ABSTRACT

Title of Thesis:	A STUDY INTO THE APPLICATION OF OCCUPATIONAL THERAPY THEORETICAL FRAMEWORK IN A PUBLIC SPACE DESIGN FOR KIRKWOOD NEIGHBORHOOD PARK
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The discipline of landscape architecture and profession of occupational therapy both aim to improve the quality of life for people and communities by removing environmental barriers for people in their everyday lives and increasing the compatibility of people with the environments they occupy. This is especially important in urban environments, where there are a multitude of barriers to green space and natural environments, including accessibility, safety, and proximity. All people, regardless of age, ability, demographic, or location, deserve access to environments that improve health and wellbeing. By working with occupational therapy practitioners in an interdisciplinary context to integrate the foundational goals of occupational therapy in design, landscape architects can create environments that improve health and wellbeing in ways that target the user group to promote engagement in meaningful activities. By doing so, landscape architects have the capacity to improve health for individuals and communities on a micro-level, while also addressing macro-level issues of environmental and occupational justice to provide

accessible spaces that allow people to participate in ways that are personally meaningful to them. This research design thesis focuses on designing a communal space within Kirkwood Neighborhood Park, located in Hyattsville, MD, to identifying potential challenges that users might face in a given environment and finding ways to help them overcome those challenges through user-centered design.

A STUDY INTO THE APPLICATION OF OCCUPATIONAL THERAPY THEORETICAL FRAMEWORK IN A PUBLIC SPACE DESIGN FOR KIRKWOOD NEIGHBORHOOD PARK

by

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I. Introduction

This research-design thesis explores how an occupational therapy theoretical perspective may inform landscape architecture in the implementation of a public space design within Kirkwood Neighborhood Park, located in Hyattsville, MD. Through the application of two occupational therapy models of practice and frameworks and two landscape architecture frameworks, this site design has the capacity to improve the social attitudes and quality of life of users in and around the park by addressing the macro-level issues of occupational and environmental justice, while simultaneously providing a built environment to enhance occupational participation at the meso-level and space for occupational therapy practitioner to potentially work with clients and groups at the micro-level. Research into occupational therapy practitioners will focus on the Person-Environment-Occupation (PEO) Model (Law et al., 1996) and the Framework of Occupational Justice (Wilcock & Townsend, 2004). The PEO Model states that occupational performance (performance in an activity with positive personal value) is shaped by the interaction between the person, environment, and occupation and that the quality of occupational performance increases or decreases in correlation with the level of congruence between the three domains (Morris & Cox, 2017). Each of the three domains is dependent on and affected by the other (Chan & Pang, 2021). The design implication for this is that more interaction with a comfortable and pleasant physical environment can raise the level of congruence between the three domains and increase the quality of occupational performance (Chan & Pang, 2021). Alternatively, less access to and time spent in a positive physical environment may lower the level of congruence

between the three domains and decrease the quality of occupational performance (Chan & Pang, 2021). Occupational injustice occurs when a person, community, or population does not have equal access to an environment that allows them to participate in meaningful activities (Wilcock and Townsend, 2004). The Framework of Occupational Justice focuses on the inclusion of all people in an occupationally just world, in which everyone can make decisions about what is most meaningful for themselves and has equal opportunity to engage in meaningful activities (Wilcock & Townsend, 2009). The Framework of Occupational Justice also explains that there are social issues that contribute to occupational injustice (Wilcock & Townsend, 2009).

In this design thesis, I seek to complement the PEO Model and Framework of Occupational Justice with theory on environmental justice and Roger Ulrich's Stress Reduction Theory, which offer insight into central principles of landscape architecture. Both occupational justice and environmental justice are foundational to an equitable society and center around the empowerment that occurs when all people have access to environments that allow for engagement in occupations (Townsend, 1996). I will seek to define environmental justice according to contemporary literature and research and draw a connection to the Stress Reduction Theory, which highlights the restorative quality of nature and the degree of influence a comfortable and pleasant natural built environment has on overall health and well-being (Ulrich et al., 1991). My research on the four topics of study within the fields of occupational therapy and landscape architecture will inform a design for the community surrounding Kirkwood Neighborhood Park, that seeks to promote engagement in

meaningful activities to support the social-emotional, cognitive, and physical health and well-being of individuals and communities regardless of age, background, or ability.

II. Important Definitions

Occupational therapy: "the therapeutic use of everyday activities (occupations) with individuals or groups for the purpose of participation in roles and situations in home, school, workplace, community, and other settings" (American Occupational Therapy Association (AOTA), 2021)

Occupational Therapy Practitioners: refers to both occupational therapists and occupational therapy assistants (AOTA, 2020)

Occupations: meaningful and purposeful "activities and tasks in which the person engages in order to meet his/her intrinsic needs for self-maintenance, expression and fulfillment" and are "carried out within the context of individual roles and multiple environments" (Law et al., 1996, p. 16)

"the everyday activities that people do as individuals, in families, and with communities to occupy time and bring meaning and purpose to life. Occupations include things people need to, want to and are expected to do" (AOTA, 2020, p. 7)

Person: "a unique, holistic being composed of mind, body, and spirit, who assumes a variety of roles simultaneously" (Law et al., 1996, p. 15)

Environment: "contexts and situations which occur outside individuals and elicit responses from them" and can include the personal, social, and physical environment (Law et al., 1996, p. 16)

Context: "a broad construct defined as the environmental and personal factors specific to each client (person, group, population) that influence engagement and participation in occupations. Context affects clients' access to occupations and the quality of and satisfaction with performance" (AOTA, 2020, p. 9)

Environmental Factors: ‘aspects of the physical, social, and attitudinal surroundings in which people live and conduct their lives. Environmental factors influence functioning and disability and have positive aspects (facilitators) or negative aspects (barriers or hindrances)” (AOTA, 2020, p. 9)

Occupational Performance: "the dynamic experience of a person engaged in purposeful activities and tasks within an environment" (Law et al., 1996, p. 16)
“the accomplishment of the selected occupation resulting from the dynamic transaction among the client, their contexts, and the occupation” (AOTA, 2020, p. 8)

Person-Environment-Occupation (PEO) Model: Model developed by occupational therapy practitioner Mary Law, which states that a person, environment, and occupation are interdependent and "interact continually across time and space in ways that increase or diminish their congruence" (Law et al., 1996, p. 17)

Framework of Occupational Justice: framework developed by occupational therapy practitioner Elizabeth Townsend, which focuses on the inclusion of all people in an occupationally just world in which each individual can decide and do what is meaningful to themselves, their families, and their communities (Cho, 2022)

Environmental Justice: “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income” (EPA, 2021).

Stress Reduction Theory: a theory developed by architect and scientist Roger Ulrich, which states that “the restorative influences of nature involve a shift towards a more positively-toned emotional state, positive changes in physiological activity levels and that these changes are accompanied by sustained attention/intake" (Ulrich et al., 1991, p. 201)

Landscape Architecture: “the art and practice of designing the outdoor environment, especially designing parks or gardens together with buildings and roads” (Oxford University Press, 2022)

III. Literature Review

Occupational Therapy

The American Occupational Therapy Association (AOTA), established in 1917, is the nation's professional association of occupational therapy practitioners. The AOTA defines occupational therapy as "the therapeutic use of everyday activities (occupations) with individuals or groups for the purpose of participation in roles and situations in home, school, workplace, community, and other settings" (AOTA, 2021). Occupational therapy practitioners ask, "What matters to you?"' not, 'What is the matter with you?" (AOTA, 2021). The foundation of occupational therapy is built on the "therapeutic nature of occupation, or purposeful activity" (Wagenfeld, 2017). Occupational therapy is a science-driven profession that applies evidence-based practice and client-centered approaches, rather than predetermined regimens, "as part of a broad approach that considers the patient's performance skills (motor, process, social interaction); activity demands; performance patterns (habits, routines, rituals, roles); and contexts and environments" (AOTA, 2021). Environments are important aspects of the therapeutic process. This includes multitiered environments- social attitudes and the physical built environment. By structuring multi-tiered environments, occupational therapy practitioners can help people meet their highest potential for occupational engagement (Wagenfeld, 2016).

Using occupations to promote health and wellness has been practiced throughout history. During the late 19th and early 20th centuries, medical treatment began to shift away from bed rest and inactivity as treatment, to recognize the curative value of

meaningful activity (Wagenfeld, 2016). Using occupations as a therapeutic tool was an important aspect of "moral treatment", a reform movement in the treatment of mental illness in the early 19th century (Kielhofner, 2009, as cited in Wagenfeld, 2016). Rather than clinical and dismissive, moral treatment was curative and compassionate, prescribing a balancing of "work and leisure activities, as well as learning methods to cope with the stresses associated with psychological issues" (Dunkel, 1983). In the early 20th century, social worker Eleanor Clarke Slagle- who would go on to become one of occupational therapy's main founders- worked at a settlement house that provided social services to immigrants arriving in the United States. Located in largely industrialized cities, settlement houses provided services that included education, health care, lodging, and food in largely immigrant neighborhoods. Slagle recognized that engaging residents in everyday activities was curative, and that providing opportunities for residents to learn new skills was meaningful and purposeful (Wagenfeld, 2016).

After WWI, many soldiers returned from the war having experienced significant injuries and trauma. Treatment of wounded soldiers involved a shift from "rest cure" to "work cure"- the idea that engaging in meaningful activity was more curative for mind and body than bedrest (Wagenfeld, 2016). Participating in crafts and creative activities helped them engage in vocational training and eventually return to work. The National Society for the Promotion of Occupational Therapy (INSPOT) was founded in 1917 and renamed the American Occupational Therapy Association in 1923. The original founders of INSPOT were an interdisciplinary group of medical professionals, social workers,

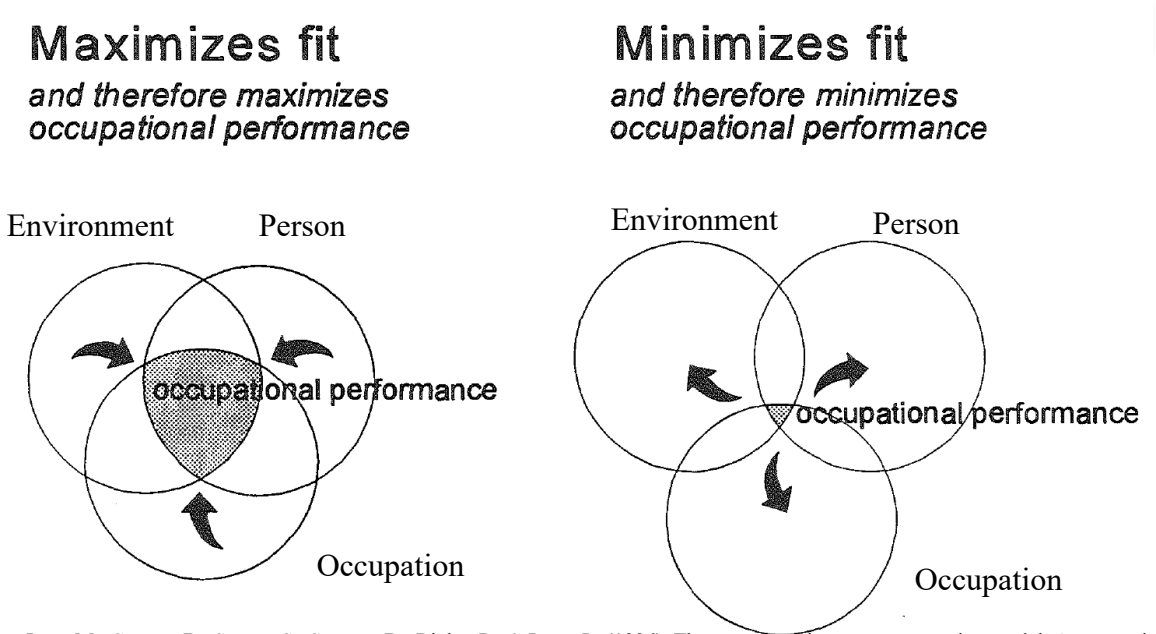
volunteers, teachers, craftspeople who believed occupations could contribute to health and well-being (Wagenfeld, 2016). From the beginning stages of the profession, occupational therapy "relied on theory and knowledge from other disciplines, including architecture and design" (Wagenfeld, 2016, p.6). Interdisciplinary collaboration continues to be integral to the fields of both occupational therapy and landscape architecture.

Person-Environment-Occupation Model

In "The Person-Environment-Occupation Model: A transactive approach to occupational performance," Law et al. (1996) introduce the PEO Model, which states that a person, an environment, and an occupation are interdependent and "interact continually across time and space in ways that increase or diminish their congruence" (Law et al., 1996, p. 17). With a higher level of congruence between the three

Figure 3.1

An Illustration of Changes to Occupational Performance as a Result of Variations in Person, Environment and Occupational Fit



From Law, M., Cooper, B., Strong, S., Stewart, D., Rigby, P., & Letts, L. (1996). The person-environment-occupation model: A transactive approach to occupational performance. Canadian Journal of Occupational Therapy, 63(1), 9–23. https://doi.org/10.1177/000841749606300103

domains, the quality of occupational performance is increased and vice versa (Law et al., 1996) (Figure 3.1).

Law et al. (1996) identifies the importance of relationships between people and their environment to boost morale and create a healthy hospital environment for early practitioners of occupational therapy. While theory and literature from the early to mid-1900's recognized this relationship, Law et al. explains that the cause and effect-based models evolved into transactive theories and models that understand occupational performance as "the product of a dynamic, interwoven relationship that exists among people, their occupations and roles, and the environment in which they live, work, and play" (Canadian Association of Occupational Therapists (CAOT), 1991; Christiansen & Baum, 1991; Law, Cooper et al., 1994; Polatajko, 1994, as cited in Law et al., 1996, p. 10). Transactional models- such as the PEO Model (Figure 3.2)- differ from linear cause-and-effect models (Figure 3.3), because they are interdependent, acknowledging that a person's behavior is subject to contextual influences which are constantly changing (Law et al., 1996).

Figure 3.2
Transactional Model of Relationship Between Person, Environment, and Occupation



Figure 3.3
Cause-and-Effect Model



The definitions of terms by Law et al. are important to understanding the PEO Model (updated definitions of terms from the 4th Edition of the Occupational Therapy Practice Framework are included here to give further understanding of concepts). Law at al. (1996) defines "person" as "a unique, holistic being composed of mind, body, and spirit, who assumes a variety of roles simultaneously" (p. 15). Law et al. (1996) explains that a person's roles are dynamic, changing with time and context; a person has a set of attributes and experiences that influence occupational performance, including self-concept, personality, culture, and competencies such as motor skills, sensory capabilities, cognitive aptitude, and overall health. Environment is broadly defined as "contexts and situations which occur outside individuals and elicit responses from them" and include the personal, social, and physical environment (Law et al., 1996, p. 16). Within the context of the PEO Model, Law et al. conceptualized the definition of occupations as "those clusters of activities and tasks in which the person engages in order to meet his/her intrinsic needs for self-maintenance, expression and fulfillment" and are "carried out within the context of individual roles and multiple environments" (Law et al., 1996, p. 16). A more updated definition from the 4th Edition of the Occupational Therapy Practice Framework (2020) defines occupation as "the everyday activities that people do as individuals, in families, and with communities to occupy time and bring meaning and purpose to life. Occupations include things people need to, want to and are expected to do" (AOTA, 2020, p. 7). Law et al. defined occupational performance as the "dynamic experience of a person engaged in purposeful activities and tasks within an environment" (Law et al., 1996, p. 16). A more updated definition from the 4th

Edition of the Occupational Therapy Practice Framework (2020) defines occupational performance as “the accomplishment of the selected occupation resulting from the dynamic transaction among the client, their contexts, and the occupation” (AOTA, 2020, p. 8).

The PEO Model describes the cultural, socio-economic, institutional, physical, and social domains of the environment as having equal importance (Law et al., 1996, p. 16). The model also considers each domain from different perspectives and systems, including those of the individual, family, community, or society, relating to micro-, meso-, and macro-levels. The model considers the notion that the use of an environment plays a role in dictating behavior (Law et al., 1996). This has implications for landscape design; a landscape architect should consider the multitude of ways different users or user groups might behave within a space, and the ways in which design shapes users’ behaviors in different ways.

The PEO Model builds on concepts from the Canadian Association of Occupational Therapists (CAOT) Occupational Therapy Guidelines for Client-Centered Practice (1991) and from environmental-behavior theories. The model of occupational performance outlined by CAOT (1991) "depicts a person's performance in self-care, productivity and leisure tasks and activities as influenced by an individual's personal characteristics and the environments in which they live, work and play" (Law et al., 1996, p. 10). Law et al. (1996) considers the theoretical origins and considerable multidisciplinary interest in the transactional approach to understanding people, environments, and populations. The PEO Model looks at the applications of existing multidisciplinary theories and models that focus on the transactional relationship

between person, environment, and occupation. Law et al. (1996) draws attention to the interconnectedness of occupational therapy with disciplines outside of the health professions and points out that occupational therapy "seems a natural addition to this multidisciplinary group that includes environmental psychology, social science, anthropology, human geography, and architecture" (Law et al., 1996, p. 12).

Law at al. (1996) also discuss models and theories regarding the interdependent relationships of groups and communities. Law et al. points to architect Weisman's 1981 study of how the physical environment of a workplace can influence the ability of employees to meet the company's goals and objectives most efficiently (as cited in Law et al., 1996, p. 11). Another important model referenced by Law et al. (1996) is Hancock and Duhl's 1986 Healthy Communities conceptual model, which focuses on "the need to change environments to fit community needs rather than trying to change individuals to fit environments" (as cited in Law et al., 1996, p. 13).

The PEO Model is a core framework of occupational therapy which gives precedent to drawing a link between occupational therapy and landscape architecture. Landscape architecture, like other design fields, can benefit from occupational therapy practitioners' insight and understanding of how person and environment interactions affect occupational performance. Application of theory and principles of occupational therapy in design can influence users' performance in self-care, productivity, and tasks and activities. The PEO Model is especially relevant because it goes beyond viewing a person as an individual in a contained environment and considers the person in various ways and within different systems that include micro-,

meso-, and macro-levels. A person is viewed as an individual, as part of a community, and as a part of a larger society. This opens up the scope of interventions occupational therapy practitioners could enable to include community-level engagement, entire families, or even governmental policy (Law et al., 1996). Landscape architects can similarly intervene on a broad scope that includes micro-level design and macro-level issues of environmental policy.

Framework of Occupational Justice

Occupational therapy has roots in social reform. Today, occupational therapy plays a role in social reform of occupationally unjust environments, which restrict or exclude people from participating in meaningful activities that improve health (Wilcock & Townsend, 2009). The Framework of Occupational Justice was primarily developed by Elizabeth Townsend and Ann A. Wilcock (Chan & Pang, 2021). In "Occupational Justice and Client-Centered Practice: A Dialogue in Progress," Wilcock and Townsend ask: "How do occupational therapy practitioners work for justice?" (Wilcock & Townsend, 2004, p. 75). They present four cases of occupational injustice, including occupational alienation, occupational deprivation, occupational marginalization, and occupational imbalance and suggest four occupational rights: "to experience meaning and enrichment in one's occupations; to participate in a range of occupations for health and social inclusion; to make choices and share decision-making power in daily life; and to receive equal privileges for diverse participation in occupations" (Wilcock & Townsend, 2004, p. 75). In her earlier research, Townsend found that people do not orchestrate daily occupations as autonomous agents with unlimited freedom of choice; occupational engagement is invariably shaped by social

and institutional environments (Townsend, 1996). Contextual factors such as age, gender, sexual orientation, race, ethnicity, ability/disability, etc., can strengthen or hinder occupational rights (Townsend, 2012). Occupational injustice occurs when a person, community, or population does not have equal access to an environment that allows them to participate in meaningful activities (Wilcock and Townsend, 2004). Certain underlying occupational determinants, including professional dominance, standardized treatment and documentation, market-driven economies, insurance, laws, and political conditions, can allow for some populations to have fewer opportunities and less access to the benefits of occupational therapy (Wilcock & Townsend, 2004, p.77).

The World Federation of Occupational Therapists states that "inequitable social circumstances shape the availability of the occupational opportunities that determine what people are able to do, can choose to do, believe they should do, or can envision doing" (World Federation of Occupational Therapists, 2014). The 2019 Revised Position Statement on Occupational Therapy and Human Rights states that "occupational justice requires occupational rights for all" and defines occupational justice as "the fulfillment of the right for all people to engage in the occupations they need to survive, define as meaningful, and that contribute positively to their own wellbeing and the wellbeing of their communities" (World Federation of Occupational Therapists, 2019).

In 2018, the AOTA Board of Directors updated *Vision 2025*- the organization's publication that outlines AOTA's mission and core tenets to occupational therapist practitioners, occupational therapy educators, occupational therapy students, occupational therapy consumers, occupational therapy policymakers, and the general public- to include specific language on diversity and inclusion as a core pillar of the profession. *Vision 2025* states that "**as an inclusive profession,** occupational therapy maximizes health, well-being, and quality of life for all people, populations, and communities through effective solutions that facilitate participation in everyday living" (AOTA, 2021).

Occupational therapists Christiansen and Baum (1991) state that "environmental factors such as physical, social and cultural aspects of the environment, arousal and environmental press and public policy can enable or impede human performance" (as cited in Law et al., 1996, p. 13), a concept that directly relates to environmental justice and the "development, implementation and enforcement of environmental laws, regulations and policies" as influential to the meaningful involvement of all people (Environmental Protection Agency (EPA), 2021). As client-centered practitioners, both occupational therapy practitioners and landscape architects work closely with individuals and communities. Like occupational therapy practitioners, landscape architects similarly address and shape multi-tiered environments that include both social attitudes and the built environment (Wagenfeld, 2016). Sociologist and urbanist William H. Whyte was a pioneer in studying human interaction with urban environments. In *City: Rediscovering the Center*, Whyte writes

that “social life in public spaces contributes fundamentally to the quality of life of individuals and society as a whole” and that landscape architects have a responsibility to create spaces that encourage civic engagement and community interaction (Whyte, 1988).

