder of Kingsport's industrial history and serves as a strong industrial landmark falling on Broad Streets axis.

Inside Cement hill is a proposed Heritage Center that follows along a linear path and allows its visitors to view its mixed soil and cement composition through the

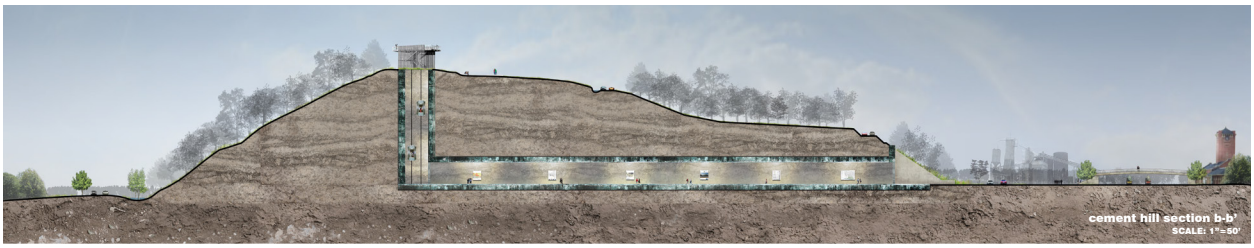


Figure 59: Cement Hill Section. Source: Author Scale = N.T.S.

glass walls that frame the space (Figure 59). Along the linear museum, visitors will be reminded of Kingsport's history through a series of historic maps, photos, and stories told from the factory workers of the Riverview community. At the end of the museum corridor, glass elevators will move the visitors up through the hill, allowing one to view how the environmental systems in place have altered the cement/soil composition of the hill overtime. The Heritage Center encourages community connectivity by reminding its visitors of the site's history, but also introduces environmental placemaking by acknowledging the soil composition and ecological makeup of Cement Hill.

Atop Cement Hill lies a nature observatory and concrete amphitheater that allows for expansive, panoramic views of Kingsport and the surrounding landscape below (Figure 60). Environmental placemaking becomes evident through interpretive, scenic viewsheds to Kingsport's diverse landscape. Additionally, these spaces also serve as environmental educational centers, displaying how a site's natural and ecological processes can reclaim an industrial environment by naturally introducing wildlife habitats and sustaining native plant communities. Like the rail station, Centennial Plaza, and the Heritage Center, the proposed Observatory and Amphitheatre fall directly on axis with Broad Street and Church Circle, offering the visual and spatial connection to Kingsport's past and present.

Figure 60: Cement Hill Amphitheatre Perspective. Source: Author.

Figure 61: Brick Quarry, Wetlands, Meadows, and Woodland Trails Plan. Source: Author

Brick Quarry, Wetlands, Meadows, and Woodland Trails

The largest portion of the site (approximately 100 acres) is comprised of a series of hiking and biking trails that, in contrast to the rigidly ordered circulation of the Industrial Park, Clinchfield Station, and Cement Hill spaces, meander through the natural, and in many cases manmade, hills and valleys of the site (Figure 61). These trails connect the various nodes on site and also link the greater Kingsport greenbelt to the site for enhanced community connectivity.

The various elevation changes on site are largely a result of the shale and clay mining processes of the early to middle 20th century. These reminders of the site's industrial past not only offer recreation opportunities through various outdoor rooms, scenic viewsheds, and wide ranging trail difficulties, they also offer importance through environmental placemaking as established habitats for a wide range of flora and fauna.

As mentioned previously, much of the Penn Dixie portion of the site has levels of cement ash soil contamination. The properties of cement ash (primarily limestone) can

Figure 62: Plant Palette. Source: Author and Multiple Sources (See Appendix)

significantly alter the ph of a soil to be considerably basic. Given the high alkalinity of the soil caused by the cement ash contamination at the Cement Hill site, plant material tolerant of basic soils is required for instillation. Additionally, alkaline soils typically do not drain as well as acidic soils, and therefore provide for a more limited and specific plant palette (Figure 62). Native trees such as Eastern Red Cedar, Red Bud, and Hackberry tend to acclimate to alkaline soils fairly well. The more stable meadow and wetland areas also require a native plant palette, though not one specific to alkaline pH tolerance due to their distance from Cement Hill. Native meadow plantings such as Echinacea, Tickseed, columbine, and Little Bluestem are proposed to offer a diverse array of color and textural interest. These native plant communities will be developed over time, offering different environmental experiences for the constructed wetlands, wildflower meadows, and woodland forests throughout the site.

