

## ABSTRACT

Title of Thesis:

PUBLIC DYEWORKS: THE ECO-  
INDUSTRY AND HYDROLOGY OF THE  
CHICAGO RIVER'S SOUTH BRANCH

Jennifer Ann Chorosevic, Dual Master of  
Architecture and Master of Real Estate  
Development, 2017

Thesis Directed By:

Jana Vandergoot, RA, School of Architecture,  
Planning and Preservation

This thesis seeks to redefine our relationship to the natural landscape by challenging our perceptions of what industry is. The goal of this thesis is to break down the processes of mass-production and make them part of local and accessible processes that better serve and engage nearby communities. Through the program of an eco-industrial textile facility, this thesis demonstrates how architecture can serve as a primary means to reconnecting people, industry, and nature by revealing and celebrating human activities as an integral part of natural cycles and systems.

PUBLIC DYEWORKS: THE ECO-INDUSTRY AND HYDROLOGY  
OF THE CHICAGO RIVER'S SOUTH BRANCH

by

Jennifer Ann Chorosevic

Thesis submitted to the Faculty of the Graduate School of the  
University of Maryland, College Park, in partial fulfillment  
of the requirements for the degrees of  
Master of Architecture &  
Real Estate Development  
2017

Advisory Committee:

Professor Jana Vandergoot, RA, Chair  
Associate Professor Madlen Simon, AIA  
Professor Brian Kelly  
Clinical Professor Margaret McFarland, JD

© Copyright by  
Jennifer Ann Chorosevic  
2017

## Preface

There is a lack of connection between people and nature, so much so that English dictionaries define nature in contrast to humans. Industry and the hidden nature of mass production have alienated people from the natural processes and systems that once connected us to the landscape. Urban environments are one example where the constructed landscape of the city lies in stark contrast to the natural landscape that preceded it. The city of Chicago is one such city, where canals, railroads, and highways replaced dirt roads and sluggish rivers; silos, lumberyards, and stock yards commoditized the natural assets of the prairies and woodlands surrounding Chicago. We are beginning to recognize that industry, and the negative connotations that are now associated with it, has removed us from feeling connected to nature within the city. Yet deep down we have an innate desire to seek out moments of connection to the natural landscape. This thesis seeks to explore the relationship between nature and the city of Chicago by analyzing the natural and industrial history of the site with contemporary aspirations to balance human needs with the health of larger ecosystems.



## Foreword

### “Chicago”

“ Hog Butcher for the World,  
Tool Maker, Stacker of Wheat,  
Player with Railroads and the Nation's Freight Handler;  
Stormy, husky, brawling,  
City of the Big Shoulders:

They tell me you are wicked and I believe them, for I have seen your painted women  
under the gas lamps luring the farm boys.  
And they tell me you are crooked and I answer: Yes, it is true I have seen the  
gunman kill and go free to kill again.  
And they tell me you are brutal and my reply is: On the faces of women and children  
I have seen the marks of wanton hunger.  
And having answered so I turn once more to those who sneer at this my city, and I  
give them back the sneer and say to them:  
Come and show me another city with lifted head singing so proud to be alive and  
coarse and strong and cunning.  
Flinging magnetic curses amid the toil of piling job on job, here is a tall bold slugger  
set vivid against the little soft cities;  
Fierce as a dog with tongue lapping for action, cunning as a savage pitted against the  
wilderness,  
Bareheaded,  
Shoveling,  
Wrecking,  
Planning,  
Building, breaking, rebuilding,  
Under the smoke, dust all over his mouth, laughing with white teeth,  
Under the terrible burden of destiny laughing as a young man laughs,  
Laughing even as an ignorant fighter laughs who has never lost a battle,  
Bragging and laughing that under his wrist is the pulse, and under his ribs the heart  
of the people,  
Laughing!  
Laughing the stormy, husky, brawling laughter of Youth, half-naked, sweating,  
proud to be Hog Butcher, Tool Maker, Stacker of Wheat, Player with Railroads  
and Freight Handler to the Nation.”<sup>1</sup>

*Carl Sandberg, 1914*

As a child, my family would take the long five hour drive down Interstate-55  
from our home in Naperville, Illinois to visit relatives in St. Louis, Missouri. Our

---

<sup>1</sup> Carl Sandberg, “Chicago,” *Poetry* 3, no. 6 (March, 1914): 191-192.

move from St. Louis to outside of Chicago is one that is logical given the description of Chicago outlined in this document: Chicago pulled us in with greater (job) opportunities than those that St. Louis could offer. On these trips back to St. Louis, we would cross the great Mississippi River and take the expressways past vacant industrial buildings south of the downtown. I couldn't understand what was wrong with these buildings and why no one would want to occupy them. The images of these abandoned, graffitied industrial structures remain with me today as I reach the end of my graduate studies and prepare to start my career. As I began my research, I would find that industry was not limited to vacant buildings: industry's footprint extends into the landscape.

The questions that puzzled me as a child are bound to the city's relationship to nature. I believe that humans have an intrinsic desire to be close to nature. Yet humans do not recognize themselves as something that is natural. Of the five English dictionaries I referenced – Cambridge, Merriam-Webster, MacMillan, Oxford, and Collins – all but one define nature in opposite to people. The Oxford Dictionary's definition of 'nature' is one such example: "the phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations."<sup>2</sup> This thesis attempts to explore and redefine the relationship between humans and nature so that human activities that define dense urban settlements like Chicago can be understood as a

---

<sup>2</sup> "nature," Oxford Dictionaries, accessed May 2, 2017, <https://en.oxforddictionaries.com/definition/nature>

contributor to rather than a burden on hydrological, vegetative, and atmospheric systems.

This thesis begins with the Chicago River. As a child going to and from Chicago's Union Station, I never once considered the Chicago River flowing beneath me as I crossed the Adams Street and Jackson Street bridges. When I began my architectural studies as an undergraduate at the University of Illinois Urbana-Champaign, I began to notice the hard edge that creates a divide where the Chicago River flows and where the buildings of the city begin to rise vertically. Why was the river so confined? Why couldn't people interact with the water's edge? These begged the larger question: where was nature within the city?

Digging into the history of the Chicago River, I discovered the answers to some of my questions lay south of the city along the South Fork of the South Branch of the Chicago River, more commonly known as Bubbly Creek. I found graffitied grain silos, abandoned coal-fired power plants, and large swaths of vacant industrial dumping grounds. In this industrial district of Chicago, I rediscovered the abandoned industrial buildings I remembered from my childhood trips to St. Louis. Although my perspective had changed, I still wondered why these buildings that had once engaged industry had to be so separate from civic life?

In order to answer that question, this thesis analyzes Chicago's industrial past and urban development to propose a way to embrace the city's history as part of a sustainable future. In doing so, this thesis serves not only as a plan for Chicago, but also a model for other industrialized cities that have many attributes in common with

Chicago. The phenomenon of the post-industrial site can be found all over North America. This sentiment is echoed in Carl Sandberg's poem:

“...I turn once more to those who sneer at this my city, and I give them back the sneer and say to them:  
Come and show me another city with lifted head singing so proud to be alive and  
coarse and strong and cunning...  
Laughing the stormy, husky, brawling laughter of Youth, half-naked, sweating,  
proud to be Hog Butcher, Tool Maker, Stacker of Wheat, Player with Railroads  
and Freight Handler to the Nation.”<sup>3</sup>

---

<sup>3</sup> Sandburg, “Chicago,” 192.

## Acknowledgements

Words cannot fully express the thankfulness I feel towards so many different individuals for their help, guidance, and support throughout this year, but I will try:

To *my family*, for giving me strength without fully knowing what “studio” is about.

To *Jana*, for seeing the potential in myself and this thesis when I at times could not.

To *Doug*, for being the greatest mentor, critic, and friend an aspiring architect could ask for.

To *Adan*, for being the greatest foundation of strength, encouragement, and illogical optimism.

To *Joe*, for always being there to lend a helping hand, especially less than 12 hours before presentation time when the printer breaks down.

To *my committee*, for your excitement and enthusiasm in envisioning the Dyeworks.

To *my friends and thesis cohort*, for their patience in listening to my ramblings.

...and to everyone who had a hand, physically or not, in making this thesis a reality, thank you.

# Table of Contents

<b>PREFACE .....</b>	<b>II</b>
<b>FOREWORD .....</b>	<b>III</b>
<b>DEDICATION .....</b>	<b>ERROR! BOOKMARK NOT DEFINED.</b>
<b>ACKNOWLEDGEMENTS.....</b>	<b>VII</b>
<b>TABLE OF CONTENTS.....</b>	<b>VIII</b>
<b>LIST OF FIGURES.....</b>	<b>X</b>
<b>LIST OF ABBREVIATIONS .....</b>	<b>XIII</b>
<b>CHAPTER 1: THEORY .....</b>	<b>1</b>
DESIGN WITH NATURE – IAN MCHARG.....	2
SEIZED BY SUBLIME SENTIMENTS – ELIZABETH MEYER .....	4
FIRST AND SECOND NATURE – WILLIAM CRONON.....	6
CONCLUSIONS.....	7
<b>CHAPTER 2: HISTORY .....</b>	<b>7</b>
HISTORY AND CHICAGO’S FIRST NATURE .....	7
TRANSPORTATION.....	9
<i>Manufacturing the River.....</i>	9
<i>Rail.....</i>	16
<i>Exodus by Car.....</i>	18
INDUSTRY.....	21
<i>Grain .....</i>	23
<i>Lumber .....</i>	26
<i>Meat .....</i>	30
<b>CHAPTER 3: SITE .....</b>	<b>35</b>
PLANNING CONTEXT .....	36
<i>Historical.....</i>	36
<i>Planned Manufacturing Districts.....</i>	43
<i>Precedents for Change.....</i>	46
SITE ANALYSIS.....	53
<i>Challenges and Opportunities.....</i>	53
<i>Site Selection.....</i>	62
<b>CHAPTER 4: DESIGN APPROACH .....</b>	<b>68</b>
PRECEDENTS.....	68
<i>Site Strategy.....</i>	68
<i>Program .....</i>	75
<i>Development.....</i>	81
PROGRAM.....	85
PROCESS.....	90
<b>CHAPTER 4: DESIGN – PUBLIC DYEWORKS.....</b>	<b>99</b>
ARCHITECTURE.....	99
FINANCING.....	116

<b>CHAPTER 5: CONCLUSIONS .....</b>	<b>118</b>
PUBLIC PRESENTATION .....	118
CLOSING REMARKS .....	119
<b>GLOSSARY .....</b>	<b>121</b>
<b>BIBLIOGRAPHY .....</b>	<b>122</b>

## List of Figures

Figure 1 Chicago's waterways before the construction of the Illinois & Michigan Canal in 1836 when the Chicago River drained into Lake Michigan. Diagram by author. ....	11
Figure 2: Chicago's waterways c. 1933. Diagram by author.....	14
Figure 3 Western inputs become eastern outputs in Chicago. Diagram by author....	22
Figure 4 Vertical movement of grain from one method of transport to another. Sketch by author. ....	24
Figure 5 Flow of grain through Chicago from western farmlands to eastern markets. ....	26
Figure 6 Horizontal movement of lumber. Diagram by author. ....	28
Figure 7 Flow of lumber through Chicago from Northeastern forests to western settlements.....	29
Figure 8 Flow of meat from western ranches to eastern markets. Diagram by author. ....	32
Figure 9 Moving, waiting, dividing of meat. Diagram by author.....	34
Figure 10 The project area (lower left) in relation to Downtown Chicago (top right). Edited Google Earth Aerial image by author.....	35
Figure 11 Plan of the complete system, presenting the city as a complete organism in which all its functions are related to one another to become a unit. Plate 110 from the Plan of Chicago, 1909.....	39
Figure 12 General map showing topography, waterways, and complete system of streets, boulevards, parkways, and parks. Plate 44 from the Plan of Chicago, 1909..	41
Figure 13 Diagram of the city and surrounding country, showing railroad circuits, existing industry, and potential future industrial growth along proposed rail corridors. Plate 73 from the Plan of Chicago, 1909. ....	43
Figure 14 Industrial corridors in the Lower West Side. Drawing by author. ....	45
Figure 15 The Eleanor Street Boathouse from its boat launch on the South Branch of the Chicago River. Image by author. ....	48
Figure 16 Aerial view of a new mixed-use transit hub at Ashland Avenue and Bubbly Creek. ....	50
Figure 17 Flow at 20 kM above Chicago. People flow into Chicago as water drains out of Chicago towards the southwest. Image by author with Google Earth underlay. ....	54
Figure 18: Patch at 20 kM above Chicago. Industrial corridors border the Chicago River, park space lines Lake Michigan. Image by author with Google Earth underlay. ....	55
Figure 19: Matrix at 5 kM above Chicago. Street grid is densest where grid is perpendicular to the river's edge. Image by author with Google Earth underlay.....	57
Figure 20: History: How Chicago has shaped its river. Diagram by author.....	59
Figure 21 The evolving shape of the South Branch over time. Dark blue represents the river's initial shape; light blue represents the river's current shape; dashed lines denote additional canals which no longer exist. Diagram by author. ....	60



Figure 22 Hydrology: The effects of Combined Sewer Overflows. Diagram by author. ....	61
Figure 23: Site analysis of 2800 S Ashland Avenue, outlined in red. Image by author. ....	63
Figure 24: Site analysis of 2453 S Laflin Street, outlined in red. ....	65
Figure 25 The site (center) from the Ashland Avenue bridge. Photo collage compiled by author. ....	67
Figure 26: Diagrams and sketches breaking down the site strategy at Gas Works Park. ....	69
Figure 27: Gas Works Park scale overlays along the South Branch. ....	71
Figure 28: Diagrams and sketches breaking down the program strategy of the Chicago Riverwalk. ....	73
Figure 29: Chicago Riverwalk scale overlays along the South Branch. ....	74
Figure 30: Rendering of the Beloit College Powerhouse from the Rock River. ....	75
Figure 31: Rendering of the Amager Bakke waste-to-energy plant emitting a smoke ring. ....	78
Figure 32 Method Soap's warehouse space was designed with the health and happiness of its employees in mind. Photo by Patsy McEnroe. ....	80
Figure 33: The west façade of The Plant facing its outdoor farm. The Peer Foods logo from the building's former tenant remains. Photo by author. ....	82
Figure 34 Initial ideogram suggesting how the program of a brewery could connect of system of sites. Diagram by author. ....	86
Figure 35 Ideogram: Collecting and filtering stormwater through plant-based textile dyeing to connect people to a reimagined industrial process. Collage by author. ....	87
Figure 36 Tracking and visualizing the hand-crafted textile dyeing process. Sketches by author. ....	88
Figure 37 The textile dyeing process visualized. Collage by author. ....	89
Figure 38 Varying urban schemes explored additional building footprints, additional park space, and key sites for architectural interventions. Drawings by author. ....	91
Figure 39 An initial section drawing with corresponding plan below exploring the relationship between the main dyeing hall with adjoining program. Drawing by author. ....	92
Figure 40 Loose sketches visualizing components of the textile dyeing process. Drawings by author. ....	92
Figure 41 Scalar overlays on the site. Drawing by author. ....	93
Figure 42 A series of 1/32" scale study models exploring the creation of space, both inside and outside the building, and the overall parti. Photos by author. ....	94
Figure 43 Site study models exploring promenade, views, figure ground, and public space. Photo by author. ....	95
Figure 44 Clay study models of the site (top) and the building (bottom), exploring topographic landscape moves related to the movement of water. Photos by author. .	96
Figure 45 Initial plan for the Dyeworks drawn at 1/32" scale. The entry to the north through a series of dyeing vials, a central courtyard, and the Drying House to the south form the main central axis with the axis of Laflin Street off to the right. Drawing by author. ....	97

Figure 46 The implied central axis of the Court of the Myrtles of the Alhambra in Granada, Spain (above) inspired the design of the central courtyard (below). Drawings by author.....	98
Figure 47 Design Strategy 1. Drawing by author. ....	99
Figure 48 Design Strategy 2. Drawing by author. ....	100
Figure 49 Design Strategy 3. Drawing by author. ....	100
Figure 50 Design Strategy 4. Drawing by author. ....	101
Figure 51 The final urban design scheme sets up four key eco-industrial parks along a continuous riverwalk with sedimentation forebays for the multiple CSO outlets along the river. South Ashland Avenue and West Cermak Road are highlighted in red while the Pilsen Industrial Corridor is outlined in black. Drawing by author. ....	102
Figure 52 Proposed site design for South Laflin Street, implementing a structured grid of infrastructure improvements. Drawing by author. ....	104
Figure 53 Potential building configurations for the various parcels and what they would look like on the site. Drawing by author.....	105
Figure 54 Proposed street section of South Laflin Street which guides people to the site via water collection and filtration in bioswales. Drawing by author.....	106
Figure 55 Ground floor plan of Dyeworks Park. Drawing by author. ....	107
Figure 56 Transverse section through the enclosed catwalk connecting the Dyeworks and the Color Lab. Drawing by author. ....	107
Figure 57 The Growing Fields with the Drying House in the background. Image by author. ....	108
Figure 58 The Bolt Library, leading visitors up into the Dyeworks via a grand staircase bordered by shelves of colorful fabric bolts. Drawing by author. ....	109
Figure 59 The colorful extraction vials of the Dyeworks. Image by author.....	110
Figure 60 Longitudinal section through the Dyeworks. Drawing by author. ....	112
Figure 61 The main floor plan of the Dyeworks. Drawing by author. ....	113
Figure 62 The main Dyeing Hall from the steps of the Drying House. Image by author. ....	113
Figure 63 The Drying House looking out towards the Growing Fields and the Chicago River beyond. Image by author. ....	114
Figure 64 Aerial of Dyeworks park denoting the flows of people, plants, textiles, and water around the site. Drawing by author. ....	115
Figure 65 Sources and uses of financing for Dyeworks Park.....	117
Figure 66 The final thesis defense boards. Photo by author. ....	118

## List of Abbreviations

Illinois and Michigan Canal – IMC

Chicago Sanitary and Shipping Canal – CSSC

Planned Manufacturing District – PMD

Metropolitan Water Reclamation District – MWRD

Tax Increment Financing - TIF

## Chapter 1: THEORY

“The city is a granite garden, composed of many smaller gardens,  
set in a garden world.... The city is a part of nature.”<sup>4</sup>

*Anne Spirn, 1984*

When looking around modern cities today, there is a lack of nature within the city. What do we mean by nature? The definition of what is natural varies between cultures, because the concept of nature is a cultural construct. Based upon entries from five different English dictionaries – Cambridge, Merriam-Webster, MacMillan, Oxford, and Collins – all but one defines nature in opposition to people. The following section seeks to understand how the concept of what is natural has evolved over time to influence peoples’ current relationship with nature. These definitions will provide a framework to propose a definition of nature for this thesis that can suggest a design resolution that would redefine the relationship between humans and nature.

Our concept of nature is based on a “nineteenth century lens of difference and opposition.”<sup>5</sup> Landscape architects like Frederick Law Olmsted approached park planning through the English tradition of “romantic planning.” This planning approach emphasized the inherent natural properties of landscape. Often, this involved removing the existing condition of the land in favor of the picturesque retreat from the city that many desired. “Nature...is mostly represented by a softly undulating pastoral scene, generally considered virtuous, benevolent, and soothing, a

---

<sup>4</sup> Ann Whiston Spirn, *The Granite Garden: Urban Nature and Human Design* (1984), 4.

<sup>5</sup> James Corner, “Terra Fluxus”, in *The Landscape Urbanism Reader*, edited by Charles Waldheim, (New York, NY: Princeton Architectural Press, 2006), 24.

moral as well as practical antidote to the corrosive environmental and social qualities of the modern city. This landscape is the city's 'other', its essential complement drawn from a nature outside of and excluding building, technology, and infrastructure.”<sup>6</sup>

## **Design with Nature – Ian McHarg**

Ian McHarg sought to understand nature's place within man's built world in his 1969 book, *Design with Nature*. The introduction presents two landscapes: the countryside of his childhood and the city where he lives and works. McHarg describes being torn between the two throughout his life, retreating to one or the other for different means. In the chapters that follow, McHarg mixes theoretical discussions on “man-nature” with recommendations on how to initiate nature within the design process, combining the “highest and best use” in the eyes of development with what the existing landscape deems most appropriate. McHarg's goal: “If we can create the humane city, rather than the city of bondage to toil, then the choice between city or countryside will be between two excellences, each indispensable, each different, both complementary, both life-enhancing.”<sup>7</sup>

McHarg states that there are two viewpoints of “man-nature”: the anthropocentrism view, where nature is subjected under man's divine dominion, and the Asiatic view, where man is submerged in nature. The anthropocentrism view has roots in religious sources. Western monotheistic cultures and the Biblical story of creation in the first chapter of Genesis insist upon man's “dominion and subjugation

---

<sup>6</sup> Corner, “Terra Fluxus,” 25.

<sup>7</sup> Ian McHarg, *Design With Nature* (Philadelphia, PA: The Falcon Press, 1969), 2.

of nature,” inflating the human ego to increase human authority over nature.<sup>8</sup> In contrast, Asiatic cultures such as traditional Japan sought a harmonious relationship between humans and nature through understanding natural processes. Landscape is revered as an icon, and, “the garden is the metaphysical symbol of society in Tao, Shinto, and Zen – man in nature.”<sup>9</sup> McHarg sees these two viewpoints as the extremes of a spectrum. In western culture, human individuality is achieved at the expense of nature while in Asiatic culture, harmony between man and nature is achieved at the expense of human individuality.<sup>10</sup> How can society seek to achieve a middle ground within this spectrum?

“From the ecological view, one can see that, since life is only transmitted by life, then by living, each one of us is physically linked to the origins of life and thus – literally, not metaphorically – to all life. Moreover, since life originated from matter then, by living, man is physically united back through the evolution of matter to the primeval hydrogen. The planet Earth has been the one home for all of its processes and all of its myriad inhabitants since the beginning of time, from hydrogen to men. Only the bathing sunlight changes. Our phenomenal world contains our origins, our history, our milieu; it is our home.”<sup>11</sup>

Rather than subjugating nature or placing nature on a pedestal, McHarg suggests that humans should treat nature as an equal because humans are natural. McHarg later goes on to argue that while humans are not necessary for life to function on Earth, humans are useful.<sup>12</sup> This is where the middle ground of the spectrum lies. People should not design *for* nature nor *design* nature but rather design *with* nature.

---

<sup>8</sup> McHarg, *Design With Nature*, 26.

<sup>9</sup> McHarg, *Design With Nature*, 27.

<sup>10</sup> McHarg, *Design With Nature*, 27-28.

<sup>11</sup> McHarg, *Design With Nature*, 29.

<sup>12</sup> McHarg, *Design With Nature*, 45.

McHarg's language is harsh and unforgiving, yet his bold statements are meant to shock and grab the reader's attention. McHarg's argument for designing with nature is compelling. The simplified spectrum where humans must aim to reach the middle ground of two extremes is easy to comprehend, but this perspective is too clear cut. Yes, humans are part of nature because humans are living creatures like other life on this planet. As such, people should not put nature above themselves nor disregard their role within the environment. If people were to design for nature within the city, parks would begin to appear where buildings are; and cities are already proof of what putting people above nature looks like. What does designing with nature look like within an existing urban environment? How can architects and developers create environments that begin to change peoples' understanding of their relationship to nature? McHarg's proposition seems to work better for unbuilt landscapes where nature and development can be designed in tangent. McHarg offers no clear prescription for how to design with nature within existing urban environments, so McHarg's definition of nature must be supplemented with what others have to say on the topic.

### **Seized by Sublime Sentiments – Elizabeth Meyer**

Upon visiting two of landscape architect Richard Haag's projects in Washington state – Gas Works Park and Bloedel Reserve – landscape architect and theorist Elizabeth Meyer sought to understand her sublime reaction to these landscapes in the essay *Seized by Sublime Sentiments*. Meyer describes the sublime as a feeling of awe and terror one experiences coupled by delight and pain, beauty

and horror.<sup>13</sup> The sublime allows the invisible *terra incognita* to challenge that which is visible in *terra firma*. Landscape can act as a verb which moves the viewer to action.

The sublime is one of three characteristics of the late-eighteenth century to describe various landscape aesthetics. The pastoral, or beautiful, and the picturesque are more commonly known and widely employed. The beautiful landscape is known as the contained scene: smooth, coherent, and comprehensible. The picturesque evokes melancholy and curiosity through landscapes of time, change, process, and ruin. If the beautiful and the picturesque described constructed landscapes, then the sublime described landscapes in the wild too large to comprehend. Artists of the late 19<sup>th</sup> century used the technique of the sublime to evoke a trajectory from terror to awe and pleasure within the viewer. Meyer details how American innovation coined the “technological sublime”, juxtaposing powerful machines against the vast American landscape. Railroads, dams, and skyscrapers demonstrated progress, growth, and improvement of landscape and culture.<sup>14</sup>

Meyer explains how a postmodern sublime, a hybrid which combines the natural sublime with the technological sublime, is employed at Gas Works and Bloedel. Both projects challenge spatial boundaries and limits through temporal means, alluding to the invisible within the visible. The result for Meyer is an experience where she is “contemplating sublime structures; imagining sublime ecosystems.”<sup>15</sup>

---

<sup>13</sup> Elizabeth Meyer, “Seized by Sublime Sentiments”, in *Richard Haag: Bloedel Reserve and Gas Works Park*, by William S. Saunders et al., (New York: Princeton Architectural Press, 1998), 21.

<sup>14</sup> Meyer, “Seized by Sublime Sentiments”, 14.

<sup>15</sup> Meyer, “Seized by Sublime Sentiments”, 20.



Meyer's experience of the sublime is limited to two landscape examples. She argues, "the sublime is in the content of the work, not its form."<sup>16</sup> Yet what limits architecture from accomplishing a similar experience that moves one to action?

### **First and Second Nature – William Cronon**

Environmental historian William Cronon takes a strong stance on man's relationship with nature in his book, *Nature's Metropolis: Chicago and the Great West*, stating, "Nature is the place where we are not."<sup>17</sup> Cronon goes on to explain how we see ourselves as unnatural creatures, and our cities are the conquest of natural elements. Chicago was able to become a metropolis by improving upon the city's natural assets. Cronon defines this type of enhancement as "second nature." First nature consists of the original landscape – untouched and unaltered. Second nature then is the improvement of nature for human ends. The distinguishing quality of second nature is the way in which it makes one believe it is natural. Second nature removes people from the processes and products of first nature in favor of an improved, mass-produced version of itself.

Cronon's stance would suggest that our concept of nature is constructed. What then distinguishes a park from its wild counterpart; wilderness versus landscape? "Wilderness is a socially constructed idea, a landscape, even though it appears wholly 'natural.' Thoreau recognized the profound existential aspects of this irony when he wrote, 'it is in vain to dream of a wildness distant from ourselves.

---

<sup>16</sup> Meyer, "Seized by Sublime Sentiments", 25.

<sup>17</sup> Cronon, *Nature's Metropolis*, 18.

There is none such. It is the bog in our brain and bowels, the primitive vigor of Nature, that inspires our dreams.”<sup>18</sup>

## Conclusions

The writings of Ian McHarg, Elizabeth Meyer, and William Cronon offer a glimpse at how we can begin to design architecture as part of an integrated ecological system to redefine the relationship between people and nature. Their viewpoints on nature suggests that buildings be developed in tangent to ecological systems to demonstrate that human processes are an integral part of nature. The result, in Meyer’s words, would be an architecture in which we are “contemplating sublime structures; imagining sublime ecosystems.”<sup>19</sup>

## Chapter 2: HISTORY

“What built Chicago? Let us answer, a junction of Eastern means and Western opportunity.”<sup>20</sup>

*Everett Chamberlin, 1873*

### History and Chicago’s First Nature

As with many cities before it, the city of Chicago was initially located near two bodies of water: Lake Michigan to the east and the Chicago River to the west. Early citizens dreamed of Chicago as a great link between the eastern and western

---

<sup>18</sup> James Corner, “Recovering Landscape as a Cultural Practice,” in *The Landscape Imagination: Collected Essays of James Corner 1990-2010*, edited by James Corner and Alison Bick Hirsch, (New York, NY: Princeton Architectural Press, 2014), 116.

<sup>19</sup> Meyer, “Seized by Sublime Sentiments”, 20.

<sup>20</sup> William Cronon, *Nature’s Metropolis: Chicago and the Great West* (New York, NY: W.W. Norton & Company, Inc., 1992), 63.

halves of the United States. Chicago's natural condition was the convergence of the continent's three most important biotic communities: prairies to the west, oak-hickory forests to the east, and access to coniferous forests north via Lake Michigan.<sup>21</sup>

The Chicago River was anything but a great waterway, yet it was one of the most important factors in the development of Chicago. The River's short length, shallow depth, and lack of a current was better suited to small watercraft than barges, which is how early Native Americans utilized the River as a passage west towards the Mississippi River.<sup>22</sup> A portage of a few miles existed during low water conditions between the mouth of the Chicago River's South Branch and the Des Plaines River.<sup>23</sup> French-Canadian explorers Louis Jolliet and Father Jacques Marquette became the first Europeans to utilize this 1.5 mile portage to travel between the Mississippi and the Great Lakes in 1673.<sup>24</sup> Early explorers imagined transforming the portage into a great canal to connect Chicago to southern trade cities along the Mississippi River.

Water from the sluggish Chicago River originally drained into Lake Michigan to form a safe harbor for vessels on Lake Michigan. While many envisioned this point as the site of a great harbor, a large sandbar at the river's mouth prevented larger vessels from Lake Michigan entering farther inland via the river.<sup>25</sup> Lake Michigan gave Chicago access to other trading cities in Wisconsin, Michigan, and Canada. Yet the Lake alone could not help make Chicago a great western metropolis.

---

<sup>21</sup> Cronon, *Nature's Metropolis*, 25.

<sup>22</sup> Cronon, *Nature's Metropolis*, 33.

<sup>23</sup> Branom, Fred K. "Some Geographic Factors in the Development of Chicago." *Journal of Geography* 20: 176, <https://search.proquest.com/docview/1290490376?accountid=14696>.

<sup>24</sup> Jeanne Gang, *Reverse Effect: Renewing Chicago's Waterways* (Chicago, IL: Studio Gang Architects, 2011), 9.

<sup>25</sup> Cronon, *Nature's Metropolis*, 55-56.

If any city had a natural advantage to be the gateway to the West, it was St. Louis, Missouri, located farther inland and west at the confluence of two of the continent's major rivers: the Mississippi and the Missouri. While water helped establish Chicago, the natural state of the city's waterways would not allow it to expand. Until the railways reached Chicago in the 1850's, trade had to come to the city by land. While glaciers had left Illinois with "some of the flattest, least rocky, least forested land in all of North America," the topography did not drain well, making travel amongst marshlands and wet prairies difficult.<sup>26</sup>

If Chicago was going to compete with or even surpass St. Louis as the great metropolis of the West, the city's natural conditions would need to be improved upon. Chicago's history with transportation flows served to connect people and goods to the city first by water and then by land. Once trade found a way to flow into the city, industrialization followed.

## Transportation

### *Manufacturing the River*

Chicagoans did not see the benefits of the Chicago River's natural state as the area's Native Americans did. The inability of large vessels to navigate the river's tight bends and shallow depths was a roadblock to the expansion of the city. Furthermore, the Chicago River did not connect to a larger river system like that of the Mississippi River. [\[Figure 1\]](#) As early as 1673, Jolliet had suggested a connection between Lake Michigan and the Illinois River to ease future travel between the Great

---

<sup>26</sup> Cronon, *Nature's Metropolis* 57.