Environmental Justice

Connection with nature is necessary for people to maintain mental health and happiness. However, environmental and public health issues affect the nation’s minority, low-income, tribal and indigenous populations disproportionately (EPA, 2021). Landscape architects have a responsibility to address environmental justice, which the EPA defines as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income” (EPA, 2021). Landscape architects should collaborate with occupational therapy practitioners to design public spaces for a broad range of users, especially the communities that use them, and eliminate the invisible labels that reinforce social, physical, and generational segregation in urban spaces (Tang, 2018). “Layering occupational therapy practitioners’ awareness of the relationship between the person, environment, and performance with that of the designers’ awareness of the person-environment relationship is, arguably, the most effective and compassionate way to ensure that the outcomes of projects promote people who are fully engaged in using a product, service, or environment to its optimal capacity” (Wagenfeld et al., 2017). Both landscape architects and occupational therapy practitioners can work together to create urban environments that are built for the fair treatment and meaningful involvement of all people who use them, where individuals, groups, and communities

can develop, recover, or maintain the meaningful activities, or occupations, that matter to them. A common implication in the Framework of Occupational Justice and environmental justice is the call for people in the professions of occupational therapy and landscape architecture to end the silence and participate in the dialogue surrounding injustice.

Sustainable urban design considers the need to rethink how we live by reducing our dependence on non-sustainable resources like fossil fuels and single-use products to meet the needs of future generations and is a core principle of landscape architecture practice. Sustainable urban design can affect a community by providing resources for the present and future. If communities do not have the resources to meet the basic needs of present and future generations, people will not be able to participate in meaningful activities and will not be able to achieve long-term goals and potential. This relates to Maslow's Hierarchy of Needs, which states that physiological needs must be met before higher level growth needs such as safety, love and belonging needs, esteem, and self-actualization can be met (Maslow & Frager, 1987). In order to achieve their goals and potential and to be able to participate in meaningful activities, people need to have the resources to meet their basic needs met.

The US Department of Health and Human Services (USDHH) states that the "social determinants of health (SDOH) are the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks" (USDHH, 2021). Two domains

of SDOH are neighborhood and built environment, as well as social and community context. Examples of SDOH include “racism, discrimination, and violence”, “access to nutritious foods and physical activity opportunities”, and “polluted air and water” (USDHH, 2021).

There is a documented correlation between pollution and race and poverty (Banzhaf, Lala, & Timmins, 2019); statistically, people who live, work, and play in more highly polluted environments are more commonly people of color and the poor in America (Skelton & Miller, 2016). A 2021 study done by Maureen R. Benjamins et al. concluded that mortality in the United States is associated with race and city of residence and that racial inequities in all-cause mortality are prominent on both a national and local level. Benjamins et al. (2021) used data from the Multiple Cause of Death data files from the National Vital Statistics System to conclude that the all-cause mortality rate from 2016 to 2018, among Black populations, was 24% higher than among white populations in the United States (rate ratio = 1.236; 95% CI, 1.233-1.238). Of particular relevance was the fact that mortality rates among Black individuals were significantly higher than those among white individuals in Washington DC, which had a rate ratio of 2.32 in 2018. “This reflects the complex dynamics connecting structural racism, demography, public policy, health care, and the lived experience of communities and individuals” (Benjamins et al., 2021). A 2021 study done by Benjamin Schwandt et al. using data from the US Vital Statistics report and the National Center for Health Statistics (NCHS) determined that the US Black–white American life expectancy gap was 3.6 years in 2018 (Schwandt et al.,

2021). A disparity in research on mortality among racial/ethnic groups- especially Hispanic populations- adds another layer of socioeconomic inequality (Hummer, 2011).

3.5 billion people- over half of the world's population- currently live in urban areas. An increasingly urbanized world is creating growing pressure for people to change the way they live and interact with the environment (Blij, 2012). Improving sustainability is imperative to urban development for resource conservation and health. Kirkwood Neighborhood Park is located in an area of high development. Increased urban development is decreasing access to environments that encourage daily exercise, provide clean air and water, and provide room to grow nutritious food. This has created growing epidemics of depression, obesity, diabetes, asthma, and heart disease (Hruby & Hu, 2014). Also, psychological damage related to disease, injury, environmental insufficiencies, or intrapersonal vulnerability are more likely to affect communities in urban environments where healthy food and clean water are often more difficult to access, pollution levels are higher, and safety is a bigger concern due to higher crime rates (Llorens, 1976). Furthermore, environmental factors such as physical surroundings, finances, pollution, availability of resources, culture, family, and community impact human growth and development and the way people experience the world around them (Llorens, 1976).

Stress Reduction Theory

The Stress Reduction Theory states that the "restorative influences of nature involve a shift towards a more positively-toned emotional state, positive changes in physiological activity levels and that these changes are accompanied by sustained attention/intake" (Ulrich et al., 1991, p. 201). The Stress Reduction Theory further states that positive responses to nature have a genetic basis and that there is a clear division between nature and built environment in human preference, with a higher preference for natural scenes. Connecting with nature usually involves more effort and intent in urban areas, especially neighborhoods that are more than .4 miles from green spaces or parks (Farr, 2008). "Surveys have shown that when most of us think of nature, spaces filled with green that help us unwind and disconnect—we envision something removed" (South, E., n.d.). Multiple studies have shown that connecting with nature has been proven to help improve memory, reduce anxiety and depression, and improve overall health and happiness. A study done by Jules Pretty et al. (2007) concluded that physical activity in green spaces may lead to a "significant improvement in self-esteem and total mood disturbance (with anger-hostility, confusion-bewilderment, depression-dejection, and tension-anxiety all improving post-activity)" (as cited in de Vries, 2016, p. 33). Research by Maas et al., (2009) and Sugiyama et al., (2008) showed that neighborhood greenness is related to social cohesion and that social cohesion is positively associated with health and wellbeing (Echeverria et al., 2008, Rios et al., 2012), where social cohesion is defined as the equivalent of "sense of community, with a focus on trust, shared norms and values, positive and friendly relationships, and feelings of being accepted and belonging" (Forrest & Kearns, 2001, as cited in de Vries, 2016, pp. 26-33).

There are also studies that show an important correlation between the quality and quantity of streetscape greenery and general health in neighborhoods. A 2016 study done by S. de Vries concluded that residents living in neighborhoods with more streetscape greenery perceived their own health as better, experienced less acute health-related complaints, and had a better mental health status than residents living in neighborhoods with less streetscape greenery. When the quality of the streetscape greenery was added, this improved the model even further, while it made the quantity information redundant. Pikora, Giles-Corti, Bull, Jamrozik, & Donovan (2003) concluded that the aesthetic value and attractiveness of local streetscapes is positively related to peoples' walking behavior. B. Giles-Corti et al. (2005) also showed a positive relationship between aesthetic value, distance, size, and attractiveness of green space and walking, and Sugiyama & Ward Thompson (2008) found that the quality of local green space (including aspects of pleasantness, lack of nuisance, good pathways) have been associated with more walking time.

Modern life in urban spaces can make engagement with nature difficult. Difficulties include safety concerns, fewer green spaces, lack of time, fatigue from work, increased screen time, lack of accessibility, and isolation (South, n.d.). However, ample research indicates that availability and access to local greenspace may lead to better health and wellness in residential and urban areas and that the relationship between greenness and mental health might be due to the restorative effects of natural environments (de Vries, 2016). de Vries (2016) also argues that the stress-reducing qualities of the environment in which physical activity takes place, and/or the social cohesion the activity creates, have more influence over health benefits than the level

of physical activity. An accessible and inviting outdoor space has the potential to allow users to feel removed from the difficulties of an urban environment. This can offer the opportunity for new sensory experiences, cognitive acuity and physical skill-building, socialization and/or social-emotional health and wellbeing.

Meso-Level and Micro-Level Uses

At its core, the field of landscape architecture has goals that align with those of occupational therapy to support health, participation, and engagement with the environment. Landscape architects shape environmental factors- the context in which people participate and engage in occupations; occupational therapy practitioners work with people to "not only function but also engage comfortably within their own distinct combination of contexts," which can be personal and environmental (American Occupational Therapy Association, (AOTA), 2020, p. 9). "Occupations occur in contexts" (AOTA, 2020, p. 10). By working with occupational therapy practitioners, landscape architects can design spaces to optimally support the goal to promote users' comfortable engagement and participation within their own distinct combination of contexts.

Occupational therapy is unique in its understanding of the importance of the mind-body-spirit connection for engagement and participation in life (AOTA, 2020). Occupations can include activities of daily living (ADLs), instrumental activities of daily living (IADLs), health management, rest and sleep, education, work, play, leisure, and social participation (AOTA, 2020). Through the lens of environmental and occupational justice, this design has the capacity to enhance personally

meaningful occupations while promoting engagement and participation for individuals of all backgrounds, ages, and abilities at the meso-level. At the micro-level, this space could be used by occupational therapy practitioners as part of a therapy program.

This design will include elements that encourage sensory exploration, movement, meditation, concentration, balance, socialization, and strengthening of the body. Occupations have utility for individuals in real world contexts, and distinctive to occupational therapy is the use of occupations as both a means and an end to therapy interventions (AOTA, 2020). Occupations can be noticeable by others or known only to the person performing them. An example given by the AOTA in the 2020 Occupational Therapy Practice Framework is an occupational therapy practitioner using activity of chopping vegetables as an intervention for an individual to practice fine motor skills (means), with the goal of improving fine motor skills for the occupation of preparing a meal (end). This project has similar goals to promote the development of skills on-site (means), which can then have further generalizable benefits for users' overall health in the real world (end). For example, an older adult using low impact exercise equipment in this designed space may improve muscle strength and stamina, which can promote autonomy and lengthen the lifespan (Liu, 2020). This occupation would be noticeable to others. Another example is a person engaged in walking along the meditative pathway on-site developing a sense of calmness and stress relief in daily life. This is an occupation that would be known only to the person involved. Therapeutic intervention in a community environment is relevant to users' everyday public and private settings and activities. Participating in

these activities on-site can complement working with an occupational therapy practitioner in a clinical setting. Though this is not a substitute for, or equivalent to, working with an occupational therapy practitioner in a clinical setting, this space will invite people to experience the outdoors, engage with nature, socialize, and have fun, fostering physical, social-emotional, and cognitive development in an environmental context that is relevant to their everyday lives.

In addition to meso-level uses, the re-designed Kirkwood Neighborhood Park could have micro-level uses to enhance and support personally meaningful occupations. At the micro-level, an occupational therapy practitioner may use site elements in a focused therapeutic way to provide services or home programming based on a client or group's specific goals.

IV. Site Inventory and Analysis

My goal for this project was to create a design guided by a literature review and research on occupational therapy. Though my research and literature review on occupational therapy theoretical perspectives informed my design, my role was that of a landscape architect student. My site inventory included a physical, cultural, and biological inventory of Kirkwood Neighborhood Park and the surrounding areas of Hyattsville. My analysis interpreted how the existing site elements could inform a safe, equitable, therapeutic, sustainable design. My design process centered around the core belief that in order for people to be able to participate in meaningful activities, they need accessible spaces to do so. Environmental justice includes the ideals of sustainability, and the need to conserve resources for future generations. Site inventory and analysis of Kirkwood Neighborhood Park and the surrounding city of Hyattsville informed a design that is maintainable for the health and use of future generations. Theoretical principles of occupational therapy guided me in designing for the health of individuals and the community, while theoretical principles of landscape architecture guided me in designing for environmental health; research into both informed an equitable, economical, cohesive, sustainable design.

Site Context

Kirkwood Neighborhood Park is located in West Hyattsville, Maryland (Figure 4.1), a suburban area on the outskirts of Washington DC (Figure 4.2). West Hyattsville is in Prince George's County, within the Anacostia River watershed (Figure 4.3). West Hyattsville is a district within the city of Hyattsville (Figure 4.4), which consists of a variety of mixed-use, historic, and commercial areas, as well as scattered green space

and public parks. The city and the public have come together in workshops and meetings to identify core neighborhoods and areas where they would like to see sustainable practices executed. West Hyattsville was identified as an area of focus.

Stanley Martin Homes at Riverfront, a new urban-style garage townhome development located between Kirkwood Neighborhood Park and the West Hyattsville Metro, will have undetermined influences on the surrounding community and use of the park. Because the townhomes are still under construction, I was unable to fully evaluate and incorporate this community and demographic into my site analysis. However, the developer's website advertises that "Riverfront defines urban living" and focuses on the benefits of the location. The two-bedroom, 2.5 bathroom units range from $498,925- $550,805 per unit (Stanley Martin, 2022). The development in West Hyattsville is highly influenced by the proximity to the West Hyattsville Metro, which expanded in 2019 to serve more commuters (WMATA, 2019). The Stanley Martin Homes at Riverfront were reportedly purchased for development "'above the appraised fair market value' and the deal includes covenants that 'guarantee a transit-oriented development' and construction of bicycle and pedestrian facilities to the Metro station" (Neibauer, 2020).

