

How can vacant lots, open spaces and streetscapes use green design to provide gathering spaces, healthy green spaces and street safety for Lower Price Hill neighborhood?

—Design Lower Price Hill, urban Appalachian Culture Celebration

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Master of Science in Landscape Architecture

Spring 2024

Instructed by:

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College of Design, Architecture, Art, and Planning

University of Cincinnati



Scan for more about this project

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Abstract

This research project aims to explore how can vacant lots, open spaces, streetscapes and building surfaces use green design to provide gathering spaces, healthy green spaces and street safety for lower price hill community. Through site analysis, literature reviews, and case studies, the project proposes three main goals: promoting healthy green spaces, enhancing pedestrian safety, and providing gathering spaces. To achieve these goals, the project sets five specific objectives: community gardens, street gathering spaces, safety signage, Appalachian cultural spaces, and reutilization of space under highways. These objectives aim to improve community environmental facilities and resource utilization, thereby enhancing the quality of life for community residents and strengthening community cohesion.

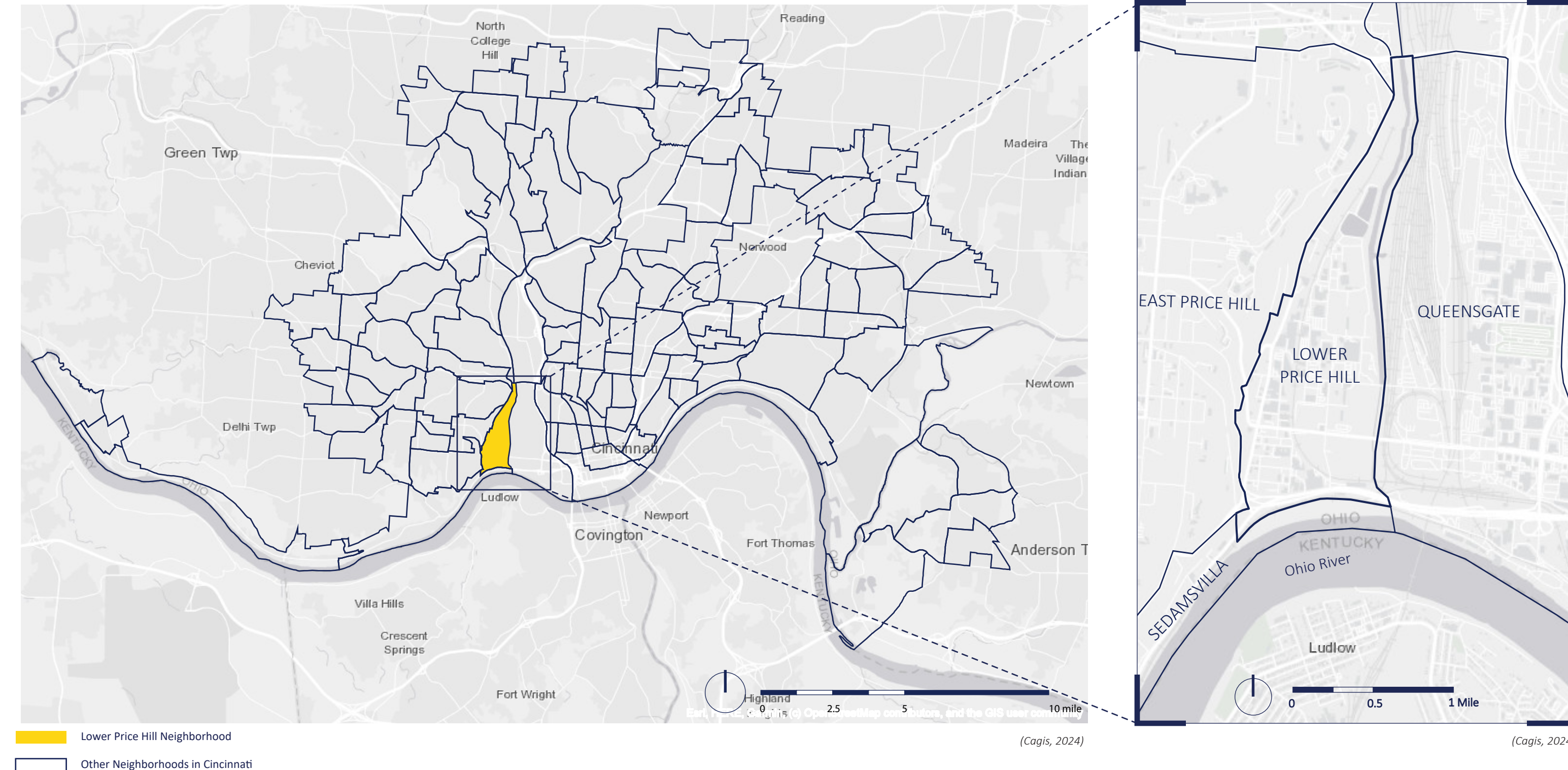
Key Words: Cincinnati, Lower Price Hill, Green Design, Street Design, Community Garden, Street Safety, Cultural Design, Urban Appalachian Culture, Landscape Design



LOWER PRICE HILL INTRODUCTION

1. CINCINNATI NEIGHBORHOOD MAP

Cincinnati is a city of Ohio state, there are 52 official neighborhoods in the city, each with its own distinct characteristics and communities. Lower Price Hill is one of these neighborhoods, located on the western edge of Cincinnati along the Ohio River. It is one of the smaller neighborhoods in terms of geographical size but has a rich history and strong sense of community.

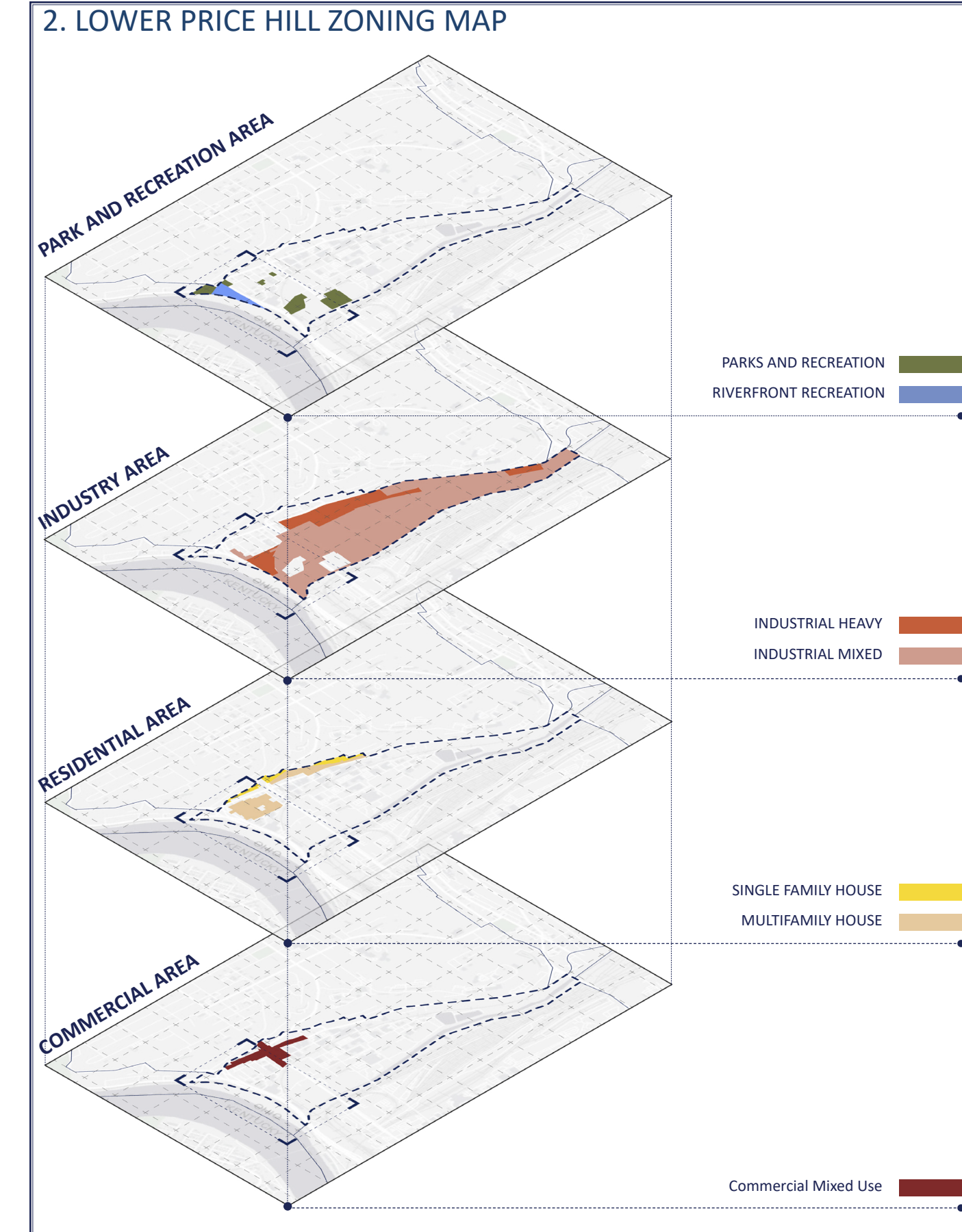


LOWER PRICE HILL INTRODUCTION

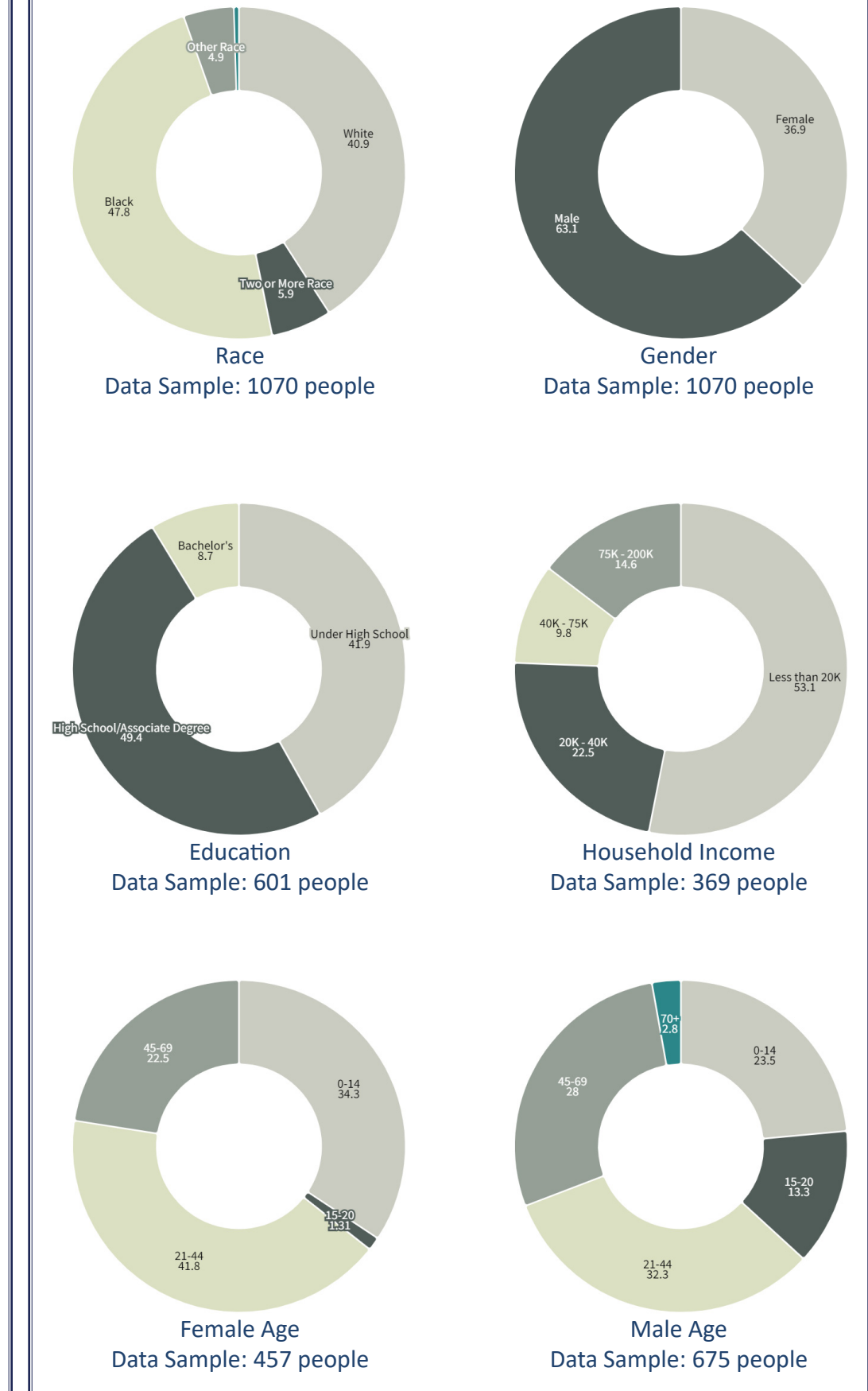
2. LOWER PRICE HILL ZONING MAP

Lower Price Hill is a historic neighborhood located in Cincinnati, Ohio, USA. Situated along the Ohio River, it has historically been a working-class area with a diverse population (Sweet, E., 2021). Despite facing economic challenges, Lower Price Hill has a resilient spirit and boasts various community organizations and initiatives aimed at improving residents' quality of life (LPH Resurgence Plan, 2019). The neighborhood offers a unique blend of urban living with a strong sense of community pride and identity.

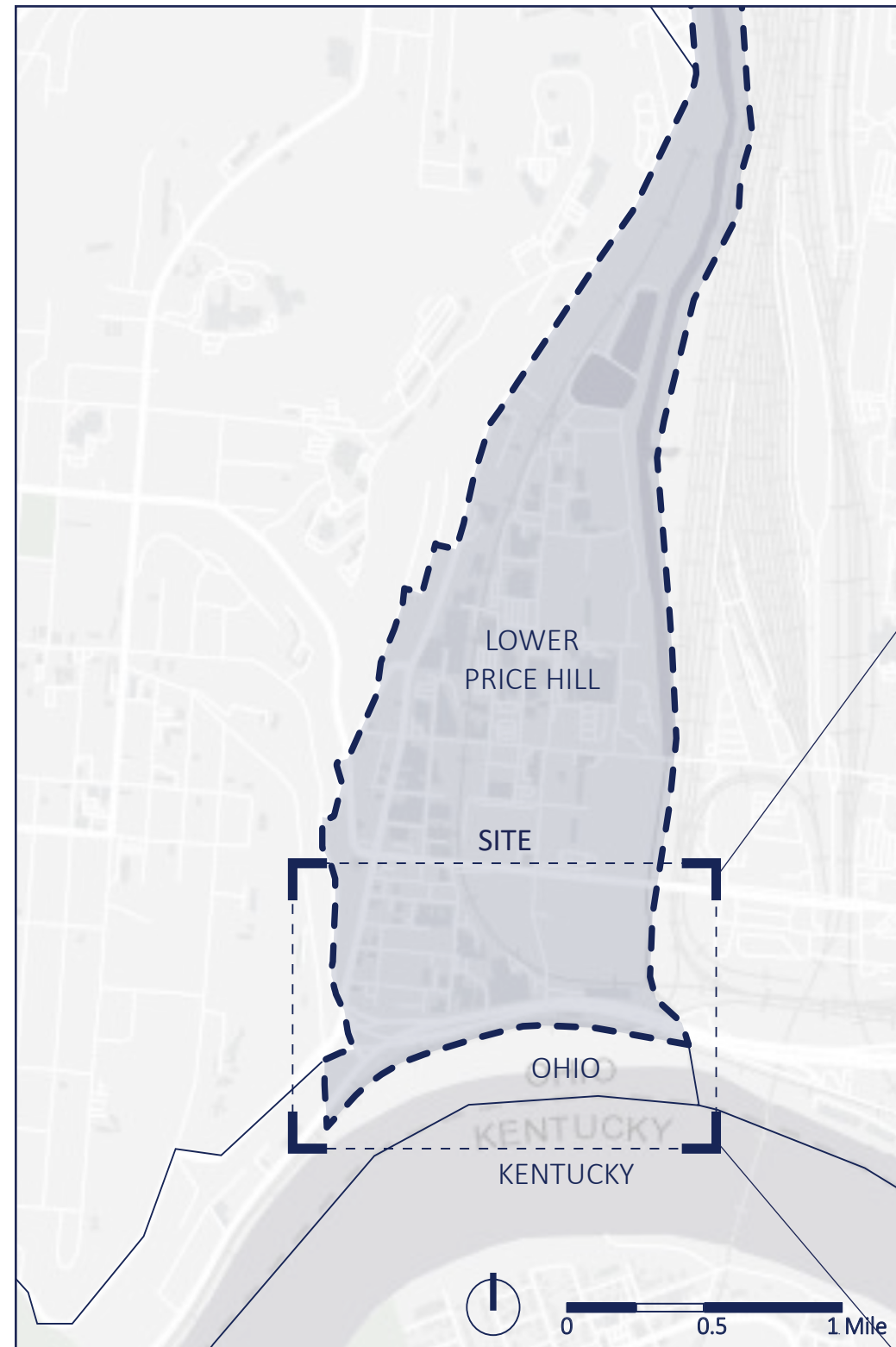
Most of Lower Price Hill's areas are used for industrial purposes, with industrial zones mainly concentrated in the central-northern part, while only a small portion of the southwestern area is used for residential purposes. Several small parks and green spaces in the Lingshi area are distributed in the southern part of this community, near the Ohio River. A small area in the southwestern part of the community is a commercial district, which also has a relatively large number of historical relics. Overall, this area is primarily industrial.