Figure 63: Deciduous Forest Trails. Source: Author

Scale = N.T.S.

The constructed wetland is a manmade pond found in the low point of the brick quarry (Figure 64). Over the course of the site's clay mining history, a large basin has been created that currently acts as a water collection point on site, with noticeable ponding after heavy precipitation. This basin would offer ecological benefits to the site through

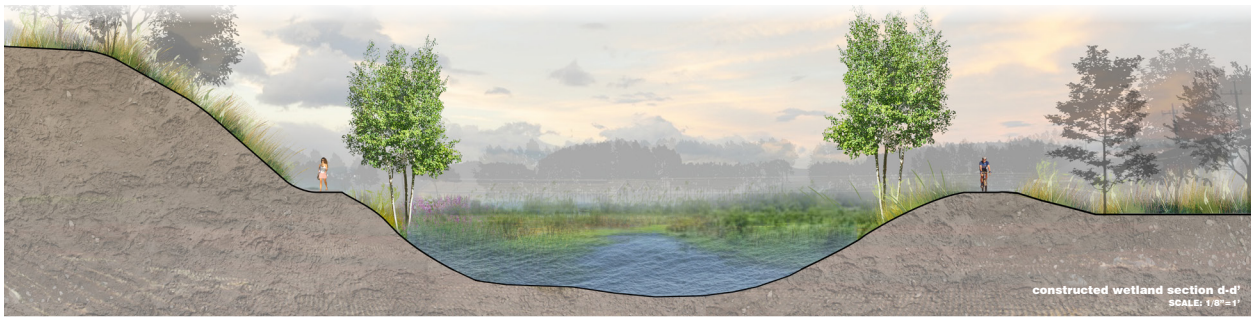


Figure 64: Constructed Wetland Section. Source: Author

Scale = N.T.S.

its conversion to a naturalized, stormwater management feature that acts as a pollution filtration system. The wetland drains south west before ultimately feeding into the nearby Holston River.

The natural and manmade beauty of the trail network throughout the site is intended to attract new visitors and residents to Kingsport's downtown, having an indirect effect on the economic success of the surrounding area (Figures 63, 65). Providing previously unavailable greenspace and mixed recreation opportunities to the downtown area ultimately improves adjoining property values, while shaping downtown Kingsport and Riverview into more liveable and healthier communities.

Figure 65: Brick Quarry Perspective. Source: Author

Figure 66: Proposed Project Phasing. Source: Author

Phasing

The implementation of the proposed post-industrial site should occur through a series of phases over a ten year span (Figure 66). Over these ten years, the space will undergo a dramatic transformation from the derelict, abandoned, and disheveled space that it currently is, into a diverse, active, and beautiful place for the residents of Kingsport and the greater Tri-Cities area. The construction of the different spaces will be carried out at different times, with benchmarks set for two, five, and ten year completion stages.

Within the first two years, all of the hardscape and trail construction will take place, with the tree and meadow plantings following shortly after. The recreation lawn and pedestrian bridge will also built. The immediate need for safe and healthy connections between downtown and Riverview as well as the need for multi-use social and recreation

amenities would drive the initial construction phase of the project.

According to this plan, the Confluence and Warehouse Gardens of the Industrial Park will be fully restored and ready for public use within five years. The completion of this stage of construction would greatly add to the economic impact the site has on downtown. Additionally, the constructed wetlands, kiosks, and bike rental station inside the Brick Quarry and trail systems would also be constructed. Funds generated from these spaces would be used to finance subsequent phases.

By year ten, the Heritage Center, Observatory and Amphitheatre at Cement Hill should be finalized, completing the program for all of the Cement Hill site. Also, the

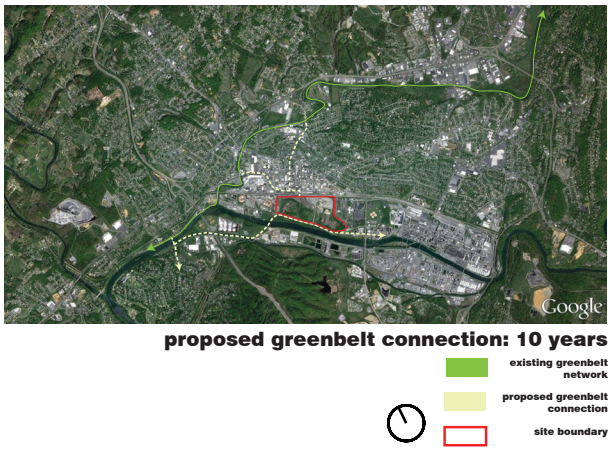


Figure 67: Proposed Greenbelt Connections: 10 Years. Source: Author and Google Earth

