From Brownfields to Greenspace:

The Calumet Open Space Reserve and Post-Industrial

Open Space Redevelopment in Southeast Chicago

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Abstract

Many U.S. cities face the question of how to redevelop vacant post-industrial land, or brownfields. The city of Chicago responded to this issue with The Calumet Open Space Reserve (COSR), which was established in 2005 and set aside nearly 4,000 acres of land in Southeast Chicago for future open space redevelopment. The COSR marks a shift in Chicago's brownfields policy from a focus on commercial and industrial revitalization to ecological preservation and open space provision. Drawing on existing plans, studies, and other archival documents from the Chicago Department of Planning and Development, I argue that the COSR was successful in transforming once vacant contaminated land into publicly accessible open space, in part due to the ecological and industrial context of the Calumet Region. Using a framework of socioenvironmental succession and accumulation by degradation, I argue that the COSR serves to decouple environmental degradation from industrial expansion. The implementation of this plan marked a shift in open space planning and management that allowed for the coexistence of industry and open space and proposed a new model for greenspace in Chicago and urban areas more broadly.

Introduction

> The forest of smokestacks, the great plumes of white and unwhite steam, were unlike any place that I, middle-class child of a nurse and a professor, had ever lived. The place remains in my memory as a gray landscape with little vegetation, a clouded sky hovering over dark buildings, and an atmosphere that suddenly made breathing a conscious act.
>
> William Cronon, *Nature's Metropolis*[1]

William Cronon opens his 1991 book *Nature's Metropolis* with a memory of driving through Chicago and passing over the Southeast Side via the Chicago Skyway. Following the same route today, remnants of Southeast Chicago's industrial past persist in the grain elevators and smokestacks, shipping canals and railroads, and distant mounds marking landfills. Yet alongside industry, this region is home to large nature preserves, ranging anywhere from remnant dune and swale ecosystems, restored wetlands, to intensively modified post-industrial land.

Following deindustrialization and the decline of the steel industry, large parcels of land were left vacant in Southeast Chicago. As a response to this, the city of Chicago's Department of Planning and Development (DPD) and Department of Environment (DOE) developed a robust planning initiative that targeted industry and open space in the area. The result was the Calumet Open Space Reserve (COSR) plan, which was published in 2005 and grew out of the previous Calumet Land Use Plan. The COSR proposal targeted 3,900 acres of open space—including wetlands, prairie, and recreational areas—for acquisition, restoration, and development.[2] Many of the COSR sites are either former industrial sites themselves or were likely contaminated at the

[1] Cronon, "Prologue: Cloud Over Chicago."
[2] "Calumet Open Space Reserve Plan."

time of the plan's publication by adjacent industrial land uses and illegal dumping.[3] As such, the plan also outlines solutions to issues surrounding environmental contamination.

The Calumet Open Space Reserve is a unique approach to brownfield redevelopment and departs from previous work in Chicago and other U.S. cities, which tended to be oriented more towards commercial or industrial redevelopment. The presence of the Reserve is a result of the large amount of vacant post-industrial land in the Calumet, which is often host to ecologically valuable habitat fragments. Despite intensive industrial land uses and extensive modification of the landscape itself, diverse ecosystems and high levels of biodiversity continued to persist even following the partial deindustrialization of the Calumet.

It was because of the intersecting ecological and industrial contexts that the COSR Plan was successful in its goals of remediating vacant brownfields sites, restoring ecosystems and ecological networks, and preserving open space in Southeast Chicago. I argue that the COSR represents an alternative pathway for development that prioritizes ecological preservation and minimizes environmental contamination, rather than a continuation along a path of industrial intensification. I analyze the development and implementation of the Reserve through the frameworks of 'accumulation by degradation' and 'socioenvironmental succession,' which I will expand on in the following paragraphs. With my research I examine the connections between environmental remediation, open space redevelopment, and the process of industrial expansion. The Calumet Open Space Reserve exists at the intersection of these three issues and serves as a valuable model to examine the dynamics of open space preservation and restoration on post-industrial vacant land.

[3] "Calumet Open Space Reserve Plan," 5.

Background and Context

The Calumet Open Space Reserve is located within the broader Calumet Region, which encompasses the land around the southern end of Lake Michigan, stretching from Southeast Chicago through Northwest Indiana (Figure 1). The Reserve however covers only the northwesternmost portion of the region, located primarily within the municipal limits of Chicago and extending slightly into the surrounding South Suburbs. The Calumet Region is ecologically unique as a result of large-scale geologic factors as well as short term successional change and anthropogenic transformations of the landscape. Like the rest of the Great Lakes, this region was subject to glaciation during the last Ice Age. The result is a landscape characterized by flat topography interspersed with dunes, ridges, and swales, and hydrologically by a high water table and shallow drainage, with numerous "wetlands, shallow lakes, and sluggish rivers."[4] Three distinct ecological communities converge in the region—prairie, boreal forest, and temperate deciduous forest—each with its own respective assemblages of plant and animal species. These communities are also highly dynamic and are subject to short term successional changes resulting from wind, erosion, and fire.[5] Due to the dynamic nature of these communities coupled with the convergence of biomes, the Calumet Region was host to a wide array of biodiversity both pre- and post-industrialization.

[4] Labus, Whitman, and Nevers, "Picking Up the Pieces," 181.
[5] Labus, Whitman, and Nevers, "Picking Up the Pieces."

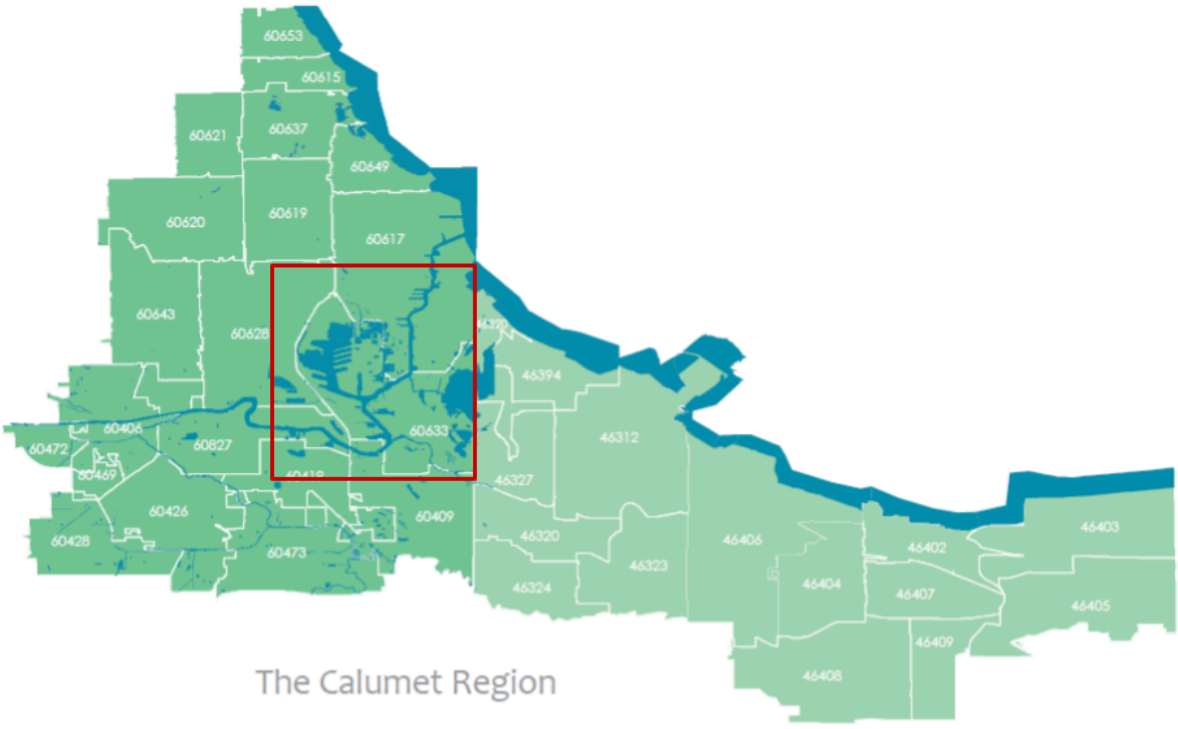

Figure 1: The Calumet Region (Approximate COSR boundaries marked in red by author)[6]

As industrialization progressed in the region, the pre-industrial landscape became subject to intensive modification. One of the first corporations to move into the Calumet was Standard Oil, which opened a refinery in Whiting, Indiana in 1890. Standard Oil was soon followed by numerous railroads, and steel mills and manufacturers, and the landscape itself was modified in various ways to make way for these industries.[7] Dunes were flattened and rivers and lakes were dredged to provide material to fill wetlands or Lake Michigan, and to make shallow waters navigable for shipping. Once industries had moved into the region, solid industrial waste such as slag, a byproduct of steel production, was used as another major source of landfill material and would continue to be a common occurrence in the area's soils into the 21st century.[8]

[6] "About | Economic Development Administration University Center | University of Illinois Chicago."
[7] Pickren, "The Frontiers of North America's Fossil Fuel Boom," 44.
[8] Pickren, "The Frontiers of North America's Fossil Fuel Boom."

Deindustrialization in the Calumet resulted in large tracts of extensively modified land sitting abandoned, creating the post-industrial landscape that characterized the region. This loss of industry, however, was incomplete and active industry continued to exist alongside now-abandoned sites. Vacant sites were left polluted and waiting to be redeveloped for further use, while remaining locked in a path dependence toward continued industrial use due to threats of contamination both on- and offsite. Through ecological succession, some of these abandoned post-industrial sites became 'rewilded' over time. Additionally, many areas had remained relatively unaltered through the height of industrialization, leaving a remnant wetlands and forest habitat, the result of which was a patchwork of intact ecosystems, highly altered post-industrial land, and active industrial land uses. At the time of the COSR Plan's development and publication, the region remained notable for its wide diversity of bird, mammal, and fish species. These included up to 200 migratory and overwintering bird species—including black-crowned night herons, yellow-headed blackbirds, stilt sandpipers, and dowitchers—and rare mammals such as Franklin's ground squirrel and red bats.[9] These shifts from a pre-settlement dunescape, to an industrial megaregion, to a patchy intermixing of active industry and remnant ecosystems left the Calumet with a unique ecological assemblage, which is often cited as a motivation behind preserving and restoring the region's ecology.

The loss of industries in the region meant that large tracts of land became available, but these were often impacted by lasting contamination from industrial use which posed a challenge for redevelopment. The result is that this land sat vacant and underutilized for an extended period. Before the COSR, there was the potential for vacant land to become reindustrialized, but rather than continue a pattern of industrial expansion through environmental degradation, the

[9] "Calumet Open Space Reserve Plan."

COSR takes advantage of vacant land in the region and presents it as an opportunity for open space development on post-industrial sites. Over time, the COSR Plan has guided the development of open space in Southeast Chicago. Large parcels of land have been acquired by the city of Chicago, transferring them from private ownership to municipal, county, or state management. These parcels have since been developed for a variety of open space uses, such as recreation or biodiversity conservation. Industry continues to persist, and as a result, today the Calumet region is home to some of Chicago's largest industrial corridors and parks, which often exist side by side.

Conceptual Framework

I analyze the development of the Calumet Open Space Reserve through the concepts of 'socioenvironmental succession' and 'accumulation by degradation.' Using these concepts, I connect the COSR to broader trends in urban growth, industrialization, and open space preservation. These concepts draw connections between industrialization and the dynamics that drive spatial expansion of industry and can be applied to the Calumet to understand how and why industrial land remains vacant and can eventually become public open space.