Lakes and the Mississippi River.<sup>27</sup> By 1814, eastern journalists were speculating how a canal would make Illinois “the seat of an immense commerce; and a market for the commodities of all regions.”<sup>28</sup>

---

<sup>27</sup> Stanley A. Changnon and Joyce M. Changnon, “History of the Chicago Diversion and Future Implications,” *Journal of Great Lakes Research* 22, no. 1 (1996): 101, accessed April 23, 2017, [https://doi.org/10.1016/S0380-1330\(96\)70940-1](https://doi.org/10.1016/S0380-1330(96)70940-1).

<sup>28</sup> Cronon, *Nature’s Metropolis*, 33.



**Figure 1** Chicago's waterways before the construction of the Illinois & Michigan Canal in 1836 when the Chicago River drained into Lake Michigan. Diagram by author.

The region's first canal, the Illinois and Michigan Canal (IMC) was completed in 1848, bringing with it dramatic change to the regional economy. Farmers in the Illinois River Valley had a new alternative to St. Louis to sell their produce where

they could receive more cash for their crops.<sup>29</sup> Larger quantities of heavier and bulkier goods could flow in and out of Chicago to and from farther distances, such as lumber which settlers would use to populate the Illinois prairies.<sup>30</sup> Chicagoans envisioned their waterways as a symbol of the city's increasing prosperity. Yet before people could adjust to the trade opportunities of the canals, rail traffic came to Chicago and overshadowed the canal's value.

The city's population grew with the increasing trade presence. Chicago saw its population increase from 30,000 in 1848, to 70,000 in 1855, and 700,000 in 1885.<sup>31</sup> As the population grew, so did the city's need to dispose of sewage and garbage. The Chicago River was a natural form of infrastructure to wash away such waste before the creation of an intricate sewer system. Chicago was not alone in this practice of turning their waterways into open sewers. Many industrializing cities in the 19<sup>th</sup> century from Washington, D.C. to London, England utilized their waterways as a natural means to wash away waste. Few realized this waste would flow from the Chicago River directly into the city's source of clean drinking water: Lake Michigan. The river became a serious health threat that bred waterborne diseases, like typhoid, cholera, and dysentery. "Decaying organic matter, whether in the form of packing wasters, or raw human sewage, was the chief water supply problem the city faced by midcentury."<sup>32</sup> Between 1840 and 1880, the city would test various solutions in an attempt to solve the river's pollution problem by diluting dirty river water with water

---

<sup>29</sup> Cronan, *Nature's Metropolis*, 60.

<sup>30</sup> Cronan, *Nature's Metropolis*, 64-65.

<sup>31</sup> Changnon and Changnon, "A History of the Chicago Diversion," 102.

<sup>32</sup> Cronon, *Nature's Metropolis*, 249.

from Lake Michigan, inadvertently committing the Chicago River to life as the city's open sewer.<sup>33</sup>

By the 1880's, a series of waterborne epidemics swept through the city, killing thousands.<sup>34</sup> The Chicago City Council developed a comprehensive sewage disposal plan in response.<sup>35</sup> The plan ultimately recommended the creation of a lock and canal system to reverse the natural flow of the Chicago River from eastward to westward, steering waste away from the city's source of drinking water. The Sanitary District of Chicago (now the Metropolitan Water Reclamation District of Greater Chicago (MWRD)) was established in 1889 to oversee the reversal.

The 28-mile Chicago Sanitary and Ship Canal opened in 1900, further expanding the city's commercial and industrial opportunities by creating a link between the Great Lakes and Mississippi watersheds.<sup>36</sup> [\[Figure 2\]](#) More importantly for the citizens of Chicago, the number of fatalities due to water-borne diseases fell. People saw the improvement of sanitary conditions in relation to the new drainage canal. "Water in Chicago River Now Resembles Liquid. The Impossible has now happened! The Chicago River is becoming clear!"<sup>37</sup>

While Chicago celebrated its victory over polluted river water, residents downstream along the Calumet and Mississippi Rivers were less than thrilled. Chicago's waste now became another person's problem, as one resident from Morris, Illinois recounted:

---

<sup>33</sup> Changnon and Changnon, "A History of the Chicago Diversion," 102-103.

<sup>34</sup> Henry L. Henderson et al., "Cargo, Crap, and Carp," in *Reverse Effect: Renewing Chicago's Waterways*, ed. Alissa Anderson, (Chicago, IL: Studio Gang Architects, 2011), 18.

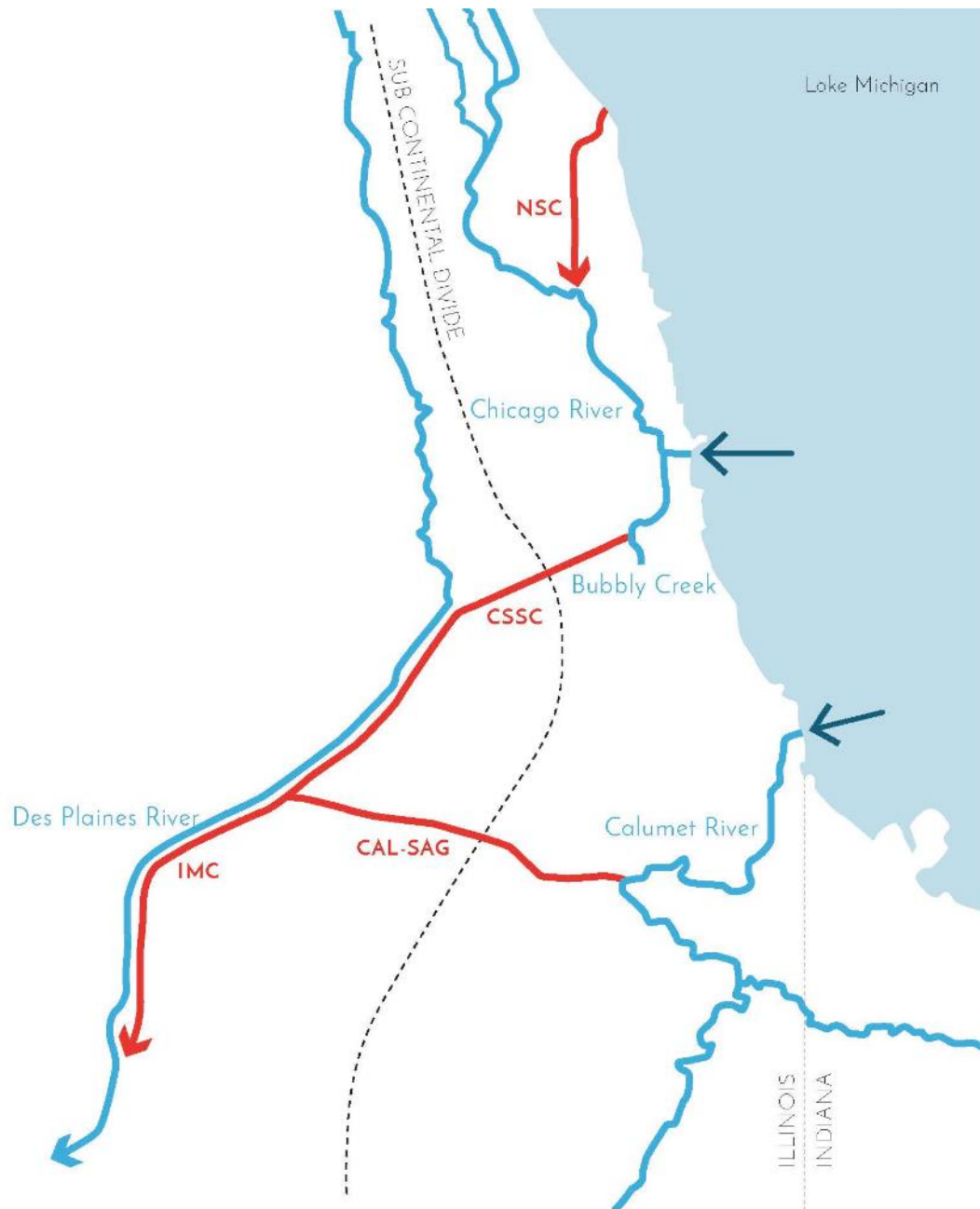
<sup>35</sup> Changnon and Changnon, "A History of the Chicago Diversion," 103.

<sup>36</sup> Henderson et al., "Cargo, Crap, and Carp," 18-19.

<sup>37</sup> Changnon and Changnon, "A History of the Chicago Diversion," 104.



“Ever since the water from the Chicago River was let down into the Illinois River...the stench has been almost unendurable. What right has Chicago to pour its filth down into what was before a sweet and clean river, pollute its waters, and materially reduce the value of property on both sides of the river and canal, and bring sickness and death to its citizens?”<sup>38</sup>



**Figure 2:** Chicago's waterways c. 1933. Diagram by author.

<sup>38</sup> Cronon, *Nature's Metropolis*, 250.

Chicago would continue to address its water pollution problems over the next century. Additional canals and channels were built to control the diversion of lake water into the Chicago River and treat sewage in the canals. Controversies regarding the diversion of lake water have gone to the U.S. Supreme Court for resolution on multiple occasions. In 1972, the MWRD began construction on a “large-scale, multi-purpose Tunnel and Reservoir Plan (TARP), commonly known as the ‘Deep Tunnel,’” to further “capture, convey, and store sewage and stormwater during storms until it can be pumped to existing treatment plants when capacity becomes available.”<sup>39</sup> The late 60’s and early 70’s brought a new interest in the environment. The National Environmental Policy Act of 1969, the Clean Water Act of 1972, and major Water Quality Agreements for the Great Lakes signed by all lake states in 1972 and 1978 have caused the city to more carefully monitor its relationship with its waterways.

Today, 55 percent of the nation’s goods come through Chicago, the 3rd largest transit hub in the world, while only 1 percent comes through the city’s canal and waterway network.<sup>40</sup> The South Branch still sees a good amount of barge activity that often makes its way upstream to the Lake. Chicago’s waterways helped shape the railroads “by competing with them, by sharing business with them, not least by influencing where they would be built”.<sup>41</sup>

---

<sup>39</sup> City of Chicago, “Green Stormwater Infrastructure Strategy,”

<sup>40</sup> Ben Schulman, “Reverse Effect: Jeanne Gang on the Chicago River,” *Better! Cities & Towns* (January-February 2012), accessed January 31, 2017, <http://bettercities.net/article/reverse-effect-jeanne-gang-chicago-river-15877>

<sup>41</sup> Cronon, *Nature’s Metropolis*, 70.

## ***Rail***

Chicago's lake, harbor, river, and canals may have made Chicago an important city in Illinois, but they would not have made Chicago the interior metropolis of the continent the way the railroads did. Construction on Chicago's first rail line, 31 miles of the Galena and Chicago Union Railroad, began in 1848, the same year the IMC reached completion. By 1852, over half of the city's wheat was arriving via the Galena and Chicago Union Railroad.<sup>42</sup> The introduction of rail traffic to Chicago lessened the city's dependence on using the river for trade. Less than a decade after the opening of the Illinois and Michigan Canal, Chicagoans referred to the canal as, "an old foggy institution – of the things that were to be superseded by new inventions."<sup>43</sup>

The railroads imposed a new geography on the American landscape. Initially these rails serviced farming towns in Chicago's western hinterlands (i.e. the St. Louis Alton and Chicago Railroad made stops in those major cities, amongst others). By 1869, Chicago was connected to the Pacific Ocean by rail, a feat unimaginable by water travel alone almost thirty years prior.<sup>44</sup> Rail lines radiated west from Chicago, dividing the region into pie-shaped wedges served by differing rail companies. In 1914, roughly 40 lines extended from the city with more than half the entire US population living within a night's train journey from Chicago.<sup>45</sup> Western rail lines

---

<sup>42</sup> Cronon, *Nature's Metropolis*, 67.

<sup>43</sup> Cronon, *Nature's Metropolis*, 70.

<sup>44</sup> Cronon, *Nature's Metropolis*, 70.

<sup>45</sup> Marco D'Eramo, and Graeme Thomson, *The Pig and the Skyscraper: Chicago, a History of Our Future*, (London: VERSO, 2002), 22.

were built from Chicago while eastern rail lines were built to Chicago.<sup>46</sup> Chicago became the link between east and west.

While 19<sup>th</sup> Century rhetoric may have described the railroads as a direct product of nature, “It was a human invention at the heart of an equally human economic system. ‘Nature,’ wrote one booster who came closer than most to this perspective, ‘built Chicago through her artificer, Man.’”<sup>47</sup> Rail lines were liberated from geography, unlike their water-based competitors. Tracks were laid along the most direct path – with the exception of topographical slope issues - between market centers, choosing to stop at points which generated high market demand at the lowest operating cost.<sup>48</sup> The same principle applied to non-railroad transport systems, but geography and climate were less of a determinant of where trains could travel and when. Farmers no longer had to rely on sluggish wagon travel when a train could transport their produce to market in a fraction of the time. Trains could travel during wet seasons and winter, periods of the year that were previously the duller for business.

The railroads succeeded in bringing the city and its hinterlands closer together. Farmers would send raw resources – grain, lumber, and livestock - by train to Chicago and receive a variety of manufactured goods in return. These goods came from across the country and around the world, further estranging people from the sources and processes of production. Yet like the canals before it, the train too would be overshadowed by the country’s next industrial marvel: the automobile.

---

<sup>46</sup> Cronon, *Nature’s Metropolis*, 90.

<sup>47</sup> Cronon, *Nature’s Metropolis*, 73.

<sup>48</sup> Cronon, *Nature’s Metropolis*, 74.

## ***Exodus by Car***

“I will build a car for the great multitude. It will be large enough for the family, but small enough for the individual to run and care for...it will be so low in price that no man making a good salary will be unable to own one – and enjoy with his family the blessing of hours of pleasure in God’s great open spaces.”<sup>49</sup>

*Henry Ford, 1909*

Cars had begun to appear in cities after the turn of the 20<sup>th</sup> Century. Many streets outside the urban core remained unpaved as horses and cable cars navigated the street with pedestrians. Henry Ford’s Model T gave more Americans access to private automobiles through the economic incentives of mass-production. By 1910, most horse and cable-car traffic disappeared from Chicago’s streets.<sup>50</sup> The period after World War II defined a new relationship between cars and cities. Roughly a century after rail lines started making their way to Chicago, the Interstate Highway system ushered in a dramatic restructuring of the urban landscape. This was the backdrop for the suburban exodus.

By 1940, the population of Chicago had reached its peak of almost 4 million people.<sup>51</sup> The state of many American cities was in decline, as cities were viewed as cramped and dirty. In conjunction with benefits from the Serviceman’s Readjustment Act of 1944, also known as the G.I. Bill, suburban living was an attractive, affordable option for returning veterans. The affordability of the automobile for the middle class helped propel people out of the city and into the suburbs.

---

<sup>49</sup> Cronon, *Nature’s Metropolis*, 208-209.

<sup>50</sup> R. Samuel Roche and Aric Lasher, *Plans of Chicago* (Chicago, IL: Architects Research Foundation, 2009), 56.

<sup>51</sup> D’Eramo and Thomson, *The Pig and the Skyscraper*, 114.

There was an influx of veterans returning home after World War II in need of housing and jobs. The G.I. Bill and the Housing Act of 1949 were influential in driving demand for housing by providing benefits for veterans that made home ownership affordable. The mass-production of large suburban developments outside the city limits represented the American dream where one could escape the ills of the city and spread out to enjoy their own personal space.

To combat this mass exodus, city leaders across the country designed ways for these former urban residents to return to the city by way of the automobile. New expressways would bring workers, shoppers, tourists, and suburban residents straight into the city center. In Chicago, Kennedy, Stevenson, and Dan Ryan expressways, the city's nicknames for I-90/94 northbound, I-55, and I-90/94 southbound, divide the city much like the rails before them. However, these elevated concrete structures form physical boundaries between neighborhoods and places. The Lake Shore Drive expressway forms a 10 lane, plus median, divide between park-goers in Grant Park from Lake Michigan much like the elevated Stevenson Expressway blocks views and access from residential neighborhoods to the banks of the South Branch of the Chicago River.

While expressways connected the suburbs to the city, they formed a new transportation method for industrial centers across the country via the Interstate Highway System implemented in the 1950's. As people moved out to the suburbs, businesses moved with them and set up shop along highways instead of railways. Trucks became the preferred method of transporting goods between city and country.

The expressways took cues from the city's rail infrastructure and in many instances were constructed on top of existing rail lines.

The appearance of cars and trucks disrupted the radial structure of the city which trains had established.<sup>52</sup> In the car-oriented suburb, people relied on personal automobiles to get them to and from the city as opposed to commuter rail lines. Furthermore, suburban residents did not have to be limited by job opportunities in the city; cars made it possible to move from one suburban zone to another.<sup>53</sup> As roads and expressways overshadowed rail transport, the rail lines which once spread across the Chicago landscape slowly began to disappear. Passenger rail lines were the first to fall. Between the 60's and 70's, many rail companies would merge into larger conglomerates. The present-day Union Pacific and Burlington Northern Santa Fe Railroads, two of the largest freight lines serving the western United States, were a result of such mergers.

According to the US Census Bureau, 2.722 million people live in Chicago as of 2014, roughly half of what it was in 1940. The suburbanization of the 1950's and the affordability of the automobile, amongst other factors, were large contributors to the dramatic population decline not just in Chicago, but in many other cities around the United States. Roads and expressways are just another layer of transportation that have contributed to the flow of manufactured goods in and out of Chicago, especially at the South Branch site. The automobile helped to decentralize the city. The farmers who once felt obligated to send their raw goods to Chicago because it was the

---

<sup>52</sup> D'Eramo and Thomson, *The Pig and the Skyscraper*, 114.

<sup>53</sup> D'Eramo and Thomson, *The Pig and the Skyscraper*, 114.

terminus of all eastward movement of resources could now send their goods via truck to the closest distribution center. Likewise, industry could move closer to the source of its raw materials.

## Industry

“The habitual weakness of the American people is to assume that they have made themselves great, whereas their greatness has been in large measure thrust upon them by a bountiful providence which has given them forests, mines, fertile soil, and a variety of climate to tenable them to sustain themselves in plenty....”<sup>54</sup>

*Superintendent of the Chicago, Burlington and Quincy Railroad, 1868*

Chicago capitalized and improved upon its natural assets to become the link between East and West. The East Coast viewed Chicago as the last point of civilization before the hinterlands of “the wild west,” while the West viewed Chicago as the first destination into the civilized east. Chicago was thus the “end of a route” where eastern and western journeys met in a complex system of inputs and outputs.<sup>55</sup> Resources would flow in from the west as raw resources and flow out as processed, manufactured goods to the east and vice versa. Initially, these resources were processed into simple material goods, like flour milling, lumber, and packaged meat.<sup>56</sup> More chemically complex materials that utilized even the tiniest of scraps to maximize profits soon supplemented these goods to maximize profits. Efficiency was

---

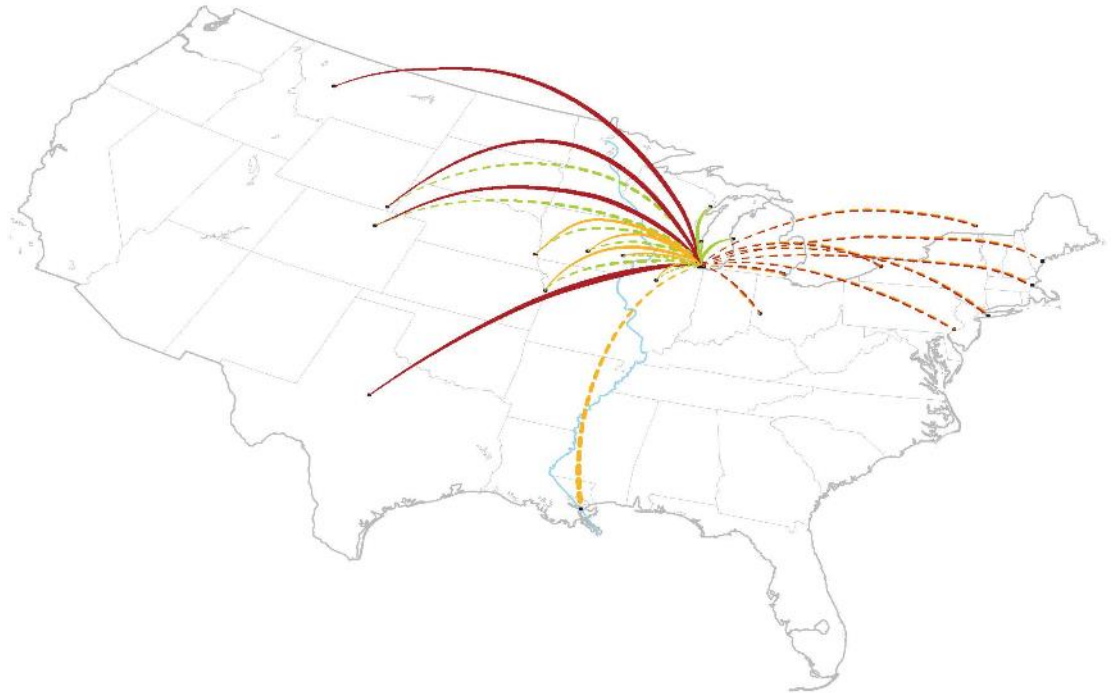
<sup>54</sup> Cronon, *Nature's Metropolis*, 206.

<sup>55</sup> Cronon, *Nature's Metropolis*, 61.

<sup>56</sup> Cronon, *Nature's Metropolis*, 311.



prized over waste. Trains never left Chicago empty, capitalizing on the east-west flow of processed goods and resources. [Figure 3]



**Figure 3** Western inputs become eastern outputs in Chicago. Diagram by author.

In each of the three major industries that existed in Chicago – grain, lumber, and meat-packing – industry replaces natural systems and processes of production with systems that worked for a human economy.<sup>57</sup> Industry was removed from its place, transforming from a process that was visible on a local scale into an invisible process that occurred on a global scale. People have forgotten not just about the landscape that existed before the city, but the process that went into making the goods that we use every day.

---

<sup>57</sup> Cronon, *Nature's Metropolis*, 223.

## **Grain**

“In the business centre of Chicago, you see not even one ‘original package’ of the great cereals.”<sup>58</sup>

*Chicago resident, 1893*

Corn and wheat dominated the Midwestern farm. However, as bread was a staple of most American and European, wheat was the primary cash crop of the west. Grain served a multifunctional purpose. Americans used grain not just for making flour for bread, but also for feeding livestock and turning it into whiskey.<sup>59</sup> The standardized grid of farm fields soon replaced prairie grasses as the dominant landscape of the West. Yet farms didn’t just appear anywhere amongst the prairie hinterlands of Chicago. Settlers established farms along major river corridors to connect them to trade centers where they could sell their produce.<sup>60</sup>

Many Illinois waterways, like the Illinois River, drained into the larger Mississippi River, so farmers shipped their produce south to cities like St. Louis and New Orleans. The Illinois Michigan Canal changed this. Once the canal connected Chicago to the Mississippi River Basin, farmers could send their produce to Chicago to access eastern trade centers that were once only accessible by dirt road. In offering competitive prices to St. Louis, many farmers felt obligated to send their produce to Chicago.

With grain coming in via the Illinois Michigan Canal, early grain traders set up along the banks of the South Branch of the Chicago River. Trade began as deals

---

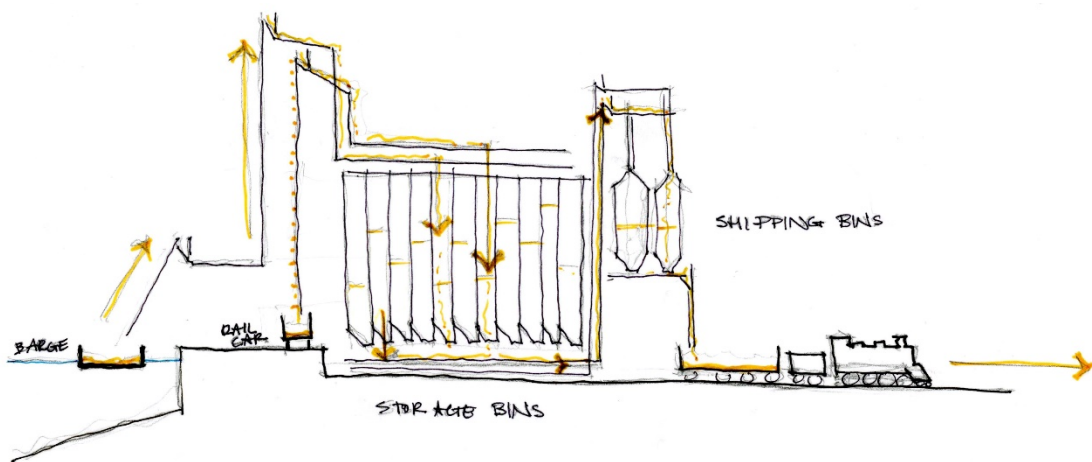
<sup>58</sup> “The Metropolis of the Prairies,” *Harper’s New Monthly Magazine* 61, (1880): 727.

<sup>59</sup> Cronon, *Nature’s Metropolis*, 98.

<sup>60</sup> Cronon, *Nature’s Metropolis*, 103.

between farmers and grain traders where sacks of grain were physically exchanged for cash. Men carried sacks of grain off boats to be placed in storehouses. Yet the process lacked efficiency. The invention of the steam-powered grain elevator and the Chicago Board of Trade in 1848 transformed the trade of grain.

The steam powered grain elevator combined individual sacks of grain into one large silo. Before, grain was separated by individual farmers' lots. Grain arrived to Chicago in a conglomeration of groups of sacks from individual farmers. Upon arrival, these sacks were unloaded onto the backs of laborers who would deposit them into large warehouses. The steam powered grain elevator replaced physical labor with a stream of liquid "gold." A steam-powered conveyor belt assisted in the transition of grain from its initial source of transport into the silo. Once in the silo, there was no way to distinguish one farmer's grain from another's. Grain could seamlessly move from one source to another. [Figure 4] Grain arrived to Chicago via wagon, water, and rail, seamlessly moving from one method of transport to another.

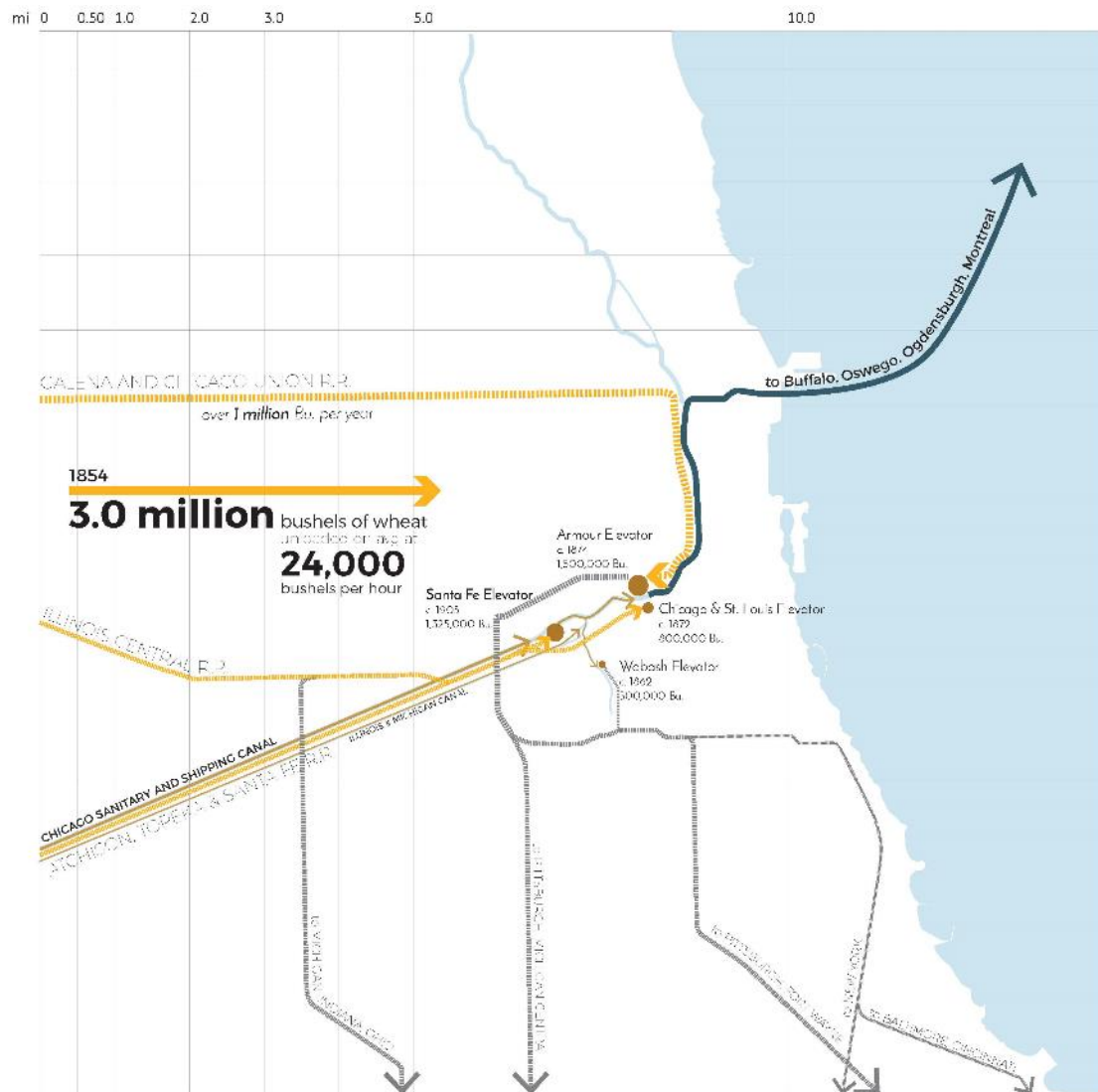


**Figure 4** Vertical movement of grain from one method of transport to another. Sketch by author.

The creation of the Chicago Board of trade in 1848, in conjunction with the arrival of telegraph lines to Chicago, further removed people from the physical

exchange of grain. The exchange happened farther north from the South Branch of the River in Chicago's downtown business district. Buyers and sellers converged in a trading hall at the terminus of LaSalle Street, speculating prices for different types and qualities of grain. No cash was exchanged; no grain was present. Only a slip of paper noted the trade that happened. Southwest of the city along the banks of the river, the grain would move from barge or freight into a silo that was then deposited on to another train headed east.

In 1870, Chicago had a total capacity of 11.6 million bushels amongst all its grain elevators. **[Figure 5]** Each elevator was generally operated by a single railroad company who would share in a portion of the profits of the grain exchanged. Within these large silos, the grain and the labor that went into getting it there remained hidden from the public. Of the handful of elevators that lined the South Branch, only the Santa Fe Elevator, now known as the Damen Silos, remains to remember the grain which traveled through Chicago.