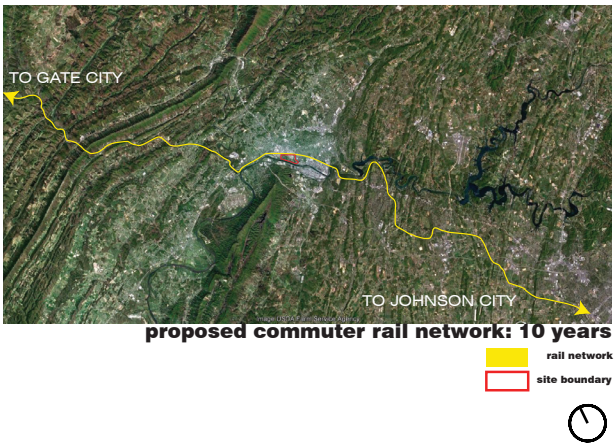


Figure 68: Proposed Commuter Rail Network: 10 years. Source: Author and Google Earth.

abandoned Holston Ammunition rail line along the Holston River would be converted into a trail system that connects into the greenbelt network (Figure 67). The rail line would connect directly to Riverfront Park and the Ridgefields neighborhood west of the site. Furthermore, the site would be connected to the greater Kingsport and Tri-Cities area through the commuter rail transit station located at the Clinchfield Station. The commuter rail line will extend to the neighboring city of Gate City, VA (north) and Johnson City, TN (south) (Figure 68).

CHAPTER VII

CONCLUSION

In conclusion, this project serves to create a newly developed landscape and public space in downtown Kingsport that reconnects neighborhoods, revitalize a struggling downtown, and reconnect the city and its people. This is accomplished through the guiding principles of community connectivity, economic development, and environmental placemaking.

This proposed landscape improves community connectivity through:

1. Vehicular and pedestrian promenades that create efficient connections to downtown, Industry Drive, and Riverview.
2. Extensive pedestrian connections that are created for safer and healthier circulation and recreation.
3. Enhanced Axial relationships between the park and downtown.
4. And Community outreach programs, educational efforts, and volunteer opportunities that help integrate detached communities.

Economic development is sparked by:

1. Positively affecting adjacent property values.
2. Increased municipal revenues from event profits and taxes
3. A population of retirees and young professionals that are attracted to the area as new home buyers
4. Local business owners receiving new income opportunities.
5. Attracting larger and more diverse user groups to downtown.

Environmental Placemaking is fostered by:

1. The addition of native plant material and removal of invasive species, returning the space to an ecologically stable condition.
2. The conversion of quarry pits into natural wetlands to control stormwater runoff.
3. The acknowledgment of the sites heritage, providing opportunities for brownfield remediation and industrial reclamation.
4. And a reducing of impermeable surfaces to improve infiltration and decrease ponding and flooding.

The redevelopment of the Penn-Dixie Cement Corp and General Shale Brick site as a landscape of community connectivity, economic development, and environmental placemaking will undoubtedly improve the state of downtown Kingsport, Riverview, and the surrounding neighborhoods and communities East Tennessee. Through repurposing Kingsport's industrial landscapes as much needed greenspace, isolated neighborhoods can become integrated into the urban fabric, a struggling downtown can be economically resuscitated, and a city and its inhabitants can be reconnected to the industrial heritage and cultural diversity that helped shape it into the town that it is today. By connecting through reuse, John Nolen's plan for designated park reservation in Kingsport, TN can once again be realized.

LIST OF REFERENCES

Bellamy, Edward, and Matthew Beaumont. *Looking Backward, 2000-1887 Oxford* World's Classics. Oxford ; New York: Oxford University Press, 2007.

Calvino, Italo. *Invisible Cities*. [1st ed. New York,: Harcourt Brace Jovanovich, 1974.

Carson, Rachel. *Silent Spring*. Boston,: Houghton Mifflin, 1962.

Caudill, Harry M. *Night Comes to the Cumberlands : A Biography of a Depressed Area.* [1st ed. Boston: Little, Brown, 1963.

Crawford, Margaret. *Building the Workingman's Paradise : The Design of American Company Towns.* Haymarket Series. London: Verso, 1995.

