

ABSTRACT

Title of Thesis: SOWING SEEDS OF SUSTAINABILITY AT
THE DEALE COMMUNITY LIBRARY

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Public libraries provide more than books: they are vital community spaces that provide access to education, connection, and opportunity. In rural areas where resources are already scarce, libraries hold their ground as resources and community hubs. This thesis will explore how landscape architecture can expand the role of libraries beyond the building by transforming outdoor spaces into places for environmental education, mental well-being, and community connection. The design reimagines the landscape surrounding the Deale Community Library to include native display gardens, an outdoor classroom, stormwater management, and spaces to encourage stewardship.

By integrating site analysis, stakeholder interviews, and precedent studies, this research presents a practical and aesthetically engaging design that balances the needs of the library staff and community. Design features, including signage, accessible seating, and educational gardens, demonstrate how sustainable design can support both people and the environment and inspire the community. This project aims to reinforce the idea that libraries are not simply buildings but

evolving community anchors, where their outdoor spaces can inspire stewardship, learning, and well-being for future generations.

SOWING SEEDS OF SUSTAINABILITY

by

Stephanie Cavanaugh

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CHAPTER 1: INTRODUCTION

1.1 Introduction

“Public libraries, especially in rural communities, are one of the few non-religious, non-commercial indoor spaces open to all, producing social capital and increasing social inclusion among rural residents” (Lenstra et al., 2023, p. 2). I discovered this quote during my research, and it became the driving force behind developing this thesis.

Libraries and education are increasingly at risk in today’s political climate. These challenges helped shape my research question: How can outdoor spaces around rural public libraries serve as a vehicle for improving community health, happiness, and environmental education? Additionally, I explore how to balance practicality and aesthetics to meet the needs of both library staff and patrons.

My research aims to design the landscape surrounding a rural library with ample vegetated space, educational gardens, and places for people to gather and rest. These amenities would further strengthen the library's role as a community anchor.

1.2 State of Libraries

Benjamin Franklin helped to establish the first lending library in the United States in 1790 via a donation in Franklin, Massachusetts. Libraries grew post-civil war and were free and open to the general public (A History of US Public Libraries, n.d.). While populated towns in the northeast began to have easier access by the 1900s, rural communities often received their literature through traveling librarians on horseback (A History of US Public Libraries, n.d.). This led the central libraries to be created in more remote areas (A History of US Public Libraries, n.d.). By the

1920s, Andrew Carnegie donated significant money to help fund the construction of 1,687 public libraries, which led to a boom in libraries throughout the US (A History of US Public Libraries, n.d.). During World War I and II, library expansion halted. Still, in 1962, the Library Services and Construction Act revived the push to expand the reach of public libraries (A History of US Public Libraries, n.d.). The Library Services and Construction Act allowed rural and urban areas that lacked library services to receive funding to construct library facilities (Illinois State Library Heritage Project, n.d.). In the 1950s, libraries expanded their services to community resources, including student summer reading programs and hosting clubs (A History of US Public Libraries, n.d.).

Up to this point, these resources were limited to white patrons as segregation was an issue at libraries until the Civil Rights Act of 1964 (A History of US Public Libraries, n.d.). Some Libraries from the 1900s to the 1960s ignored segregation or provided libraries specifically run by and for African Americans, such as the Brevard Street Library in Charlotte, NC (A History of US Public Libraries, n.d.).

Libraries today have kept their resources up to date with current technology, including internet access, technology lending, and offering online subscriptions (A History of US Public Libraries, n.d.). In addition to providing book lending services, libraries offer social and health services, accessible spaces, food and housing resources, social justice education, and small business resources (American Library Association, 2024).

Libraries today are facing demands to censor thousands of titles. Between 2022 and 2023, a 65% increase in book titles asked to be censored in libraries (American Library Association, 2024) (Figure 1.1). Fifty-four percent of censorship requests occurred at public libraries, and 8% of censorship attempts included threats to library closures, funding, bomb threats, vandalism, and theft (American Library Association, 2024). Many of these pressures to censor books are developed from lists drafted by organized groups that target the voices of LGBTQIA+ and people of color (American Library Association, 2024).

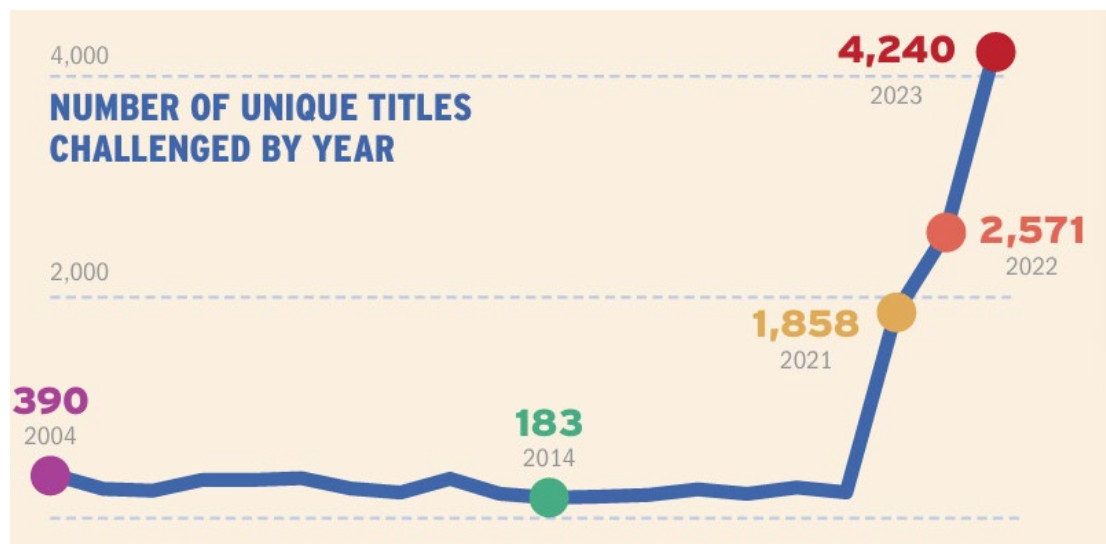


Figure 1.1. "Graph on Number of Unique Titles Challenged by Year from 2004 to 2023" by American Library Association retrieved on March 20, 2025, from https://live-alaorg.pantheonsite.io/sites/default/files/2024-04/state-of-americas-libraries-report-2024-accessible-web-version_0.pdf

This impact affects not only book availability but also librarians' jobs. One hundred fifty-one bills were introduced to state senates to allow for "the criminal prosecution of librarians, threaten library funding, or impose unconstitutional content-based restrictions on books for children and adolescents" (American Library Association, 2024). Counteractive measures have combated misinformation on controversial titles (American Library Association, 2024).

1.3 Libraries as Community Anchors

One community asset that libraries provide is broadband internet. This resource allows people in remote areas to access internet services and engage with their community and the wider world. Providing these resources sets libraries apart because they can offer a resource many other community anchors do not (Alemanne et al., 2011). Alemanne argues that libraries should be the community anchor of all community anchors as they are highly visible beacons of communities, tend to be well-trusted, and provide extensive resources at no cost (Alemanne et al., 2011).

Libraries are very accessible, mainly thanks to the library boom of the 1900s. More than 95% of Americans are within a library service location, making them one of the most accessible services (Philbin et al., 2019). Libraries have extensive summer reading programs to help children stay engaged, allowing for social connections among rural residents and children (Philbin et al., 2019). In addition to children's programs, many libraries provide adult educational opportunities for community bonding and building relationships between staff and participants and among patrons (Philbin et al., 2019). Libraries are among the few free spaces for people who welcome those who may not feel safe or welcome in their homes (Philbin et al., 2019).

Libraries in rural communities help build social capital: the networks, relationships, and trust developed in a community (Russell & Huang, 2012). As with Lenstra's opening quote, libraries are seen as safe and welcoming spaces to all, which allows people of all kinds to feel open to creating relationships and social bonds while in the library (Russell & Huang, 2012). Libraries tend to host a potpourri of events

that allow rural communities to encourage residents to be more involved with each other (Russell & Huang, 2012). Resources are scarce in rural communities, and libraries help ensure access to the same resources (Russell & Huang, 2012). Since many types of events are hosted at libraries, these events can welcome people of all ages rather than catering to one demographic (Russell & Huang, 2012),

Libraries hold a significant role in their communities, so their sustainability is vital to the landscape architecture profession. I want to ensure that libraries that provide critical resources such as internet access, shelter, restrooms, and knowledge are not removed from rural communities that could suffer the most without these resources.

1.4 Environmental Education

As libraries offer educational programming within their buildings, there is an opportunity to increase that education in the surrounding environment. Behavior change is critical to encouraging people to be better stewards. Research has shown that signage tends to affect behavior when it is located near the action requested, explains the goal behavior, makes the new behavior convenient, and uses civil language and imagery (Meis & Kashima, 2017).

In addition to signage, experiential learning is key to changing people's behavior. The Kootenay Native Plant Society developed a model that includes the steps to encourage residents to implement native gardens on their properties (Beckwith et al., 2022). It begins with information sharing, such as talks and publications, and then knowledge building, including outdoor signage and community

programs (Beckwith et al., 2022). The final step is social learning, which includes hands-on events at residents' homes to work with them (Beckwith et al., 2022).

Homeowner attitudes drive native plant gardens in residential yards. For example, researchers surveyed residents in Arizona. They found they have generally positive views of native plants, but this was not a predictor of whether they were planted in their homes (Wheeler et al., 2022). Predictors of native plantings in yards included "residents [who] believed native plants belonged in the city, prioritized choosing native plants, and had higher household income (Wheeler et al., 2022)." Education on native plants was reported to be low, and in the arid Arizona climate, residents selected plants based on their drought resistance (Wheeler et al., 2022). As many native plants are highly drought-resistant, data suggested that great information and education on native plants could increase their footprint if marketed within the correct context (Wheeler et al., 2022).

1.5 Theoretical Framework

In addition to the research above, this thesis's theoretical framework includes attention restoration theory (ART), stress reduction theory (SRT), and biophilia. These theories explain why natural spaces generally improve the health of their users.

ART is a theory based on our human capacity for attention, specifically our directed attention to focus on tasks. Over time, our capacity for this attention is depleted and reduced as we use it repeatedly, which can lead to issues with memory, problem-solving skills, and mood (Kaplan, 1995).

Kaplan's solution is restorative environments, particularly those that are in nature. Environments restore our directed attention by engaging different types of

attention, such as involuntary attention. Kaplan described four significant components of a restorative experience: being away, fascination, Extent, and compatibility. Being Away is the idea that we can step outside of our daily responsibilities and create distance between us and our tasks. Fascination is attention that effortlessly engages us with stimuli such as grass blowing in the wind. Extent is the idea that the restorative environment should feel encompassing. Compatibility is how the restorative environment aligns with the individual's needs and whether it is easy to engage with (Kaplan, 1995).

SRT is the idea that our natural environments directly impact our stress levels. This theory focuses on the emotional and physical benefits of being in nature. When viewing nature, people tend to have an increased mood and a decreased heart rate and blood pressure. Therefore, stress is reduced over long-term exposure to nature (Ulrich, 1983).

Biophilia is a theory that humans are inherently attracted to nature and the natural world. Research shows that natural environments almost always evoke positive emotions, supporting the biophilia theory. Implementing more natural features into a site, such as vegetation and water, may bring about a positive experience for people (Wilson, 1984).

1.6 Gaps in the Literature

Over the past decade, research on ‘green libraries’ has been increasing compared to the decades before 2011, and of the existing research on green libraries, few papers mentioned landscapes specifically (Fedorowicz-Kruszewska, 2021). Research mainly focuses on the interiors of libraries and how they are energy

efficient and sustainable, with less on the surrounding landscapes. Many libraries are starting to incorporate Story Walks, but the outdoor experience tends to be limited around the library (Lenstra et al., 2023). Story Walks are a phenomenon where a children's book is broken up page by page along a path outdoors so that people can follow the story as they walk outside (Swicker, 2021).

Libraries are shifting from lending services to regional knowledge and resource centers (Zang et al., 2023). In a 2023 study on Japanese libraries, researchers found that most outdoor space around libraries is dedicated to parking, and the building footprints themselves tended only to use fifty percent or less of the site, which reveals that the surrounding outdoor environment is underutilized (Zang et al., 2023). One of Zang et al.'s (2023) proposals to increase the use of the external library space is to add more green space that supports meetings, telework, education, and outdoor seating instead of parking structures. Urban libraries tend toward green roofs to remedy the lack of green space, but this may not be a solution for older buildings in rural environments (Zang et al., 2023). There is a lack of literature on rural libraries and their place in the community fabric. Urban libraries are typically more studied; however, their relevance to rural communities may be limited (Lenstra et al., 2023). Urban landscapes are not always comparable to rural spaces, and urban guidelines may not be applicable in the rural setting. Libraries are currently being used as community centers, which points to a new purpose for these community staples (Reid & Howard, 2016).

The rural library system is constrained by a lack of staff and funding, shorter hours, and a lack of guidelines and models for rural libraries (Reid & Howard, 2016).

Rural librarians have expressed a need for gathering spaces for community meetings and clubs (Reid & Howard, 2016). In the current library literature, there is an emphasis on outdoor, external gathering spaces and having space for seating (Zang et al., 2023; Reid & Howard, 2016).

People in rural counties have less access to 'Leisure-Time Physical Activity' (LTPA), which is defined as physical activity that is not work-related. Rural areas lack infrastructure investment, and while there is a larger quantity of outdoor areas, there is a lack of accessible, quality green space. People living in rural communities reported that they were more likely to engage in LTPA if they enjoyed the physical activity areas in their community (Kegler et al., 2022).

Some studies show that partnerships between libraries and local Parks and Recreation Departments are as low as 11% (Lenstra et al., 2023). Some libraries will lend out day passes to local parks for library users. There is currently a lack of partnership between public health and libraries (Lenstra et al., 2023). This allows for opportunities to repair this connection, including collaborations with local organizations (Hammock et al., 2023).

These spaces must be protected and built upon to ensure their continuation in this increasingly technological environment. Rural communities generally have less access to resources, and libraries can help fill this gap. In addition, thousands of public libraries in the United States can benefit from library landscapes that landscape architects can design.

CHAPTER 2: CASE STUDIES

To begin my design process, I looked at existing gardens at public libraries that varied in scale and cost. In this section, I will explore the Charles E. Miller Branch Library, a newly built library in Ellicott City, MD, with a significant design budget. I will then explore the People’s Garden at Princeton Public Library in Princeton, IL, where the garden was implemented through grassroots organizations and volunteers at an existing library.

2.1 Charles E. Miller Branch Library, Ellicott City, MD

The Charles E. Miller Branch Library in Ellicott City, MD, serves as a community hub and offers a range of resources, programs, and services for all ages. In its commitment to sustainability and education, the library is home to the Enchanted Garden, a teaching garden that promotes environmental awareness. With its multitude of offerings, the Miller Branch Library fosters learning, creativity, and community engagement.

2.1.1 Sustainable Design Features

The Enchanted Garden at the Charles E. Miller Branch Library in Ellicott City, MD, is a teaching garden for community members regardless of age, and it is open during regular library hours. Designed for education and engagement, it features flexible seating and informative signage that guides visitors through raised beds, compost bins, and demonstration tables (Figure 2.1). A diverse selection of native and non-native plant species enhances the garden’s ecological value (Figure 2.2). Stormwater management plays a crucial role, with a bioswale, rain garden, and rain

barrels to support water reuse. The rain garden holds certifications as a Monarch Waystation and a National Wildlife Habitat, further emphasizing its commitment to environmental stewardship (Howard County Library System, n.d.). The surrounding infrastructure integrates sustainability into its design by using a lighter-colored pavement for the parking lot, which helps mitigate the heat island effect. The library fosters local connections in the summer by hosting a farmers' market in the parking lot. Additionally, a green roof on the library roof is planted with sedum, contributing to insulation and stormwater absorption. A storage shed provides essential space for tools and materials, ensuring the garden remains well-maintained and functional (Howard County Library System, n.d.).

The Enchanted Garden is an excellent source of environmentally friendly applications. The library is a much larger facility and serves a larger population. With a larger budget, this design can achieve several features that may be difficult to implement without significant money. However, the garden is closed each night and reopened each morning, so it can only be used during the library's operating hours, limiting its accessibility.



Figure 2.1. “Raised Beds at the Enchanted Garden” by Jaewon Nicky Hyun in 2023:

https://lh3.googleusercontent.com/p/AF1QipO5ytT_8bPzt7nmrYDW-4kv30XTft9ME_q9ZtQT=s680-w680-h510



Figure 2.2. “Planting in The Enchanted Garden” by Deborah Montgomery in 2025:

<https://lh3.googleusercontent.com/p/AF1QipNzX6VcXyfhQHbkT6aporSJOUrf-ccxwSFwpPQ=s680-w680-h510>

2.2 People's Garden at Princeton Public Library, Princeton, IL

The People's Garden at Princeton Public Library in Princeton, IL, is a grassroots effort to dedicate outdoor space to education, sustainability, and environmental stewardship. The garden features native plants, flowers with high nectar, and organic practices to support pollinators and promote sustainable gardening practices. Through their education programs, workshops, and local partnerships, the People's Garden connects visitors of all ages with valuable resources on conservation landscape practices.

2.2.1 Sustainable Design Features

The People's Garden showcases sustainable gardening features while fostering community involvement and education. The garden attracts pollinators and provides them with a thriving habitat. Informational signage and educational programming help visitors learn more about pollinator habitats, native plants, and environmentally conscious gardening practices. Residents, volunteers, and local garden clubs maintain

the garden, strengthening a sense of ownership and stewardship. For the garden's implementation, volunteers helped plant 710 plants, which helped foster community and connection (Figure 2.3). The garden integrates organic gardening practices, rainwater reuse, and composting to inspire visitors to implement these practices in their own gardens. As an extension of the library and its goals, the People's Garden connects visitors with pollinators, ecology, and sustainable resources. The garden is open to all ages and hours and provides a calm setting for relaxation and connection to nature. Partnerships with organizations such as Princeton Graphics, the Bureau County Pheasants Forever Chapter, the Xerces Society for Invertebrate Conservation, Friends of the Garden, and local businesses help to further and expand its cause. (USDA, 2022).

The People's Garden is an excellent example of low-cost, volunteer-based interventions. This garden was built in a grassroots manner through partnerships and local intervention. However, the garden lacks shade, which may make the garden unbearable in summer.



Figure 2.3. "Volunteers Plant the People's Garden" by USDA retrieved on February 20, 2025, from https://www.nrcs.usda.gov/sites/default/files/styles/side_image/public/2022-09/14460342245_39b5a947b7.jpg?itok=JNpEUnQA

CHAPTER 3: METHODS

In this chapter, I discuss the selection of my site, my site analysis, inventory, and interviews with two Branch Managers at the Deale Library. This research informed my design and helped me better understand the site so that I could provide them with the best design options.

3.1 Context and Site Selection

Site selection and context go hand in hand, as the context of the site explains the site selection.

3.1.1 Site Context

I chose the Deale Community Library as my site to design. Located in Deale, the site is in the southern part of Anne Arundel County, Maryland (Figure 3.1, 3.2, 3.3).

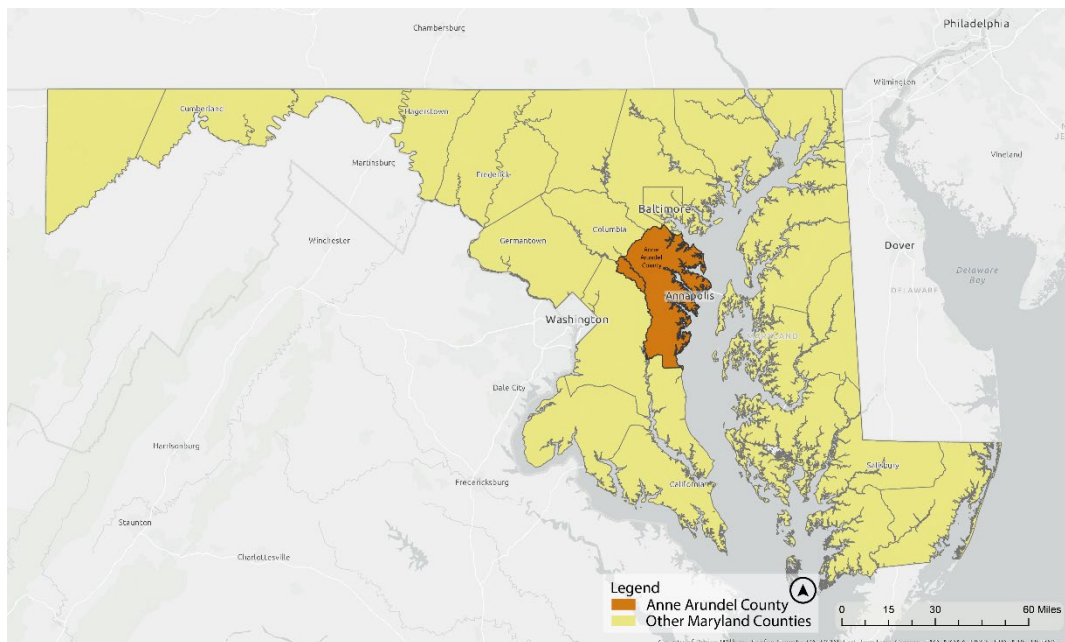


Figure 3.1. “Map of Maryland Counties: Anne Arundel County (Orange) and Other Maryland Counties (Yellow)”



Figure 3.2. “Deale Town Limits and Site Location”

Built in 1968, the Deale Community Library has been a community hub in this rural area, as no community centers are located nearby. In addition, there are plans to expand the library, though landscape design has not historically been added to older properties.

According to the U.S. Census (2020), the library is in a rural area. According to the U.S. Census, rural areas are those that are not within urban areas (US Census Bureau, 2024). Urban areas are densely populated areas with at least 2,000 housing units or a population of at least 5,000 (US Census Bureau, 2024). This includes nearby non-residential urban land (US Census Bureau, 2024). Tennis courts are currently located on the property. The slopes are not steep, and there is evidence of a sensory garden on the south side of the building (Figure 3.3).