3. DEMOGRAPHIC SITUATION



4. PROJECT SITE INFORMATION



Lower Price Hill Neighborhood
 Project Site Boundary
 (Cagis, 2024)

COMMUNITY MATTERES - AN ACTIVE COMMUNITY ORGANIZATION



HOLD COMMUNITY ACTIVITY

COMMUNITY GARDEN ACTIVITY



PROMOTE NEIGHBORHOOD COMMUNICATION

Community Matters is an active organization with Appalachian culture background. It plays important role in Lower Price Hill area for its contributions on engaging community members, managing community gardens, promoting local business and education.

(Picture source: See Bibliography)

LPH RESURGENCE PLAN. 2019



KICK-OFF MEETING, MARCH 2015



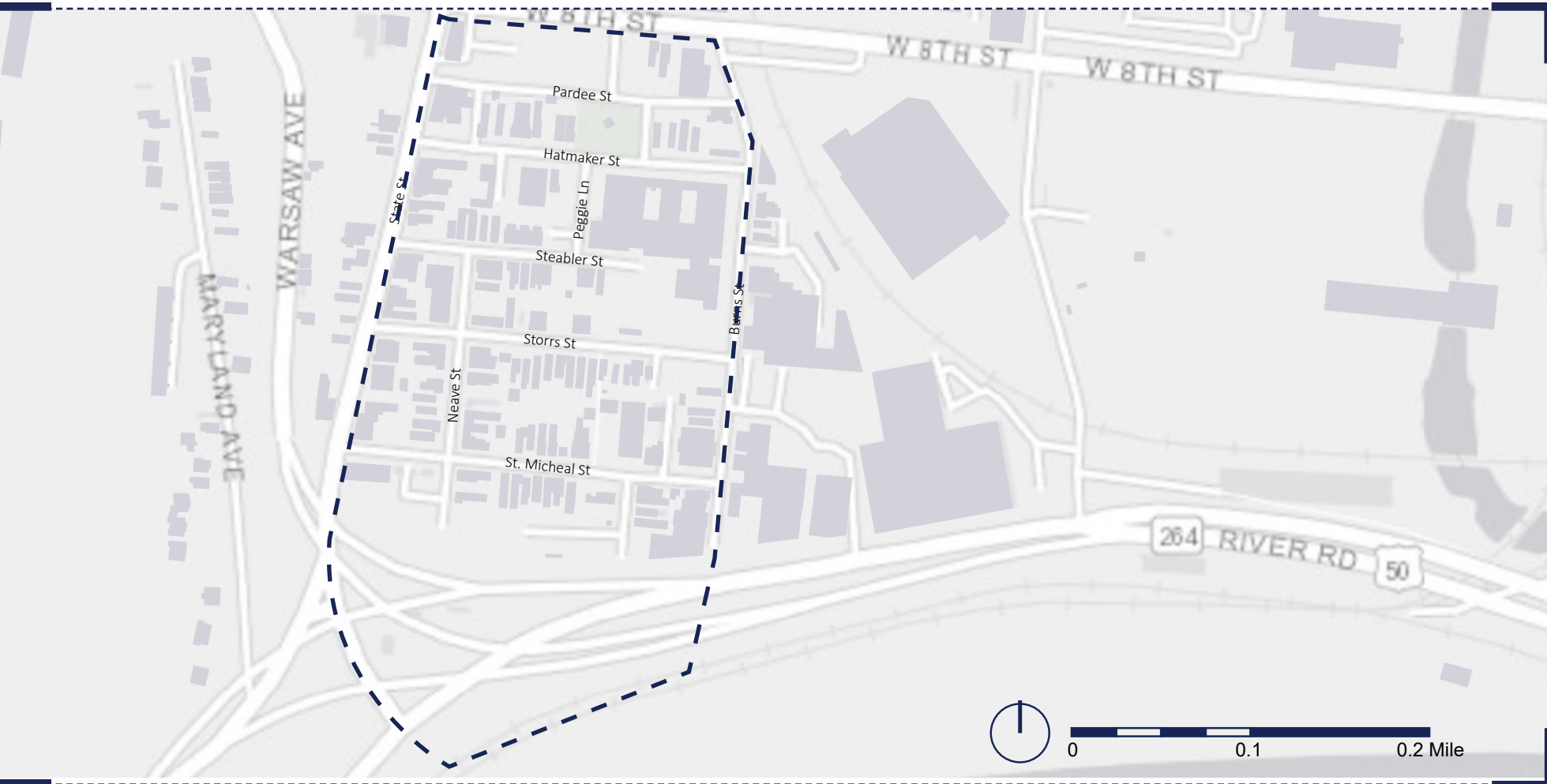
HABITAT FOR HUMANITY PRESS CONFERENCE, 2016



HOUSING TEAM, 2015

This is a plan involving LPH residents and officials, aimed at envisioning a better future for LPH. Community members actively participate in meetings, raising concerns and aspirations such as revitalizing the economy, ensuring safe streets, and more. All future plans are documented in this report.

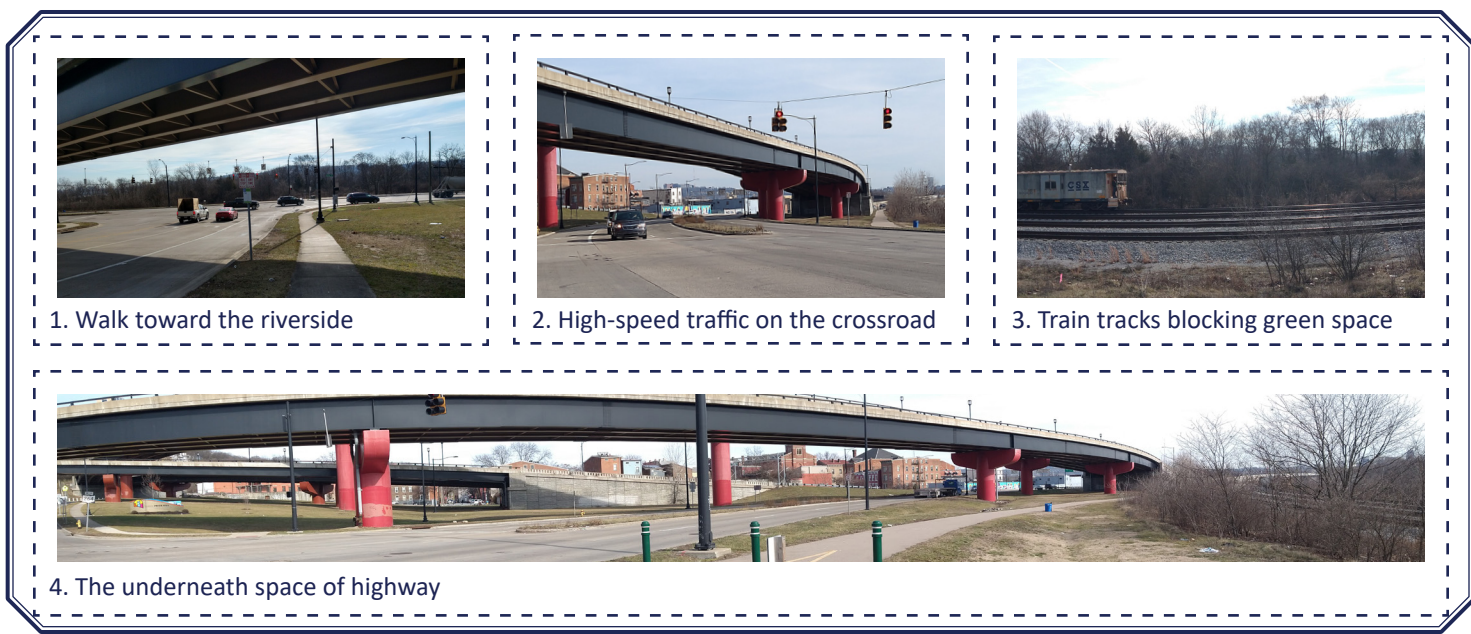
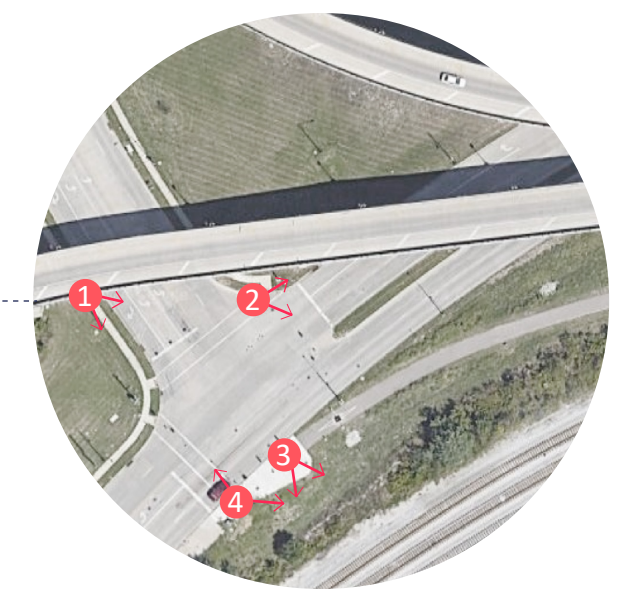
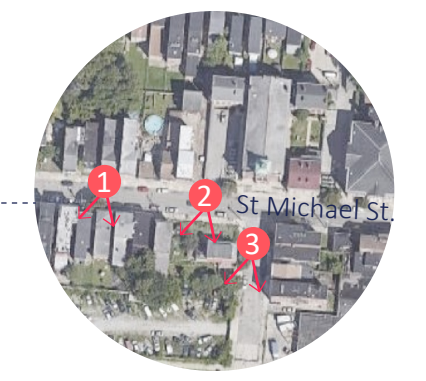
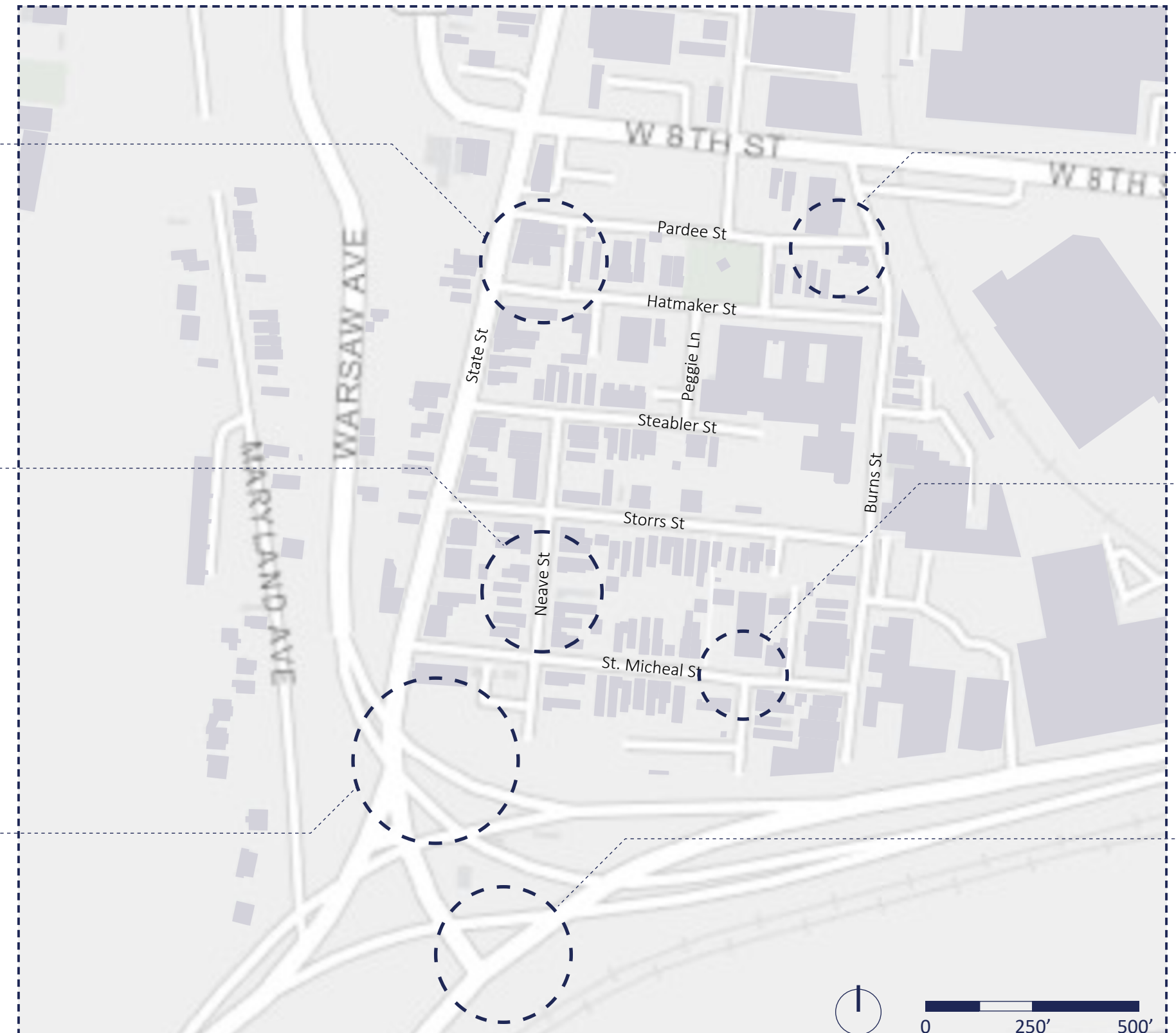
(Picture source: See Bibliography)



Design Boundary
 (Cagis, 2024)

SITE VISIT MAP

This research conducted a visit in the southwest area of the site and documented several situations in Spring 2024. The photos capture Neave Street, St. Michael Street, green spaces under the highways, and the riverfront green space along the Ohio River. Lower Price Hill is a mixed race neighborhood (35.3% Black, 43.4% white, 21.3% Other, and 2.1% Hispanic) with 1,082 residents, 40% of which are 17 and under. (*Cincinnati Census, 2020*) The site presents many challenges, such as not well managed community gardens, vacant houses, sidewalks occupied by trash cans and barbecue grills, and damaged concrete surfaces, etc. Through photo observation, opportunities can be identified to create a better neighborhood community environment.



Site History

Lower Price Hill is one of the first neighborhoods in Cincinnati to be included in the planning. From the 1800s-1940s, many working-class Irish immigrants lived there. After WW2, Appalachian moved to the neighborhood; it became a thriving Appalachians community in the 1970s. In the recent two decades the number of Latino has been rising. After the 1990s, it began to experience population loss. The originally middle-class neighborhood finally became mainly low-income residents (cincy.com, 2013) (Sweet, E., 2021)

The LPH neighborhood is a typical example of “out-migration” in the 1960’s when industry began to adjust from a manufacture base centered locally to that industry locating in other regions. As the industry moved, those working-class families moved as well and left behind housing stock less valuable but affordable to lower income families. (Sweet, E., 2021)

According to the 2020 census, the migration back to these types of neighborhoods are attractive once again to those either starting families (young couples) or those interested in living in progressive neighborhoods on the rise.



Lower Price Hill History Collage

2. SITE INVENTORY & ANALYSIS

PROJECT INTRODUCTION

There are numerous weaknesses and opportunities in Lower Price Hill. During the on-site investigation, it is discovered that many residents use the sidewalks in front of their homes as venues for family gatherings. They set up barbecue grills, chairs, and tables on the sidewalks because there are no suitable places for residents to gather nearby. Despite the presence of two community gardens, they are inaccessible, and the entire area lacks sufficient green space. Beneath the overpass of the highway, there is a large open lawn, but the shadows cast by the overpass obstruct sunlight, leaving some areas with bare soil exposed. Coupled with the effects of noise and air pollution, this area is not welcoming. An evident sign is that there is much more pet waste around the community gardens compared to under the highway overpass, indicating that even though residents cannot access the community gardens, they still prefer to linger around them.

Additionally, there are many vacant houses in the area, and near them, boarded-up windows can be seen. The surface of the cement roads often shows damage, and occasionally, there are piles of garbage bins accumulating on the sidewalks. This not only inconveniences pedestrians and poses safety hazards but also negatively affects the health of surrounding residents and pedestrians.