Duany, Andres, Jeff Speck, and Mike Lydon. *The Smart Growth Manual.* 1 vols. New York: McGraw-Hill, 2010.

Duany, Andres, and Robert Davis Andres Duany and Elizabeth Plater-Zyberk (Firm). *Garden Cities : Theory & Practice of Agrarian Urbanism*. London: The Prince's Foundation for the Built Environment : distributor The Prince's Foundation for the Built Environment, 2011.

Dunham-Jones, Ellen, and June Williamson. *Retrofitting Suburbia : Urban Design Solutions for Redesigning Suburbs*. Hoboken, N.J.: John Wiley & Sons, 2009.

Corner, J. *Recovering Landscape as a Critical Cultural Practice*. Recovering Landscape. Princeton Architectural Press.

Geddes, Patrick. *Cities in Evolution : An Introduction to the Town Planning Movement and to the Study of Civics*. London: Routledge, 1997.

Gehl, Jan. *Life between Buildings : Using Public Space*. New York: Van Nostrand Reinhold, 1987.

Harbison, Robert. *Eccentric Spaces*. London: Andr©* Deutsch, 1977.

Hemingway, Ernest. *The Sun Also Rises*. Scribner trade pbk. ed. New York, N.Y.: Scribner, 2006.

Howard, Ebenezer. *Tomorrow; a Peaceful Path to Real Reform*. London,: S. Sonnenschein, 1898.

Lee, Tom. *The Tennessee-Virginia Tri-Cities : Urbanization in Appalachia, 1900-1950.* 1st ed. Knoxville: University of Tennessee Press, 2005.

Leopold, Aldo, Charles W. Schwartz, and Robert Finch. *A Sand County Almanac ; and, Sketches Here and There*. Special Commemorative ed. New York ; Oxford:

Oxford University Press, 1989.

Lynch, Kevin. *The Image of the City.* Publications of the Joint Center for Urban Studies. Cambridge, [Mass.]: Technology Press, 1960.

Mumford, Lewis. *The City in History : Its Origins, Its Transformations, and Its Prospects.* Harvest/Hbj Book. New York: Harcourt Brace Jovanovich, 1961.

Norberg-Schulz, Christian. *Genius Loci : Towards a Phenomenology of Architecture.* London: Academy Editions, 1980.

Riddell, Robert. *Sustainable Urban Planning : Tipping the Balance.* Malden, MA ; Oxford: Blackwell, 2004.

Rotary Club Kingsport Tenn., John A. Piquet, and Joseph Hamblen Sears. *Kingsport, The Planned Industrial City*. Kingsport, Tenn.,: The Rotary club, 1946.

Saunders, William S. *Urban Planning Today : A Harvard Design Magazine Reader* Harvard Design Magazine Readers. Minneapolis ; London: University of Minnesota Press, 2006.

Sendich, Emma, and American Planning Association. *Planning and Urban Design Standards*. Hoboken, N.J.: John Wiley & Sons, 2006.

Thayer, Robert L. *Lifeplace : Bioregional Thought and Practice.* Berkeley ; London: University of California press, 2003.

Thoreau, Henry David. *Walden; or, Life in the Woods.* Boston, 1854.

Waldheim, Charles. *The Landscape Urbanism Reader.* New York: Princeton Architectural Press, 2006.

Whyte, William Hollingsworth. *The Social Life of Small Urban Spaces.* Washington, D.C.: Conservation Foundation, 1980.

Wolfe, Margaret Ripley. *Kingsport, Tennessee: A Planned American City*. Lexington: University of Kentucky, 1987.

Evergreen at the Brick Works. *Final Master Plan*. June 2006.

HUD.GOV: U.S. Department of Housing and Urban Development. *HOPE VI*. 2013. portal. hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/programs/ph/hope6

HOPE VI / FRESH START. http://www.kingsporthopevi.com/index.php

APPENDIX

SUPPLEMENTARY ANALYSIS AND DESIGN

The following diagrams and design sketches are first impressions of the site overlaid from an aerial image of downtown Kingsport. Many of these diagrams provide context and insight into the existing condition of the downtown Kingsport area. However, many of them do not respond directly to the guiding principles proposed for the design of the Penn-Dixie Cement and General Shale Products sites, and therefore were not chosen to be included in the site analysis chapter. Still, being that these were the initial site analysis boards created, they illustrate an important phase in the design process and were instrumental in the further development of the project.