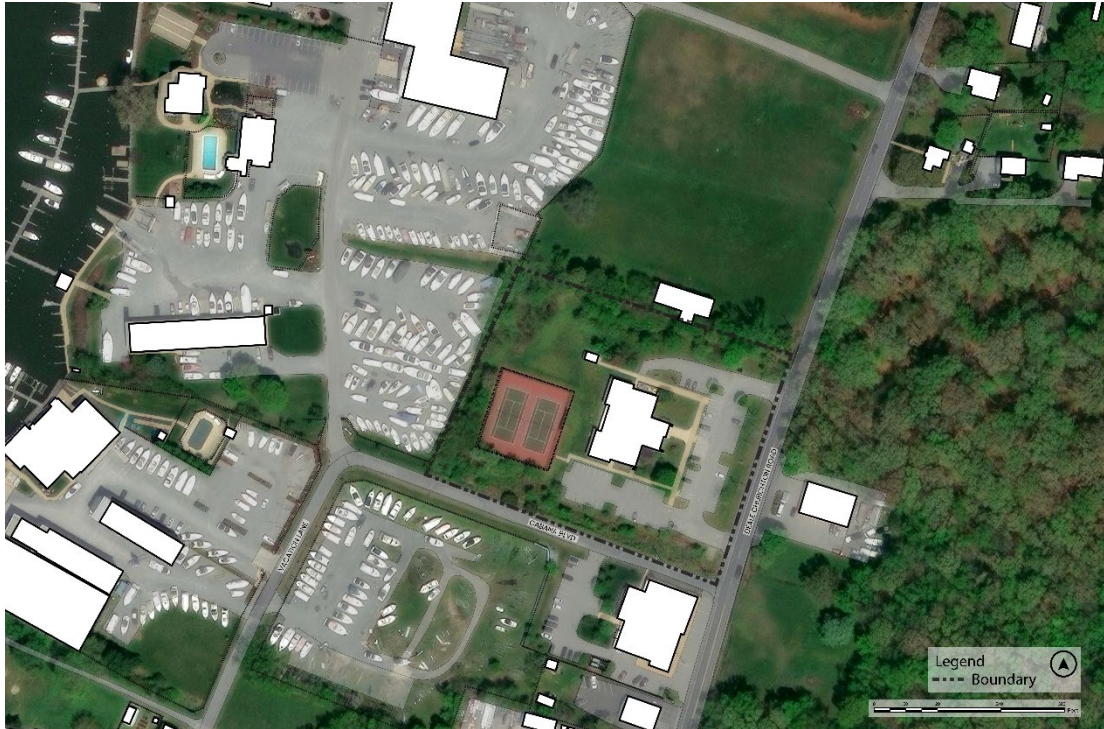


Figure 3.3. “Deale Community Library Site Location”

3.1.2 Library Service Context

The Deale Library serves the southernmost communities of Anne Arundel County, including Deale, Lothian, Pindell, and Old Colony Cove (Figure 3.4).

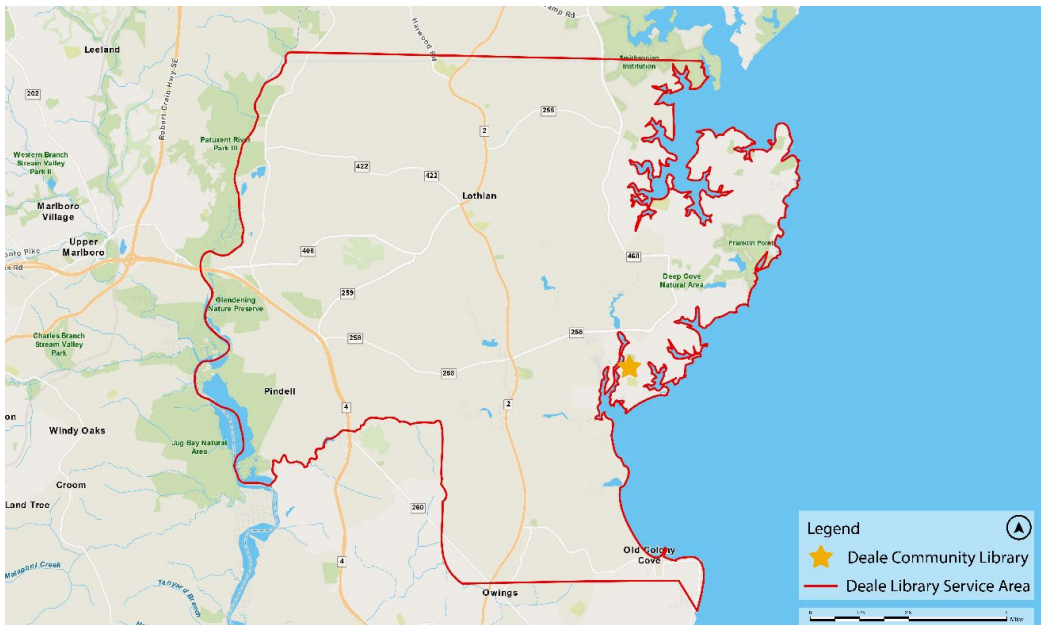


Figure 3.4. “Map of Deale Library Service Area”

On a broader scale, the Deale Library serves as a community hub, as the closest community center is in Galesville, which is 5 miles away and an 11 to 15-minute drive from the Deale Community Library (Figure 3.5).

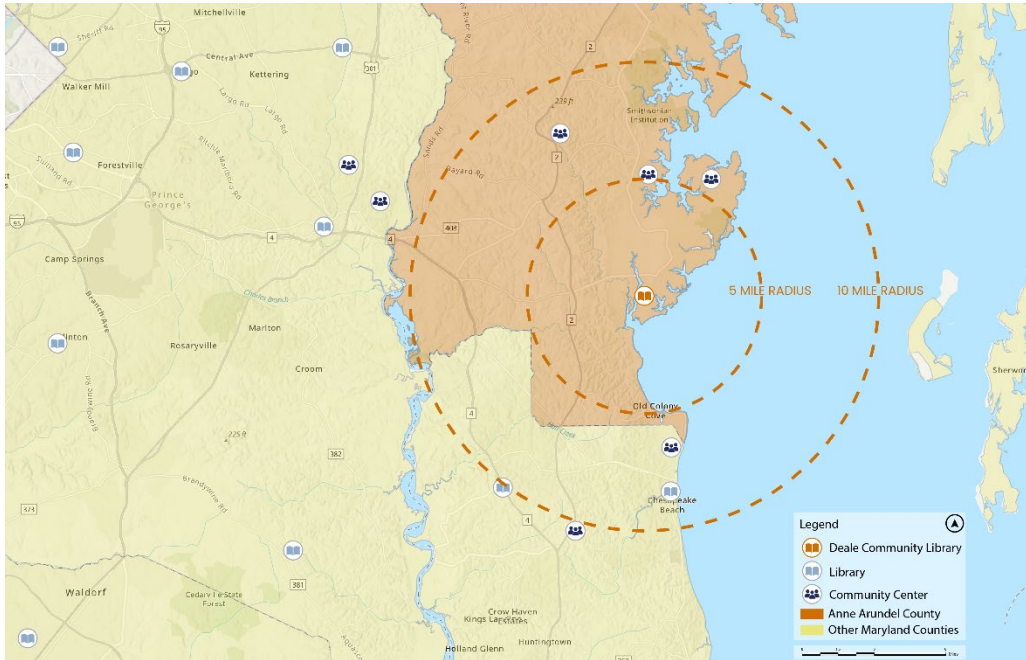


Figure 3.5. “Map of Local Community Centers and Libraries around the Deale Area”

Several businesses are located nearby, including the future Deale Community Park, stores selling goods and services like My Fancy Finds Boutique, and several marinas along Rockhold Creek, such as Harbor Cove Marina (Figure 3.6).



Figure 3.6. “Map of Businesses Near The Deale Community Library”

As noted in Figure 3.6, plans are to create a Community Park on the property adjacent to the Deale Community Library. Construction is currently underway. The plans include removing the barn structure near the tree line on the north property line between the park and the library (Figure 3.7). A small footpath will also connect the park and the library, but no other plans exist to connect the two (Figure 3.8).



Figure 3.7. “View of Abandoned Barn” by Google Street View retrieved on February 20, 2025, from <https://shorturl.at/HkScM>



Figure 3.8. “Plan for Deale Community Park Adjacent to Deale Community Library” by Anne Arundel County, retrieved on February 20, 2025, from <https://www.aacounty.org/recreation-parks/capital-projects/deale-community-park>

3.1.3 Site Selection

I looked through local and state library location lists to find this site, particularly in Prince George’s County and Anne Arundel County. I also used Google Maps to search for library locations. I chose the Deale Community Library for its rural location, underutilized green space, and proximity to the Chesapeake Bay.

Much of the land surrounding the library is lawn framed by fragmented forests and a wetland along the west edges. The amount of usable space allows for several design opportunities, large and small.

This site's location in the Critical Area adds restrictions and opportunities. Its proximity to a large, threatened estuary can show the more direct impacts of both

positive and negative landscape practices. Having a site within the Critical Area can be an example of how to have a beautiful and sustainable garden that positively affects the Bay's health. I will discuss the Critical Area more in Depth in section 3.2.4.

3.2 Site Inventory

3.2.1 Demographics

The Deale community has a relatively small population of 4,943 people, with a median age of 44.7 (Census, 2020). The median household income is \$123,176, and the employment rate is 63.6% (Census, 2020). Most residents speak only English, and 43.4% have at least a bachelor's degree. The poverty rate is 3.9%, less than half of the poverty rate for the state of Maryland (Census, 2020). The typical commuting time for those employed is 46.2 minutes, indicating potential commuting to Washington D.C. or Baltimore. 20.8% of the working population claims to work from home. 92.9% of those living in Deale own their home, significantly higher than the state of Maryland's 67.9% (Census, 2020). 31% of residents live in a household with children, and 22% of households have seniors living with them (Anne Arundel County Public Library, 2024).

3.2.2 Library Statistics and Resources

According to Anne Arundel County Public Library, the Deale Community Library serves 20,714 residents. In fiscal year 2024, the Library recorded 38,845 visits and facilitated 104,968 item checkouts. Patrons utilized library computers for 3,301 sessions and connected to Wi-Fi 53,913 times. Additionally, 9,904 individuals

attended programs, including Teen Game Night, Preschool Storytime, South County Freewriters, and Nature Explorers (Anne Arundel County Public Library, n.d.).

The library's resources include the Fishing Pole Loaner Program, a weekly opportunity to meet with an On-Site Social Worker, six public computers, EV Charging stations, and a Caring Cupboard with free pantry items for those in need. There is also a meeting room available for public use that can hold up to 128 people, though it tends to have excess moisture and humidity during the wetter season. The building itself is 8,730 square feet and is open Monday through Thursday from 10 AM to 8 PM and Friday and Saturday from 10 AM to 5 PM. It is closed on Sundays (Anne Arundel County Public Library, 2024). In the summer, a farmer's market is hosted in the parking lot along the southern side of the Library; however, there are plans to move this market to the new community park, which has been confirmed through correspondence with Anne Arundel County Parks and Recreation.

3.2.3 Zoning

Anne Arundel County's GIS data shows that the Deale Community Library is zoned as commercial. Adjacent properties are also zoned as commercial, except for the Community Park north of the site, which is zoned as Open Space (Figure 3.9). The surrounding area has many smaller residential homes outside of the commercial bubble.



Figure 3.9 “Map of Current Land Use in Site Context”

Based on Anne Arundel County’s Plan for 2040, the land use for the library is updated to reflect it as Public Use. Significant Commercial properties still surround the Library, and more Low-Density Residential and Maritime Land Use (Figure 3.10).

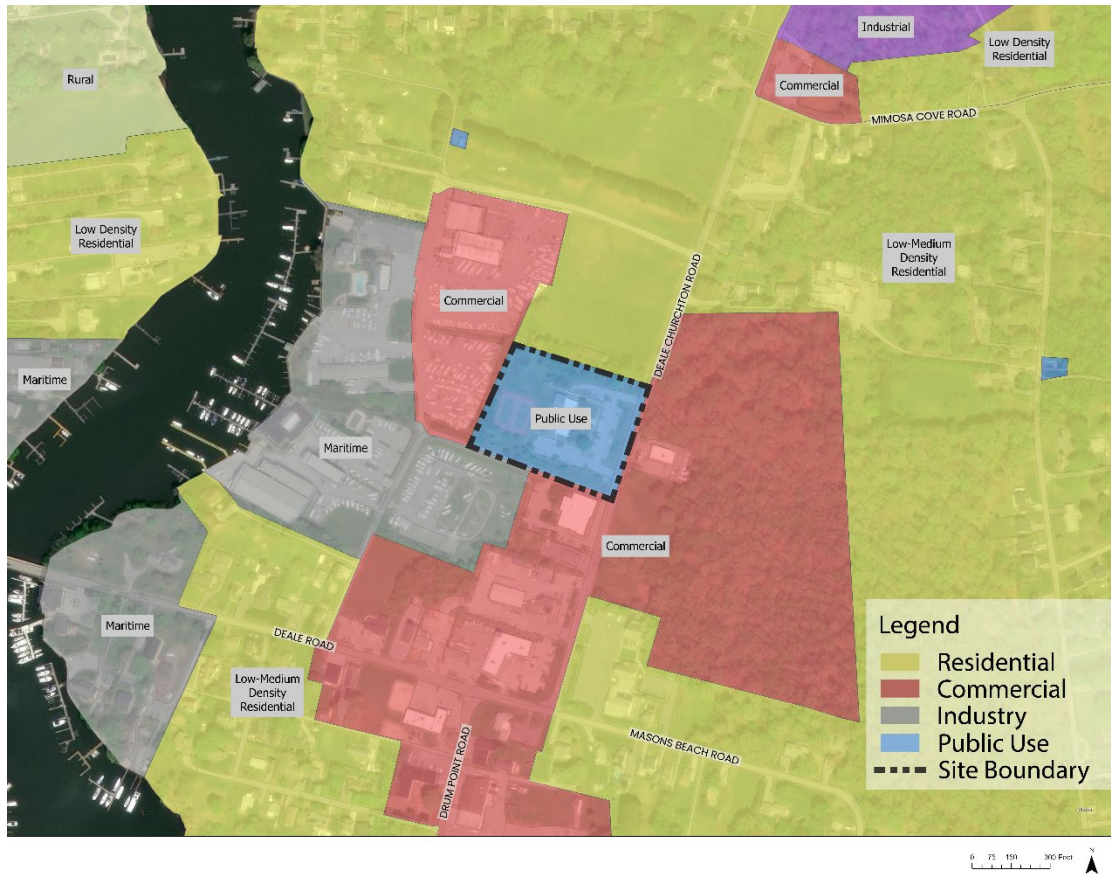


Figure 3.10 “Map of Plan 2040 Land Use in Anne Arundel County within Site Context”

3.2.4 The Critical Area and Zoning Overlays

Anne Arundel County implements specific zoning regulations within the Chesapeake Bay Critical Area to safeguard water quality and natural habitats.

According to Anne Arundel County's Development Department, the

"Critical Area is located 1,000 feet landward from mean high tide or the edge of tidal wetlands, as designated on the State Tidal Wetland maps, and all waters of and lands under the Chesapeake Bay and its tributaries." (Anne Arundel County Department of Development, n.d.)

Land within this area is classified into three categories: Intensely Developed Areas (IDAs), Limited Development Areas (LDAs), and Resource Conservation Areas (RCAs) (Anne Arundel County Department of Development, n.d.).

Intensely Developed Areas (IDAs) are regions of at least 20 acres characterized by high-density residential, commercial, institutional, or industrial uses. Development in IDAs focuses on reducing pollutant runoff through site design and stormwater management practices, such as sand filters and swales, to improve water quality (Delfs & Maurer, 2004). Additionally, designated Habitat Protection Areas within IDAs must be identified and conserved, promoting clustering of development to minimize impervious surfaces and enhance natural vegetation (Anne Arundel County Department of Development, n.d.).

Limited Development Areas (LDAs) are regions with low to moderate-density development, including residential areas, forests, fields, wetlands, and woodlands. Development in LDAs aims to maintain or improve water quality and conserve existing natural habitats (Delfs & Maurer, 2004). In areas of new development or redevelopment without forest coverage, 15% of the area must be planted with trees. Furthermore, LDAs must conserve existing areas of natural habitat and incorporate wildlife corridors to ensure the continuity of plant and wildlife habitats (§ 17-8-402. Lot Coverage Limits in the Critical Area., n.d.).

For both LDA and RCA developments, impervious surfaces are limited to 15%–31% of the site, depending on specific criteria. A minimum 100-foot buffer from the mean high-water line of tidal waters, tributary streams, and tidal wetlands is required to protect water quality and habitats. Any disturbance within this buffer

necessitates a buffer management plan approved by the Department of Inspections and Permits, and vegetation removal requires a permit. Additionally, development on slopes of 15% or greater is generally prohibited in LDAs and RCAs unless it facilitates slope stabilization, allows connection to public utilities, or provides direct shoreline access, with all disturbances limited to the minimum necessary (§ 17-8-402. Lot Coverage Limits in the Critical Area., n.d.).

These zoning regulations direct development toward areas with existing infrastructure, minimizing environmental impacts on the Chesapeake Bay watershed. Anne Arundel County strives to balance growth with preserving vital natural resources by implementing these measures.

The Deale Community Library is located in 99.6% of the Critical Area, 3.34 of the 3.36 total acres. 75.9% (2.55 acres) of the site is located in the IDA, and 23.7% (0.795 acres) is situated in the LDA (Figure 3.11). The Critical Area can be developed but must go through a permitting process, and restrictions are much lower than land within the Critical Area Buffer, one hundred feet from tidal waters (Critical Area FAQ's, n.d.).

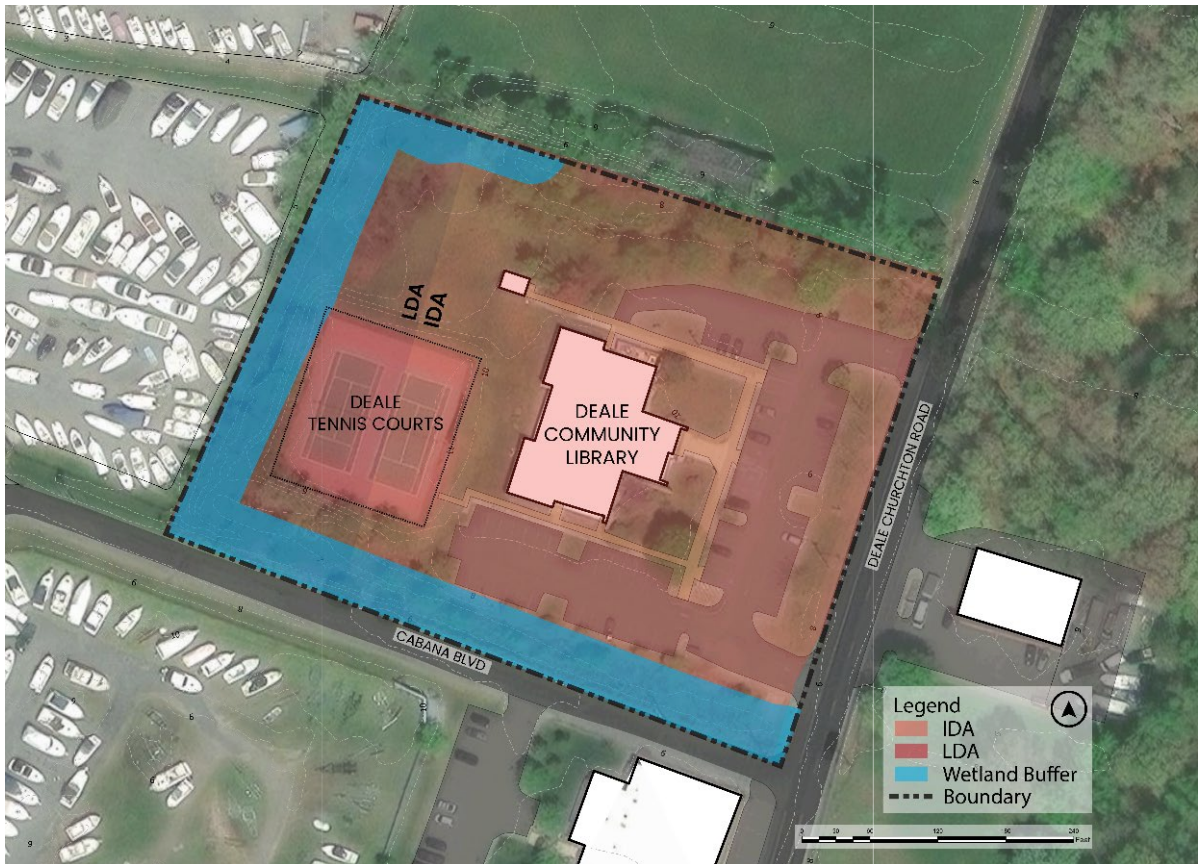


Figure 3.11 “Map of LDA and IDA Zoning Within Site Boundary”

3.2.5 Wetland Buffer

As seen in Figure 3.11, the Deale Library has a wetland buffer around most of the site, in addition to LDA/IDA zoning. Non-tidal wetlands maintain a 25-foot buffer from the centerline of the wetland (Klebasko, 2020). According to the Critical Area Team staff for Anne Arundel County, the wetland would need permission to remove current invasives, such as phragmites, and native plants would need to replace them. Permitting would also be required for any disturbance of the site.

3.2.6 Watershed

The Deale Community Library is located in the southern Chesapeake Bay Watershed (Figure 3.12), specifically the West Chesapeake Bay Watershed (Figure 3.13).



Figure 3.12. “Chesapeake Bay Watershed” by West Virginia Rivers retrieved on March 5, 2025, from <https://wvrivers.org/chesapeakebaywatershed/>



Figure 3.13. “West Chesapeake Bay Watershed” by Maryland Department of Environment retrieved on March 5, 2025, from <https://mde.maryland.gov/programs/Water/TMDL/Pages/West-Chesapeake-Bay.aspx>

It is located in the sub-watershed of Herring Bay (Figure 3.14) (Figure 3.15).