**Figure 5** Flow of grain through Chicago from western farmlands to eastern markets. Diagram by author.

## Lumber

“The history of the lumber trade is the history of the city.”<sup>61</sup>

*George Hotchkiss, 1884*

The prairies outside of Chicago lacked the building materials necessary to construct permanent, habitable structures for early settlers. Constant prairie fires

<sup>61</sup> Cronon, *Nature's Metropolis*, 183

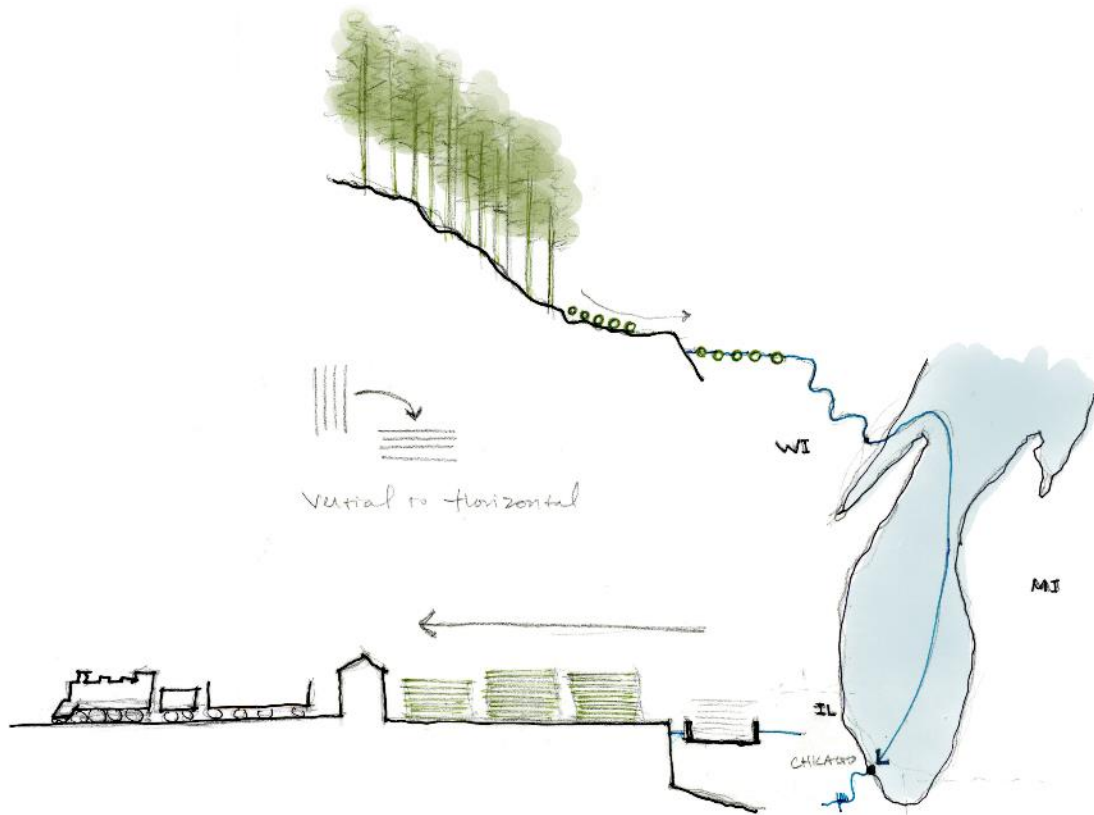
prevented trees from growing in the grasslands. North of Chicago and across Lake Michigan, the land was plentiful with lumber. The forests of northeastern Wisconsin and upper Michigan were bountiful with a variety of hard and soft woods that were accessible to streams that drained into Lake Michigan. Thus, a supply and demand existed between settlers in need of wood and woodland areas with more timber than they knew what to do with.

Until 1870, the majority of Chicago's timber supply came in via Lake Michigan from woodland areas surrounding the Lake.<sup>62</sup> The most desired tree from these areas was the white pine, the one soft wood that could float on water. Logging crews would transport cut timber down to the nearest waterway that would drain to Lake Michigan to then float to Chicago. Once there, Wholesalers would purchase lumber from Chicago's harbor on Lake Michigan to be transferred down the Chicago River to lumber yards along the South Branch of the Chicago River. To ease the transition from water to rail, over a dozen canals were dredged roughly a quarter mile long extending north from the north banks of the South Branch to rail lines on South Blue Island Avenue and Cermak Road. Lumber would be unloaded from docks in these canals onto the lumber dealer's lots. Each canal served over a hundred standard sized lots measuring 244 by 100 feet.<sup>63</sup> From here, the lumber would sit until a retail dealer would purchase them to be transported by the rail lines nearby to their destination. [[Figure 6](#)]

---

<sup>62</sup> Cronon, *Nature's Metropolis*, 155.

<sup>63</sup> Cronon, *Nature's Metropolis*, 175.



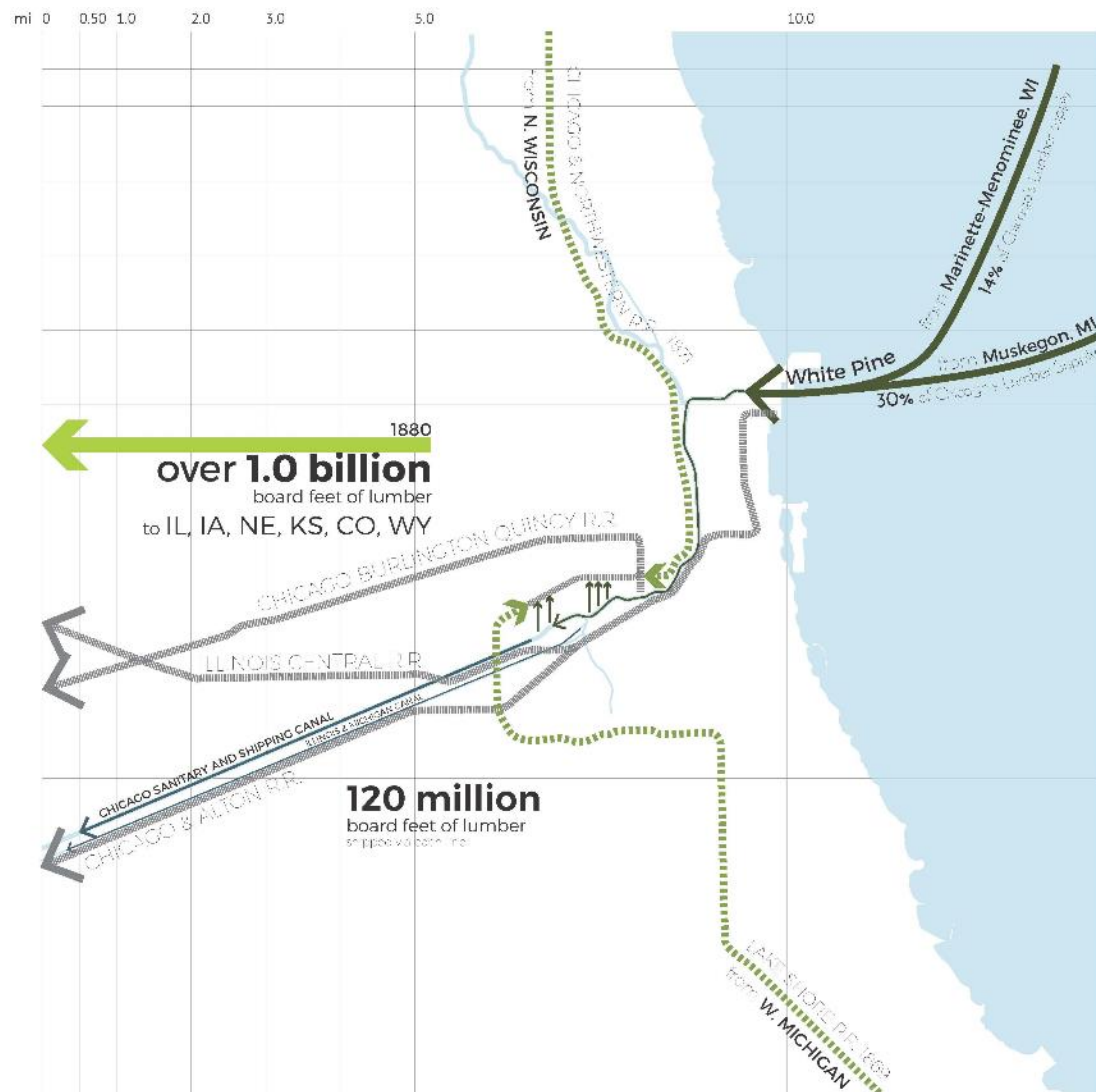
**Figure 6** Horizontal movement of lumber. Diagram by author.

Railroads soon became the main transportation method of delivering lumber. The innovation of the balloon frame in 1833 helped Chicago's lumber receipts increase dramatically. Chicago's lumber dealers initially served southwestern Illinois, Iowa, and Southern Wisconsin. By 1860, Chicago's reach had extended into Nebraska, Kansas, Colorado, and Wyoming with the assistance of the city's extensive rail system.<sup>64</sup> **[Figure 7]** Chicago shipped out 220 million board feet of lumber in 1860, 580 million in 1870, and over 1 billion board feet of lumber in 1880, the city's peak year; the railroads shared 95 percent of lumber exports in 1880, demonstrating the dominance of the railroad in expanding Chicago's commercial reach.<sup>65</sup> Amongst

<sup>64</sup> Cronon, *Nature's Metropolis*, 181.

<sup>65</sup> Cronon, *Nature's Metropolis*, 181.

Chicago's three main rail lines, the Chicago Burlington Quincy Railroad, the Illinois Central Railroad, and the Chicago and Alton Railroad, each shipped over 120 million board feet of lumber in 1870.<sup>66</sup>



**Figure 7** Flow of lumber through Chicago from Northeastern forests to western settlements. Diagram by author.

Rail lines capitalized on the flow of processed goods and resources to maximize efficiency. Trains going east with grain would return to western granaries with lumber going west. Likewise, eastern rail lines delivering lumber in Chicago

<sup>66</sup> Cronon, *Nature's Metropolis*, 181.



would take grain shipments back east. The east-west movement of processed goods and resources in and out of Chicago created an efficient system where no rail car arrived at a destination empty. This was one way in which Chicago's industries maximized efficiency for profits. The meat-packers would perfect it.

### ***Meat***

"The hog is regarded as the most compact form in which the Indian corn crop of the States can be transported to market. Hence the corn is fed to the hog on the farm, and he is sent to Chicago as a package provided by nature for its utilization."<sup>67</sup>

*British Journalist*

Bison were the original livestock of the prairie. In 1830 there were an estimated 40,000,000 bison throughout North America. By 1900, there were only 300 bison left in the United States. The disappearance of bison in the United States and North America made room for other forms of livestock familiar to farming, namely cattle and pigs. Chicago's meat-packing industry would transform the process of butchering livestock into a highly efficient system attracting people from around the world to come watch the mass-production of death.

The presence of the first stock yard in Chicago dates back to 1837. These yards were small and individually owned. Many included hotels and saloons for herders to stay in after making the trek to Chicago with their livestock. With the railroads came centralization to the stock yards. It was inefficient for train lines to visit individual packers and pay different rates; the railroads wanted a regulated system. In 1864, nine of the largest railroads and members of the Chicago Pork

---

<sup>67</sup> Cronon, *Nature's Metropolis*, 208-209.

Packers' Association came together to create the Union Stock Yard and Transit Company. This conglomeration of packers would form one large stock yard just south of the South Fork of the South Branch of the Chicago River, out of reach from potential encroaching urban development at the time.

The Yards located themselves on marshlands whose wet soil conditions were unfavorable for building large structures upon. To solve this issue, engineers drained the marshes, along with sewage and waste the Yards produced directly into the South Fork of the river. Eventually, the heavy pollution would give the fork its more commonly known name, Bubbly Creek.

The Union Stock Yard and Transit Company officially opened on Christmas Day, 1865. Efficiency and innovation within Chicago's stock yards would allow them to eclipse their competitors to become the "Hog Butcher for the world."<sup>68</sup> Chicago first had to stop the process of decay. Pork was easiest to package because it could be salted and cured in order to last the trip, before rail travel, from western farm to eastern dinner tables. Yet Eastern markets longed for fresh meat, especially beef. Packers began manipulating the seasons 1858 by packing pork in the summer with stored winter ice from the Chicago River.<sup>69</sup> While this created a year-round market for pork in Chicago, cattle continued to be transferred from Chicago to eastern butchers in New York and other cities. In the late 1870's, Gustavus F. Swift improved upon the designs of George H. Hammond in 1868 for a refrigerated rail car to transport dressed beef.<sup>70</sup> The effects on Chicago's beef industry were staggering.

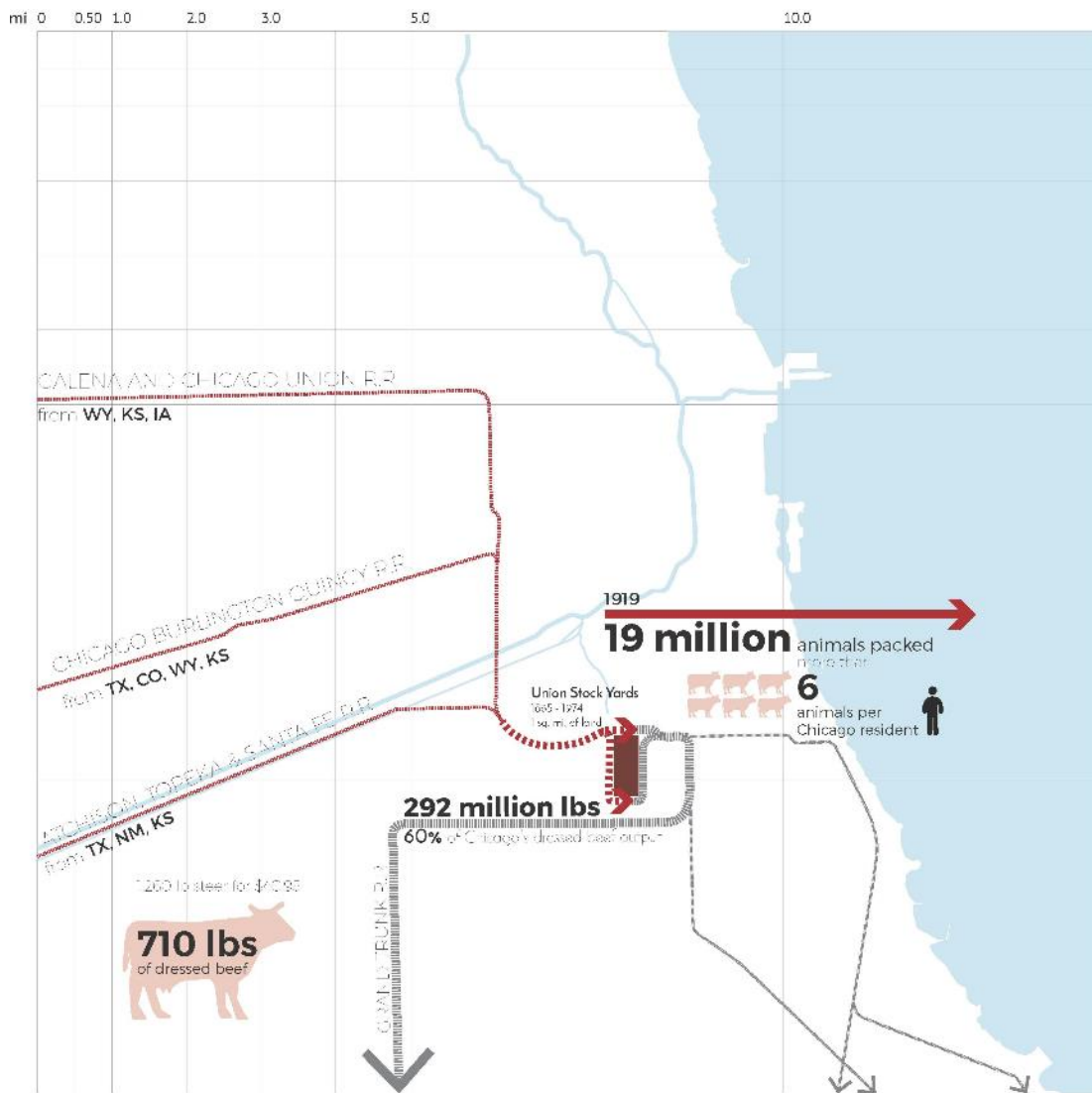
---

<sup>68</sup> Sandburg, "Chicago," 192.

<sup>69</sup> Cronon, *Nature's Metropolis*, 231.

<sup>70</sup> Cronon, *Nature's Metropolis*, 237.

The increase in cattle slaughtered in Chicago between 1883 and 1884 helped the industry turn towards “meat-packing” versus “pork packing.”<sup>71</sup>



**Figure 8** Flow of meat from western ranches to eastern markets. Diagram by author.

Meat packers worshipped at “the altar of efficiency”, and no system better employed this than the disassembly line. The disassembly line originated in the Porkopolis of Cincinnati, but Chicago perfected it. Animals were divided into minute

<sup>71</sup> Cronon, *Nature's Metropolis*, 237.

pieces and parts to generate the greatest profit from their sale.<sup>72</sup> Frederick Law

Olmsted described the process as such:

“We entered an immense low-ceiled room and followed a vista of dead swine, upon their backs, their paws stretching mutely toward heaven. Walking down to the vanishing point, we found there a sort of human chopping-machine where the hogs were converted into commercial pork. A plank table, two men to lift and turn, two to wield the cleavers, were its component parts. No iron cog-wheels could work with more regular motion. Plump falls the hog upon the table, chop, chop; chop, chop; chop, chop, fall the cleavers. All is over. But, before you can say so, plump, chop, chop; chop, chop; chop, chop, sounds again...Amazed beyond all expectation at the celerity, we took our watches and counted thirty-five seconds, from the moment when one hog touched the table until the next occupied its place.”<sup>73</sup>

The packers waged a war on waste, utilizing every part of the animal to generate a profit. Early by-products of the non-meat portions of the animals included candles, soap and other products from tallow and lard. Chemical research laboratories in the 1880's and 1890's created more exotic by-products like oleomargarine, bouillon, brushes, combs, gut strings, stearin, pepsin, and canned pork and beans.<sup>74</sup> Philip Armour reflected on this process, saying, “There was a time, when many parts of cattle were wasted, and the health of the city injured by the refuse. Now, by adopting the best-known methods, nothing is wasted, and buttons, fertilizer, glue, and other things are made cheaper and better for the world in general, out of material that was before a waste and a menace.”<sup>75</sup> In turning waste into profits,

---

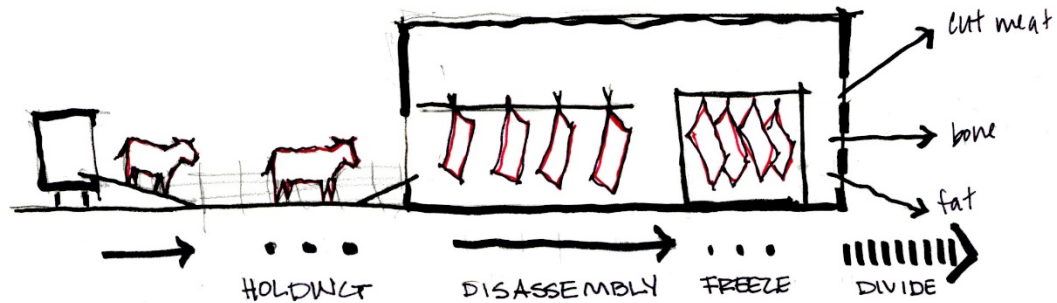
<sup>72</sup> Cronon, *Nature's Metropolis*, 211.

<sup>73</sup> Frederick Law Olmsted, *A Journey Through Texas: or A Saddle-Trip on the Southwestern Frontier*, (New York, 1857): 9.

<sup>74</sup> Cronon, *Nature's Metropolis*, 250.

<sup>75</sup> Frank W. Gunsaulus, “Philip D. Armour: A Character Sketch,” *North American Monthly Review of Reviews* 23 (1901): 172.

packers sold what they should have thrown away and transformed the environment around the yards in the process.



**Figure 9** Moving, waiting, dividing of meat. Diagram by author.

Unlike the grain silos - towering, sublime industrial structures where the process of industry was hidden – or the lumber yards – an endless sea of wood piles hiding the cityscape around it – the Stock Yards put the process of death on display. **[Figure 9]** Chicago guidebooks often listed the yards as an attraction to visit, joining the Chicago Board of Trade and the lumberyards along the South Branch.<sup>76</sup> People from around the world, including royalty, would visit the stock yards to marvel at the efficiency of death, indifferent to the mass-produced slaughtering happening before their eyes. In this way, the yards symbolized the connection between various interests: country and city; west and east; producer and consumer; animals and killers. Yet a much deeper separation existed: that between the act of killing and from nature itself.<sup>77</sup>

<sup>76</sup> Cronon, *Nature's Metropolis*, 255.

<sup>77</sup> Cronon, *Nature's Metropolis*, 213.

## Chapter 3: Site

Chicago's industrial history was largely centralized in the city's Lower West Side neighborhoods along the South branch of the Chicago River. **[Figure 10]** This area has traditionally be known as a “port of entry” for Chicago's working-class immigrant populations who were employed in the surrounding industrial district. A solid working-class community still exists along the South Branch of the river today, as do the industrial corridors which shaped the landscape.



**Figure 10** The project area (lower left) in relation to Downtown Chicago (top right). Edited Google Earth Aerial image by author.

## Planning Context

“Make no little plans; they have no magic to stir men’s blood...”<sup>78</sup>

*Daniel Burnham, 1907*

### ***Historical***

From its incorporation in 1837, Chicago developed a dual physical character: one is urban, the other is a middle ground between town and country. Combined, these characters create “a simple radial arrangement with concentric zones laid over a neutral gridiron plan. Settlement decreased in density and increased in scale as it extended away from the lake, but the governing lines of the grid remained constant.”<sup>79</sup> At the center of Chicago lay the city’s working heart. Commercial activity was concentrated within the central business district, more commonly known today as “the Loop,” while industrial development surrounded the financial core. Those who could afford to live outside the density of the central city’s urban development found housing accommodations north and west of the city along the evolving transportation network of cable-cars and eventually rail.

Planners could experiment with issues of housing, recreation, circulation, and access to the natural landscape on the periphery of the city where there was room to do so. Parks could address all these issues as reclaimed or improved natural landscapes to lure residents away from the ills of the city. Neighborhoods north, south, and west of the city competed for the same affluent residents; those with the largest parks and easy access to transportation had the biggest draw. These

---

<sup>78</sup> Charles Moore, *Daniel H. Burnham, Architect, Planner of Cities. Volume 2*,” (Houghton Mifflin Company, 1921), 147.

<sup>79</sup> Roche and Lasher, *Plans of Chicago*, 9.

conditions were most prevalent north of the city while open space was harder to come by in the city's expanding industrial district. Therefore, the north side of Chicago became the location of the city's affluent residential neighborhoods while the south side housed the city's working population.

By 1893, Chicago consisted of a compact core, a diffuse periphery, and a natural landscape just beyond.<sup>80</sup> Within these elements, zones of housing, commerce, and industry developed separately, unified only by a radial transportation network. The city lacked a comprehensive plan that negotiated all three elements. The World's Columbian Exposition of 1893 gave Chicago the opportunity to display the nation's technological and cultural achievements on an international stage. Planning the fair was a concentrated exercise of city planning. The fair's daily attendance was comparable to the daytime population of central Chicago, which required convenient internal and external circulation and basic services much like a central city.<sup>81</sup> Architect Daniel Burnham would use lessons learned from planning the Columbian Exposition as well as the McMillan Plan in 1901 to capture the public's imagination for an improved comprehensive plan for Chicago.

### ***1909 Plan of Chicago***

In 1906, civic-minded businessmen of the Commercial Club of Chicago approached Daniel Burnham and his partner, Edward Bennett, to design a comprehensive plan for the City of Chicago. Chicago was less than seventy years old in 1906, but it was the fastest growing city in America and the second largest city in

---

<sup>80</sup> Roche and Lasher, *Plans of Chicago*, 18.

<sup>81</sup> Roche and Lasher, *Plans of Chicago*, 22.



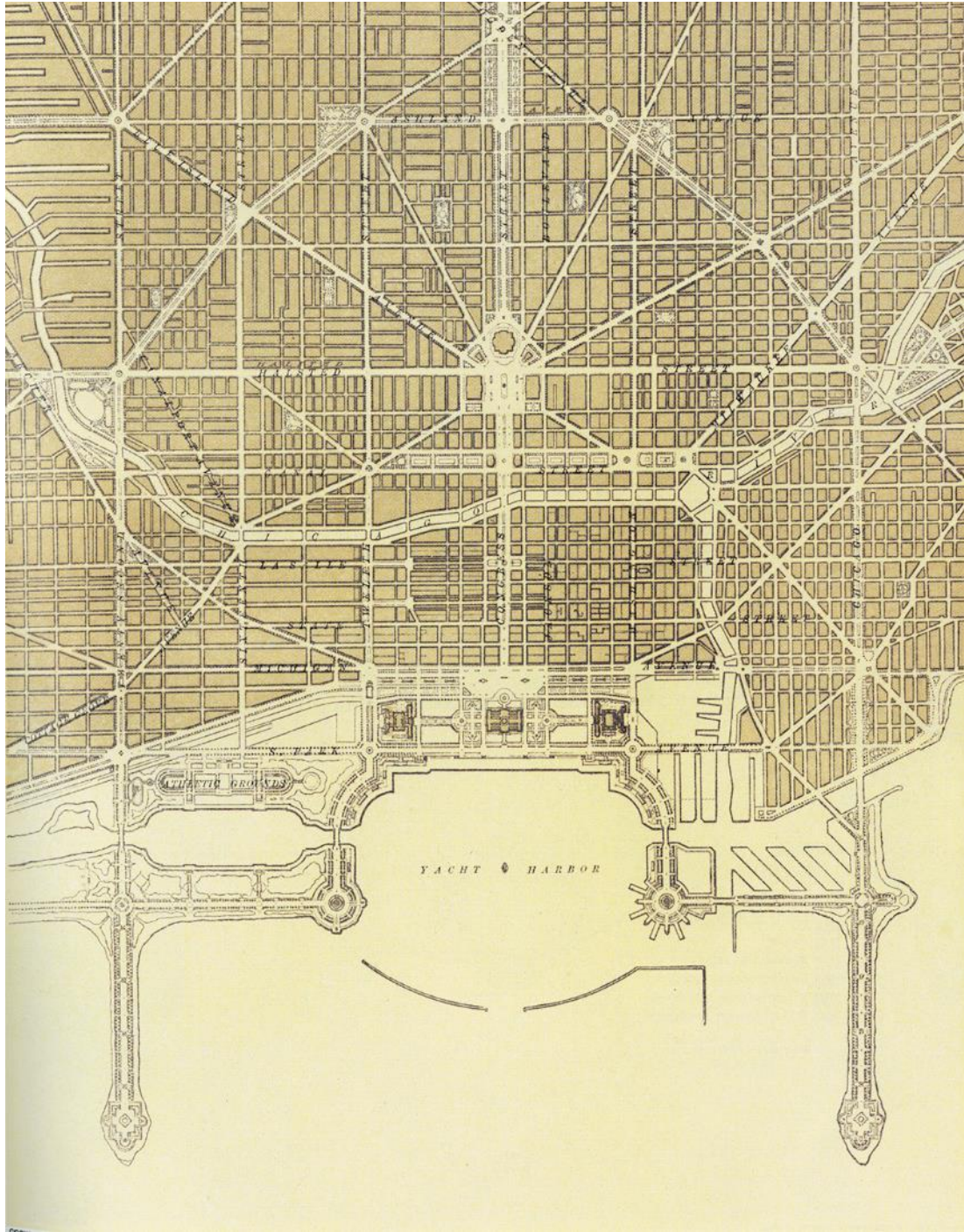
the nation after New York.<sup>82</sup> Commercial rather than government interests would be responsible for developing a comprehensive metropolitan plan for the larger public interest.

The rapid expansion of the city created a need to connect its concentric zones – core, periphery, and landscape – through improved systems of circulation.

Burnham and Bennett looked to Haussmann's urban plan for Paris to relate America's "urban predicament" to a shared past while incorporating elements from earlier proposals for improvement. The result combined landscape and circulation to connect and relate a central city to periphery parks and suburbs.

---

<sup>82</sup> R. Samuel Roche and Aric Lasher, *Plans of Chicago*, 1.

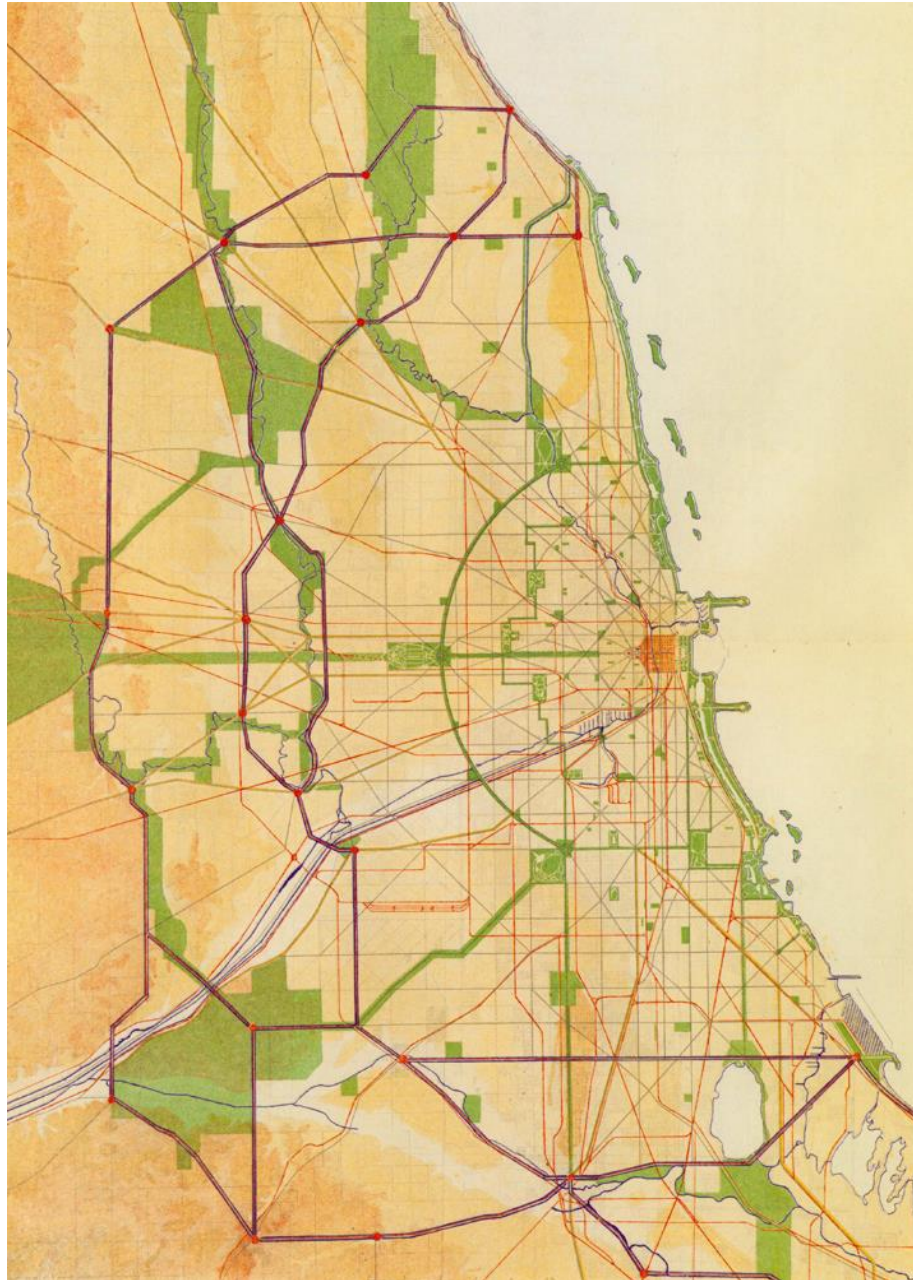


**Figure 11** Plan of the complete system, presenting the city as a complete organism in which all its functions are related to one another to become a unit. Plate 110 from the *Plan of Chicago*, 1909.