James Elliott and Scott Frickel develop the concept of socioenvironmental succession to better describe the process by which cities grow spatially and how industrial and residential development intersect with the presence of brownfields and other vacant land. Drawing on urban sociology and human ecology, they propose the framework in order to describe "how and why hazardous industrial sites accumulate to contaminate urban lands."[10] Under this framework, industrial expansion leads to spatial expansion of industrial land and increased production and deposition of waste, often in local environments. Elliott and Frickel describe socioenvironmental

[10] Elliott and Frickel, "Urbanization as Socioenvironmental Succession," 1737.

succession as the interactions between social and environmental factors in an urban environment resulting in reciprocal and recursive land use patterns.[11] As cities develop and expand, their need for land grows as their spatial extent increases. Successive waves of development result in industry moving outward from an urban core, leaving contaminated land behind which is then redeveloped for residential or commercial use all while converting more peri-urban land to industrial use. The Calumet is uniquely situated outside of Chicago with respect to the historic core of the Loop and the mouth of the Chicago River while also being readily accessible from Lake Michigan via the Calumet River. Together these contributed to its growth as an industrial region by allowing access to water transportation routes while having a supply of land necessary for industries to grow their operations. However, once the region began to deindustrialize, it saw depopulation and a rise of vacant land resulting from a lack of development pressure. This would set the stage for municipal intervention in the form of the COSR Plan, which would address the issue of vacant post-industrial land.

In addition to socioenvironmental succession, I also draw on the concept of 'accumulation by degradation,' originally defined by Leigh Johnson to describe the positive feedback between Arctic warming and increased oil exploration and drilling,[12] but later applied to the growth of industry in the Calumet Region by Graham Pickren.[13] Johnson describes accumulation by degradation as an iterative process, where instances of degradation—resulting from fossil fuel emissions, radiative forcing of the atmosphere, and Arctic warming—allow for further capital accumulation by allowing industries to access new frontiers of exploitation and extraction, such as oil fields that had previously been inaccessible due to ice or permafrost

[11] Elliott and Frickel, 1740.
[12] Johnson, "The Fearful Symmetry of Arctic Climate Change."
[13] Pickren, "The Frontiers of North America's Fossil Fuel Boom."

cover.[14] In the context of the Calumet, Pickren argues that accumulation by degradation reveals "that frontiers not only remain available in despoiled places, but become available precisely because of the degradation of that landscape" and that the process "works not just to keep land prices low, but also undermines contemporary efforts to reimagine the future of [the] Calumet."[15]

In the following pages I examine the intersections between brownfields policy, environmental organizing, and open space planning through the frameworks discussed above. I analyze the development of the COSR from early open space advocacy through the publication and implementation of the COSR Plan, relying primarily on archival sources from the Chicago DPD. Additionally, I pay close attention to sites that were targeted and acquired by the city as 'opportunity sites,' and were subsequently developed into parkland and managed under the Chicago Park District. Finally, I argue the COSR Plan serves to represent a shift in open space planning for Chicago and cities more broadly, and is able to successfully restore open space in a historically industrialized region.

Literature Review

My research is situated more broadly in discussions of vacant land and brownfields in urban areas, environmental justice, and open space planning in Chicago. Existing literature on brownfields often focuses on earlier approaches to the remediation and redevelopment, which often focused on commercial or industrial revitalization and less on issues of habitat and open space loss resulting from previous development. Environmental justice as a field is rooted in discussions of environmental contamination, public health, and the distribution of environmental burdens and resources, and has large overlaps with literature on brownfields, vacant land, and

[14] Johnson, "The Fearful Symmetry of Arctic Climate Change."
[15] Pickren, "The Frontiers of North America's Fossil Fuel Boom," 52–53.

open space. More recently, environmental justice literature has turned to linking brownfields and the redevelopment of post-industrial sites to the process of environmental gentrification and the potential for remediated brownfields sites to contribute to the displacement of residents. The Calumet Open Space Reserve exists at the intersection of brownfields literature, environmental justice, and open space planning. The COSR Plan addresses concerns over the reuse of vacant land and how that land can serve to provide more equitable access to open space while preventing further environmental degradation.

Brownfields and Vacant Land

The concept of a brownfield was formally defined beginning in the 1980s in response to the environmental movement of the 1970s and an increased awareness of the lasting impacts of industrial pollutants on local environments. The United States Environmental Protection agency defines a brownfield as "a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant."[16] In 1980 the EPA passed CERCLA, or the Comprehensive Environmental Response, Compensation, and Liability Act, which established liability for the cleanup of contaminated sites.[17] This act, more commonly known as the Superfund, held all past, current, and future parties responsible for the environmental remediation of a site. Because of the steep costs associated with cleanups, the passage of CERCLA resulted in a large number of contaminated sites falling into disuse, resulting in the accumulation of vacant land in cities across the U.S. In response to the increase in brownfields properties, CERCLA was reformed to lessen liabilities and provide funding to assist in remediation. As a result, costs and risks

[16] US EPA, "Overview of EPA's Brownfields Program."
[17] Higgins, "Evaluating the Chicago Brownfields Initiative."

associated with brownfields redevelopment lessened, and efforts were made to address the issue of vacant post-industrial land.

The US EPA has since developed its own Brownfields and Land Revitalization Program, which primarily serves to provide grants and other forms of funding to municipalities, states, and tribal governments to support research, program funding, and the assessment and cleanup of brownfields sites.[18] This program further lessens financial barriers and allows for cities and other jurisdictions to initiate the remediation process and effectively clean up contaminated sites for potential future redevelopment.

In addition to financial constraints, one challenge to the redevelopment of brownfields sites is that they often host a diverse array of physical features, aside from the known or potential presence of contaminants. These are a result of the sites' former industrial uses, and can range from buried debris, large remnant structures, paved surfaces, or dense vegetation resulting from abandonment and disuse. Preston et al. develop a brownfields typology which provides some insight into physical factors of brownfields that contribute to their redevelopment as open space. Certain types, including types "(c) impervious grey surfaces, (i) hard surfaced with peripheral vegetation, and (u) informal open grassland" can readily be used as informal open space and can support recreation or urban agriculture.[19] The typology also identifies a tendency for irregularly shaped parcels or sites with variable topography as being highly vegetated as a result of difficult or costly redevelopment, resulting in these sites being left to develop through ecological succession.[20] As a result of this variation, there's no 'one size fits all' solution to redevelopment, and instead redevelopment plans are often tailored to meet the needs of cities and specific

[18] US EPA, "Overview of EPA's Brownfields Program."
[19] Preston et al., "Not All Brownfields Are Equal," 10.
[20] Preston et al., 8–9.

brownfields sites. In the case of the COSR, many of the brownfields sites are wetland habitat or are located along bodies of water, both of which complicate the redevelopment process.

In addition to federal regulatory frameworks set forth by the EPA, many cities independently implemented initiatives to redevelop disused sites. Chicago was one such city, and Mayor Richard M. Daley established the Chicago Brownfields Initiative in 1993 to leverage public funding towards remediation and redevelopment costs.[21] In addition to municipal investment, the Chicago Brownfields Initiative prompted policy initiatives which offered tax incentives for brownfield cleanup, introduced risk-based site-specific cleanup standards, and provided opportunities for grants from the state and the EPA.[22] By 1998, Chicago was named a Brownfields Showcase Community by the federal government for the work completed on the Initiative. The Chicago Brownfields Initiative was largely successful, although limited in its scope and implementation since it resulted mainly in industrial or commercial revitalization on brownfields sites. Most notably, it prompted redevelopment within the city and turned the city's attention to vacant land with redevelopment potential.

Outside of Chicago, other methods have been proposed and implemented in various cities to understand and address the problem of vacant land and brownfields. In their book *Terra Incognita*, Ann Bowman and Michael Pagano examine the dynamics underlying the presence of vacant land in U.S. cities. Between 1997 and 1998, Pagano and Bowman conducted a survey of 70 U.S. cities with populations greater than 50,000 residents, and conducted in-depth follow up studies in Phoenix, Seattle, and Philadelphia.[23] They found that on average cities had 12,397 acres of vacant land within their municipal boundaries, representing an average of 15.4% of total urban land area. They argue that the presence and extent of vacant land in a city is dependent on

[21] Higgins, "Evaluating the Chicago Brownfields Initiative."
[22] "Chicago Brownfields Initiative."
[23] Bowman and Pagano, *Terra Incognita*, Appendix A.

social values and economic factors that incentivize redevelopment, such as tax structure and the land-tax dynamic, or the revenue potential of vacant land derived from income or property tax.[24] The land-tax dynamic highlights a concern planners may have when redeveloping vacant lots for open space: parks do not generate as much direct tax revenue as commercial or industrial zoned land.

As an example of brownfield redevelopment into park space, the city of Toronto in the late 1990's took on a brownfields redevelopment project that prioritized the creation of greenspace, and successfully generated over 1,500 acres of open space in the city.[25] Similar to the Calumet Open Space Reserve, Toronto set aside post-industrial land for open space development, but this land was dispersed throughout the city rather than being concentrated in one area. This approach is beneficial in distributing resources among residents while broadly reducing the risk of exposure to pollutants. The COSR, in contrast, is centered around a specific geographic region within Chicago, and although it may not effectively serve the entire city it prioritizes cleanup efforts in an area that was historically highly industrialized and remained polluted. Additionally, a citywide approach like Toronto's may not effectively protect and restore critical habitat, whereas the COSR's main focus is ecological restoration and therefore may have more significant impacts in terms of habitat connectivity and ecological restoration.

Environmental Justice

At the same time that the EPA and other government agencies turned their attention towards disused sites, environmentalists set their sights on environmental issues impacting urban environments and the people inhabiting them. Early environmental justice work in the 1970's and 1980's focused on environmental contamination and its impacts on human health by

[24] Bowman and Pagano, *Terra Incognita*.
[25] De Sousa, "Turning Brownfields into Green Space in the City of Toronto."

targeting locally unwanted land uses, or LULUs, which typically included large industrial polluters and other sources of toxins in local environments.[26] Beginning in 1991 with the First National People of Color Environmental Leadership Summit and the publication of the Principles of Environmental Justice, the environmental justice movement took a broader stance and began to target other issues such as land use planning, housing, public health, transportation, and community engagement. There is a long history of environmental justice organizing in Southeast Chicago. Two grassroots environmental justice organizations—People for Community Recovery (PCR) and the Southeast Environmental Task Force (SETF)—were founded in 1979 and 1989, respectively, as a response to poor environmental conditions on the Southeast Side. These issues included air pollution and increased risk of respiratory disease, toxic waste dumping and landfills, and a lack of open space.[27]

More recently, environmental justice advocates and scholars have turned to the issue of environmental gentrification. Environmental, or 'green' gentrification is defined as the "convergence of urban redevelopment, ecologically minded initiatives and environmental activism…[and] builds on the material and discursive successes of the urban environmental justice movement and appropriates them to serve high-end redevelopment."[28] In response to this issue, Winifred Curran and Trina Hamilton identified an approach to environmental justice organizing that they describe as "just green enough."[29] A just green enough approach attempts to decouple high-end residential and commercial redevelopment from environmental remediation in order to prevent displacement of community members who often bear the greatest burden of exposure. Curran and Hamilton first identified this approach in the New York neighborhood of

[26] Anguelovski, "From Toxic Sites to Parks as (Green) LULUs?"
[27] "Environmental Justice in Chicago."
[28] Checker, "Wiped Out by the 'Greenwave.'"
[29] Curran and Hamilton, *Just Green Enough*.

Greenpoint, Brooklyn, but this framework has not been applied in the Calumet Region and is underutilized in Chicago as a whole.

Open space redevelopment on post-industrial sites is often linked to green gentrification as a driver of the process. In *Parks for Profit*, Kevin Loughran examines the development of the High Line in New York and the Bloomingdale Trail in Chicago, or the 606 informally. In both of these cases, open space redevelopment on former railroad rights-of-way resulted in these amenities being commodified by developers, prompting increased high-end residential development and displacement of working-class residents.[30] Some scholars argue that because of the adverse effects of greening, post-industrial parks like the High Line or the 606 have become a new form of LULU, one that contributes to green gentrification and the displacement of neighborhood residents.[31] The people that carry the most burden of exposure from these industrial sites tend to be the first that are displaced in the process of green gentrification and are not afforded access to the amenities that were created following an environmental remediation.