Despite the many weaknesses of Lower Price Hill, there are also numerous opportunities. Firstly, several community organizations are quite active in the area, such as Community Matters, which is dedicated to promoting the development of local small businesses, enhancing the education level of residents, and creating opportunities for success. They frequently organize community activities at local churches and outdoors, fostering interaction among local residents and significantly increasing the vibrancy of the area. Secondly, the site is close to the Ohio River, with undeveloped riverfront green space. According to the resurgence plan from 2019 (LPH Resurgency Plan, 2019), this green space is expected to become a riverfront park serving the local community. Furthermore, the green space under the overpass can also be utilized to provide additional activity space for local residents. Lastly, many vacant houses in the area can be repurposed into various functional spaces, such as public green spaces or recreational facilities.

The next few pages show more detailed analysis of the strengths, weaknesses, opportunities and threats.

PROJECT SWOT ANALYSIS

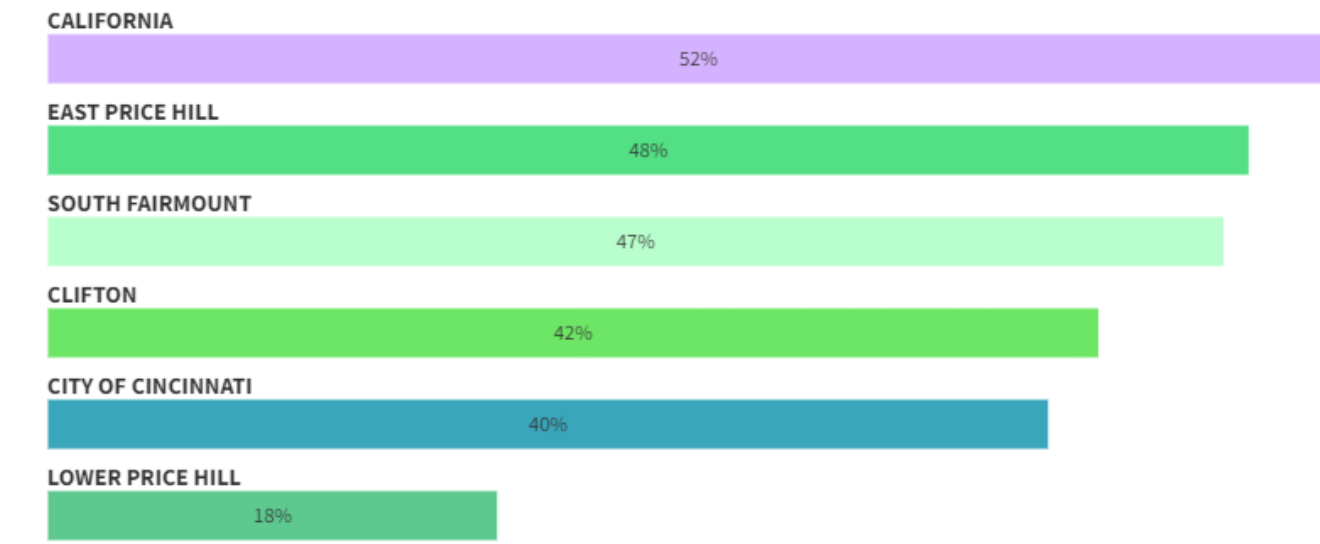


ENVIRONMENT - CANOPY COVERAGE



The Green Canopy in this residential area is about **5** acres, which is about **11.1%** of the residential area.

GREEN CANOPY COVERAGE COMPARE WITH OTHER NEIGHBORHOOD IN CINCINNATI



Data Source: Cagis, 2024

From this picture, it can be observed that the canopy coverage of the LPH residential area in Cincinnati is much lower than that of many other neighborhoods due to trees sporadically scattered between blocks, and no continuous street trees along the streetsides. Such a layout has a negative impact on the health of pedestrians and local residents. Street trees play an important role in urban environments as they can purify the air, regulate microclimates, protect soil, and reduce soil erosion. (Hewitt et al., 2019) Additionally, street trees can provide cooling shade and lower surface temperatures in summer. Furthermore, street trees also provide ecological spaces for small animals in the city. The absence of street trees would lead to a decline in air quality, an increase in ground temperatures, and a reduction in biodiversity within the site. Therefore, increasing the canopy coverage within the site has a positive impact on the health of residents.

In addition, from observing the picture, it can be found that the canopy coverage of the riverside green space is higher than LPH residential area. However, due to the barriers of highways and railways, residents cannot easily access this green space. Therefore, improving accessibility has become an important issue for my research. Measures such as improving the convenience of public transportation systems, increasing pedestrian and cycling paths, and enhancing pedestrian access around green spaces are effective ways to improve accessibility. By improving the accessibility of the riverside green space, residents can more conveniently enjoy the benefits brought by this green space, thereby enhancing their quality of life.

ENVIRONMENT - AIR QUALITY

Ozone Pollution

In the State of the Air report released in 2022, the American Lung Association identified Cincinnati as one of the cities with the most severe **ozone pollution, ranking 32nd**. According to the report, the ozone pollution level in the area reached an “F” grade, indicating a significant impact on air quality and the need for more measures to improve the environmental situation.

Ozone can cause premature death and other serious health effects such as asthma attacks, cardiovascular damage, and developmental and reproductive harm.

PS: The “State of the Air” report is the Lung Association’s annual air quality “report card” that tracks and grades Americans’ exposure to unhealthy levels of ground-level ozone air pollution. (American Lung Association, 2022)

HEART ATTACKS

Ozone and particulate pollutants can cause the human body to produce an excess of oxidizing substances, potentially leading to cellular damage and inflammation, thereby causing heart disease.

ASTHMA

Ozone and particulate pollutants can irritate the respiratory tract, thereby triggering or exacerbating asthma symptoms.

DEVELOPMENTAL HARM

By compromising the respiratory and nervous systems, ozone and particulate pollutants can have negative effects on the growth and development of children and adolescents.

LUNG CANCER

Ozone and particulate pollutants can cause respiratory inflammation, prolonged exposure to these pollutants may result in permanent lung function impairment, and increase the risk of developing lung cancer.

POSSIBLE EFFECTS FOR HEALTH

AUTISM SPECTRUM DISORDER (ASD)

Relative rates of ASD among children (1-3 Years old) exposed to PM2.5: **64%**

Relative rate of ASD when pregnant women are exposed to PM2.5 environment: **31%**

RELATIVE RATIO OF FINE PARTICULATE POLLUTANTS (PM2.5) AND ASD (CK Lin et al., 2021)

According to a 2021 study from Harvard University, there is a close correlation between air pollution and increased risk of autism spectrum disorder (ASD) in children. Specifically, the presence of fine particulate matter (PM2.5) is associated with an increased risk of autism in children. The study indicates that exposure to environmental particulate matter (PM) is linked to neurobehavioral disorders, particularly during late pregnancy and early childhood. The latest research findings reveal that for each increase of 10 micrograms of PM2.5 per cubic meter of air during infancy, the risk of ASD increases by 64%, while during the prenatal period, this risk increases by 31%. Furthermore, the study finds that the highest risk during the prenatal period occurs in late pregnancy. The results also indicate that even exposure to PM2.5 levels below the current regulatory standards may have an impact on vulnerable populations. (CK Lin et al., 2021)

WAYS TO IMPROVE AIR QUALITY

TAKE PUBLIC TRANSPORTATION

Using public transportation is an effective way to reduce car exhaust emissions, improve air quality, and decrease particulate pollution. This not only helps improve the microclimate of communities but also promotes a healthy lifestyle, reducing adverse impacts on the environment.

ADD HEALTHY GREEN SPACES

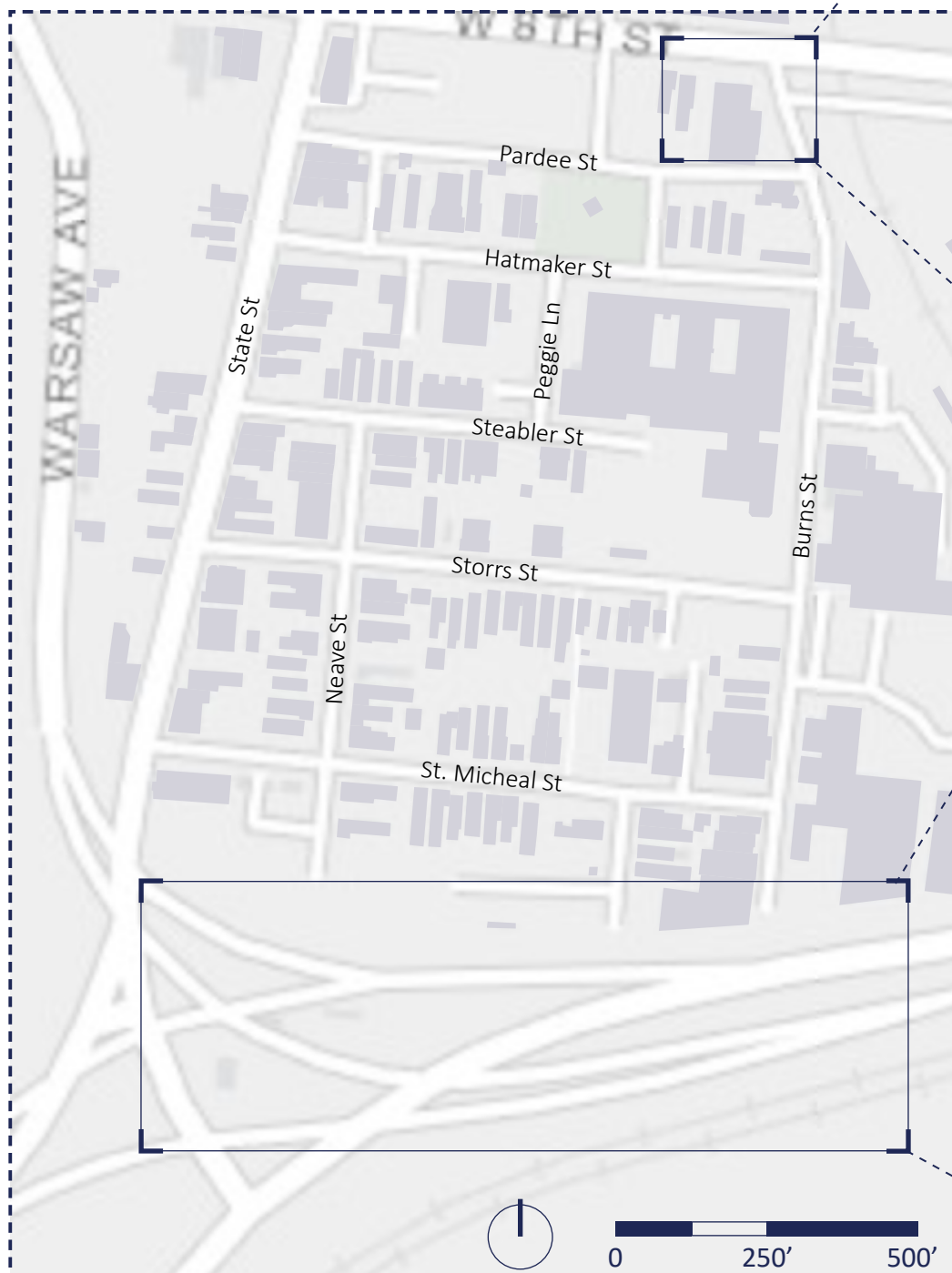
Green spaces effectively reduce the concentration of particulate pollutants, improve air quality, promote health, and regulate microclimates. This kind of ecological environment not only provides fresh air for people but also enhances the livability of cities and the quality of life for residents.

LOCAL HEALTHY FOOD

Producing healthy foods locally such as community garden, help reduce carbon footprint, improve health, and decrease contribution to air pollutants. This not only helps enhance air quality but also benefits food safety and ensures the health of residents.

ENVIRONMENT - NOISE

The noise pollution within the area primarily stems from the nearby highway to the south and the fire station on 8th Street. Prolonged exposure to noise levels exceeding 70dB can detrimentally affect human health, with every 10dB increase representing a tenfold rise in energy. (FTA, May 2006) In fact, the health status of residents within the site corroborates this phenomenon. In the 2020 Cincinnati Census, 10.6% of the population, totaling 114 individuals, were found to have heart disease, while 37.8%, totaling 409 individuals, were diagnosed with high blood pressure. (Cincinnati Census 2020)



(Cagis, 2024)

Cincinnati Fire Dept. Station 17
(Image by Jinyi Wang)

There is a fire station in w 8th street, Every time a fire truck is dispatched, it emits a siren, which can be heard up to half a mile away in residential areas. In other words, residents throughout the entire vicinity can feel its presence. Within a 50-foot range, noise from the highway can reach **70dB to 80dB**, akin to the volume of people conversing loudly nearby. The sound of fire engines can reach 120dB, equivalent to someone loudly roaring by one's ear. For comparison, the noise level of a car horn is 110dB, making fire engine noise ten times louder than a car horn. (FTA, May 2006)

Highway near the residential area
(Image by Jinyi Wang)

Highway Noise Coverage

Moreover, most residential areas within the site are situated within 400 feet of the highway. At this distance, highway noise can reach **59 dBi**; at 200 feet, it is **62dBi**, and at 100 feet, it is **65dBi**. (FTA, May 2006) Such levels of noise carry numerous risks, including the unnoticed elevation of stress hormones, leading to increased anxiety and anger, thereby raising the likelihood of heart disease and other related ailments.

ENVIRONMENT - ILLUMINATION

SITE ILLUMINATION SOURCE

I. STREET LIGHT POLE

(Google Map, 2022)

II. STREET LIGHT INSTALLATION

Street Light Detail
(City of Columbus, 2024)

III. STREET LIGHT INSTALLATION ESSENTIAL

Installation Standard
(City of Columbus, 2024)

Currently, streetlights in Cincinnati are powered and maintained by Duke Energy. These lights are installed on wooden poles, approximately 25 feet high, and use LED bulbs, which are more energy-efficient than traditional bulbs.

According to the Ohio Traffic Engineering Manual (TEM), it is recommended that crosswalks have an average vertical illuminance of at least 1.9 fc (20 lux)(TEM,2024). 20 lux means a public areas with dark surroundings, as a comparison, family living room lights is 50 lux.(wikipedia, 2021)

Keeping a certain distance between streetlights and trees is for safety reasons, to prevent tree branches from contacting the circuit. Additionally, this facilitates maintenance work. Moreover, if tree canopies are too close to streetlights, it may affect the lighting effect.

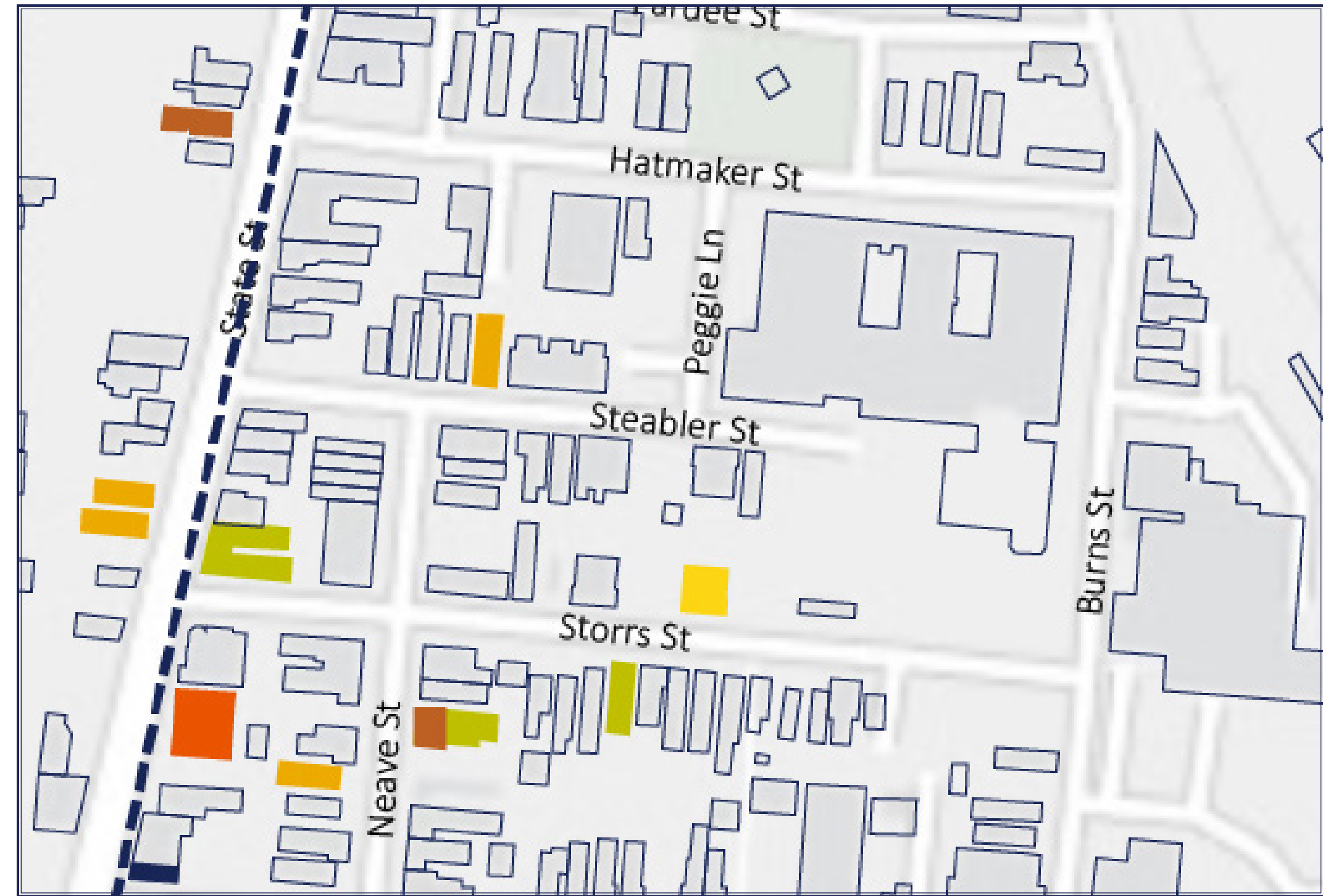
SITE STREET LIGHT DISTRIBUTION

Light Poles Map

Within the site, there are a total of **64** street lamps, approximately **15** feet in height, with wood poles topped with metal, operated by Duke Energy. (Duke Energy, 2024)

Each street lamp can illuminate a radius of approximately 2.5-3 times its own height. A street lamp that is 20 feet tall can illuminate an area with a radius of about 50-60 feet. **This means that a street lamp should be placed approximately every 50 feet. However, there is a noticeable shortage of street lamps within the site, meaning that some areas within the site are not illuminated at night.** This poses a safety hazard for residents returning home late from work. Moreover, if damaged roads are added to the equation, it significantly increases the likelihood of them tripping and falling.