Figure 69: Existing Vegetation: Author and Google Earth

Existing Vegetation

With the exception of downtown and some of the other commercial districts, Kingsport and its neighborhoods have maintained a relatively dense amount of tree canopy, though open space is at a minimum inside of the city limits. It is not until you move south of the Holston to Bays Mountain, where open space and environmental preservation are established. Bays Mountain consists maple tree forests which many species of native plants and animals call home. It is not uncommon to see grey wolves, bobcats, or black bears in the wildlife preserve during peak season.

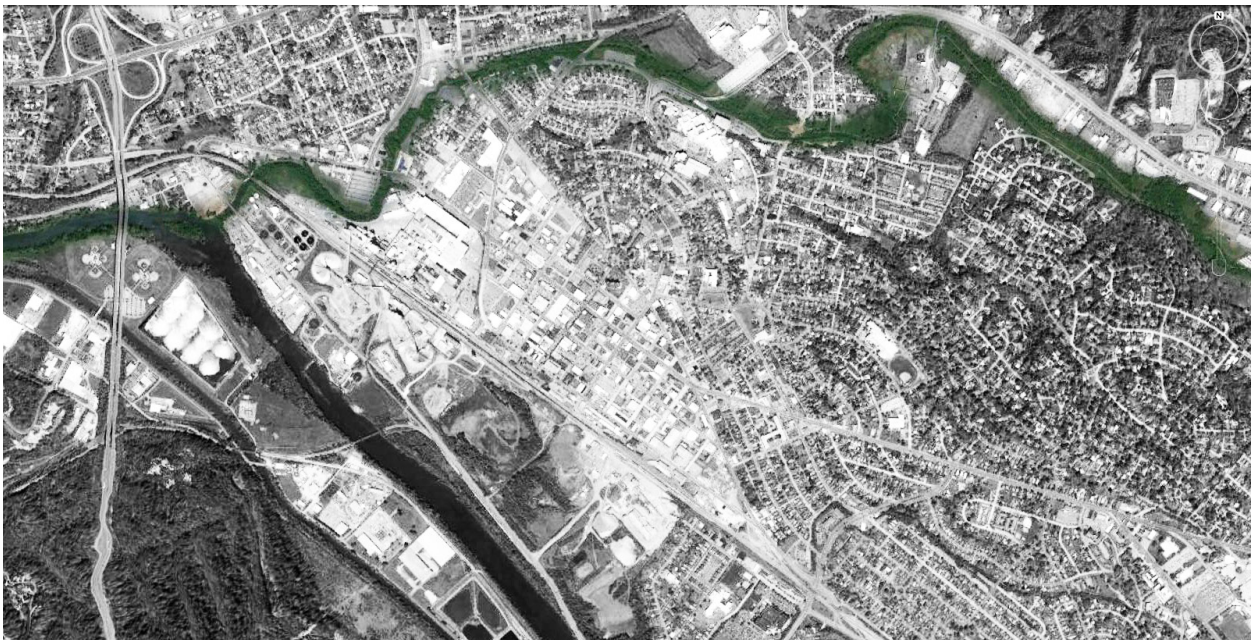


Figure 70: Existing Greenbelt: Author and Google Earth

Existing Greenbelt

Planned by Nolen as the northern border to Kingsport in the early 20th century, the greenbelt originally functioned as a publicly accessible greenspace meant to reflect the rural heritage of the community. It is now one of Kingsport's main recreational amenities, serving as an 8 mile linear greenway fitness trail. The greenway is comprised of four segments: the Buffalo Grasslands, Woodlawn, Cherokee Grounds, and Boatyard district, and passes through many historic sites, including Civil War grounds, Exchange Place, and Netherland Inn along its route across the city.

Figure 71: Existing Water Bodies: Author and Google Earth

Existing Water Bodies

The Holston River creates a natural southern boundary to the Penn-Dixie and General Shale Brick Sites, though it is not currently visible to the public from these areas. The top of Cement Hill would provide the most opportunity for scenic overlooks to the river, which is currently inaccessible to the community.

Figure 72: Existing Industrial Corridors: Author and Google Earth

Existing Industrial Corridors

The North Holston River continues north West of Eastman Chemical and Long Island towards downtown. A majority of this segment of the river is flanked on either side by industry, including Kingsport's waste water management facilities (northwest), rail lines extending to Holston Ammunition Plant, Domtar Paper Company, and what has previously been the site of Penn-Dixie Cement and General Shale Brick Company. Very little of this area is accessible to the public, with the only recreational facilities existing north of the industrial area in Riverfront Park.