Open Space Planning in Chicago

Chicago has a long history of open space planning and park development, dating back to Daniel Burnham's 1909 Plan for Chicago. This plan established what would later become Chicago's lakefront park system, as well as the city's major inland parks, the boulevard system, and laid the foundation for what would become the Cook County Forest Preserves.[32] More recently in 1998, Chicago published its CitySpace Plan in collaboration with the Chicago Park District and the Forest Preserves, which has since guided open space development in the city. The comprehensive, 143-page document identifies areas of need and outlines areas for open

[30] Loughran, *Parks for Profit*.
[31] Anguelovski, "From Toxic Sites to Parks as (Green) LULUs?"
[32] Radnis, "Chicago's Lakefront Park System."

space expansion and improvement in Chicago, ranging from investment in existing park infrastructure, mechanisms for expansion, and zoning and land acquisition.[33] CitySpace also proposes a framework plan covering neighborhood greenspaces, the lakefront, downtown park space, greenways and connectivity, industrial and transportation corridors, and wetlands and natural areas. CitySpace specifically includes sections on the acquisition of vacant land for park space section and wetland preservation, which would be critical to the implementation and expansion of the COSR.[34]

Advocacy for open space in Chicago often intersects with principles of environmental justice, and efforts have been made to provide more adequate opportunities for recreation and leisure on public land in historically underserved areas. In 2018, the Friends of the Parks, a non-profit organization concerned with equity in the Park District, published a "State of the Parks Report." In the report, they detail challenges related to equity in the parks, including lack of funding and programming in South and West Side parks and an overall need for more parkland in the city.[35] The State of the Parks also classifies parks into six categories: citywide, community, linear, magnet, nature preserve, and other. Nature preserve parks are defined as "land designated for the establishment and preservation of natural areas [which] may have facilities for nature education," and a majority of these parks are sites that were created by the COSR.[36]

The problem of vacant land is complex and highly variable between urban areas, and overlaps with other issues surrounding environmental justice, open space provision, and the decline of industries resulting in brownfields. Environmental justice is useful in bridging the gap between the impacts of environmental remediation, the process of 'greening,' and gentrification

[33] "CitySpace: An Open Space Plan for Chicago."
[34] "CitySpace: An Open Space Plan for Chicago," 29, 59.
[35] "State of the Parks."
[36] "State of the Parks," 16.

but does not fully explain why land becomes vacant in the first place, and why a particular mode of development is prioritized. My research examines the redevelopment of brownfields sites into publicly accessible open space, including urban parks, ecological preserves, and recreation areas, in contrast to early efforts to address the problem of vacant post-industrial urban land mainly through revenue-focused redevelopment.

The Calumet Open Space Reserve represents a departure in Chicago's previous brownfields policies, which focused on revenue-generating development such as industrial revitalization and commercial development. The development of the Calumet Open Space Reserve is distinct because it prioritizes open space preservation and development in a concentrated area within the city of Chicago and its suburbs. Additionally, the COSR is unique because it extends across jurisdictional boundaries and involves three management agencies. By using the COSR as a model for open space redevelopment, I hope to bridge the gaps between literature on brownfields and vacant land, environmental justice, and open space planning.

Data and Methods

My research primarily utilizes archival sources to document the development of the Calumet Open Space Reserve. In doing so, I examine changes in the region over time, beginning with early open space advocacy and progressing through the DPD's planning efforts for the Calumet. These municipal archives prove to be a vital source in tracing the development of the COSR from its inception to its adoption and early implementation, and the archival sources that I draw on reflect the municipal agencies involved in this process.

Archival research was conducted at the Special Collections Division of the Chicago Public Library, located in the Harold Washington Library Center. My analysis relies mainly on

the records of the Open Space Section of Chicago's Department of Planning and Development, since this agency was responsible for publishing COSR plan, the focal point of my research. The COSR itself is a fairly diffuse entity, spanning three independent management agencies and a municipal planning department, therefore a challenge to this research was clarifying the specific actors and agents that had a hand in the planning and development process. By focusing on the DPD and the COSR Plan, I was able to narrow the scope of my research to a set of records within a single archive. The DPD's records are organized by series, and I specifically focus on Series 1: Lake Calumet Area since this overlaps with my study focus. The Lake Calumet Series contains information on the planning efforts in the Calumet region, spanning from 1981 to 2010, with the bulk of the material originating between 2000 and 2008. My research focuses on the latter time period, since this was a time of heightened interest and investment in the Lake Calumet area and its communities following the Calumet Land Use Plan and the Calumet Open Space Reserve plan, which were published in 2001 and 2005, respectively.[37] The Open Space Section records include preliminary drafts and comments on these two plans from the DPD, and other municipal organizations involved in the planning process such as the Chicago DOE, the Metropolitan Water Reclamation District (MWRD), and the Illinois Department of Natural Resources (IDNR). In addition to the main plan documents, the records include meeting agendas and notes involving the COSR, documentation from various subcommittees involved with planning in the area, and records relating to individual COSR sites including the park-district-managed Hegewisch Marsh, Indian Ridge Marsh, and Big Marsh.

The bulk of the CPL's archives are from municipal agencies, such as the DPD, and individuals and community organizations therefore tend to be underrepresented in this particular archive. This limits the archive's scope when considering non-governmental organizations and

[37] "Calumet Area Land Use Plan"; "Calumet Open Space Reserve Plan."

private entities including corporations and nonprofits. Due to the collaborative nature of the COSR, however, certain non-municipal government agencies and non-government organizations are peripherally featured through their involvement with the DPD. Included are the three core management agencies in the region: the Chicago Park District, the Forest Preserve District of Cook County (FPDCC), and the Illinois Department of Natural Resources (IDNR). Public agencies at other regulatory levels are also represented, including the Illinois and United States EPAs, as well as community-based environmental justice organizations, such as SETF and PCR, which directly interacted with the DPD throughout the COSR planning process. Despite the limitations of these archives, I ultimately rely on them for primary source material because my focus is on the city of Chicago's involvement in the COSR, and they reflect this perspective.

Using this data, I begin by constructing a narrative to trace the development of the COSR beginning with early studies and advocacy, and progressing through early plans by the DPD including the Calumet Land Use Plan, the COSR itself, and the Reserve today. By synthesizing these sources and presenting the implementation of the COSR as a narrative, I emphasize the intersecting ecological and industrial contexts of the Calumet and the role that the COSR Plan played in the remediation of vacant post-industrial sites and the restoration of ecosystems and ecological networks. Additionally, I will address how the COSR as a planning mechanism serves to decouple continuous industrial expansion from the availability of vacant post-industrial land by analyzing its development with two frameworks: accumulation by degradation and socioenvironmental succession.

Results and Analysis

The idea of utilizing vacant post-industrial land for open space development was a novel approach for the city of Chicago, especially in the context of a large open space reserve. The concept first gained traction among local organizations and partnerships involved in open space advocacy in the 1980s and 1990s, following increased interest in industrial revitalization from the city concurrent with the Chicago Brownfields Initiative. The Calumet Land Use Plan and the Calumet Open Space Reserve were the first city-initiated plans to target open space specifically in the Calumet. The implementation of the Calumet Open Space Reserve Plan itself required extensive collaboration between public agencies at the municipal, county, and state level, as well as private entities. One of the most significant outcomes of the COSR was the creation of spaces for eco-recreation, or ecologically restored open space that is simultaneously managed to provide recreation opportunities to neighborhood residents and Chicagoans more broadly.

I will analyze the development of the COSR beginning with early open space advocacy in the region to the Plan's publication and implementation, and I will apply the frameworks of accumulation by degradation and socioenvironmental succession to the Reserve. The period of early advocacy spans from the early 1980s until the 2000s when city-led efforts, including the COSR and the Calumet Land Use Plan, began to take shape. I pay close attention to the opportunity sites outlined in the COSR, which were initially privately owned but would go on to become large 'nature parks' under the Chicago Park District following remediation. I argue that the creation of the COSR plan and its implementation serves to decouple industrial growth from former land uses, diverging from the cycles of accumulation by degradation and socioenvironmental succession. In doing so, the COSR presents a path for development in the

Calumet that prioritizes the preservation and restoration of ecological networks and provides open space for recreation.

Opportunity for Open Space and the Calumet Land Use Plan

As early as 1984 the opportunity for open space in the Calumet Region was recognized by residents and community organizations—such as SETF and the Lake Calumet Study Committee—fifteen years before any municipal land use plan would be published for the region. Early studies from this period varied in scale and focus, ranging from real estate groups contracted by the city to identify industrial development opportunities to environmental NGOs concerned with wetland conservation.[38,39] Most notable from this early period was the Lake Calumet Study Committee, a partnership of local residents concerned with open space, which published the "Conceptual Plan for the Lake Calumet Ecological Park" in 1986. This plan targets 31 sites in Chicago and the adjacent South Suburbs for open space preservation and restoration, many of which are later incorporated into the COSR.[40] This is one of the earliest mentions of a large open space reserve in the region and introduces the idea of incorporating ecological preservation and recreation. By 1995, the Committee had prepared a set of figures arguing for the economic advantages of an ecological park.[41] Many of these advantages had to do with private property values, but figures also included trail usage by cyclists, recreation spending, increases to quality-of-life indices with open space, and ecosystem services such as stormwater retention provided by wetlands. Additionally, the Committee proposed corridors for development which would integrate sites into a broader network of open space expanding eastward into Indiana.[42]

[38] "Calumet Area Implementation Plan."
[39] "Lake Calumet Wetlands."
[40] Landing, "CONCEPTUAL PLAN FOR THE LAKE CALUMET ECOLOGICAL PARK : CHICAGO, ILLINOIS."
[41] "Advantages of an Ecological Park in the Illinois-Indiana Area."
[42] "Calumet Ecological Park: Description of Corridors."

The Southeast Environmental Task Force (SETF) was another organization involved with open space advocacy and environmental justice. SETF interacted with the DPD throughout the planning process for the COSR, and advocated specifically for increasing trail connections, improvements to open space access, and creating connectivity and open space corridors extending throughout the Chicago region in their Calumet Area Vision.[43,44,45] SETF continued to interact with DPD, pushing for the development of more open space, and in particular increasing connectivity between sites to facilitate movement, and would continue to be a vocal supporter of the COSR, and open space in the Calumet more broadly.[46] Although the full involvement of SETF in open space advocacy in the Calumet is beyond the scope of this paper, it is important to mention the organization's involvement in the COSR as there was often overlap and collaboration with the DPD.

It was also around this time period that Chicago began to shift focus in its brownfields policy from industrial revitalization to open space restoration. Chicago had been recognized nationally as a leader in brownfields policy following the success of the Chicago Brownfields Initiative and the city received two grants to continue this effort, which would ultimately contribute to the development of an open space plan for the Calumet. One was a Sustainable Development Grant from US EPA, which was awarded to develop a plan for the Lake Calumet area and would contribute to the creation of the Calumet Area Land Use and COSR Plans. [47] The Chicago DOE also launched a pilot brownfields program for Lake Calumet that focused on ecological restoration and brownfields redevelopment, which was enabled through funding from the Illinois-Indiana Sea Grant.[48]

[43] Rosinski and Byrnes, "Letter to Community Leaders of the Southeast Side," September 25, 2003.
[44] Mammoser, "Calumet Corridor Vision."
[45] "Calumet Area Vision."
[46] Dickhut, "Letter to Aaron Rosinski, SETF," February 9, 2004.
[47] Dickhut, "A Sustainable Future for Lake Calumet," May 22, 2000.
[48] "International Brownfields Exchange: Chicago Brownfields Redevelopment Initiative."

The result of these grants and early organizing was the Calumet Area Land Use Plan, which was first published in 2001.[49] This plan was the first city-led effort to preserve open space in the Calumet and redevelop post-industrial sites for recreation. The plan outlines opportunities for both industrial and open space development in the Calumet Region, and highlights relevant contexts relating to historic land uses, including land transportation and railways, water transportation, industries, waste and landfills, and recreation. The Land Use Plan introduced the concept of an open space reserve that would exist within the Calumet alongside industry, acting as a precursor to the COSR.[50] This inception of an open space reserve is relatively distinct among the existing classifications of open space in Chicago, and incorporates aspects of traditional ecological preserves—including habitat preservation and restoration—while emphasizing accessibility and opportunities for recreation. By recognizing the need for open space in the region, the Calumet Area Land Use Plan laid the foundation for preliminary work on the COSR.