Figure 4.1
Map of Kirkwood Neighborhood Park

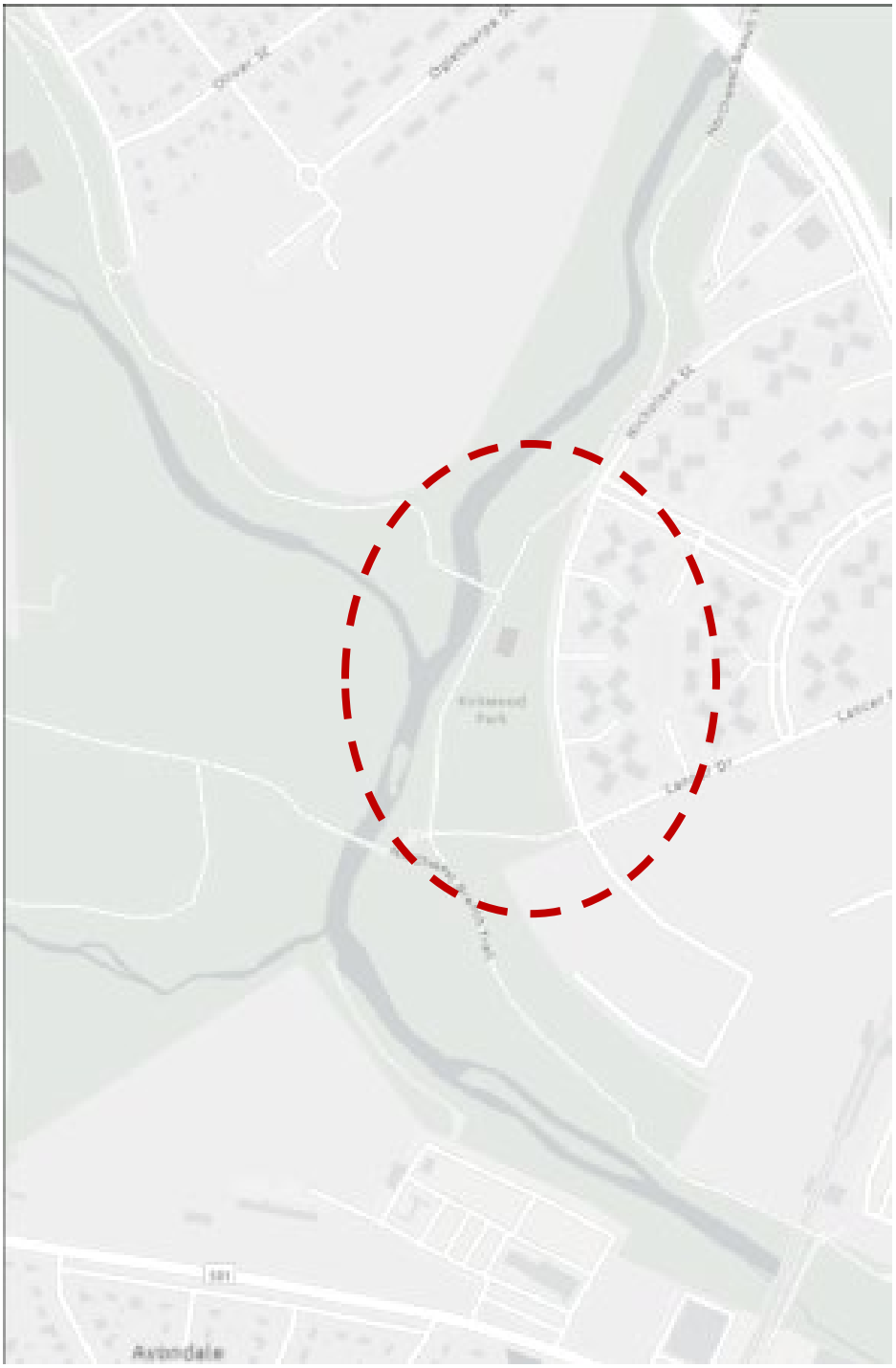


Figure 4.2
Map of Hyattsville MD, located in Prince George's County

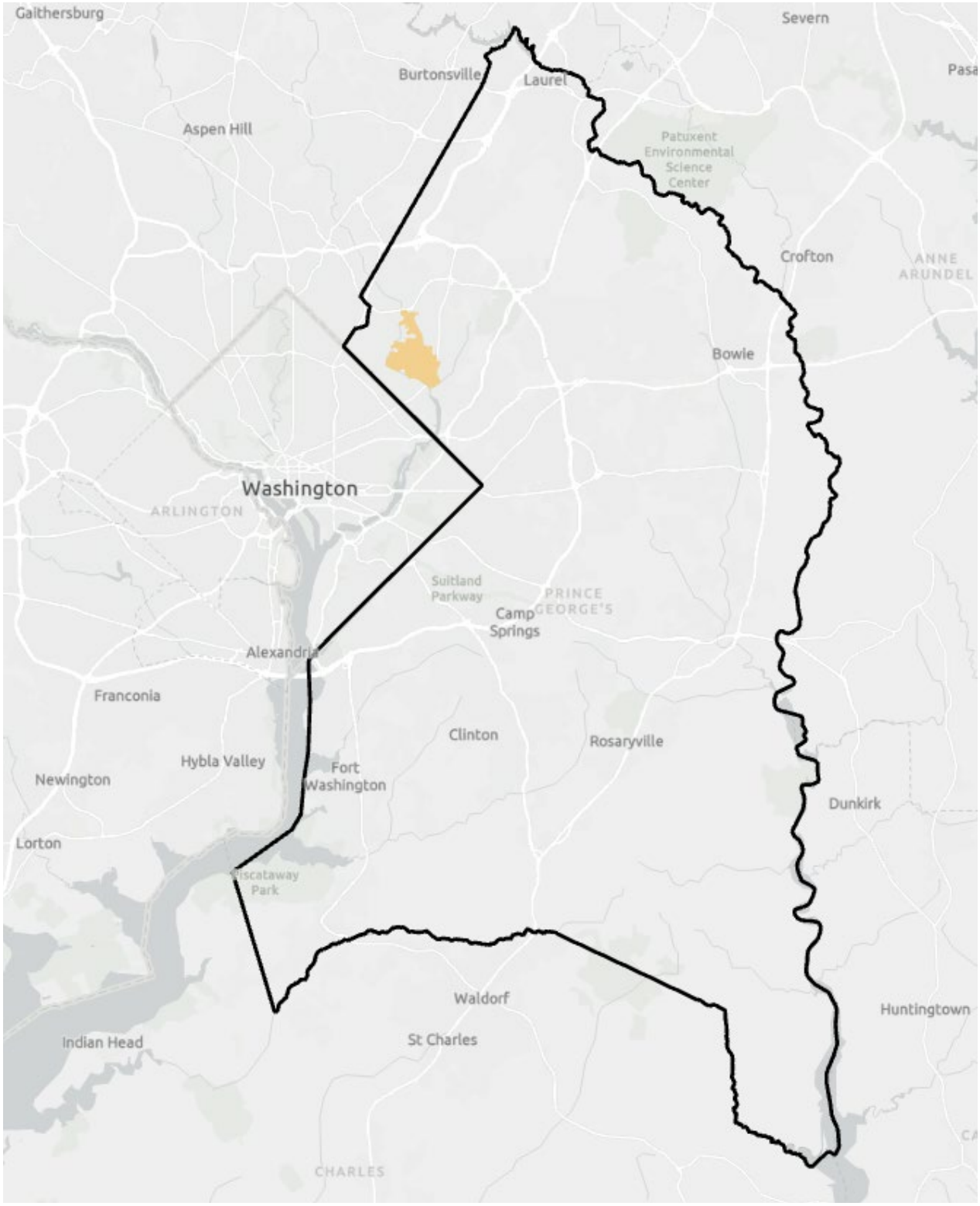


Figure 4.3
Map of Anacostia River Watershed

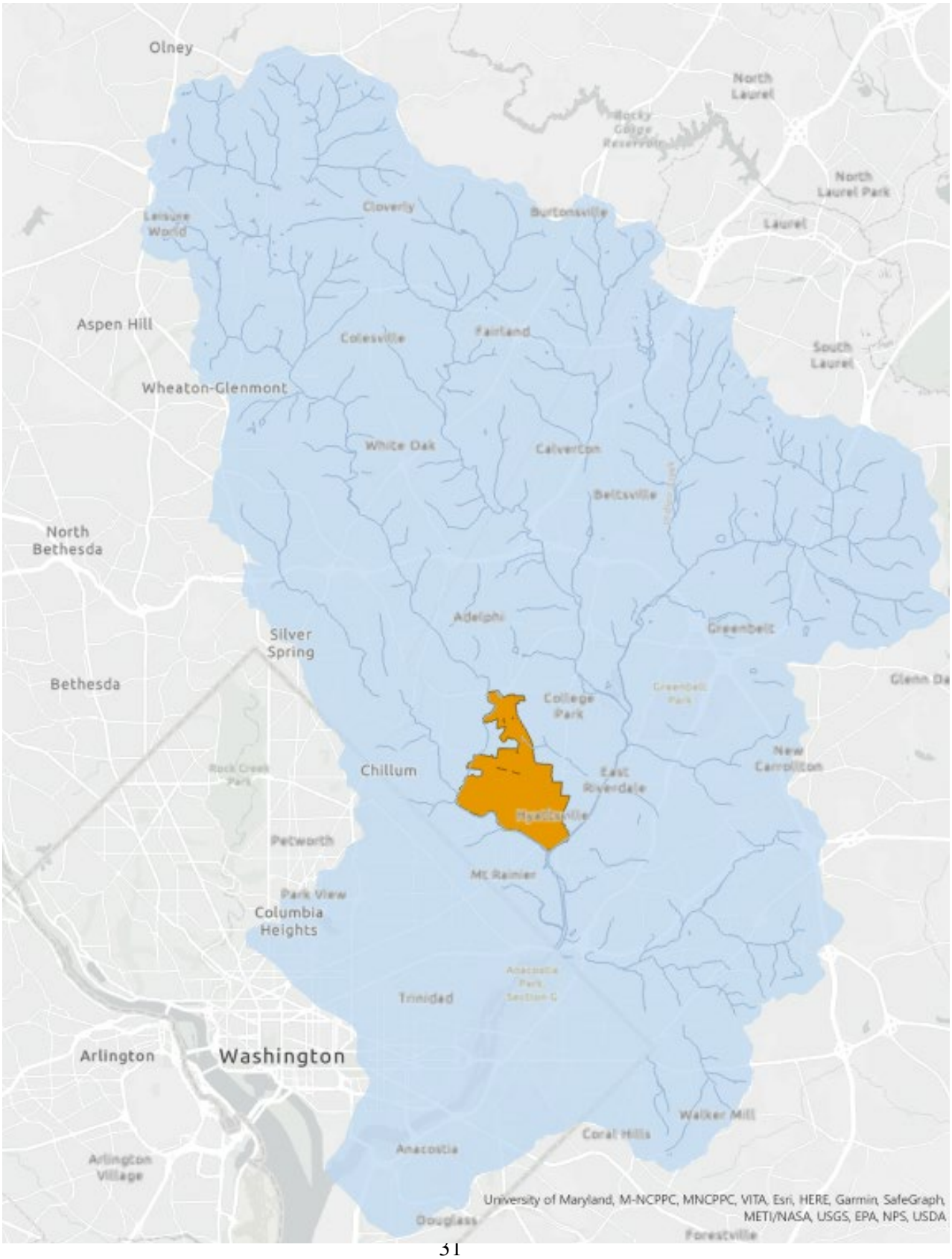
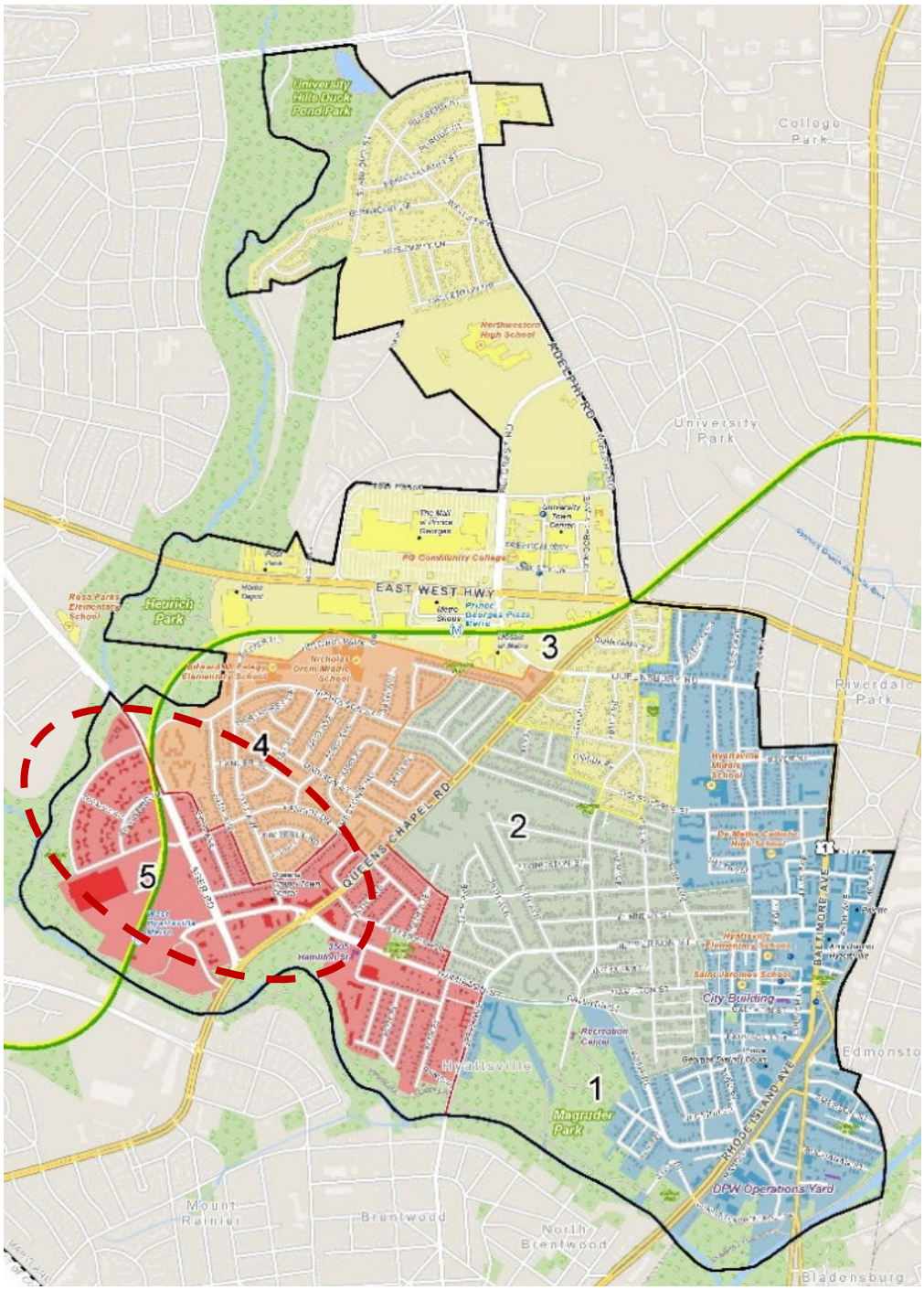


Figure 4.4
West Hyattsville is a District Within the City of Hyattsville



Fuentes, S. (2014). City of Hyattsville. *Maps*. map, City of Hyattsville. Retrieved January 4, 2022, from https://www.hyattsville.org/DocumentCenter/View/5841/City-Ward-BaseMap-Option-3-2.

There is a recent increase in real estate development in West Hyattsville, and demand for real estate is above average (Nivera, 2021). The area surrounding Kirkwood Neighborhood Park is prime for development due to the proximity to Washington, DC, downtown Hyattsville, University of Maryland, and the West Hyattsville Metro Station. The most updated reported median home value in Hyattsville is $336,300 (Nivera, 2021). Housing prices are rapidly rising, as seen in the current nearby Stanley Martin Homes at Riverfront townhouse development.

The rapid development in this area presents an opportunity to identify methods to improve the health of the community and for sustainable future development. Many of the residences in this neighborhood are older, well-established, built between 1940 and 1969, indicating that the next generation of homeowners may likely be children inheriting family homes (Location Inc., 2021). A more comfortable, safe environment with green streetscapes and outdoor spaces to engage in meaningful activities might motivate future homeowners to advocate for long-term transformation of development methods. Increased demand for homes will increase the potential user group of my site and will also affect the environmental health of the Anacostia River, Sligo Creek, and the local ecology.

Site History

Due to its location on the periphery of Washington DC and the Anacostia River Hyattsville has historically been an ideal area for growth and development. Researching the history of the area and the city's growth offered insight into the current development and future growth patterns that were relevant to my site design.

Prior to European colonization in the 1600s, the area that now comprises Hyattsville, MD was inhabited primarily by Algonquin- and Iroquois-speaking American Indian tribes (City of Hyattsville, 2021). According to Donovan Begay (2019), writing for the American Library Association, because the area is located near the Anacostia and Potomac Rivers, the region was rich in natural resources and allowed local tribes to easily transport and travel along the area's waterways and trails. Begay further writes that "the area's "river systems and current national parks are where the Piscataway, Pamunkey, the Nentego (Nanichoke), Mattaponi, Chickahominy, Monacan, and the Powhatan cultures thrived". The arrival of Europeans in 1608 devastated existing indigenous townships with disease and war and eventually led to the forcible removal of local tribes.

European settlers saw the advantages of existing trails and use of waterways for trade and transport, and a small riverfront community was formed in present-day Hyattsville in the mid-1700s. Washington D.C. and the town of Baltimore were established, leading to the need for transportation between the two hubs. 1812 construction of the Washington and Baltimore Turnpike connected the two cities through present-day Hyattsville. In 1828, the Baltimore and Ohio Railway also passed through the area from Washington to Baltimore. Local community residents saw the potential for development due to the area's location at the intersection of the turnpike and railway line, and The Act of Incorporation for the City of Hyattsville was signed on April 7, 1886 (City of Hyattsville, 2021).

Churches, schools, athletic groups, and civic organizations were formed as Hyattsville grew in size and population. As Washington DC grew and became the

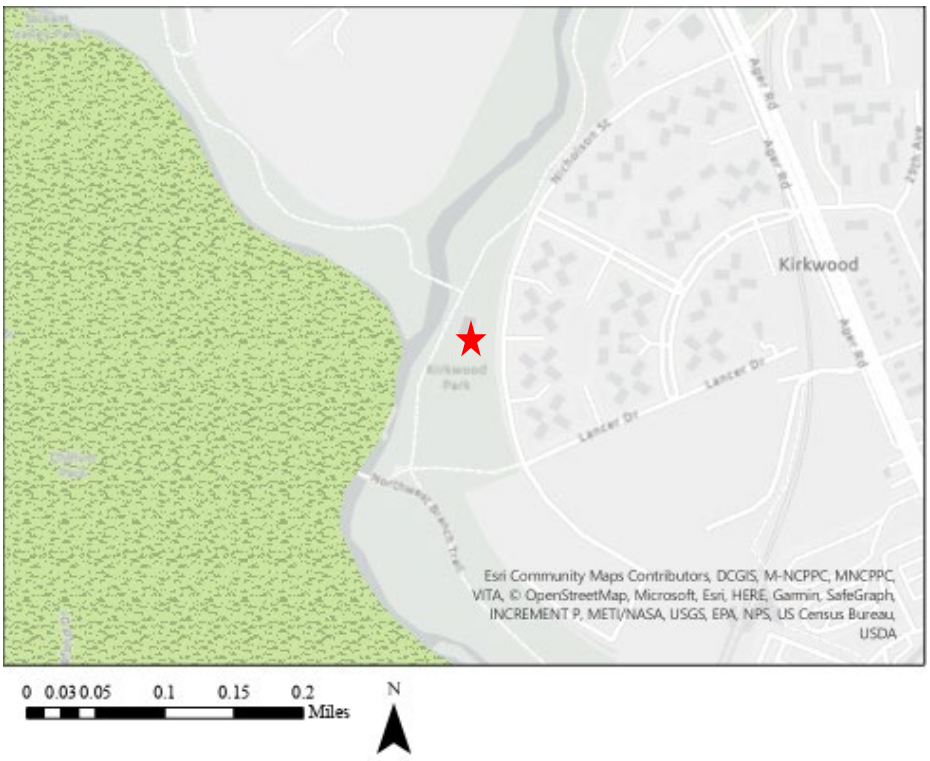
focal point of political activity in the United States, property prices rose and Hyattsville became a destination for summer homes for wealthier residents. An electric streetcar connected Hyattsville to Washington DC, and Hyattsville grew as a "streetcar suburb" throughout the early to mid- 1900s. The development of large areas of agricultural land throughout the 1900s and 2000s reduced the availability of fresh food (City of Hyattsville, 2021).

Hyattsville during the 1900s also includes a history of racial exclusion that was, unfortunately, common throughout cities in the United States (Hyattsville Preservation Association, 2021). Restrictive covenants prohibited the sale of land and housing to anyone other than "white individuals" in order to enforce racial segregation. The US Supreme Court case of Shelley v. Kraemer in 1948 "held that restrictive covenants in real property deeds which prohibited the sale of property to non-Caucasians unconstitutionally violate the equal protection provision of the Fourteenth Amendment" (Cornell Law School, 2021). The United States 2020 census shows that Hyattsville is a more diverse city today, with a diversity of "racial identity, sexual orientation, gender identity, national origin, socioeconomic status, and a variety of other identities" (Hyattsville Preservation Association, 2021).

According to the Hyattsville Preservation Association (2021), the city "has a rapidly expanding local business community" due to the "geographic and cultural center of the Gateway Arts District". Though this is true for the city as a whole, new zoning categories show that some smaller, family-owned businesses are being replaced by larger commercial buildings and companies in the area surrounding Kirkland Neighborhood Park " (Prince George's County Planning Department, 2019).

Farmers' markets have sprung up all over the city, and now present opportunities for residents to purchase fresh produce nearby. The area surrounding Kirkwood Neighborhood Park, however, is not within walking distance to a farmer's market and is close to a Healthy Food Priority Area (HFPA) (Figure 4.5). In Prince George's County, an HFPA is an area where: 1) The ratio of healthy to unhealthy food retailers is low, 2) The median household income is below $67,553, the Maryland Self Sufficiency Standard for a family of four and 3) Over 5.2% of households have no vehicle available (Prince George's County Food Equity Council, 2021). There is an opportunity in Kirkwood Neighborhood Park to add community gardens to grow produce and provide a place for farmer's markets for the growing residential market.

Figure 4.5
Healthy Food Priority Areas



Demographics

Census data shows that Hyattsville is a rapidly growing city. According to the most recent census, Hyattsville had a population of 21,287 in 2020, a 21.3% increase since the 2010 census (U.S. Department of Commerce, 2021). The 2020 census response rate in Hyattsville was 63.3%, lower than the 71.2% response rate statewide in Maryland and the national response rate of 67%. Figure 4.6 shows the most relevant census data for Hyattsville, as compared to Maryland and the United States.

Figure 4.6

Hyattsville 2020 Census Data

	Hyattsville	**Maryland**	**United States**
Population Census April 1, 2020	21,287	6,177,224	331,449,281
Age			
Persons under 5 years	7.3%	6%	6%
Persons under 18 years	23.5%	22.1%	22.3%
Persons 65 years and over	9.9%	15.9%	16.5%
Race and Hispanic Origin			
White alone	58.5%	30.4%	76.3%
Black or African American alone	31.1%	30.3%	13.4%
American Indian and Alaska Native alone	.6%	.7%	1.3%
Asian alone	6.7%	4.6%	5.9%
Hispanic or Latino	10.6%	36.9%	18.5%
White alone, not Hispanic or Latino	50%	25.4%	60.1%
Population Characteristics			
Foreign-born persons 2015-2019	15.2%	31.6%	13.6%
Housing			
Owner-occupied housing unit rate, 2015-2019	66.9%	46.6%	64%
Median value of owner-occupied housing units, 2015-2019	$314,800	$336,300	$217,500

Median Gross Rent, 2015-2019	$1,392	$1,433	$1,062
Families & Living Arrangements			
Persons per household, 2015-2019	2.67	2.76	2.62
Living in same house 1 year ago, 2015-2019	86.4%	85.8%	85.8%
Language other than English spoken at home	19.0%	42.9%	21.6%
Health			
With a disability, under age 65 years, 2015-2019	7.5%	5.7%	8.6%
Persons without health insurance, under age 65 years	6.9%	14.2%	10.2%
Economy			
In civilian labor force, total, percent of population age 16 years+, 2015-2019	67.1%	76.8%	63%
Transportation			
Mean travel time to work (minutes), workers age 16 years+, 2015-2019	33.2	33.7	26.9
Income and Poverty			
Median household income (in 2019 dollars), 2015-2019	$84,805	$81,736	$62,843
Per capita income in past 12 months (in 2019 dollars), 2015-2019	$42,122	$35,494	$34,103
Persons in poverty	9.0%	11%	11.4%
Businesses			
Total Number of Businesses, 2012	2,065	531,953	27,626,360
Men-owned firms, 2012	1,003	276,630	14,844,597
Women-owned firms, 2012	878	209,119	9,878,397
Minority-owned firms, 2012	1,513	203,394	7,952,386
Nonminority-owned firms, 2012	424	314,902	18,987,918
Geography			

Population per square mile	7,972	636	87
Land area in square miles	2.67	9,707.24	3,531,905.43

From U.S. Department of Commerce. (2021). *QuickFacts Hyattsville city, Maryland; United States*. United States Census Bureau. Retrieved December 31, 2021, from https://www.census.gov/quickfacts/fact/table/hyattsvillecitymaryland,US/PST045219

There are several apartment buildings within walking distance of the site (.4 miles). 48% of residents are between ages 25-54, with 23% below age 17, indicating that the area has a high percentage of families with young children. Additionally, there are several public and private elementary and K-12 schools, including Rosa Parks Elementary School, Ridgecrest Elementary School, Thomas Stone Elementary School Chillum Elementary School, and Cesar Chavez Elementary School, indicating that a high percentage of families have young children (Figure 4.7). There are several houses of worship in the area, indicating the importance of family and a strong sense of community. However, there is only one community center within walking distance of the site (Figure 4.8). This presents an opportunity to create a space for the community to come together.

Figure 4.7
Elementary Schools Within Walking Distance of Site

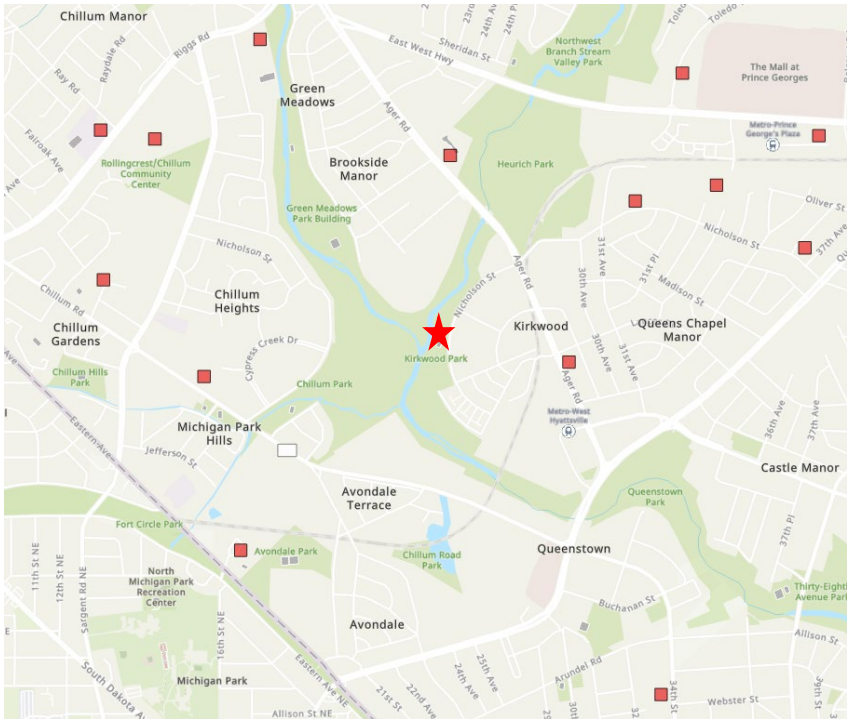
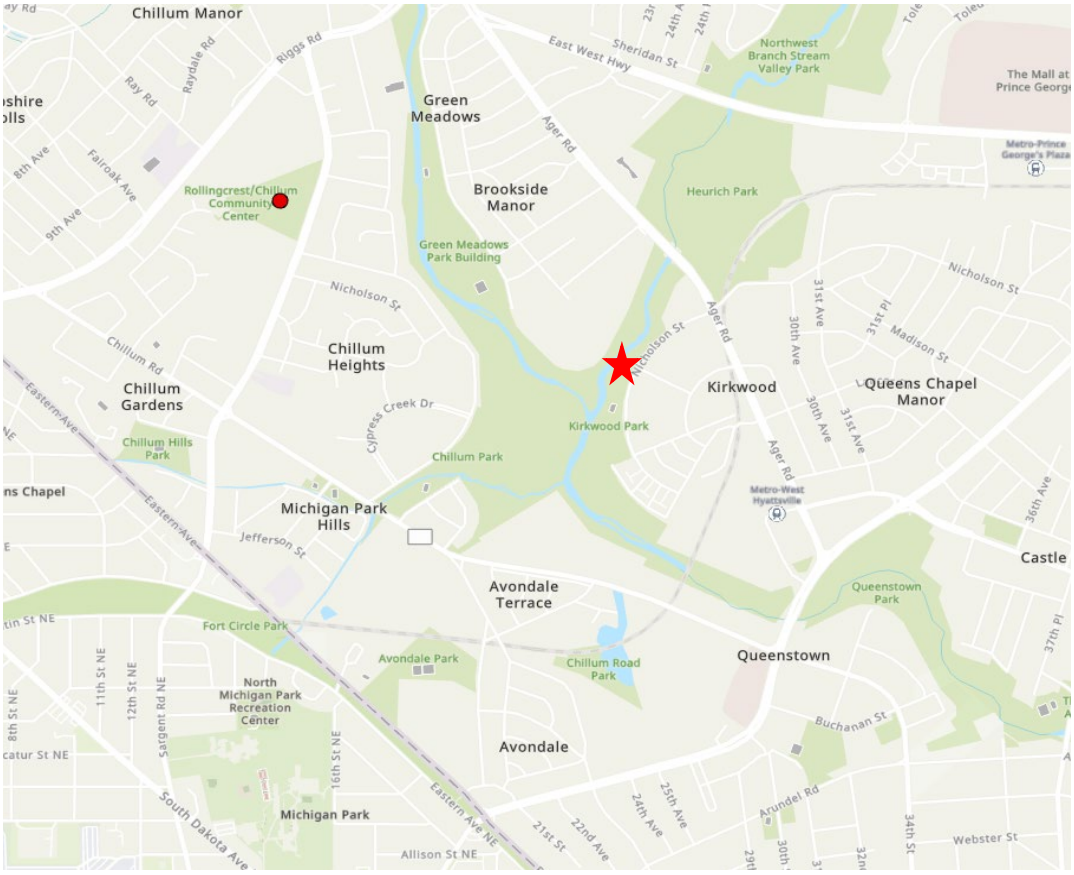


Figure 4.8

One Community Center Within Walking Distance of Site



Crime and Safety

Figure 4.9 shows the 2020 crime statistics in Hyattsville compared to Maryland and national averages from data collected by the Federal Bureau of Investigation (FBI) Uniform Crime Reporting Program. Figure 4.10 shows the 2021 crime map of the area, displaying areas of low-high crime.