Figure 73: Existing Parks and Recreation: Author and Google Earth

Existing Parks and Recreation

The majority of the parks in Kingsport are active recreation facilities, including two baseball parks, 1 soccer park, and the greenbelt fitness trail. Borden Park is a small pocket park east of downtown which is enclosed by a low income neighborhood. Borden Park is more for passive recreation, with disc golf and picnic facilities on site. Bays Mountain Park and Planetarium, located atop Bays mountain, includes over 22 miles of hiking and biking trails and educational center situated on a 3,200 acre nature preserve housing various native animal species on site.

Figure 74: Potential Reclamation and Remediation Author and Google Earth

Potential Reclamation and Remediation

The Penn-Dixie and General Shale Brick Sites offer great opportunities for industrial site reclamation. Their currently exists over a dozen dilapidated, though historically significant industrial buildings on site. The potential for reuse of the materials or the restoration of the buildings provide opportunities for public centers and environmental management systems not currently present in Kingsport. Though, according to the City Planner's office, most of the site has been decontaminated over the last 20 years, there still exists some greyfield contamination on Cement Hill from the kiln dust and cement ash remnants, which may require the removal of harmful contaminants through soil dredging

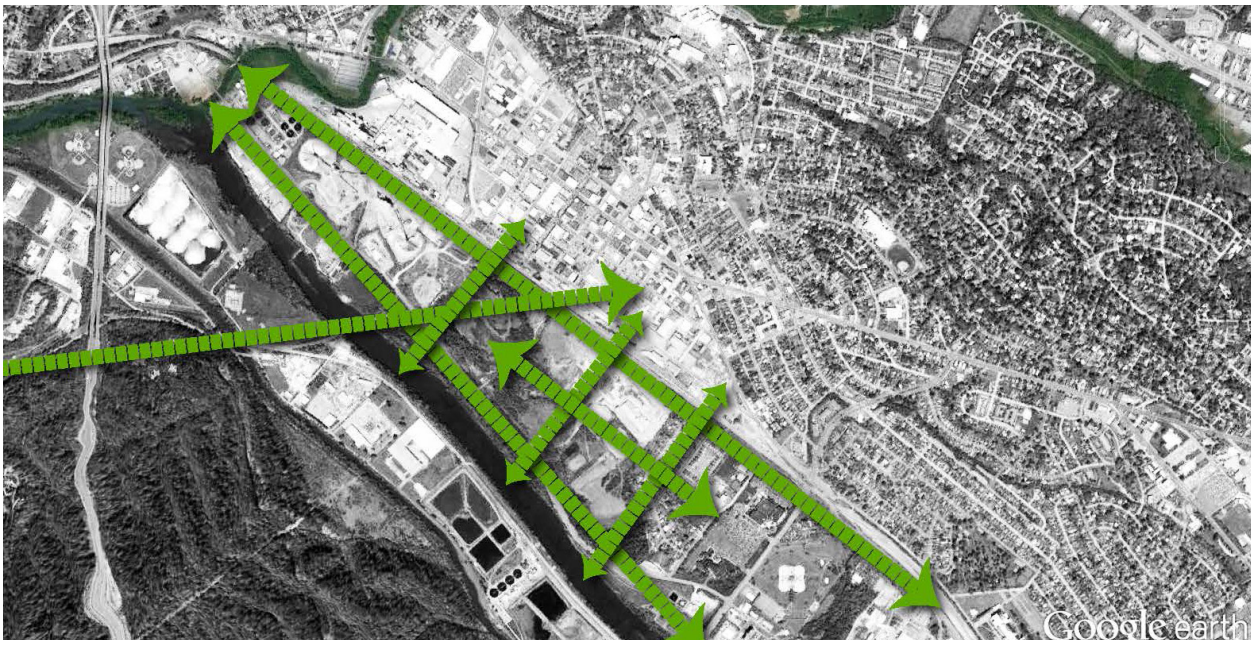


Figure 75: Linear Connections: Author and Google Earth

Linear Connections

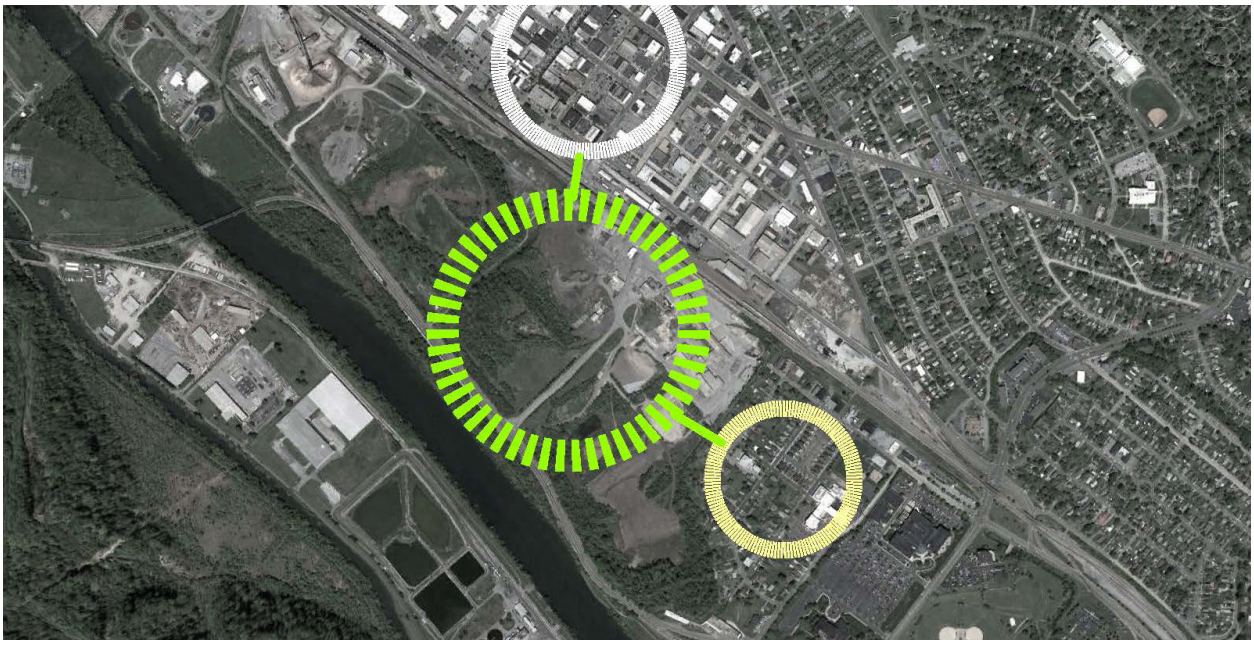


Figure 76: Proposed Connectivity: Author and Google Earth

Proposed Connectivity

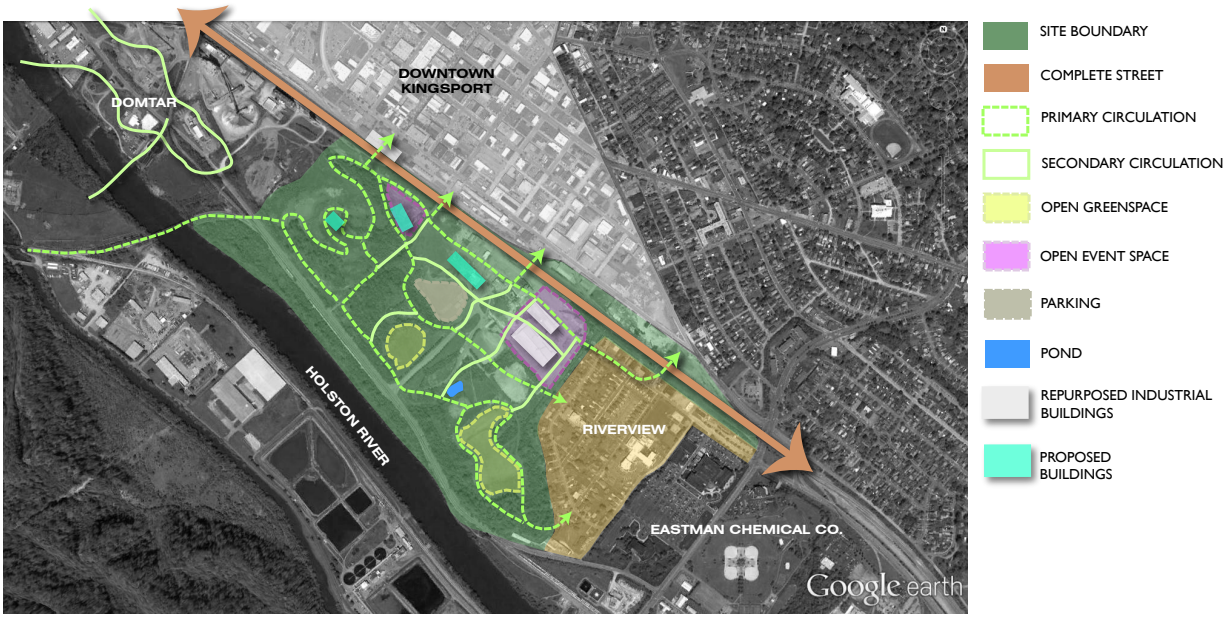


Figure 77: Initial Design Sketch A. Source: Author and Google Earth