The Land Use Plan established guiding goals for development in the region, including quality of life improvements for residents. Under the plan, livability would be increased by retaining and attracting commercial and industrial development, allowing residents access to greater economic opportunities, while simultaneously protecting and restoring wetlands and other natural areas in the region.[51] Included in the plan is a map depicting future land use in the area (Figure 2), which introduced various designations of open spaces, including existing publicly accessible open space as well as sites designated for future preservation, reclamation, and recreation. In the context of the Land Use Plan, preservation involves the continued maintenance of natural habitat patches and expansion of buffers, while reclamation involves the conversion of former industrial or otherwise modified land to natural habitat. A majority of the

[49] "Calumet Area Land Use Plan."
[50] "Calumet Area Land Use Plan," 14.
[51] "Calumet Area Land Use Plan," 12.

land covered by the plan is slated to remain industrial, but sites of existing and future open space are beginning to take the shape of the COSR by this point.

Early public comments on the Land Use Plan were generally positive and in support of the creation of open space in the area. A focus group report on the preliminary Land Use Plan from 2000 stated that the topic of "open space generated the greatest volume of discussion."[52] This discussion covered issues with open space access and continuity, the presence of active industry in the area, the role of open space and greenways as buffers for industrial-zoned land. Since many of the sites targeted former industrial land and were located within an active industrial corridor, some residents felt that the potential for contamination and perception of these sites could limit usage. Participants noted that even if open spaces are not 'usable' in the form of parks or other spaces for recreation, they are still valuable as open space rather than industrial land due to the fact. This valuation was based on the fact that with an official open space designation, vacant land would be protected from future contamination, a concern which was expressed by focus group participants. Additionally, open space could serve as habitat for wildlife, and recreation-focused management may interfere with wildlife such as nesting bird species.

Other comments congratulated the planning process in bringing disparate community groups, such as industry leaders, the city, and local environmental organizations, together with the potential for future community involvement in open space development. Victor Crivello, a local resident involved with open space advocacy, offered support for the open spaces as a "postmodern image" of natural areas, featuring "hollowed out" industrial sites and smokestacks, and the opportunities that they presented for eco-recreation and tourism, and opening the

[52]"Lake Calumet Preliminary Land Use Plan Focus Group Report."

Calumet Region to visitors.[53] The plan also recognizes the "unique environmental characteristics" of the Calumet and begins the major process of restoration, but a group of instructors from Chicago State University raised concerns over the West Shore of Lake Calumet and its lack of connections to the Pullman historic site and neighborhood to the west, and the potential for habitat fragmentation resulting from a lack of connectivity between open spaces proposed in the plan.[54]

[53] Crivello, "Comments on the Calumet Land Use Plan."
[54] Bouman, Halpin, and Peterman, "Comments on Calumet Area Land Use Plan."

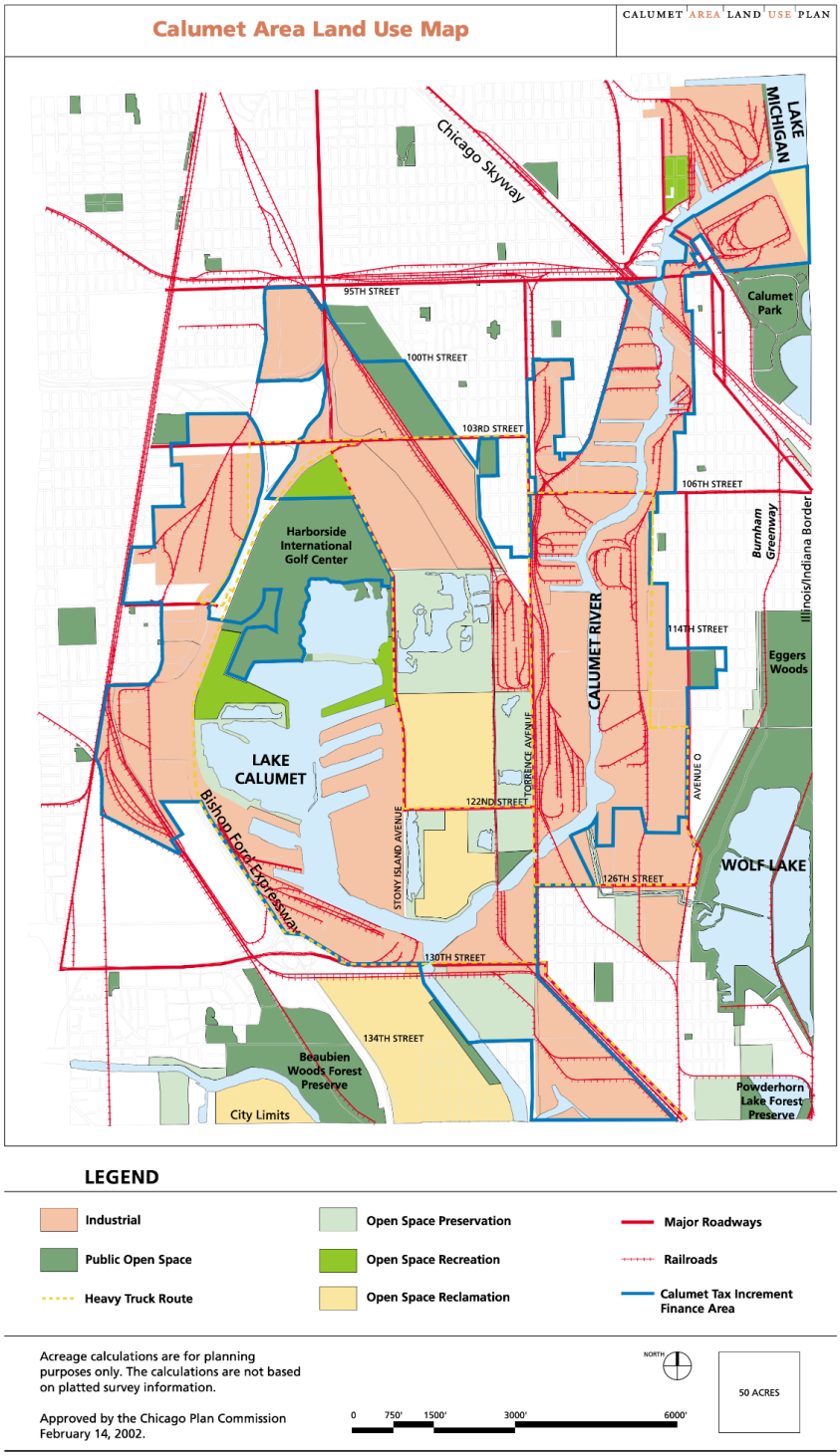

Figure 2: Map of Planned Calumet Area Land Use, 2001

The Calumet Open Space Reserve: Plan Publication and Implementation

The Calumet Open Space Reserve Plan in its final form was published in 2005, but the Plan and the Reserve sites had been in development since at least 2001 when it was conceptualized in the Calumet Area Land Use Plan.[55] Development of the plan and its publication was led by the Chicago Department of Planning and Development, in partnership with the Chicago Department of Environment, Calumet Area Industrial Commission (CAIC), Openlands Project, and the Southeast Chicago Development Commission. Openlands, the CAIC, and the Southeast Chicago Development Commission represent different private interests that would shape the development of the COSR plan. These organizations had worked closely with the DPD since the Calumet Land Use Plan, although Openlands would be the most involved with the COSR since their focus was on open space and habitat protection. During this time, other collaborative efforts spanning between management agencies became more formalized to facilitate the inter-agency collaboration necessary for the acquisition, restoration, and eventual creation of the Reserve's sites.

At the time of the plan's publication, the land that would go on to become the Reserve was divided among existing open space, private landowners, and public entities such as the MWRD or USACE that were not concerned with open space management. Some sites were already under city ownership by 2005, but had not undergone environmental assessments or remediation, and were therefore not yet open to the public. The plan also highlighted and prioritized the acquisition of opportunity sites, which were privately owned parcels that possessed unique ecological features. These opportunity sites and city-owned land would see the largest investment from the city in terms of redevelopment and required environmental assessment and remediation as well as ecological restoration and recreational improvements.

[55] Dickhut, "Memorandum: Calumet Area Land Use Plan and Calumet Open Space Reserve."

This investment would pay off, however, and many of these sites would go on to become some of the Reserve's most characteristic locations and provide opportunities for recreation.

The COSR plan divides the management of open space among three public agencies: the Illinois Department of Natural Resources (IDNR), the Forest Preserve District of Cook County (FPDCC), and the Chicago Park District (CPD). The division of management between the three agencies allows for the COSR boundaries to extend outside of the Chicago city limits and allows for more specialized management of sites based on the intended use of the sites as well as their ecological function. Specifically, the IDNR's role was envisioned to focus on habitat preservation and restoration for threatened and endangered species, including the pre-existing management areas of William Powers Conservation Area and the portions of Wolf Lake in Illinois. The goal for the FPDCC, which also managed existing open space before the time of publication, was to expand and buffer extant wetlands, prairies, and riparian ecosystems. Finally, the Chicago Park District is highlighted primarily for their role in providing recreation opportunities for residents of Chicago, as well as providing programming in the parks. For this reason, the Park District was initially assigned to areas that the plan identified as having high recreation potential and was tasked with developing future trail connections to facilitate active transportation throughout the region.

In order to negotiate the overlapping jurisdictions of these public agencies, the City of Chicago entered intergovernmental agreements (IGAs) with the IDNR and Forest Preserves. The potential for an IGA between the City of Chicago and the IDNR was first proposed by the DPD in 2000 to address the challenges surrounding funding and transfer of land ownership.[56] With this IGA came the question of a potential environmental center focusing on the Calumet Region, which would be built and managed by the DOE. The DPD argued that it was because of unclear

[56] Dickhut, "Immediate IGA Issue for Lake Calumet Open Spaces."

ownership that land surrounding Lake Calumet was "in limbo for decades," and that "it is difficult to get management and maintenance funds… for land nobody owns."[57] As a result, an IGA was pursued to potentially streamline the process of acquiring and transferring land, and ultimately managing open space.

The final COSR plan emphasizes the importance of these IGAs, which allows the city to acquire privately owned land before transferring ownership to the county or state, or maintaining ownership for Park District use. Under these agreements, the city is able to initially acquire land, and is responsible for environmental assessment, determining and setting ecotoxicology (ecotox) standards for aquatic and terrestrial plants and wildlife, and remediating sites with the assistance of the state of Illinois and other environmental agencies such as the EPA. The intention of the IGAs, and the COSR plan more broadly, is that "cooperative efforts such as these that will make the Calumet Open Space Reserve a reality."[58] Following city environmental assessments and cleanups, the sites would be transferred to their respective managers based on each agency's focus area—for example, ecological preservation in the case of the IDNR—and developed to meet site-specific goals of recreation, preservation, or both.

In addition to outlining the relationships between the city and management agencies, the plan also defines six distinct geographic management units: Calumet Prairies, Calumet Wetlands, Wolf Lake, Lake Calumet, the Little Calumet River, and the Grand Calumet River (Figure 3, maps of individual units with sites can be found in Appendix 1, Supplemental Figures 1-6). Each management unit is unique in regard to the extent of existing and planned open space and environmental conditions and concerns of contamination, summarized in Table 1 below. Each of the management units, and individual sites within the units, presents a unique set of challenges

[57] Dickhut, 1.
[58] "Calumet Open Space Reserve Plan," 4.

and goals for open space management. As such, inter-agency collaboration continued to be relevant, if not necessary, with the city consulting with IDNR on restoration and remediation at heavily contaminated sites, including Hegewisch, Indian Ridge, and Big Marsh sites as well as Van Vlissingen Prairie.[59] These sites are significant as they make up a majority of the Calumet Prairies and Wetlands management units, and individually are some of the largest within the COSR.

[59] Tom Flattery, "Letter to Chicago DPD from IDNR, RE: Hegewisch Marsh, Van Vlissingen Prairie, Big Marsh and Indian Ridge Marsh," June 21, 2005.