The plan's three basic elements of interconnected transportation, streets, and open space relate Chicago's various concentric zones to an imagined central source, the plan's fourth and final element. The plan proposed to consolidate individually

operated rail lines to better facilitate separate lines for freight and passengers through and around the central city. New diagonal streets were forged with the existing street grid to bring through, local, and recreational traffic between the periphery and the central city. Open space was set aside along the Lakefront and dispersed in concentric rings from the central city to create a sequence of increasingly larger and more naturalistic landscapes. The central city functioned as a common destination from which streets, green boulevards, and transportation systems radiated towards.





**Figure 12** General map showing topography, waterways, and complete system of streets, boulevards, parkways, and parks. Plate 44 from the *Plan of Chicago*, 1909.

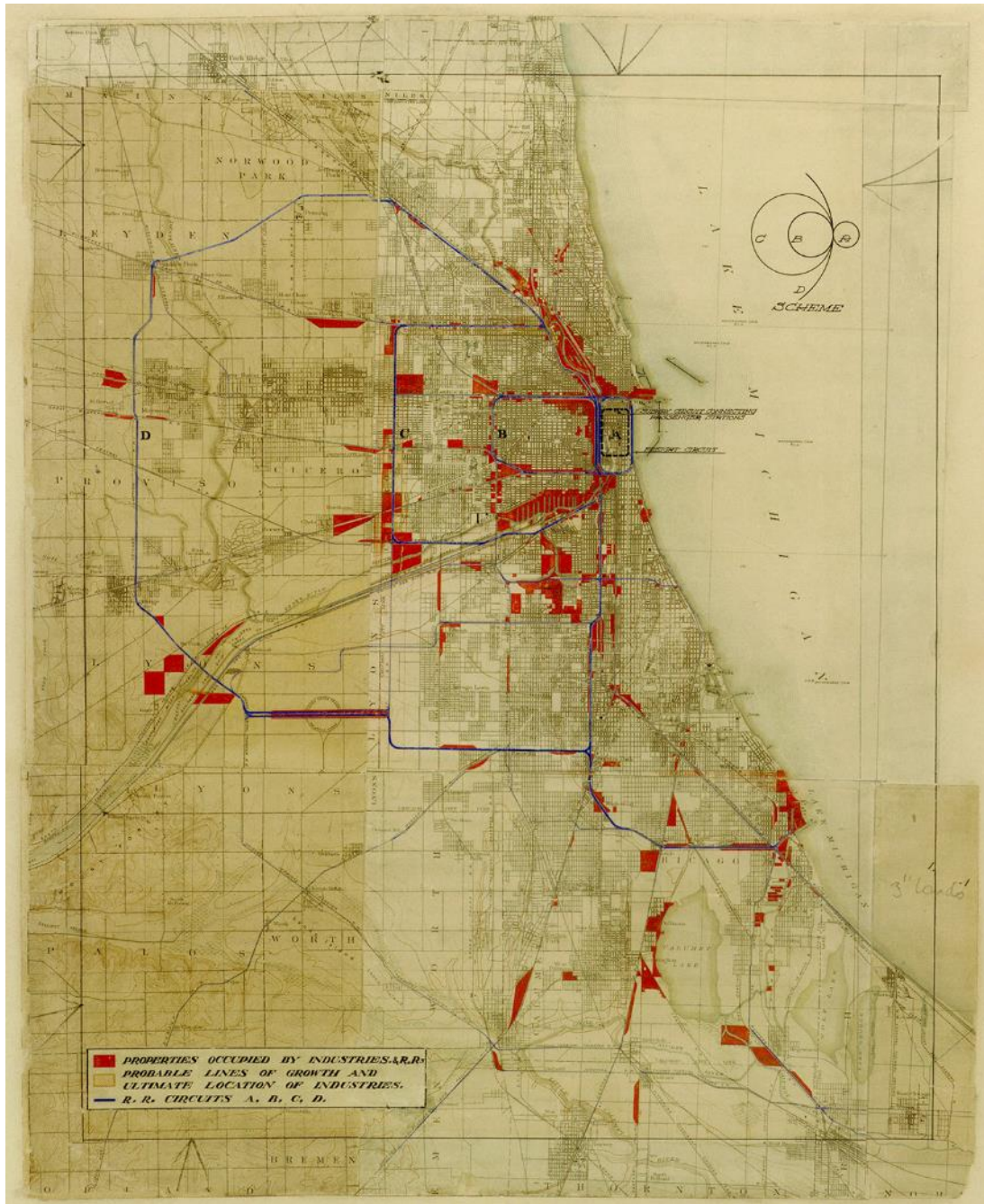
City leaders envisioned the plan to address economic issues related to Chicago's future development. However, what Burnham and Bennett eventually created was more akin to an idealized vision for Chicago than an implementable plan. Little thought was given to the growing influence of automobile travel nor the ever-

growing skyline of central business district. Much of the 1909 *Plan of Chicago* lives within the rich illustrations contained in its pages.

One of the plan's greatest legacies lies in its prescription for a greater, connected landscape of public, natural spaces. Burnham and Bennett's vision for a continuous public Lakefront and a preserved forest belt on the periphery were realized. Today, the former consists of Chicago's many Lakefront parks and beaches while the latter survives as the Cook County Forest Preserve. Other elements within the plan's proposed system of open spaces went unrealized due to the introduction of the automobile in the city.<sup>83</sup> Parks became destinations for individual drivers with the freedom of mobility versus valued communal spaces to foster community between neighbors. The riverfront within the city was neglected as a landscape connector due to its overwhelming industrial nature. Today, the Chicago River is increasingly seen as a valuable public asset worth preserving for public space, much like Burnham and Bennett's treatment along the river's northern extents on the city's periphery.

---

<sup>83</sup> Roche and Lasher, *Plans of Chicago*, 79.



**Figure 13** Diagram of the city and surrounding country, showing railroad circuits, existing industry, and potential future industrial growth along proposed rail corridors. Plate 73 from the *Plan of Chicago*, 1909.

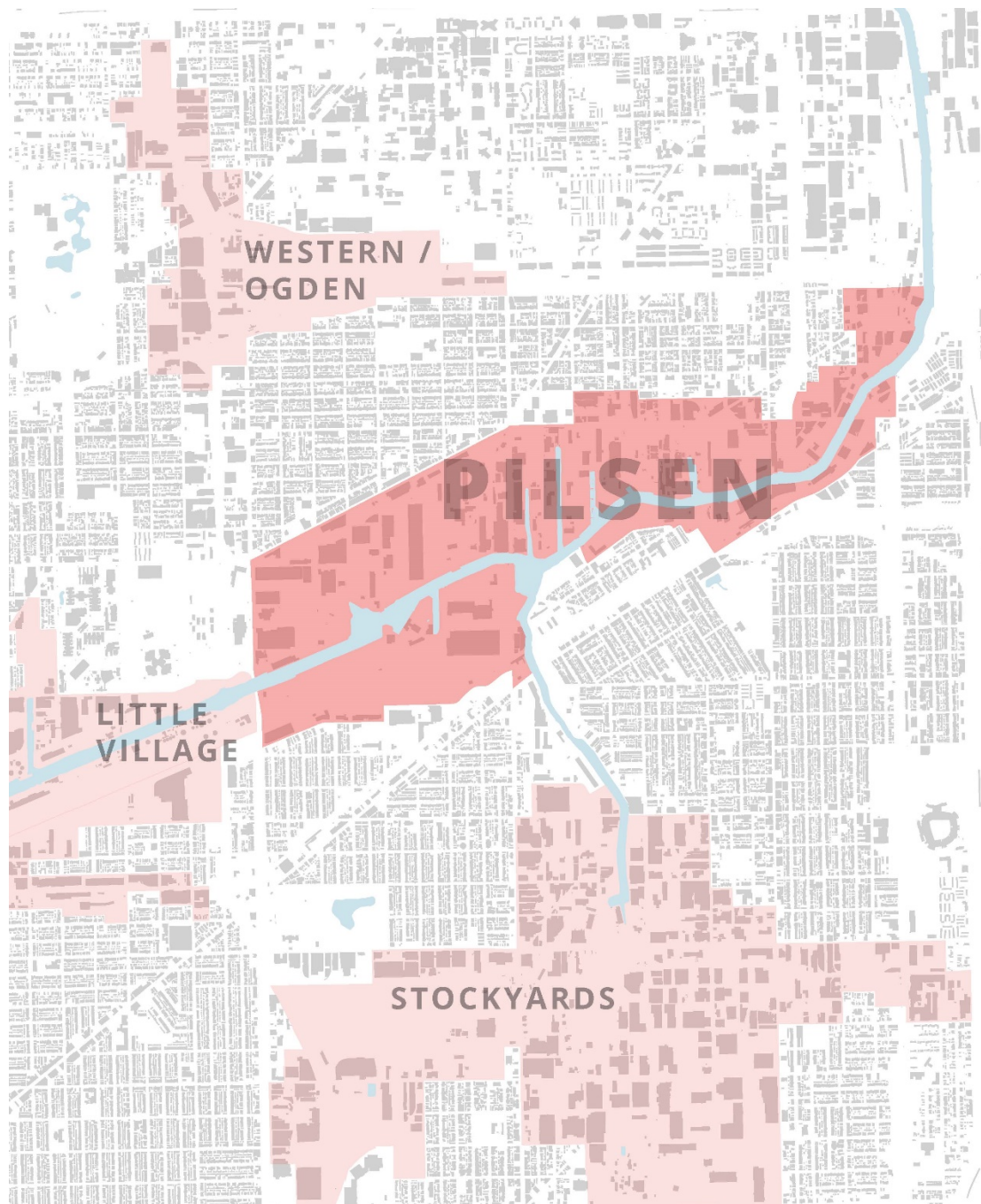
### ***Planned Manufacturing Districts***

The project area is located within a special zoning district known as the Pilsen Planned Manufacturing District (PMD), which is part of the greater Pilsen Industrial

Corridor. **[Figure 14]** The PMD is a special land use provision to support manufacturing, transportation, warehousing, and other industrial uses, creating formal boundaries around critical industrial areas. Former Chicago mayor Richard M. Daley established the PMDs as a planning initiative in the 1980s. At the time, industries in Chicago were becoming weary of encroaching residential development pushing them out of the city with increasing land values. In 1988, Mayor Daley established a protective zoning measure to ensure manufacturing remained a part of the city's diversified economy. According to §17-6-0401-A of the Chicago Zoning Ordinance, the Planned Manufacturing District (PMD) is intended to:

1. Foster the city's industrial base;
2. maintain the city's diversified economy for the general welfare of its citizens;
3. strengthen existing manufacturing areas that are suitable in size, location and character and which the City Council deems may benefit from designation as a PMD;
4. encourage industrial investment, modernization, and expansion by providing for stable and predictable industrial environments; and
5. help plan and direct programs and initiatives to promote growth and development of the city's industrial employment base.





**Figure 14** Industrial corridors in the Lower West Side. Drawing by author.

Since 1988, Chicago has established over fifteen PMDs within twenty -six formal industrial corridors throughout the city. These districts which account for around 12 percent of all city land are primarily located along Chicago's waterways and transportation infrastructure. The largest PMDs are located along the South Branch of



the Chicago River where much of the city's industrial production has traditionally occurred.

Given that the PMDs are protected zoning districts, there are stringent requirements regarding permitted uses. Notably, no residential uses are permitted nor allowed. All parcels within the Pilsen PMD, also known as PMD-11 in the Chicago Zoning Code, have a floor area ratio (FAR) of 3.0. Such permitted uses include: urban farms (indoor and rooftop with a gross floor area (GFA) of 3,000 square feet maximum for goods produced on site), food and beverage retail, residential storage, and retail sales (general with a GFA of 3,000 square feet maximum for goods produced on site). Non-permitted uses include: schools and educational facilities, sports recreation participant (often a special permitted use), and community gardens.

While the PMDs have been successful at providing a place for industry within Chicago, these districts have become barriers to other types of development within the city and along the Chicago River. Changes in zoning are approved on a case-by-case basis for land parcels within a PMD. Community stakeholders also have a say in the process. The Pilsen Land Use Committee (PLUC) makes recommendations on new development projects on behalf of the Pilsen community to Alderman Daniel Solis of the 25<sup>th</sup> Ward. Yet the lengthy approval process is a challenge.

### ***Precedents for Change***

#### **Chicago's Backyard**

Chicago's current Mayor, Rahm Emmanuel, has been advocating to change how Chicagoans perceive the Chicago River. In September 2011, Mayor Emanuel

announced plans to make the Chicago River “the city’s next recreational frontier.”<sup>84</sup> The plan included the creation of four new boathouses (now complete) along the river, increased access to park space, and expanded riverfront trails. The EPA provided nearly \$1 million in grant funds to help treat contamination in the river and spur job creation. The boathouses aimed to generate greater access to the Chicago River as access points to water activities and riverfront attractions. “Much like Lake Michigan is Chicago’s front yard, the Chicago River is our backyard, and should be an asset that people across the city enjoy, not avoid,” Emmanuel stated in the press release from the city.<sup>85</sup>

The four boathouses are located at River Park, Clark Park, Ping Tom Memorial Park, and 28<sup>th</sup> and Eleanor. The Eleanor Street boathouse was the last to be completed, opening in the fall of 2016. Yet there has been debate whether people are using the new boathouses. According to a *Chicago Tribune* article on September 21, 2016 by Grace Wong, community residents surrounding the boathouses have complained about the lack of advertisement on the programs offered at the boathouses, overpricing of kayak rentals and tours, and the lack of people seen using the boathouses. Some residents feel the boathouses are helping to generate awareness about the river as a resource for recreation while others question whether the boathouses are accomplishing what the City intended them for.

---

<sup>84</sup> City of Chicago Office of the Mayor, *Mayor Rahm Emanuel Announces Plans to Make the Chicago River the City’s Next Recreational Frontier*, September 9, 2011, accessed May 2, 2017, [https://www.cityofchicago.org/city/en/depts/mayor/press\\_room/press\\_releases/2011/september\\_2011/mayor\\_rahm\\_emanuelannouncesplanstomakethechicagoriverthecitysnex.html](https://www.cityofchicago.org/city/en/depts/mayor/press_room/press_releases/2011/september_2011/mayor_rahm_emanuelannouncesplanstomakethechicagoriverthecitysnex.html).

<sup>85</sup> Office of the Mayor, *Mayor Rahm Emanuel Announces Plans to Make the Chicago River the City’s Next Recreational Frontier*, [https://www.cityofchicago.org/city/en/depts/mayor/press\\_room/press\\_releases/2011/september\\_2011/mayor\\_rahm\\_emanuelannouncesplanstomakethechicagoriverthecitysnex.html](https://www.cityofchicago.org/city/en/depts/mayor/press_room/press_releases/2011/september_2011/mayor_rahm_emanuelannouncesplanstomakethechicagoriverthecitysnex.html).



**Figure 15** The Eleanor Street Boathouse from its boat launch on the South Branch of the Chicago River. Image by author.

In the case of the Ping Tom Boathouse and the Eleanor Boathouse, the boathouses face industrial buildings and parking lots on the opposite bank of the river. These two boathouses don't appear to connect into a greater park space network; they operate as solitary access points on the river. Yet the presence of the boathouses is encouraging area residents to desire more waterfront development to open up access to the Chicago River. With the Eleanor Boathouse located near to the site, the boathouse presents an opportunity to connect into a larger park network along the South Branch.

## **Great Rivers Chicago**

In the spirit of Mayor Emanuel's drive to create greater access to the Chicago River, the Mayor and the Metropolitan Planning Council launched the "Great Rivers Chicago" project to develop an action plan "for community, economic and recreational development along Chicago's rivers," according to a press release on the City of Chicago's website. The Metropolitan Planning Council in partnership with the Office of the Mayor, Friends of the Chicago River, and Chicago Metropolitan Agency for Planning released the details of the plan in August of 2016. The plan focuses on the three rivers that support the greater Chicago metropolitan area - the Chicago River, the Calumet River, and the Des Plaines River - creating goal-markers for 2020, 2030, and 2040. The ultimate goal according to the Great Rivers Chicago website is to have inviting, productive and living rivers in Chicago by 2040.

The plan's Leadership Commission emphasized the importance of reaching out to the community to understand how people currently use and wish to use the Chicago River. Over 6,000 people contributed to the Great Rivers Chicago plan. Through over 100 formal and informal open houses, site walks, and place-based design charrettes, community members stressed the need for five things: 1) better access, 2) more recreational opportunities, 3) improved aesthetics, water quality and habitat, 4) more business and tourism along the rivers, and 5) more job opportunities along the rivers.<sup>86</sup> Community input allowed the Leadership Commission to create design goals for each of the plan's three goal-markers.

---

<sup>86</sup> "Vision," Great Rivers Chicago, accessed May 2, 2017, <http://greatriverschicago.com/vision.html>.

The plan also highlights five unique locations within four industrial corridors as “riverfront productivity zones.” The vision for the Pilsen PMD at Ashland Avenue and Bubbly Creek is of particular interest. The Great Rivers plan envisions a vacant lot immediately south of Canal Origins Park as a mixed-use development hub.



**Figure 16** Aerial view of a new mixed-use transit hub at Ashland Avenue and Bubbly Creek. Rendering by Ross Barney Architects.

A new architectural intervention on this lot would connect into the CTA Orange line at Ashland Avenue and serve as a new water taxi stop to utilize the river as a transportation route. A new pedestrian bridge across Bubbly Creek at Canal Origins Park and the Eleanor Street Boathouse would allow the hub to connect into the city’s proposed riverfront trail system. Combined, these interventions would improve riverfront access and attract people to come down to the water’s edge.

The Great Rivers Chicago plan is an ambitious proposal that is intended to stir interest in waterfront development. The plan represents a vision for Chicago’ rivers from the community. The five locations that the plan highlights are not isolated

interventions. Instead, these development areas connect to each other through riverfront trails and increased water transportation and recreation options. Great Rivers demonstrates how a comprehensive site design strategy can connect multiple locations along the waterfront while simultaneously activating the river as a recreational amenity.

#### **North Branch Framework Plan**

Current Chicago Mayor Rahm Emanuel initiated a public process in spring 2016 through the Department of Planning and Development to assess the future viability of the city's Industrial Corridor system. The North Branch Industrial Corridor is the first district to go through this review process. The North Branch Industrial Corridor constitutes three PMDs northwest of downtown Chicago along the North Branch of the Chicago River. Since 1990, this industrial corridor has seen a shift in employment types from manufacturing and industrial uses to information and technology. Residential development on either side of the river has also put pressure on the industrial corridor, causing city officials, representatives, and residents to reconsider the role of the PMD.

After a year-long public process involving local business owners, trade associations, community groups, nearby residents, elected officials, and other stakeholders, the City of Chicago released the "North Branch Framework" plan on May 8, 2017. On July 27, 2017, the framework plan became an official city ordinance after approval from the Chicago Planning Commission and the Chicago City Council. The framework establishes local priorities and provides a roadmap for future growth to

promote job creation and expand the city's manufacturing base through three primary goals:

1. maintain the North Branch Industrial Corridor as an important economic engine and vital job center within the city of Chicago;
2. provide better access for all transportation modes; and
3. build upon the North Branch Industrial Corridor's unique natural and built environment.<sup>87</sup>

The North Branch Framework implements these goals through updates to corridor zoning designations and the development of new funding mechanisms. The map amendments reduce the size of the industrial corridor to a central, industrial core that would retain the PMD zoning designation. The remaining areas of the industrial corridor would return to their previous designated use prior to the establishment of the PMD. **[Figure 16]** Existing industrial uses would remain permitted as the corridor transitions for desirable future development. The framework recommends an Industrial Corridor Fee for land that transitions to non-manufacturing uses that would be used to support other industrial corridors citywide. Additionally, developers can seek density bonuses for a fee. These fees would be used to support public improvements within the corridor system.

The North Branch Framework plan will be a precedent for the city's other industrial districts. Each industrial corridor has unique assets and characteristics which will make subsequent framework plans for other corridors similar yet different from

---

<sup>87</sup> Department of Planning and Development, "North Branch Framework," (Chicago, IL: City of Chicago, 2017), 34-50.

the North Branch. No such framework plan currently exists for the Pilsen Industrial Corridor, and it may take years before the city initiates a similar review process.

Studies conducted by the Department of Planning and Development and the Environmental Protection Agency have noted community desire for change within the Pilsen Industrial Corridor. The communities surrounding the industrial corridor want to preserve the area's working-class character and fear that new development would encourage gentrification. Residents would also like to see more open space, especially along the river.

There is opportunity to introduce a mixture of uses to bring residents to the riverfront while retaining light manufacturing and sustainable industries to preserve the area's character. Though it may take years to initiate and implement a comprehensive zoning review of the Pilsen PMD, the resulting changes will open access to the riverfront and stimulate needed development along the South Branch.

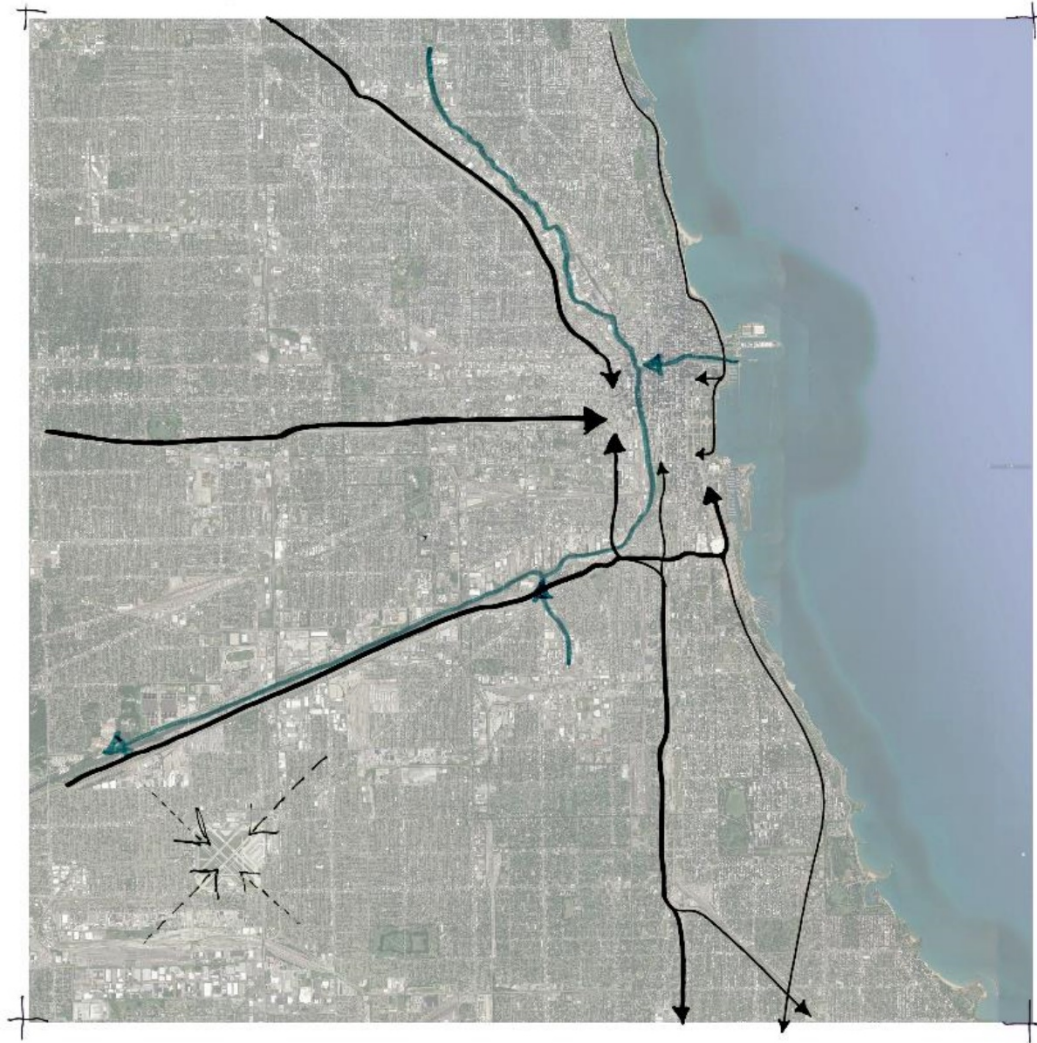
## **Site Analysis**

### ***Challenges and Opportunities***

The following analysis contains techniques from Richard T.T. Forman's *Land Mosaics* which informed the initial site research. Diagramming the spatial characteristics/form of the site through Google aerial images helped generate a basic understand of the layers that exist within the project area. These layers include: flows, of transportation and resources; patches, of industry, residential, and recreation; and matrices, of the surrounding street grid. This initial analysis revealed a deeper complexity of information on the site, including: the evolving hydrology of the South Branch of the Chicago River and the layers of history.



The site analysis generated a refined focal area from the initial area...

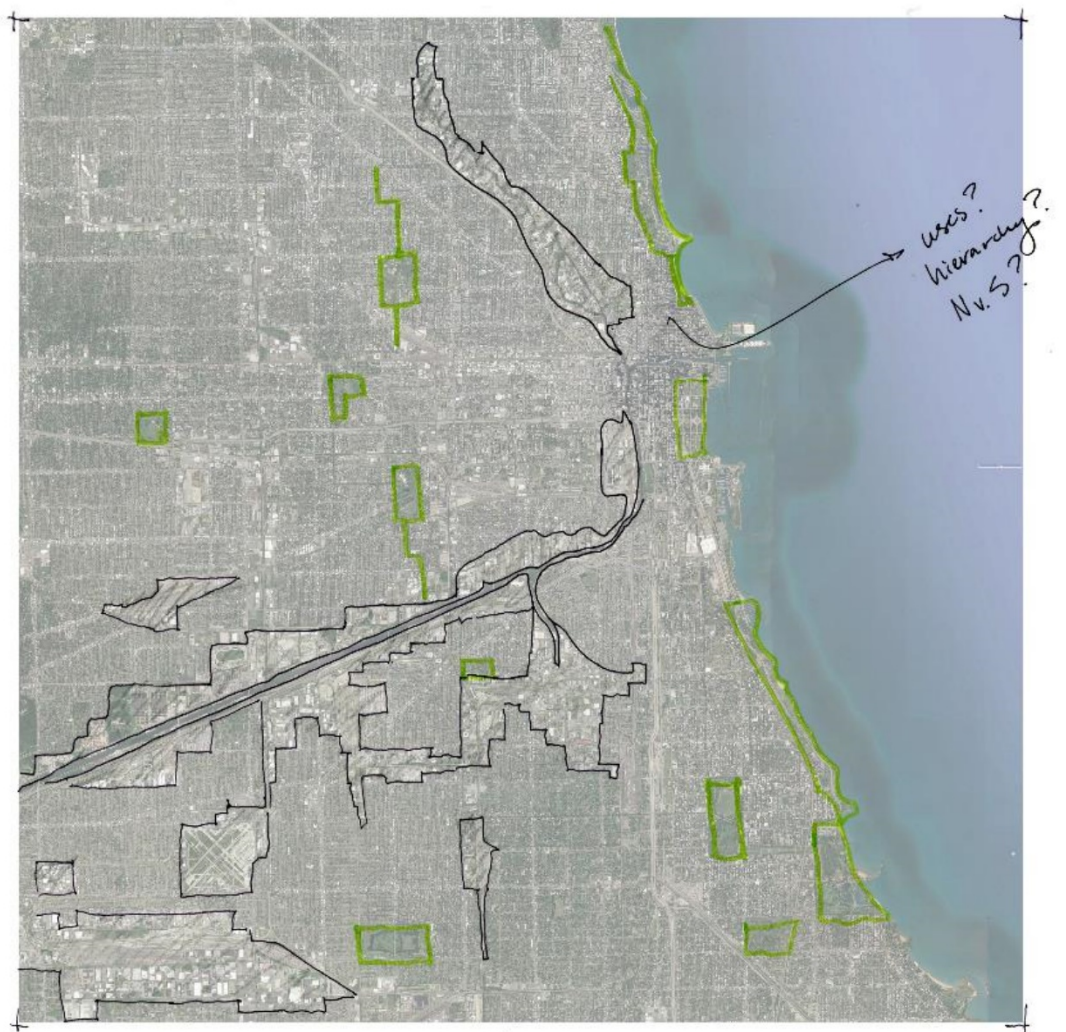


**Figure 17** Flow at 20 kM above Chicago. People flow into Chicago as water drains out of Chicago towards the southwest. Image by author with Google Earth underlay.

Chicago was built on the eastward-westward movement of people and goods. While goods still come in and out of Chicago, much of the city's former industrial manufacturing has been decentralized along the nation's interstate highways and across the globe. Chicago's expressways and airports have allowed people to become the major resource that flows in and out of the city. Interstate-55 (Stevenson

Expressway) and Interstate-90/94 (Dan Ryan) are the main highways which cut through the south side of Chicago. I-55 parallels the south bank of the South Branch, forming a barrier between industry along the river and residential development south of the interstate. The river is hidden from both above the interstate and at ground level, blocked by concrete pillars which elevate the interstate. The only hint at the river's presence are the bridges which cross it to connect the north and south banks.

### Patches



**Figure 18:** Patch at 20 km above Chicago. Industrial corridors border the Chicago River, park space lines Lake Michigan. Image by author with Google Earth underlay.

Chicago's PMDs are distinctive patches amongst the urban fabric. The majority of the city's PMD's exist along the Chicago River and the city's rail corridors. These patches of industry form a boundary along the South Branch of the Chicago River, preventing public access to the river. Yet without the PMD's, the value of riverfront real estate would push industry elsewhere in the city or out to the suburbs. The relocation of Finkl Steel and the Chicago Fleet and Facility Management maintenance garage to the South Side of Chicago, along with a revival of the historic Pullman industrial district are indicators of a larger trend for these industries to locate in the South Side of Chicago. If industry is to become part of Chicago's modernizing economy, it will have to reinvent itself and become integrated within the urban fabric to allow people to connect to the river.



## Matrices



**Figure 19:** Matrix at 5 km above Chicago. Street grid is densest where grid is perpendicular to the river's edge. Image by author with Google Earth underlay.

The repeating pattern of the city's street grid forms a matrix, or background condition. South of the river, the street hierarchy promotes north/south movement. Downtown Chicago lies roughly three miles northwest of the site. North of the river, the street grid promotes east/west movement. The matrix of streets is broken up within the industrial district along the river. The canals north of the river follow the surrounding residential grids, pulling the river directly north inland. There is one area along the river where the street grid creates a perpendicular relationship with the

river: the area bounded by W 31<sup>st</sup> Street to the south and the South Branch of the river to the north. The matrix of the grid is densest here, dominated primarily by single-family residential rowhomes.