VACANT BUILDING MAP



There are a total of 11 vacant properties on the site, each with different reasons for being vacant. Some of these properties have historical value but pose safety risks due to aging. Others are vacant due to contamination or crime reasons. If these properties have historical and cultural value, their reuse can help protect and preserve the local heritage. Additionally, these properties can be redesigned as green spaces, such as parks, gardens, or recreational areas, to improve the community environment and residents' quality of life.

VACANT LOT STATUS NOTES

Vacant - Civil

- The building is unoccupied and not in use. Or the building has been left vacant for an extended period without maintenance or care.

Vacant - Condemnation

- The building has been officially declared unfit for habitation due to safety or health concerns.

Vacant - Crime activity

- The building has been officially declared unfit for habitation due to crime activities.

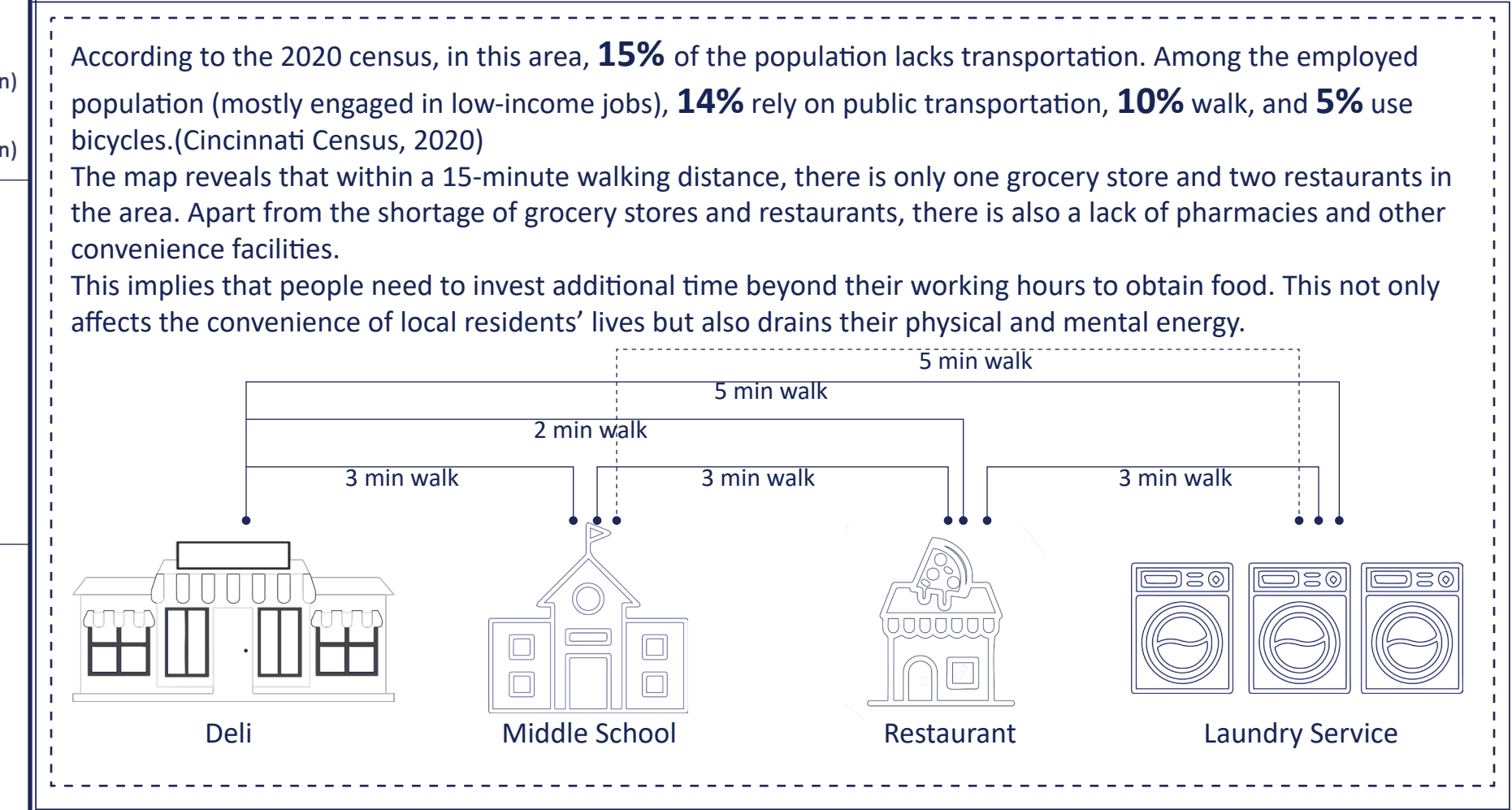
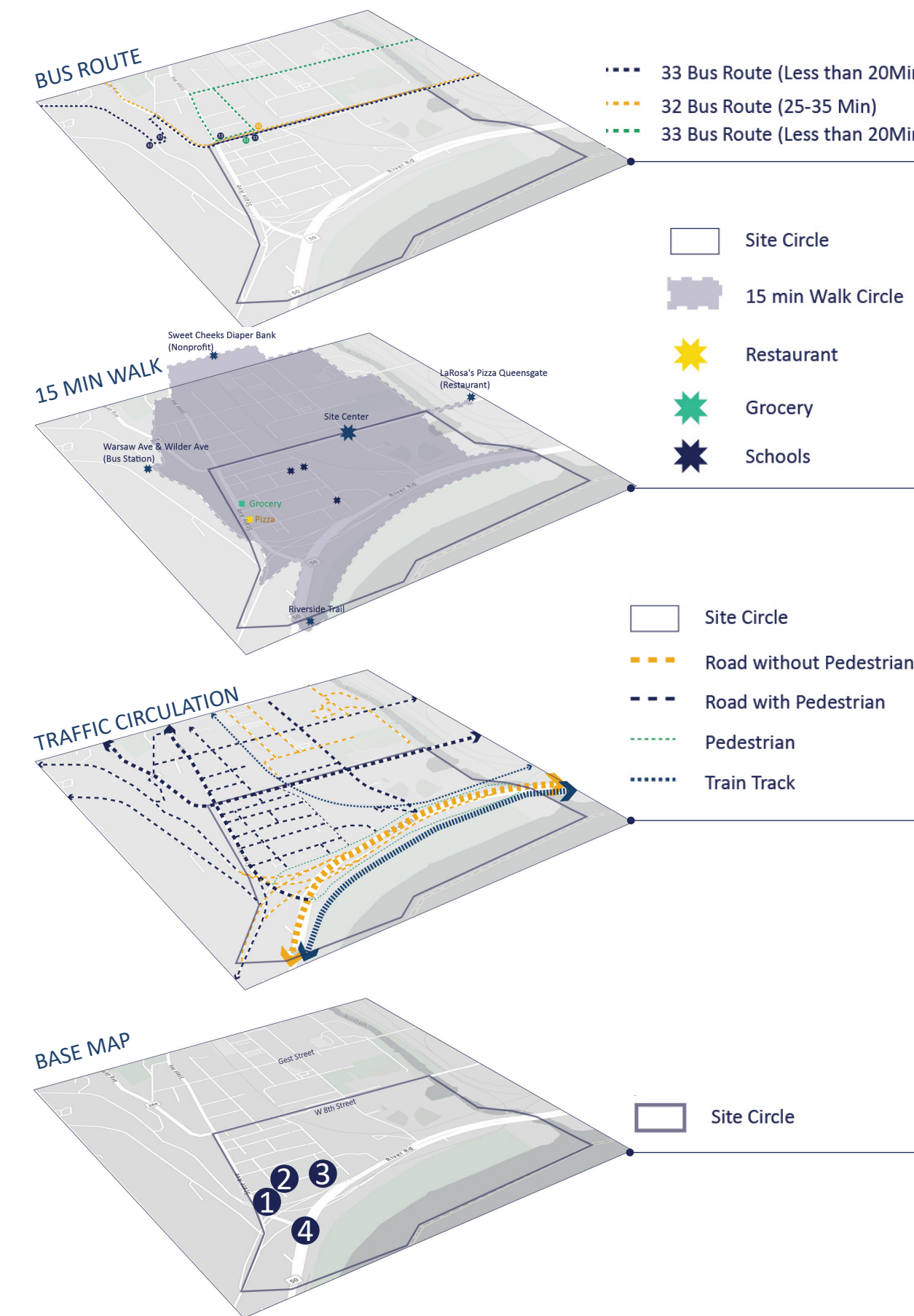
Vacant - Historic & Unsafe

- Suggesting that the building has historical significance and not structurally sound or poses risks to public safety.

Vacant - Petition

- The building has been formally submitted with an application requesting to be officially recognized as a vacant property.

TRANSPORTATION SYSTEM



3. LITERATURE REVIEW & CASE STUDY

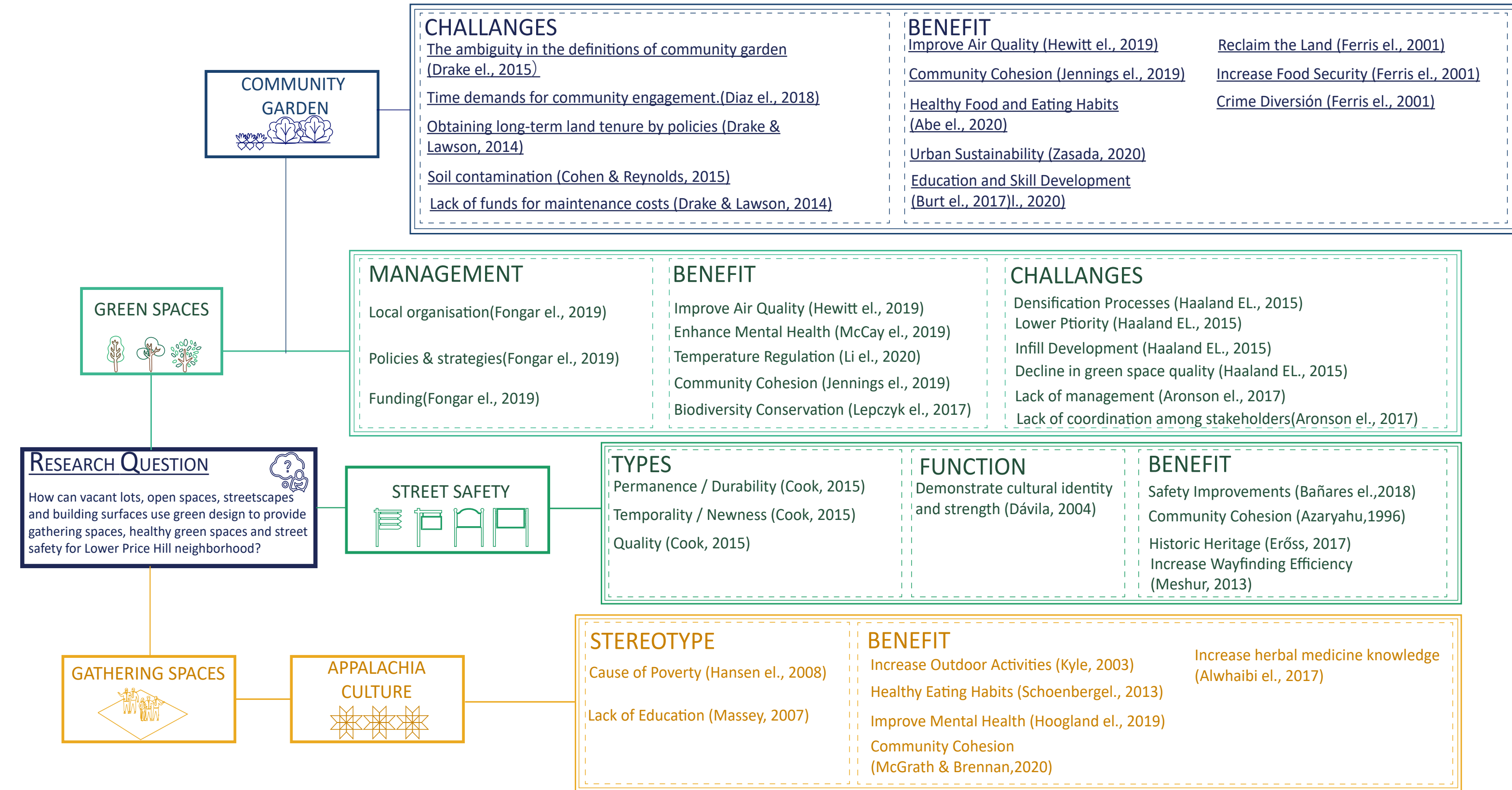
INTRODUCTION

From last module, several significant challenges facing the research site are evident. Firstly, there is a lack of green spaces, meaning residents cannot effectively combat the health impacts of air pollution and highway noise. Secondly, there are safety concerns on the streets, particularly at intersections of main roads and highways, where speeding vehicles may increase the risk of traffic accidents. The site includes a middle school and a daycare, and in 2023, speeding vehicles resulted in the tragic death of a three-year-old boy. The third challenge is the presence of numerous vacant buildings, posing both a problem and a potential opportunity. Local organization Community Matters plans to renovate some vacant buildings into affordable housing, but the high economic cost of full-scale renovations necessitates considering alternative solutions, such as transforming these buildings into public green spaces, to enhance the quality of the community environment. The fourth challenge is limited access to healthy food for residents, with only a small deli currently providing fresh food services. To address this issue, consideration could be given to establishing community gardens or other forms of agricultural supply points to offer residents more healthy food choices. Lastly, while the community holds potential for revitalization and has a spirit of renewal, there is a lack of clear goals and direction in cultural development. Therefore, it is necessary to formulate and implement relevant cultural promotion plans to foster diversity and prosperity in community culture.

In this unit, the study will explore solutions to the aforementioned challenges through literature review and case studies. Firstly, it is essential to define the scope of the research. The first objective is to increase the quantity of green spaces within the site. Green spaces not only involve planting vegetation on vacant land but also providing health and ecological benefits, and functional spaces for local residents, such as community gardens for food production. Additionally, utilizing the roof spaces of vacant buildings for rooftop gardens could further increase green spaces. The second objective is to enhance gathering spaces. Due to the lack of recreational areas, local residents often set up makeshift barbecue grills on sidewalks, and garbage bins are frequently placed haphazardly, posing safety hazards and health issues for pedestrians. Therefore, increasing public squares, community activity centers, and other gathering spaces is crucial for improving residents' quality of life. Moreover, to meet the demands of local organizations for various events, diverse public event venues need to be added. The third objective of the study is to improve the safety of streets within the site. To achieve this, measures such as traffic speed limits, additional traffic signs, and pedestrian crossings can be considered to reduce the occurrence of traffic accidents. To validate the effectiveness of the research objectives and enhance the credibility of the project, this unit will integrate relevant literature and case studies to test the reliability of the research objectives and propose specific solutions and recommendations based on actual circumstances.

To test the effectiveness of the content within the research objectives and to enhance the credibility of the project, relevant literature and case studies will be integrated in this unit to test the reliability of the research objectives.