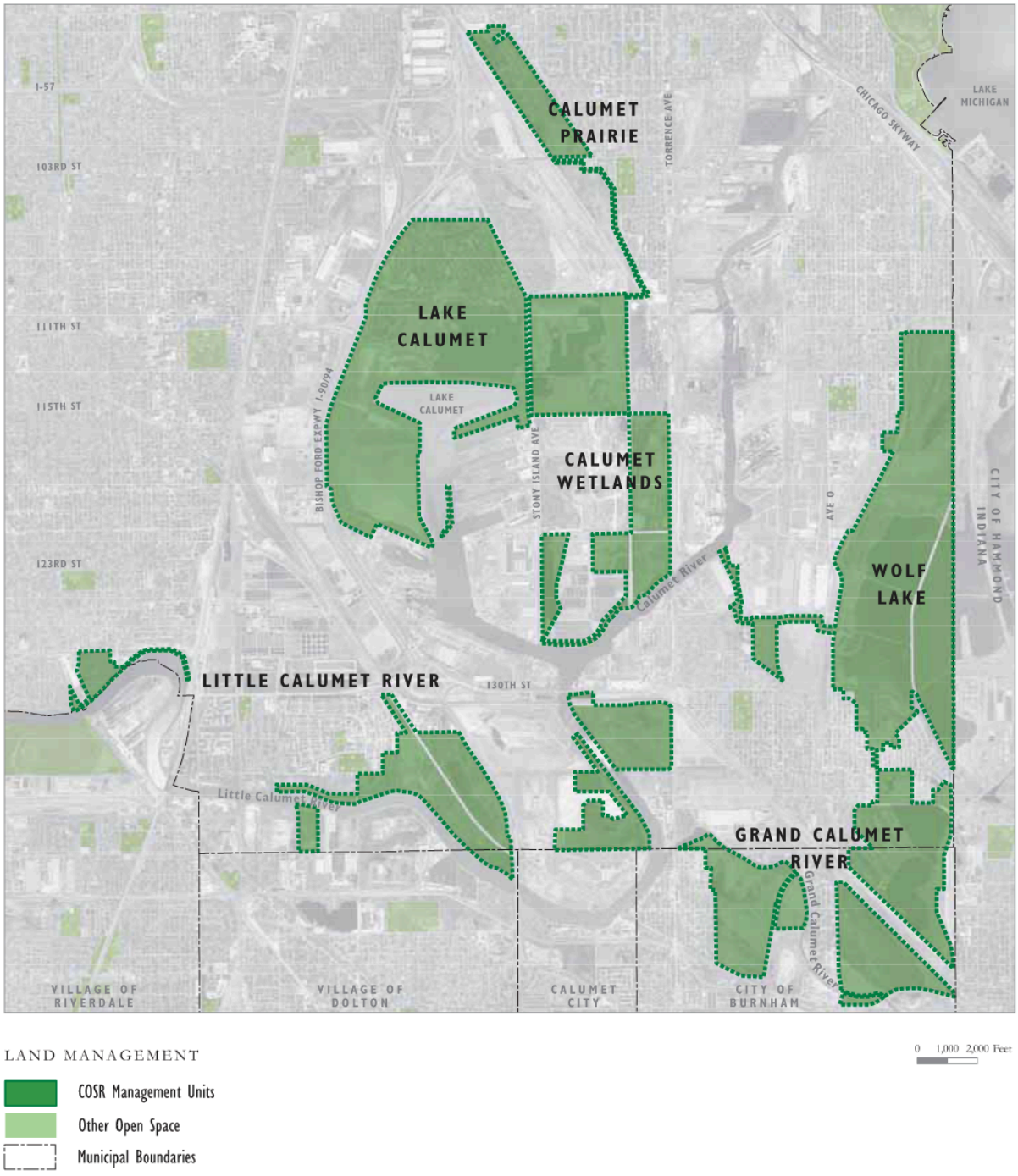

Figure 3: COSR Management Units, taken from the COSR Plan (2005)

Management Unit	Sites	Total Size (acres)	Environmental Concerns (onsite)	Environmental Concerns (offsite)
Calumet Prairies	Marian R. Byrnes Park (formerly Van Vlissingen Prairie), Van Vlissingen Trail	146.6	Illegal slag dump site, high pH soils	
Calumet Wetlands	Big Marsh, Indian Ridge Marsh, Heron Pond, Deadstick Pond, MWRD SEPA Facility and River Edge	559.4	Slag dumping and lead contamination, surface water contamination	MWRD Biosolids Drying Facility, Paxton Land and Lakes Landfills, Cluster Site
Wolf Lake	Eggers Woods, Indian Creek and Hyde Lake Wetlands, William Powers Conservation Area, Wolf Lake Connectors	960	Industrial discharge and sanitary overflow in Wolf Lake and tributaries from Indiana, Slag fill	
Lake Calumet	West Lake Calumet, West Shore, Gull Island, Calumet Gateway, Harborside International Golf Center, Harborside Marsh and Dike, East Shore	958.9	Municipal and construction solid waste, incinerator ash, wastewater sludge	
Little Calumet River	Beaubien Woods, Hegewisch Marsh, Riverdale Wetlands, Riverdale Woods and Bend, Eggleston Triangle, Thomas O'Brien Lock, O'Brien Lock Marsh and Whitford Pond, 130th and Torrence Stormwater Wetland	589.2	Limestone spoil storage at O'Brien Lock, limited information otherwise	CID Landfill, Land and Lakes Landfill, Cottage Grove Landfill
Grand Calumet River	Powderhorn Lake and Prairie, State Line Marsh, 134th Street Marsh, Burnham Woods Golf Course, Burnham Prairie, Cattail Marsh, Grand Calumet Buffer	699	Limited information available	

Table 1: Summary of COSR Management Units

Creating the Reserve: Site Acquisition and Restoration

Implementation of the COSR plan progressed in various stages. The Forest Preserve sites—including Beaubien Woods, Eggers Woods, and Powderhorn Marsh—and IDNR's Wolf Lake property already existed in some form but were expanded and buffered with adjacent land acquisitions and conservation easements. Larger opportunity sites identified in the COSR Plan required the most work to acquire land from private owners, assess existing environmental conditions, and establish guidelines for remediation. These sites had either been recently acquired or would soon be acquired by the city following the Plan's publication and were contaminated from former industrial uses. Many of the opportunity sites ultimately became city parks under the Park District, although only after remediation processes had been completed. The acquisition process for Hegewisch, Big Marsh, and Indian Ridge Marsh sites are particularly well documented, since these were developed more recently by the city and would ultimately remain under municipal jurisdiction through the Park District.

Initial acquisitions and restoration estimates were nearly $70 million for the Reserve's opportunity sites (Appendix 1, see Supplemental Tables 1 and 2). Site acquisition was placed at $18.5 million, while restoration and environmental cleanup made up the bulk of the cost at $51.1 million. In order to acquire the larger Reserve sites, including Hegewisch and Big Marsh, the city pursued open land trust (OLT) grants through the state and IDNR. The two sites covered a total of 393 acres, with an acquisition cost $8.9 million.[60] The state would provide $3 million in OLT funds, with the intention that the sites would be developed collaboratively between the city and IDNR, with the IDNR as the final owner.[61] This was done under the guidance of the COSR IGA between IDNR and Chicago, which assigned the responsibility for cleanup and environmental

[60] "Caucus Open Land Trust Acquisition Data."
[61] "Caucus Open Land Trust Project Narrative."

assessment to the Chicago DOE and DPD and final site management to the state. The city was awarded a grant of $3 million, marking a major step in the completion of the Reserve since these sites were the largest wetland areas in Chicago and contained important migratory bird habitats which were host to state-endangered bird species.[62] With the OLT award, Big Marsh and Hegewisch were further protected from future industrial encroachment, such as landfill expansion and illegal dumping, and the city could begin the process of remediation and habitat restoration.

One added challenge to site acquisition outside of the risk of contamination was that the many of the target open spaces were composed of smaller parcels ranging in size from standard city lots to entire blocks. Indian Ridge Marsh is one such example, where the city had already acquired 1,100 tax delinquent parcels within the site, but CorLands, an extension of Openlands involved in land acquisition, owned a set of parcels interspersed throughout city-owned property.[63,64] In order to finalize the site, the city needed to consolidate these parcels under one owner, which was fairly common for COSR opportunity sites since they often initially belonged to various private owners before becoming vacant.[65] The city purchased the parcels from CorLands in 2004, only after the DOE had conducted environmental risk assessments and determined that risks involved onsite dredge material deposited by USACE and the Cluster Site, an adjacent complex of landfills designated as a Superfund site by the EPA.[66,67] Once these parcels were acquired, the city could then begin to more effectively address continued issues of environmental contamination and incorporate them into the COSR as open space.

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[62] "Caucus Open Land Trust General Project Data."
[63] Dickhut, "Memo: ACME-Indian Ridge Marsh."
[64] "CorLands and Openlands Project: Strategic Partners for Open Space Conservation."
[65] Worthington, "Memo: ACME/Indian Ridge Marsh Properties."
[66] Megquier, "Indian Ridge Marsh Property."
[67] Worthington, "Memo: Acknowledgement of Environmental Conditions."

Big Marsh Park was the last major site in the COSR to be acquired by the city. The roughly 275-acre wetland site was purchased from Waste Management (WM) of Illinois in 2008, following testing and inspection by both parties along with the DOE.[68] DPD also consulted with DOE on previous environmental assessments, including a CERCLA brownfields assessment by the EPA and studies privately funded by WM Illinois, and conducted preliminary site inspections which found debris and evidence of illegal dumping throughout the site.[69,70] The site was purchased from WM Illinois in early 2007, marking a milestone in the development of the COSR since it was one of the largest opportunity sites identified in the COSR plan.[71] Similar to Indian Ridge Marsh, the Big Marsh site was initially a set of smaller parcels which were then consolidated after the city gained possession.

Across the three sites, pre-existing environmental conditions and the goal of maintaining natural habitat meant that proposed management strategies were highly site-specific. At Big Marsh, for example, this entailed reconstructing a dam and manipulating water levels on a main outlet to Lake Calumet to promote the growth of native emergent plant species, benefiting wildlife species through habitat provisioning.[72] Remediation of terrestrial areas at Big Marsh also relied on the use of plants, a technique referred to as phytoremediation, which was supported by the EPA for lessening ecological disturbance and served to maintain plant diversity that was documented in vegetation surveys of the site.[73,74] Both Big Marsh and the Indian Ridge Marsh complex—including the Northern and Southern units of Indian Ridge Marsh and Heron Pond—were impacted by external factors such as contamination in runoff from the

[68] "Real Estate Sales Agreement."
[69] Worthington, "Memo, RE: Big Marsh/Interlake Property."
[70] Peters, "Memo: Big Marsh/Interlake Property Site Inspection Result."
[71] Cheung, "Memo, RE: Big Marsh Acquisition."
[72]"Operation and Maintenance Plan, Big Marsh Wetland Water Level Control."
[73] Van der Kloot, "Letter from US EPA Region 5 to David Graham, Chicago DOE," June 14, 2010.
[74]"Vegetation Survey Results and Preliminary Management and Monitoring Strategy."

Superfund-designated Cluster Site, which further complicated restoration efforts. Hegewisch was found to have low ecotox risk from soil, surface and groundwater contamination, and could be managed with little ecological risk.[75] Despite differing levels of contamination, restoration plans often set goals for minimally managed landscapes, with site development focusing on passive natural areas and wildlife viewing opportunities for visitors.[76]

[75] Denise M. Casalino, "Letter to IDNR from Chicago DPD Regarding COSR Sites," April 8, 2005.
[76] "Caucus Open Land Trust Project Narrative."