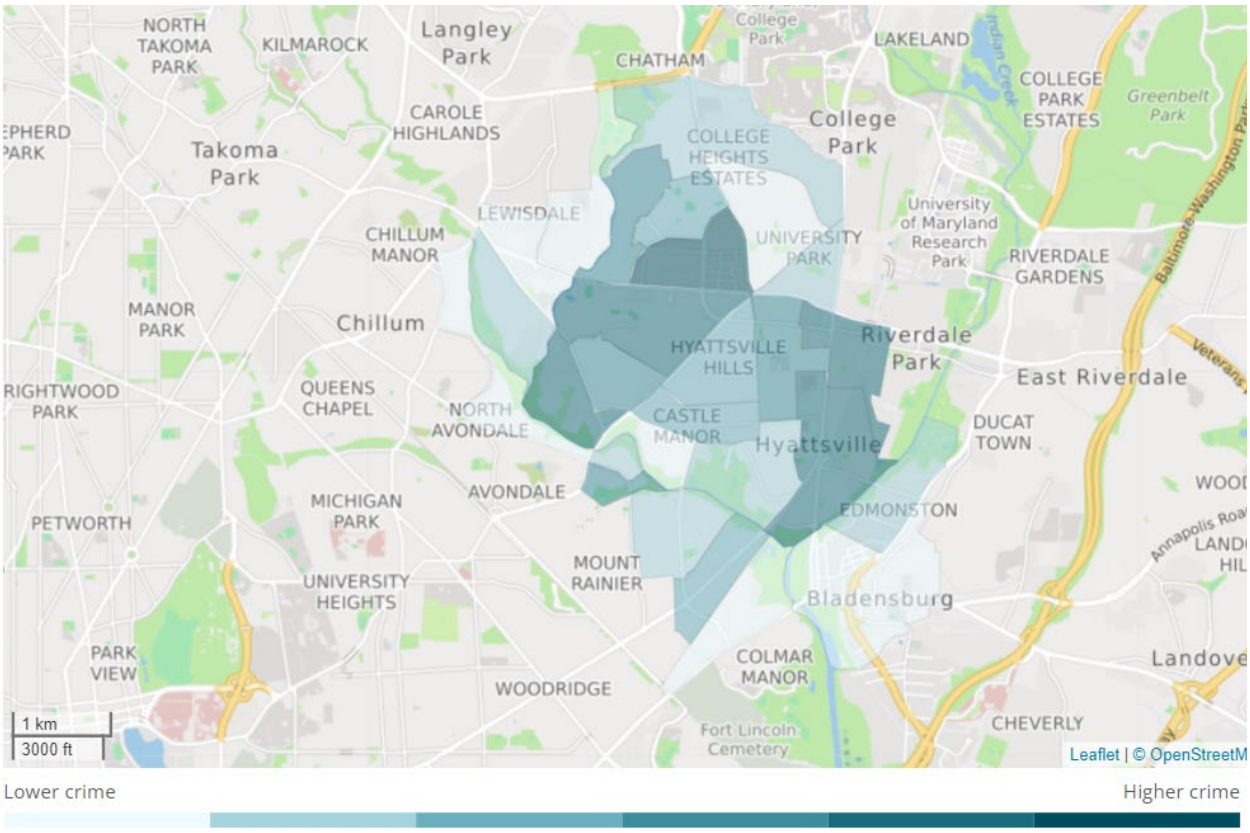
Figure 4.9

Hyattsville Crime Statistics

	Number of Reported Incidents	Hyattsville/100 people	Maryland/100 people	United States/100 people
Total Crime	1,197	6,530	2,010	2,346
Murder	4	21.6	9	6.5
Rape	3	16.43	28.6	38
Robbery	53	289	119	74
Assault	25	136	243	280
Violent crime	85	464	400	388
Burglary	54	294	252	314
Theft	996	5,433	1,185	1,398
Vehicle Theft	62	338	173	246
Property Crime	1,112	6,066	1,610	1,958

From Areavibes. (2021). *Hyattsville, MD Crime*. Hyattsville, MD Crime Rates & Map. Retrieved December 31, 2021, from https://www.areavibes.com/hyattsville-md/crime/

Figure 4.10
Hyattsville Crime Map



From Areavibes. (2021). Hyattsville, MD Crime. Hyattsville, MD Crime Rates & Map. Retrieved December 31, 2021, from https://www.areavibes.com/hyattsville-md/crime/

According to the FBI's Uniform Crime Reports, the total crime rate in Hyattsville is 178% above the national average; violent crime is 20% higher than the national average; and property crime is 210% above the national average (Areavibes, 2021). The Maryland Department of the Environment (MDE) defines environmental justice as the right of all people to enjoy equally high levels of environmental protection regardless of their race, color, national origin or income and states that "low income and minority communities are most vulnerable to environmental justice issues" (Maryland Department of the Environment (MDE), 2021).

Hyattsville's largest demographic populations are Hispanic (36.9%) and Black or African American (29.4%)- both minority groups in the United States of America (Census, 2020). The 2019 MD Vital Statistics Annual Report also shows that Black or African American individuals are over five times more likely to die due to homicide than Non-Hispanic White Americans. The national rate of homicides in the US is .006%, compared to .022% in Hyattsville. Because Hyattsville has a significantly higher crime rate than the national average, Black Americans are disproportionately more likely to be victims of violent crime.

Prince George's County is also a dangerous area for pedestrians, with the highest number of pedestrian deaths due to traffic accidents in the Washington metro region (Zero Deaths Maryland, 2020). Crash analysis reports show that car accidents in Prince George's County accounted for nearly 40% of pedestrian deaths in the region in 2020 (Zero Deaths Maryland, 2020).

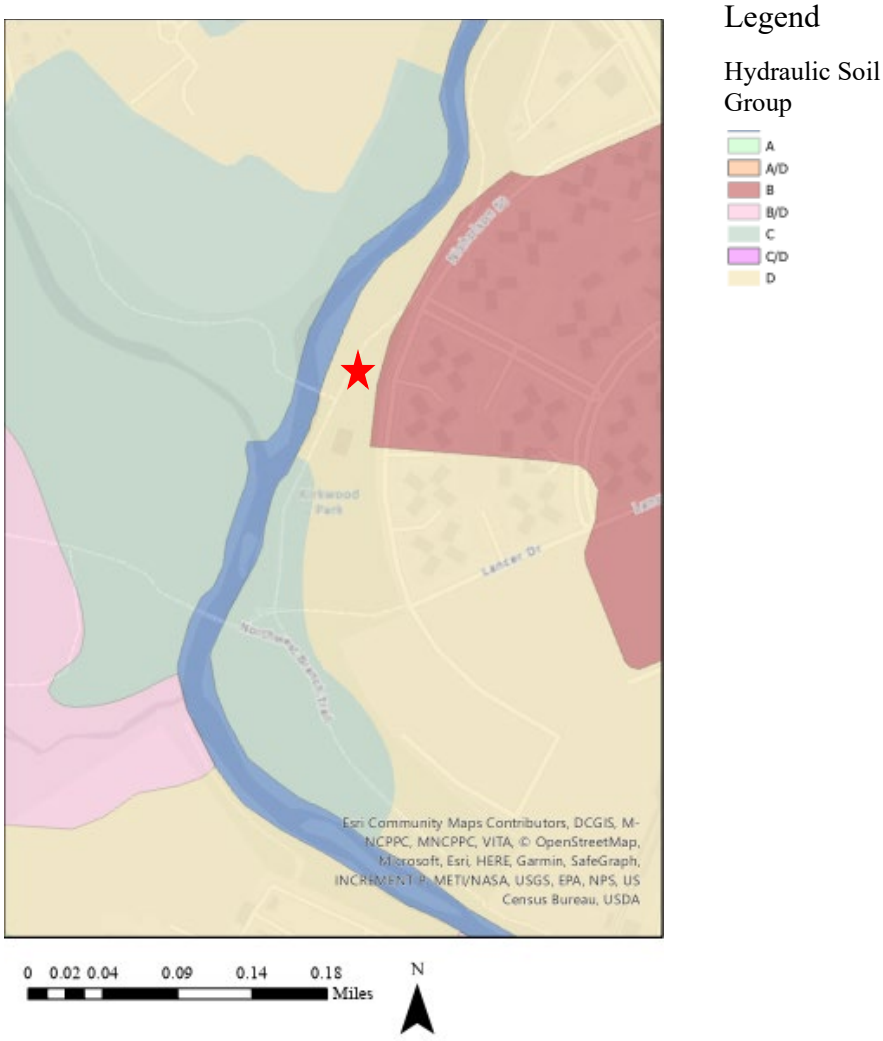
Crime and safety data in Hyattsville indicates the need for safe pedestrian access and design interventions that deter crime. Public park design offers many opportunities to

either prevent or encourage crime. There is an opportunity to incorporate Crime Prevention Through Environmental Design strategies in my community park design (The International Crime Prevention Through Environmental Design Association, 2021).

Soils

Kirkwood Neighborhood Park and the surrounding areas consist of mainly Type C and Type D soils, which exhibit poor infiltration. The project site consists of Type D soil with high levels of clay, poor infiltration rates, and high runoff potential. Type C soil is found along the slopes of Sligo Creek, which is within the 100-year flood plain. Type C soils "include granular soils such as gravel, sand and loamy sand, submerged soil, soil from which water is freely seeping, and submerged rock that is not stable" (United States Department of Labor, n.d.) The presence of Type C soils along Sligo Creek indicates that this area is prone to flooding and erosion. The results of the USDA Web Soil Survey indicate that the soil along Paint Branch Stream and Campus Creek is heavily eroded due to steep slopes and frequent flooding, while much of the disturbed urban soil is poorly drained due to high levels of clay and the presence of large expanses of impermeable surfaces (US Department of Agriculture, 2021).

Figure 4.11
Hydraulic Soil Groups



Climate

According to weather data from NASA's MERRA-2 Modern-Era Retrospective Analysis, the warmest times of the year in Hyattsville are between *May 30 - September 15,* with an average daily high temperature above *80°F*. July is the warmest month, with an average high temperature of 88°F and an average low temperature of 70°F (Cedar Lake Ventures, 2021).

The *coldest days of the year are between November 30 to March 4*, with an average daily high temperature below *53°F.* The coldest month of the year is *January*, with an average low temperature of *29°F* and a high temperature of *45°F* (Cedar Lake Ventures, 2021).

May has the most rainfall, with an average rainfall of *3.5 inches* (Cedar Lake Ventures, 2021).

Hyattsville experiences *high levels of* seasonal variation in humidity (Cedar Lake Ventures, 2021).

The *muggier period* of the year is between *May 23* to *September 29,* during which time the comfort level is *muggy, oppressive,* or *miserable* at least *16%* of the time. The month with the muggiest *days* in Hyattsville is *July* (Cedar Lake Ventures, 2021).

The growing season is typically from *April 1* to *November 4*, rarely starting before *March 15* or after *April 19*, and rarely ending before *October 16* or after *November 25* (Cedar Lake Ventures, 2021).

Because Kirkwood Neighborhood Park is located in an area with high levels of seasonal variation in temperature and humidity, and considering the increasing

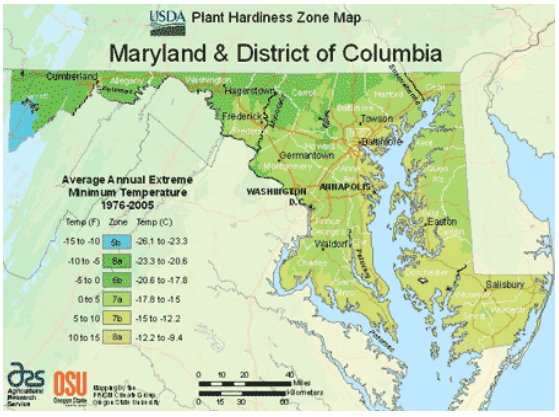
variability due to climate change, it will be important to design for the park to be used year-round. Materials need to be chosen that can be used on very hot days and have low reflectivity. There is an opportunity to mitigate the effects of heat island effect by increasing vegetation and canopy coverage on-site.

There is currently one sheltered area on the site, which was observed to be used in rain events. Due to the regular occurrence of rain, users of the site would benefit from additional sheltered areas.

Vegetation

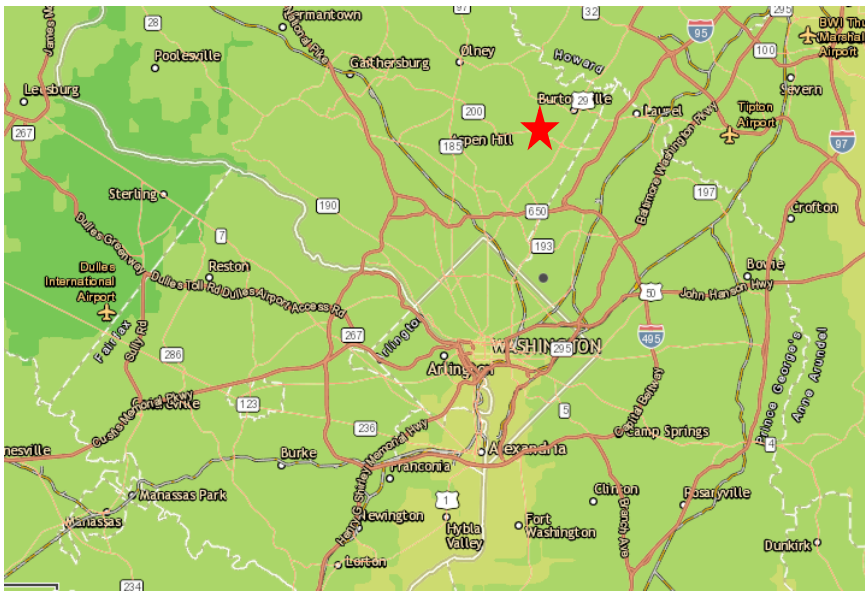
Kirkwood Neighborhood Park falls into the United States Department of Agriculture (USDA) Plant Hardiness Zone 7a (Figures 4.12 and 4.13). USDA plant hardiness zones are divided into categories of 10 degrees F zones to indicate which plants are best suited to grow in an area or location (United States Department of Agriculture (USDA), 2021).

Figure 4.12
Maryland Planting Zones – USDA Map Of Maryland Growing Zones



From Gardening Know How. (2022). Maryland Planting Zones – USDA Map Of Maryland Growing Zones. *USDA Planting Zones*. map. Retrieved January 1, 2022, from https://www.gardeningknowhow.com/planting-zones/maryland-planting-zones.htm.

Figure 4.13
USDA Plant Hardiness Zone Map- Kirkwood Neighborhood Park



From United States Department of Agriculture (USDA). (2012). 2012 USDA Plant Hardiness Zone Map. *USDA Plant Hardiness Zone Map*. map. Retrieved January 1, 2022.

Ideal plant choices to install on this site would be low-maintenance native plants. Large native trees that are likely to thrive at this location based on soil, plant hardiness zone, and climate include oak trees, hickory trees, maple trees. Smaller trees include dogwoods, redbuds, and holly trees. Shrubs appropriate for this site include viburnum, winterberry, azaleas, hydrangeas, and boxwoods. Perennials that thrive in this zone include Foam Flower, Geraniums, Swamp Milkweed, Wild Columbine, and Black-Eyed Susans.

Existing vegetation in Kirkwood Neighborhood Park is sparse; there are only two trees- one American Sycamore (*Platanus occidentalis)* and one American Sweetgum *(Liquidambar styraciflua)* within the entire 180,500 square foot park (Figure 4.14).

Figure 4.14
Existing Trees on Site



The existing trees along Nicholson St. are sparse and in poor health (Figure 4.14).

Figure 4.15
Existing Street Trees Along Nicholson St.



There is an opportunity to increase tree coverage and improve the streetscape along Nicholson St. to improve green space, thereby potentially reducing crime and improving health. “Improving a city’s urban tree canopy can have numerous benefits, including reducing summer peak temperatures and air pollution, enhancing property values, providing wildlife habitat, providing aesthetic benefits, and improving social ties among neighbors” (USDA Forest

Service, 2019). Adding native vegetation on site will provide an inviting space that improves users' mood through engagement with nature and allows users to feel as though they are “getting away” (Ulrich et al., 1991). There is also an opportunity to plant pollinator gardens to increase biodiversity and connect people with wildlife the gardens attract.

There is a dense border of various invasives along the NW Branch Trail. (Figures 4.16 and 4.17).

Figure 4.16
Existing Invasives Along NW Branch Trail



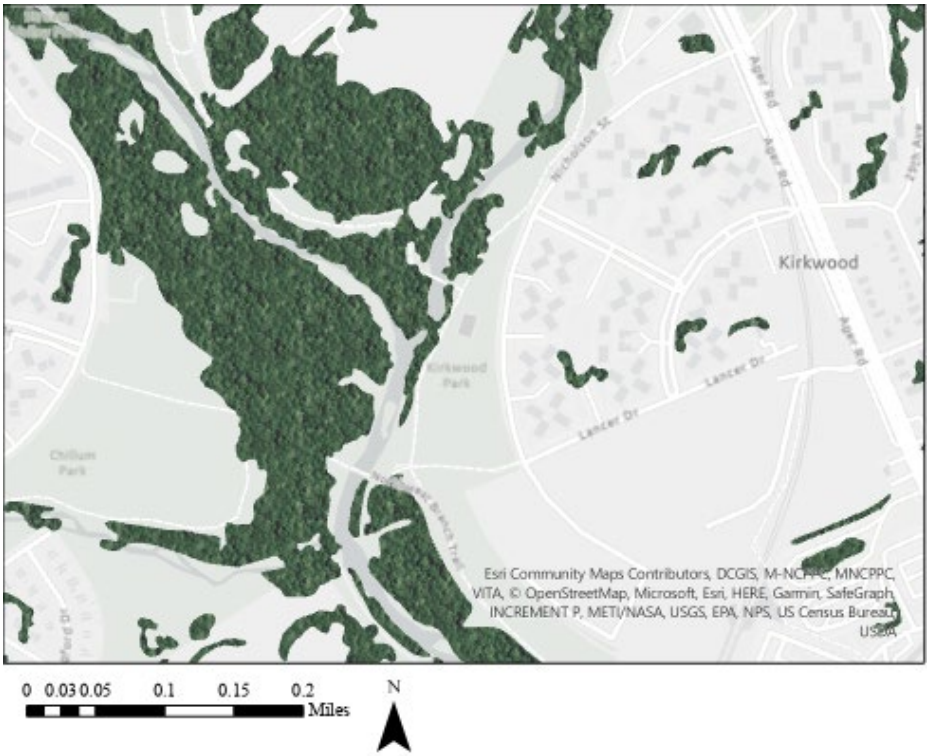
Figure 4.17
Existing Invasives Along NW Branch Trail



There is an opportunity to replace invasives with native plants to create a sustainable corridor along the NW Branch Trail. Additionally, ongoing volunteer programs to maintain the site (removing invasives, planting new trees, etc.) could provide skill and community-building opportunities. Increasing the width of the trail and painting bicycle lanes could make the trail more accessible for mobility-impaired individuals and improve safety by separating bicycle and pedestrian use.

Lack of existing tree canopy coverage (Figure 4.18) does present an opportunity to place community gardens in the best possible spot to grow fresh fruit and vegetables by considering wind and sun direction.