LITERATURE REVIEW MAP



The purpose of this literature review is to explore how to use green design to provide healthy green spaces, street safety and gathering spaces. This literature review examines three main themes: green spaces, street safety, and gathering spaces. Among these, the category of gathering spaces will primarily focus on those related to the Appalachian culture. The review emphasizes the benefits of each theme for the site, as well as potential challenges, providing theoretical grounds for selecting subsequent objectives.

CASE STUDY - GREEN SPACES

PROJECT NAME
 Olympic Park, Beijing North

BLUE-GREEN INFRASTRUCTURE TYPE
 Sunken green space and sunken square with underground detention and drainage; permeable pavement, flow to tree pits; underground water storage cisterns; overflow to separate sewer new development)

BGI FUNCTIONS & CLIMATE IMPACTS
 Flood prevention; groundwater recharge; stormwater utilization; ecosystem regeneration

The Beijing Olympic Park, also known as the Olympic Park, is a massive complex built by China in Beijing to host the 2008 Summer Olympics. The park covers approximately 1,215 hectares (3,000 acres) and is located in the Chaoyang District of Beijing. It represents a landmark project symbolizing China's urban modernization and Olympic spirit. The Chinese government invested billions of dollars to transform the area into world-class sports facilities.

Firstly, the project underwent meticulous planning and design. Architects and urban planners collaborated to develop a comprehensive plan integrating various sports venues, public spaces, transportation systems, and landscaping elements. The goal of the planning was to create a modern, sustainable, and visually appealing environment. Designers took environmental considerations into account and implemented a series of measures to minimize the park's impact on the environment, including green building practices, water conservation measures, and energy-efficient technologies.

Secondly, the Olympic Park boasts various green infrastructure elements. Extensive green spaces, including landscaped gardens, trees, and grasslands, not only beautify the environment but also help improve air quality and provide habitats for wildlife. Sustainable water management practices, such as rainwater harvesting, water recycling systems, and permeable paving, are implemented to reduce stormwater runoff and prevent water pollution.

Lastly, the project provides some design elements that can be emulated. Firstly, the use of native plants helps conserve water resources and reduce reliance on pesticides. Secondly, the adoption of permeable surfaces helps reduce stormwater runoff, prevent erosion, and recharge groundwater supplies. Additionally, incorporating green roofs and walls helps reduce air pollution and mitigate the urban heat island effect. Finally, the construction of rain gardens can capture and filter stormwater runoff, reducing the risk of flooding, erosion, and water pollution.

These design elements not only enhance the ecological sustainability of cities but also improve people's quality of life and provide valuable insights for future urban development.

Blue-Green Infrastructure

Blue-Green Infrastructure(BGI) (c.ramboll.com, 2024)

Blue-Green Infrastructure(BGI) (Siehr EL., 2022)

Image: Shutterstock

CASE STUDY - STREET SAFETY

PROJECT NAME

Urban Street Design Guide(2013) by National Association of City Transportation Officials(NACTO)

NEIGHBORHOOD STREET

"Local streets in residential neighborhoods are often underutilized as spaces for play and leisure. These streets should provide safe and inviting places to walk with direct access to local stores and schools. Design for local streets can combine stormwater management features, curb extensions, vertical speed control elements, and bicycle facilities that encourage safe speeds and meter through traffic."(NACTO, 2013)



IMAGE: NACTO, 2013

On 1-way neighborhood streets, travel lanes may be striped to narrow the perceived width of the roadway. An undifferentiated traveled way encourages higher speeds. Crash rates have been shown to increase as lane width increases. (NACTO, 2013)

Left-side bike lanes reduce the risk of dooring conflicts and are an effective treatment for most neighborhood streets. (NACTO, 2013)

Raised crosswalks or curb extensions maintain safe travel speeds and reinforce the residential nature of the street. (Safe Routes to School, 2012)



BEFORE



AFTER

IMAGE: NACTO, 2013

Location: New York, NY, Credit NYC DOT - New York City DOT's Slow Zones program uses striping and signage, including interim gateway treatments), to emphasize slower speeds in 20 MPH zones. Credit: NYC DOT

New York City DOT's Slow Zones program uses striping and signage, including interim gateway treatments, to emphasize slower speeds in 20 MPH zones.(USDG, 2024)

After putting white striping and signage, the current vehicle speed obversely become slower, which creates a safer street environment for pedestrian.

2-WAY YIELD STREET

"2-way yield streets are appropriate in residential environments where drivers are expected to travel at low speeds. Many yield streets have significant off-street parking provisions and on-street parking utilization of 40–60% or less. Create a "checked" parking scheme to improve the functionality of a yield street."(NACTO, 2013)



IMAGE: NACTO, 2013

All residential streets should provide safe and inviting places to walk and good access to local stores and schools. Design should mitigate the effects of driveway conflicts, reduce cut-through traffic, and maintain slow speeds conducive to traffic safety. (NACTO,2013)

The planted furniture zone of the sidewalk creates opportunities for street trees, bioswales, pervious strips, and rain gardens. (NACTO,2013)

While most yield streets should have a minimum of signage and striping, signage should be used to indicate bidirectional traffic at transition points or where 2-way operation has recently been introduced. (NACTO,2013)

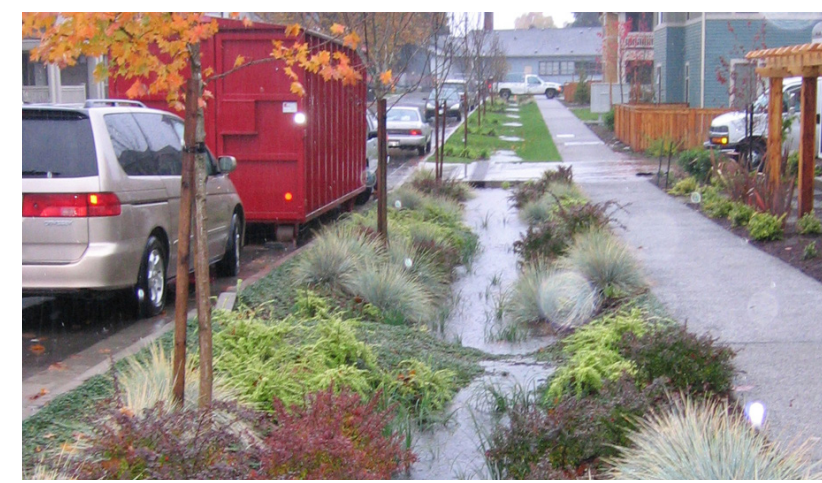
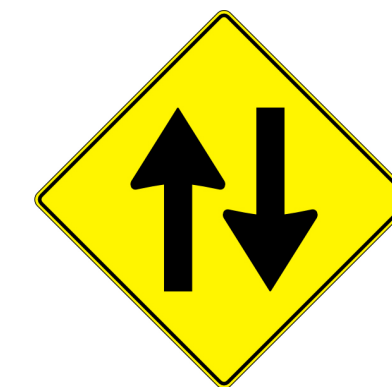


IMAGE: NACTO, 2013

Bioswales may be applied in the furniture zone of residential or low-volume streets to both ecologically and aesthetically enhance the streetscape.(NACTO,2013)



Parking utilization on yield streets should be monitored closely. (NACTO,2013)

RECOMMENDATIONS

For a yield street to function effectively, motorists should be able to use the street intuitively without risk of head-on collision. Depending on whether the yield street has high or low parking utilization, flush curbs, or other features, its configuration may vary. A yield street with parking on both sides functions most effectively at 24–28 feet, while yield streets with parking on only one side can be as narrow as 16 feet, assuming that parking utilization is low enough for cars to safely yield and pass one another. (Daisa & Peers, 1987)

MAJOR INTERACTIONS

"The intersection of two major streets can act as both a barrier and a node. Redesigning major intersections requires designers to critically evaluate the tools and trade-offs available to make an intersection work better for everyone."(NACTO, 2013)



IMAGE: NACTO, 2013

Use leading pedestrian intervals (LPI) to give pedestrians a head start entering the crosswalk. Add pedestrian safety islands where possible and eliminate channelized rightturn lanes to slow turn speeds and create self-enforcing yielding to pedestrians. Provide a right-turn pocket or mixing zone where right turn volumes merit. Minimize speed, especially at turns. Curb extensions, tight corner radii, cycle tracks, and pedestrian safety islands force drivers to navigate intersections cautiously(NACTO,2013)

At large intersections, accommodate bicyclists either through full signalization or mixing zones. While a dedicated bicycle signal is generally desirable from a safety point of view, an added signal phase lengthens the overall cycle length and exacerbates delay for all users. Avoid the use of mixing zones or restrict turns where turn volumes are likely to make bicyclists feel unsafe. (NACTO,2013)

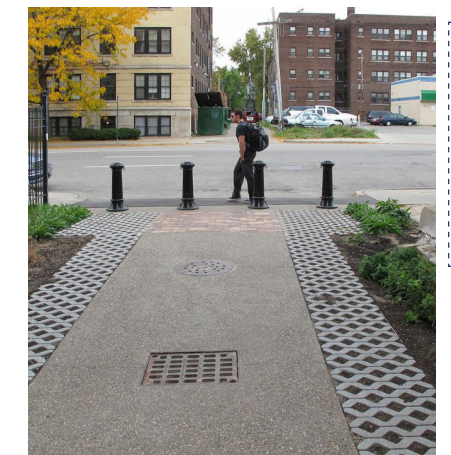
GREEN ALLEY

"The majority of residential alleys have low traffic and infrequent repaving cycles, resulting in back roads with potholes and puddling that are uninviting or unattractive.."(NACTO, 2013)



To avoid puddling, stormwater run-off should be infiltrated in-place using permeable paving or rain gardens at the edge of the pedestrian path(EPA, 2013)

Construct green alleys with low-impact pavement materials, such as pervious pavements with high reflectivity to reduce heat island effects..(NACTO,2013)



Location: Detroit, MI, Picture by Green Garage

This photo shows permeable pavement and greenery in the alleyway.

BRIEF INFORMATION



Google Map, 2022

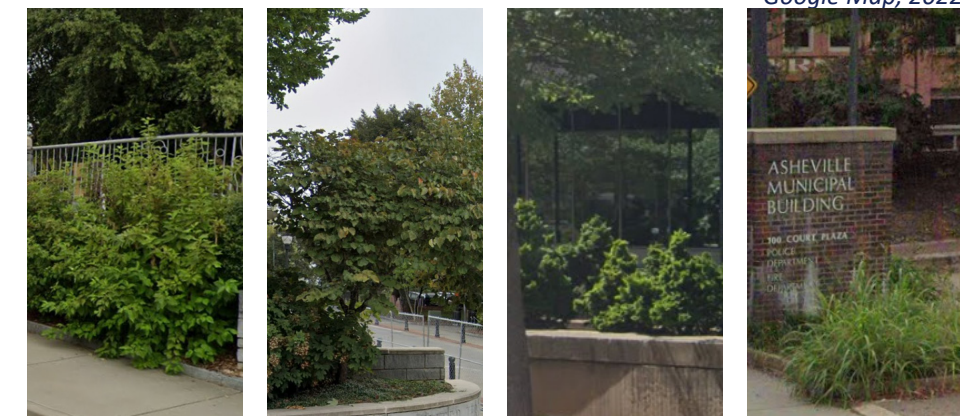
PROJECT NAME
Pack Square Park

LOCATION
80 Court Plaza, Asheville, NC 28801

SIZE
6.5 acres

HOW IT CELEBRATE APPALACHIA CULTURE?

1. APPALACHIA AREA NATIVE LANDSCAPING



Google Map, 2022

Mountain Laurel (*Kalmia latifolia*) Eastern Redbud (*Cercis canadensis*) Eastern Red Cedar (*Juniperus virginiana*) Switchgrass (*Panicum virgatum*)

These native plants require less maintenance compared to non-native species. By showcasing indigenous flora, the park celebrates the natural heritage of the Appalachian Mountains and promotes sustainability and ecological stewardship.

2. APPALACHIA CULTURAL EVENT



This park hosts a diverse range of cultural activities, serving as a vital venue for showcasing Appalachian music, arts, and traditional culture. These events often attract local musicians, artisans, and storytellers, who uniquely showcase the rich cultural heritage of the region. From storytelling to Appalachian cuisine and wine, these activities are varied, offering people the opportunity to deeply understand and experience the cultural richness of the area.

3. SCULPTURE INSTALLATION



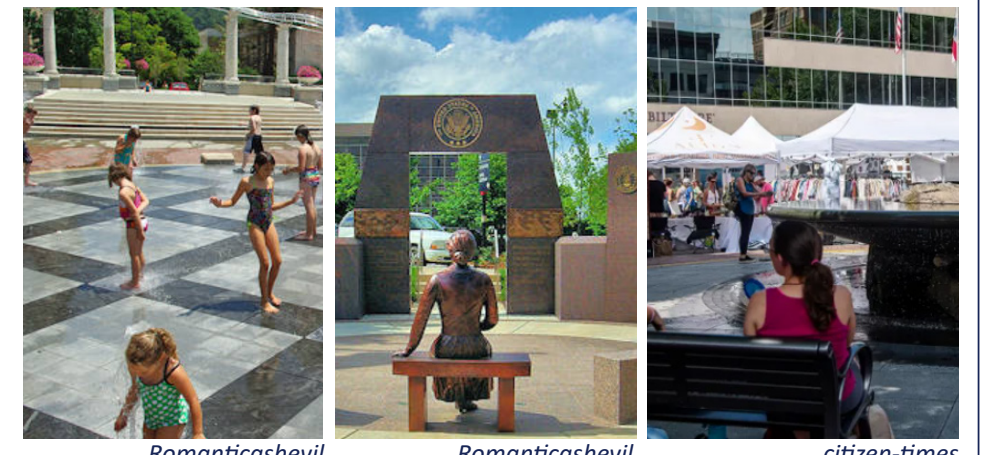
The centerpiece of this fountain is a mountain-shaped structure built with stacked stones, resembling the peaks of the Appalachian region. The fountain seamlessly merges the mountain scenery with water, evoking admiration and respect for the natural beauty of Appalachia.



Artist: Hoss Haley publicartarchive.org publicartarchive.org

The wave-shaped canopy, extending 120 feet, harmonizes with the distant contours of the Appalachian Mountains, connecting the surrounding buildings with the magnificent mountain scenery. Serving not only as a sunshade but also as a decorative element for the event venue, its elegant form makes every performance more captivating.

4. COMMUNITY GATHERING

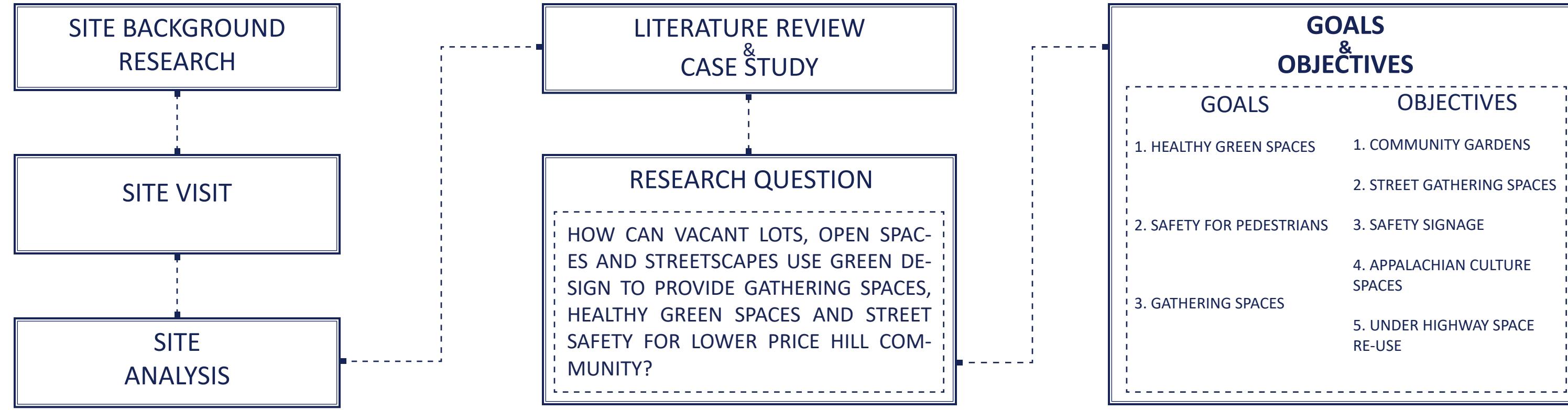


Romanticashevil Romanticashevil citizen-times

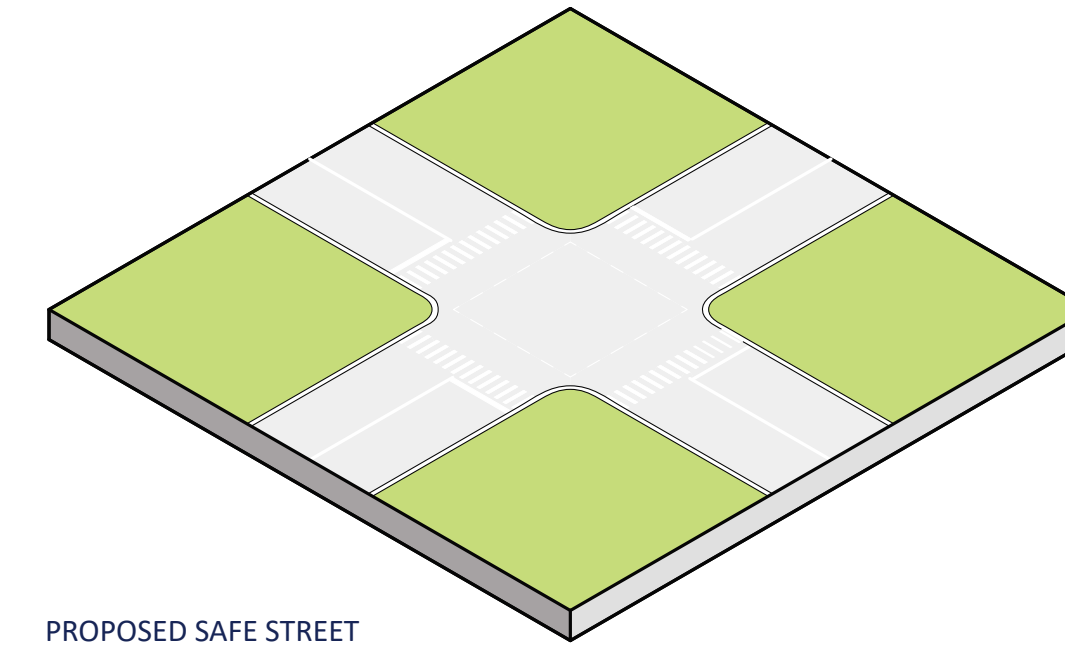
The park has many gathering spaces for residents, each catering to different needs and preferences. The Fountain Plaza, for instance, serves as a favorite destination for children during the summer months, providing a playful area for them to enjoy. Veterans Memorial Plaza, featuring a circular layout with surrounding seating, ideal for community gatherings, events, and speeches. Additionally, the Fountain Plaza offers a tranquil retreat for residents seeking relaxation, with its soothing ambiance and inviting atmosphere. These diverse spaces within the park not only encourage social interaction but also contribute to the sense of community and connection among Asheville's residents.