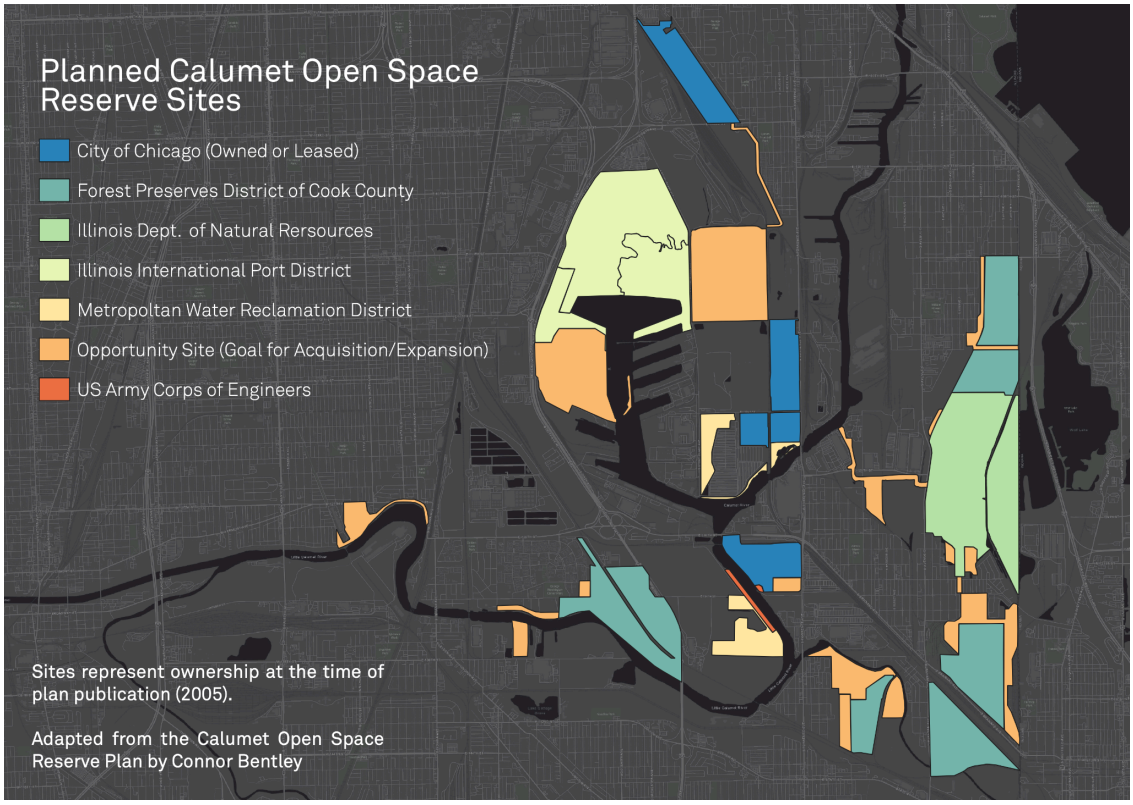

Figure 4: Planned Calumet Open Space Reserve Sites

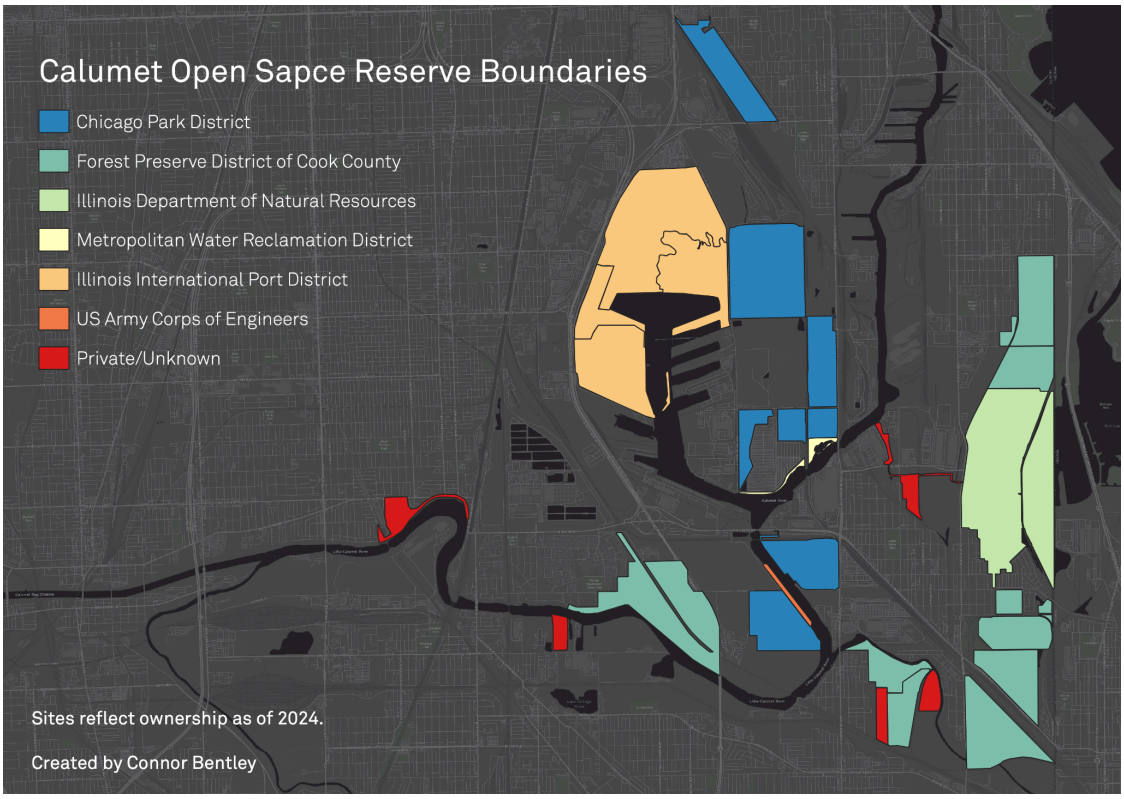

Figure 5: The Calumet Open Space Reserve Today

To date, a majority of the Calumet Open Space Reserve sites have been acquired since the initial plan was published (Figures 4 and 5). The larger opportunity sites, including Big Marsh, Hegewisch Marsh, Indian Ridge Marsh, and Marian R. Byrnes Park (formerly Van Vlissingen Prairie), have all become Park District land. The city had intended to transfer the larger sites to IDNR even as late as 2005, but by 2011 they had been transferred to the Park District, which resulted in these spaces being oriented more toward recreation in conjunction with ecological restoration.[77] The result is that the Park District sites have seen improvements to accessibility and walking paths, opportunities for eco-recreation, and in the case of Big Marsh a bike park and the Calumet Environmental Center.[78] The vision of an open space preserve introduced over 20 years ago has been realized, and Calumet residents, and Chicagoans more broadly, can enjoy the benefits.

Analysis: Accumulation by Degradation and Socioenvironmental Succession

I argue that the Calumet Open Space Reserve is a departure from previous paths of continuous industrial expansion and development which had characterized the Calumet Region. In applying the frameworks of accumulation by degradation and socioenvironmental succession, I demonstrate how the implementation of an open space reserve in a historically, and continuously, industrialized region serves to decouple the contamination and abandonment of land from future industrial expansion and contamination.

The COSR serves to inhibit accumulation by degradation in two main ways: protecting open space and remediating environmental contamination. The development of open space and restoration of critical habitats prevents continued accumulation of industrial contamination, and

[77] Denise M. Casalino, "Letter to IDNR from Chicago DPD Regarding COSR Sites," April 8, 2005.
[78] "Chicago Park District."

creates the opportunity for alternative, ecologically sound land uses. In the Calumet Area Land Use Plan, it is specified that land brought into this proposed open space reserve should remain so and would be "assured protection" from future industrial expansion.[79] In doing so, industrial expansion is limited, preventing future contamination on Reserve sites.

The remediation efforts directed towards sites within the COSR serve as an additional measure in preventing further degradation through the removal and cleanup of contaminants on these open space sites. Cleanup of contaminated land allows for other land uses on post-industrial sites and by limiting environmental degradation, remediation serves to alter how industries accumulate land for future expansion. For example, Big Marsh had previously been slated for development as a sanitary landfill by private landowners, but protection as a part of the COSR means that it will remain open "in perpetuity."[80] An open space that has been remediated and redeveloped has essentially reversed the process of accumulation by degradation, and future industrial expansion may be hindered by the fact that this land is considered valuable because of its status as open space or a critical habitat. This ecological valuation is distinct from other brownfields redevelopment projects, which ascribe redevelopment value to commercial or industrial revitalization and their overall contribution to the municipal tax base.

The COSR, however, falls somewhat short in providing a mechanism for acquiring land as it becomes available, and the target opportunity sites are fairly rigid. As new sites become available there is little guidance within the plan itself on what should be done with these sites. This can be seen in the conflict over the potential expansion of WM's CID landfill, located adjacent to multiple Reserve sites. In 2005, Waste Management proposed an expansion to the site with the existing landfill to be capped and transformed into a park, but SETF argued against this,

[79] "Calumet Area Land Use Plan," 14.
[80] Bouman, "Letter from Mark Bouman to David Graham, Chicago DOE," May 19, 2010.

instead advocating for the existing landfill to be sealed off with a soil cap once it had reached capacity and be incorporated as a habitat site in the COSR.[81] SETF's Calumet Area Vision proposed an alternative that closed and capped landfills could be managed to become grassland habitat areas, supporting native prairie plants and grassland bird species.[82,83] The COSR plan targeted vacant land that existed at the time that it was published, and is fairly static in its application, whereas SETF's Vision responded to evolving conditions in the Calumet. Additionally, the COSR highly prioritizes remnant habitat sites, for example the wetlands found at Big Marsh or existing open space that could be enhanced with buffers. Sites like municipal solid waste landfills are rarely considered or mentioned, outside of the threat of contamination to adjacent remnant wetlands. The sites that are prioritized in the COSR exhibited some degree of natural features before they were subject to ecological restoration, which were subsequently improved once the city had acquired the sites.

More broadly, the COSR represents an alternative pathway to socioenvironmental succession, and the presence of vacant land in the Calumet is a result of this process. Social drivers transformed the landscape to accommodate the needs of industries in the area, resulting in modifications to the landscape and altered ecology. Socioenvironmental succession in the Calumet initially followed the typical path of industrial growth and expansion, followed by abandonment and reuse of land, but it is distinct because some post-industrial land was left vacant. This lack of redevelopment pressure—whether from larger demographic or economic forces—resulted in ecological succession taking place on dumping grounds or former industrial facilities and these spaces slowly colonized by plants and wildlife. Additionally, many of the COSR sites were only partially degraded, so the successional process of converting land from an

[81] Rosinski, "Letter from the SETF to Mayor Daley," July 10, 2005.
[82] Rosinski, "Citizens for Landfill Alternatives Political Strategy," July 5, 2005.
[83] "Calumet Area Vision."

unmodified state to contaminated post-industrial land was left incomplete. The COSR was able to intervene and stop the progression of this process, which combined with the lack of incentive to redevelop these sites to facilitate commercial or industrial uses resulted in the implementation of the Reserve.

Over the 20 years that the COSR has been in development, the Calumet Region has seen a dramatic shift in open space. Wetland habitats have been restored, existing Forest Preserves have been buffered from adjacent industry, and eco-recreation has become a possibility in new ecological parks under the Chicago Park District. The development and implementation of the COSR is a result of a mobilization of community groups who first recognized the opportunities that vacant land posed for open space in the region. Implementation of the plan itself required coordination between the city of Chicago, Cook County, and the state in order to realize an ambitious vision of generating nearly 4,000 acres of open space. The COSR Plan marks a major shift in brownfields policy for Chicago, in contrast with previous work such as the Brownfields Initiative which focused on revenue-generating revitalization. Ultimately, the establishment of an open space reserve in the Calumet serves to alter cycles of disuse and abandonment that characterized this post-industrial region. The COSR plan reflects concerns over sustainable development that were being called into question at the time of its publication, including how urban and industrial development interact with the natural environment, and how those can exist together in cities.

Conclusion

Successive waves of industrialization resulted in large-scale transformation of the Calumet Region from its pre-industrial dunescape. Despite these changes, which were often

coupled with environmental degradation and contamination, remnants of the region's ecology persisted in fragmented wetlands, prairie, and forest. The decline of industry in the Calumet left behind large parcels of underutilized post-industrial land, and when confronted with questions of what to do with this vacant land, the city of Chicago turned toward open space.