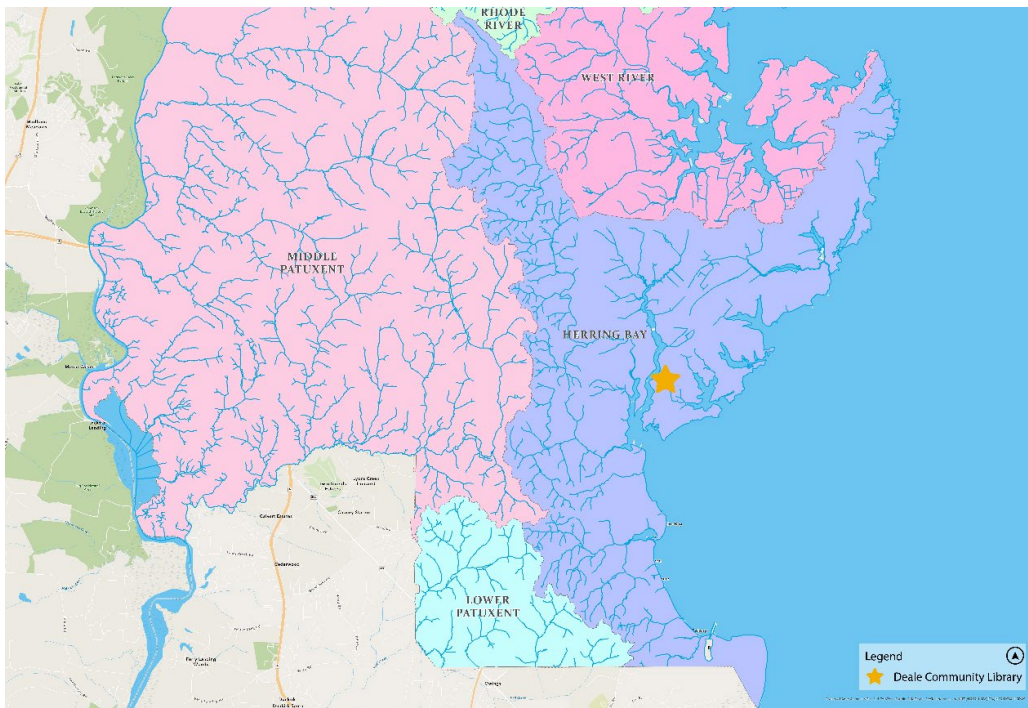


Figure 3.14 “Map of Chesapeake Bay Sub-Watersheds”

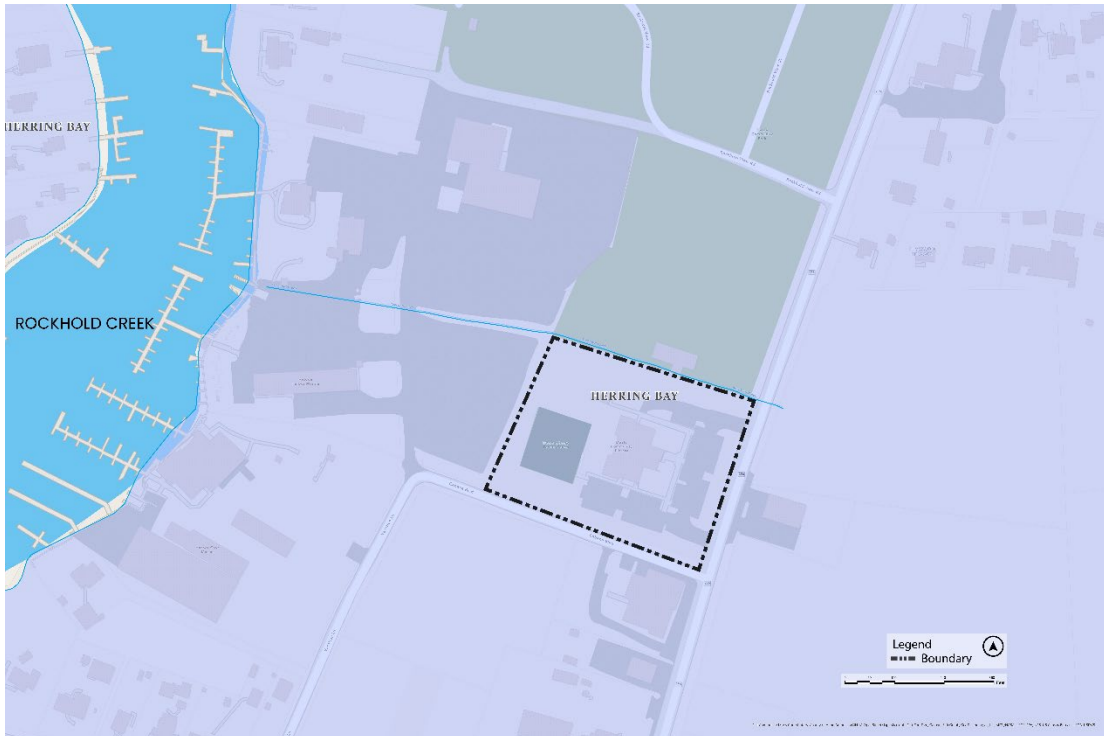


Figure 3.15 “Map of Site Context in Herring Bay Watershed”

3.2.7 Soil Conditions

The site consists of two primary soil types: CxB (C/D) and SrA (B/D) (Figure 3.16). The CxB soil is in hydrological group C/D, with poor drainage conditions when dry and moderate drainage when wet.



Figure 3.16 “Map of Soil Types at Deale Community Library”

The CxB soil, covering 22.4% of the site, has a strongly acidic pH ranging from 3.5 to 4.4 and a composition of 21.7% clay, 24.2% sand, and 54.1% silt. It has a moderately shallow water table at a depth of 17.3 inches. The majority of the site (77.6%) is composed of SrA soil, which has a slightly acidic pH of 6.1 to 6.5 and a higher silt content (70.4%), with lower proportions of clay (18%) and sand (11.6%). The SrA soil has a much shallower water table, only 5.1 inches below the surface, indicating a higher susceptibility to saturation and potential drainage challenges.

3.2.8 Planting Conditions

The site is located in Zone 8a, which indicates that planting in this area must be hardy down to 10 to 15 °F (USDA, 2023). Due to climate change, hardiness zones are shifting north over time, and plants must adapt to that (Shenton, 2023). Based on

some projection models, USDA zones may increase to 9a by the end of the century for the worst-case scenario (Davey Institute & Arbor Day Foundation, n.d.). On a broader scale, the Deale Community Library is located in the Middle Atlantic Coastal Plain (Ecoregion III) and the Chesapeake-Pamlico Lowlands and Tidal Marshes (Ecoregion I and II). More specifically, it is categorized within Ecoregion IV as Chesapeake-Pamlico Lowlands and Tidal Marshes (63b), indicating a landscape characterized by low-lying coastal plains, tidal marshes, and wetlands (Figure 3.17) (Figure 3.18) (US EPA, 2016).

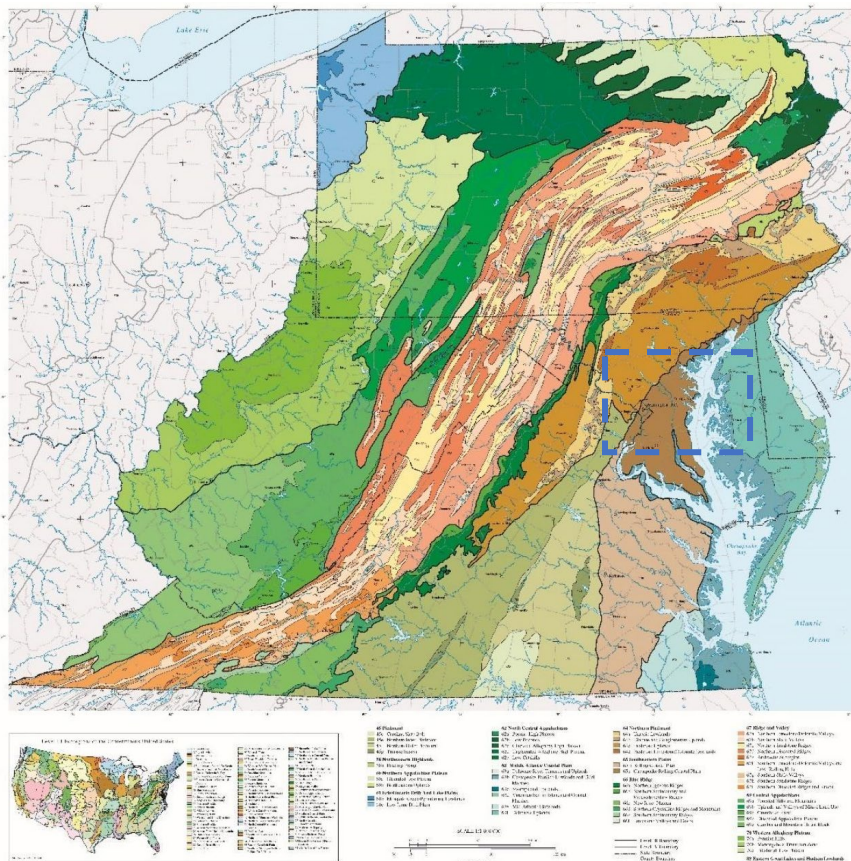


Figure 3.17. "Level III and IV Ecoregions of EPA Region 3" by U.S. Environmental Protection Agency retrieved on March 5, 2025, from https://dmap-prod-oms-edc.s3.us-east-1.amazonaws.com/ORD/Ecoregions/reg3/reg3_eco.pdf



Figure 3.18. “Level III and IV Ecoregions of EPA Region 3 Zoomed In” by U.S. Environmental Protection Agency retrieved on March 5, 2025, from https://dmap-prod-oms-edc.s3.us-east-1.amazonaws.com/ORD/Ecoregions/reg3/reg3_eco.pdf

3.3 Opportunities and Constraints

3.3.1 Opportunities

The landscape surrounding the Deale Library presents several opportunities for improved design. Adjacent to the library, the proposed community park provides an excellent opportunity to connect park visitors to the library and vice versa. With ample room for flexible programming, the site benefits from its abundant nature and sunlight, creating an inviting atmosphere for visitors. Additionally, the proximity of residential properties offers opportunities to strengthen neighborhood connections, accessibility, and chances to educate local homeowners. The surrounding forest

further enriches the site, providing a natural buffer and ecological value that can be integrated into the design to foster a harmonious relationship between built and natural environments.

3.3.2 Constraints

There are several constraints that the site features need to address in the design process. The site's location within the Critical Area, including Limited Development Area (LDA) and Intensely Developed Area (IDA) zoning designations, requires adherence to strict environmental regulations and protects the wetland buffer on site. Additionally, the well-used tennis courts limit opportunities for a significant site reconfiguration. The site experiences intense heat due to a lack of shade, posing challenges to user comfort and plant viability. Finally, a limited budget necessitates strategic, cost-effective design solutions that maximize impact while remaining financially feasible.

3.4 Interviews with Branch Managers

3.4.1 Branch Manager for the Deale Community Library

I met with the Branch Manager for the Deale Community Library in May of 2024 to inquire about the feasibility of designing the library. I also asked and received permission to proceed. The discussion provided valuable insight into the existing landscape, community engagement, and future aspirations for the site. Staff want to expand the current sensory garden, which a Master Gardener initially installed. They also would like to reintroduce native plants despite challenges with maintenance and the neighboring marina's resistance to "messy" vegetation. Additionally, staff

communicated that they would like the local wetlands restored as invasives have overtaken them due to mowing pressures from a neighboring business.

Community engagement with the library appears complex. While some programs like nature-based activities exist, they often remain indoors. Infrastructure constraints, including lack of shade and inadequate seating, limited outdoor programming. The library has faced challenges with inclusivity, receiving backlash for initiatives like Rainbow Story Time, where librarians would read books about different types of families. Additionally, they are experiencing resistance to specific book titles, which is on trend with the rest of the country. The surrounding community, historically composed of watermen, has changed, with many residents now commuting to Baltimore or Washington, D.C., for work.

Discussions also covered the library's role as a gathering space, with events such as concerts, summer reading programs, and seasonal festivals drawing crowds. The adjacent tennis courts, owned by Anne Arundel County Parks and Recreation, remain in frequent use. Additionally, the SoCo Farmers Market operates in the library parking lot from May to September, though they plan to relocate to the Community Park once it is open. Parking availability fluctuates with seasonal demand, and the presence of a police monitoring device is attributed to ballot box security.

Regarding site history, the library was built in 1968, received an architectural award in 1972, and underwent renovations in 1989 and 1991. Landscaping efforts have been sporadic, with prior plantings failing without maintenance or education on what plants were planted where. The library sits only five to eleven feet above sea level, presenting environmental challenges such as excessive moisture in the

gathering room during the summer. Staff members noted a lack of familiarity with the location among colleagues, with many commuting from outside Deale. While there had been mention of a future expansion, no concrete plans exist, and any development would likely be at least a decade away.

Through email correspondence, I asked about the shed on site, and the Branch Manager told me it is currently used for storing outdoor maintenance equipment, extra carpet, and other materials. In addition, the branch manager informed me that they did not have any records or educational materials regarding prior planting projects that seemed to have failed.

This interview and correspondence provided critical insight into the needs and challenges of the Deale Library landscape, informing the direction of my thesis and the potential for meaningful design interventions such as an enhanced sensory garden and multi-functional outdoor programming.

3.4.2 Interim Branch Manager for the Deale Community Library

The Branch Manager for the Deale Community Library retired in December of 2024, and I was redirected to speak with the Interim Deale Branch Manager. I interviewed with them to gain further insight into the management and future planning of the Deale Library landscape. The library's landscape maintenance is handled by an external company and overseen by the Facilities Director. While Anne Arundel County owns the library's land and funds exterior projects, the sensory garden was independently funded by the library, bypassing county approval due to its size and small-scale impact. A garden group is responsible for ongoing care on a volunteer basis, which can be inconsistent. There are no current plans to redesign the

surrounding landscape. Infrastructure concerns include sidewalk repairs and discussions about expanding the building to function more as a community center, as the existing facility serving the area is distant and ineffective for local needs. An architect recently visited the site, though their affiliation remains unclear, and discussions lean toward renovation rather than a complete rebuild.

Additional community concerns include the lack of restrooms at the nearby community park, which may necessitate increased reliance on the library's facilities. The local farmers market is expected to be relocated to the park. While significant events have historically strained the library's parking capacity, the community park's extensive parking lot facilities will hopefully accommodate future needs. This allows for the opportunity to reduce the size of the parking lot. The county owns the adjacent tennis courts, though their original purpose remains uncertain. Other pressing site needs include increased shaded areas for outdoor story time and protective containment measures, such as fencing, to enhance children's safety and provide parents peace of mind.

This interview reinforced the Deale Library's evolving role as a community hub and highlighted key areas for potential landscape improvements.

CHAPTER 4: DESIGN CONCEPT AND PROGRAM

4.1 Design Goal

I developed goals for this project based on my site inventory and analysis, interviews, and the two case studies I researched. Below is a summary of my findings (Table 4.1):

Design Feature	Case Study	Client	Site Inventory and Analysis	Committee
Educational Programming	✓	✓		✓
Building Community	✓			
Educational Signage	✓			✓
Collaborative Partnerships	✓			✓
Foster Connection to Nature	✓			✓
Promote Physical and Mental Well-Being	✓			✓
Building Stewardship in Community and at Home	✓		✓	✓
Demonstrate Sustainable Practices	✓		✓	✓
Low-Impact Design			✓	✓
Stormwater Management		✓	✓	✓
Less Impervious Surface		✓	✓	✓
Soil Drainage Issues		✓	✓	
Understory Vegetation			✓	
Seating		✓		✓
Lighting		✓		
Native Plants	✓	✓		✓
Shade		✓	✓	✓
Outdoor Classroom	✓	✓		✓
Nature Play Space				✓
Demonstration Gardens				✓
Children's Garden				✓
Marina Theme				✓
Food Forest				✓
Bird/Pollinator Habitat	✓			✓
Expand Sensory Garden		✓		✓

Table 4.1. "Table Summarizing Design Features Based on Case Study, Client, Site Inventory and Analysis, and Committee Goals"

4.1.1 Goals from Case Studies

In my research on the Miller Branch Library, I examined its goals for integrating sustainable design and education into outdoor spaces. The library aims to teach sustainable horticulture for food production and pollinator support while providing hands-on learning opportunities in gardening and environmental stewardship. Its design demonstrates eco-friendly practices such as composting and rainwater harvesting, fostering community engagement and a deeper connection to nature. Additionally, the library promotes physical activity, relaxation, and mental well-being through its outdoor spaces. By creating an environment that supports library programs and serves as an educational resource, the library aspires to inspire visitors to adopt sustainable practices in their own lives. From these goals, I chose to focus on the following goals to apply to my own design:

1. Promote relaxation and mental well-being.
2. Teach visitors about sustainable practices and encourage them to apply them in their yards.
3. Provide support for library programs through outdoor space.

For the Princeton People's Garden, I explored their goals for creating a thriving habitat for native pollinators by incorporating native and high-nectar plants that support bees, butterflies, and birds. The garden serves as an educational resource, offering programs and workshops on pollinator habitats, native plants, and sustainable gardening practices for visitors of all ages. It aims to foster a sense of community stewardship and environmental responsibility by engaging volunteers and local groups through collaborative partnerships. Additionally, the garden features

educational signage to provide passive learning opportunities, ensuring accessibility to sustainable gardening knowledge for all. Through these efforts, the Princeton People's Garden supports lifelong learning and encourages adopting environmentally responsible practices. From these overarching goals, I chose to focus on the following goals in my design (Figure 4.1):

1. Support learning for all ages.
2. Display and educate people on sustainable gardening practices
3. Provide signage for passive educational opportunities

4.1.2 Goals from Client Interviews

From correspondence with the Branch Manager and Interim Branch Manager for the Deale Community Library, I developed goals based on the client's desire for the site. They desired basics like seating and lighting and were enthusiastic about removing parking and expanding the sensory garden. In addition, they had concerns about eliminating invasives. Maintenance was a significant concern as staff had limited time and energy, and prior plantings had no educational material to differentiate weeds from design. From these client goals, I decided to prioritize all of them except for lighting, as the library tends to close before dusk except for the colder winter months (Figure 4.2).

4.1.3 Goals from Site Inventory and Analysis

My site inventory and analysis informed me that the design had to have a low impact and account for stormwater management. The site already had excessive pavement and impervious surfaces that needed to be addressed to reduce stormwater

runoff. The soil may not allow for a rain garden, so other stormwater management methods must be explored. With the existing tree canopy, there is a severe lack of understory plantings that allow for height variation. The wetlands on site are also clogged with invasive Phragmites and need to be cleaned and replaced with different plantings. Based on the amount of open area and lack of shade on the west side of the site, shade from either trees or structures needs to be added as it is unbearably hot in the summer. From these goals developed through the Site Inventory and Analysis process, I decided to focus on the following (Figure 4.3):

1. Less impervious surfaces
2. Replacing wetland invasives with native plants
3. Adding shade structure to allow for year-round use of the site
4. Adding stormwater management to treat runoff before entering the Chesapeake Bay

4.1.4 Goals from Committee

After conveying this information and details to my committee, they offered me different paths and ideas for my design. All members agreed to remove unused parking spaces, add an outdoor classroom, and add shade trees. Some suggested nature play options and a children's garden. Some also suggested a food forest, pollinator habitats, and demonstration gardens. Theming could also reflect the marina and local history. From these goals developed through my committee meetings, I decided to focus on the following (Figure 4.4):

1. Removing excess parking lot
2. Design an Outdoor Classroom

3. Provide Demonstration Gardens for Residents
4. Add Shade trees

4.1.5 Goals Developed from Above Information

In order to synthesize this information, I mapped out the different site features that different sources suggested to me. In green, I highlighted features that had multiple sources reference them or were emphasized by the source (Figure 4.1). From these sources I used to develop goals from the client, case studies, Site Inventory and Analysis and my committee, I developed three overarching goals for my design:

1. Promote environmental education through sustainable and aesthetically pleasing native gardens supported by experiential learning, signage, and workshops.
2. Provide an accessible space to engage involuntary attention and connect with nature to bolster wellness.
3. Foster community engagement by encouraging stewardship in their community and their properties.

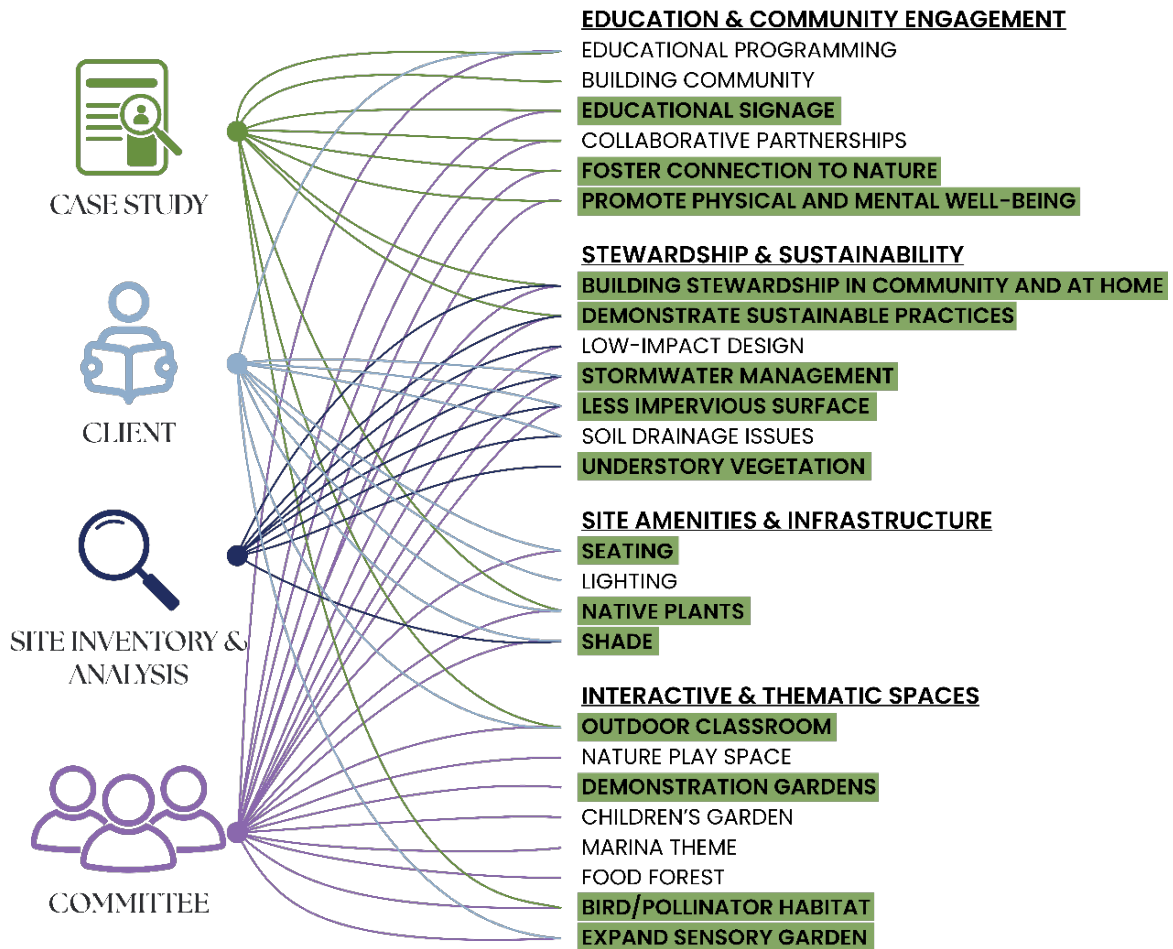


Figure 4.1. "Diagram on All Goals"

4.2 Design Program

From my analysis of the above potential goals, I developed a design program that focuses on creating sustainable, educational, and engaging outdoor spaces that inspire visitors of all ages. Integrating an outdoor classroom supported by informative signage to ensure passive educational value is a key component. In addition to the academic value, the outdoor classroom will be designed to be multipurpose to foster community connection through supporting library programs, community meetings, and club gatherings. The planting design will incorporate at least 70% native species to demonstrate their beauty and ecological benefits while supporting biodiversity.