## Hydrology

“Chicago owes its existence to the Chicago River,  
and the river owes its present form to Chicago.”<sup>88</sup>

*Libby Hill, 1873*

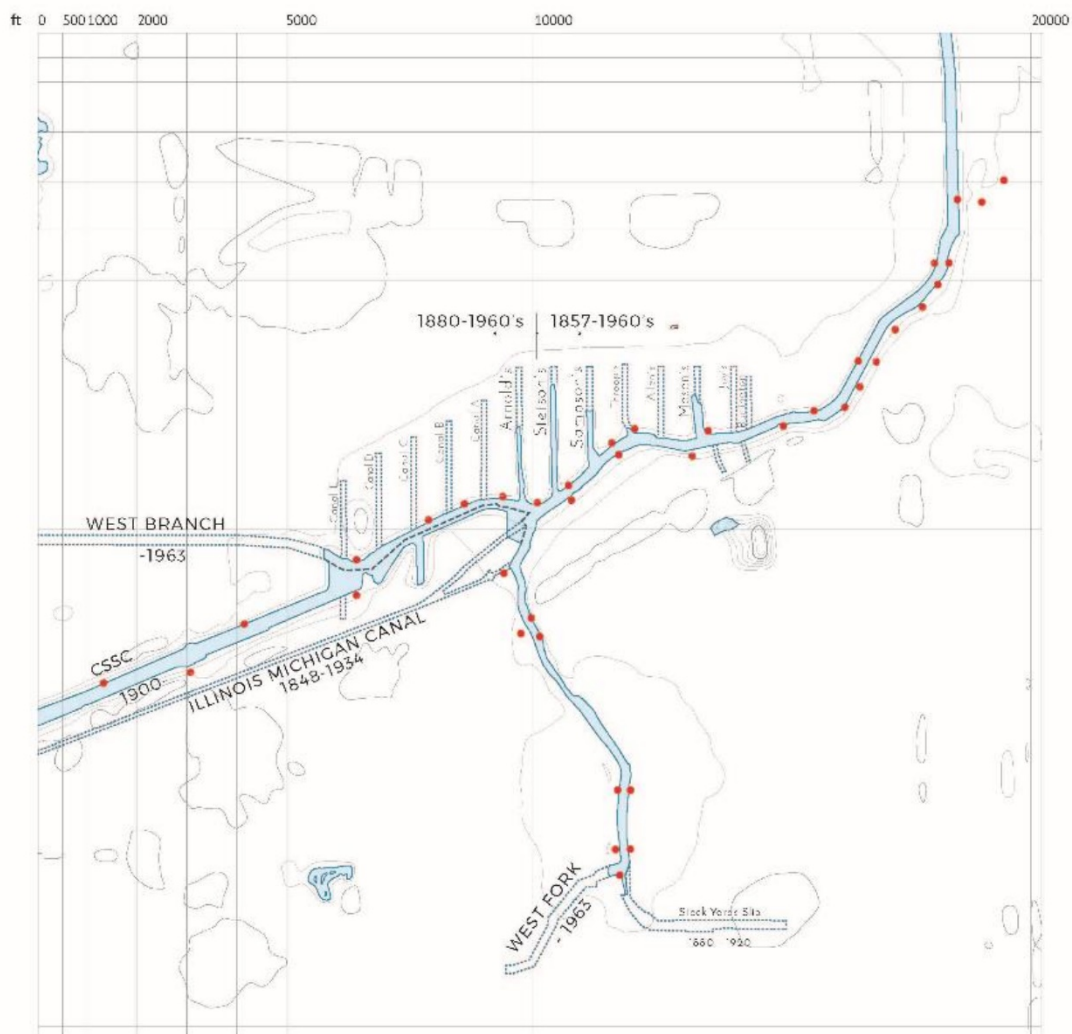
The Chicago River that is present today is not the river’s natural state. Chicago has modified the course of the Chicago River over the city’s history with inadvertent consequences. Parts were added and subtracted to suit the changing needs of the industries that surrounded it. [\[Figure 20\]](#)

One of the first modifications to the course of the river was the Illinois and Michigan Canal, connecting the Chicago River to the Mississippi River Basin in 1848. Once the railroads arrived in the 1850’s, canals were dredged along the north bank of the South Branch. These artificial canals connected lumber coming into Chicago via Lake Michigan to rail lines along Cermak Road. The river reached its maximum intervention after 1900. The creation of the Chicago Sanitary and Shipping Canal forever reversed the flow of the Chicago River for the health of the city’s population. The Sanitary and Shipping Canal overshadowed the Illinois Michigan Canal which came before it. The CSSC was much wider and deeper than the IMC and the two ran relatively parallel to one another. Many portions of the IMC were filled in during the 1930’s as the canal fell out of use. Canal Origins Park is one of the few remnants of the canal at the site, denoting the starting point of the canal.

---

<sup>88</sup> Cronon, *Nature’s Metropolis*, 63.

More of the river began to disappear during the 1950s and 1960s as industry began to move out of the city towards the expressways and the suburbs. The lumber yards and saw mills which once populated the canals along the South Branch had been replaced by larger industries that were not as dependent upon water traffic on the river. The Stock Yards which were in decline also lost their riverfront access. By the late 90's, the river had reached its present form. [Error! Reference source not found.]



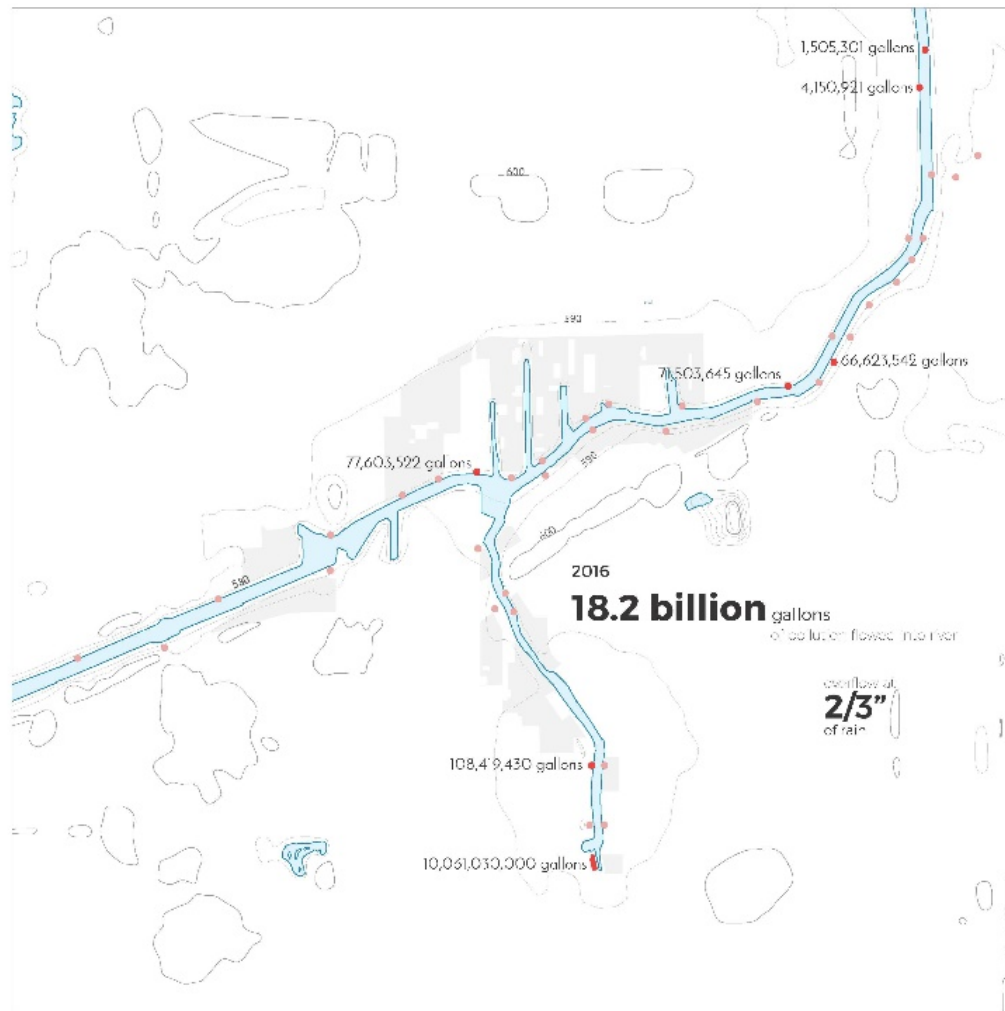
**Figure 20:** History: How Chicago has shaped its river. Diagram by author.



**Figure 21** The evolving shape of the South Branch over time. Dark blue represents the river's initial shape; light blue represents the river's current shape; dashed lines denote additional canals which no longer exist. Diagram by author.

Like most cities at the time of its development, Chicago utilized its river as a natural sewer to wash away waste. The city's sewer system combined stormwater and sewer water into one large pipe with multiple outlets draining into the river. While not problematic during dry periods, the real problem comes with heavy rainfall. As little as  $\frac{2}{3}$  of an inch of rain can overwhelm the system, causing stormwater and sewer water to mix and overflow into the river. More than 18.2

billion gallons of pollution flowed into the Chicago River in 2016.<sup>89</sup> While industry helped shape the river, the design of our built environment is the greatest contributor to the problems of pollution today. **[Figure 22]**



**Figure 22** Hydrology: The effects of Combined Sewer Overflows. Diagram by author.

Chicago's modifications to the Chicago River almost appear natural. One would hardly consider that a West Branch of the river once existed. Yet the shape of

<sup>89</sup> Michael Hawthorne, "Chicago River still teems with bacteria flushed from sewers after storms," *Chicago Tribune*, June 23, 2017. Accessed September 2, 2017, <http://www.chicagotribune.com/news/local/breaking/ct-chicago-river-still-dirty-met-20170623-story.html>



the river along the South Branch is unique to this area because of the industry that started here. The river anomalies offer design opportunities to connect people to the water: the canal slips extend the river's edge inland, permitting greater waterfront access for public and private development; the turning basins widen the river, creating a convergence point to invite people out into the water.

### ***Site Selection***

The initial intent of this thesis was to repurpose an existing industrial structure along the Chicago River. Ideal sites were located along the South Branch of the Chicago River as vacant industrial properties and structures with historical significance (i.e. built prior to 1930). The two notable sites which fulfill these initial criteria are the Damen Silos at 2860 S Damen Avenue and the Fisk Generating Station at S Morgan Street. The 15-story grain silos, built back in 1906, have been useless since an explosion in 1977 and are a popular (though illegal) destination for graffiti artists and photographers. The Fisk Generating Station on the other hand was one of Chicago's biggest industrial sources of carbon dioxide emissions between 1903 and its closure in 2012. While both buildings met initial site criteria, the size of the structures and state of abandonment pose significant obstacles to development: they are either too costly to demolish or too massive to program and repair. After studying Richard Haag's work at Gas Works Park, these structures seemed better off left alone and incorporated as part of a larger urban landscape design scheme.

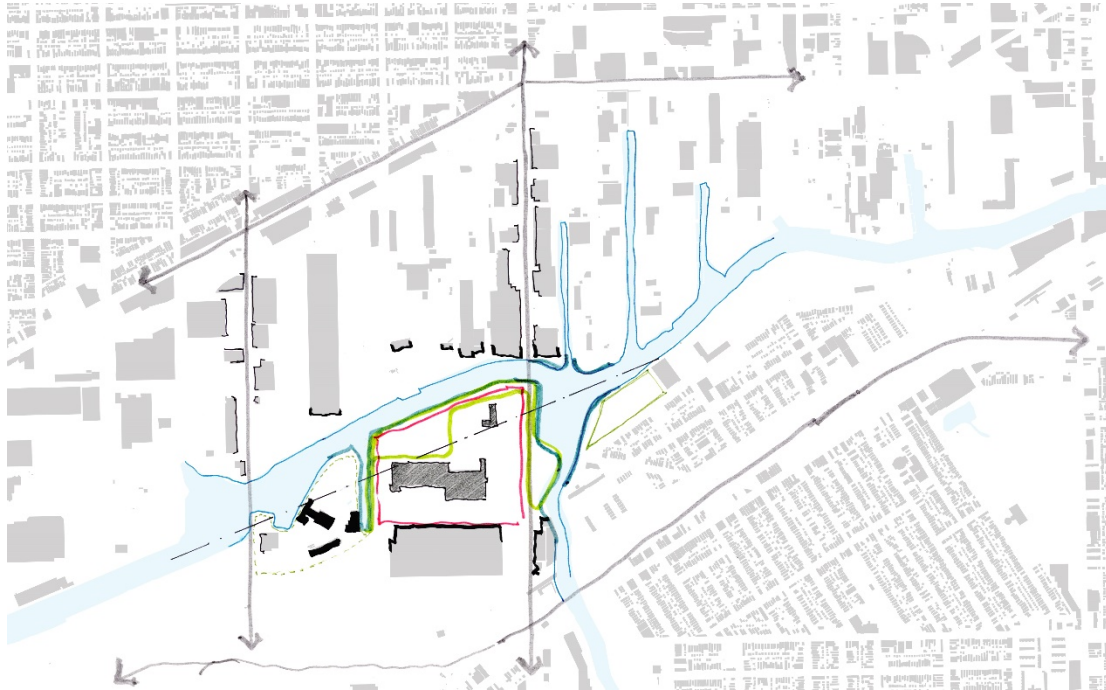
Upon delving into an analysis of the industrial history along the South Branch, there was more to the area than the remaining industrial structures. The absence of former industries, resource loops, and waterways provided clarity in determining that

the ideal site did not have to have an existing structure on it, or one with historical significance.

Further site analysis also revealed three anomalies along the South Branch: the canal slips, the turning basin, and the residential street grid bounded by S Halsted Street to the east, W 31<sup>st</sup> Street to the South, the South Fork to the West, and the South Branch to the north. All three of these conditions exist near the turning basin where the South Branch and the South Fork of the river converge

The ideal site would capture or relate to most of these unique characteristics: the turning basin, the canals, and the residential grid along S Eleanor Street. The development requirements of the dual degree brought practicality to the site selection: the selected site should be for sale or easily acquirable. Three sites presented different challenges and opportunities in relation to these characteristics: 2800 S Ashland Avenue, 2453 S Laflin Street, and 977 W Cermak Road.

**Site A: 2800 S Ashland Avenue**



**Figure 23:** Site analysis of 2800 S Ashland Avenue, outlined in red. Image by author.

Historically, Site A at 2800 S Ashland Avenue was an industrial rail yard. Recently it was the former printing facilities for the Chicago Sun Times, one of Chicago's largest newspapers. Since 2014, QTS Realty Trust, a Kansas-based data center developer, has been turning the 317,000-sq. ft. center into a massive data center.

Water and park space surround the 30-acre site on three sides. S Ashland Avenue is the main north-south street that forms the eastern border to the site. The link between the site and the turning basin is not ideal: Ashland Avenue acts a barrier between the site and the turning basin to the east. Pedestrians would either have to cross over Ashland at street level, or cross under the bridge at the water's edge.

One of the unique opportunities that Site A presents is its adjacency to the Damen Silos to the west. There would be a unique opportunity to design a landscape connection between the parks which border the site and the Damen Silos. The site would then serve as a mediator between the industrial remnants of the silos and activity happening at the turning basin.

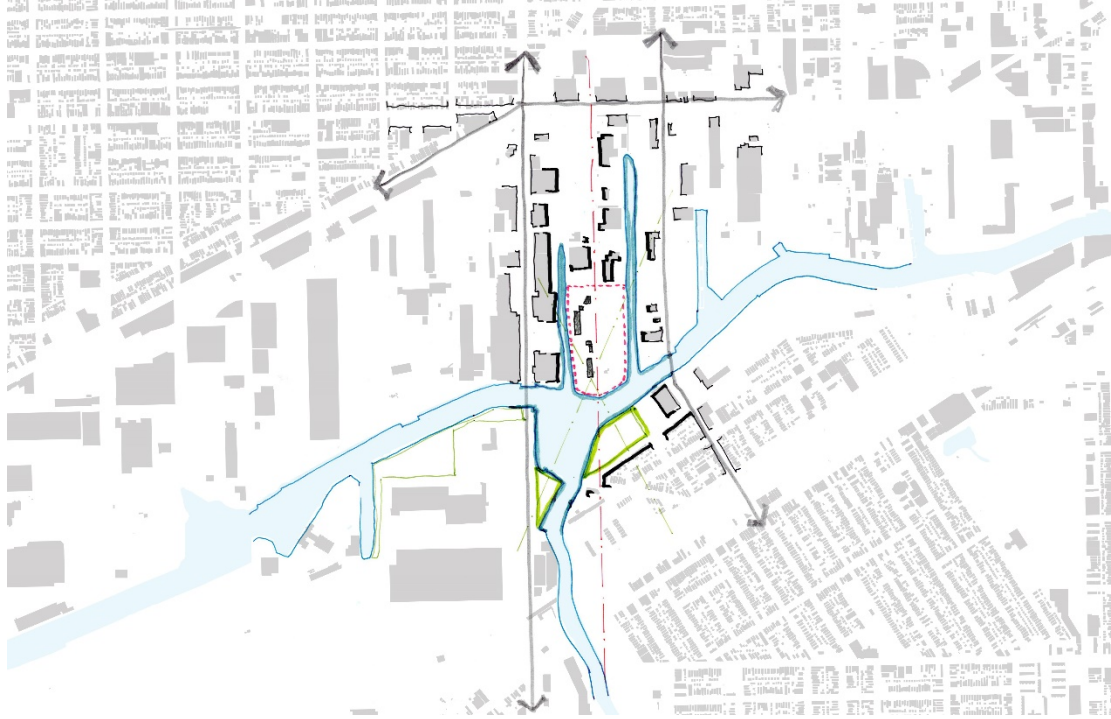
The greatest challenge of Site A is the occupancy status and size of the site. While it would be easy to say that QTS could be financially persuaded to move to a new location, no business would want to move after investing a significant amount into improvements to a new facility. The sheer size of the site is also a challenge. According to a recent Chicago Tribune article, almost 30 acres surround the existing structure, including landscaping and parking.<sup>90</sup> The site itself requires a mini

---

<sup>90</sup> Meg Graham, "Former Chicago Sun-Times printing plant gets high-tech facelift," Chicago Tribune, last modified March 21 2016, accessed May 6 2017, <http://www.chicagotribune.com/bluesky/originals/ct-qts-data-center-sun-times-plant-bsi-20160321-story.html>

masterplan if a program other than a large factory or warehouse were to occupy the site.

#### Site B: 2453 S Laflin Street



**Figure 24:** Site analysis of 2453 S Laflin Street, outlined in red.  
Image by author.

Site B at 2453 S Laflin Street holds a unique position in relation to the river.

The 10.86-acre site is situated at the terminus of Laflin Street on the north bank of the South Branch of the river. Two of the remaining canal slips border the site to the east and west with the turning basin forming the southern edge. Laflin Street creates a linear axial relationship with Park 571 to the south and Bubbly Creek farther south. The site's position on the turning basin offers unique opportunities to relate to the park spaces on the southern end of the basin. The canals offer further opportunities to implement remediative landscape strategies to treat stormwater runoff in the river.

Historically a series of lumber yards occupied the current site. Today, the site is used for asphalt mixing and concrete production. Few buildings populate the site

with most of the land remaining open for large piles of aggregate. Other industries north of the site on Laflin include recycling centers and a landscaping supply store.

While there are few notable existing structures to work with on Site B, the site is essentially an open canvas to work with. The Laflin site is one of the few industrial parcels in the Pilsen PMD currently on the market. Compared to Site A, this would be an easier property to acquire from a real estate perspective. Laflin connects the site north to W Cermak Road, which extends into the greater Pilsen neighborhood. The greatest opportunity lies in the site's access to water on three sides, presenting unique opportunities to connect with the river and adjacent sites along the river.

**Site C: 977 W Cermak Road**

Site C at 977 W Cermak Road is the one site not located near the turning basin. However, the site has other admirable qualities. The site connects to W Cermak Road to the north via road access on Morgan Street. The 10.48 acre site has one existing building on site which currently houses a mechanical contractor storage center. Two office buildings occupy the adjacent property to the east with AT&T and BlueCross BlueShield as tenants. The South Branch of the river borders the property to the south and a canal slip is adjacent to the property to the west.

One of the unique opportunities and challenges of the site lies to the adjacent property west: the abandoned Fisk Generating Station. Site C lays in the shadow of the generating station. This could be an opportunity to propose a future for Fisk that supports whatever activity occurs on site. Site C could connect to the generating station in a larger urban design context programmatically or through a landscape intervention. However, Fisk's vacant status may do more harm than good. To design

on Site C may require proposing a future for the generating station so the two interests do not compete with one another, theoretically expanding the site boundaries.

### **Selecting Site B**

After examining the above sites in relation to the surrounding industrial corridor, Site B at 2453 S Laflin Street provides the most opportunity for the architecture to engage with the water. The site's unique waterfront features can be found at few other properties along the Chicago River. At the heart of the Pilsen Industrial Corridor, near the cross axis of S Ashland Avenue and W Cermak Road, the site is in a prominent location to be a catalyst for redevelopment throughout the corridor.



**Figure 25** The site (center) from the Ashland Avenue bridge. Photo collage compiled by author.

## Chapter 4: Design Approach

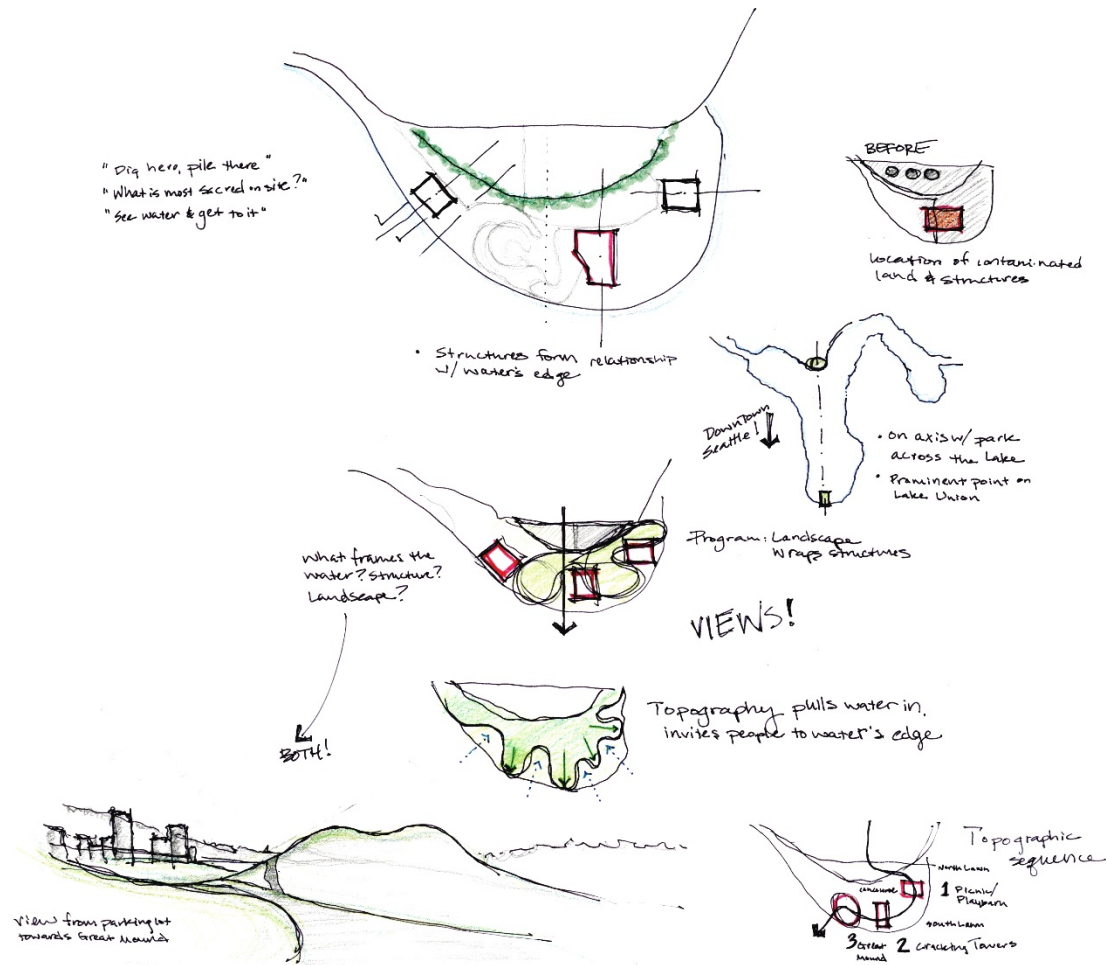
### **Precedents**

#### ***Site Strategy***

##### **Gas Works Industrial Park**

The industrial park at Gas Works in Seattle, Washington helped to change the public's perception of the post-industrial landscape. Initially envisioned as a prominent park space on Lake Union, the site instead became the location of a coal gasification plant. After the plant's closure, the City acquired the 19-acre site for parkland in the 60's. Landscape architect Richard Haag was commissioned to re-envision a new future for the space.

Haag utilizes topography and the site's existing industrial structures to frame moments around the park. The ground is carved away between the three architectural elements to pull people down towards the water. The excavated contaminated soil is relocated on site and capped with a layer of clay to create the Great Earth Mound summit. From the parking lot, visitors are guided east to west, curving around the water's edge from the lowest topographic point, the boiler house picnic shelter, to the highest topographic point, the Great Earth Mound. The site's prominent towers sit between these two elements, forming an axial relationship with downtown Seattle at the southern end of Lake Union.



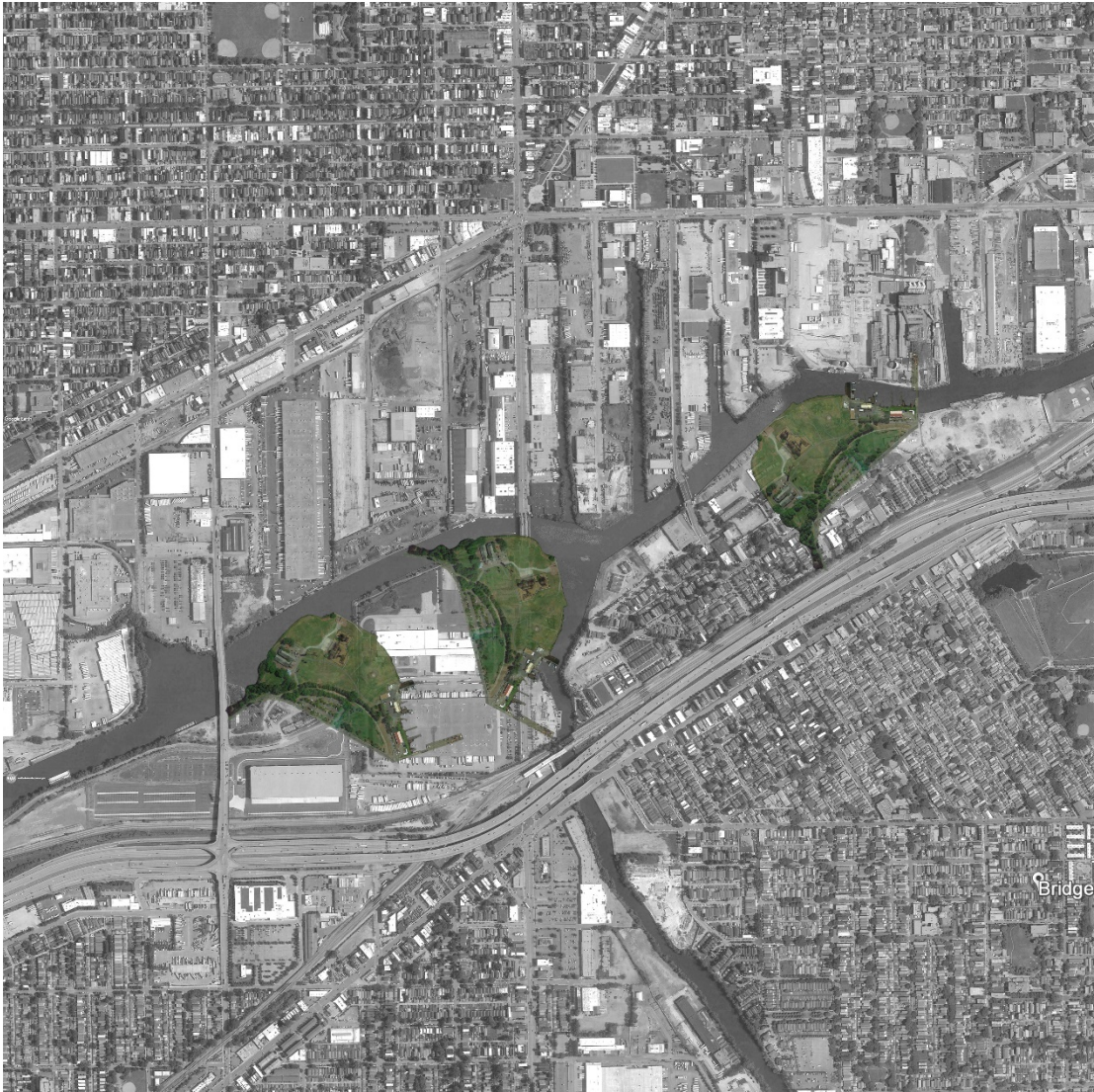
**Figure 26:** Diagrams and sketches breaking down the site strategy at Gas Works Park. Images by author.

Haag's bioremediation strategies were revolutionary in the 1970's. The site has healed itself over time, allowing the public to have a physical connection with its industrial past. While the remaining structures are in one sense a celebration of the past, their presence simultaneously allows people to reflect on the culture of industry that we have created.

Gas Works Park parallels the South Branch site in some interesting ways. Industry, specifically the production of energy, is an integral component of the site's history. Many sites along the river's edge will need to be treated for



contamination within the soil, so Gas Works' remediation strategies could potentially be utilized at the South Branch Site. The main lesson to learn from Gas Works is the celebration of a sublime industrial structure through landscape. When the ideas represented by Gas Works Park are overlayed on the South Branch site, there are many ideal points along the river that could be the setting for a park that celebrates a remaining industrial structure. A "Gas Works Park" may be essential to the overall urban design, but it is not the focal point. Instead, it may be another space within a sequence that leads to the climactic architectural moment.