4. PROJECT GOAL & OBJECTIVES

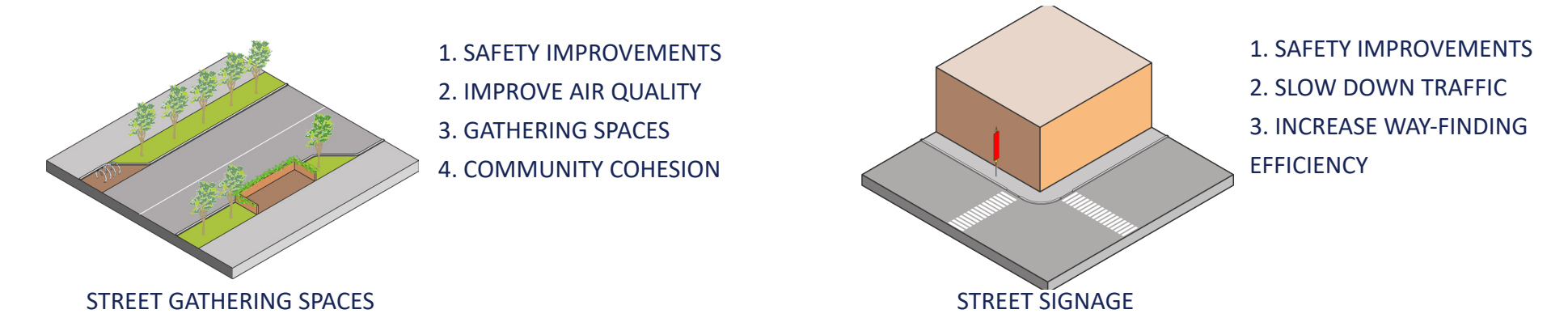
RESEARCH DEVELOPMENT



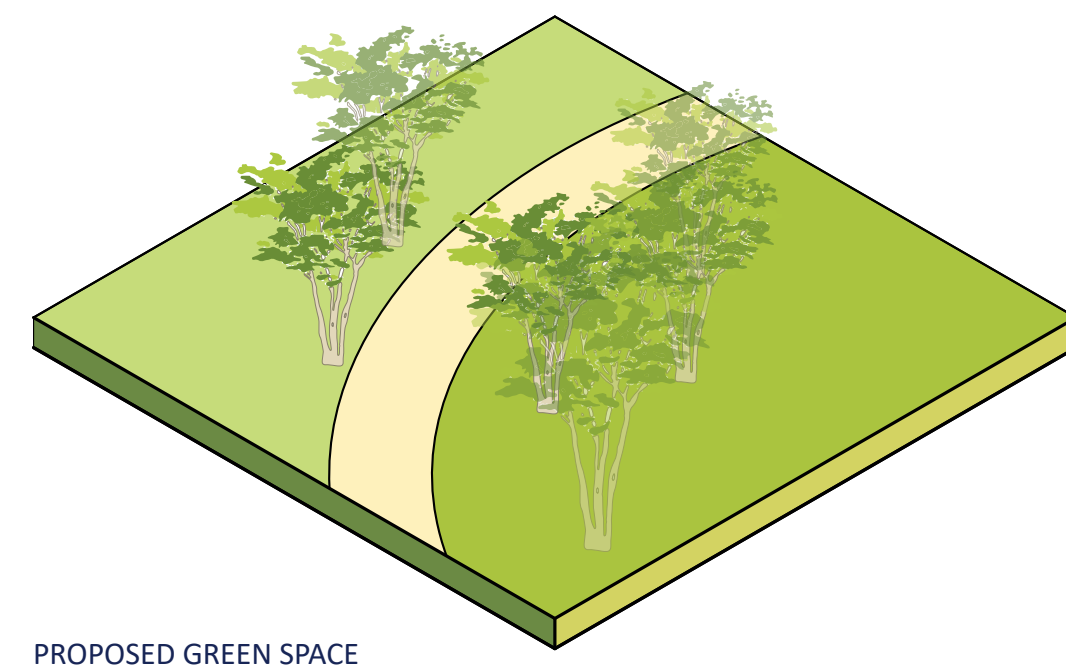
GOAL 2 SAFETY FOR PEDESTRIANS



OBJECTIVES TO ACHIEVE GOAL 2



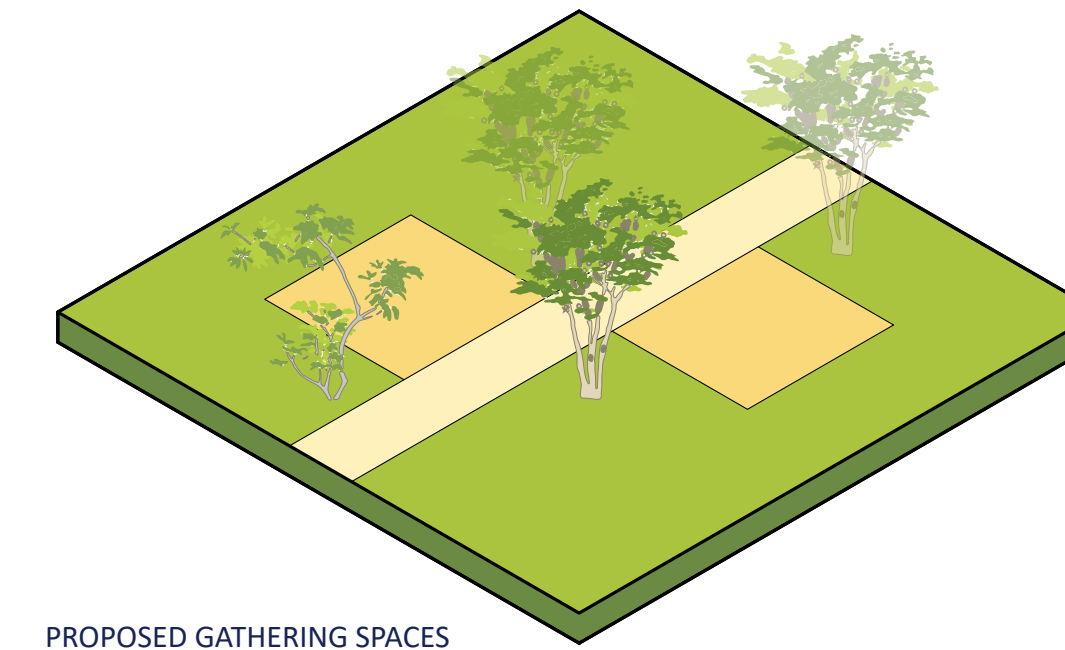
GOAL 1 HEALTHY GREEN SPACES



OBJECTIVES TO ACHIEVE GOAL 1



GOAL 3 GATHERING SPACES



OBJECTIVES TO ACHIEVE GOAL 3

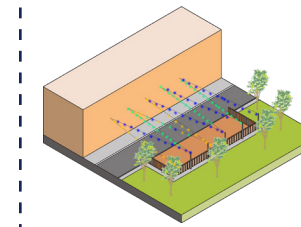


5. DESIGN STRATEGY

DESIGN CONCEPT

1. RECREATION AREA

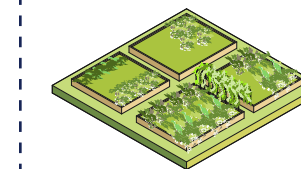
CELEBRATE APPALACHIAN CULTURE



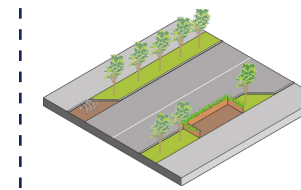
Using plants native from Appalachian area and facilities with Appalachian elements. Adding Appalachian culture scape is good for build community culture identity and provide public gathering spaces for local residents. Plants in this area help improve the air quality of the micro environment

3. RESIDENTIAL AREA

COMMUNITY GARDEN & STREET GATHERING SPACES



In the residential area, community gardens and street gathering spaces will be constructed, greatly enriching community life. The community gardens will serve as vital locations for residents to access healthy food, develop healthy lifestyle habits, and for educational purposes.



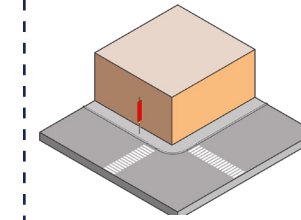
Similarly, the street gathering spaces will offer diverse functionalities, such as hosting gatherings, barbecues, and other activities, eliminating the need for residents to occupy sidewalks as venues for family meals. These gathering spaces will be planted with various plants, not only beautifying the street landscape but also serving to purify the air.



(Cagis, 2024)

2. SCHOOL AREA

STREET SAFETY

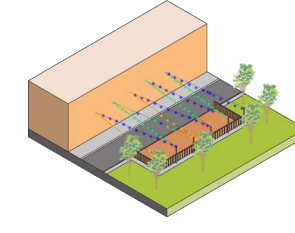
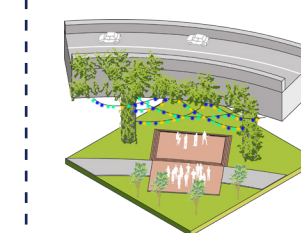


(Community Matters Facebook, 2023)

The areas around the school, safety signs and safety zones will be established to remind passing vehicles to reduce their speed. These safety signs will feature conspicuous colors and be equipped with flashing lights, effectively reducing vehicle speed.

4. UNDER HIGHWAY AREA

MUSIC STAGE AND CULTURE



The space beneath highways can be transformed into a versatile venue, serving as a music stage for concerts, performances, and various community events such as cultural festivals and markets. Increasing greenery, including native plants and climbing vegetation, enhances air quality without damaging the highway structure. This improves the urban environment, creating a comfortable living space for residents.

This area can also be seen as an excellent venue for celebrating Appalachian culture, where various cultural activities can be held, and decorations themed around Appalachian elements can be arranged.

DESIGN CONCEPT



Image by Jinyi Wang

DESIGN STRATEGY 1 - STREET SAFETY



Photo by Jinyi Wang

EXISTING

Street safety has always been a focal point of concern for residents in this area, particularly due to the presence of a high school where traffic control by police cars is required during school dismissal times. In 2023, a heartbreaking traffic accident occurred here, resulting in the tragic death of a three-year-old boy. This incident has brought even greater attention to the safety issues surrounding the streets near the school. To enhance street safety, especially on the streets adjacent to the school, prominent signage and speed reduction are crucial. The design scheme incorporates bright yellow coloration, along with conspicuous text and flashing lights, to draw drivers' attention and prompt them to slow down. These prominent signs and lights not only serve to remind drivers to watch for pedestrians and students but also improve street visibility during nighttime and inclement weather, thus reducing the occurrence of traffic accidents. Furthermore, strengthening street safety measures also helps bolster residents' confidence in street safety, providing children with a safer campus and community environment. Therefore, investing in improvements to street safety facilities is not just an investment in residents' quality of life but also an investment in the future of the community, laying a solid foundation for its development and prosperity.



Image by Jinyi Wang

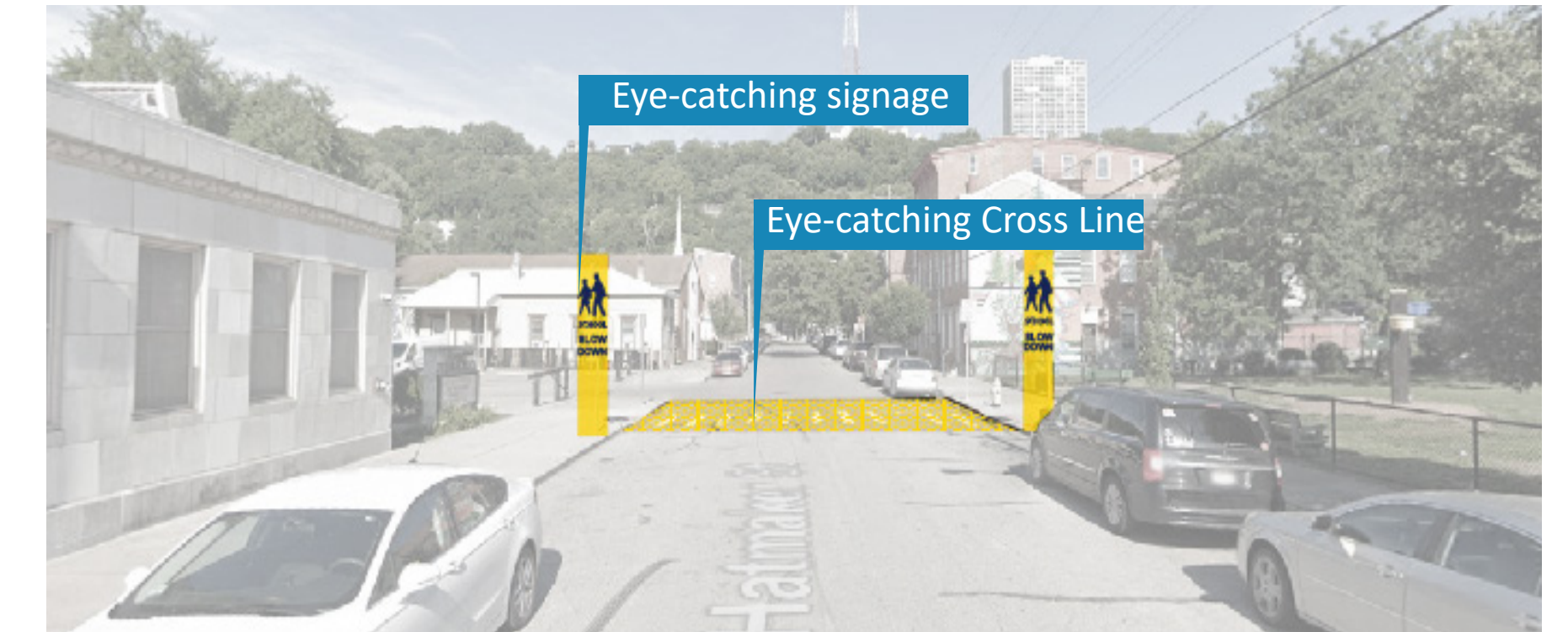
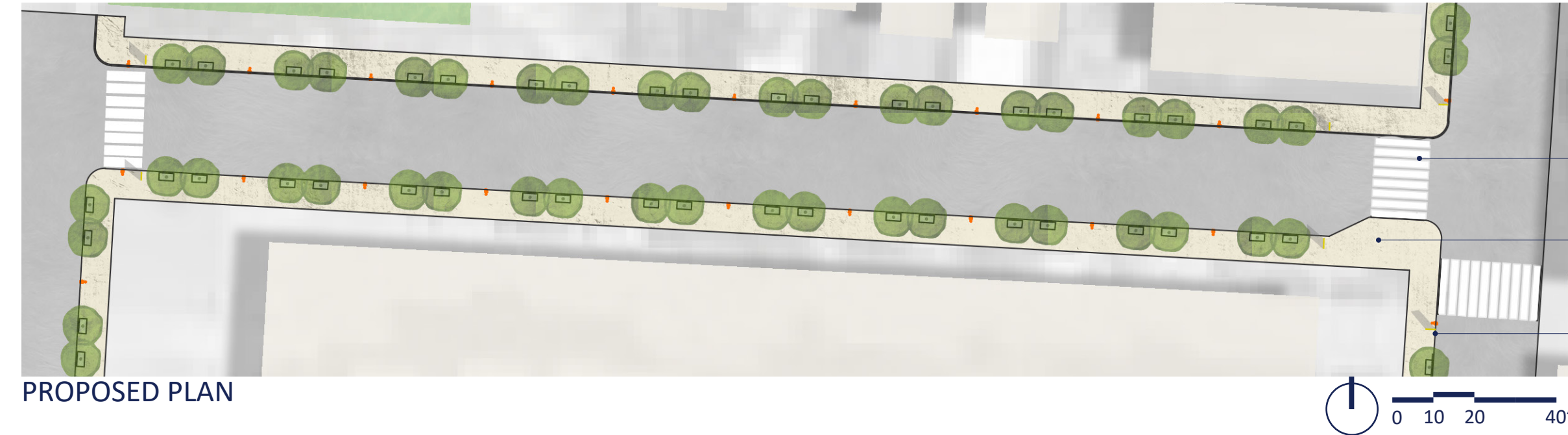


Image by Jinyi Wang

PROPOSED SCENARIO

DESIGN STRATEGY 1 - STREET SAFETY



DESIGN STRATEGY 1 - STREET SAFETY



A safer street is urgently needed in Lower Price Hill, not only because the area is populated with many children but also because there is a public school called Oyler School and an adjacent daycare center. What's even more crucial is that this area suffers from serious street safety issues, which tragically resulted in the death of a three-year-old boy in 2023.