Native plants can be hardy in many conditions and will reduce maintenance and costs. Stormwater management strategies will be seamlessly integrated into the landscape to enhance sustainability. To improve user comfort, shaded areas, and ample seating will be added for both patrons and employees. Additionally, the design will account for necessary storage solutions and expand the existing sensory garden, enriching the site's interactive and immersive qualities. The project aims to foster a deeper appreciation for nature through these elements while creating a functional, inviting, and environmentally responsible space.

CHAPTER 5: DESIGN

5.1 Concept Diagrams

To begin the design process, I created three concept diagrams to explore the space and its potential orientation. Each option varies in construction intensity, pervious surface, and circulation. All options include retaining the main parking lot on the east side of the building, the tennis courts, and protecting the surrounding forest buffer and wetlands.

I prioritized sustainable design that enhances ecological function and community engagement. Each plan incorporates native plant display gardens, emphasizing biodiversity and sustainability while providing patrons with passive and active educational opportunities. Stormwater management is required on-site, as the size of the building and parking add up to a significant impervious surface area. Additionally, all designs build on the site's relationship with the adjacent Deale Community Park, offering clear pathways and visual connections to extend the library's reach into the surrounding landscape.

Another defining theme is the inclusion of outdoor gathering spaces that support learning, relaxation, and community interaction. Whether through an outdoor classroom, sensory gardens, or reading areas, each plan enhances the library's role as a community hub by providing spaces encouraging engagement with nature. Removing invasive species and restoring wetlands also indicate a shared goal of ecological stewardship, reinforcing the library's identity as an anchor for sustainability in the Deale community.

5.1.1 Concept One: Forested Fundamentals

In developing the Forested Fundamentals Concept, I prioritized the efficient reuse of existing space (Figure 5.1). I repurposed half of the parking lot on the southern side to create an outdoor classroom, utilizing the existing pavement. I relocated the storage area nearby to support classroom and maintenance needs. Additionally, I moved the sensory garden from its small location on the southern side to a more central position between the tennis courts and the library, incorporating a winding exploratory path to enhance engagement.

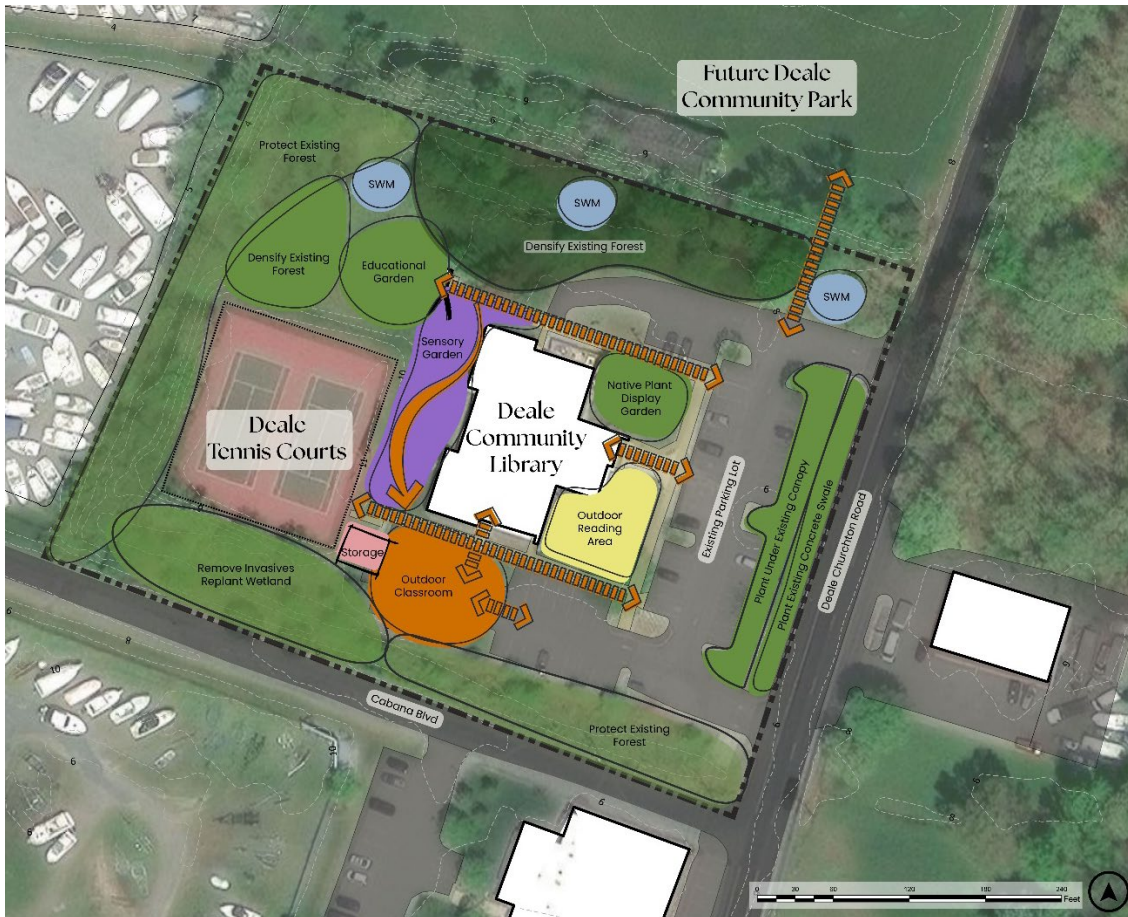


Figure 5.1 “Forested Fundamentals Concept Design”

This design also features an outdoor reading area, a native display garden, and an educational garden, all contributing to passive educational opportunities as visitors navigate the site. A key focus of the design is the densification of the existing forest, ensuring it remains a primary focal point. For stormwater management, I implemented a series of small micro-bioretenion areas within the forested space to manage runoff while integrating effectively with the landscape.

5.1.2 Concept Two: Woodland Walk

For the Woodland Walk concept, I focused on strengthening the connection between the future community park and the library (Figure 5.2). Since the park features winding paths, I sought to reflect that design element by incorporating a forested exploratory path that links to the planned library connection. Along this path, I included shaded seating areas within the forest and a native plant display garden showcasing species that thrive in shade. Additionally, I integrated an outdoor classroom with adjacent storage to support educational activities.

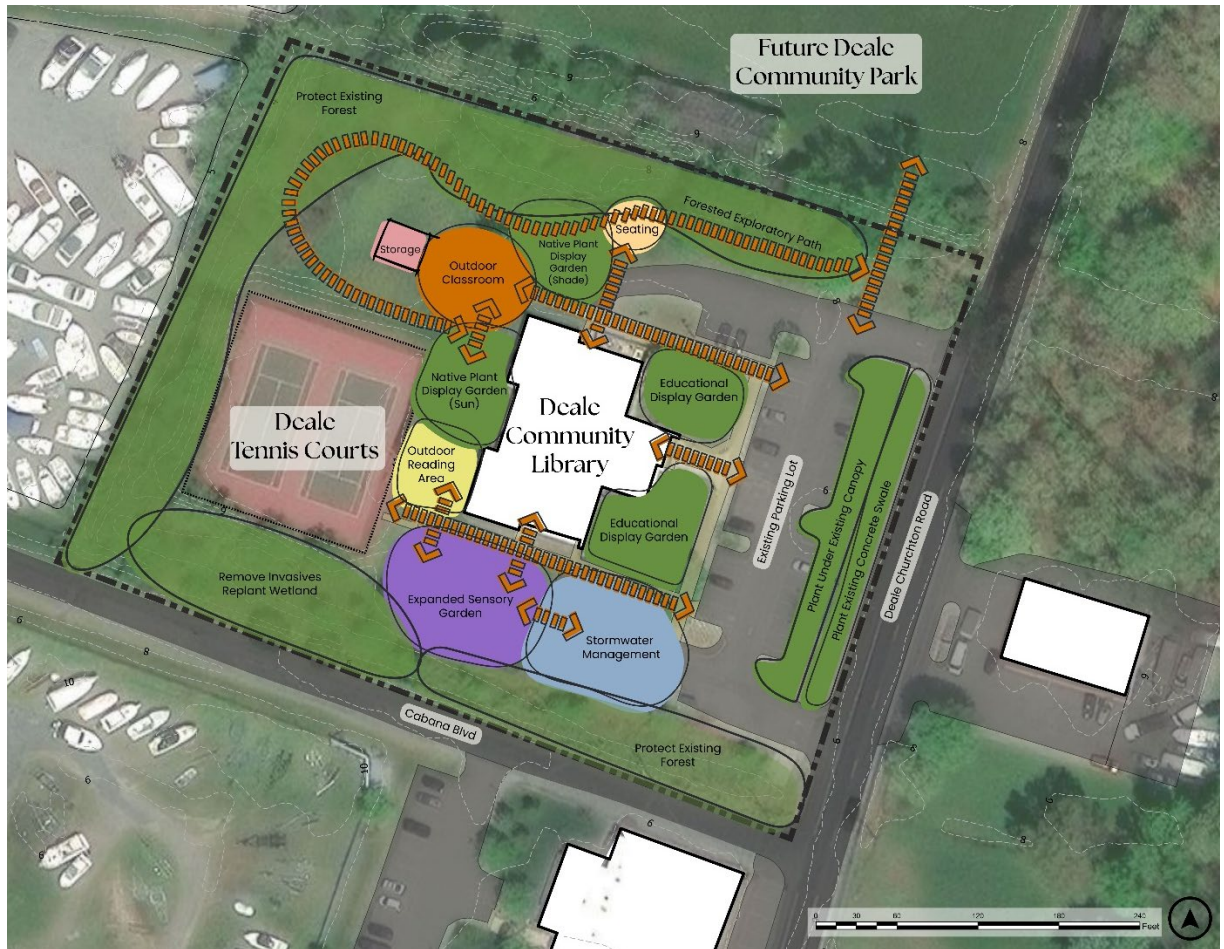


Figure 5.2 “Woodland Walk Concept Design”

I designed another native plant display garden between the tennis courts and the library, explicitly featuring sun-loving species suited to the area's conditions. As with each design, I included an outdoor reading area to provide visitors with a quiet, inviting space.

To enhance the sensory garden, I expanded it significantly by removing the parking lot on the southern side entirely and replacing it with a more immense, more immersive garden experience. This space also incorporates stormwater management to address site hydrology while enhancing biodiversity.

At the entrance, I designed a series of educational display gardens that serve both as a welcoming feature and an opportunity for passive learning, enriching visitors' experiences as they explore the site.

5.1.3 Concept Three: Nature Nexus

For my Nature Nexus concept, I aimed to integrate elements from both previous concept designs while prioritizing financial feasibility (Figure 5.3). To minimize costs and disruption, I retained all existing parking areas, which meant there was insufficient space to incorporate an outdoor classroom. However, I maintained the exploratory path from my Woodland Walk concept, ensuring a strong connection between the park and the library while preserving and enhancing existing site features.

The sensory garden, currently located in a small area along the southern side of the building, would be expanded slightly into the adjacent space between parking areas. At the front of the site, native plant display gardens would create a welcoming and educational entry experience. I included an outdoor reading area for visitors between the tennis courts and the library. An educational display garden in a sunny location at the back of the site would further support passive learning opportunities.

Seating throughout the forested area along the exploratory path would enhance comfort and accessibility while meeting client and patron needs. Stormwater management features would also be incorporated along this path, which would be ideally designed as an interactive element with a crossing or boardwalk. This would allow visitors to engage with and better understand the site's hydrology.

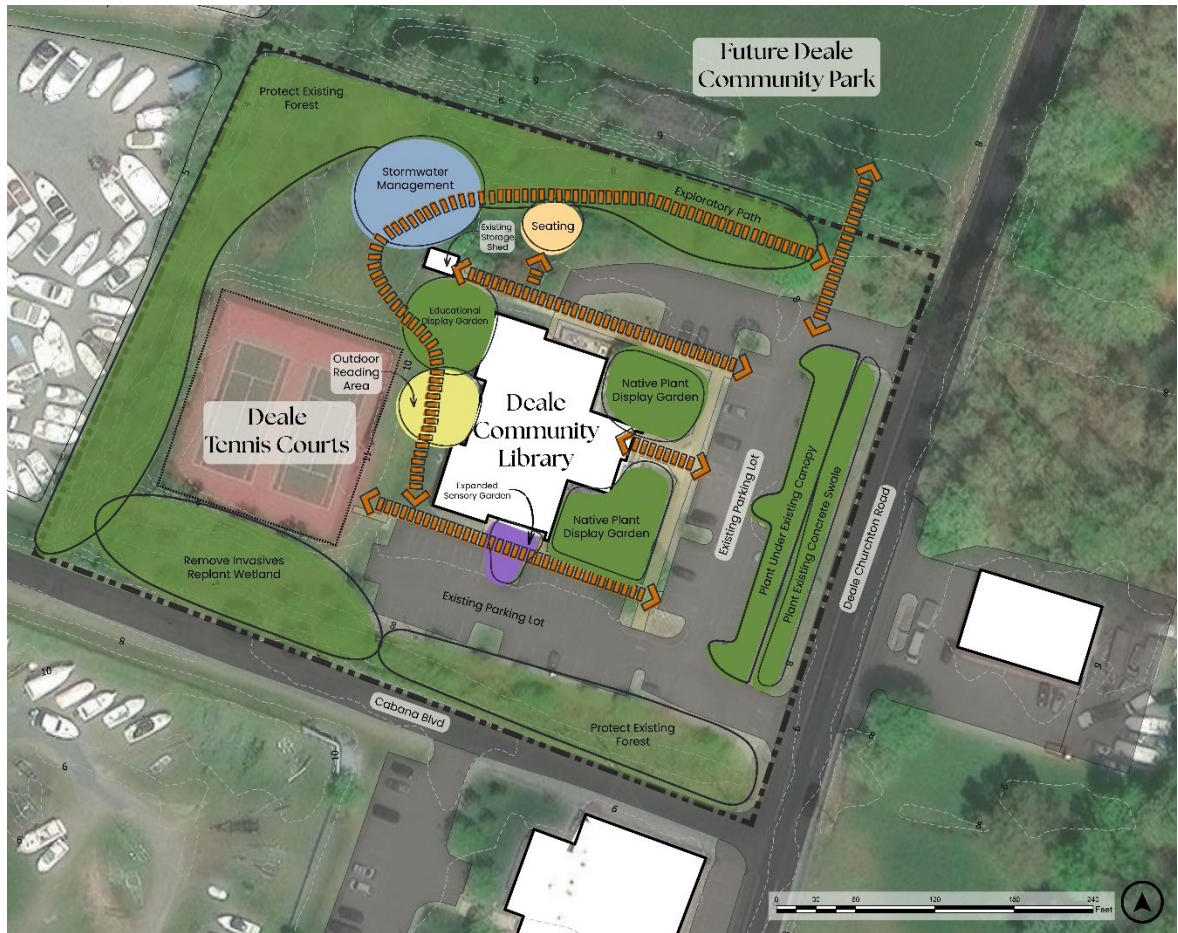


Figure 5.3 “Nature Nexus Concept Design”

This design represents the lowest-impact approach. It requires minimal grading or major construction beyond the stormwater management features, outdoor reading area, and seating improvements. Strategic planting enhancements are the primary interventions, as this is a cost-effective and sustainable solution.

5.2 Site Plan

After consulting with my committee and client, we found that the Woodland Walk Concept was preferred. Both groups were excited about the exploratory path, the removal of the parking lot, and the additional outdoor reading space. Additionally, they responded positively to the inclusion of an outdoor classroom. The feedback I

received suggested relocating the storage area and extending the exploratory path around the library, creating a continuous loop. Incorporating these recommendations, I refined my design and developed the final site plan. My final site plan addresses my three main goals as seen below (Figure 5.4) (Figure 5.5).



Figure 5.4 “Design Goals”

Design elements were included to address my goals of promoting environmental education, providing accessible space to bolster wellness, and fostering community engagement by encouraging stewardship. To promote environmental education, I included the Nature Wellness Walk, a pollinator crosswalk, an outdoor classroom, a meadow walk, a native display garden for sun and shade conditions, a conversion of the concrete swale to a planted one, and bioretention. The Nature Wellness Walk and the Sensory Garden fit into this category to bolster wellness. To foster community engagement, I designed the Sensory Garden, outdoor classroom, storage shed, outdoor reading area, and accessible outdoor seating.

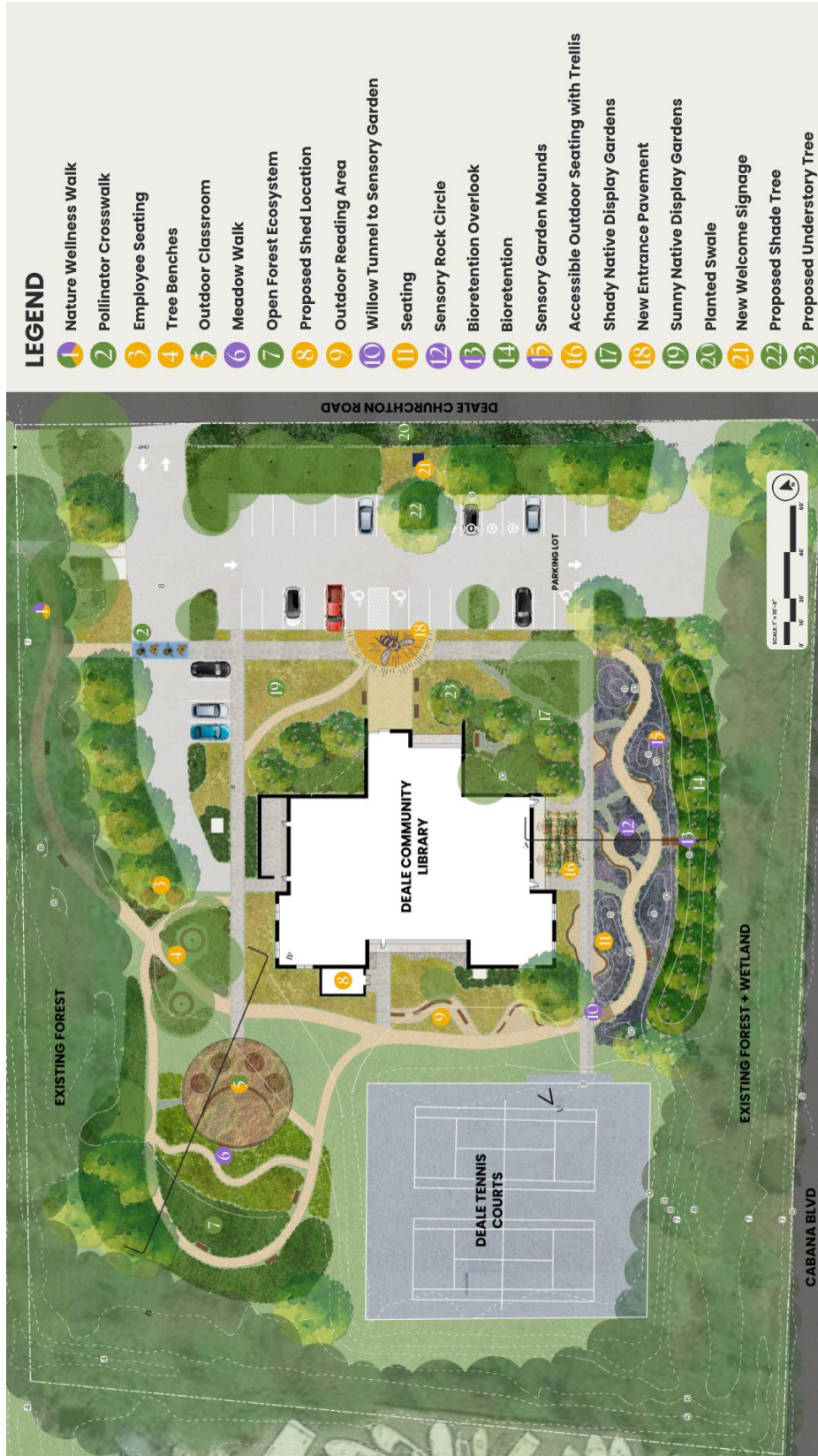


Figure 5.5 “Sowing Seeds of Sustainability at the Deale Community Library Site Plan”

5.2.1 Environmental Education

Below is a map showing the features of this site plan that show case Environmental education (Figure 5.6). I will go through these features and how they relate to this goal.

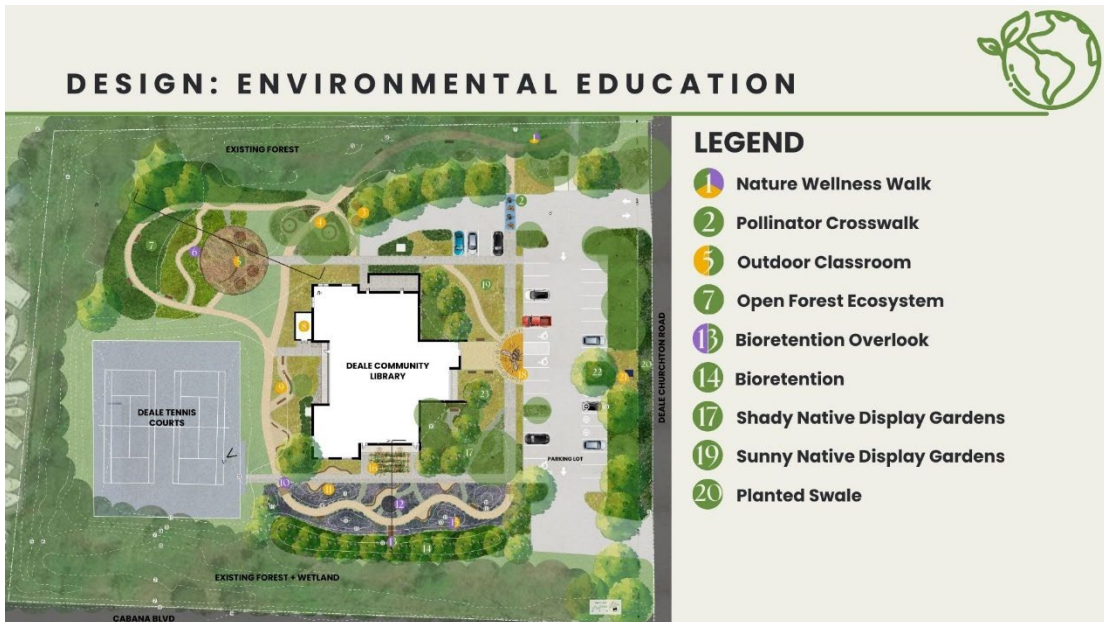


Figure 5.6 “Overview of Environmental Education Features”

To begin with the goal of promoting environmental education, I will discuss one of the defining features of the design: the Nature Wellness Walk (Figure 5.7). This design feature connects to the path leading to the Deale Community Park and winds through the existing forest, incorporating seating areas along the way. This path extends around the entire library, creating a continuous loop. The walkway is constructed with permeable pavers to enhance accessibility and stormwater management. Signage incorporated along the walkway allows for passive learning about local flora and fauna (Figure 5.8).