Figure 4.18
Existing Tree Canopy Coverage

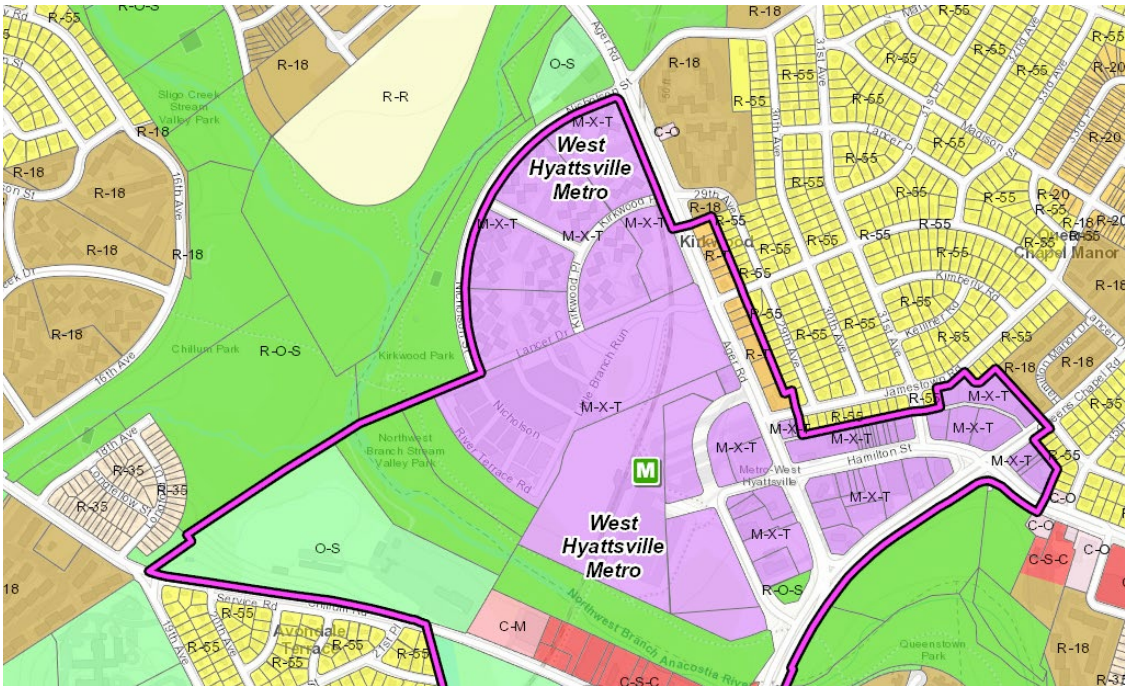


Zoning

Kirkwood Neighborhood Park falls within the Reserved Open Space (R-O-S) zoning category of Prince George's County. The existing land use is parks and open space. According to the Prince George's County Planning Department, the R-O-S zoning category "encourages preservation of large area of trees and open space; is designed to protect scenic and environmentally sensitive areas and ensure retention of land for non-intensive active or passive recreational uses" (2019). A Countywide Map Amendment was approved on November 29, 2021. The new Zoning Ordinance, Zoning Map, and Subdivision Regulations will take effect on April 1, 2022. The zoning for Kirkwood Neighborhood Park will remain R-O-S, but the surrounding areas will see some changes in zoning. Single-family residential zoning categories show little impact or change. The cluster of apartments and multi-family homes that are currently in the Mixed-Use Transportation (M-X-T) category will fall into a new Local Transit-Oriented (L-T-O) category in 2022. The main changes include stipulations on lot size and dwelling units per acre, which is not extremely significant in scope but indicates future development plans for increased density. Similar to the M-X-T zone, the new L-T-O zoning category "provides for moderate-intensity, vibrant, transit-rich mixed-use centers incorporating walkable urbanism and robust connectivity for pedestrians, bicyclists, transit riders, and drivers. Vertical mixed-use development, with ground-floor retail, service, or office uses and residential above, is strongly encouraged" (Prince George's County Planning Department, 2019).

Figure 4.19

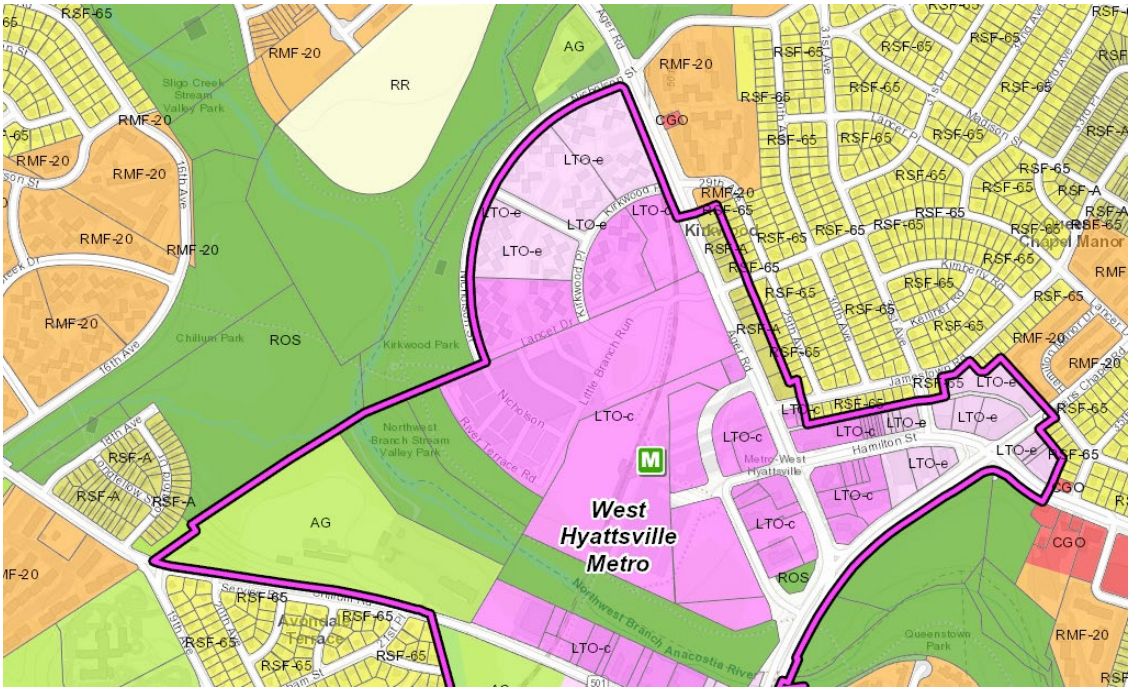
Existing Zoning, Source: Prince George's County Planning Department



From Prince George's County Planning Department. (2019). CMA Approved Zoning Comparison Map. Zoning Rewrite. map. Retrieved December 30, 2021, from http://zoningpgc.pgplanning.com/zoning-swipe-tool/.

Figure 4.20

Approved Zoning Effective April 1, 2022, Source: Prince George's County Planning Department

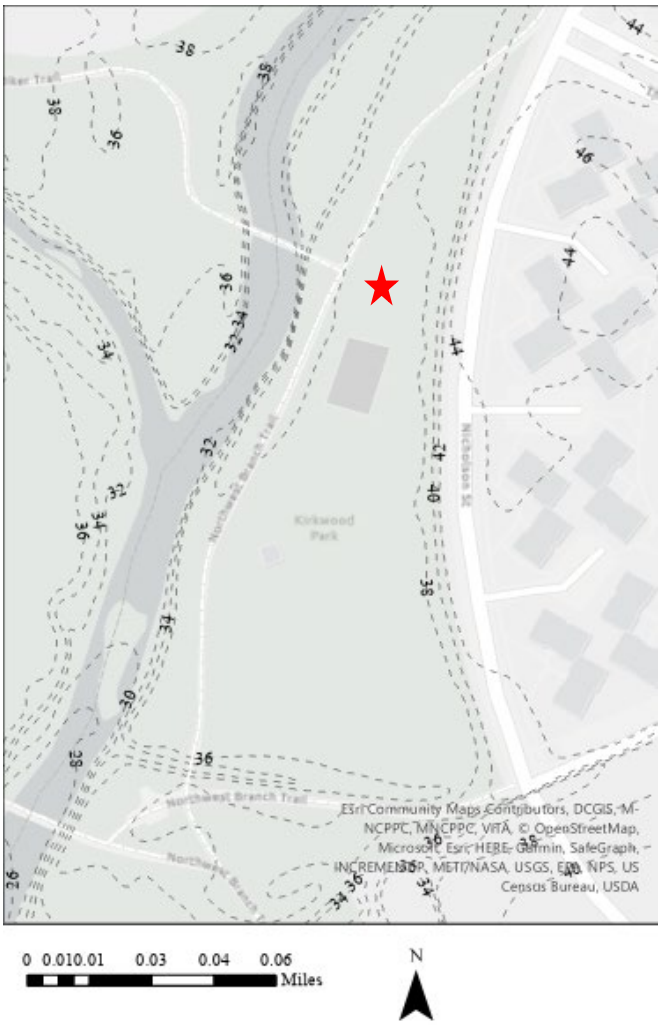


From Prince George's County Planning Department. (2019). CMA Approved Zoning Comparison Map. Zoning Rewrite. map. Retrieved December 30, 202 from http://zoningpgc.pgplanning.com/zoning-swipe-tool/.

Hydrology

The site is relatively flat, with sheet flow moving east to west, toward the Anacostia River (Figure 4.21)

Figure 4.21
Existing 2ft Contours



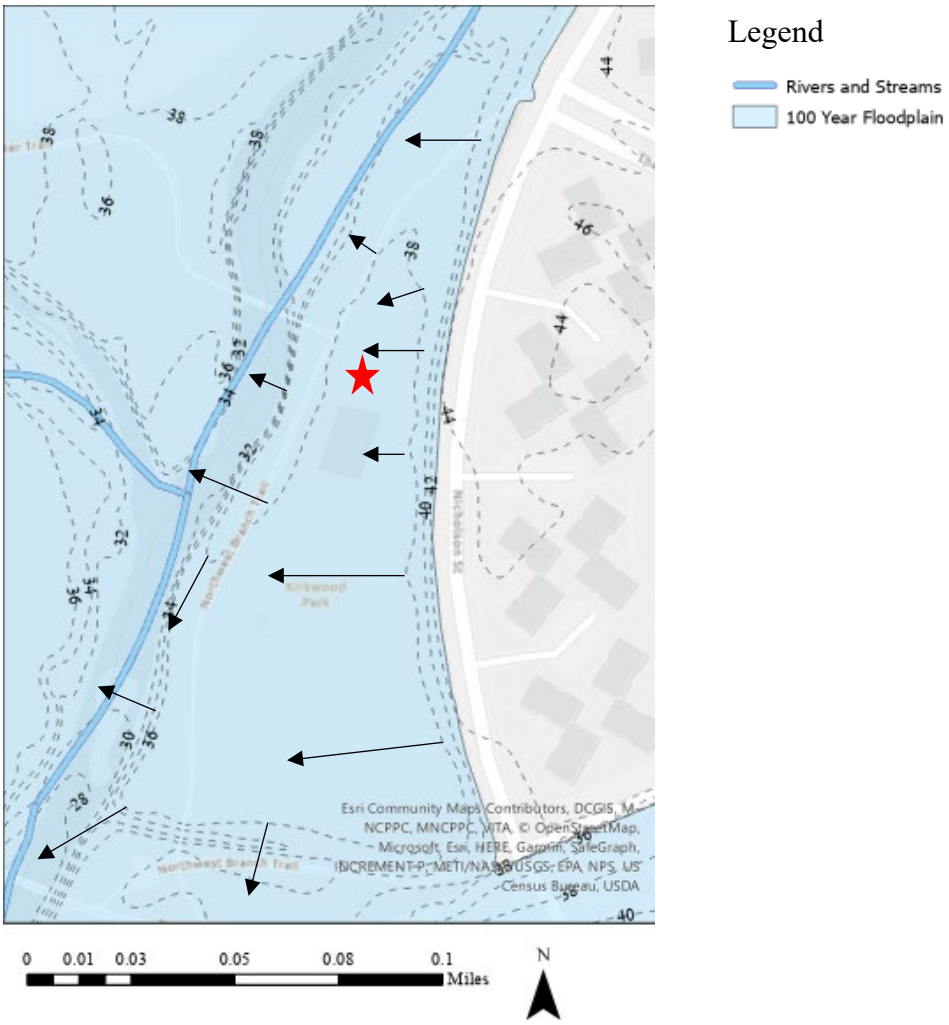
There is a steep slope on the east side of the site, off of Nicholson St, that has an approximate average slope of 25% (Figure 4.22).

Figure 4.22
25% Slope Along Nicholson St



Water flows down the slope from Nicholson St, where it either pools on the site or continues to drain down the slight 2% incline into the NW Branch of the Anacostia River, depending on the velocity of the sheet flow (Figure 4.23).

Figure 4.23
Hydraulic Flows



The entire area of Kirkwood Neighborhood Park is within the 100 year floodplain (Figure 4.24), increasing the chance of flooding on site.

Figure 4.24
100 Year Floodplain



After slight rain events, I also observed standing water and mowing tracks that could cause soil compaction and further drainage issues (Figure 4.25). There is an opportunity to include suggestions in a continuing maintenance plan.

Figure 4.25
Mowing Tracks Observed On-Site



Figure 4.26 shows the large areas of impervious surface to the east of the site.

Figure 4.26



There is an opportunity to incorporate bioretention to capture stormwater on-site before it flows into the NW Branch of the Anacostia River, carrying pollutants from the asphalt on Nicholson St into the water body that will flow into the larger Anacostia River and ultimately into the Chesapeake Bay

Circulation

Kirkwood Neighborhood Park is not visible from Ager Rd, the main road that traverses north of the site. Nicholson St, which has two-way access off Ager Rd and runs adjacent to the east side of the park, is a dead-end street. Because there is only one access point by car, it seems likely that a user would have to be purposefully seeking out the park to go there. The park is more accessible by bike and by foot, making the site more likely to be used by nearby residents and by trail users (Figure 4.27). There is a housing complex east of the park, but no crosswalks to allow for safe crossing into the park. The addition of crosswalks, traffic calming devices, and additional sidewalks along Nicholson St will allow for safer circulation for residents of the existing housing complex, and for new residents of the townhomes that are in development.

Of particular importance are the multi-use trails that lead to Kirkwood Neighborhood Park. The 21-mile multi-use NW Branch Trail runs north from Bladensburg, MD, through Kirkwood Neighborhood Park, and ends in Silver Spring, MD. The NW Branch Trail is part of the Anacostia Tributary Trail System, which has trails that run throughout the state of Maryland (Figure 4.28) (Prince George's County Parks and Recreation, 2012). The NW Branch Trail connects with Sligo Creek Trail and Indian Creek Trail at Kirkwood Neighborhood Park (Figure 4.29) (Prince George's County Parks and Recreation, 2012). A section of the East Coast Greenway- a multi-use trail that runs from Maine to Florida- also passes through Kirkwood Neighborhood Park. The intersection of trails is an opportunity to attract cyclists, runners, and walkers along the trail to stop and stay at the park instead of passing through.

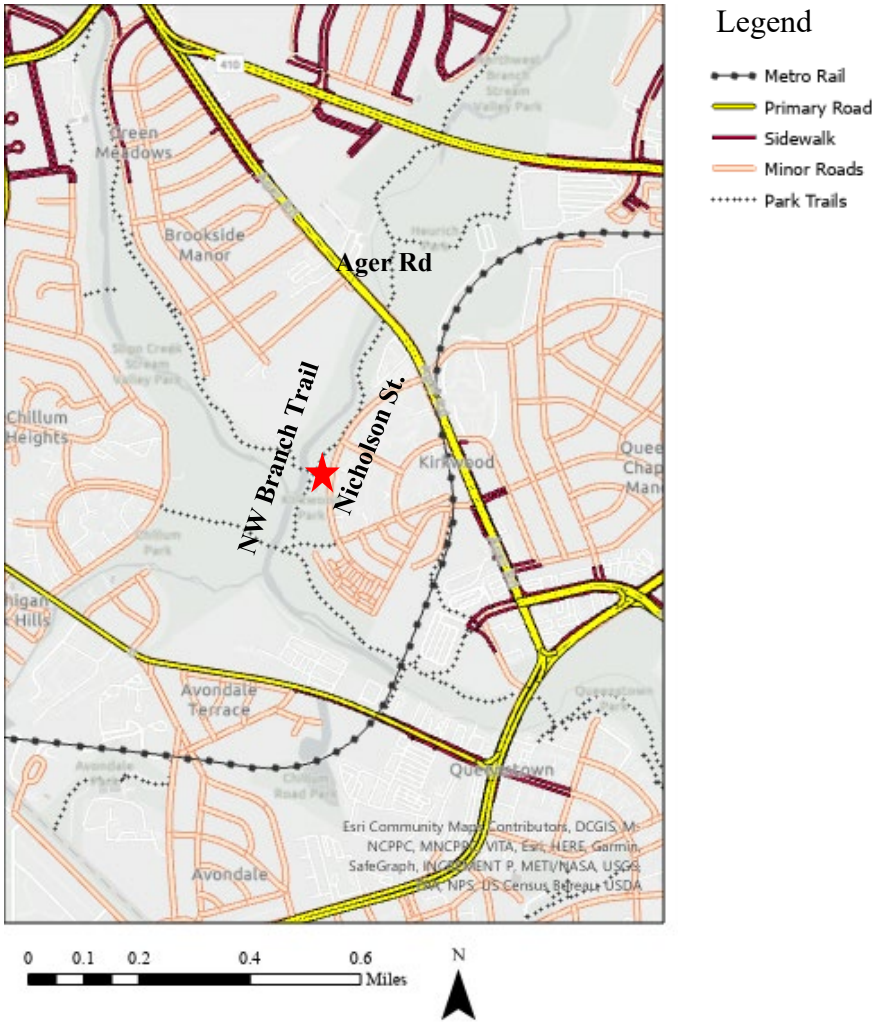
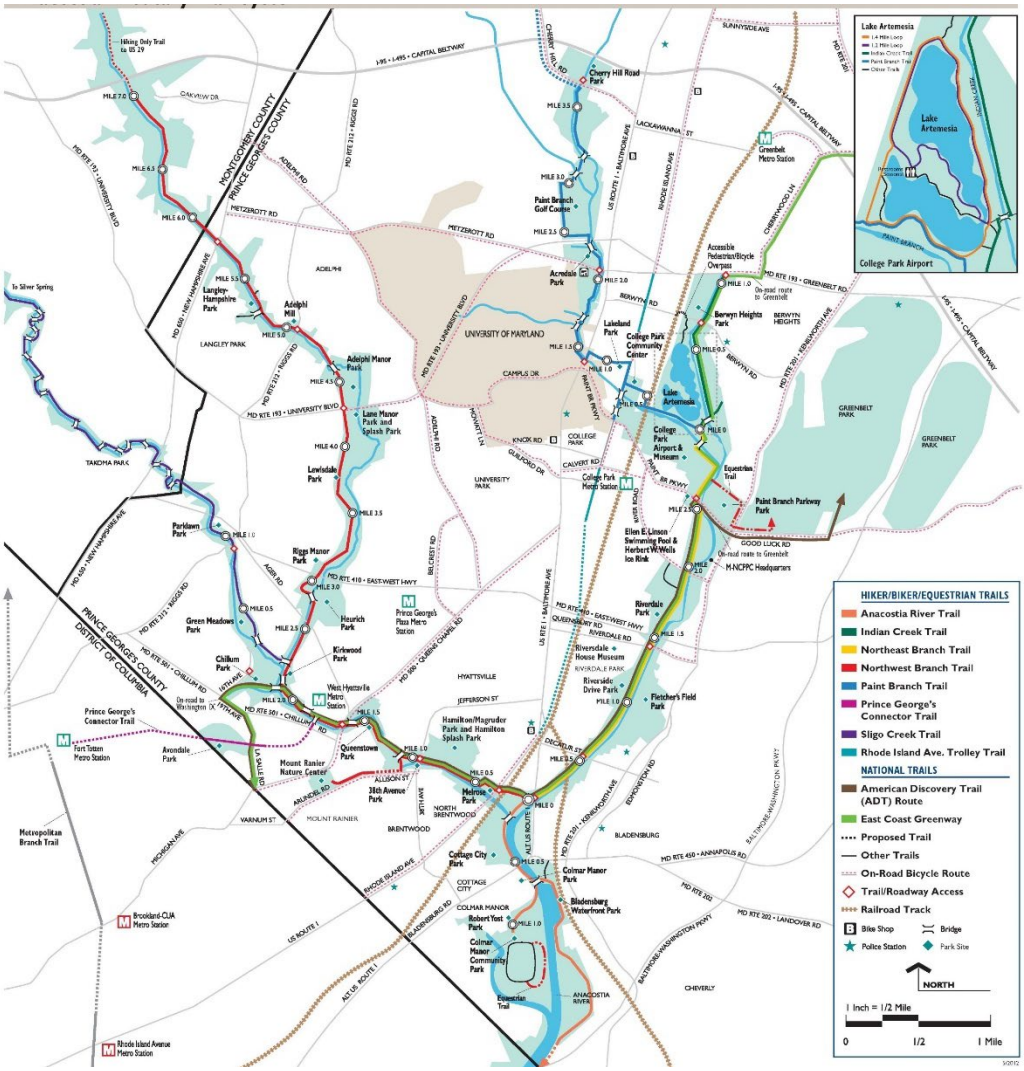
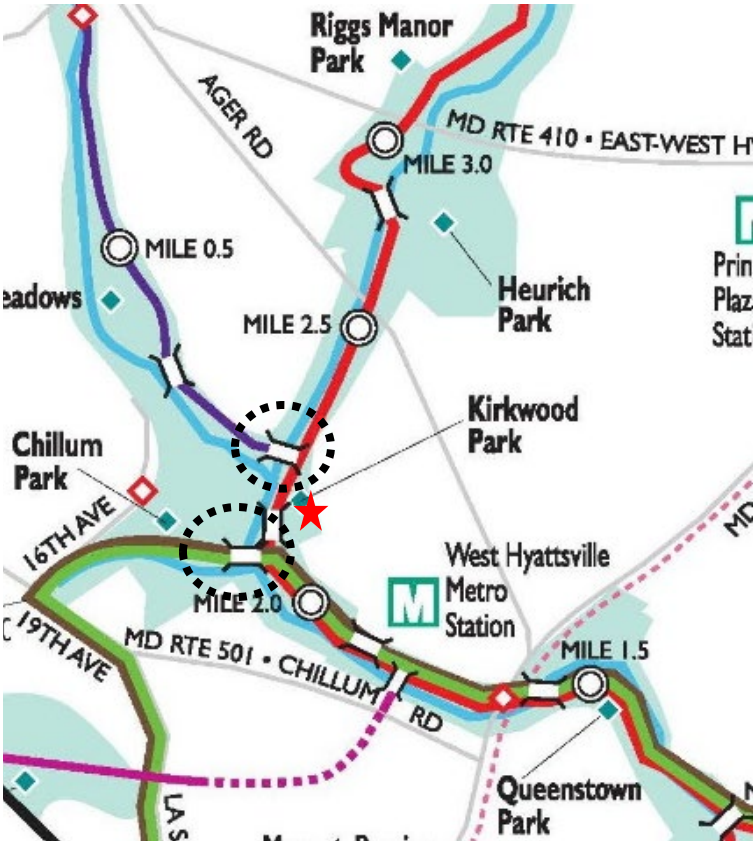

Legend
Metro Rail
Primary Road
Sidewalk
Minor Roads
Park Trails
Ager Rd
NW Branch Trail
Nicholson St.
Brookside Manor
Chillum Heights
Avondale Terrace
Avondale
Esri Community Maps Contributors, DCGIS, M-NCPPC, MNCPPC, VITA, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA
0 0.1 0.2 0.4 0.6
Miles
N

Figure 4.28
Anacostia Tributary Trail System



From Anacostia Tributary Trail System. (2012). PG Parks and Recreation. map. Retrieved January 3, 2022, from https://www.pgparks.com/DocumentCenter/View/579/Anacostia-Trail-Map-PDF?bidId=

Figure 4.29
Intersections of NW Branch Trail with Sligo Creek Trail and Indian Creek Trail



From Anacostia Tributary Trail System. (2012). PG Parks and Recreation. map. Retrieved January 3, 2022, from https://www.pgparks.com/DocumentCenter/View/579/Anacostia-Trail-Map-PDF?bidId=

V. Design

Design Goals

The overarching goal for this thesis was to propose a design for the built environment that could take advantage of relationship between occupational therapy and landscape architecture to create a meaningful and just environment for people of all ages and abilities. The design program was guided by an occupational therapy theoretical perspective to address what matters to the people who will use the site and to create an environment for the surrounding community that allows people to participate. By creating a local green space that can be used equitably, I aimed to demonstrate how occupational therapy practitioners and landscape architects can work together to design environments for health and wellbeing based on what matters to people, not what is the matter with them.