During the field visit in March, researchers witnessed police cars maintaining order outside the school gates during dismissal. Researchers interviewed Mrs. Heather, a teacher at Oyler School, who emphasized the urgent need for safety signs, which have yet to be implemented. Additionally, she mentioned the necessity of installing flashing safety signs because regular signs are ineffective in reducing vehicle speed.

DESIGN STRATEGY 2 - APPALACHIAN CULTURE RECREATION SPACES



Photo by Jinyi Wang

EXISTING

Currently, this space is used as a parking lot, but according to the zoning map, this plot of land is designated for recreational purposes. Therefore, it is an ideal venue for celebrating Appalachian culture. This space is perfect for transforming into a pavilion adorned with Appalachian-themed flags and lights, surrounded by plants native to the Appalachian region. Utilizing these plants not only adds unique scenery to the site but also reduces maintenance costs, as they are better suited to the local climate and soil conditions. These pavilions can serve as gathering and relaxation spots for local residents and provide dining areas for employees in nearby commercial districts. People can unwind here, admire the scenery, and experience the charm of Appalachian culture. Additionally, this place can host various cultural events such as concerts, dance performances, and craft fairs, attracting more people to learn about and experience the unique charm of Appalachia. By transforming this parking lot into a venue celebrating Appalachian culture, we not only make efficient use of this piece of land but also provide more opportunities for cultural exchange and experiences for the local community and visitors, enriching the diversity and vibrancy of the city.

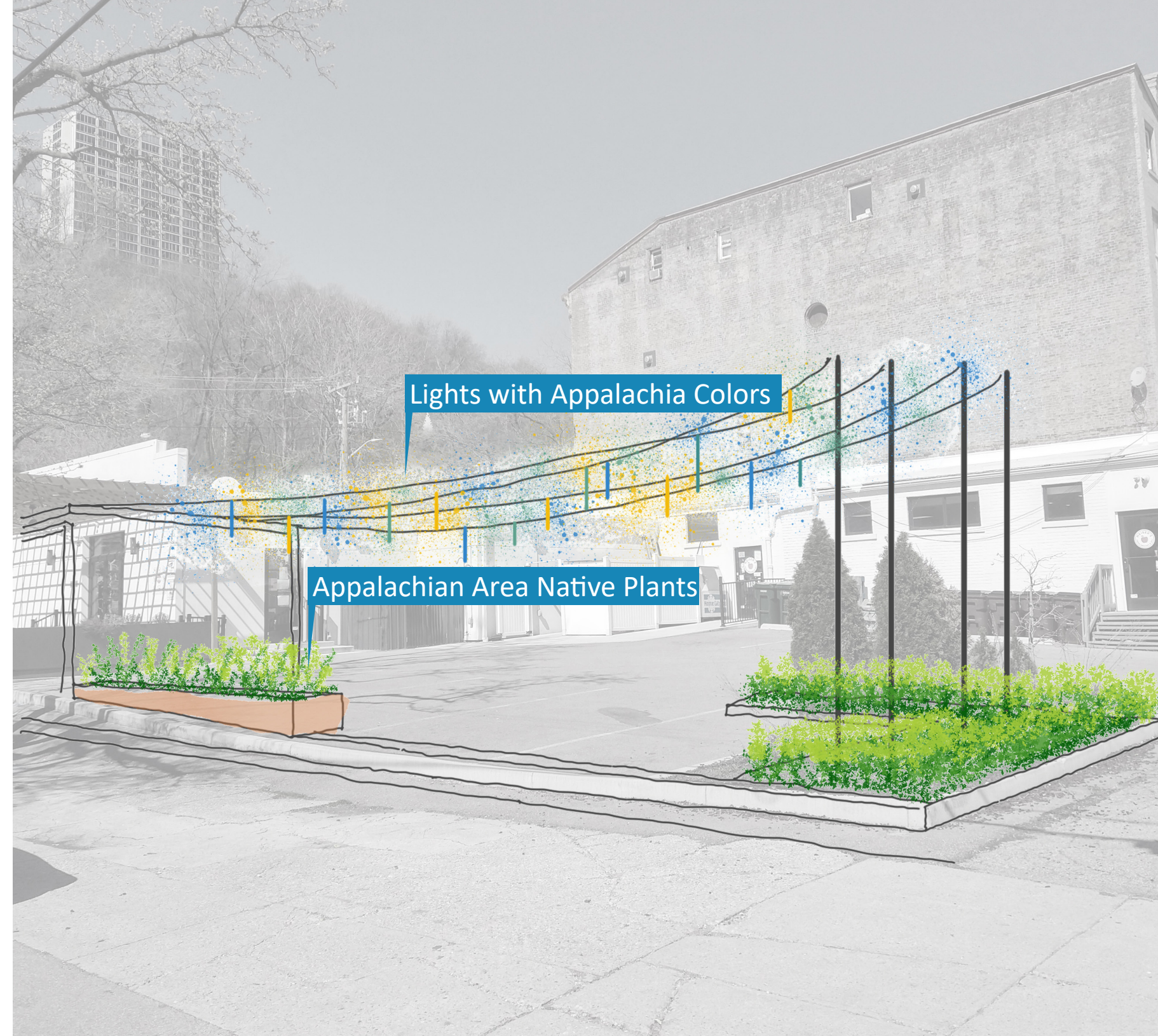


Image by Jinyi Wang

PROPOSED SCENARIO

DESIGN STRATEGY 2 - APPALACHIAN CULTURE RECREATION SPACES

PLANT LIST



Eastern Red Columbine
(*Aquilegia canadensis*)

Native Range:
Eastern North America

Zone:
3 to 8

Height:
2.00 to 3.00 feet

Spread:
1.00 to 1.50 feet

Bloom Time:
April to May

Bloom Description:
Light pink/yellow to blood red/
yellow

Sun:
Full sun to part shade



Eastern Redbud
(*Cercis canadensis*)

Native Range:
Eastern North America

Zone:
4 to 8

Height:
20.00 to 30.00 feet

Spread:
25.00 to 35.00 feet

Bloom Time:
April

Bloom Description:
Pink

Sun:
Full sun to part shade



American Holly
(*Ilex opaca*)

Native Range:
Eastern and central United States

Zone:
5 to 9

Height:
15.00 to 30.00 feet

Spread:
10.00 to 20.00 feet

Bloom Time:
May

Bloom Description:
Creamy white

Sun:
Full sun to part shade



Virginia Bluebell
(*Mertensia virginica*)

Native Range:
North America

Zone:
3 to 8

Height:
1.50 to 2.00 feet

Spread:
1.00 to 1.50 feet

Bloom Time:
March to April

Bloom Description:
Blue

Sun:
Part shade to full shade



Bloodroot
(*Sanguinaria canadensis*)

Native Range:
Eastern and central North America

Zone:
3 to 8

Height:
0.50 to 0.75 feet

Spread:
0.25 to 0.50 feet

Bloom Time:
March to April

Bloom Description:
White or pink tinged

Sun:
Part shade to full shade



Wild Bergamot
(*Monarda fistulosa*)

Native Range:
North America

Zone:
3 to 9

Height:
2.00 to 4.00 feet

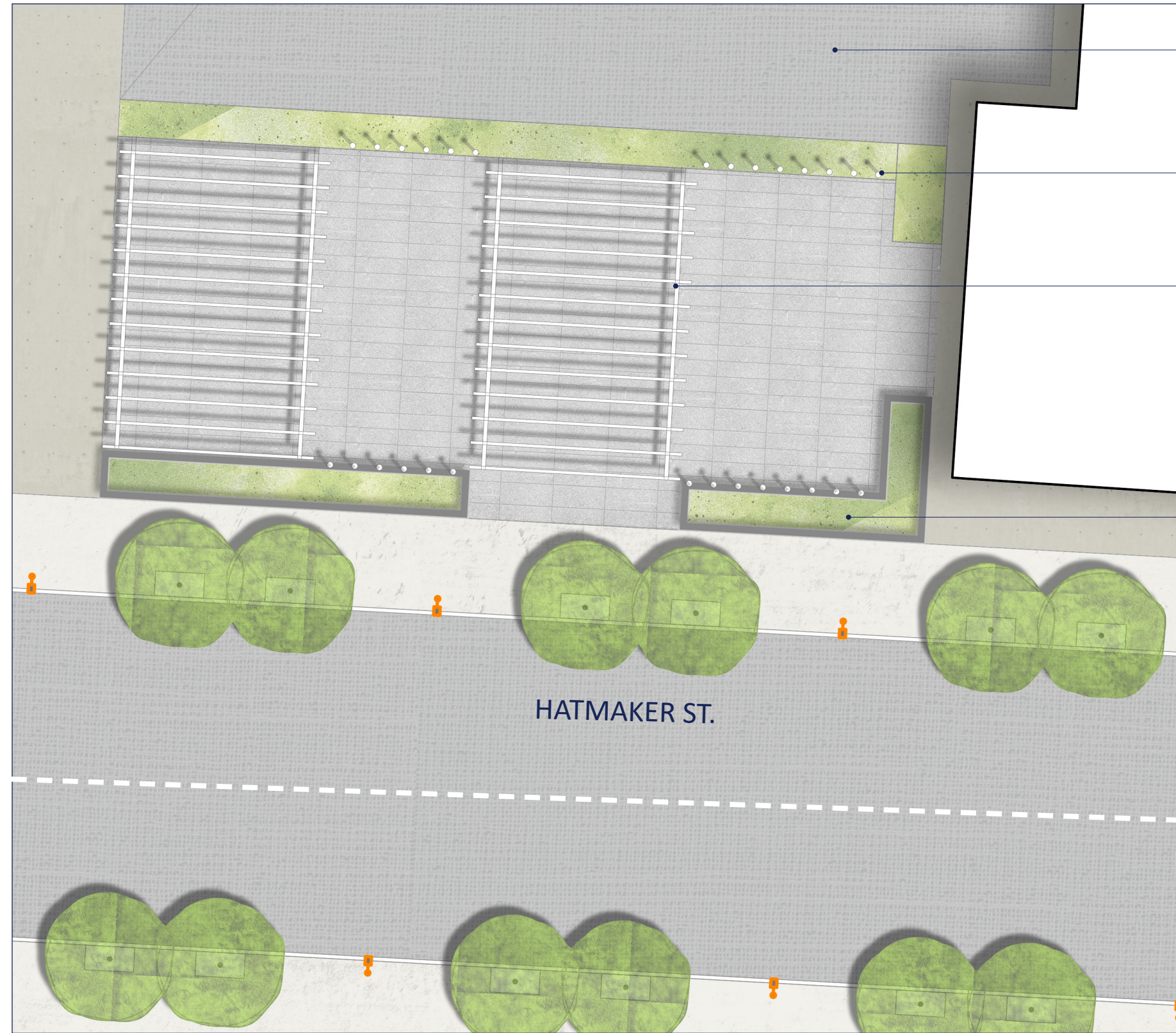
Spread:
2.00 to 3.00 feet

Bloom Time:
July to September

Bloom Description:
Pink/lavender

Sun:
Full sun to part shade

DESIGN STRATEGY 2 - APPALACHIAN CULTURE RECREATION SPACES



PROPOSED PLAN



Image by Jinyi Wang

EXISTING PARKING LOT

PROPOSED POST FOR HANGING FLAGS

PROPOSED OPEN CANOPY

PROPOSED APPALACHIAN GARDEN

HATMAKER ST.

DESIGN STRATEGY 2 - APPALACHIAN CULTURE RECREATION SPACES



PROPOSED OPEN CANOPY

PROPOSED POST FOR HANGING FLAGS

EXISTING PARKING LOT

PROPOSED APPALACHIAN GARDEN

Image by Jinyi Wang

DESIGN STRATEGY 3 - STREET GATHERING SPACE



Photo by Jinyi Wang

EXISTING

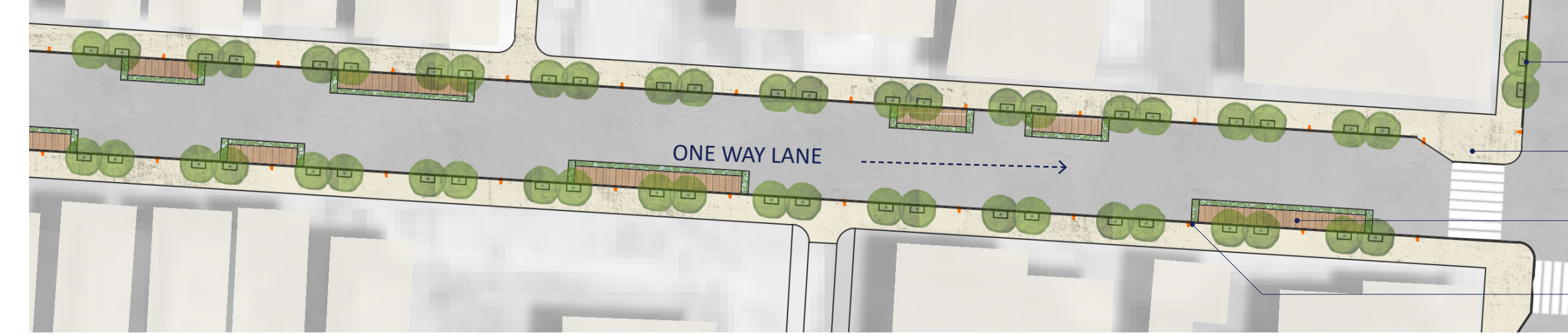
Streets are not just thoroughfares for vehicles; they can also serve as venues for community activities. With redesigned surroundings, streets are adorned with lush greenery, enticing people to pause and admire. Existing streets can undergo transformations, such as converting them into one-way lanes, to allocate more space for pedestrians. The fenced areas on both sides of these streets can become daily gathering spots for residents. Inside the fences, benches, outdoor café seats, and more can be installed, providing community members with a relaxed and enjoyable space for interaction. Such renovations not only increase social activities within the community but also enhance residents' satisfaction and sense of belonging to the neighborhood. Furthermore, these alterations contribute to enhancing the overall streetscape, increasing urban greenery, thus improving the quality of urban life. By transforming streets into venues for community activities, we can not only better utilize urban spatial resources but also foster community integration and development, making cities more livable.