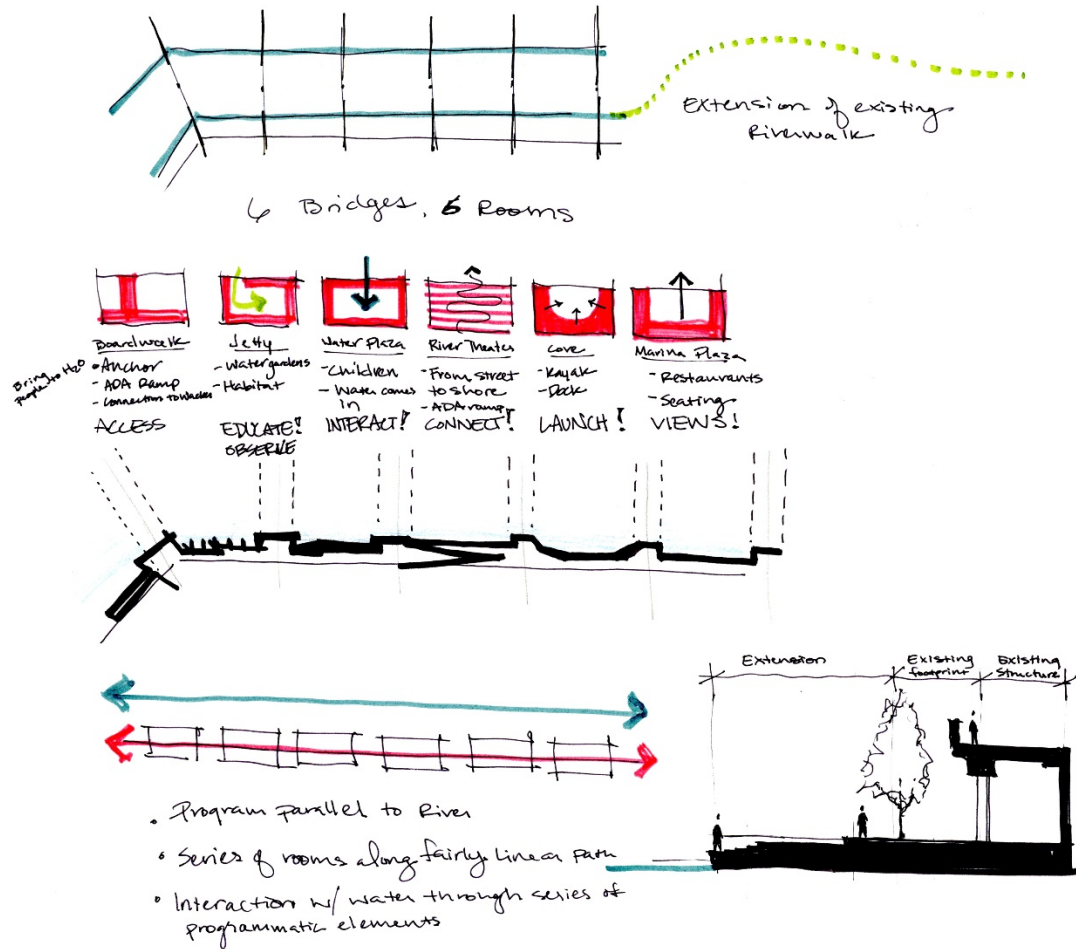


**Figure 27:** Gas Works Park scale overlays along the South Branch.  
Image by author using Google Earth aerial images.

### **The Chicago Riverwalk**

The Chicago Riverwalk aims to turn the Chicago River into an amenity for downtown Chicago. Throughout three phases, the Chicago Department of Transportation collaborated with Ross Barney Architects, Sasaki Associates (phase 2 and 3), Jacobs Ryan Associates, and Alfred Benesch & Company to create a pedestrian connection between Wacker Drive and the river's edge.

The part of the project consists of a fairly linear path parallel to the river that connects a series of spaces. These spaces, or rooms, are placed between the bridges which connect either side of the river at street level. Between the six bridges, there are six rooms that are programmed to engage the river in different ways: Marina Plaza between the Dearborn and State Street bridges engages the water's edge through retail activity and seating that allows people to take in views of life on the water; the Cove between the Clark and Dearborn bridges launches people out onto the water through a dock for kayaks and small watercraft; the River Theater between the LaSalle and Clark Street bridges connects pedestrians from Wacker Drive at street level to the Riverwalk below through an ADA accessible stair ramp; the Water Plaza between the N Wells and LaSalle bridges integrates water into the path so children can play in a zero-depth fountain; the Jetty between N Wells and Franklin educates visitors about the river ecology through floating water gardens that provide habitat; the Boardwalk between Lake and Franklin is the western anchor that creates the initial connection to the Riverwalk through an ADA compliant ramp that frames the confluence of the river's three branches. These six rooms happen within a 25-foot build-out from the existing Riverwalk path at Lower Wacker Drive. Each street bridge designates a threshold from one room to the next.



**Figure 28:** Diagrams and sketches breaking down the program strategy of the Chicago Riverwalk. Images by author.

The Riverwalk's modest footprint contains a number of design lessons. The Riverwalk connects spaces parallel to the river while bringing pedestrians from street level down to the water's edge. When applied to the South Branch site, the Riverwalk parti could function parallel to the water's edge, as it is currently designed, or perpendicular to the water's edge.





**Figure 29:** Chicago Riverwalk scale overlays along the South Branch.  
Image by author using Google Earth aerial images.

In the parallel arrangement, it would connect a series of spaces along the river.

In the perpendicular arrangement, the Riverwalk could connect people farther inland to the river's edge; a series of rooms would guide pedestrians to the final point of celebration: an architectural moment integrated with the water's edge.

## ***Program***

### **Utilizing the River as Resource: Beloit College Powerhouse**

Beloit College partnered with Studio Gang Architects in 2014 to reimagine a former coal-burning power plant as a student union and recreation center. Located on the Rock River near the border of Wisconsin and Illinois, the design aims to retain the century-old structure's industrial character while utilizing reduced energy features. When the building is completed in 2019, Studio Gang hopes the Powerhouse will connect the campus to the river, spurring the redevelopment of Beloit's riverfront.<sup>91</sup>



**Figure 30:** Rendering of the Beloit College Powerhouse from the Rock River. Rendering by Studio Gang Architects.

The design reinterprets the former structure's initial use for energy creation through the kinetic energy of recreation and wellness spaces for students. According

---

<sup>91</sup> Karissa Rosenfield, "Beloit College Power Plant / Studio Gang," ArchDaily, last modified November 5 2014, accessed May 2 2017, <http://www.archdaily.com/564488/studio-gang-reimagines-beloit-powerhouse-as-campus-hub>

to Studio Gang's website, the program features a 10,000 sq. ft. fitness center and a 17,000 sq. ft. recreational gym, including a 3-lane track and an 8-lane competition pool. The building also includes a coffee shop, student lounges, club rooms, conference center, and a lecture hall/theater. The interaction of spaces for collaboration, conversation, study, and fitness engage the site's historic use in a creative way.

The building capitalizes on its unique location along the Rock River to sustainably power the building. Geothermal pipes underneath the river and on land generate the Powerhouse's heating and cooling needs. A series of tubes transfer heated/chilled water from underground up and around the building under the exterior skin of the structure, transforming the building walls into a radiant surface.<sup>92</sup> This "isothermal envelope" will help the building maintain a constant interior temperature throughout the year.

The lessons learned from this design precedent are programmatic and technical. Studio Gang poetically translates the site's historic program into a modern context. It would have been interesting to see how the kinetic energy from students working out could translate into energy production, even if on a small scale, for the building. Understandably the scale of the development and frequency of use of the gym program may not allow for this idea to become a reality on this site. The building instead utilizes the river as a sustainable energy resource. The Rock River is comparably greater in size and power than the "sluggish" Chicago River, so the

---

<sup>92</sup> Rosenfield, "Beloit College Power Plant / Studio Gang."

capability for the South Branch to generate power for any surrounding buildings may not be feasible.

### **“Part of the City”: Amager Bakke Waste-to-Energy Plant**

The Amager Bakke waste-to-energy plant is a first of many: it will be the cleanest waste-to-energy plant in the world; it will be the tallest and biggest building in Copenhagen; and it will house Denmark’s first ski-slope.<sup>93</sup> BIG’s Bjarke Ingels described the combined incinerator and recreational space, saying, “Tate Modern was a power plant that turned into a museum. We are trying to make a functioning power plant.”<sup>94</sup> The design intends to change the public perception of public utilities through the marriage of art and science, transforming industry into something that is clean and green.

In BIG fashion, the plant is more than just cutting-edge, waste-to-energy technology. The site occupies a prominent spot in the middle of the city next to a marina. BIG took the idea of a “mountain of trash” to transform the building’s roof into a literal mountain with green spaces, hiking trails, and a climbing wall. In the winter months the mountain turns into a ski slope. The slope of the roof and an elevator adjacent to the plant’s smokestack make this space publically accessible from the ground level.

---

<sup>93</sup> Vanessa Quirk, “BIG’s Waste-to-Energy Plant Breaks Ground, Breaks Schemas,” ArchDaily, last modified March 5 2013, accessed May 6 2017, <http://www.archdaily.com/339893/bigs-waste-to-energy-plant-breaks-ground-breaks-schemas>

<sup>94</sup> Terry Slavin, “An incinerator with a view: Copenhagen waste plant gets ski slope and a picnic area,” The Guardian, last modified October 26 2016, accessed May 6 2017, <https://www.theguardian.com/cities/2016/oct/26/incinerator-copenhagen-waste-plant-bjarke-ingels-ski-slope>



In its transformation, the Amager Bakke plant becomes a destination for public participation and engagement. When the public thinks of industry, many conjure images of tall smokestacks with steady streams of smoke emitting from them. BIG reimagines this negative connotation of industry in a way to inform and engage the general public. The new plant's smokestack will puff smoke rings whenever 1 ton of fossil CO<sub>2</sub> is released, serving as a visible indicator of the impact of consumption according to BIG's website.



**Figure 31:** Rendering of the Amager Bakke waste-to-energy plant emitting a smoke ring. Rendering by BIG.

Amager Bakke conveys an interesting lesson about the integration of industry into the urban fabric. While it has yet to be seen if the smoke rings will actually work (the building is currently under construction) or what safety precautions will keep skiers from sliding over the edge, the concept is pure: break down the barriers between people and industry. In addition to designing a cleaner energy production system, BIG has thought about how the process of industry can start to become visible to the public. Similar to Studio Gang's Beloit College Powerhouse, BIG

translates concepts related to industrial use into public programs that create spaces where people and industrial infrastructure can interact.

### **Built for Clean: Method Soap, Chicago**

Method Soap's new "factory of the future" in Chicago's South Side is more than just about cleaning up soap – it's about reimagining the supply chain. The green soap company's new factory is a one-stop-shop for bottling, packaging, and shipping. Method's factory is the first LEED Platinum manufacturing facility in its industry, demonstrating the company's dedication to sustainability and serving as a model for others to follow.

Method wanted to choose a site that would allow them to provide green space and jobs to the local community. The design team selected a 22-acre former brownfield site in the Pullman District of Chicago's South Side. The Pullman neighborhood is known historically for being the first model, planned industrial community for the Pullman Car Company in the mid to late 19<sup>th</sup> century. Designers considered the site's history as a former lumber yard and steel mill into consideration when selecting materials and considering remediation strategies.

The 150,000 square foot facility houses Method's bottling, packaging, and shipping activities in addition to administrative office space and sustainable practices. The 48,750 square feet of warehouse space was designed to "increase operational efficiency, create long-term flexibility and boost workers' spirits."<sup>95</sup> Roughly 15,000 square feet of the warehouse is leased to Amcor, Method's bottle manufacturer,

---

<sup>95</sup> Karl Heitman, "The Natural Capitalism Concept Comes to Industrial", NAIOP Development Magazine, <http://www.naiop.org/en/Magazine/2016/Fall-2016/Development-Ownership/The-Natural-Capitalism-Concept-Comes-to-Industrial.aspx>

reducing the 1,000 miles of inefficiency for bottling down to 1,000 feet.<sup>96</sup> Precast panels with 12-foot-wide, nine-foot-high openings and skylights flood the bottle manufacturing and packaging floor areas with more natural light than seen on a typical factory floor. Adjacent to the warehouse is 2,000 square feet of lab space, where “thought bubbles [are] made here.” [Figure 32] The company’s administrative offices are also located on site in 15,750 square feet of office space.



**Figure 32** Method Soap's warehouse space was designed with the health and happiness of its employees in mind. Photo by Patsy McEnroe.

Sustainability was at the forefront of the design process. The factory’s largest programmatic element is the 75,000-square foot hydroponic green roof leased to Gotham Greens. The greenhouse produces over one million pounds of fresh

---

<sup>96</sup> Zeke Markshausen, “Made in Chicago: Method Soap”, IDEO: Blog, <https://www.ideo.com/blog/made-in-chicago-method-soap>

produce annually.<sup>97</sup> Arugula, bok choy, lettuces, and kale are available on local store shelves two days after harvest, compared to the average two weeks.<sup>98</sup> The greenhouse is not the only green element at Method. Over 60 percent of the building's energy consumption is supplied by a refurbished 600-kilowatt wind turbine and solar trees in the parking lots.<sup>99</sup>

Method is intent on sharing its industrial innovations with the public. Tours of the facility are offered to the public every Wednesday, and colorful awnings attract the local community to share the fence-free front lawn. Method's dedication to the triple bottom line (people, planet, and profit) has paved the way for other manufacturers to follow their lead in creating future sustainable facilities.

## ***Development***

### **Net-Zero Development: The Plant**

The Plant is an urban indoor farm located at 1400 W 46th Street in the Back of the Yards neighborhood of Chicago, Illinois. The building is a former processing plant built in 1925. **[Figure 33]** When Peer Foods left the building in 2007, it seemed destined to be torn down. Developer Bubbly Dynamics, LLC bought the building in 2010 to cater to a “food desert” lacking healthy food options.

---

<sup>97</sup> William McDonough + Partners, “Method Manufacturing Facility: The South Side Soapbox”, <http://www.mcdonoughpartners.com/projects/method-home/>

<sup>98</sup> Markshausen, “Made in Chicago: Method Soap”, <https://www.ideo.com/blog/made-in-chicago-method-soap>

<sup>99</sup> Heitman, “The Natural Capitalism Concept Comes to Industrial”, <http://www.naiop.org/en/Magazine/2016/Fall-2016/Development-Ownership/The-Natural-Capitalism-Concept-Comes-to-Industrial.aspx>





**Figure 33:** The west façade of The Plant facing its outdoor farm. The Peer Foods logo from the building’s former tenant remains. Photo by author.

The 93,500-sq. ft. facility is 60 percent leased up by a variety of small food businesses. According to Bubbly Dynamics’ website, the building is still under construction with the goal of full build-out by 2019. The anchor tenants for the facility include Whiner Beer Co. and Pleasant House Bakery. Other tenants include: Four Letter Word Coffee Roasters, JustIce, Rumi, and Plant Chicago. Together these tenants promote The Plant’s concept of a “circular economy” by utilizing each other’s waste to power their operations. In closing waste, resource, and energy loops, The Plant hopes to be a model for sustainable, net-zero urban food production.

The building’s tenants are dispersed between three floors. Upon entering the building, visitors initially find themselves in the building’s lobby, which contains

Whiner Beer's taproom and a bookstore from which Plant Chicago operates building tours from. Plant Chicago oversees the aquaponics farm which accounts for the majority of the basement level. The aquaponics farm is a vital component to the building's circular economy, consuming waste from the building's tenants to produce energy for the system. The second floor currently houses the building's food businesses and will be the future location for museum space dedicated to the history of Chicago's Stockyards.

Plant Chicago is the 501(c)3 nonprofit organization that focuses on educational outreach to the Back of the Yards Community. Plant Chicago hosts classroom visits, tours, and workshops geared towards the general public. Plant Chicago also hosts a weekend farmers market on the grounds surrounding the facility from June to September. The farmers market is also operational inside The Plant's lobby and in Whiner Beer Co.'s tasting room from October to May. The community has access to the producers who make the food they buy both on site and from around the neighborhood all year round.

The Plant embodies connecting people to the process of making. Through Plant Chicago, visitors and the local community can learn how a building can utilize waste for production through sustainable practices. While the development is not yet complete or perfect in its execution, The Plant is a model for sustainable development.

#### **Art, Community, and Production: Bridgeport Arts Center**

The Bridgeport Arts Center is a multi-disciplinary creative facility located at 1200 W 35<sup>th</sup> Street in the Bridgeport neighborhood of Chicago, Illinois. The building

is formerly known as the Spiegel Catalog Warehouse, built in 1936, which received landmark designation from the City of Chicago in 2010. The Bridgeport Arts Center is part of Bridgeport's growing art scene. Events like 3<sup>rd</sup> Fridays, held on the third Friday of every month, invite the public in to interact with artists of varying ages, mediums, and experience.

The facility houses a variety of public and private programming dispersed between six floors. Commercial storefront uses welcome visitors into the building at the ground floor. Public art galleries pull people from the ground floor up to the third and fourth floors. From here, tenants can access private or shared studio and office spaces of varying sizes, ranging from 250-5,000 sq. ft. While normally closed off to visitors, events like 3<sup>rd</sup> Fridays, held on the third Friday of every month, invite the public in to interact with the artists in their studio spaces. Amenities such as the Chicago Ceramic Center and the Fashion Design Center on the fifth floor cater to both in-house artists and the community, offering studio tenants special rates for use of equipment and pottery classes for adults and kids in the community. The Arts Center also contains 36,000 sq. ft. of event space. The Sculpture Garden on the ground floor and Skyline Loft on the fifth floor cater to special events with rehabbed, open loft spaces.

The Bridgeport Arts Center is an eclectic mix of public and private uses that engage the community through art. Studio and office spaces, ground floor storefronts, and event spaces generate profit for the building while gallery spaces and events invite the community in to engage with the community's culture. The programmatic and sectional relationship of the building's uses engage the community

with a process of making. At the Bridgeport Arts Center, the manufacturing of art and culture is something that the community can take part of.

## ***Program***

Program has been the greatest question of the thesis. The initial intent was to design an industry for water while recognizing the historical impact of industry where the site is located. Few ideas initially came to mind, including a water treatment plant, a brewery, and a textile dyeing facility. [\[Figure 34\]](#) The area is already served by Stickney Water Reclamation Plant, the world's largest water treatment facility, roughly five and a half miles southwest of the proposed site along the Chicago Sanitary and Ship Canal. A brewery was a likely program candidate given the historic movement of grain in the area. However, the program did not have a strong connection to intense industrial processing or need to be broken down and revealed; there are many examples of breweries that operate at varying scales and sizes which connect people to the process of brewing.

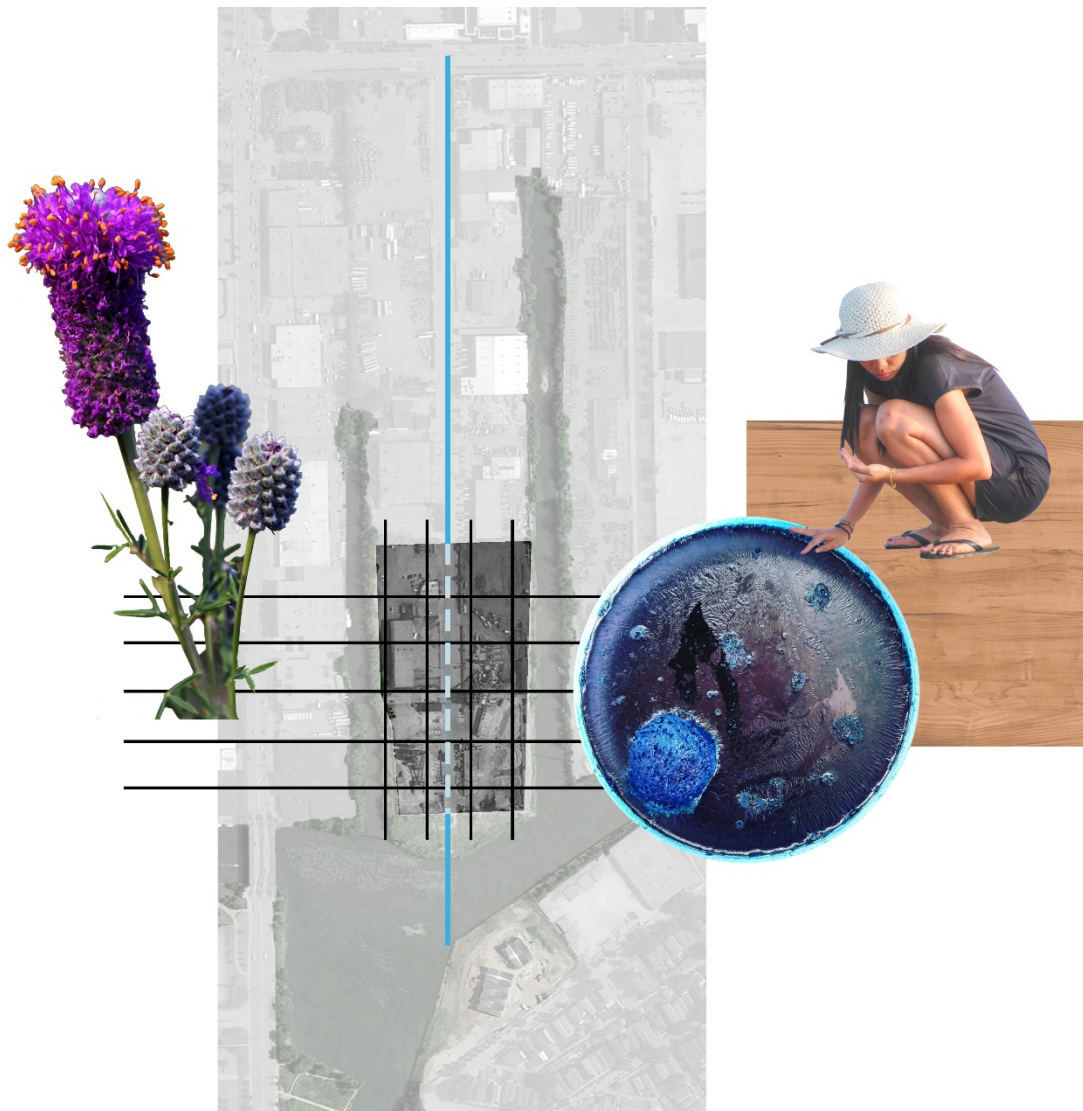




**Figure 34** Initial ideogram suggesting how the program of a brewery could connect of system of sites. Diagram by author.

Little was known about textile dyeing. In an article on Zady.com, a sustainably-conscious e-commerce clothing company, Juliette Donatelli writes, “Today, 90% of clothing is dyed synthetically, and critics say you can tell the next season’s hit hue by the color of the rivers in China.” The industry utilizes synthetic dyes rather than relying on natural systems as it traditionally had, and the dyeing process is mechanized and concealed from the public. It became clear that textile

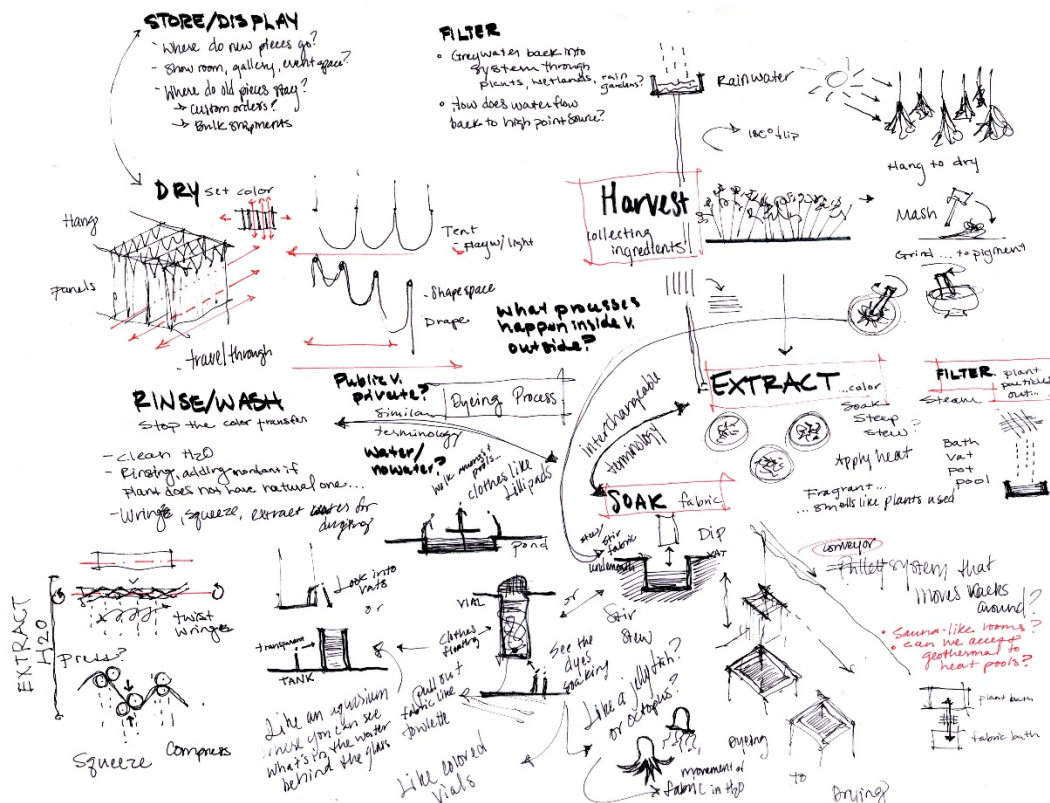
dyeing provided an opportunity to break down and reveal an industrial process to reconnect a community with its riverfront. **[Figure 35]**



**Figure 35** Ideogram: Collecting and filtering stormwater through plant-based textile dyeing to connect people to a reimagined industrial process. Collage by author.

The first step was to understand what the textile dyeing process at the hand-crafted scale entails. Five main steps were identified based on the dyeing processes of small, artisanal dyers **[Figure 36]**:

1. *Harvest*: grasses, roots, fruits, flowers, bark, and any form of plant material are collected. The plants can either be dried and transformed into pigment, or soaked in water while still fresh.
2. *Extract*: Color is extracted from the plant in boiling vats of water. Extraction time relates to color intensity.
3. *Bathe*: Fabric is soaked in the colorful dyes. The longer the fabric sits in the bath, or the number of times the fabric is dipped, results in deeper hues.
4. *Stop*: The coloring process ends when the fabric is removed from the bath and rinsed to set the dye in.
5. *Dry*: The process is finalized once the fabric is hung to dry.



**Figure 36** Tracking and visualizing the hand-crafted textile dyeing process. Sketches by author.

This process, and the visualization of it, would form the foundation of the architectural design. [Figure 37]





**Figure 37** The textile dyeing process visualized. Collage by author.

## **Process**

The design process utilized a combination of hand sketches and model-making with the assistance of digital tools to create drawing underlays. This process allowed ideas to remain loose and fluid. Many of the final design elements can be found in the initial sketches and models.

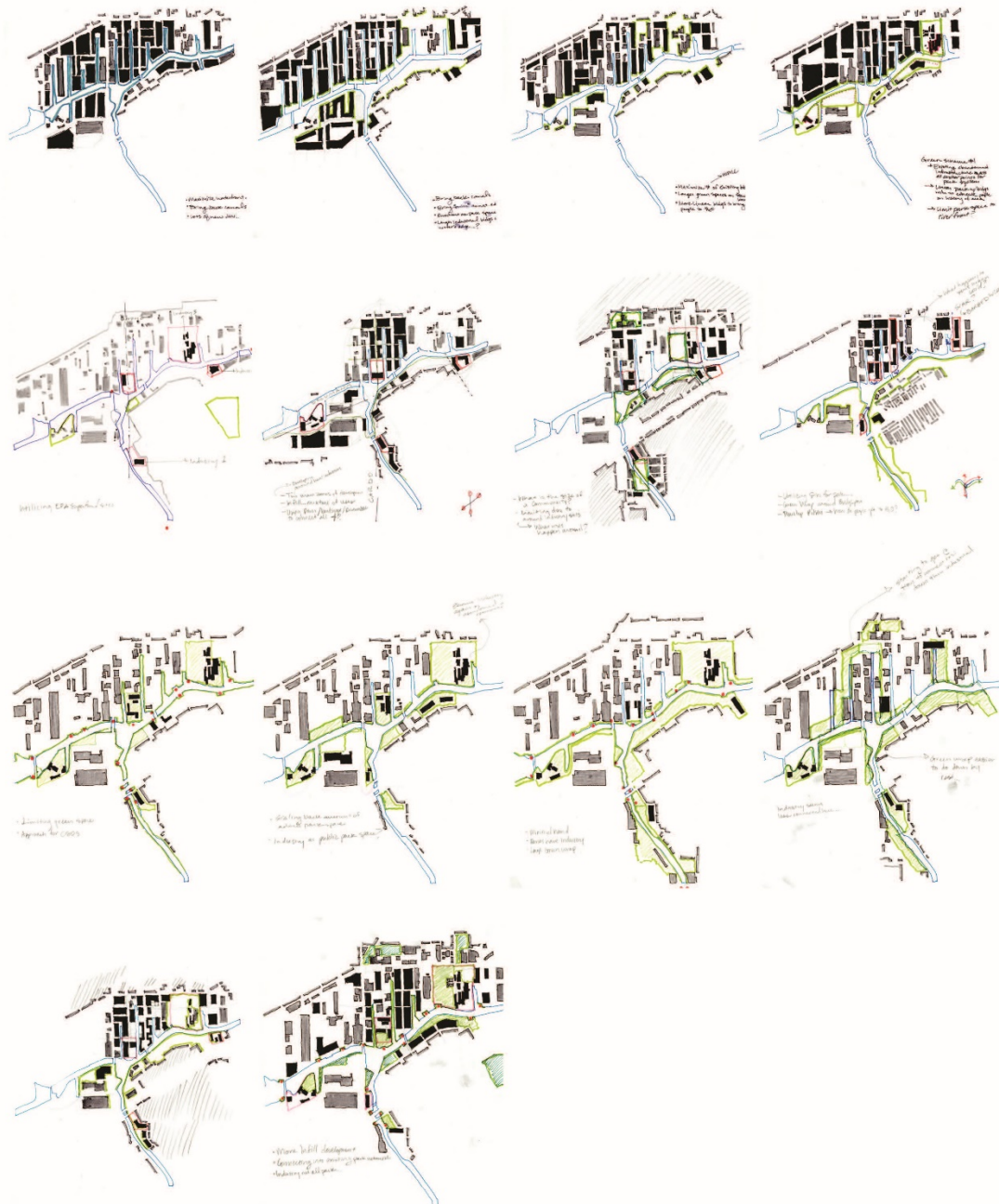
The design operates on three different scales: the urban, the site (Laflin Street), and the building. All three scales had to be developed simultaneously as they all informed each other. This required that the design focus had to continually pivot once a specific scale reach a level of development to inform moves for another scale. The urban design was resolved first to allow further development of the site and building scales throughout the semester.

The first design task explored setting up an urban context for the architecture to respond to. **[Figure 38]** Error! Reference source not found.] After exploring a few early schemes through figure ground interventions, it became clear that the urban design would focus on addressing the river through conceptual landscape proposals and suggesting key sites for eco-industrial parks. This fulfilled the goals of the thesis to allow time to address the resolution of the building design.

After reaching a significant level of development with the urban design, the design quickly focused on the building scale. Section studies were the first way to explore program relationships and design features. **[Figure 39]** Loose sketches followed, envisioning parts of the dyeing process – what were various vessels that could hold water; what precedents (in nature and the built environment) could provide inspiration for the visualization of the dyeing process? **[Figure 40]** To understand the

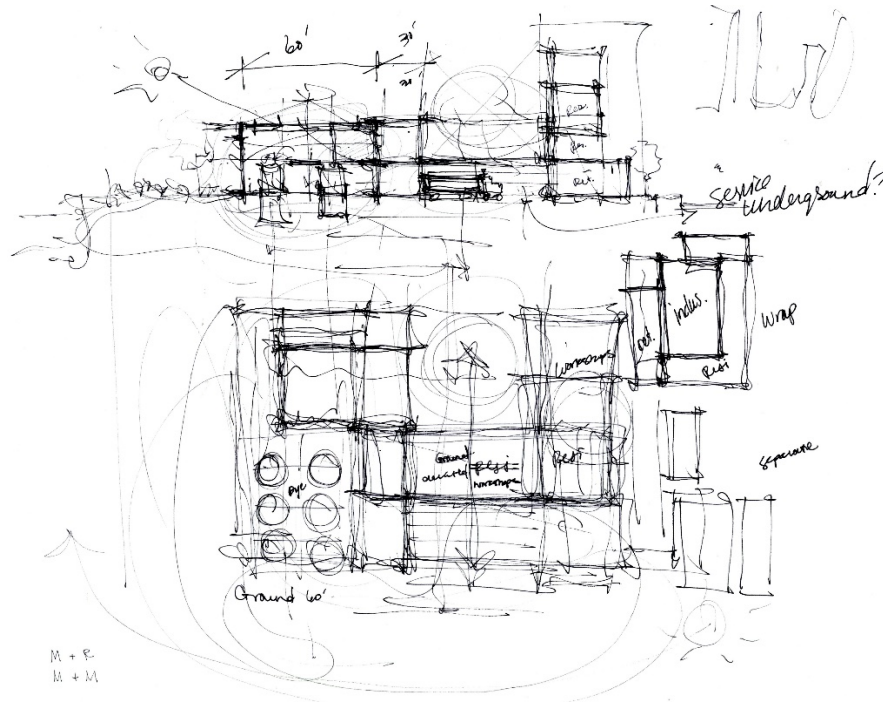
scale of the 10.5-acre parcel, a series of scalar overlays were developed. [Figure 41]

These studies revealed the size of the site in figure ground was misleading; the building would be a small component of a larger landscape and site design.