A thorough literature review, site inventory, and site analysis generated the following design goals:

- Address Issues of Equity
    - Make the site a "community backyard"- a place that belongs to the community while promoting environmental stewardship
    - Provide local green space that includes good pathways and a high-quality streetscape to improve mood of residents and increase walking time
    - Design for sustainable human and ecosystem health in a rapidly developing urban environment
    - Consider age, demographics, and ability in design

    - Improve safety and accessibility to and on site
- Promote Social-Emotional Well-Being
    - Increase level of participation
    - Make engagement with site elements self-directed
    - Promote socialization
    - Promote engagement with nature and foster environmental stewardship
    - Improve mood through engagement with nature
    - Nurture relationships with community, family, and self
    -
- Enrich Cognitive Health
    - Improve memory and concentration
    - Provide space for users to calm their mind and body in a way that is shown to have long-term benefits
    - Promote creativity
    - Encourage problem solving
    - Improve focus and attention span
- Develop Physical Health
    - Incorporate low impact strength building equipment
    - Develop balance and coordination
- Encourage Sensory Enrichment
    - Encourage users to explore sensory activities and feel immersed in nature (such as the rustle of leaves, sounds of wildlife, flow of water

nearby, push and pull of the wind, sound of hammock movement, feel of the breeze)

    - Provide elements that allow users to experience proprioceptive vestibular input- sensation of any change in position, direction, or movement of the head and of body movement in space

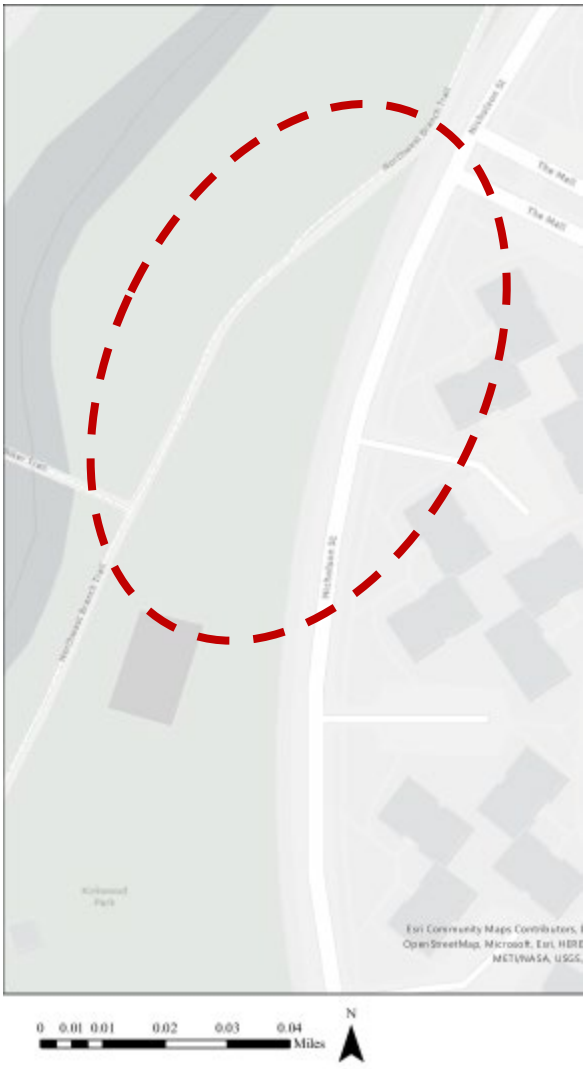
- Improve Ecosystem Health
    - Remove invasives along Sligo Creek and introduce native planting
    - Increase tree canopy
    - Capture and treat stormwater
    - Increase wildlife habitat
- Support Education and Therapy
    - Occupational therapy practitioners can use site at the micro-level
        - Add elements of exercise and play that can be used by an occupational therapy practitioner with clients or groups
        - Include elements that explore sensory activities such as musical instruments and tactile materials
    - Provide space that teachers can use as an outdoor classroom

Areas of Focus

Though my focus was on the 40,000 square foot open lawn at the northern end of Kirkwood Neighborhood Park, I also considered existing elements to create a cohesive design. Creating cohesion and organization was important in telling the

story of my design, which emphasized the importance of making all design elements meaningful to people across their lifespan.

Figure 6.1
Chosen Site Within Kirkwood Neighborhood Park



Approach and Program

The following program was created to accomplish the project design goals:

- Change the environment to fit the community needs rather than trying to change individuals to fit the environment:
    - Make all areas of the site accessible through use of 8-foot-wide pathways, ramps, and choice of materials across the site
        - This will also allow groups of people to walk easily walk together, promoting socialization and nurturing relationships between families and friends on site
    - Provide spaces for users of all ages to include nature play, a climbing wall, puzzle/game area, and exercise area
    - Create a sustainable corridor along NW Branch Trail and improve streetscape along Nicholson Ave to provide safe, beautiful, and accessible ways to get to the site
    - Add additional shade structures near heavily used areas- playground and basketball court- for people to gather and engage while using these elements
- Address environmental and occupational justice:
    - Add crosswalks and traffic calming devices for safe and easy access to the site from the surrounding neighborhood
    - Introduce a community garden for therapeutic use and fresh produce
    - Increase tree canopy to provide shade, reduce carbon, improve biodiversity, and lowering micro-climate

    - Consider site lines and use fencing to improve user safety
- Include a meditative walk that improves users' mood through immersion in nature and allows users to feel as though they are “getting away”
- Include a hammock area that improves balance and coordination and calms the mind and body to reduce stress
- Attract cyclists, runners, and walkers along the trail to stop and stay at the park instead of passing through by adding shaded areas and benches for rest and an exercise area near the trail
- Manage stormwater across the site, focusing on areas near the soccer field and on sloped terrain that were observed to flood or pool during rain events
- Add site furniture and lighting that carries materials and patterns already used in the park to create a cohesive park design

Site Plan



1. Crosswalk and North Site Entrance
2. Meditative Walk
3. First Overlook
4. Exercise Area
5. Game and Puzzle Area
6. Hammock Area
7. Nature Play Space
8. Rock Climbing Area
9. Raised Foot Bridge
10. Existing Basketball Court with New Pavilion
11. Flexible Lawn Space
12. Second Overlook
13. Existing Playground with New Pavilion
14. Community Garden
15. Footbridges Over Bioretention Planting
16. Existing Soccer Field
17. Added Sidewalks Along Nicholson Street
18. Crosswalks and Traffic Calming Devices

NOT TO SCALE

North

Design Elements

Macro-Level Theory	Design Element	Design Goal
Environmental Justice Framework of Occupational Justice	Accessible pathways, sidewalks, and crosswalks	- Address issues of equity - Improve social-emotional wellbeing - Improve physical health - Education and therapy
Environmental Justice Framework of Occupational Justice Stress Reduction Theory	Overlooks	- Address issues of equity - Improve cognitive health
Environmental Justice Stress Reduction Theory	Streetscape planting	- Address issues of equity - Improve cognitive health - Improve sustainability
Person-Environment-Occupation Model Stress Reduction Theory	Game and puzzle area	- Improve cognitive health - Improve social-emotional wellbeing - Education and therapy
Person-Environment-Occupation Model	Exercise and stretching area	- Improve physical health - Improve cognitive health - Education and therapy - Improve social-emotional wellbeing

Person-Environment-Occupation Model Stress Reduction Theory	Nature play	- Improve physical health - Improve cognitive health - Education and therapy - Improve social-emotional wellbeing - Provide sensory enrichment
Person-Environment-Occupation Model	Climbing area	- Improve physical health - Improve cognitive health - Education and therapy - Provide sensory enrichment
Person-Environment-Occupation Model Stress Reduction Theory	Meditative walk	- Improve physical health - Improve cognitive health - Education and therapy - Improve social-emotional wellbeing - Provide sensory enrichment
Person-Environment-Occupation Model Stress Reduction Theory	Hammock area	- Improve physical health - Improve cognitive health - Education and therapy - Improve social-emotional wellbeing - Provide sensory enrichment

Person-Environment-Occupation Model Stress Reduction Theory Framework of Occupational Justice Environmental Justice	Community Garden	- Address issues of equity - Improve physical health - Improve cognitive health - Education and therapy - Improve social-emotional wellbeing - Provide sensory enrichment - Improve sustainability
Framework of Occupational Justice Environmental Justice	Bioretention planting and increased tree canopy coverage	- Address issues of equity - Improve sustainability

Pathways and Circulation

Occupationally unjust environments can lead to unhealthy effects in a person's daily life, including loss of purpose, inability to fulfill life roles, reduced societal contributions, and reduced sense of belonging (Welu, 2020, Altman, Lollar, and Rasch, 2014), and people are more likely to visit places in their own neighborhood than to seek them out in different neighborhoods. There are no public parks in this area that offer all of the therapeutic elements proposed in this design, and urban parks are generally not accessible for all. There is a high percentage of older adults and young people in the neighborhood surrounding Kirkwood Neighborhood Park. The pathways and methods of circulation around the site are designed to be accessible to people of all ages and abilities.

Eight-foot-wide concrete pathways provide access to all elements and areas of the site addressed occupational and environmental justice by removing the barriers that would prevent people from using the space in a way that is personally meaningful. The width and material of the pathways allow for easy wheelchair access, and provide an even, smooth surface for people walking with assistive devices. The slopes of the ramps on site were designed according to ADA standards. Adding crosswalks, sidewalks, and traffic calming devices along Nicholson Street made access to the site easier, more comfortable, and safer. A main aspect of this design is addressing the fact that people need to be able to access spaces that improve mood and health in order to experience the benefits, and that occupational and environmental injustice occurs when those spaces are not accessible for everyone. Making the park accessible through use of materials, with of pathways, and crosswalks ensures that all people can enter the site and participate in meaningful ways.

The width of the pathways addresses goals to improve social-emotional wellbeing by allowing groups of people to walk together and pass each other comfortably. This makes moving through the site comfortable and self-directed, removing barriers to access of all areas within the site. Being able to walk with others promotes socialization; people are able to walk with others and engage in conversation without constant interruption. Walking comfortably in a self-directed way through an environment that meets the community's needs also nurtures relationships within the community, families, and individuals. For older adults, being able to walk in a self-directed manner can provide motivation to walk outdoors, which decreases isolation and helps retain personal autonomy (Liu, 2020).

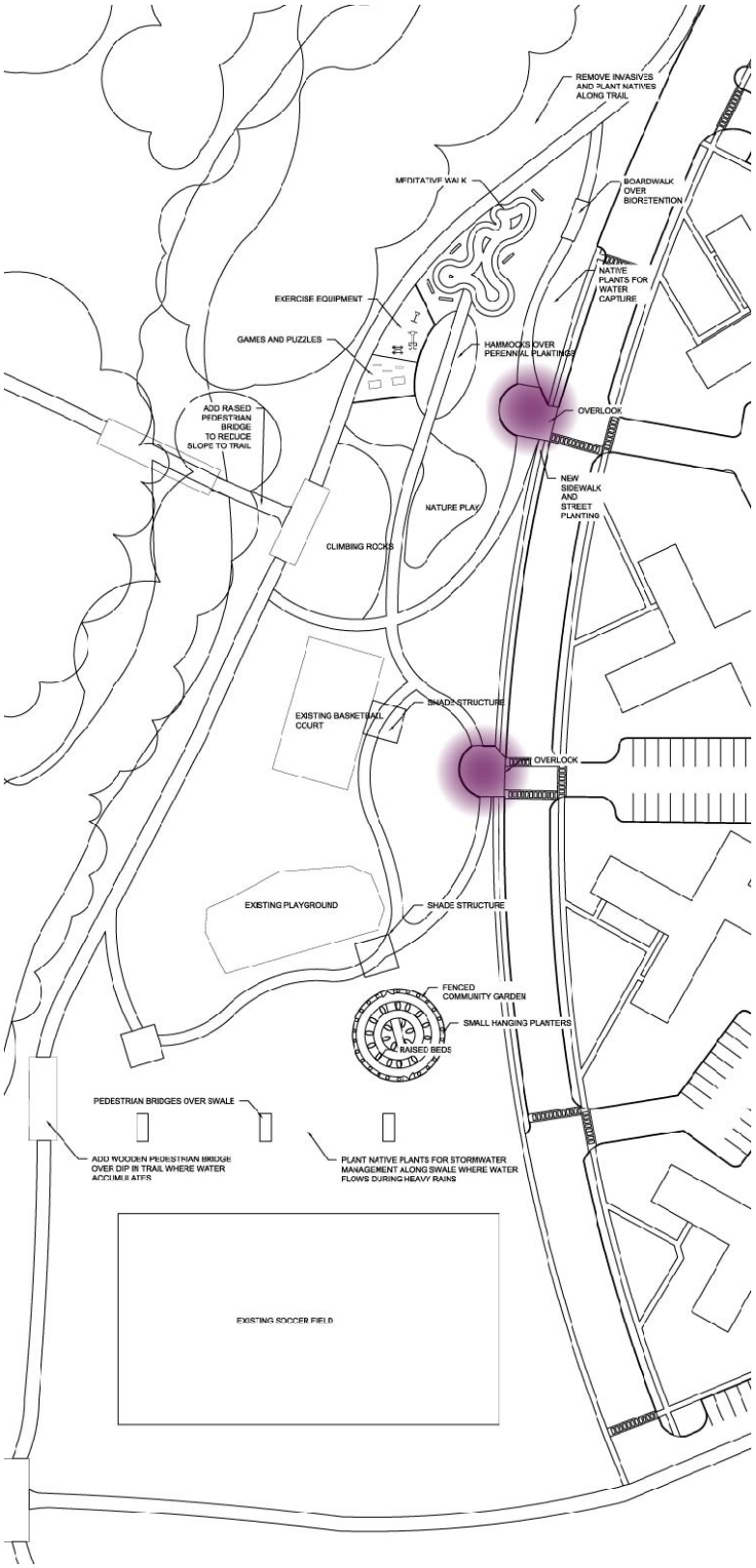
Walking also improves physical strength, improves balance, and increases range of motion. Occupational therapy practitioners can use the ramps and pathways to work with clients and groups on a program to increase ambulatory stamina and range of motion in a pleasing outdoor environment.

Figure 6.2
North Entrance to Site



A crosswalk leads users directly onto the site from the adjacent housing complex, where they can enter the site through an eight-foot wide accessible ramp or follow the trail to other park elements

Overlooks


REMOVE INVASIVES AND PLANT NATIVES ALONG TRAIL
MEDITATIVE WALK
BOARDWALK OVER BIORETENTION
NATIVE PLANTS FOR WATER CAPTURE
EXERCISE EQUIPMENT
GAMES AND PUZZLES
HAMMOCKS OVER PERENNIAL PLANTINGS
OVERLOOK
ADD RAISED PEDESTRIAN BRIDGE TO REDUCE SLOPE TO TRAIL
NEW SIDEWALK AND STREET PLANTING
NATURE PLAY
CLIMBING ROCKS
EXISTING BASKETBALL COURT
SHADE STRUCTURE
OVERLOOK
EXISTING PLAYGROUND
SHADE STRUCTURE
FENCED COMMUNITY GARDEN
SMALL HANGING PLANTERS
RAISED BEDS
PEDESTRIAN BRIDGES OVER SWALE
ADD WOODEN PEDESTRIAN BRIDGE OVER DIP IN TRAIL WHERE WATER ACCUMULATES
PLANT NATIVE PLANTS FOR STORMWATER MANAGEMENT ALONG SWALE WHERE WATER FLOWS DURING HEAVY RAINS
EXISTING SOCCER FIELD

Bridges and thresholds are important features for guiding people into the site, where they can use the design elements in meaningful ways. Two overlooks lead to Kirkwood Neighborhood Park from Nicholson Street. These spaces become rooms that can be destinations for people to experience the site without entering, or can be resting points for people to pause before entering the site. The overlooks create a connection to the surrounding neighborhood, and are elements that invite people in. Including the overlooks as a connection to the site also gives the sense of the space as a "community backyard", or a place that belongs to the community; the overlooks allow everyone in the community to experience the space and participate in active or passive activities, within and outside the park. The overlooks can improve social emotional health because people can experience the benefits of improved mood and stress relief from afar, or they can experience a sense of separation from the chaos of urban everyday life.

The overlooks also provide added safety, allowing adults to watch over children playing in the park, or allowing people to scope out the park for any sense of danger before entering.

Figure 6.3
Section A-A'

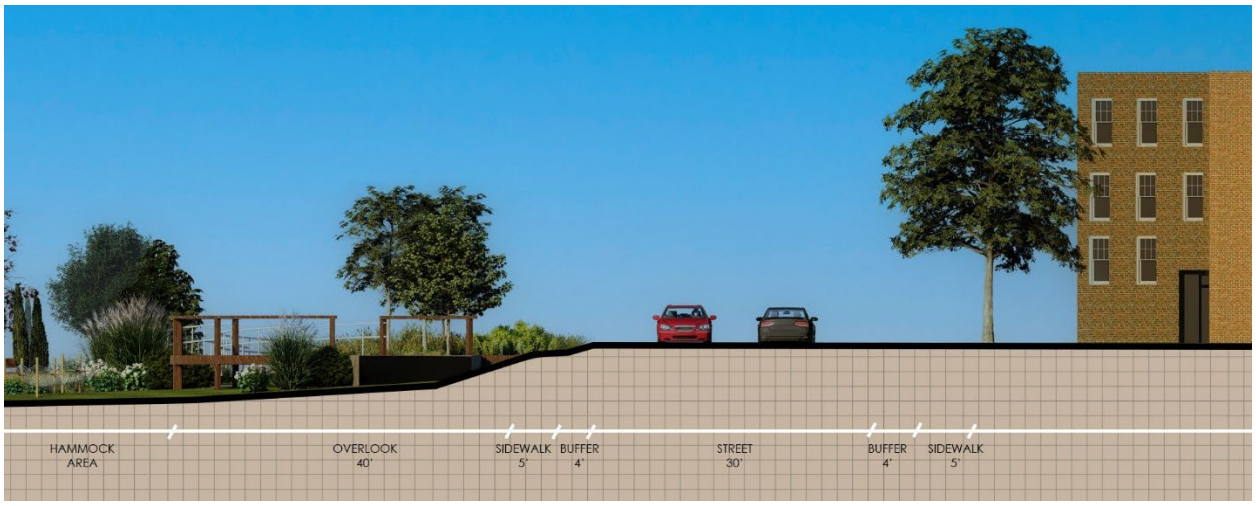
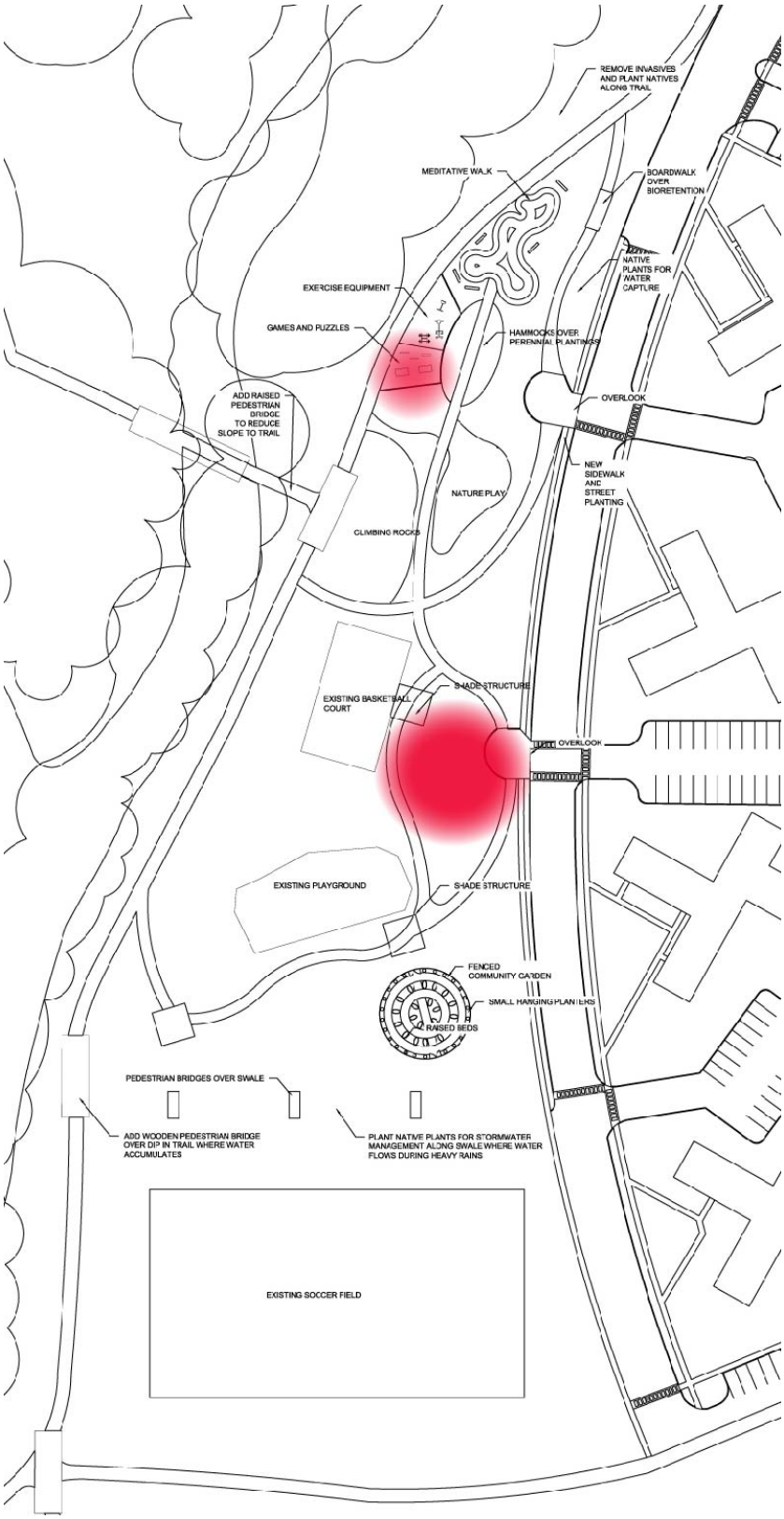


Figure 6.4
Central Pathway



The overlooks have seating for people to experience the site without entering, and an accessible central pathway creates easy accessibility to all elements on site

Game/Puzzle Area



There are two areas on site that are designated for games. This includes an area with elements such as ping pong, tic-tac-toe, and building blocks, and a more versatile lawn area near the basketball court for both active and passive activities such as cornhole, games, sports, and yoga. Games require concentration and skill and can improve physical and cognitive health. For children and teens, these games can provide motivation to go outdoors, reduce screentime, and can help with practicing patience, concentration, and following directions. The games can also improve social-emotional wellbeing and have intergenerational value to people across the lifespan. Playing with family or peers on-site could improve teamwork skills and nurture healthy, supportive relationships, which could have generalizable benefits for people of all ages. Older adults who experience isolation could feel encouraged to reach out to others and socialize. Teens and children could develop social skills by playing with others on-site and interacting with people of different ages, background, and abilities, which could more generally improve social skills in their everyday lives, raise awareness of the nuances of the people and the world around them, help them make friends, and improve confidence.