The Calumet Open Space Reserve was published in response to this question and helps mediate the conflicting interests of continued industrial land use and open space preservation. The COSR plan was successful in the city's goal of acquiring land for open space development, most notably through the creation of public parks under the management of the Chicago Park District, and through the expansion of existing remnant ecosystems. Interestingly, the plan itself did not initiate municipal interest in open space in the Calumet, and efforts had already been undertaken before its publications to expand existing open space. Most importantly for its success, the COSR plan outlines mechanisms for land acquisition and intergovernmental collaboration while broadly setting standards for open space management.

The Calumet Open Space serves to decouple industrial expansion from continued environmental degradation through the restoration of local ecologies and provision of publicly accessible open space, remediation of environmental contamination, and the protection of land from future development. Not only can the Reserve serve as a model for future open space redevelopment in Chicago, but it can potentially be applied elsewhere in cities facing the same questions of open space provision and post-industrial vacant land. The Reserve is highly dependent on the context of the Calumet, but the model that it presents can be adapted elsewhere to local contexts. By prioritizing open space in a region that was historically subject to intense modification by industrial development, the COSR disrupts the cycle of accumulation by degradation and provides alternate pathways for socioenvironmental succession. In doing so, the

Calumet Open Space Reserve imagines a future for the Calumet, and Chicago more broadly, not tied to continued industrial intensification and contamination, rather one where humans and nature can coexist.

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Library.

Appendix: Supplemental Data

Site	Proposed Owner	Est. Acres	Acq. Estimate	Acq. Cost Funded	Funding Source	Acq. to Fund (DPD)
Van Vlissingen Prairie West	IDNR	72	250,000	250,000	OLT 00/01	0
Van Vlissingen Prairie East	CPD	65	250,000	250,000	OLT 00/02	0
Van Vlissingen Trail	CPD	20		PD Process		
Indian Ridge Marsh North/South	IDNR	155	3,800,000	2,300,000	TRP	0
				1,500,000	OLT 00/01	
Heron Pond	IDNR	40	with IRM			
Big Marsh	IDNR	310	3,900,000	1,800,000	DPD Tax Exempt	100,000
				2,000,000	OLT 00/01	
Deadstick Pond	MWRD	50	N/A	N/A		
MWRD River Edge	MWRD	10	N/A	N/A		
Hegewisch Marsh	IDNR	100	3,900,000	3,900,000	OLT 03, Great Lakes USFWS	0
Hegewisch Marsh Southwest	IDNR	20	N/A	MWRD Transfer		
Environmental Center Site	City	17	2,000,000	1,150,000	DPD Tax Exempt	850,000
Beaubien Woods Expansion	FPDCC	20	780,000			780,000
Eggers Woods Expansion North	FPDCC	10	N/A	Easement		
Eggers Woods Expansion	FPDCC	10	57,500	57,500, Easement	TRP	0
Eggers Woods Expansion South	FPDCC	10	N/A	Easement		
Wolf Lake Connector	IDNR	3	117,000			117,000
Indian Creek	CPD	25	N/A	PD Process		
Hyde Lake Wetlands	CPD	45	1,755,000			1,755,000
West Shore	IDNR	110	N/A			
134th St. Marsh		45	1,755,000			1,755,000
Total		1,137	18,564,500	13,207,500		5,357,000

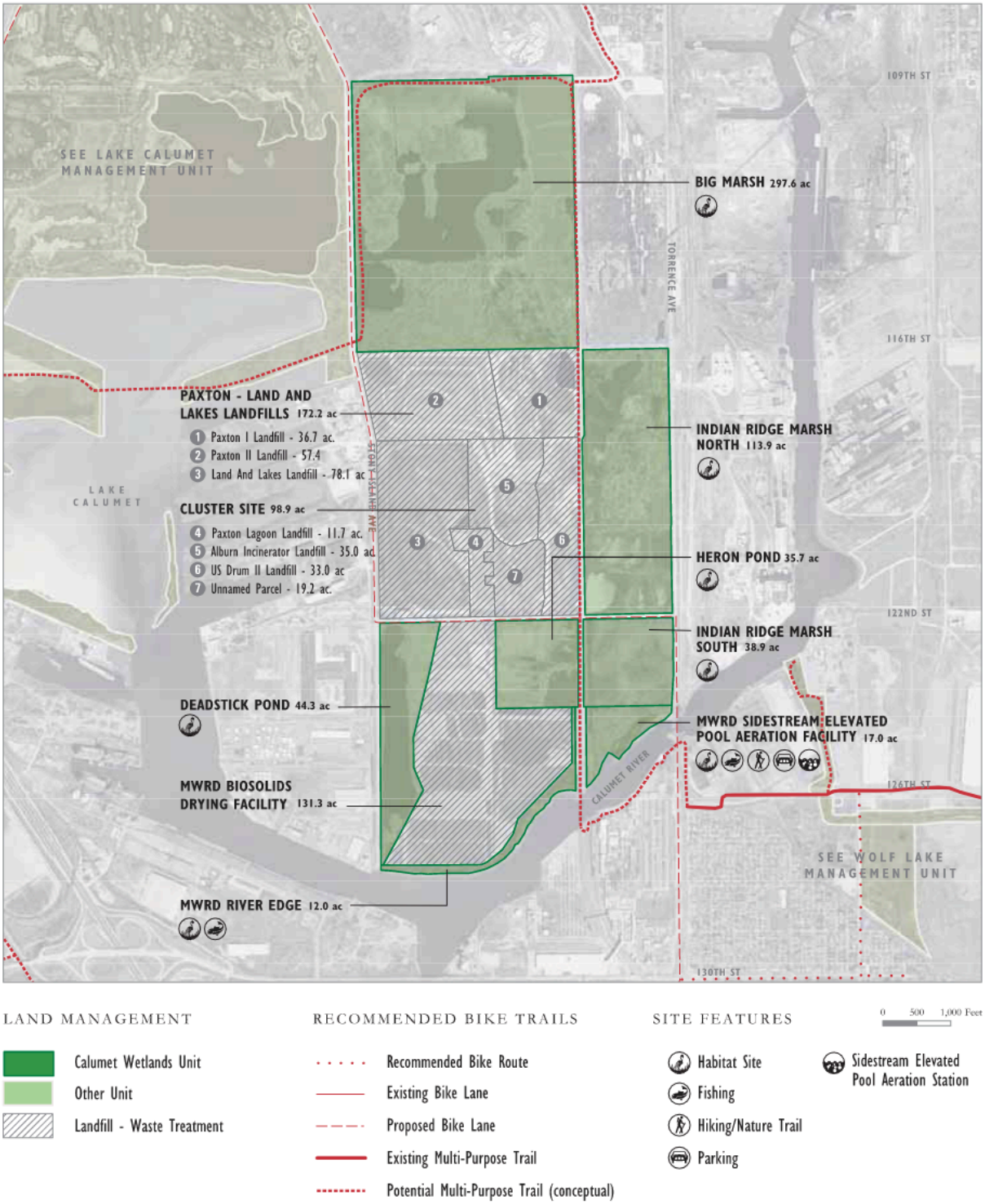
Supplemental Table 1: COSR Site Acquisition Estimates[84]

[84] "Calumet Open Space Reserve: Acquisition and Restoration Estimate."

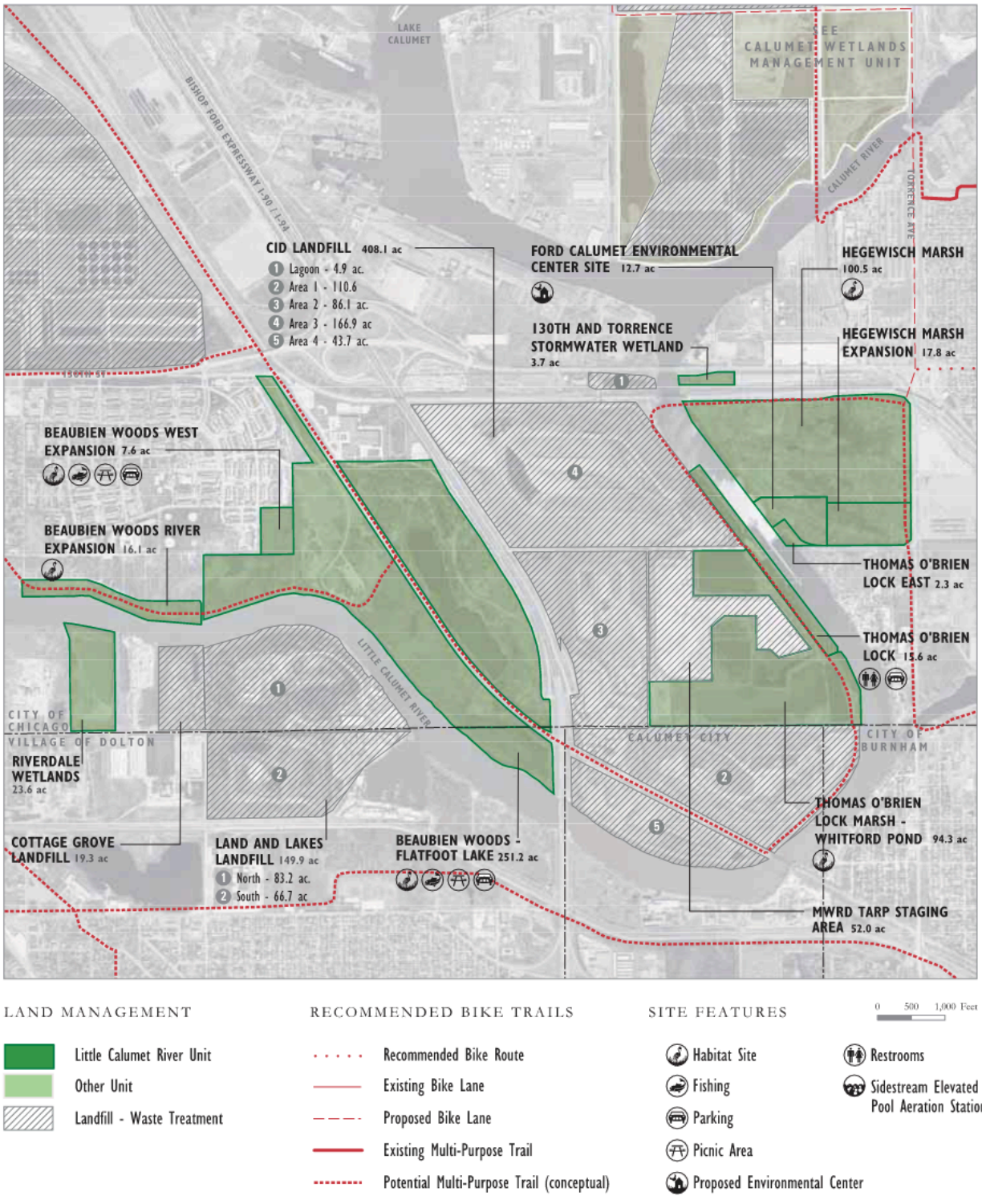
Site	Cleanup & Restoration Est.	Cleanup Funded	Cleanup Funding Source	Cleanup/Rehab to Fund
Van Vlissingen Prairie West	3,240,000	500,000	City GO 02-06	2,740,000
Van Vlissingen Prairie East	2,925,000	500,000	City GO 02-07	2,425,000
Van Vlissingen Trail	900,000			
Indian Ridge Marsh x North/South	6,975,000	4,000,000	USACE	
		1,000,000	City	
Heron Pond	1,800,000			1,500,000
Big Marsh	13,950,000			
Deadstick Pond	2,250,000			
MWRD River Edge	450,000			
Hegewisch Marsh	4,500,000			1,500,000
Hegewisch Marsh Southwest	900,000			
Environmental Center Site	765,000			
Beaubien Woods Expansion	900,000			
Eggers Woods Expansion North	450,000			
Eggers Woods Expansion	450,000			
Eggers Woods Expansion South	450,000			
Wolf Lake Connector	135,000			
Indian Creek	1,125,000			
Hyde Lake Wetlands	2,025,000			
West Shore	4,950,000			
134th St. Marsh	2,025,000			
Total	51,165,000	6,000,000		8,165,000