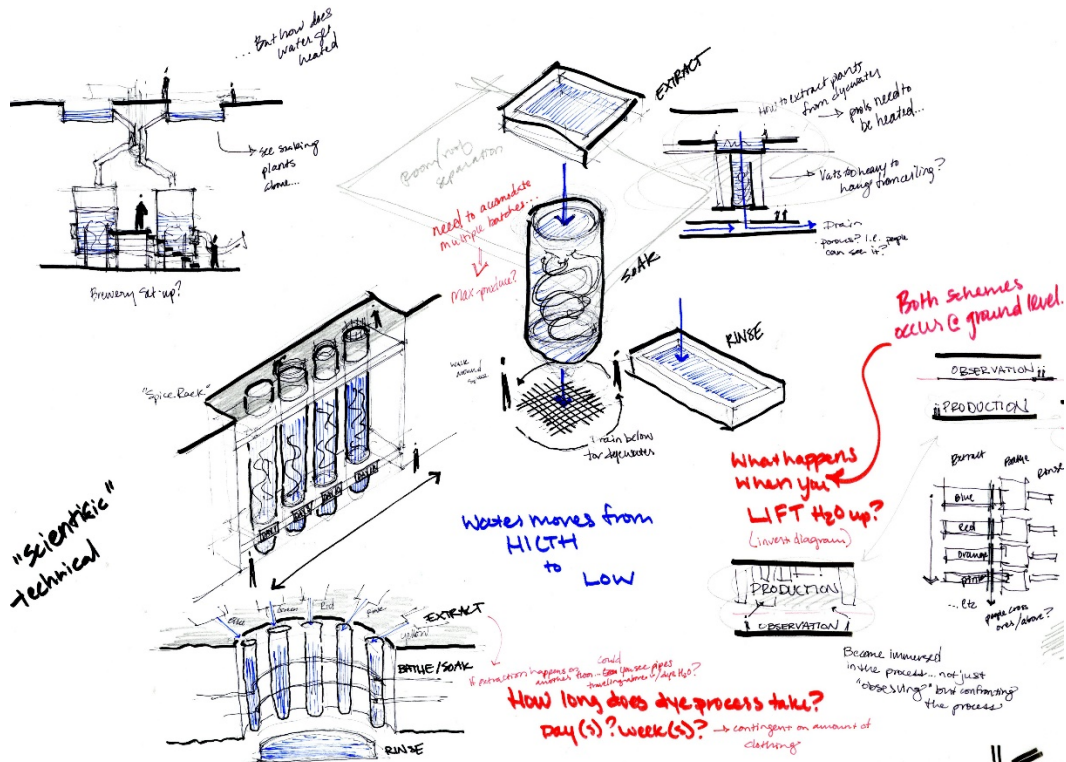


**Figure 38** Varying urban schemes explored additional building footprints, additional park space, and key sites for architectural interventions. Drawings by author.





**Figure 39** An initial section drawing with corresponding plan below exploring the relationship between the main dyeing hall with adjoining program. Drawing by author.



**Figure 40** Loose sketches visualizing components of the textile dyeing process. Drawings by author.



**METHOD SOAP**



**AMSTERDAM BLOCK**



**EVERGREEN BRICKWORKS**



**BALTIMORE INNER HARBOR**



**PHILADELPHIA NAVY YARDS**



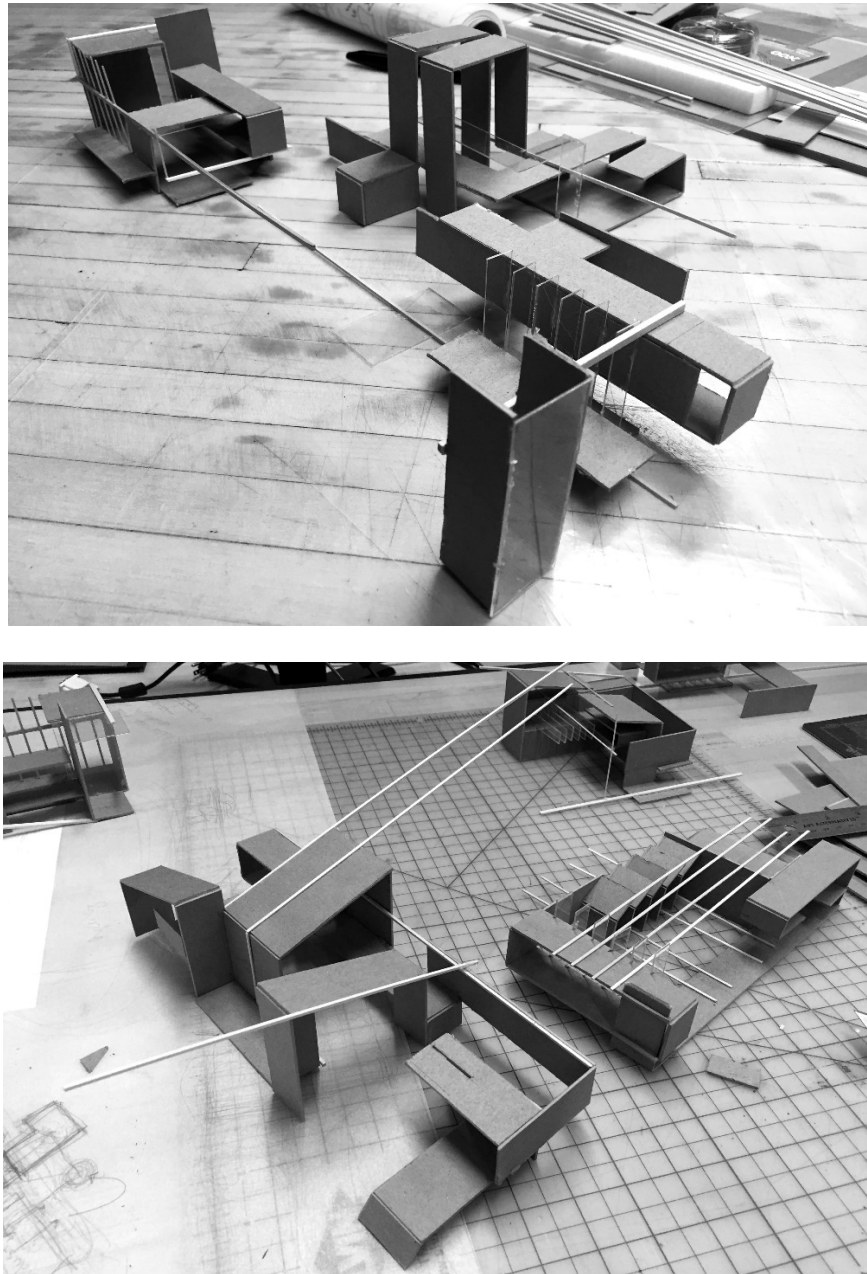
**THE PLANT, CHICAGO**

**Figure 41** Scalar overlays on the site. Drawing by author.

Understanding the scale of the parcel helped to inform model explorations of the building design. These armature models at  $1/32'' = 1'-0''$  scale employed three

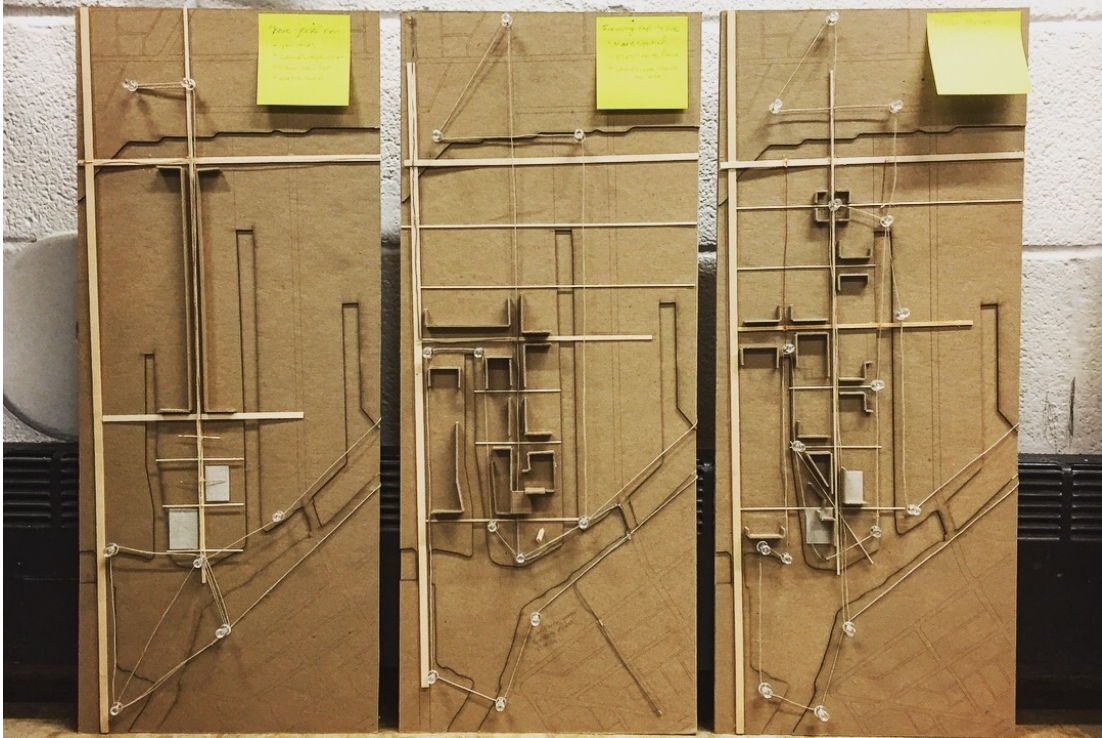


different materials: chipboard to suggest opaque planes, thin plexiglass to suggest transparency, and wooden dowels as armature or structure. **[Figure 42]** The armature most often implied the movement and directionality of water.



**Figure 42** A series of 1/32" scale study models exploring the creation of space, both inside and outside the building, and the overall parti. Photos by author.

Modeling was also a way to explore the issues at the site scale. Initially, the armature language of the building models was carried into the site models. [Figure 43] However, clay became a medium to explore topographic moves of the site. Models in clay were developed at the site scale (1:200) and eventually the building scale ( $1/32'' = 1'-0''$ ). [Figure 44]



**Figure 43** Site study models exploring promenade, views, figure ground, and public space. Photo by author.

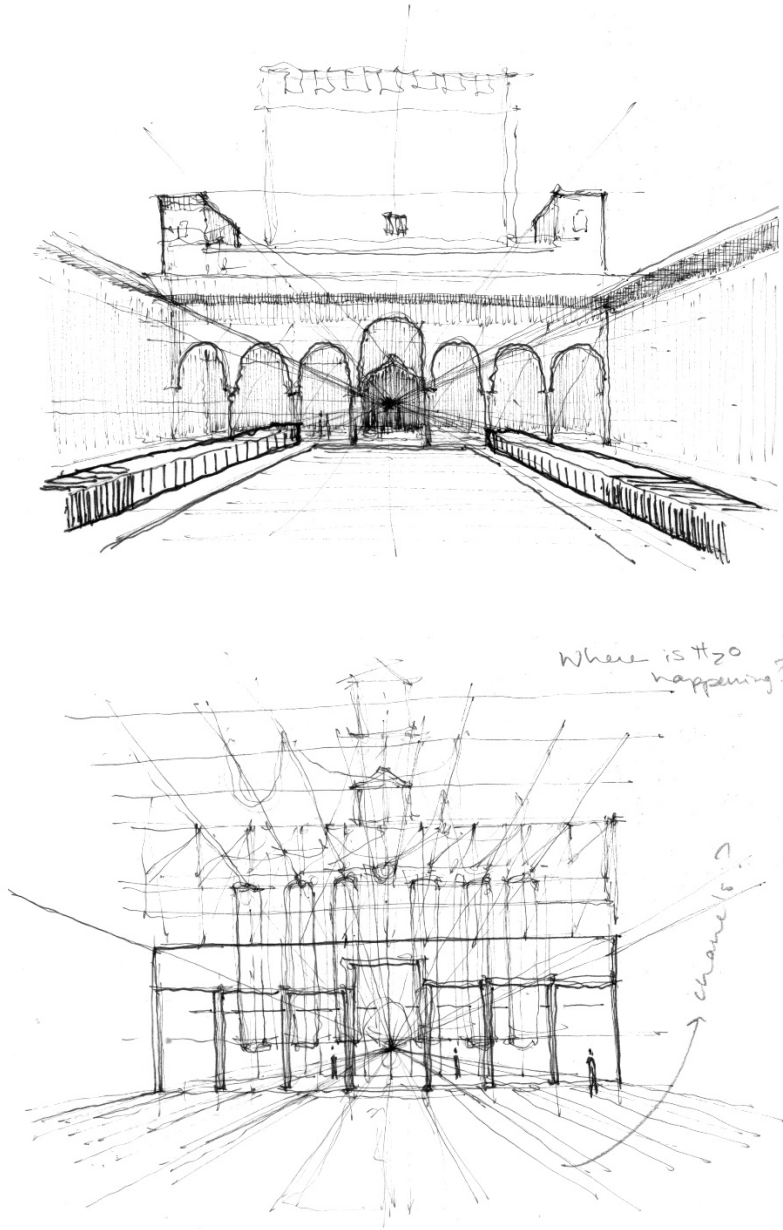
Spaces like the Drying House, where fabrics would be hung to dry, and the entry sequence through a series of large dyeing vials were developed early on in sketches and models. These spaces formed the end points of a central axis with circulation around a central courtyard. [Figure 45] The north/south axis of Laflin Street running down the middle of the site influenced the symmetry and regular geometry of the architecture in plan. Precedents helped to inspire further design moves in ground-level perspectives. [Figure 46]



**Figure 44** Clay study models of the site (top) and the building (bottom), exploring topographic landscape moves related to the movement of water. Photos by author.



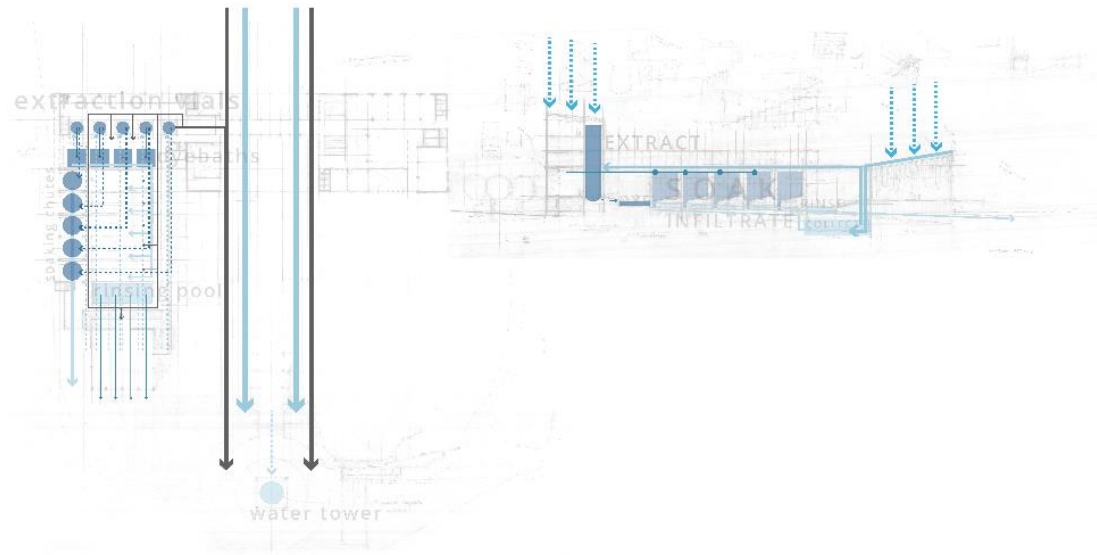




**Figure 46** The implied central axis of the Court of the Myrtles of the Alhambra in Granada, Spain (above) inspired the design of the central courtyard (below). Drawings by author.

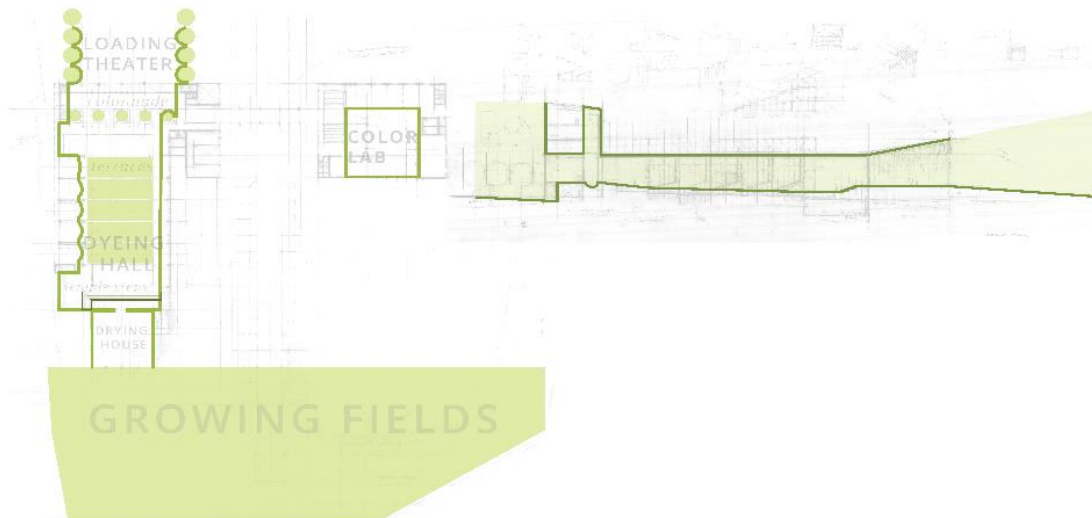
This process of sketching and model making resulted in the building being designed in continuously evolving parts rather than through a series of overall schemes. The architecture formed around the design of a system of varying flows. Understanding historical industrial precedents, like Henry Ford's Model T assembly line, affirmed that the dyeing process had to work in an efficient loop. Yet the





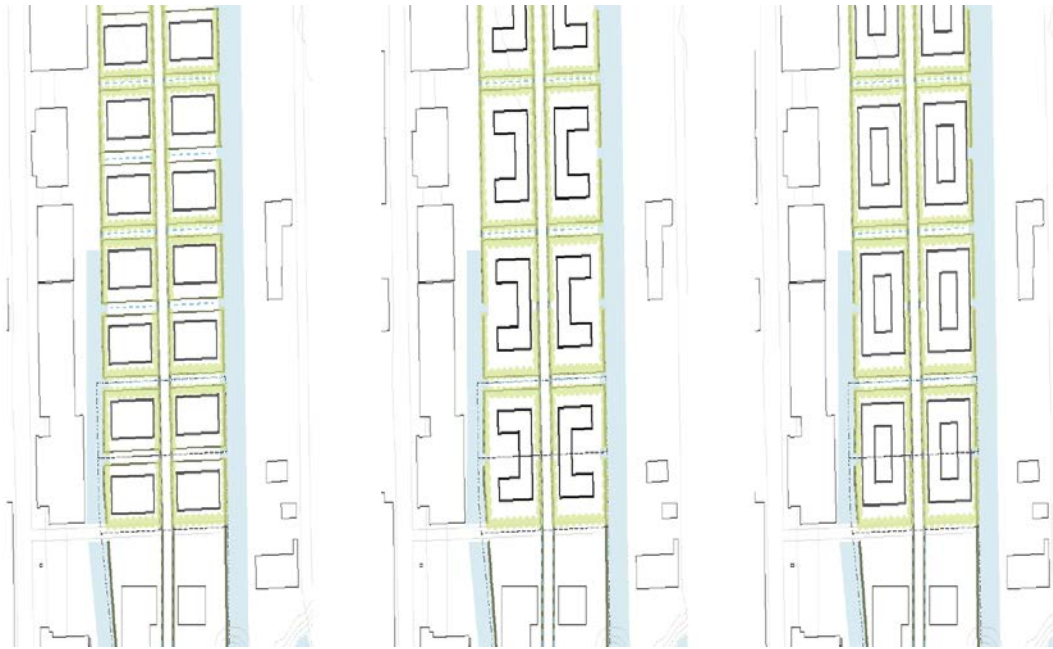
**Figure 48** Design Strategy 2. Drawing by author.

3. moments of intense processing, both at the industrial scale and the hand-crafted scale [Error! Reference source not found.]; and



**Figure 49** Design Strategy 3. Drawing by author.

4. the design is a catalyst for future economic development [Error! Reference source not found.].



**Figure 50** Design Strategy 4. Drawing by author.

At the urban scale, the design proposes three main ideas. [Error! Reference source not found.] The first idea creates a system of four eco-industrial parks are stabled along a main cross axis of South Ashland Avenue and the South Branch to work together in a closed loop system. Such industries would include a sustainable furniture manufacturer, a vegetable leather tannery, and a plant-based Dyeworks to mimic the industries which historically aligned the river. These industries are designed to conceptually work together in a closed loop system so that the outputs of industry can become the inputs of another. The second idea connects these eco-industrial parks along a continuous Riverwalk to increase pedestrian access throughout the corridor and to the river. The third idea proposes sedimentation forebays at the CSO outlets along the river to filter out heavy sediments during heavy rainfalls. The design zooms into the eco-industrial park at the large turning basin in the river for its unique waterfront conditions to provide the most opportunity for a water based industry.

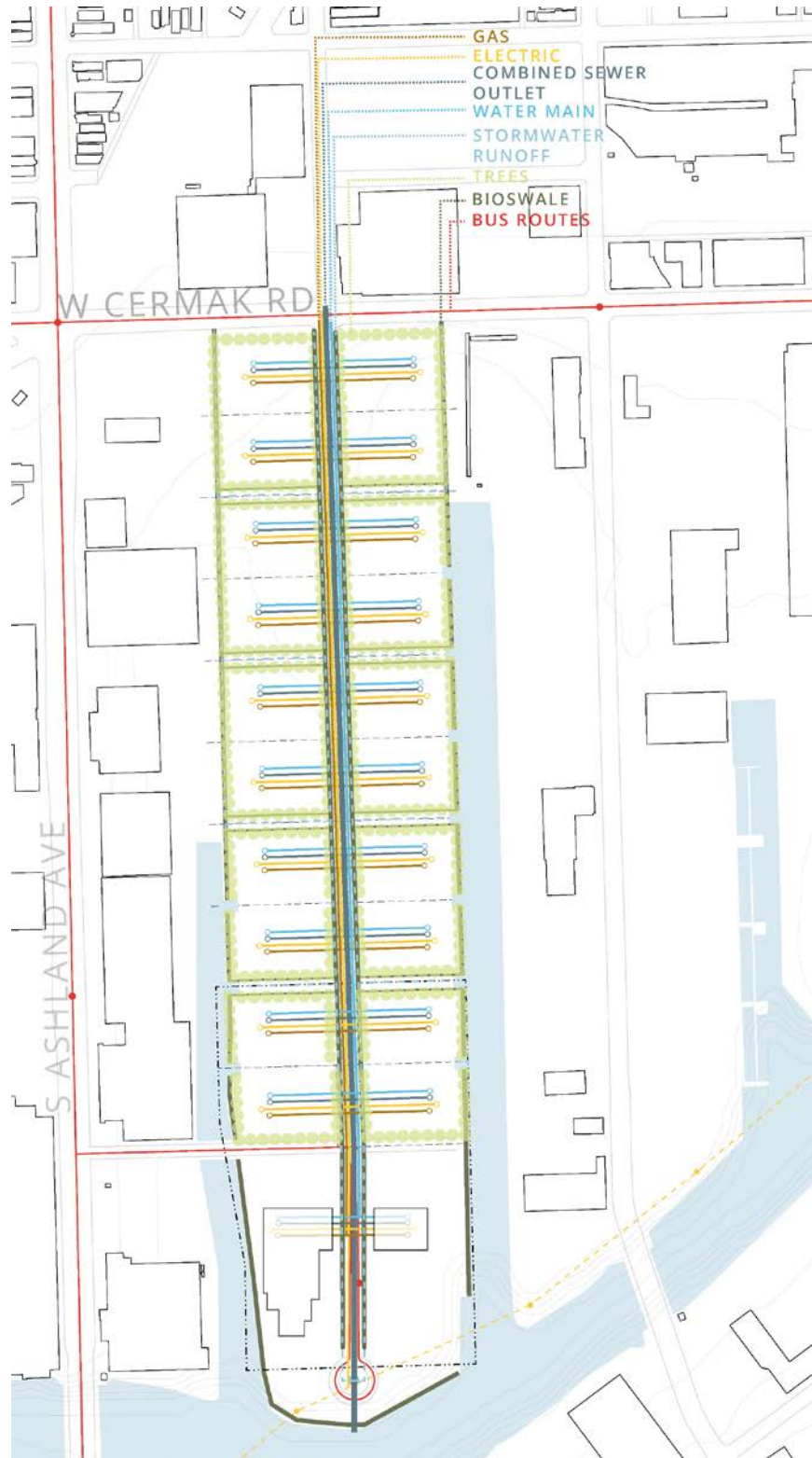




**Figure 51** The final urban design scheme sets up four key eco-industrial parks along a continuous riverwalk with sedimentation forebays for the multiple CSO outlets along the river. South Ashland Avenue and West Cermak Road are highlighted in red while the Pilsen Industrial Corridor is outlined in black. Drawing by author.

The site design proposes a series of infrastructure improvements to increase land value, influence future development, and guide people from Cermak Road down to the site. [Error! Reference source not found.] These infrastructure improvements introduce gas, electric, and water lines along a defined grid. In combination with new green infrastructure, including street trees and bioswales, a series of parcels are implied that can be developed according to a prescribed design system. Other developers can purchase a single parcel or groupings of parcels to build out following a variety of configurations. This future

development would happen once the Pilsen Industrial Corridor undergoes similar zoning revisions as on the north side.

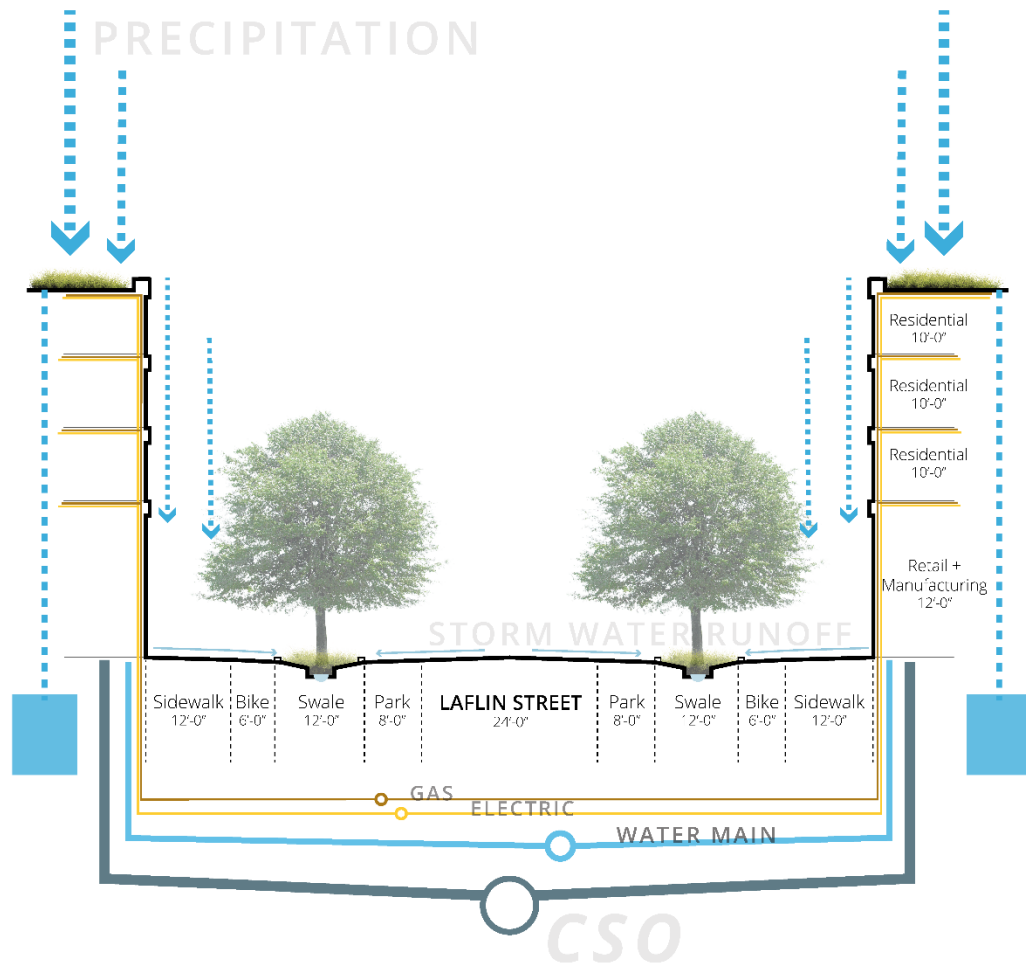


**Figure 52** Proposed site design for South Laflin Street, implementing a structured grid of infrastructure improvements. Drawing by author.



**Figure 53** Potential building configurations for the various parcels and what they would look like on the site.  
Drawing by author.