These games can also be calming techniques to help reduce stress. The games are both passive and active elements; people of all ages can stop and engage in tic tac toe or drawing on a chalkboard alone or with another person, while cornhole and ping pong can be an active sport with two or more people. Yoga is also both a passive and active activity and can restore energy if fatigued from everyday living. Yoga also improves mood and increases muscle strength.

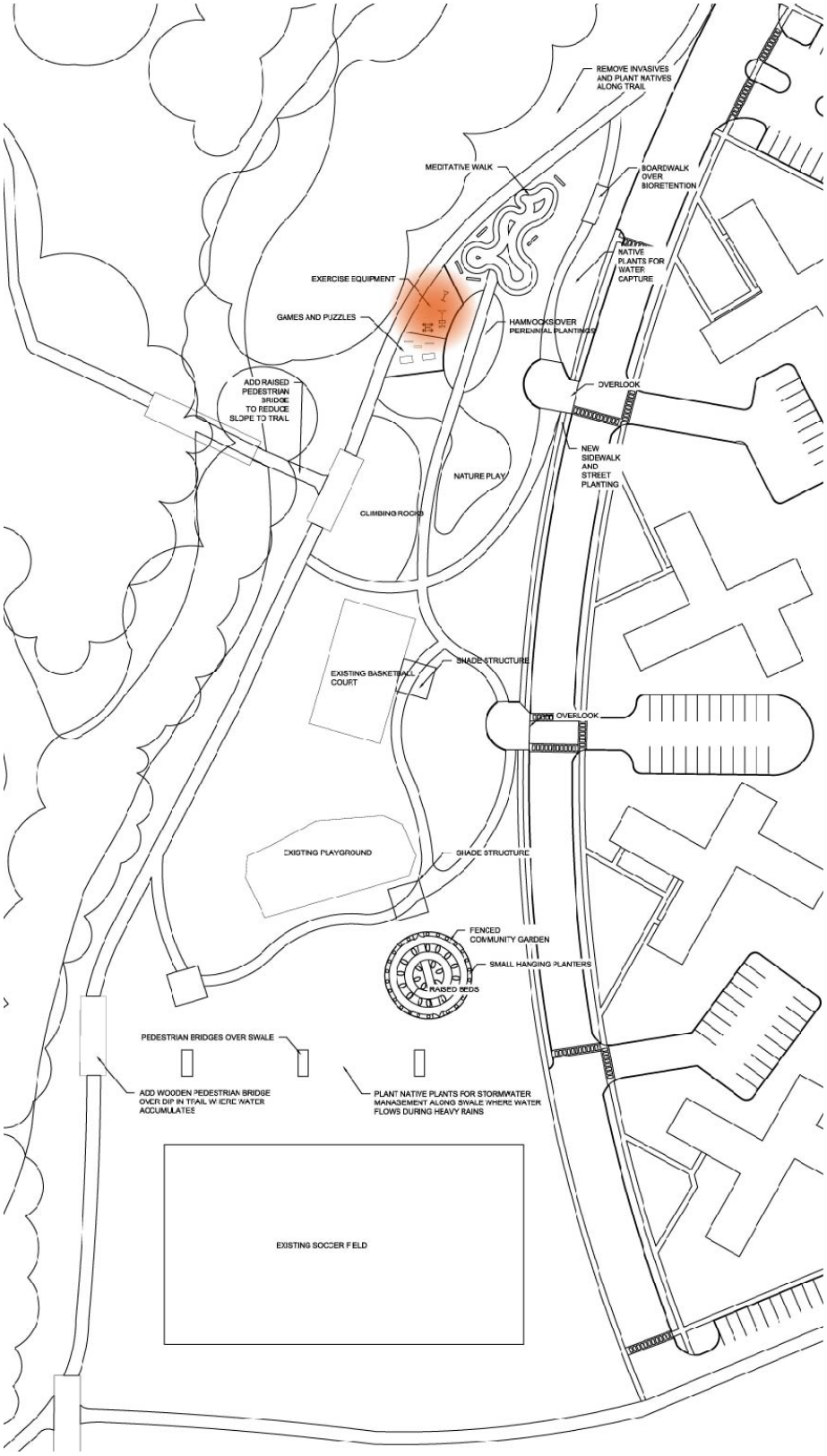
Figure 6.5
Section B-B'



Figure 6.6
Lawn and Versatile Game/Yoga Area



Exercise Area



For people living near Kirkwood Neighborhood Park- with high commute times and many families with children- it can be difficult finding time, space, and motivation to exercise amidst the hectic schedules of everyday life. The exercise area on site can encourage and promote mental and physical health with equipment and other design elements that can be used to strengthen gross motor skills, balance, hand eye coordination, memory, and concentration. The exercise equipment encourages stretching and other minimal impact strength training.

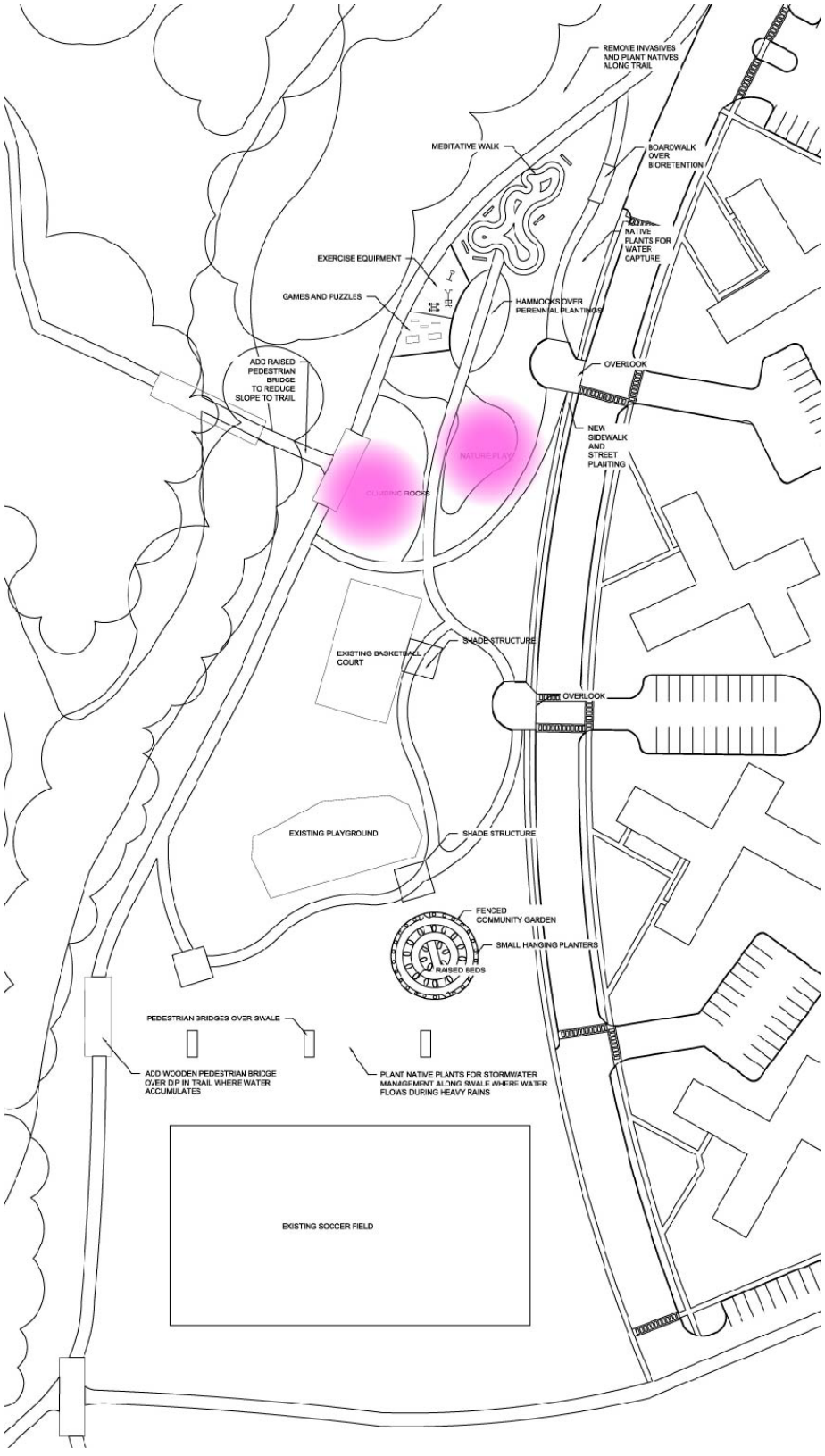
For people with limited mobility, having active elements can be defeating. The exercise area, with an adjacent area for stretching, is designed to be both passive and active. All exercise equipment can be used by people of all ages and abilities. Low impact exercise can help older adults to live longer and retain greater personal autonomy, increase muscle strength, and increase range of motion (Liu, 2020). This area could be a destination for residents using the park or could be a meaningful stop for people passing through on the adjacent trail. For all users, the exercise and stretching areas can help meet the goal of physical strengthening without seeming intimidating or defeating.

Figure 6.7
Exercise and Stretching Areas



Low-impact exercise and stretching areas can be used by people of all ages and abilities

Nature Play and Climbing Area



According to the American Academy of Child and Adolescent Psychology (AACAP), children ages 8-12 in the United States spend 4-6 hours a day watching or using screens, and teens spend up to 9 hours (AACAP, 2020). Though televisions, phones, and computers are invaluable resources, too much screen time can be detrimental and may lead to sleep problems, lower grades in school, less time with family and friends, lack of outdoor or physical activity, over or undereating, mood problems, poor self-image and body image issues, and less time learning other ways to relax and have fun (AACAP, 2020).

The nature play and climbing area have the capacity to engage individuals and groups in activities outdoors, away from screens, to exercise in ways that are fun and physically challenging. Climbing and nature play can strengthen gross motor skills, improve balance, and improve hand eye coordination. These activities can also improve cognitive health. Research shows that engaging in outdoor play and activities can lead to improved mood, increased attention span, and reduced anxiety (Cohen, 2021).

The nature play and climbing area are designed for users of all ages to improve mental acuity and improve mental health by using creativity, problem solving, play, and imagination. Spending time in nature can build confidence in people of all ages and abilities (Cohen, 2021). For children, outdoor play is often less structured than most types of indoor play, allowing them to make decisions, be creative, and get along with others (Cohen, 2021). Climbing is also a sport and hobby that can create

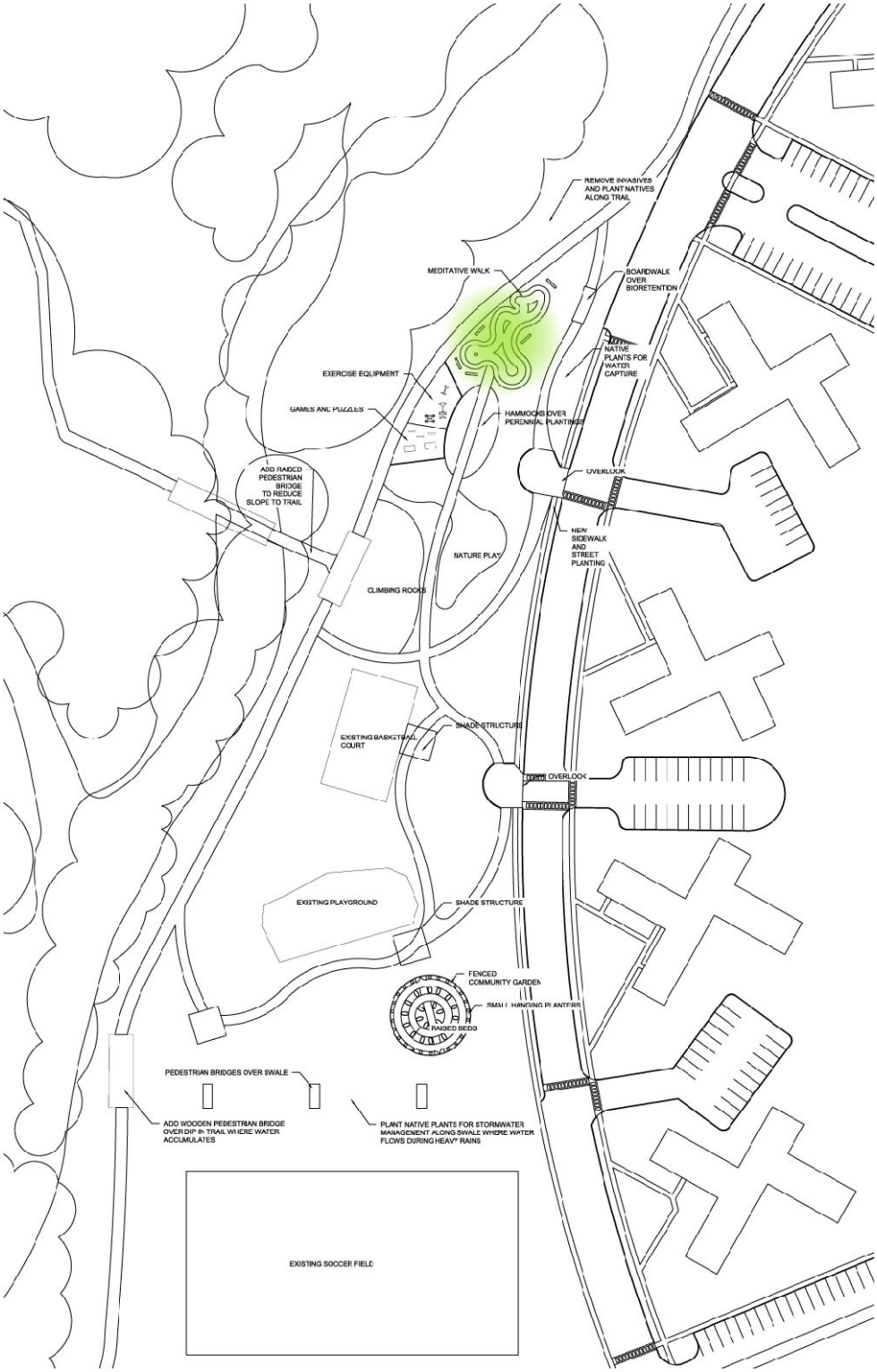
social connections and can encourage people to engage in a new hobby outside of the park.

Figure 6.8
Climbing and Nature Play



Climbing and nature play areas can be used by adults, teens, and children to improve physical strength and forge social connections

Meditative Walk



Meditation is a mind-body-spirit complementary medicine that treats individuals holistically (Mayo Clinic, 2020). Meditation involves focusing one's attention and eliminating stressful thoughts. This can lead to a sense of calm, peace, and balance that can benefit emotional well-being and overall health (Mayo Clinic, 2020).

The meditative walk is an element that engages both the mind and body. As individuals and groups walk along the pathway, they are encouraged to eliminate information that is overloading their minds and focus on the way they are moving through and occupying the space. The meditative walk can have long-term cognitive benefits that persist beyond the experience, including building skills to manage stress, increasing self-awareness, focusing attention on the present, reducing negative emotions, increasing imagination and creativity, and increasing patience and tolerance (Mayo Clinic, 2020). According to the Mayo Clinic (2020), research indicates that meditation can also improve physical health and help treat symptoms of certain medical conditions, especially those that are worsened in times of high stress. These conditions include anxiety, asthma, cancer, chronic pain, depression, heart disease, high blood pressure, irritable bowel syndrome, sleep problems, and tension headaches (Mayo Clinic, 2020).

The vegetation within and around the meditative walk can allow people to become immersed in nature, away from the urban environment surrounding them. This can encourage users to explore sensory activities such as listening to the rustle of leaves, sounds of wildlife, the trickle of water, the whisper of the wind, creaks of hammock

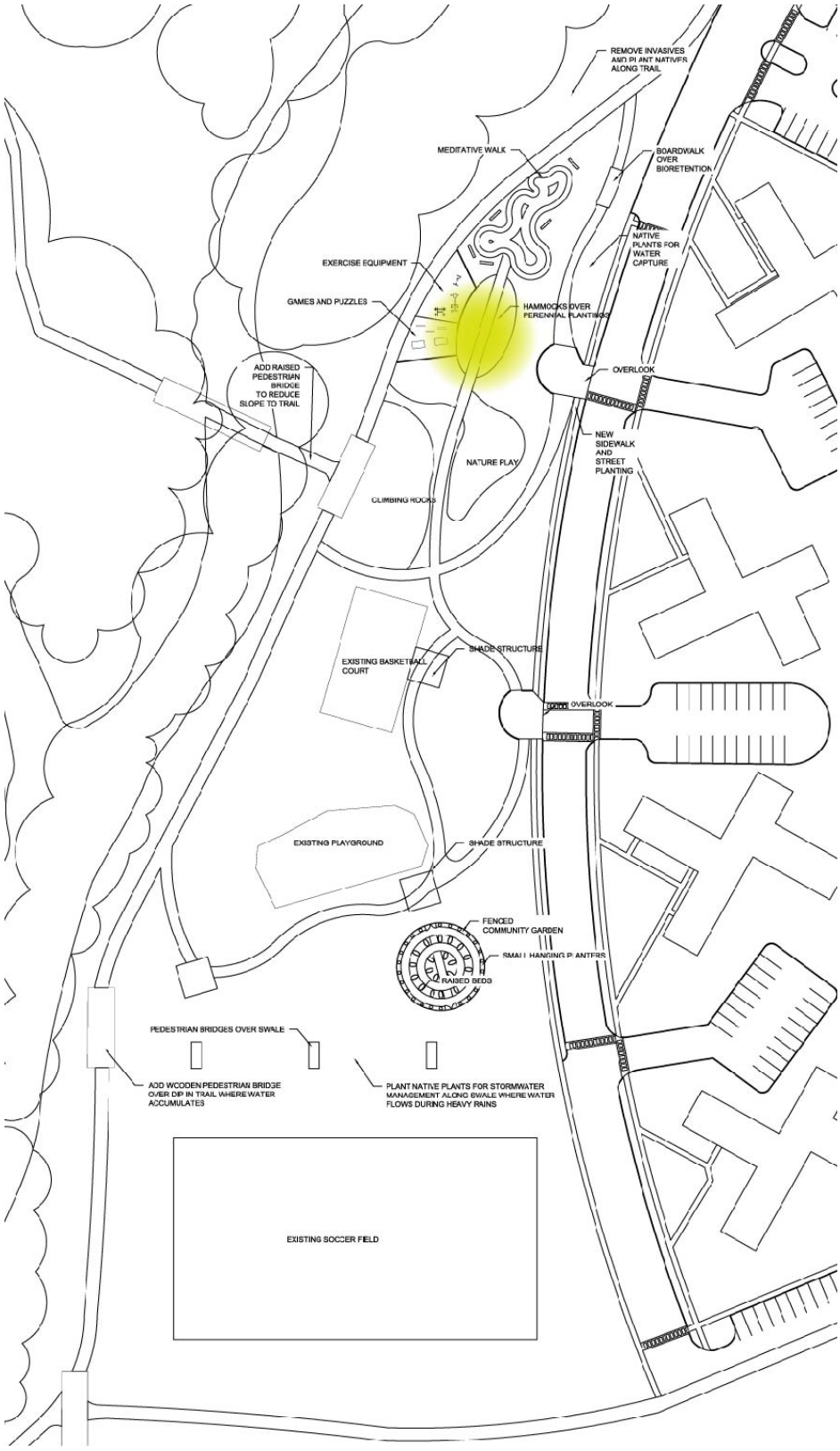
movement; seeing the changing of the colors of the leaves, watching the birds; or feeling the breeze.