Initial Design Sketch A

Figure 78: Initial Design Sketch B. Source: Author and Google Earth

Initial Design Sketch B

ADDITIONAL RESOURCE INFORMATION

Figure 61: Sources

Trees and Shrubs

Eastern Red Bud: http://www.arborday.org/treeguide/TreeDetail.cfm?id=6

Eastern Red Cedar: http://www.realchristmastrees.org/dnn/Education/TreeVarieties/EasternRedcedar.aspx

Common Hackberry: http://plants.oaklandnursery.com/12130001/Plant/1670/Prairie_Pride_Common_Hackberry

Sycamore: http://www.freefoto.com/preview/15-19-11/Sycamore-Tree--Northumberland

Bald Cypress: http://www.statesymbolsusa.org/Louisiana/bald_cypress_tree.html

River Birch: http://www.sweetvalleyfarms.com/nurserystock/heritage.htm

False Indigo: http://www.imagejuicy.com/images/plants/b/baptisia/2/

Garden Forsythia: http://www.johnsonsnursery.com/garden_slices.aspx

Fragrant Sumac: http://www.conard-pyle.com/index.cfm?fuseaction=srplants.plantDetail&plant_id=551

Weigela: http://sales.mckaynursery.com/index.php?main_page=products_all&disp_order=7&page=2

Meadow Mix

Little Bluestem: http://stcroixvalleylandscaping.com/blog/indexphpornamentalgrassesare-catching-on-in-the-midwest/

Indiangrass: http://kendallrosie.edublogs.org/

Gold Plate Yarrow: http://www.inlandnwgardening.com/gallery2/main.php?g2_view=slideshow.Slideshow&g2_itemId=7659

Eastern Red Columbine: http://www.outsidepride.com/seed/flower-seed/columbine/columbine-eastern-red-flower-seed.html

Purple Coneflower: https://www.roundstoneseed.com/Blog/category/Wildflower.aspx?page=2

Tickseed: http://www.zeably.com/Coreopsis_basalis

River Oats: http://www.wildflower.org/plants/result.php?id_plant=CHLA5

Virginia Spiderwort: http://davesgarden.com/guides/pf/showimage/256509/

Red Top Grass: http://www.wildflower.org/plants/result.php?id_plant=TRFL2