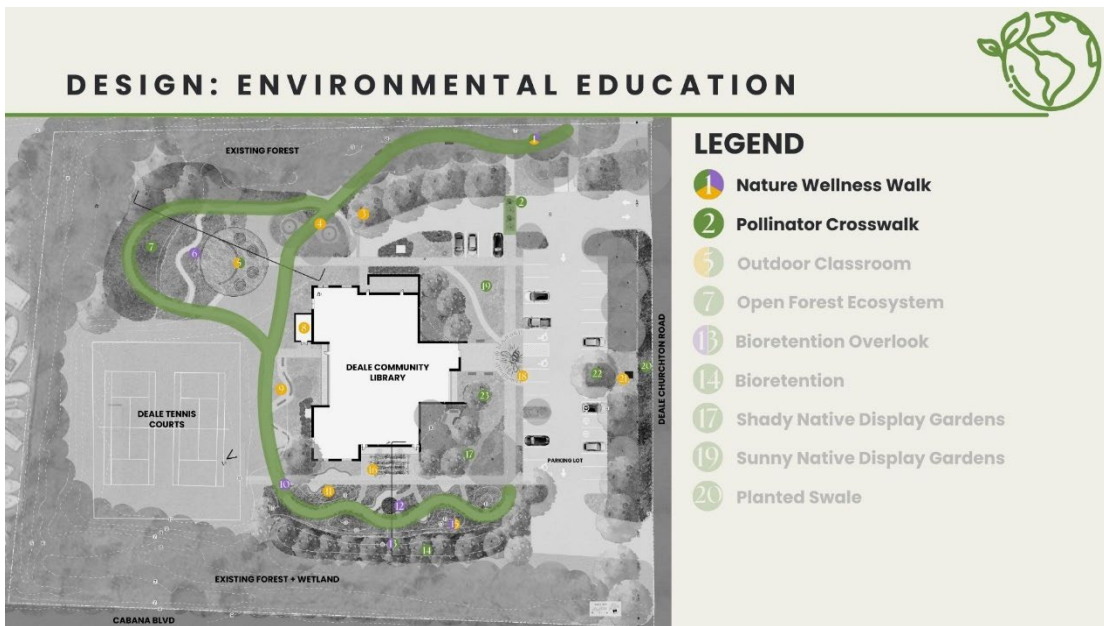


Figure 5.7 “Nature Wellness Walk and Pollinator Crosswalk Location”

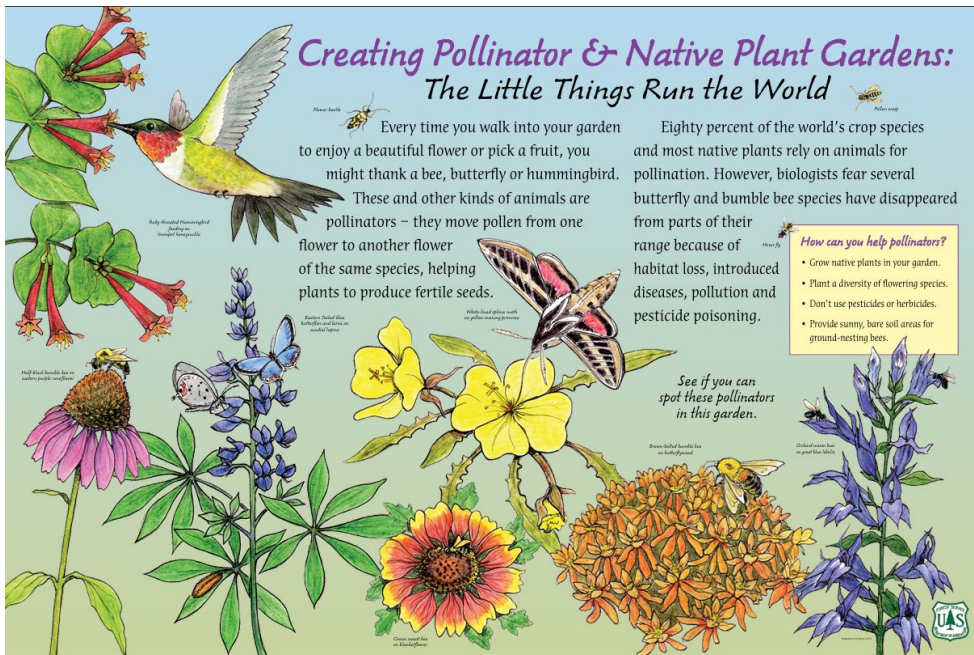


Figure 5.8. “Educational Signage Example for Ecosystems” by U.S. Forest Service retrieved on March 10, 2025, from <https://www.fs.usda.gov/wildflowers/features/panels/CreatingPollinatorNativePlantGardens2.pdf>

Visitors who follow the loop around the library encounter various thoughtfully integrated features that enrich the experience and support the site's ecological and educational goals.

To enhance the site's connectivity, I introduced an additional pathway to the library (Figure 5.7). Currently, the only direct path connecting the community park to the library leads visitors past dumpsters and into oncoming traffic, which is neither welcoming nor safe. I added a new spur from the Nature Wellness Walk to address this.

This crosswalk is both functional and educational. It provides a safer route while incorporating playful ecological elements. Designed to engage visitors, it highlights key pollinators such as native bees and monarch butterflies, fostering awareness of their role in the ecosystem.

I removed one employee parking space to allow this new connection, which ensures a seamless link between the park, library, and surrounding circulation.

One of the focal points of this design is the outdoor classroom, which features flexible seating arrangements to accommodate various learning experiences (Figure 5.9) (Figure 5.10).

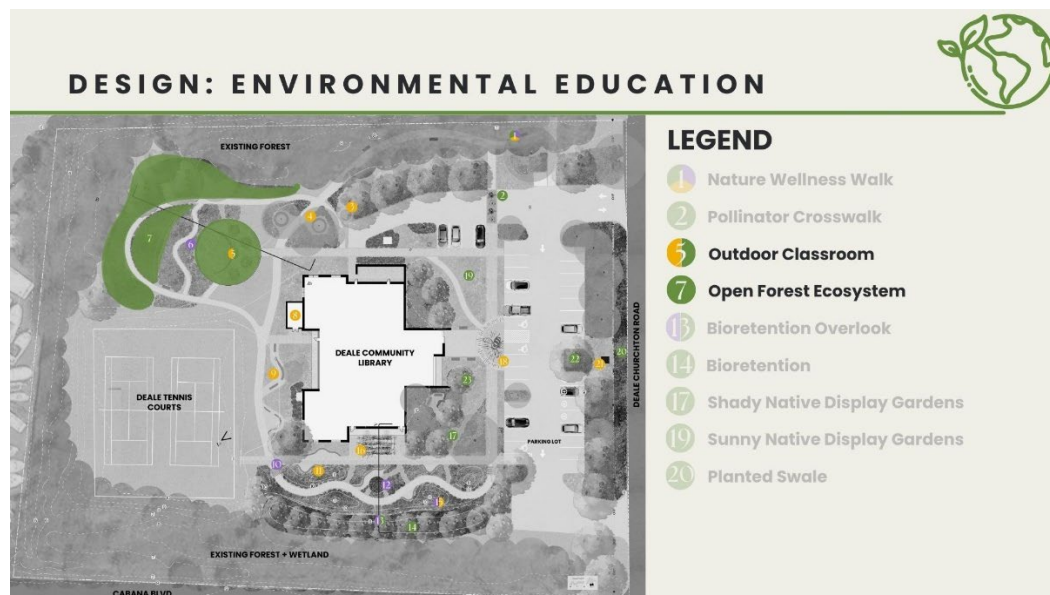


Figure 5.9 “Outdoor Classroom and Open Forest Location”

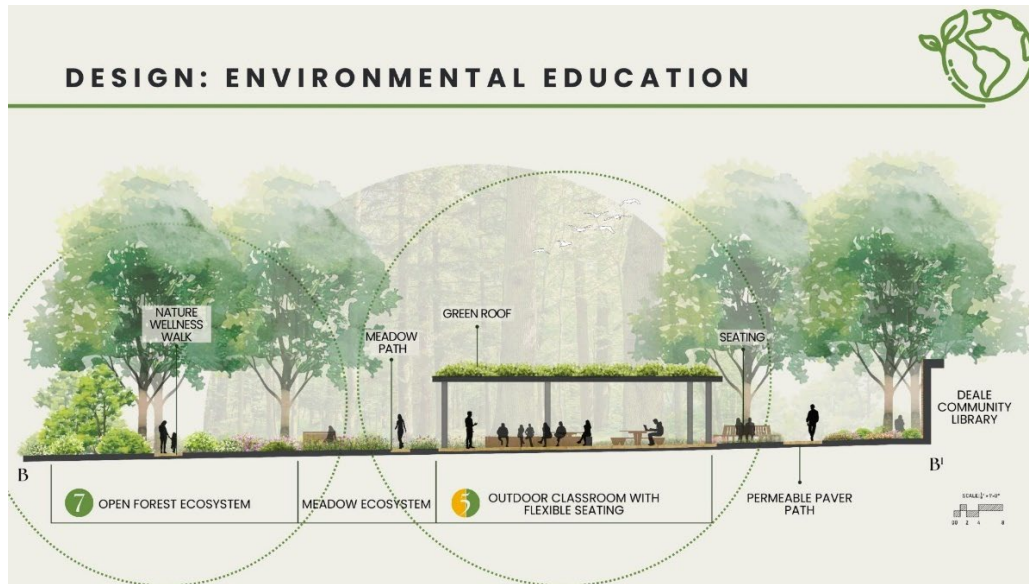


Figure 5.10 “Section B-B’: Relationship Between Outdoor Classroom and Open Forest Ecosystem”

A sizeable bench faces the meadow at the center, that is backless in some places, allowing for seating on either side (Figure 5.11). Some areas of the bench will have a back to provide comfort (Figure 5.12). This orientation is ideal for classes, tutorials, lectures, or any form of outdoor instruction, where participants can engage with a speaker while enjoying a scenic view of the meadow. It would host the Nature Explorers Program as it provides a comfortable space for learning outdoors, even on the hottest days. There would be charging stations located at the outdoor classroom to ensure that electronic equipment could also be used outside.



Figure 5.11. “Backless Bench for Lectures or Instruction” by County Casual Teak retrieved on March 9, 2025, from https://www.countrycasualteak.com/media/catalog/product/cache/779cf8b5b0df9a9bc6f784513a4b5fa8/c/i/circa_4517_0337_1.jpg



Figure 5.12. “Curved Bench with Back” by Christy Webber Landscapes retrieved on April 18, 2025, from <https://i.pining.com/736x/6f/bd/6e/6fbd6ebcad615cce774a0aca7222c98d.jpg>

The outdoor classroom features a green roof planted with hardy species, such as native sedums, which enhances sustainability and aesthetics. This addition helps manage stormwater and is visually appealing.

On the east side of the library, near the front entrance, display gardens are designed to beautify the landscape and showcase native plants aesthetically and educationally (Figure 5.13). These gardens enhance the welcoming entrance to the library and inspire homeowners to incorporate these species into their landscapes. Informational signage will be placed throughout the gardens to identify plant species and highlight their ecological benefits for passive education (Figure 5.14).

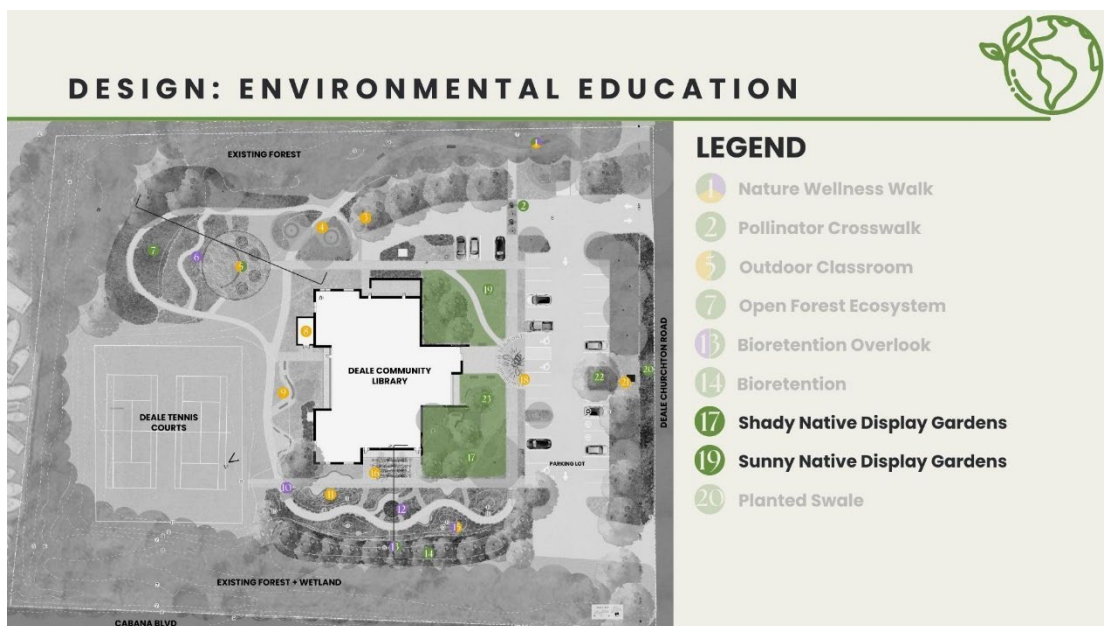


Figure 5.13 “Display Gardens Location”



Figure 5.14. “Educational Signage on Individual Plants” by My Plant Label retrieved on March 10, 2025, from <https://myplantlabel.com/wp-content/uploads/2015/12/Swamp-rose--450x360.jpg>

The sun display gardens are woven throughout the site, particularly in areas with ample sunlight surrounding the library. In contrast, shade display gardens are concentrated around the Nature Wellness Walk through the forest and on the southeast side of the building entrance.

Plants for the shady native garden include *Calycanthus floridus* (Carolina allspice), *Podophyllum peltatum* (Mayapple), and *Clethra alnifolia* ‘Hummingbird’ (Sweet pepperbush). In the sunny native garden, plantings include *Rudbeckia laciniata* (Cut-Leaf Coneflower), *Panicum virgatum* ‘Shenandoah’ (Switch grass), and *Solidago rugosa* ‘Fireworks’ (Rough Goldenrod). These species aim to provide seasonal interest from March through November, with select plants offering winter interest.

Both display gardens provide a path through them, and the shade garden already benefits from an existing *Quercus phellos* (Willow Oak) that offers shade. To leverage this opportunity, I added seating in the shade to allow for a quieter space to read, talk, or relax.

This feature addresses the design goal of encouraging the surrounding single-family residential community to incorporate more native plants, reduce traditional lawn space, and minimize their environmental impact. By demonstrating the beauty and ecological value of native landscaping, the library can serve as a model for sustainable gardening practices in the region.

Another educational opportunity is the replanted swale along Deale Churchton Road. Currently, a concrete swale directs stormwater to an outfall along the road, but it is in poor condition and contributes to the site's impervious surface (Figure 5.15). Lack of maintenance has made it ineffective and visually unappealing, which reduces its ability to manage runoff while detracting from the landscape (Figure 5.16).

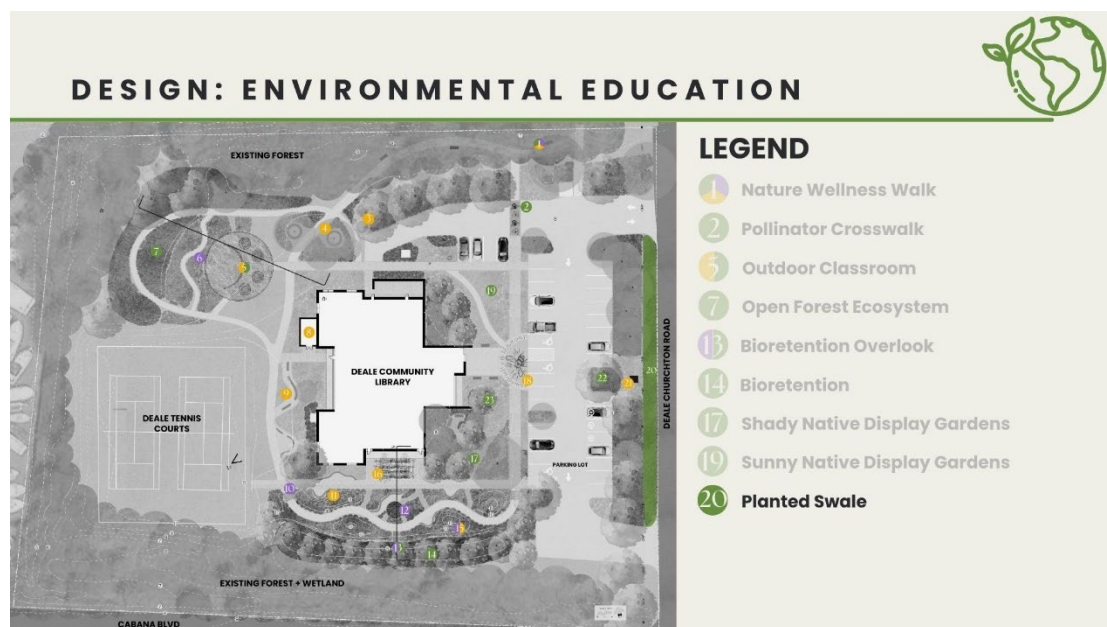


Figure 5.15 "Planted Swale Location"



Figure 5.16 “Existing Concrete Swale along Deale Churchton Road”

My design replaces the existing concrete with a planted swale, which will improve stormwater management while enhancing the ecological and aesthetic value of the site. The planting scheme for the swale consists of species well-suited to wet conditions, including *Packera aurea* (Golden ragwort), *Chasmanthium latifolium* (Northern sea oats), and *Chelone glabra* (White turtlehead). These native plants thrive in both partial shade and full sun, ensuring adaptability to the site’s conditions. Their low height preserves sight lines between the library and Deale Churchton Road and contributes to a more visually appealing landscape. This feature increases permeable surface area and improves water infiltration and overall site sustainability.

The final educational opportunity designed for the Deale Community Library is the bioretention space (Figure 5.17). This space is an excellent opportunity to give residents stormwater management options for their yards, as a rain garden may not be appropriate. Seeing a thriving native bioretention feature can showcase how this feature works (Figure 5.18).

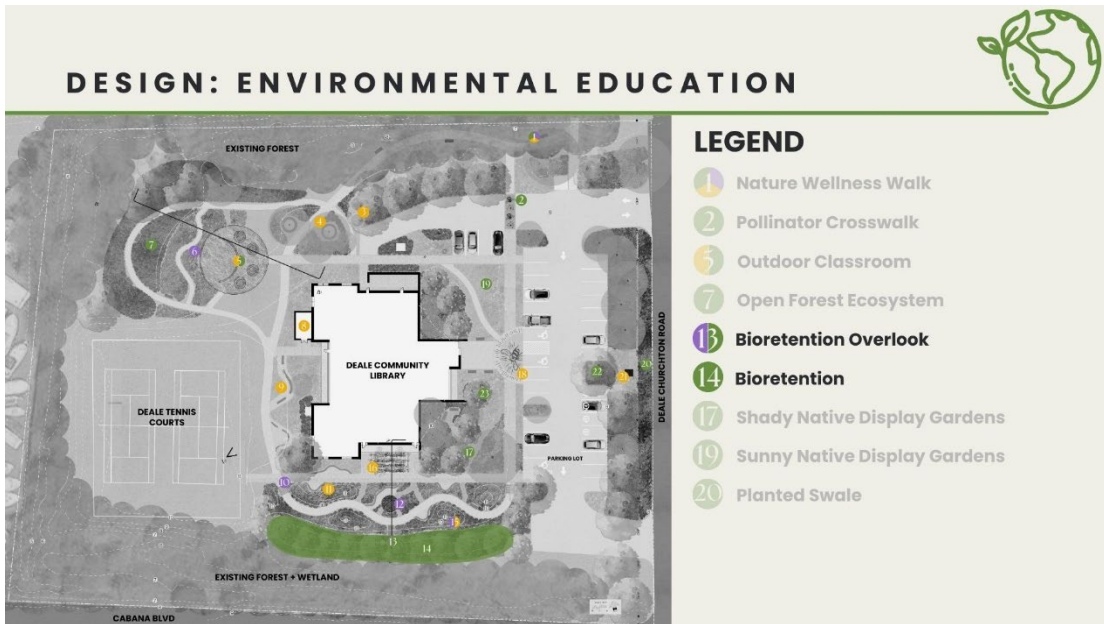


Figure 5.17 “Bioretention Location”

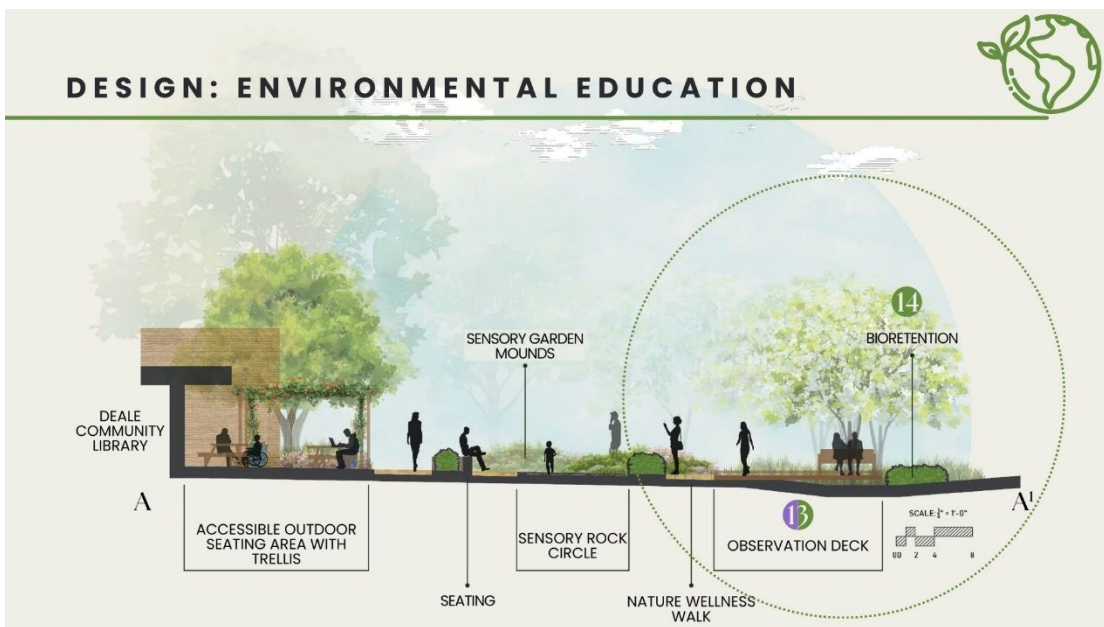


Figure 5.18 “Section A-A’: Bioretention Experience”

Effective stormwater management is critical to the site design, particularly given the site's existing wetlands, high water table, and proximity to the Chesapeake Bay. The library staff noted that the meeting room, which was added as an extension to the building, can become damp, and the site’s soil tends to hold water after rainfall. Proper stormwater management is essential to maintaining site conditions. This

design must ensure that water draining into the Chesapeake Bay is treated at the source rather than discharged untreated into the estuary.