Supplemental Table 2: COSR Restoration Estimates

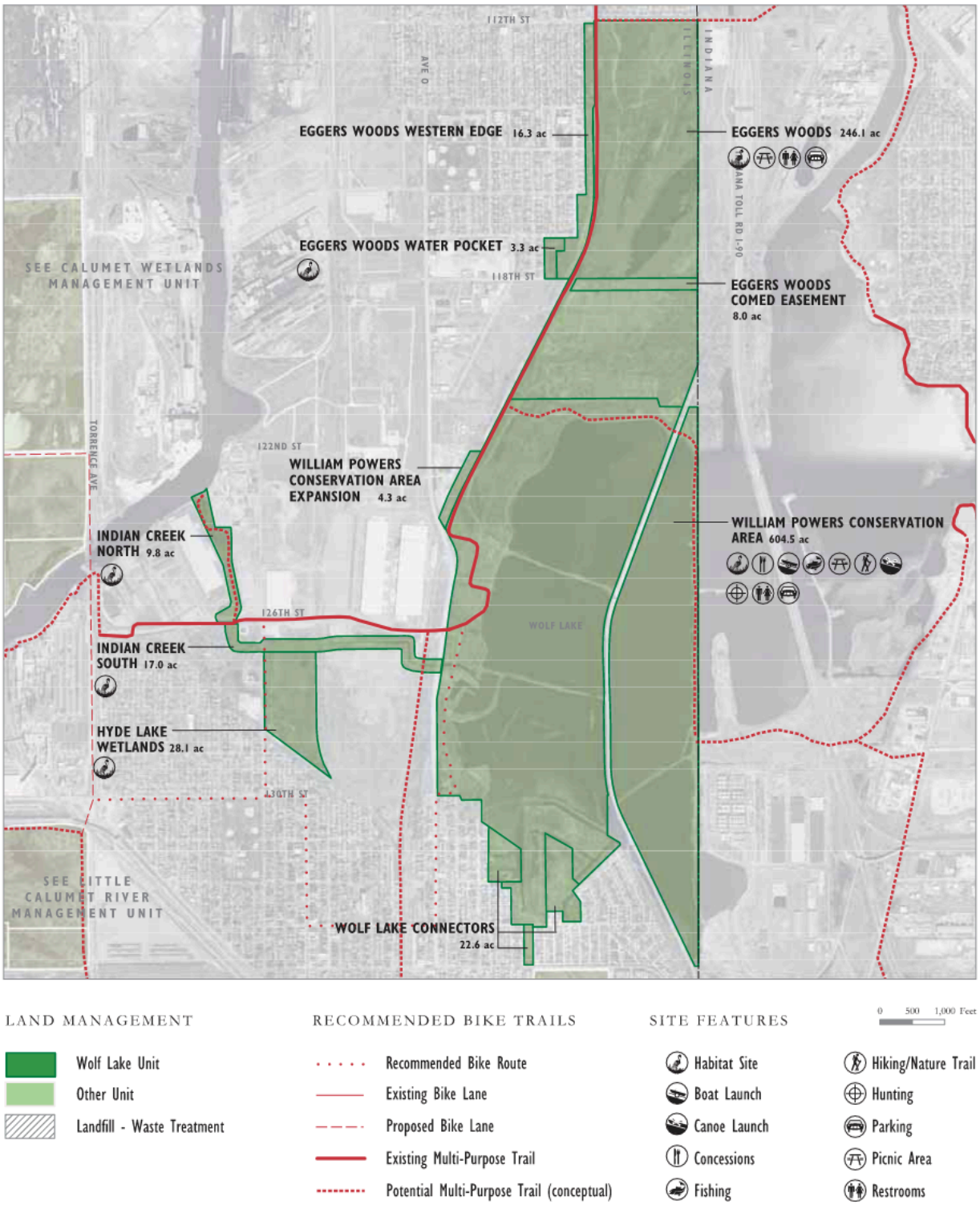
Supplemental Figure 1: Calumet Prairies Unit



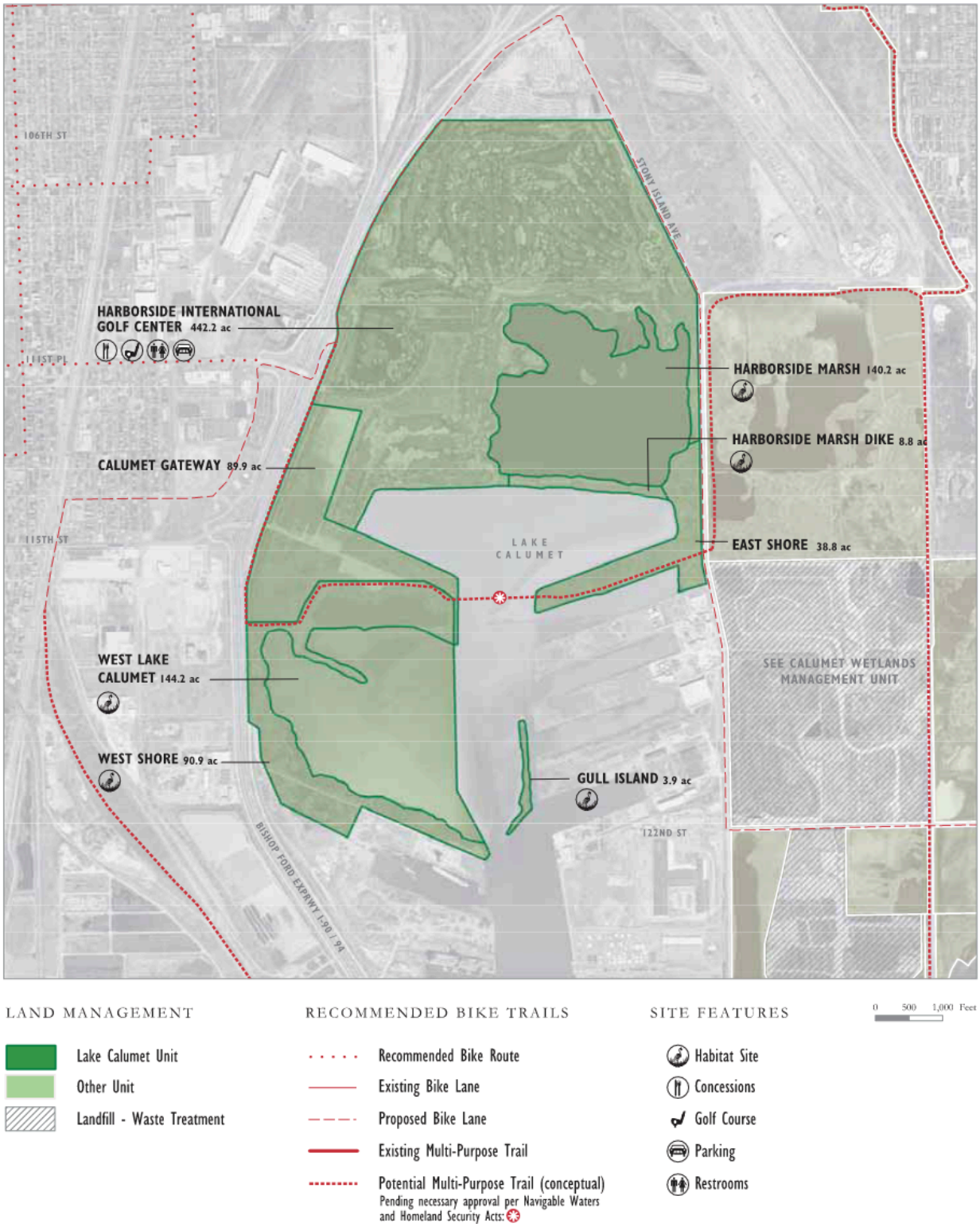
Supplemental Figure 2: Calumet Wetlands Unit



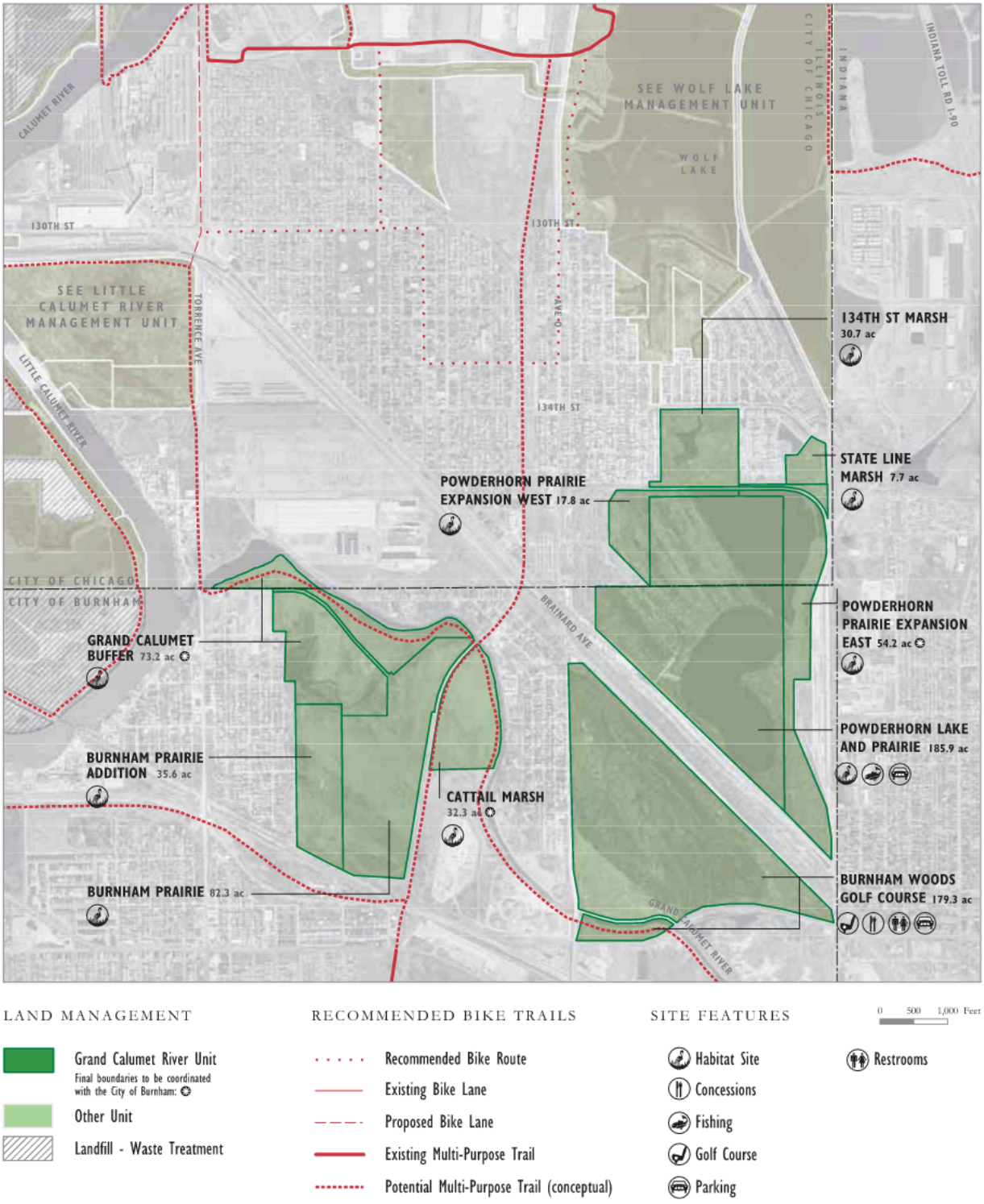
Supplemental Figure 3: Little Calumet River Unit



Supplemental Figure 4: Wolf Lake Unit



Supplemental Figure 5: Lake Calumet Unit



Supplemental Figure 6: Grand Calumet River Unit