Photo by Jinyi Wang

PROPOSED SCENARIO

DESIGN STRATEGY 3 - STREET GATHERING SPACE



PROPOSED PLAN



- PROPOSED STREET TREE
- PROPOSED ENLARGED PEDESTRIAN WALKING PATH AND SAFETY CURB
- PROPOSED STREET GATHERING SPACE
- PROPOSED PLANTER



PROPOSED PERSPECTIVE

Image by Jinyi Wang

- PROPOSED STREET GREEN SPACES
- STREET GATHERING SPACES WITH DIFFERENT SIZE
- 4'TALL PLANTER
- 3'-8" TALL PLANTER

DESIGN STRATEGY 4 - COMMUNITY GARDEN



Photo by Jinyi Wang

EXISTING

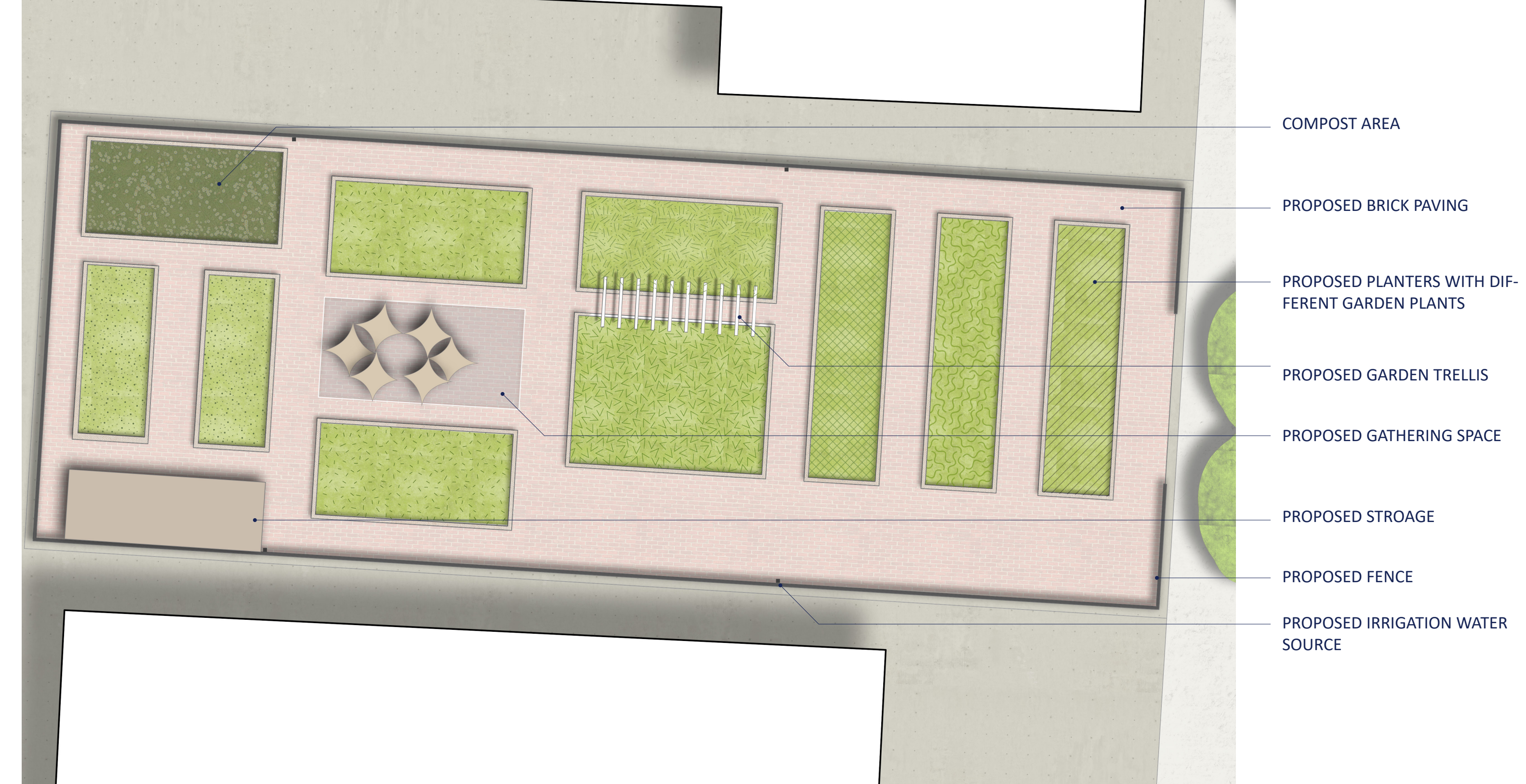
Before deciding to repurpose vacant land for other uses, considering transforming it into a community garden is a viable option. A community garden can serve as a multifunctional space, producing food by cultivating various vegetables and fruits on the land. These foods can be supplied to local delis, thereby reducing the adverse environmental impact of food transportation and lowering carbon emissions. Simultaneously, it provides community residents with more avenues to access fresh, high-quality food, aiding in improving their dietary habits and enhancing their health. This initiative not only enhances efficiency in resource utilization but also stimulates economic vitality within the community. The construction of community gardens can also foster interaction and collaboration among community residents, strengthening community cohesion and injecting new vitality into social development.



Photo by Jinyi Wang

PROPOSED SCENARIO

DESIGN STRATEGY 4 - COMMUNITY GARDEN



PROPOSED PLAN



DESIGN STRATEGY 4 - COMMUNITY GARDEN



PROPOSED PERSPECTIVE

Image by Jinyi Wang

DESIGN STRATEGY 4 - COMMUNITY GARDEN

According to a research about vegetable output and cost saving of community gardens in San Jose, California, it was found that a community garden can produce approximately **0.75** pounds of vegetables per square foot per growing season. If vertically growing vegetables such as tomatoes are planted, the yield may be higher. Taking as an example a community garden renovated from an empty house, the area available for vegetable cultivation is approximately 640 square feet. Therefore, each growing season can produce approximately **487.5** pounds of vegetables. However, it should be noted that the specific yield will be influenced by the types of vegetables planted, and the results may vary (Algert et al., 2014).

PLANT LIST

Name	Size	Planting	Harvesting	Supplier
Purple Coneflower (<i>Echinacea purpurea</i>)	10-12 in	Spring / Fall	N/A	Eden Brothers
Butterfly Milkweed (<i>Asclepias tuberosa</i>)	8-12 in	Spring / Fall	N/A	Eden Brothers
Bee Balm (<i>Monarda spp.</i>)	8-14 in	Spring / Fall	N/A	Eden Brothers
Black-Eyed Susan (<i>Rudbeckia hirta</i>)	5-12 in	Spring	N/A	Eden Brothers

Cucumber (<i>Cucumis sativus</i>)	H. 36-48 in	Apr - Sep	Jun - Nov	Eden Brothers
Lettuce (<i>Lactuca sativa</i>)	8-10 in	Jan - Dec	Feb - Dec	Eden Brothers
Spinach (<i>Spinacia oleraceae</i>)	H. 8-24 in	Jan - Dec	Feb - Dec	Eden Brothers
Corn (<i>Zea mays</i>)	H. 72 - 84 in	Apr - Jun	Jul - Sep	Eden Brothers
Tomato (<i>Solanum lycopersicum L.</i>)	N/A	Apr - Jun	Jul - Sep	Eden Brothers
Zucchini (<i>Cucurbita pepo</i>)	24 - 48 in	Apr - Jun	Jul - Sep	Eden Brothers
Cabbage (<i>Brassica oleracea</i>)	8-10 in	Jan - Dec	Feb - Dec	Eden Brothers
Lettuce (<i>Lactuca sativa</i>)	8-10 in	Jan - Dec	Feb - Dec	Eden Brothers
Eggplant (<i>Solanum melongena</i>)	24 - 48 in	Apr - Jun	Jul - Sep	Eden Brothers

PLANTING DESCRIPTION

The vegetable garden is planted with vegetables suitable for planting and harvesting in every season, such as winter vegetables like cabbage, lettuce, and spinach, as well as warm-season vegetables like eggplant, tomatoes, and zucchini. The cultivation of these vegetables ensures that users can harvest fresh vegetables throughout the year, reducing the cost of purchasing food, decreasing the frequency of driving, and lowering the carbon footprint.

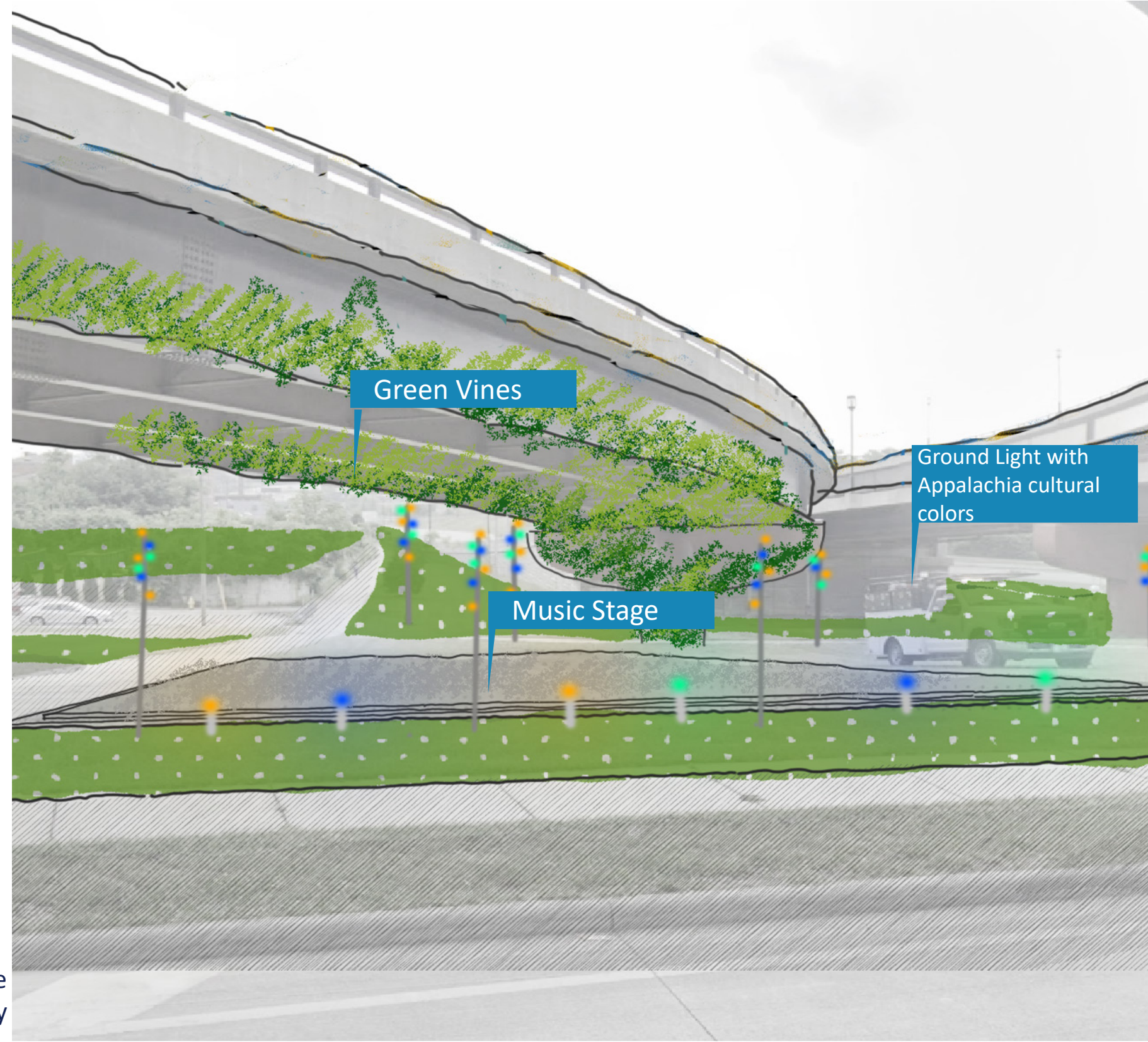
DESIGN STRATEGY 5 - UNDER HIGHWAY MUSIC STAGE



Photo by Jinyi Wang

EXISTING

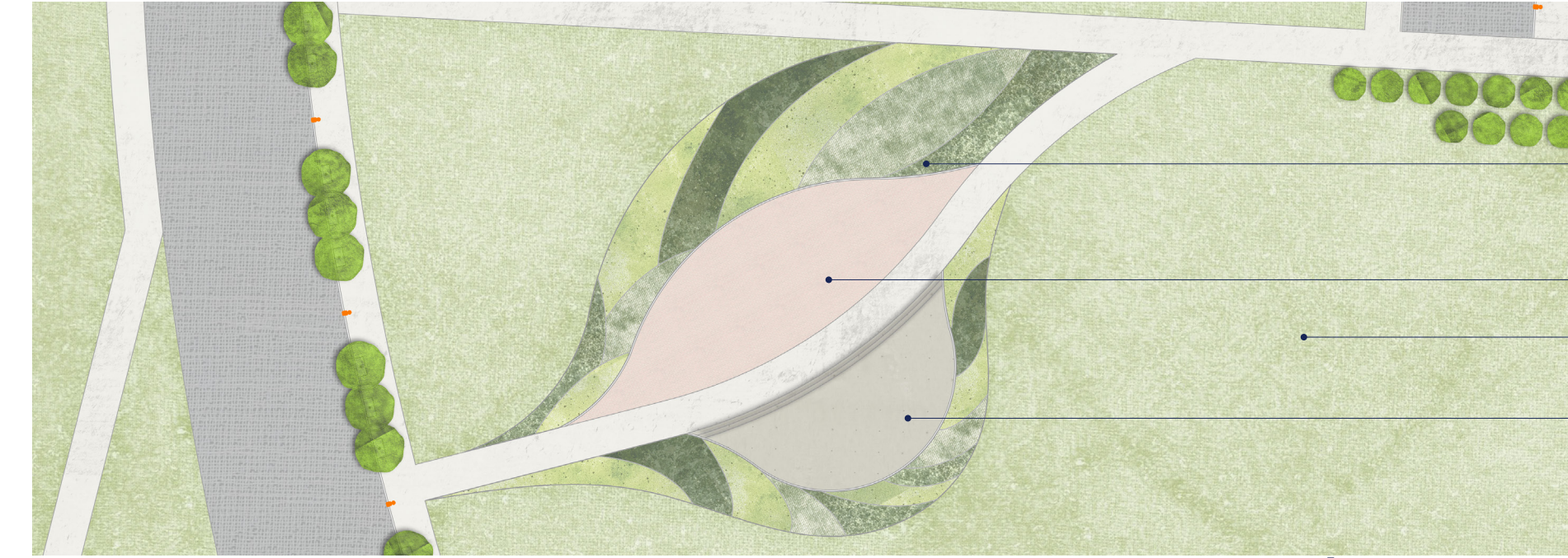
The open space beneath the highway currently presents a dull and lifeless scene, lacking the charm to attract gatherings. Due to its lack of focus, individuals lingering there may feel lost or unsure of what to do. However, by transforming this vacant land into a music stage, it can be effectively utilizing this area. The curved shape of the highway above forms a ready-made canopy, providing natural shade for the stage. Additionally, vines can be planted on the support pillars of the highway to enhance greenery and aesthetics. The underside of the elevated highway can also be adorned with community-spirited colorful lights and flags, creating a lively and festive atmosphere. In this way, this once abandoned space will be transformed into a multifunctional and appealing venue. Various cultural events, concerts, and community gatherings can be held here, attracting more people and fostering interaction among residents. Moreover, such a transformation can add a new attraction to the city, enhancing its image and appeal. By converting the space beneath the highway into a vibrant and active venue, we not only make efficient use of the land but also inject new vitality and energy into the city.



PROPOSED SCENARIO

Image by Jinyi Wang

DESIGN STRATEGY 5 - UNDER HIGHWAY MUSIC STAGE



PROPOSED PLAN



- PROPOSED WILDFLOWER RESTORATION AREA
- PROPOSED GATHERING AREA
- EXISTING TURF
- PROPOSED MUSIC STAGE
- EXISTING HIGHWAY



PROPOSED PERSPECTIVE

Image by Jinyi Wang

- VERTICAL GREEN AREA
- GROUND LIGHT WITH APPALACHIAN CULTURE ELEMENTS
- PROPOSED MUSIC STAGE
- PROPOSED WILDFLOWER RESTORATION AREA
- PROPOSED GATHERING SPACE

DESIGN SUMMARY

The Lower Price Hill neighborhood is a vibrant one, characterized by an admirable spirit of revival. Residents of this neighborhood are dedicated to its revitalization, contributing through various efforts such as refurbishing vacant buildings, establishing community gardens, and increasing community activities. In 2019, the neighborhood released a comprehensive revitalization plan outlining various objectives and future prospects, albeit with a relatively brief discussion on community culture.

The Lower Price Hill area holds immense potential. This research project aims to utilize green design to provide gathering spaces, healthy green areas, and street safety for Lower Price Hill communities. Through site analysis, literature review, and case studies, the project identifies three primary goals: promoting healthy green spaces, enhancing street safety for pedestrians, and providing gathering spaces. To achieve these goals, the project sets five specific objectives: community gardens, street gathering spaces, safety signage, Appalachian cultural spaces, and the reuse of spaces under highways. These objectives aim to improve community environmental infrastructure and resource utilization, enhance the quality of life for community residents, and strengthen community cohesion.

This study offers insights into better utilization of public spaces and vacant land, addressing issues faced by the Lower Price Hill area such as air pollution, low canopy coverage, noise, limited access to healthy food, and a lack of public gathering spaces.

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(LPH History Collage, page 14. Collages by Jinyi Wang, Images Noted Bellow)

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https://santamaria-cincy.org/

http://www.onebloc.org/

https://www.pricehillwill.org/lower-price-hill?pgid=kz3jg8o7-11666e41-eeb8-40b6-ad97-dfd1ffb1fc1f

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