Figure 6.9
Meditative Walk



Meditative walk can be a restorative experience in nature, which can have more generalizable benefits of lowering stress and anxiety levels

Hammock Area



The hammock area is a central element that is both active and passive, promoting social connections and physical health through movement, while also encouraging rest, restoration, and sensory enrichment (Chicago Occupational Therapy, 2017). The hammocks are deliberately arranged to be an element that both literally and figuratively connects the active elements (climbing, nature play, game area, lawn space, exercise equipment) to the more passive elements on-site (meditative walk, site entrance, stretching area). The hammocks are an element that has the capacity to improve social-emotional well-being, physical health, improve cognitive health, provide sensory enrichment, and can be used on the micro-level by occupational therapy practitioners as part of an occupational therapy program (Chicago Occupational Therapy, 2017).

In an urban area, people can experience a lack of engaging nature experiences due to increased screen time, long commute times, and long periods of time spent indoors (AACAP, 2020). Elements on site such as the hammock provide opportunity for users to experience sensation in nature such as the push and pull of the wind, the sound of the birds, and feel of the breeze. Fragrant perennial plantings within the hammock area can also engage users' sense of smell.

The hammocks are elements that also allow users to experience proprioceptive and vestibular input- sensation of any change in position, direction, or movement of the head and awareness of body in space (Chicago Occupational Therapy, 2017). The hammock swings can help with balance (climbing in and out), reduce stress, and

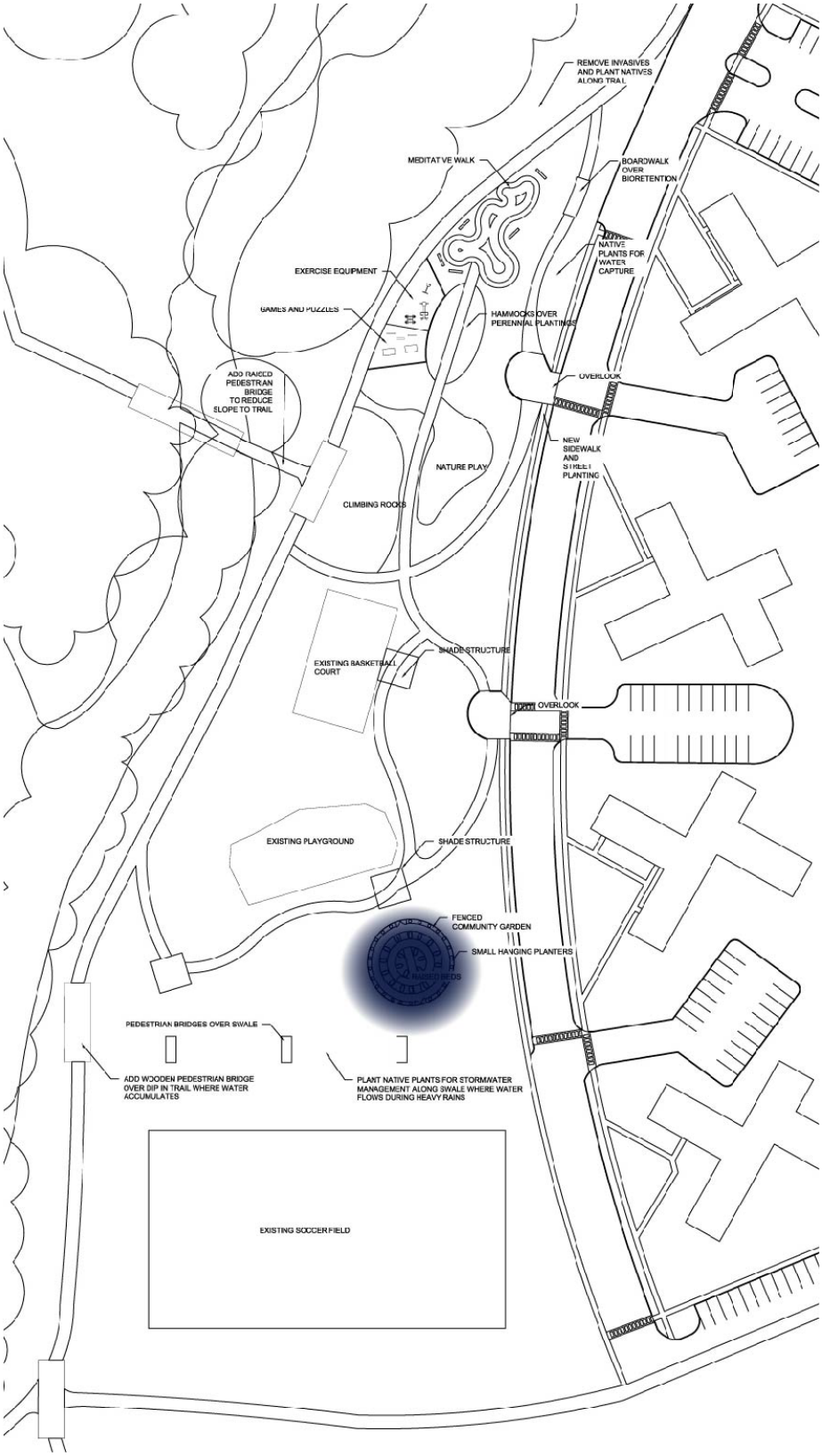
further allow users to become completely immersed and “get away” from urban life (Chicago Occupational Therapy, 2017).

Figure 6.10
Hammock Area



The hammock area is a central element that is both active and passive, promoting physical health through movement but also encouraging restoration and sensory enrichment. The hammocks are an element that connect the active elements to the more passive elements on-site

Community Garden



Community gardens present an opportunity for learning, exercise, self-efficacy, and community engagement, which can have more generalizable benefits of increased satisfaction with life, improved quality of life, and a decrease in depression and anxiety (van Dillen, S. M., et al, 2011).

Gardening is an activity that can reduce stress and improve concentration, and can be a tool for an occupational therapy practitioner to work with clients and groups as part of a targeted therapy program. The area surrounding Kirkwood Neighborhood Park is within a Healthy Food Priority Zone; an area designed specifically for growth of fresh produce can contribute to creating an equitable environment for the community. Gardening can also be a social activity, bringing families, friends, and the community together.

Figure 6.11
Community Garden and Soccer Field

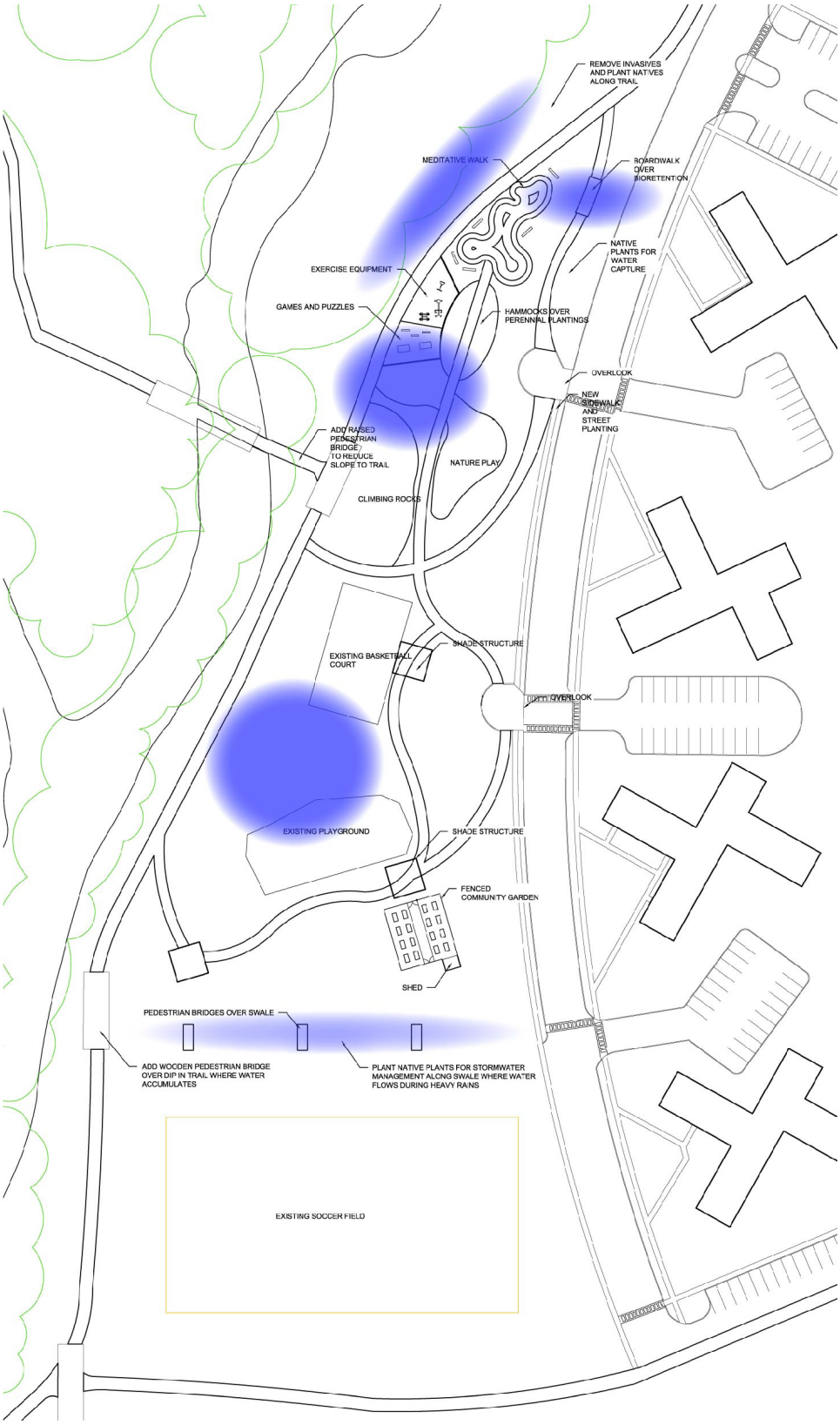


Community garden has many benefits in everyday life, and as a tool for occupational therapy practitioners as part of a therapy program

Figure 6.12
Section C-C'



Planting, Bioretention, and Tree Canopy



An issue I addressed throughout the design process was the lack of connection with nature in urban spaces. Increased planting and tree canopy coverage was important to meeting my goal to provide an inviting space that improves users' mood through engagement with nature and allows users to feel as though they are “getting away”. Trees and green space can create areas where people can sit back and be immersed in nature and feel removed from the city. Increased tree canopy coverage will also have a high environmental impact, including reduced heat island effect, improved air quality, and capturing of stormwater, while also providing a sense of physical comfort. Planting diverse native plant species will increase biodiversity and have positive impacts on ecosystem health. Tree canopy is an aspect of environmental justice because it creates such drastic health and environmental benefits.

I observed standing water on the n the north end of the site and north of the soccer field. Bioretention planting, including native grasses, groundcovers, ferns, and shrubs, are low maintenance solutions that capture and treat stormwater but also bloom to bring color and aesthetics to the park. Specific planting could include Alumroot, Woodland Phlox, Spotted Bee Balm, Ostrich Ferns, and Virginia Sweetspire. For the streetscape, a minimal variety of plants can reduce maintenance costs but be aesthetically appealing, inviting people into the park and improving health to passers-by. These plantings could include Black Eyed Susans and Tussock Sedge to create lush, full plantings. A garden of Black Eyed Susans, Woodland Phlox, Lavender, and Spotted Beebalm is included near the hammock area as repeated organizational elements on site, which are colorful and fragrant. The

fragrance of Lavender can be a calming element for people relaxing in the hammocks. Large trees are not included on the northern end of the site to ensure users have clear site lines when entering the park, and to ensure the bioretention plants receive an adequate amount of shade throughout the day.

The meditative walk area includes medium sized, colorful trees to provide shade and a sense of immersion in nature. Serviceberries are a possible choice because they are a native plant with colorful flowers and edible berries for wildlife. Medium-sized, colorful, hardy trees such as American Dogwood, Redbuds, and Magnolia trees allow for open sight lines for adults with children to be able to use the meditative path with a reduced worry for safety. A barrier of Arborvitae or similar screening shrubs around the pathway perimeter creates texture and privacy without hindering sight lines to and within the meditative walk area.

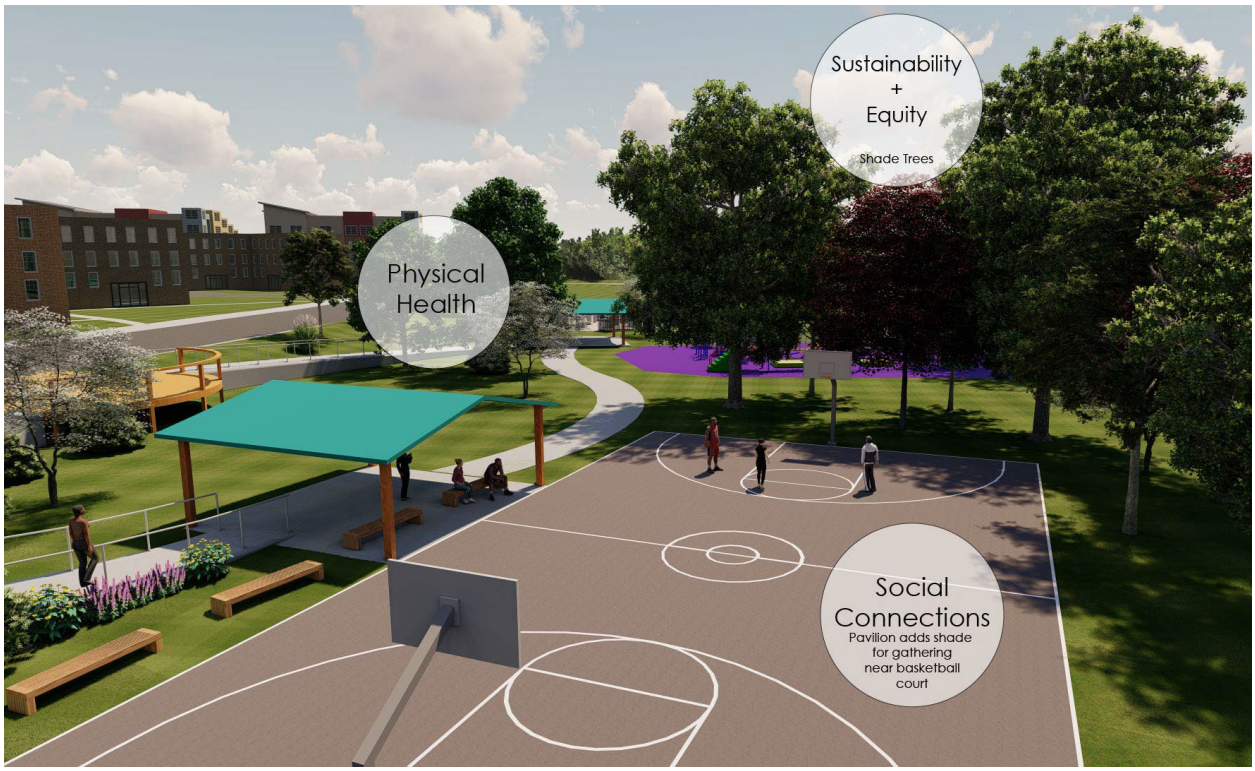
Red maples are currently planted along Nicholson Street; additional red maples within the park can be planted as a repeated, organizing element. There is currently one Sweetgum tree and one Sycamore tree on site. Sweetgum trees are a large, colorful shade tree that can also be repeated across the site for increased tree canopy coverage. Dwarf Southern Magnolias are planted around the hammock area for evergreen texture and to create an area of privacy around the hammock area without completely hindering site lines from the trail and exercise and play area.

Existing Elements Within Kirkwood Neighborhood Park



An important aspect of the design was creating cohesion within Kirkwood Neighborhood Park, which involved creating connection between elements of my design with existing elements on site. The main elements included the heavily used soccer field, basketball court, and playground. Additional pavilions near these elements can make the areas more comfortable for people using them. Near the basketball court, people can more comfortably gather and watch other play, or can rest while playing on the lawn area adjacent to the basketball court.

Figure 6.13
Existing Basketball Court and New Pavilion



An added shade structure makes the elements on site more comfortable to use

Figure 6.14
Existing Playground and Soccer Field with New Pavilion



Figure 6.15
Existing Playground with New Pavilion



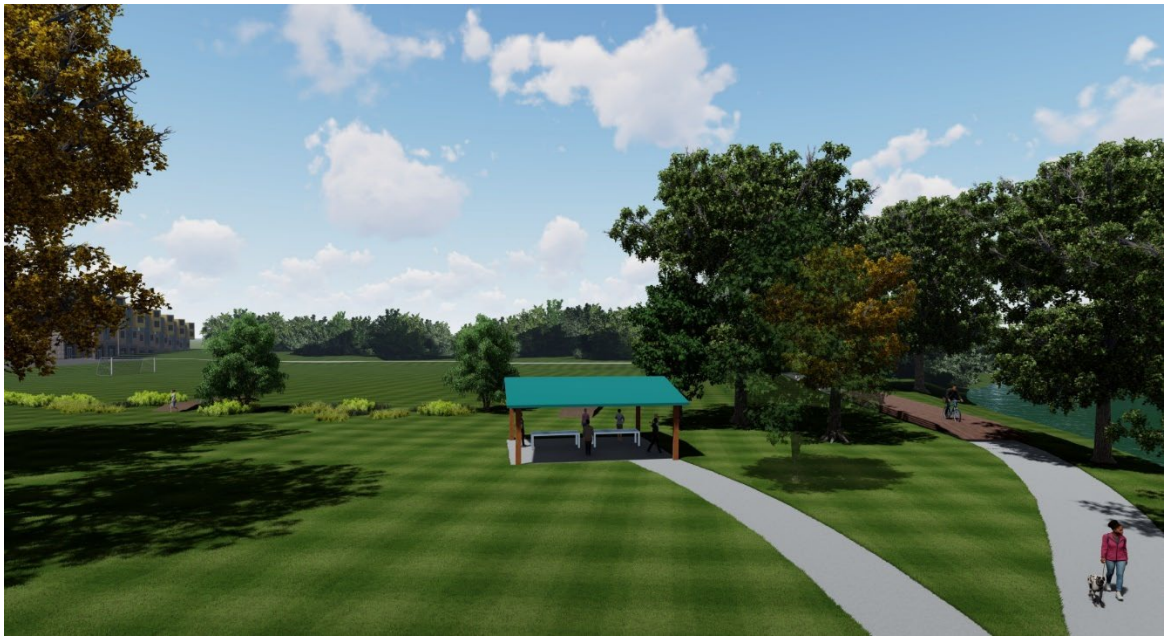
The new pavilion can be used by the community for social events

Figure 6.16
Kirkwood Neightobhood Park at Night



Lighting makes the park safer to use in the evenings

Figure 6.17
Existing Pavilion with New Bridges and Bioretention Planting



The addition of foot bridges leading from the soccer field to the park makes site more usable

VI. Reflection

My overarching goal for this thesis was to propose a design for the built environment that could take advantage of relationship between occupational therapy and landscape architecture to create a more just environment for people of all abilities. The broader initial goal of designing an urban park informed by the foundational principles of occupational therapy with a focus on health and wellness evolved over the course of the project. Recognizing and communicating the overlap between occupational therapy and landscape architecture was more difficult than I had anticipated. The urban context of the site was important from the outset because I saw the lack of natural settings as a hinderance to the health of urban residents. I saw an opportunity to solve the problem through the lens of occupational therapy and creating a space where users could participate in activities that were meaningful to them and improved the quality of their everyday lives beyond the context of the park. As I learned about the history and practice of occupational therapy, I began to discover an overlap of occupational and environmental justice. The project goal became clear when I focused on the Person-Environment-Occupation (PEO) Model (Law et al., 1996) and the Framework of Occupational Justice (Wilcock & Townsend, 2004) to complement theory on environmental justice and Roger Ulrich's Stress Reduction Theory to inform my design. When there is an unjust environment, as there often is in an urban setting, people cannot participate in activities that are meaningful to them. People deserve an environment that contributes to their health and social inclusion. By addressing macro-level issues of occupational and environmental justice, my goal

was to think holistically about what community needs and introduce design elements that are meaningful and that they look forward to using.

A central aspect of the iterative process for this project was regularly conferring with my interdisciplinary committee team of landscape architects and an occupational therapist to effectively tell the story of this design. The central theme of the story was designing through a lens of meaningfulness based on the environmental context of Kirkwood Neighborhood Park and the surrounding area, with special consideration for intergenerational users and families. I also considered how movement between elements can make the space available to everyone and addressed the places not being used. Designing a space that meets a wide range of users makes the meaningfulness increase.

Future Exploration

This project aims to provide precedent to effectively curate a framework into the future applications of occupational therapy in landscape architecture. Occupational therapy is unique in that it can take place in a multitude of different settings, including home and community settings, hospitals, long-term care facilities, mental and behavioral health settings, outpatient clinics, and schools. This research-design thesis is a starting point for future exploration into how the framework of occupational therapy theory can be applied as a complementary agent in design in a variety of settings, extending beyond the application in a public park.

A path forward could involve additional studies into the basic frameworks that were applied in this design. Specifically, this could involve gathering data that supports

how environmental justice factors into the ways occupational therapy may be applied in a given environment, and how those contextual factors influence the design. This could include data on air pollution, tree canopy coverage, and water quality, as well as additional data on demographics.

An important aspect of this research-design thesis was demonstrating the importance of interdisciplinary collaboration in design. Collaborating with an occupational therapist was vital to my project and creating a design that creates environmental justice and contributes to peoples' health and social inclusion. For landscape architects, occupational therapy can serve as a foundation to further understand how the environment and spatial organization can either facilitate or hinder performance and participation in outdoor spaces. By working with occupational therapy practitioners to gain insight into the design of a space from an occupational therapy practitioner's perspective, landscape architects may better identify potential challenges that users might face in a given environment and discover new ways to help them overcome those challenges through user-centered design. Occupational therapy practitioners and landscape architects can collaborate to design outdoor spaces that promote physical, cognitive, sensory, social, and emotional well-being in ways that have additional generalizable benefits in other areas of life.

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