The existing site featured a significant amount of impervious surface, including the parking lot, sidewalks, building, shed, tennis courts, and concrete swale. Collectively, these elements accounted for approximately 1.27 acres of impervious surface or 36.9% of the total site area. My design removes 9,438 square feet of parking lot, reducing impervious surface coverage to 1.05 acres, or 31.2% of the site. However, because parking remains essential for library patrons and the tennis courts are a well-loved community feature, these high-use impervious areas were preserved in the redesign.

Under existing conditions, the site required treatment for 8,447 cubic feet of stormwater. The wetlands on the site's south side already function similarly to a bioretention area and treat approximately 5,173 cubic feet of water. This leaves 3,274 cubic feet of untreated runoff requiring additional treatment (Figure 5.19). In the proposed design, the total stormwater that needs to be treated is reduced to 7,278

cubic feet. After accounting for the treatment capacity of the wetlands, 2,105 cubic feet remain to be managed (Figure 5.20).

DESIGN: ENVIRONMENTAL EDUCATION

ESD Calculation for Existing Site Conditions

ESD_v = Runoff volume (in feet cubed or acre-feet) captured in specific ESD practices where:

$$ESD_v = \frac{(P_e)(R_v)(A)}{12}$$

- **P_e** = Rainfall target used to determine ESD goals and the size of practices
 $P_e = 1.8$ (based on C Soil)
- **R_v** = the dimensionless volumetric runoff coefficient
 $= 0.05 + 0.009(I)$ and I is percent impervious cover
 Existing **I = 37.7%** (1.25 Acres/3.358 Acres)
 $R_v = 0.05 + 0.009(37.2) = 0.385$
- **A** = drainage area (in feet² or acres) = **146,267 ft²** (3.358 Acres)

$$ESD_v = \frac{(1.8)(0.385)(146,267)}{12} = 8,446.480 = 8,447 \text{ ft}^3$$

Figure 5.19 “ESD Calculation for Existing Site Features”

DESIGN: ENVIRONMENTAL EDUCATION

ESD Calculation for Proposed Site Conditions

ESD_v = Runoff volume (in feet cubed or acre-feet) captured in specific ESD practices where:

$$ESD_v = \frac{(P_e)(R_v)(A)}{12}$$

- **P_e** = Rainfall target used to determine ESD goals and the size of practices
 $P_e = 1.8$ (based on C Soil)
- **R_v** = the dimensionless volumetric runoff coefficient
 $= 0.05 + 0.009(I)$ and I is percent impervious cover
 Proposed **I = 31.3%** (1.05 Acres/3.358 Acres)
 $R_v = 0.05 + 0.009(31.3) = 0.3317$
- **A** = drainage area (in feet² or acres) = **146,267 ft²** (3.358 Acres)

$$ESD_v = \frac{(1.8)(0.3317)(146,267)}{12} = 7,277.5146 = 7,278 \text{ ft}^3$$

Figure 5.20 “ESD Calculation for Proposed Site Features”

To address the stormwater flow, the bioretention area is designed to exceed the necessary capacity, treating 2,893 cubic feet of water, 138% of the remaining stormwater volume (Figure 5.20). In addition to its functional benefits, the bioretention area provides habitat for local birds, offers shade, and contributes to an aesthetically pleasing experience for visitors walking through the landscape. I also designed a small, elevated overlook deck for visitors to get a view from within the bioretention. There would be a bench and signage on the benefits of bioretention and how it may be a better fit for Deale's soil condition.

In addition to the bioretention, minor regrading would occur on site to ensure that the water does not pool and slopes meet ADA standards.

These design features help teach and passively teach about the environment, hoping to inspire visitors to implement these practices in their own yards.

5.2.2 Bolster Wellness

As mentioned in the theoretical framework of this paper, nature and outdoor spaces for rest can be rejuvenated and restored. With this framework in mind, I focused on the Nature Wellness Walk, meadow walk, and Sensory Garden to aid mental restoration (Figure 5.21).

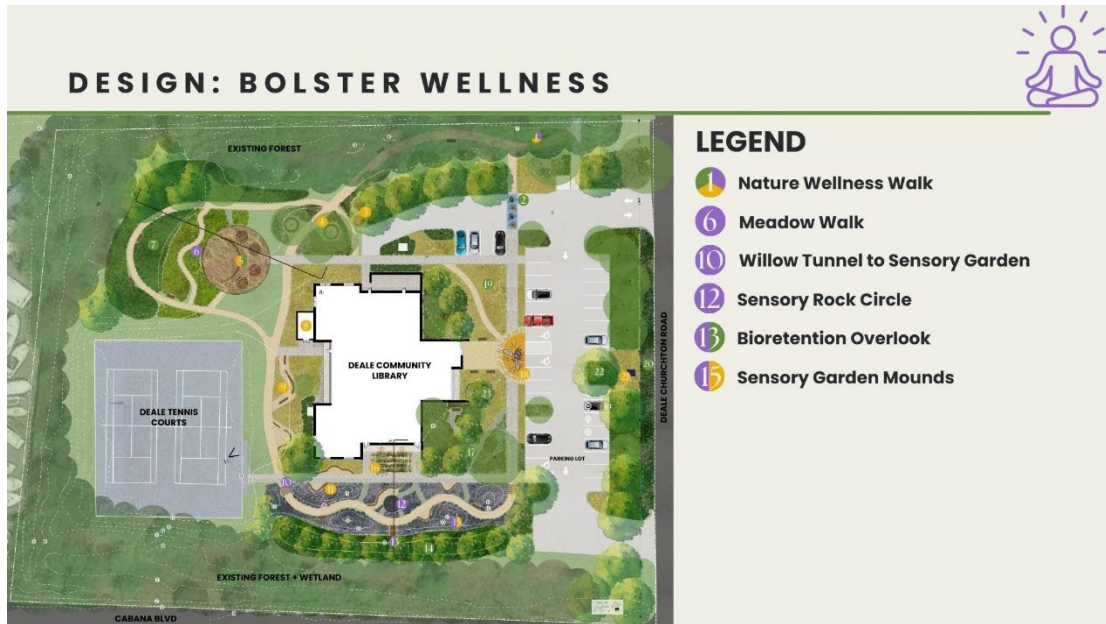


Figure 5.21 “Overview of Bolstering Wellness Features”

The Nature Wellness Walk is an educational opportunity for visitors to engage with nature and step away from their daily stressors (Figure 5.22). Along the Nature Wellness Walk, opportunities to interact with the space, learn, and rest on curated seating allow for an immersive experience. Planting that changes throughout the walk in a way that flows from one area to another provides for engagement of attention in the environment. Plantings were selected to capture the senses with consistent color palettes and differing textures and heights. As plantings change and shift throughout the seasons, even regular visitors will find something new to experience in each season.

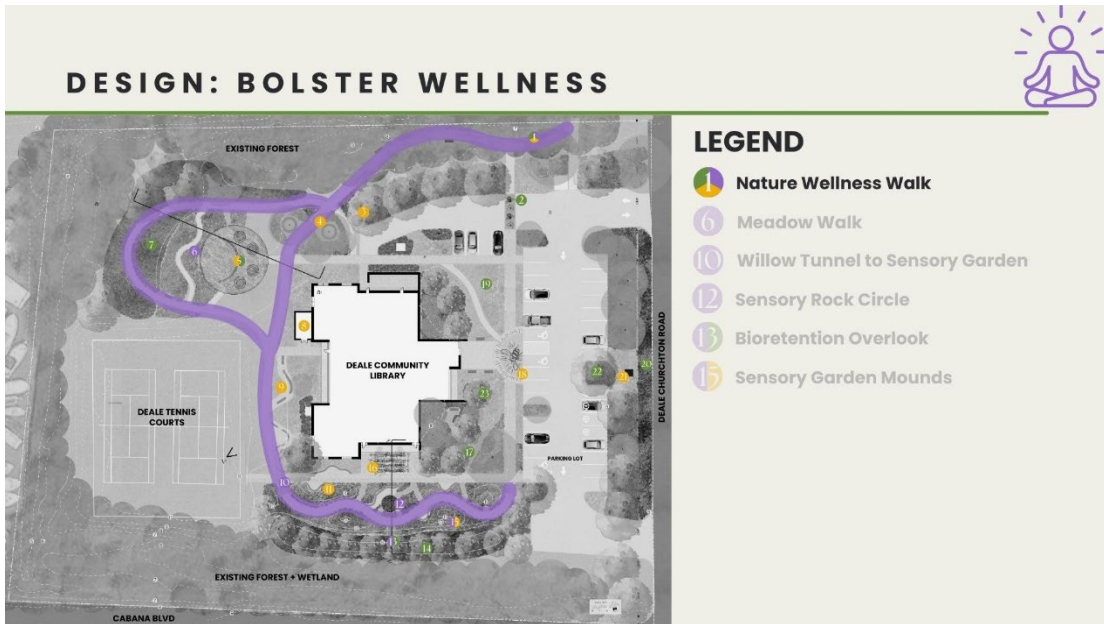


Figure 5.22 “Nature Wellness Walk Location”

Along the Nature Wellness Walk and west of the outdoor classroom, I designed a winding path that meanders through the newly established meadow, which one can view from the outdoor classroom (Figure 5.23). This pathway immerses visitors in the plantings and experiences seasonal changes. This captivating feeling can aid in the sense of ‘being away’ as coined by Kaplan (Kaplan 1995).



Figure 5.23 “Winding Meadow Path Location”

The meadow is designed to thrive in the site's high water table, featuring plant species that can tolerate wet conditions. Key selections include *Amsonia hubrichtii* (Hubrichtii's Blue Star), which provides visual interest from March to October, *Eutrochium maculatum* 'Gateway' (Spotted Joe Pye Weed), and *Solidago uliginosa* (Bog Goldenrod). These species ensure year-round ecological and aesthetic value, which enhances the site's biodiversity while offering a dynamic experience. This experience will engage visitors with involuntary attention and soft fascination for the landscape around them.

The Sensory Garden does the most work engaging visitors of all ages with their environment and surroundings to help shift their minds toward connecting with nature (Figure 5.24). As a focal point in the design, the proposed Sensory Garden drew inspiration from the existing Sensory Garden located on the south side of the building. This area receives ample sunlight, making it an ideal space for an expanded, immersive garden experience. To reduce impervious surfaces on site, I replaced the existing parking lot with a much larger Sensory Garden that offers patrons a space for relaxation, exploration, and sensory engagement (Figure 5.25).

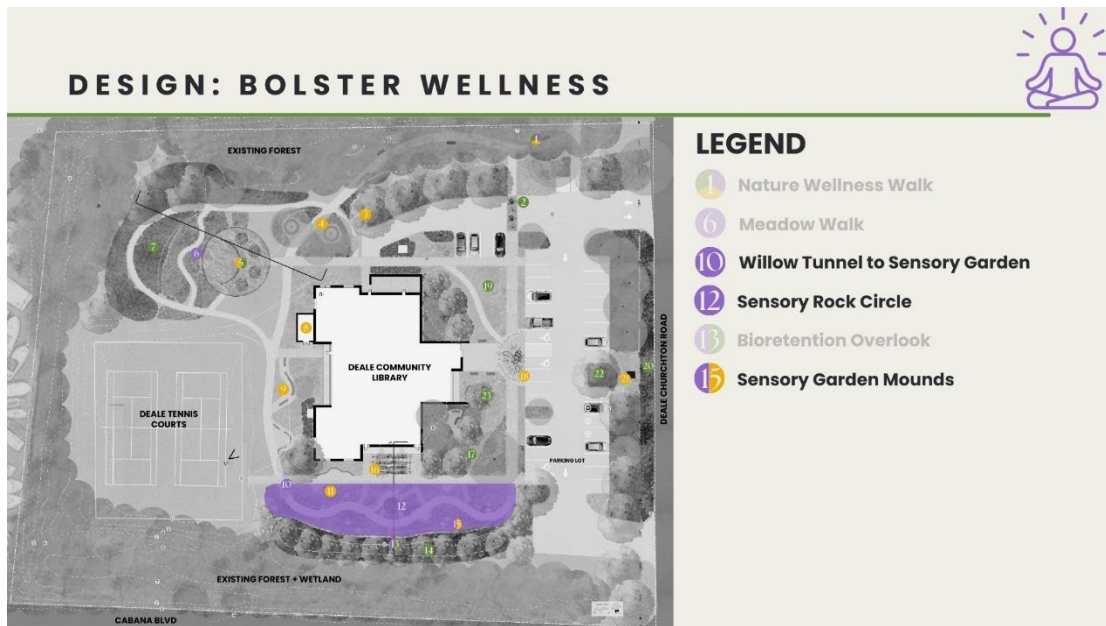


Figure 5.24 “Sensory Garden Location”

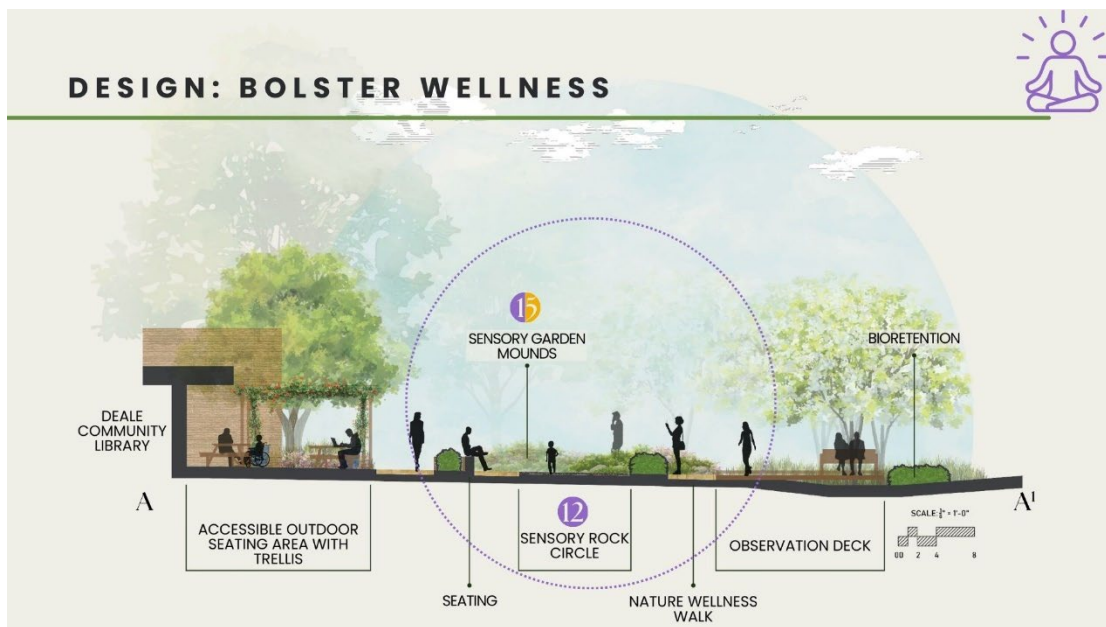


Figure 5.25 “Section A-A’: Sensory Garden Experience”

I designed the circulation through this area to create an accessible and pleasant experience. The winding path through the Sensory Garden completes the Nature Wellness Walk around the library while stepping stone shortcuts provide direct access from the south library exit. Seating within the garden mimics the outdoor reading area and adds to a sense of continuity. Willow tunnels frame the entrances, creating a

playful gateway to the space. Mounds of sensory plants, no more than two to three feet in height, add a subtle sense of height variation and enhance the feeling of immersion without obstructing sight lines.

The Sensory Garden focuses on scent and touch to create a more engaging experience for visitors, allowing for a better connection between oneself and the surrounding environment. This is achieved through the sensory rock circle at the garden's center. It is designed to enhance grounding and mindfulness through reflexology. This feature consists of smooth river rocks carefully arranged to stimulate pressure points on the feet, promoting balance and mindfulness (LallousLab, 2014). Riverrock is placed in a practical and artful way (Figure 5.26). A handrail will be incorporated along some sections for those requiring additional support (Figure 5.27).



Figure 5.26. “Artfully Arranged River Rock” retrieved on March 9, 2025, from <https://i.pinimg.com/736x/ac/77/94/ac77949308222069e8d980120bf0e9ec.jpg>



Figure 5.27. “Reflexology Path with Handrail” by Kara Williams, retrieved on March 9, 2025, from <https://i.pinimg.com/736x/ac/77/94/ac77949308222069e8d980120bf0e9ec.jpg>

The plant palette is carefully curated to emphasize soft, playful textures and soothing colors. Light purples, blues, soft pinks, and whites dominate the space, creating a tranquil environment without overwhelming the senses. Fragrant plants were selected for their ability to produce pleasant smells from the flowers or from touching the plant’s leaves. I selected plants of different textures to accommodate the sense of touch. Many of these selections serve a dual purpose, offering both aromatic and textural interest.

This planting palette is curated to be the most interesting from May through August, aligning with the library’s busiest season when summer reading programs attract the most visitors. The garden provides a welcoming retreat for all ages by offering a space for relaxation, play, and quiet contemplation.

An extension of the Sensory Garden, the Bioretention Overlook also provides reprieve to visitors (Figure 5.28). Located south of the sensory garden, this space allows folks to feel immersed in nature underneath the *Magnolia virginiana* and within the bioretention area (Figure 5.29).

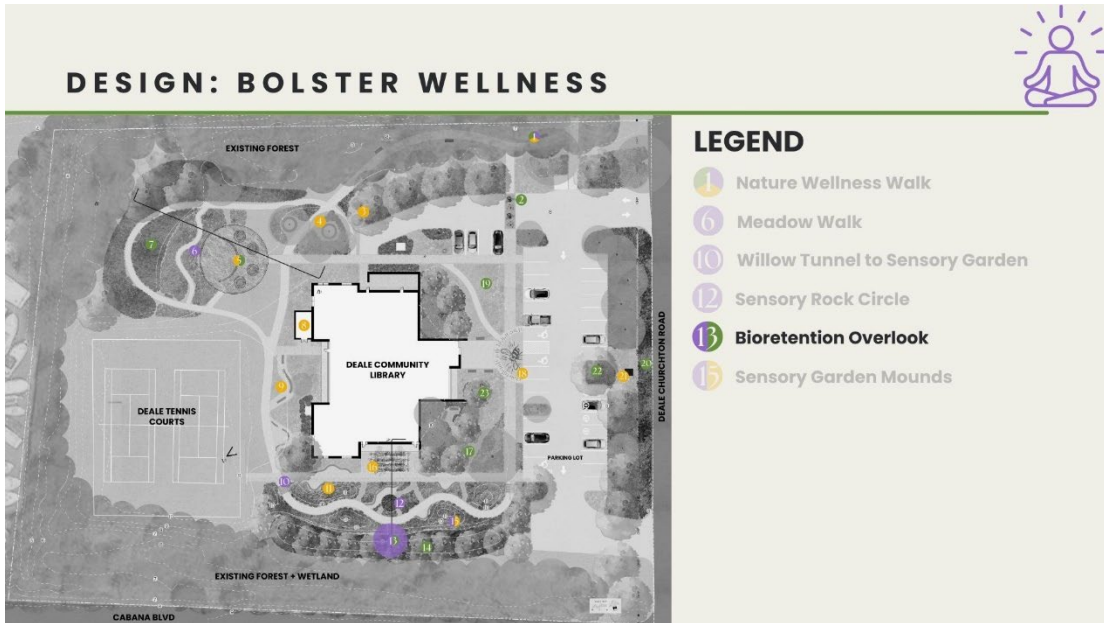


Figure 5.28 “Bioretention Overlook Location”

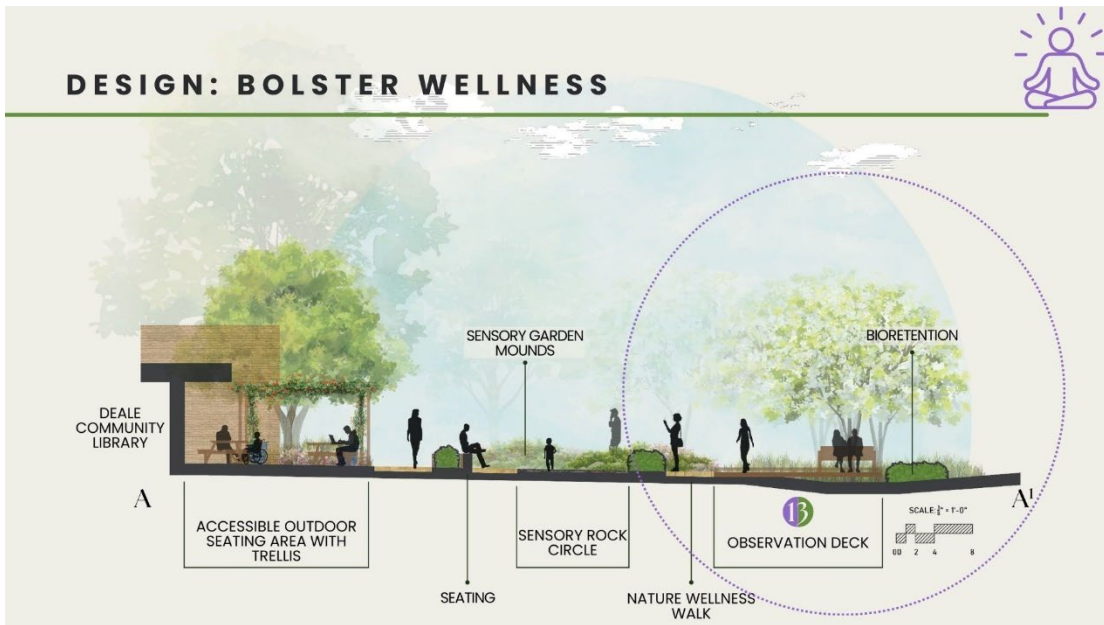


Figure 5.29 “Section A-A’: Bioretention Overlook Experience”

The Sensory Garden, along with the Nature Wellness Walk and meadow walk, allows visitors to feel more connected to nature and generally less stressed, bolstering health.

5.2.3 Foster Community Engagement

My final goal focused on community engagement and building connections between people at the library and the surrounding town. Many of my design features fit into this category, including the outdoor classroom, seating along the Nature Wellness Walk, the storage shed, new signage, the outdoor reading area, the accessible outdoor seating area, and the Sensory Garden (Figure 5.30). These features often overlap with other goals and allow for building social connections.



Figure 5.30 “Overview of Community Engagement Features”

The outdoor classroom, discussed in depth in section 5.2.1, allows for environmental education and community connection (Figure 5.31). I designed this space to be multifunctional, allowing for community meetings and educational

sessions. Since Deale does not have a community center, the Library’s meeting room is often used for community events. However, these events are limited to the space within the library, and a larger outdoor space can accommodate more people.