Slender Lespedeza: http://www.redorbit.com/education/reference_library/science_1/plants/1112599319/levi7/

VITA

Patrick Nathan Osborne is from Kingsport, Tennessee and is pursuing a Master of Landscape Architecture degree from the University of Tennessee. He is currently a Graduate Teaching Assistant for the Landscape Architecture Program and is Treasurer of the TNASLA Student Chapter. During his time as a student, he has had the opportunity to work as a Landscape Architect Intern with Carol R. Johnson Associates as well as an intern for Fox Den Country Club, both located in Knoxville, TN. In 2006, he earned a Bachelor of Arts from the University of Tennessee in Language and World Business, with a concentration in Spanish culture and literature. This background has enabled Patrick the ability to better communicate with people of Latino heritage and to travel the world and obtain a profound appreciation for other cultures and landscapes.

Prior to his return to academia, Patrick worked as a Senior Account Manager for Dell, Inc. in Nashville, TN. This experience exposed Patrick to a professional business atmosphere, while at the same time furthering his knowledge of Information Technology systems, business to business sales, and client relationship management. This experience also enlightened Patrick to the understanding that a traditional business career path was not in his future, leading him back to school to pursue Landscape Architecture.

Upon graduation, Patrick hopes to be employed by a local Landscape Architecture firm in pursuit of licensure as a Landscape Architect. He hopes to be able to work on urban planning, campus, waterfront, and site remediation projects, and ultimately hopes that his work will create memorable spaces to the betterment of the environment.