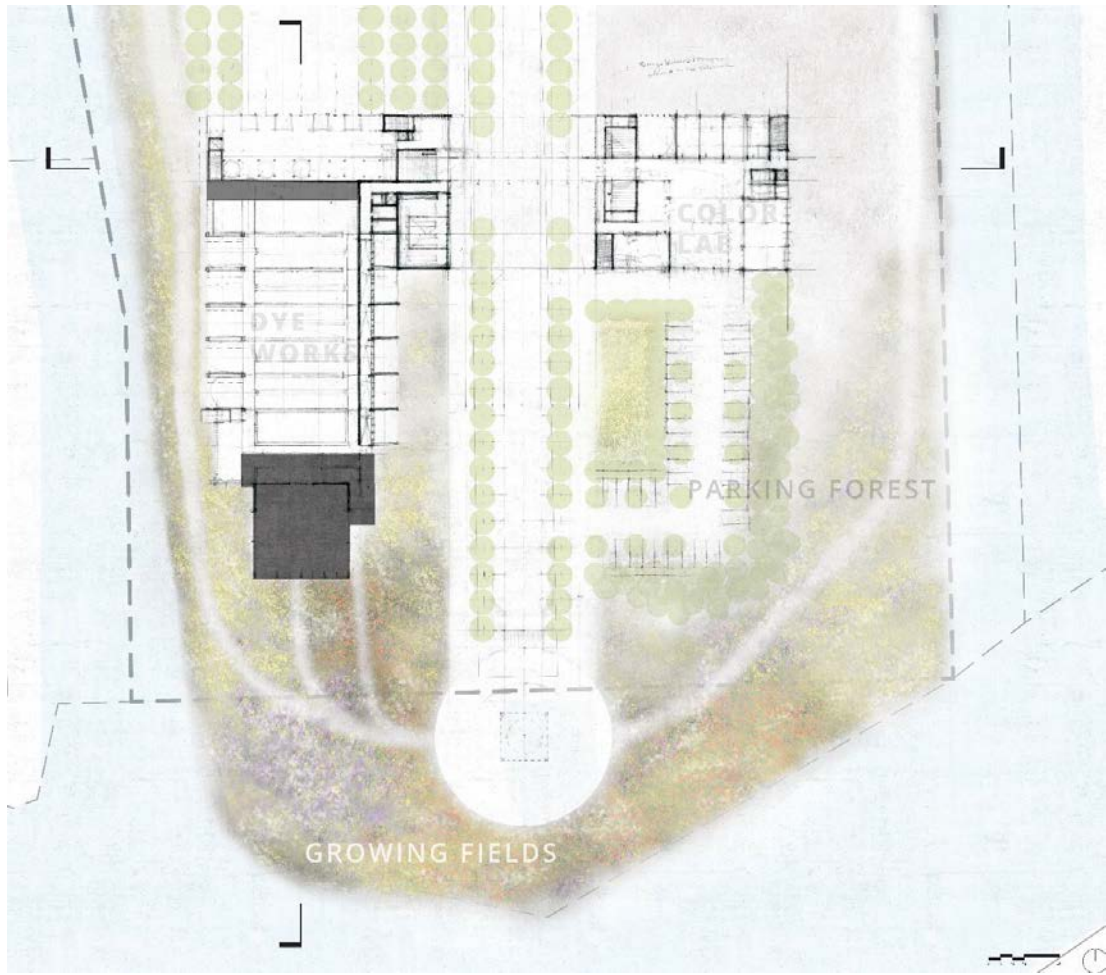
A redesigned South Laflin Street integrates components of a complete street while considering how future development will be a part of the water collection and filtration system. [Error! Reference source not found.]



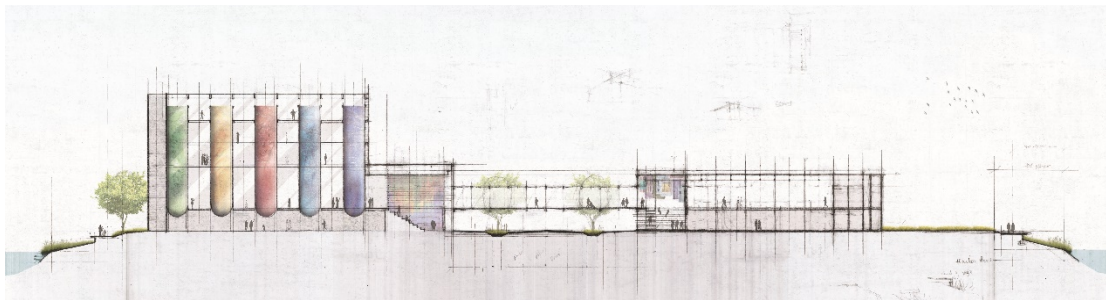
**Figure 54** Proposed street section of South Laflin Street which guides people to the site via water collection and filtration in bioswales. Drawing by author.

The architectural design is comprised of two main buildings: the Dyeworks and the Color Lab. [Error! Reference source not found.Error! Reference source not found.] The Dyeworks exemplifies the process of textile dyeing on an industrial scale while the Color Lab makes the process accessible to residents, visitors, and small businesses or artisans. A change in scale happens between the two buildings to relate to the different functions and users, most notably in section. **[Figure 56]** The two buildings are connected via an enclosed catwalk on the second floor, allowing people, materials, and ideas to flow between the two buildings.





**Figure 55** Ground floor plan of Dyeworks Park. Drawing by author.



**Figure 56** Transverse section through the enclosed catwalk connecting the Dyeworks and the Color Lab. Drawing by author.

It was essential to include all parts of the textile dyeing process as part of the final architectural design. The first step is harvesting, exemplified by the Dyeworks' main public space: The Growing Fields. These wildflower meadows provide public

access to the waterfront where parkgoers can walk amongst the plants which are harvested for use in the Dyeworks. [Figure 57Error! Reference source not found.]

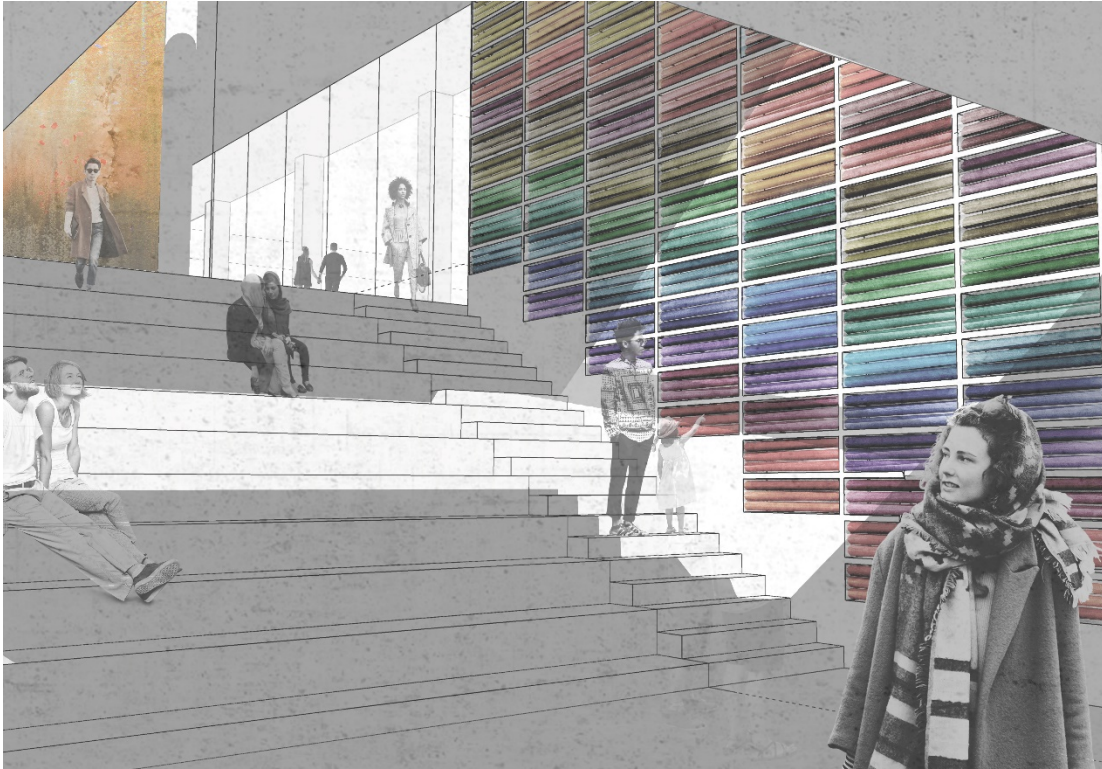


**Figure 57** The Growing Fields with the Drying House in the background. Image by author.

Visitors to the Dyeworks can enter the site via The Growing Fields to the South, or through the main entrance along the redesigned Laflin Street to the north. At the entrance to the Dyeworks, the Bolt Library, visitors can view the public collection of the Dyeworks' recent projects in floor-to-ceiling shelves of colorful fabric bolts. A grand staircase on axis with the facility's large extraction vials leads



visitors up into the main floor of the Dyeworks. As with The Growing Fields, one can find themselves simultaneously at both the beginning and end of the dyeing process. **[Figure 58]**



**Figure 58** The Bolt Library, leading visitors up into the Dyeworks via a grand staircase bordered by shelves of colorful fabric bolts. Drawing by author.

A colonnade of 60-foot-tall extraction vials draw visitors further in to the Dyeworks. Light from the adjacent courtyard reflects through these vials of colorful water with floating plant material inside. **[Figure 59]** In this pinch space, viewers experience the vials to their left and the loading theater simultaneously to their left. A large glass façade allows people to view trucks coming and going with goods to and from the Dyeworks. **[Figure 60]**

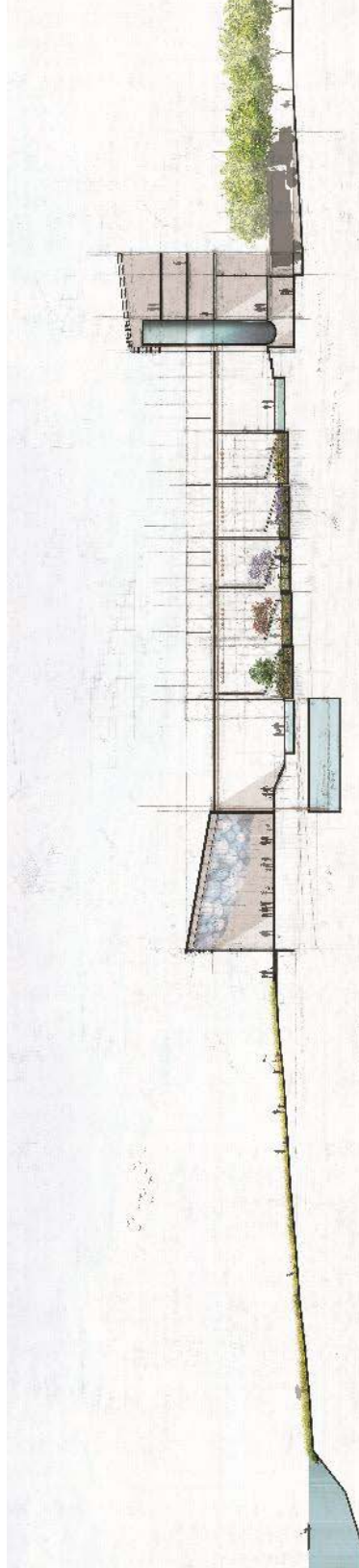




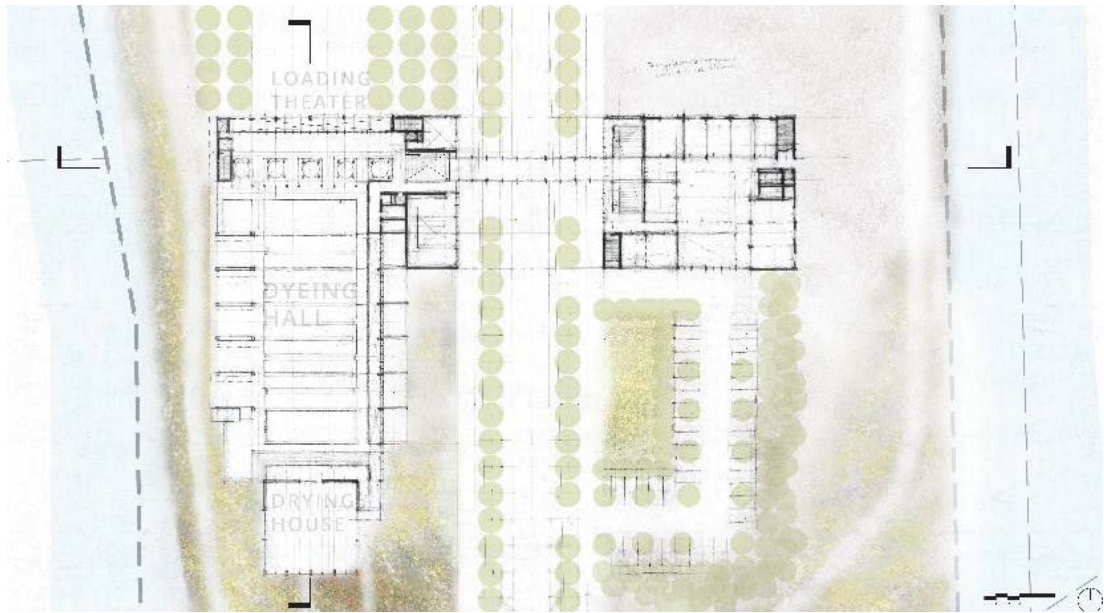
**Figure 59** The colorful extraction vials of the Dyeworks. Image by author.

Upon walking through the extraction vials, visitors find themselves in the main Dyeing Hall. The movement of people, plants, textiles, and water flow in choreographed paths around this central space. The enclosed courtyard steps down into a series of pools and terraces. [Error! Reference source not found.] Recessed dyebaths at the base of the extraction vials drain down into stepped growing terraces where growing and harvesting can happen 24/7 within the Dyeworks. Translucent

pipes above connect the extraction vials to the soaking chutes on the west side of the courtyard, guiding visitors through the space through overhead paths of colored water. The large metal chutes on the have translucent sides so people walking through the courtyard can see floating fabric soaking within them as they walk past. The terraces culminate in a large rinsing pool and steps leading up to the entrance to the final space, the Drying House. Looking back from the Drying Hall's amphitheater steps, one can admire all steps of the textile dyeing process working seamlessly in a closed loop system. **[Figure 62]**



**Figure 60** Longitudinal section through the Dyeworks. Drawing by author.



**Figure 61** The main floor plan of the Dyeworks. Drawing by author.



**Figure 62** The main Dyeing Hall from the steps of the Drying House. Image by author.



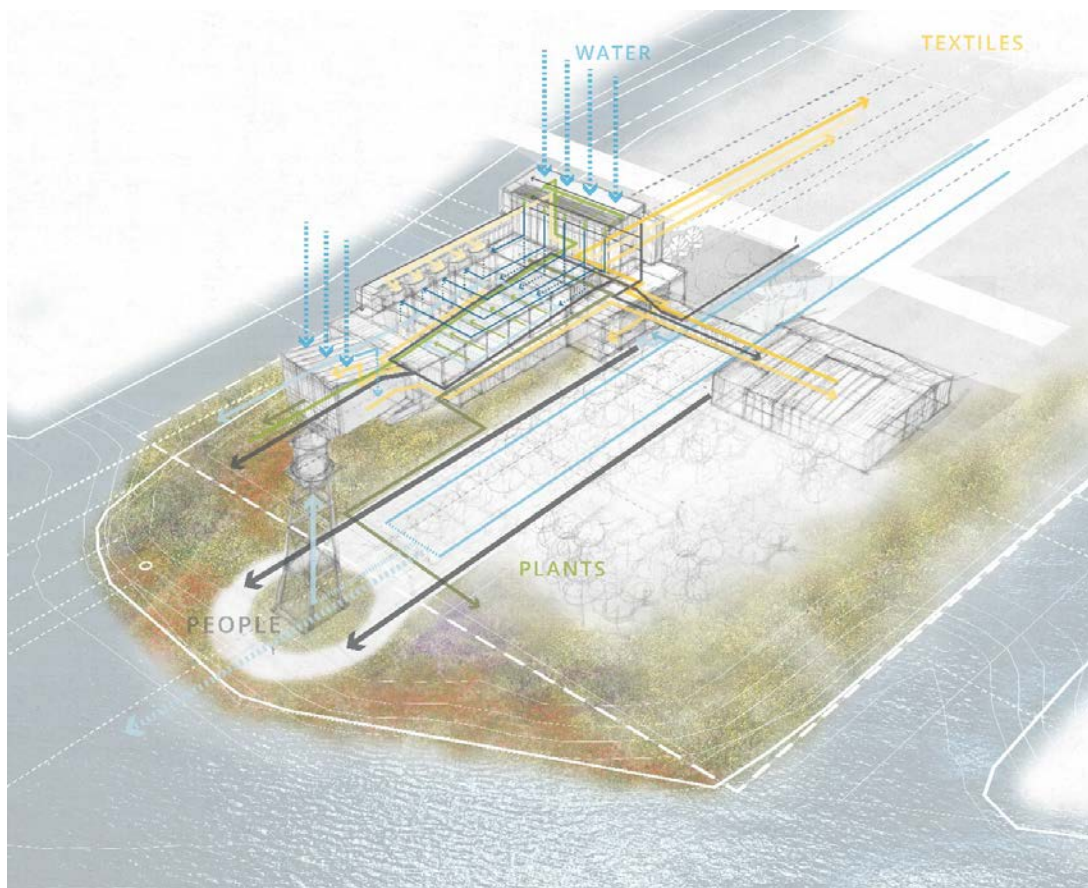


**Figure 63** The Drying House looking out towards the Growing Fields and the Chicago River beyond. Image by author.

The final space of the Dyeworks is the Drying House, the temple of the Dyeworks. The roof slopes up from the entrance, opening towards unobstructed views of the Growing Fields and the Chicago River beyond. **[Figure 63]** Yards of fabric are draped from the rafters to dry, emphasizing the open views ahead. Water can drip down from the fabrics through grates in the floor to be collected for filtration and future use. Additionally, the angled shed roof of the Drying House captures and filters rainwater to an underground cistern below. Hanging fabric above frees the ground below, making the space perfect for private events, like weddings, exhibitions, fashion shows, etc. to generate additional income for the facility.

Upon exiting the Drying House, one finds themselves back in the Growing Fields. Once again, these spaces denote the beginning yet the end of the dyeing process. The architectural design emphasizes the choreography of flows of people, plants, textiles, and water functioning like a loop around the site. **[Figure 64]**

Conceptually, a visitor may never have to enter the Dyeworks to understand the movement of the various flows as these paths are visible from the building's exterior. These visible, yet invisible systems are the foundation of what makes the Dyeworks a new kind of public space that is integrated into its environment.



**Figure 64** Aerial of Dyeworks park denoting the flows of people, plants, textiles, and water around the site. Drawing by author.

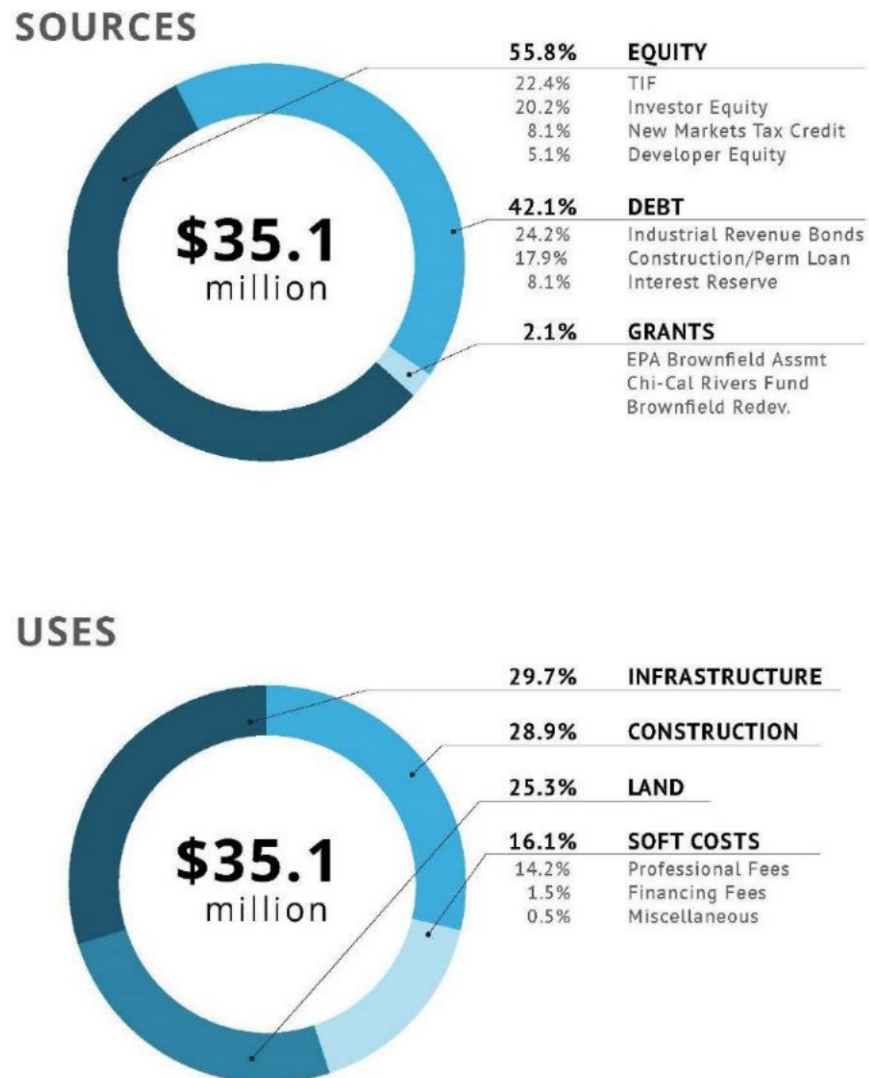
## ***Financing***

The dual nature of the degree required a financial analysis of the architectural design to ensure the Dyeworks is both an innovative yet profitable investment opportunity. The total build-out of 88,300 square feet will cost roughly \$31.5 million to build. The project's capital stack consists of 42.1 percent in debt, made up of a construction to permanent loan and industrial revenue bonds; 55.8 percent in equity, divided amongst developer and investor equity, Tax Increment Financing (TIF), and New Markets Tax Credits (NMTC); and 2.1 percent in grant funding from various environmental agencies for remediation assessments and cleanup.

Income from the Dyeworks and Color Lab will generate an average of \$2.8 million in effective gross income per year. Year one net operating income (NOI) is expected to be roughly \$2.4 million with an after tax cash flow of \$1.3 million. Much of this revenue comes from the development's event spaces, which cater to weddings, exhibitions, corporate outings, etc. At an average of \$16,000 per event, comparable to other unique event spaces in the area, these spaces are expected to generate around \$1.5 million per year without accounting for inflation. The costs related to personnel to coordinate and advertise these spaces is accounted for in the operating expenses. Since the facilities are leased with a triple net lease structure, operating expenses for repairs and maintenance, taxes, insurance, utilities, and management fees are recovered from the tenants.

Over a ten-year hold period, Dyeworks Park generates over \$15.7 million in annual after-tax cash flow. At a 7.5 percent exit cap rate, the property is expected to have a \$30.3 million sale valuation based on a ten-year hold period with a sale of the

property in year 11. With a ten percent discount rate, the development has an after-tax internal rate of return (IRR) of 24 percent and an after-tax net present value (NPV) of \$12.2 million. At these rates and reversion period, the NPV is greater than the cost to acquire the property, which is estimated to be roughly \$8.9 million.



**Figure 65** Sources and uses of financing for Dyeworks Park.

As the first development of its kind in the Pilsen neighborhood, the financial returns reflect how Dyeworks Park is a high risk, high reward development proposal. The goal of the project is to build a better community while building returns on



investment. The subject property and the rest of the Pilsen Industrial Corridor have unrealized development potential beyond building more of the same warehouse and distribution stock. Chicago is a growing innovation city that is poised to become a leader in sustainable manufacturing for the nation, given its historic industrial context. Dyeworks Park could be at the forefront of this trend, demonstrating how development can fulfill the quadruple bottom line of environmental sensitivity, social responsibility, financial viability, and sustainable design.

## Chapter 5: Conclusions

### ***Public Presentation***



**Figure 66** The final thesis defense boards. Photo by author.

The public presentation of the thesis occurred on December 13, 2017. The critique was positive and complementary of the concept, the program, and the

representation. One reviewer commented on the educational nature of the dyeworks program as it is uncommon.

The main point of critique was a desire for the architecture to reach a further point of refinement. One reviewer wished to have seen a wall section, or other building details to discuss how these spaces come together as architecture. It is these details which differentiate industrial architecture from other typologies.

Another point of critique was further refinement of the systems design as it relates to the landscape. The main aerial diagram showed many arrows coming out of the building, but few going back in. There were also many questions about the organization of the flowers in The Growing Fields. Considering the industrial nature of the site, reviewers thought there would be more organization to where plants were grown as opposed to the wild, natural representation in the drawings. All of these ideas were considered throughout the design process but were not correctly represented or fully resolved to quell such questions.

### ***Closing Remarks***

The architectural thesis process reflects how design is an iterative process. The project did not end how it began, but that does not mean it was a failure. Though the outcome of the design proposition could not have been imagined back at the beginning of the process, the evolution of the thesis is amazing to reflect on.

There was one notable pivot point back in late May of 2017 after the first design meeting. Though the site was chosen, the program was unclear; the idea of pursuing a brewery felt comfortable but not necessarily challenging. It was clear that the subject of the thesis had the potential to contribute a new discussion to the

professions of architecture and real estate development: how can industry become an integral public space within the city? I am thankful I listened to my committee chair and challenged myself to explore the program of the Dyeworks.

Considering the challenges, there were as many successes as there were missteps, many of which were discussed at the public presentation. The beauty, or horror, of thesis is that it doesn't end with this project. As many reviewers at the defense remarked, the yearlong thesis process is just the beginning of a lifelong thesis journey. While the Dyeworks may be complete for now, it will continue to evolve, and its ideas will take on a new life in future projects throughout my career. I hope the ideas within this document germinate into the profession to inform a continuing discussion on how our buildings and landscapes can shape the public realm.

## Glossary

*Note: There are a few terms used throughout the document that are used as common jargon in Chicago. Here are a few:*

Bubbly Creek – the South Fork of the South Branch of the Chicago River

the Loop – Chicago's central business district

the Lakefront – the shores of Lake Michigan within Chicago

South Branch/North Branch – short for the South/North Branch of the Chicago River

## Bibliography

- Branom, Fred K. "Some Geographic Factors in the Development of Chicago." *Journal of Geography* 20: 176, <https://search.proquest.com/docview/1290490376?accountid=14696>.
- Changnon, Stanley A., and Joyce M. Changnon. "History of the Chicago Diversion and Future Implications." *Journal of Great Lakes Research* 22, no. 1 (1996): 110-118. Accessed April 23, 2017. [https://doi.org/10.1016/S0380-1330\(96\)70940-1](https://doi.org/10.1016/S0380-1330(96)70940-1).
- City of Chicago Office of the Mayor. *Mayor Rahm Emanuel Announces Plans to Make the Chicago River the City's Next Recreational Frontier*. September 9, 2011. Accessed May 2, 2017. [https://www.cityofchicago.org/city/en/depts/mayor/press\\_room/press\\_releases/2011/september\\_2011/mayor\\_rahm\\_emanuelannouncesplanstomakethechicagoriverthecitysnex.html](https://www.cityofchicago.org/city/en/depts/mayor/press_room/press_releases/2011/september_2011/mayor_rahm_emanuelannouncesplanstomakethechicagoriverthecitysnex.html).
- Corner, James, and Alison Bick Hirsch. *The Landscape Imagination: Collected Essays of James Corner 1990-2010*. New York, NY: Princeton Architectural Press, 2014.
- Corner, James. "Terra Fluxus." In *The Landscape Urbanism Reader*, edited by Charles Waldheim, 21-33. New York, NY: Princeton Architectural Press, 2006.
- Cronon, William. *Nature's Metropolis: Chicago and the Great West*. New York, NY: W.W. Norton & Company, Inc., 1992.
- D'Eramo, Marco, and Graeme Thomson. *The Pig and the Skyscraper: Chicago, a History of Our Future*. London: VERSO, 2002.
- Department of Planning and Development. "North Branch Framework." Chicago, IL: City of Chicago, 2017.
- Flinchum, Russell. "Industry Grows Up." *The Architect's Newspaper*. February 4, 2011. Accessed October 23, 2017. <https://archpaper.com/2011/02/industry-grows-up/>.
- Gang, Jeanne. *Reverse Effect: Renewing Chicago's Waterways*. Chicago, IL: Studio Gang Architects, 2011.
- Graham, Meg. "Former Chicago Sun-Times printing plant gets high-tech facelift." *Chicago Tribune*. March 21, 2016. Accessed May 6, 2017.

<http://www.chicagotribune.com/bluesky/originals/ct-qts-data-center-sun-times-plant-bsi-20160321-story.html>.

Great Chicago Rivers. "Vision." Great Rivers Chicago. Accessed May 2, 2017.  
<http://greatriverschicago.com/vision.html>.

Hawthorne, Michael. "Chicago River still teems with bacteria flushed from sewers after storms." *Chicago Tribune*. June 23, 2017. Accessed September 2, 2017.  
<http://www.chicagotribune.com/news/local/breaking/ct-chicago-river-still-dirty-met-20170623-story.html>

Heitman, Karl. "The Natural Capitalism Concept Comes to Industrial." *NAIOP Development Magazine*. Fall 2016. Accessed September 2, 2017.  
<http://www.naiop.org/en/Magazine/2016/Fall-2016/Development-Ownership/The-Natural-Capitalism-Concept-Comes-to-Industrial.aspx>

Henderson, Henry L., Thomas Cmar, Karen Hobbs, and Elizabeth Corr. "Cargo, Crap, and Carp." In *Reverse Effect: Renewing Chicago's Waterways*, edited by Alissa Anderson, 18-29. Chicago, IL: Studio Gang Architects, 2011.

Markshausen, Zeke. "Made in Chicago: Method Soap." IDEO: Blog. Last modified August 29 2016. Accessed September 2 2017.  
<https://www.ideo.com/blog/made-in-chicago-method-soap>.

McHarg, Ian L. *Design with Nature*. Philadelphia, PA: The Falcon Press, 1969.

"The Metropolis of the Prairies." *Harper's New Monthly Magazine* 61. 1880: 711-731.

Meyer, Elizabeth. "Seized by Sublime Sentiments." In *Richard Haag: Bloedel Reserve and Gas Works Park*, by William S. Saunders et al. New York: Princeton Architectural Press, 1998.

Olmsted, Frederick Law. *A Journey Through Texas: or A Saddle-Trip on the Southwestern Frontier*. New York, 1857.

Quirk, Vanessa. "BIG's Waste-to-Energy Plant Breaks Ground, Breaks Schemas." ArchDaily. Last modified March 5 2013. Accessed May 6 2017.  
<http://www.archdaily.com/339893/bigs-waste-to-energy-plant-breaks-ground-breaks-schemas>.

Roche, R. Samuel, and Aric Lasher. *Plans of Chicago*. Chicago, IL: Architects Research Foundation, 2009.

Rosenfield, Karissa. "Beloit College Power Plant / Studio Gang," ArchDaily. Last modified November 5 2014. Accessed May 2 2017.

<http://www.archdaily.com/564488/studio-gang-reimagines-beloit-powerhouse-as-campus-hub>.

Schulman, Ben. "Reverse Effect: Jeanne Gang on the Chicago River." *Better! Cities & Towns* (January-February 2012). Accessed January 31, 2017.  
<http://bettercities.net/article/reverse-effect-jeanne-gang-chicago-river-15877>.

Showalter, William Joseph. "Chicago Today and Tomorrow: A City Whose Industries Have Changed the Food Status of the World and Transformed the Economic Situation of a Billion People." *National Geographic Magazine* 35, no. 1 (January 1919): 1.

Sinclair, Upton. *The Jungle*. 1920.

Slavin, Terry. "An incinerator with a view: Copenhagen waste plant gets ski slope and a picnic area." *The Guardian*. Last modified October 26 2016. Accessed May 6 2017. <https://www.theguardian.com/cities/2016/oct/26/incinerator-copenhagen-waste-plant-bjarke-ingels-ski-slope>.

William McDonough + Partners. "Method Manufacturing Facility: The South Side Soapbox." Accessed September 9 2017.  
<http://www.mcdonoughpartners.com/projects/method-home/>

Wong, Grace. "Boathouses offer more river access, but is anyone using them?" *Chicago Tribune*. September 21, 2016. Accessed May 11, 2017.  
<http://www.chicagotribune.com/news/ct-chicago-river-boathouses-met-20160921-story.html>.