Figure 5.31 “Outdoor Classroom Location”

In addition to the auditorium seating, four round tables provide additional seating, creating a comfortable space for studying, reading, or working on a computer while utilizing the readily available Wi-Fi. These seating moments are opportunities to connect outdoors while working together. This space could be an opportunity for those who work remotely to interact with their fellow community members (Figure 5.32).

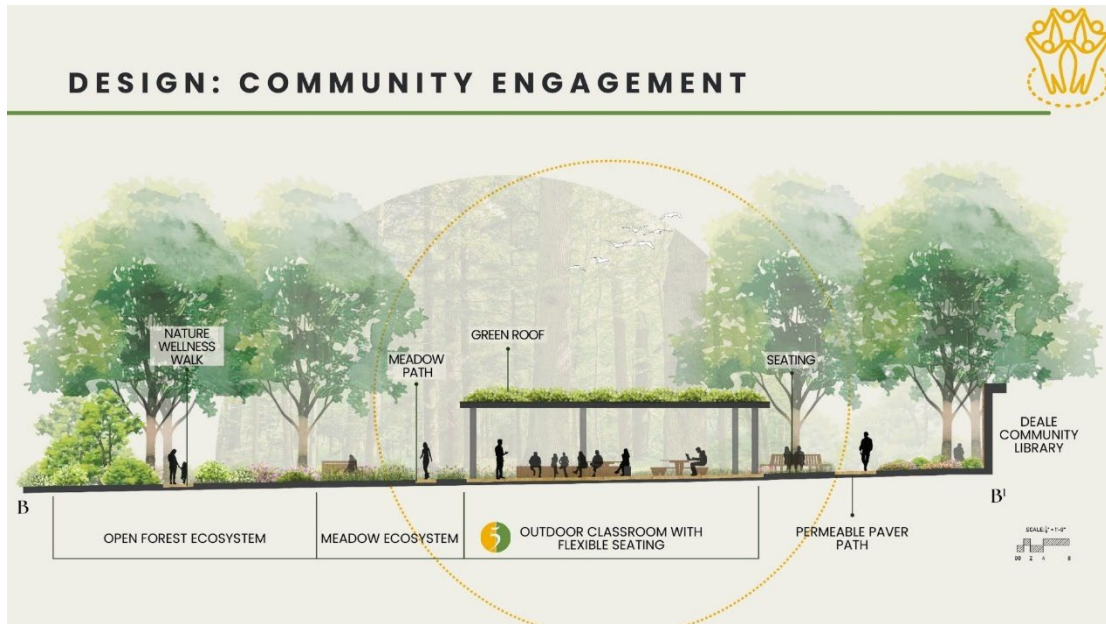


Figure 5.32 “Section B-B’: Outdoor Classroom Experience”

Along the Nature Wellness Walk, I incorporated several opportunities for rest and contemplation through a variety of seating options (Figure 5.33). These include traditional benches (Figure 5.34) and benches positioned around existing mature tree canopies to take advantage of the natural shade. The design features both backless benches (Figure 5.35) and those with back support for added comfort (Figure 5.36) to accommodate different preferences.



Figure 5.33 “Nature Wellness Walk and Seating Locations”



Figure 5.34. “Traditional Wood Bench” by Westminster Teak retrieved on March 9, 2025, from <https://www.westminsterteak.com/images/products/13618/13618A.jpg>



Figure 5.35. “Backless Tree Bench” by County Casual Teak retrieved on March 9, 2025, from <https://www.countrycasualteak.com/curved-backless-teak-garden-bench-circa-4544>



Figure 5.36. “Tree Bench with Back Support” by Atlantic Patio Furniture retrieved on March 9, 2025, from <https://atlanticpatio.com/wp-content/uploads/2013/06/products-btghenham-1glsca.jpg?>

Additionally, seating areas designed for employees and other visitors include tables with benches arranged in a circular layout (Figure 5.33). This arrangement complements the site's curvilinear features while providing a functional and inviting space for relaxation, informal gatherings, and lunch breaks (Figure 5.37). These opportunities allow residents, visitors, and employees to connect with each other and nature. These seating options are showcased in Section B-B' (Figure 5.32).



Figure 5.37. “Employee Seating with Table” by Westminster Teak retrieved on March 9, 2025, from <https://www.westminsterteak.com/PID70090/Round-Teak-Picnic-Table/pnc=PN70090>

In the current layout, the storage shed is positioned at the end of a long pathway in the middle of the field, where the outdoor classroom is now designed (Figure 5.38). Its current location is inconvenient, challenging to access, and visually unappealing as a focal point in the landscape.



Figure 5.38 “Existing Shed”

Library staff indicated that they primarily use the shed to store outdoor maintenance equipment, such as lawnmowers and blowers, which were necessary before the county assigned a maintenance crew to the site. The shed also provides storage for other materials that cannot be accommodated inside the building. While the new design maintains the storage shed at its original size, it is now repositioned along the back west wall, which is more discreet and does not obstruct sightlines (Figure 5.39). This new placement ensures easier access while improving circulation between the library, storage shed, outdoor classroom, and tennis courts.

DESIGN: COMMUNITY ENGAGEMENT



Figure 5.39 “Proposed Shed Location”

To further integrate the shed into the site, it would be painted with a mural reflecting elements of the local environment, such as native plants, the watermen, or other defining features of the Deale community (Figure 5.40). This artistic addition would enhance the structure’s aesthetic appeal, transforming it into a visually engaging and meaningful part of the landscape. Mural art is an excellent opportunity for community members to engage with each other and local artists, and the mural installation could be a community event.



Figure 5.40. “Painted Storage Shed” by Tony Midson, retrieved on March 9, 2025, from https://media.oregonlive.com/hg_impact/photo/11183235-large.jpg

The outdoor reading area is a key component of this design and provides Deale Community Library patrons with a calm, restorative space to read and enjoy the outdoors (Figure 5.41). This area is thoughtfully structured with curvilinear backless benches that accommodate seating on either side. This flexibility allows visitors to watch tennis matches or face the surrounding plantings for a more serene experience, allowing for various visually appealing views (Figure 5.42).



Figure 5.41 “Outdoor Reading Area Location”



Figure 5.42 “View of Outdoor Reading Area”

A buffer of plantings separates some seating in the reading area from the adjacent walking loop, adding a sense of privacy and quiet. Additionally, benches are spaced approximately three and a half feet apart to allow wheelchair users to sit directly alongside other visitors. This area is multifunctional, as the seating arrangement enables people to face each other for conversation or discussion between

small groups or quietly read independently. This experience can also lead to better community connection, as people can sit together without engaging in conversation.

I redesigned the space on the south side of the building, where the Sensory Garden was previously located, to create an accessible outdoor seating area (Figure 5.43) (Figure 5.44). The tables are designed to accommodate individuals with mobility challenges, specifically those who use wheelchairs (Figure 5.45).



Figure 5.43 “Sensory Garden and Accessible Outdoor Seating Area Location”



Figure 5.44. “Accessible Outdoor Table” by Bright Idea Shops retrieved on March 9, 2025, from https://www.brightideashops.com/image?filename=handicap_hex_4.jpg&width=800&height=0

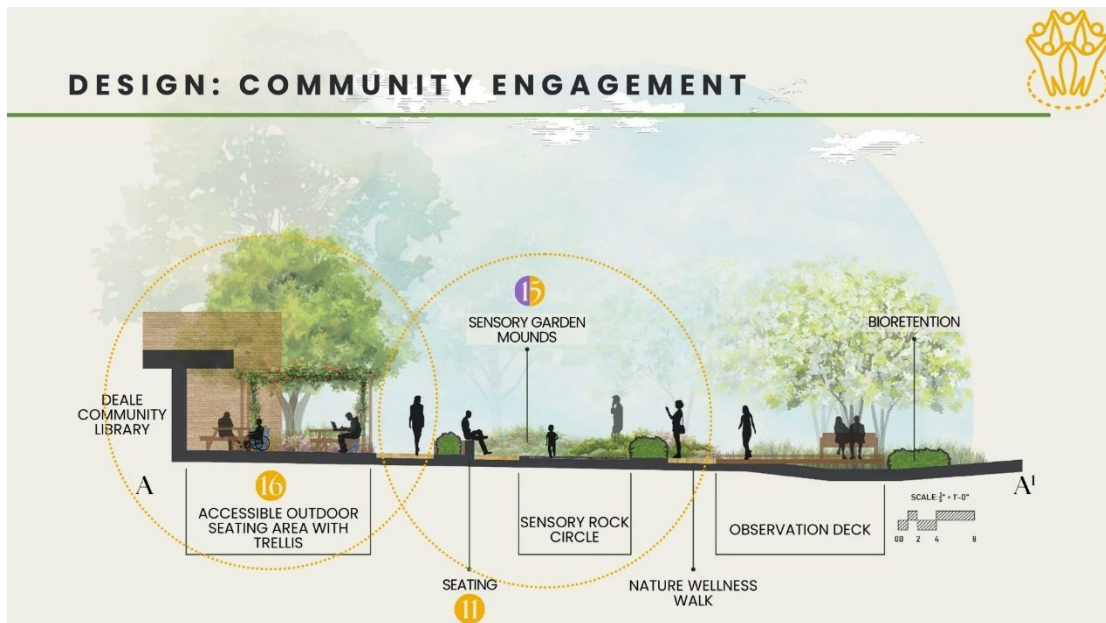


Figure 5.45 “Section A-A: Accessible Outdoor Seating Area and Sensory Garden Experience”

This area, partially situated under the existing overhang, benefits from the existing building structure and additional shade provided by a newly designed trellis. The trellis supports a semi-evergreen native vine, *Lonicera sempervirens* (Coral Honeysuckle), which would grow from large planters. This planting choice offers seasonal interest by providing shade during the hotter months while maintaining some lingering green in the winter.

This space overlooks the relocated and expanded Sensory Garden, providing a convenient outdoor setting for library patrons of all abilities. Visitors can work on laptops, complete assignments, or enjoy reading without traveling far from the library.

The Sensory Garden itself would be another opportunity for community connection (Figure 5.43). People are encouraged to sit and decompress in this space or actively walk around interacting with nature (Figure 5.45). This seating can be made of reused pavement pulled up on site to create a gabion bench (Figure 5.46)



Figure 5.46. “Gabion Bench Design” by 99fab retrieved on April 18, 2025, from https://99fab.com/cdn/shop/files/8720845446482_m_en_hd_1.jpg?v=1712381960&width=1000

As a key design element, this space would be frequented as an attraction to residents and visitors. I designed the Sensory Garden to flourish in the summer when most visitors stop by with their children or visit the neighboring farmers' market. This garden would attract people of all ages and lead to group interaction.

Another opportunity for connecting community members to the library is to update the welcoming signage along Deale Churchton Road. The current sign for the Deale Community Library is easily missed by drivers passing through town (Figure 5.47). To create a more recognizable landmark, I designed a new sign, a large sculpture of stacked books, with "Deale Library" displayed along the spines (Figure 5.48). This design provides a creative way to welcome visitors while making the library more recognizable within the community.



Figure 5.47 "Existing Deale Library Sign"

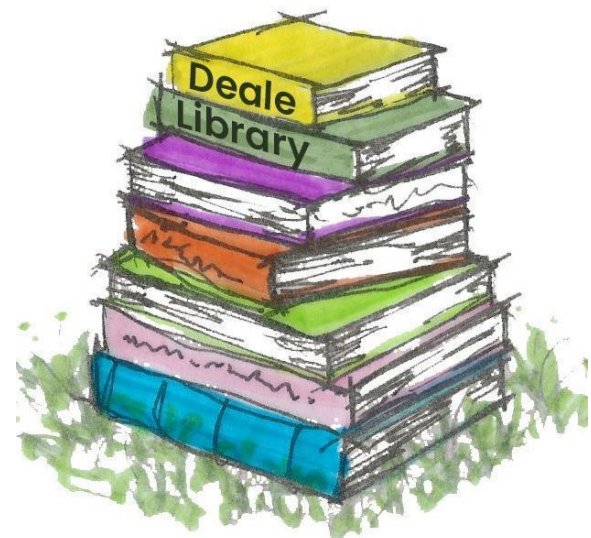


Figure 5.48 "Proposed Signage"

The sculpture's footprint would be approximately four by four feet wide and five feet tall, ensuring it remains a prominent visual element without obstructing sightlines. The stacked book concept reinforces the library's identity and serves as an

inviting and memorable feature for patrons and passersby. This signage could be an opportunity to quickly identify the Deale Community Library and a photo opportunity for visitors of all ages.

These features help to offer opportunities for residents and visitors to connect and build a social network with each other.

5.3 Plant Lists

Plant selection was a crucial aspect of this project's design, as it plays a key role in aesthetics and ecological impact. To inspire homeowners to incorporate native species into their landscapes, the chosen plants needed to be visually appealing, environmentally beneficial, and well-suited to the local conditions.

Deale has a high water table, wet soils, and a humid climate in the summer and mild winters. As a result, all selected species were chosen for their ability to thrive in these conditions while contributing to the site's overall ecological health.

According to the USDA, native plants are “indigenous terrestrial and aquatic species that have evolved and occur naturally in a particular region, ecosystem, and habitat. Species native to North America are generally recognized as those occurring on the continent prior to European settlement” (U.S. Forest Service, n.d.). I focused on plants that are native to the Mid-Atlantic to prioritize regional nativity, and then used plants native to the continental United States. I am defining the Mid-Atlantic region as Virginia, Maryland, D.C., Delaware, New Jersey and Pennsylvania. Not all species selected are native; however, non-native species are not invasive or problematic to the Maryland ecosystem. Current research shows that having 70% or more native species provides a better habitat for local insects, birds, and other

pollinators (Narango et al., 2018). In addition, as climate change creates a warmer climate in Maryland, more species adapted for southern climates have a better chance at thriving in the coming years.

I will outline each category and the plant species included in the following sections. Below is a diagram of the overall categorization of plant zones (Figure 5.49)

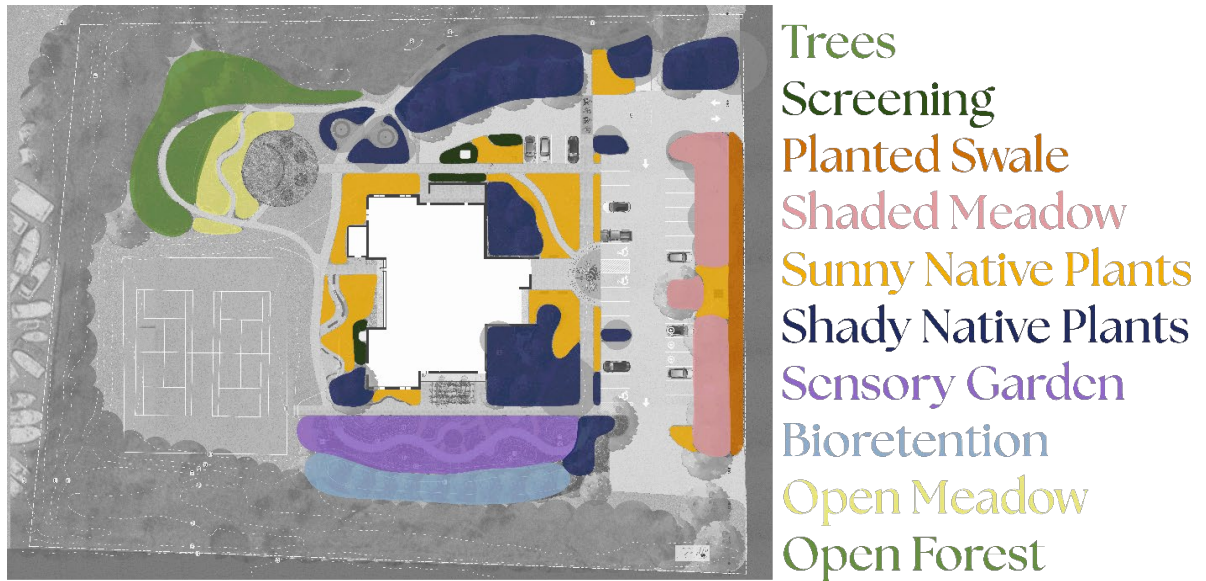


Figure 5.49 “Overall Plant Zoning Map.”

Plant choices were selected using the following resources:

- Anne Arundel County Native Plant List (Reaves, Jr. & Husted, 2022)
- Rainscapes Plant Guide (Rainscapes, 2018)
- Native Plants for Rain Gardens (Alliance for the Chesapeake Bay, n.d.)
- Native Plants for Wildlife Habitat and Conservation Landscaping for Maryland’s Coastal Plain (U.S. Fish & Wildlife Service, 2001)
- Native Plants for Wildlife Habitat and Conservation Landscaping: Chesapeake Bay Watershed (Slattery et al., 2003)
- North Carolina State Extension Gardener Plant Toolbox (North Carolina Cooperative Extension, 2025)

- Missouri Botanical Garden Plant Finder (Missouri Botanical Garden, 2025)
- Commercial Maryland Native Plant List (University of Maryland Extension, 2025)
- USDA Plants Database (Natural Resources Conservation Service, n.d.)

5.3.1 Tree Options and Screening

Expanding the tree canopy was an essential component of this design, achieved by strategically adding shade and flowering trees. While an existing forest surrounds the site, its location along the periphery provides limited shade for active spaces.

To enhance coverage, I introduced shade trees in key areas, filled gaps within the forest, and placed additional trees around the building. Additionally, I incorporated shade trees into the parking island between the parking area and Deale Churchton Road. This addition provides shade for plantings and offers relief for visitors and vehicles, helping to mitigate heat.

The site already features several mature trees, which were preserved wherever possible. To complement them, I selected *Acer rubrum*, *Quercus bicolor*, and *Tilia americana* for their impressive mature height and canopy spread, ranging from sixty to seventy feet in height and thirty to sixty feet in width, ensuring shade coverage (Figure 5.50) (Table 5.1). Each tree selected is a keystone species for hosting moths and butterflies; however, *Quercus* is one of the best tree species to host these insects (Narango et al., 2020).

All three species contribute vibrant fall color. Additionally, each tree thrives in moist soils, making them well-suited to the site's high water table.

Latin Name	Common Name	Bloom Time	Fall Color or Winter Interest	Mid-Atlantic Native
<i>Acer rubrum</i>	Red Maple	March, April	✓	✓
<i>Quercus bicolor</i>	Swamp White Oak	March - May	✓	✓
<i>Tilia americana</i>	American Linden	April - July	✓	✓

Table 5.1. “Plant List for Shade Tree Options”

Native understory trees were chosen for their aesthetic appeal and ecological benefits (Table 5.2). For example, *Asimina triloba* thrives in wet, shaded conditions and produces edible fruit, making it an excellent fit for the Open Forest Zone. Meanwhile, *Chionanthus virginiana*, already thriving on-site, offers stunning late-spring and early-summer blooms, making it a natural choice for the native display gardens.

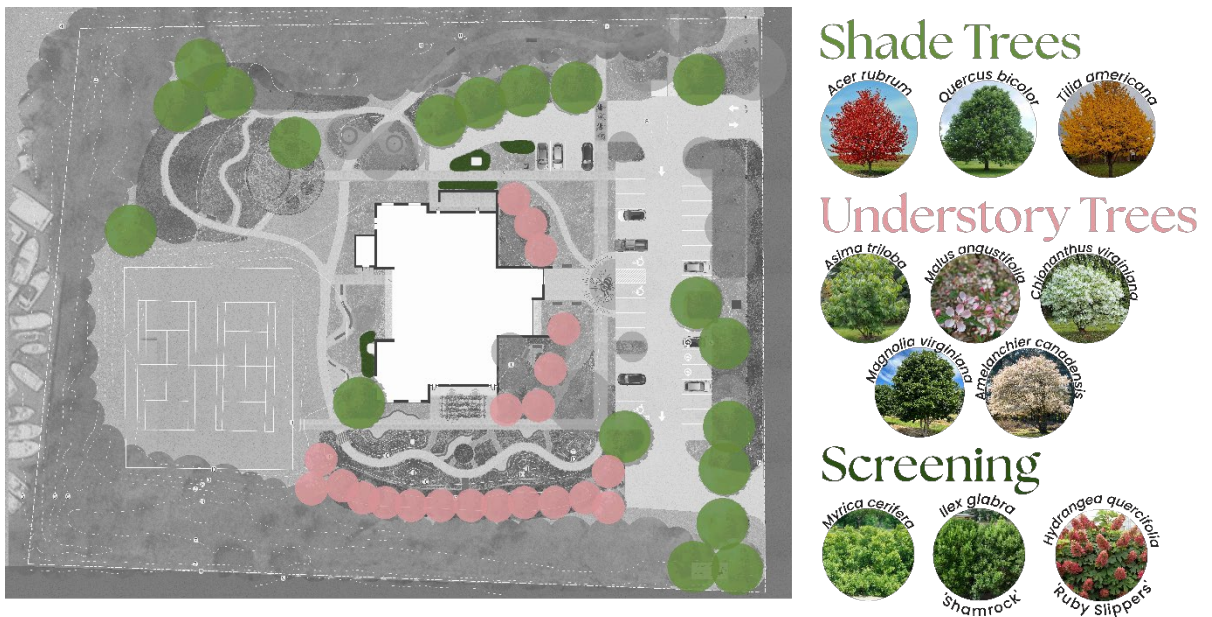


Figure 5.50 “Diagram of Shade Trees, Understory Trees, and Screening.”

Latin Name	Common Name	Bloom Time	Fall Color or Winter Interest	Mid-Atlantic Native
<i>Asima triloba</i>	Pawpaw	March - May	✓	✓
<i>Magnolia virginiana</i>	Sweetbay Magnolia	May - July	✓	✓
<i>Malus angustifolia</i>	Southern Crabapple	April, May	✓	✓
<i>Amelanchier canadensis</i>	Serviceberry	March - April	✓	✓
<i>Chionanthus virginiana</i>	Fringetree	May, June		✓

Table 5.2. “Plant List for Understory Tree Options”

In addition to trees, structure planting that provided screening was essential in certain areas to minimize the visibility of utilities and maintain a cohesive landscape. For example, the large utility areas on the north side of the building, near the employee parking lot, required strategic planting to soften their appearance. This included the well and generators, which are enclosed by bollards, and the AC unit on the southwest side of the building. To effectively screen these less aesthetically pleasing elements, I selected evergreen plants or those with year-round interest, ensuring they remain visually appealing in all seasons (Figure 5.50) (Table 5.3). *Hydrangea quercifolia* ‘Ruby Slippers’ is not native to the Mid-Atlantic but is native to the southeastern United States, and survives hot and humid climates particularly well. This will serve well as Maryland weather continues to warm up due to climate change.

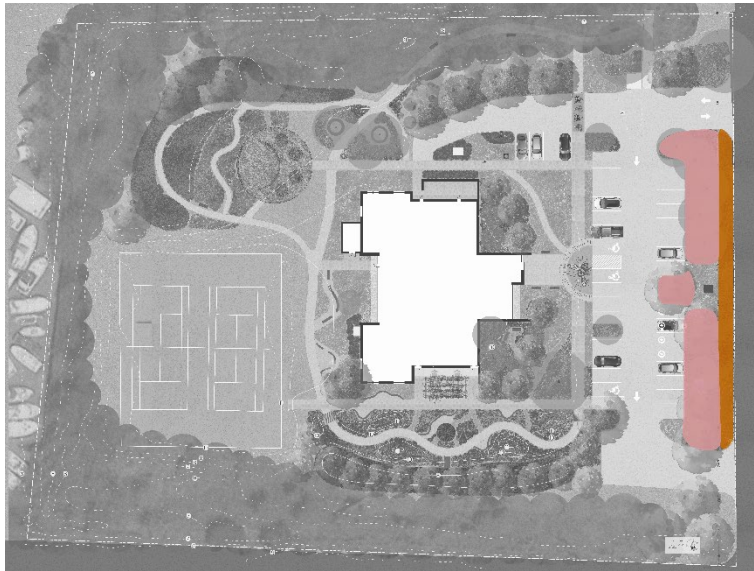
Latin Name	Common Name	Bloom Time	Fall Color or Winter Interest	Mid-Atlantic Native
<i>Morella cerifera</i>	Southern Bayberry	April	✓	✓
<i>Ilex glabra</i> 'Shamrock'	Shamrock Inkberry	May - June	✓	✓
<i>Hydrangea quercifolia</i> 'Ruby Slippers'	Ruby Slippers Oak Leaf Hydrangea	June - August	✓	

Table 5.3. "Plant List for Screening Plants"

5.3.2 Swale Plantings and Shaded Meadow

At the front entrance, visitors approaching the site are now greeted by new signage, a planted swale, and a shaded meadow beneath both new and existing trees (Figure 5.51). The planted swale is a reconstruction of a previously existing concrete swale designed to enhance functionality and aesthetics.

The plant selection for the planted swale includes *Chasmanthium latifolium*, *Chelone glabra*, and *Packera aurea* (Table 5.4). For the shady area beneath the proposed and existing trees, a groundcover of *Carex mix* is paired with *Tiarella cordifolia*, and pops of color from *Phlox divaricata* 'Blue Moon' add visual interest in early spring (Table 5.5). This low, layered planting palette creates a soft and inviting introduction to the site, offering a playful yet refined aesthetic that feels welcoming and natural.



Planted Swale



Shaded Meadow



Figure 5.51 “Diagram of Swale and Shaded Meadow Plantings.”

Latin Name	Common Name	Bloom Time	Fall Color or Winter Interest	Mid-Atlantic Native
<i>Chelone glabra</i>	Turtle Head	August – October		✓
<i>Chasmanthium latifolium</i>	Inland Sea Oats	September, October	✓	✓
<i>Packera aurea</i>	Golden Groundsel	April – July	✓	✓

Table 5.4. “Plant List for Planted Swale”

Latin Name	Common Name	Bloom Time	Fall Color or Winter Interest	Mid-Atlantic Native
<i>Tiarella cordifolia</i>	Foam Flower	May		✓
<i>Carex woodii</i>	Sedge	April - May	✓	✓
<i>Phlox divaricata</i> 'Blue Moon'	Blue Moon Phlox	April, May		✓

Table 5.5. “Plant List for Shaded Meadow”

5.3.3 Sunny Native Display Garden

The sunny native display garden features a diverse yet cohesive plant palette, maintaining a consistent theme of pinks, purples, and touches of yellow (Figure 5.52). These selections consist of hardy plants that thrive in hot, sunny conditions, making them excellent choices for the site and residents or neighbors looking to incorporate resilient, low-maintenance species into their own yards. In addition to their durability, these plants offer strong seasonal interest, providing visual appeal from spring through fall (Table 5.6).

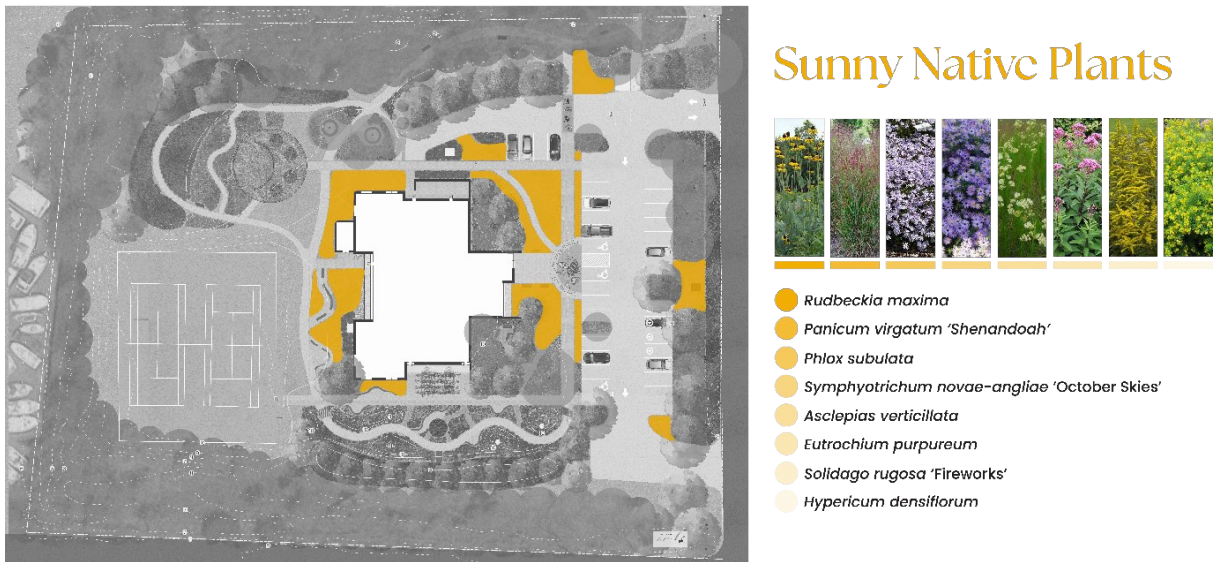


Figure 5.52 “Diagram of Native Display Garden Plants for Sunny Conditions.”

Latin Name	Common Name	Bloom Time	Fall Color or Winter Interest	Mid-Atlantic Nativity
<i>Rudbeckia laciniata</i>	Cut-leaf Coneflower	July, August		✓
<i>Panicum virgatum</i> 'Shenandoah'	Switch Grass	July – September	✓	✓
<i>Phlox subulata</i>	Creeping Phlox	April, May	✓	✓
<i>Symphotrichum novae-angliae</i> 'October Skies'	New England Aster	September, October		✓
<i>Asclepias verticillata</i>	Whorled Milkweed	June – August	✓	✓
<i>Eutrochium purpureum</i>	Joe Pye Weed	July – September		✓
<i>Solidago rugosa</i> 'Fireworks'	Seaside Goldenrod	September, October		✓
<i>Hypericum densiflorum</i>	Bushy St. John's Wort	June - August		✓

Table 5.6. “Plant List for Native Display Garden for Sunny Conditions”

5.3.4 Shady Native Display Garden

Shady native plants are incorporated throughout the site, including in the shade native display garden on the southeast side of the building’s front entrance (Figure 5.53). Many of these species are similar to those found in open forest ecosystems, sharing comparable growing conditions and habitat characteristics.

This planting palette includes a mix of evergreens, structurally significant shrubs, and a selection of perennial flowering species (Table 5.7). Together, they provide year-round visual appeal with strong seasonal interest. These plants are well-suited to the site’s mature tree canopy, allowing them to thrive in the available shade while enhancing the landscape’s ecological and aesthetic value.



Shady Native Plants



- *Calycanthus florida*
- *Polystichum acrostichoides*
- *Heuchera americana*
- *Podophyllum peltatum*
- *Tiarella cordifolia*
- *Clethra alnifolia* 'Hummingbird'
- *Viola walteri* 'Silver Gem'

Figure 5.53 “Diagram of Native Display Garden Plants for Shady Conditions.”

Latin Name	Common Name	Bloom Time	Fall Color or Winter Interest	Mid-Atlantic Nativity
<i>Calycanthus florida</i>	Carolina Allspice	April – June	✓	✓
<i>Polystichum acrostichoides</i>	Christmas Fern		✓	✓
<i>Heuchera americana</i>	Alumroot			✓
<i>Podophyllum peltatum</i>	Mayapple	April		✓
<i>Viola walteri</i> 'Silver Gem'	Prostrate Blue Violet	March, April	✓	✓
<i>Tiarella cordifolia</i>	Foam flower	May	✓	✓
<i>Clethra alnifolia</i> 'Hummingbird'	Summersweet	July, August	✓	✓

Table 5.7. “Plant List for Native Display Garden for Shady Conditions”

5.3.5 Sensory Garden

The Sensory Garden played a significant role in this design. It needed to accommodate primarily full-sun plants, with only a few that could tolerate partial shade due to sun exposure. I intentionally did not include trees within the Sensory Garden to maintain this exposure, though I incorporated them in the adjacent bioretention area for shade. Ensuring ample sunlight was crucial for supporting diverse plants well-suited for sensory engagement.

In designing the Sensory Garden, I focused primarily on smell and touch. While the plants were categorized by sensory experience, many selections naturally overlapped. For example, plants with strong fragrances (Figure 5.54) (Table 5.8), such as *Morella cerifera* ‘Don’s Dwarf’ and *Thymus serpyllum*, often have interesting textures (Figure 5.55) (Table 5.9). Some aromatic plants, such as *Thymus serpyllum*, are edible, though I chose not to emphasize taste as a primary sensory component.



Sensory Garden

Smell



- *Monarda didyma* 'Purple Rooster'
- *Clethra alnifolia* 'Hummingbird'
- *Thymus serpyllum*
- *Nepeta x* 'Walker's Low'
- *Salvia rosmarinus* 'Arp'
- *Myrica cerifera* 'Don's Dwarf'
- *Perovskia atriplicifolia* 'Blue Jean Baby'

Figure 5.54 “Diagram of Sensory Garden Plants for Sense of Smell.”

Latin Name	Common Name	Bloom Time	Fall Color or Winter Interest	Mid-Atlantic Nativity
<i>Perovskia atriplicifolia</i> 'Blue Jean Baby'	Russian Sage	July – September		
<i>Clethra alnifolia</i> 'Hummingbird'	Hummingbird Clethra	July, August	✓	✓
<i>Thymus serpyllum</i>	Creeping Thyme	June, July	✓	
<i>Morella cerifera</i> 'Don's Dwarf'	Don's Dwarf Southern Bayberry		✓	✓
<i>Nepeta x</i> 'Walker's Low'	Walker's Low Catmint	May – July		
<i>Salvia rosmarinus</i> 'Arp'	Arp Rosemary	May, June		
<i>Monarda didyma</i> 'Purple Rooster'	Purple Rooster Bee Balm	June, July		✓

Table 5.8. “Plant List for Sensory Garden: Smell”



Sensory Garden

Touch



- *Stachys byzantina*
- *Panicum virgatum* 'Summer Sunrise'
- *Echinacea purpurea* 'White Swan'
- *Cephalanthus occidentalis* 'Fiber Optics'
- *Ilex glabra* 'Gem Box'

Figure 5.55 “Diagram of Sensory Garden Plants for Sense of Touch.”

Latin Name	Common Name	Bloom Time	Fall Color or Winter Interest	Mid-Atlantic Nativity
<i>Stachys byzantina</i>	Lamb's Ear			
<i>Panicum virgatum</i> 'Summer Sunrise'	Upright Switchgrass	August, September	✓	✓
<i>Echinacea purpurea</i> 'White Swan'	White Cone Flower	June – August		✓
<i>Cephalanthus occidentalis</i> 'Fiber Optics'	Buttonbush	June - August	✓	✓
<i>Ilex glabra</i> 'Gem Box'	Gem Box Inkberry Holly	May – July	✓	✓

Table 5.9. “Plant List for Sensory Garden: Touch”

I created a palette with soft, soothing colors to create a calming atmosphere.

The bloom mix features pastel shades of purple, pink, and white to enhance the sensory experience without overwhelming the visual senses.

5.3.6 Bioretention Plantings

For the bioretention area, I prioritized native plants, as they are best suited to these conditions and help protect the existing forest line, which I aimed to preserve. The selected plantings are all highly resilient and well-adapted to wet conditions.

The tree selection includes *Magnolia virginiana*, a species well-suited for bioretentions. These understory trees were planted to provide shade and create a partial-shade environment. This balance allows for an understory of shade-tolerant plants, contributing to seasonal interest throughout the year.

In this area, I also incorporated subtle pops of red to add character, mainly since it is farther from the building. Additionally, species such as *Ilex verticillata* and *Salix discolor* provide winter interest, ensuring visual appeal even in the colder months (Figure 5.56) (Table 5.10).

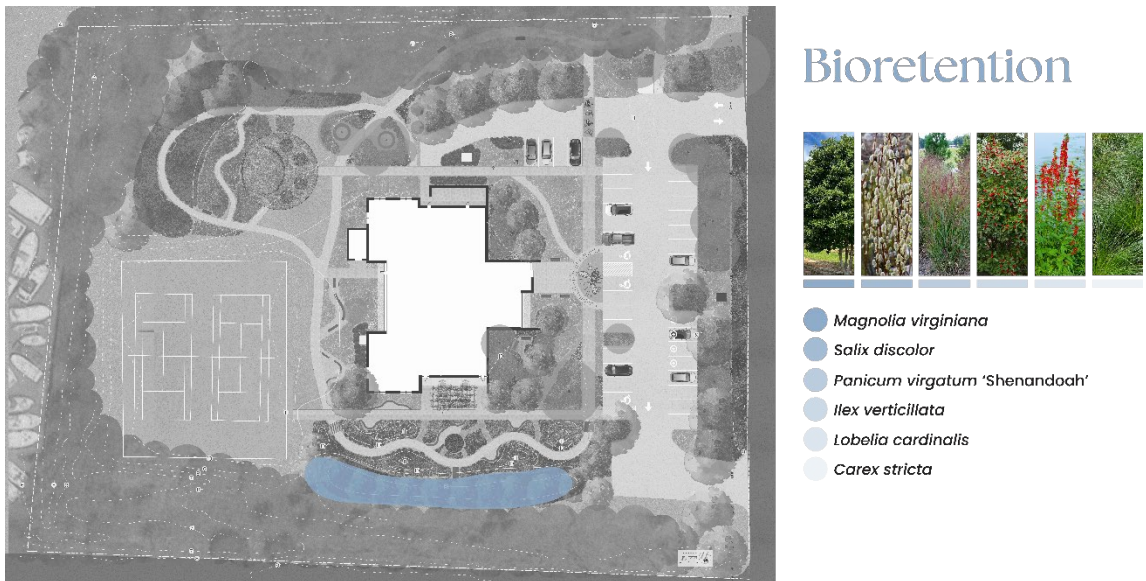


Figure 5.56 “Diagram of Bioretention Plants.”

Latin Name	Common Name	Bloom Time	Fall Color or Winter Interest	Mid-Atlantic Nativity
<i>Magnolia virginiana</i>	Sweetbay Magnolia	May - July	✓	✓
<i>Salix discolor</i>	Pussy Willow	March, April		✓
<i>Panicum virgatum</i> 'Shenandoah'	Switch Grass	July – September	✓	✓
<i>Ilex verticillata</i>	Winterberry	April - May	✓	✓
<i>Carex stricta</i>	Tussock Sedge		✓	✓
<i>Lobelia cardinalis</i>	Cardinal Flower	July – September		✓

Table 5.10. "Plant List for Bioretention"

5.3.7 Open Meadow

The open meadow complements the outdoor classroom and the forested walking areas of the Woodland Walk (Figure 5.57). This meadow receives full sun, requiring hardy plant selections that can thrive in these conditions.

I kept the plant palette relatively simple while ensuring year-round interest (Table 5.11). The meadow is left intact until late February, when it is cut back to allow for new growth. The color palette features a dynamic mix of pinky reds, whites, and yellows, creating an engaging and visually rich backdrop for educational sessions in the outdoor classroom.



Open Meadow



- *Amsonia hubrichtii*
- *Eutrochium maculatum* 'Gateway'
- *Panicum virgatum* 'Shenandoah'
- *Solidago uliginosa*
- *Anemone canadensis*
- *Packera aurea*

Figure 5.57 “Diagram of Open Meadow Plantings.”

Latin Name	Common Name	Bloom Time	Fall Color or Winter Interest	Mid-Atlantic Nativity
<i>Amsonia hubrichtii</i>	Hubrichtii's Blue Star	March, April	✓	
<i>Eutrochium maculatum</i> 'Gateway'	Spotted Joe Pye Weed	July – September		✓
<i>Panicum virgatum</i> 'Shenandoah'	Switch Grass	July – September	✓	✓
<i>Solidago uliginosa</i>	Bog Goldenrod	August – October		✓
<i>Anemone canadensis</i>	Windflower	April – June	✓	✓
<i>Packera aurea</i>	Golden Groundsel	April – July	✓	✓

Table 5.11. “Plant List for Open Meadow”

5.3.8 Open Forest

The open forest palette is designed to reflect the native forest ecology of the site (Figure 5.58). This area features a diverse range of plants, carefully selected to create layers of varying heights and depths, mirroring the natural structure of the forest. The plantings provide visual interest from early spring through fall while complementing the existing ecosystem (Table 5.12).

In addition to enhancing the landscape, this palette helps restore plant species that may have been lost due to invasive species or past clearing. It reinforces the health of the forest while maintaining its natural beauty.

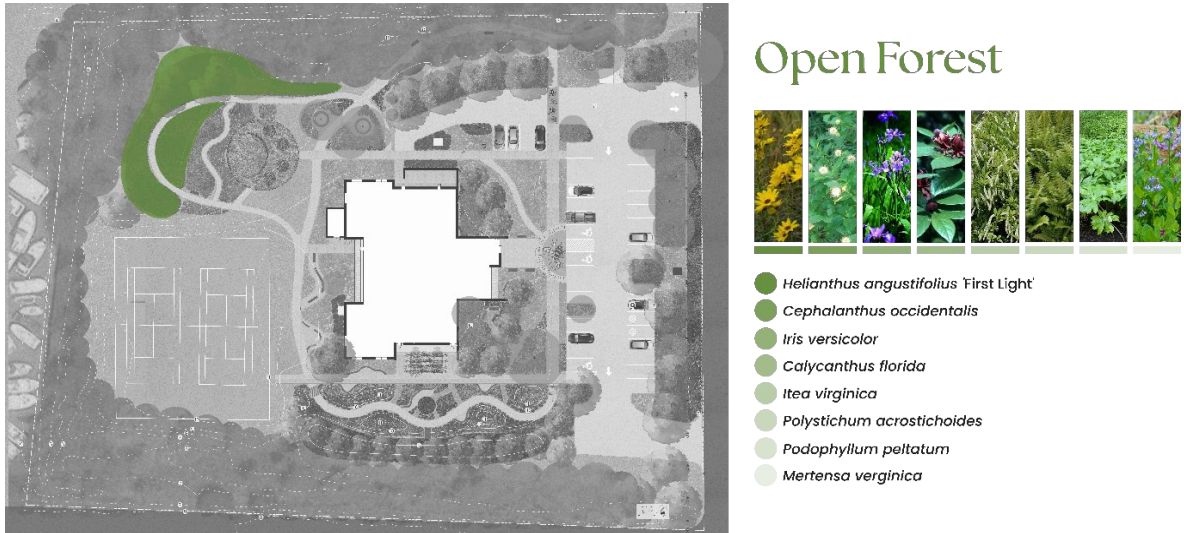


Figure 5.58 “Diagram of Open Forest Plantings.”

Latin Name	Common Name	Bloom Time	Fall Color or Winter Interest	Mid-Atlantic Nativity
<i>Mertensa virginica</i>	Virginia Bluebells	March, April		✓
<i>Podophyllum peltatum</i>	Mayapple	April		✓
<i>Polystichum acrostichoides</i>	Christmas Fern		✓	✓
<i>Itea virginica</i>	Virginia Sweetspire	September, October	✓	✓
<i>Calycanthus florida</i>	Carolina Allspice	April – June	✓	✓
<i>Iris versicolor</i>	Blue Flag	May, June		✓
<i>Cephalanthus occidentalis</i>	Button Bush	June	✓	✓
<i>Helianthus angustifolius</i> 'First Light'	Swamp Sunflower	July - September		✓

Table 5.12. “Plant List for Open Forest”

CHAPTER 6: CONCLUSION

The goals of this design were shaped by the theories of Attention Restoration Theory (ART), Stress Reduction Theory (SRT), and biophilia. By integrating these elements into the site, I intended to inspire residents with beautiful, native gardens to incorporate into their yards, promote environmental stewardship through active and passive learning, and foster community engagement.

6.1 Evaluating the Design

This design successfully creates educational opportunities through interpretive signage, a new outdoor classroom, and various environmentally friendly strategies, including conservation landscaping with native plants, stormwater management, and a green roof. The planting palettes were carefully selected to suit this unique area of ecoregions in Anne Arundel County, and their success could be measured by how many residents adopt similar plantings in their own spaces. Community engagement could be evaluated by tracking visitor numbers, user interactions, and the time people spend in the space post-installation.

My design supports ART by providing calm, quiet areas with abundant natural features that help ease the mind. The Sensory Garden, in particular, offers spaces for soft fascination, allowing visitors to recuperate from daily stressors. SRT is addressed by introducing additional outdoor spaces around the library where people can read, rest, and gather. These are amenities that are currently lacking. This expansion also strengthens the site's connection to biophilia. While the library's existing windows

provide natural views, the new design enhances them, making them more aesthetically engaging and immersive.

Some limitations may include deer, although their presence was not mentioned or emphasized as an issue by either of the Branch Managers I interviewed. In addition, plants in the existing sensory garden do not appear to have deer damage. In addition, maintenance and irrigation will be a factor in the installation. If more time were available, I would develop a maintenance and identification plan for the library to use or pass along to the maintenance crew. Irrigation may be needed in the first few years to establish; however, with a higher water table, the soil may provide some form of irrigation. Allergies may also be a limitation, as I am proposing Oaks and Maples, though I am only proposing 19 shade trees, and there will be a combination of the three trees selected. Perennials selected do not tend to have allergic concerns, but individual experience may vary. Salinity may also be a concern, as the road salt or salinity from the water table may be a factor. Research suggests that native plants can have high salt tolerance, but long-term exposure may cause plants to be less productive in phytoremediation in stormwater management features. *Panicum virgatum* (switch grass), was noted as having high salinity tolerance, which is selected for the bioretention on site (Long et al., 2025).

The success of the case studies, particularly at the Miller Branch Library, rests on the availability of staff and partnerships between the library and other organizations. For example, the Howard County Bee City program partnered with the library to use the Enchanted Garden as a hands-on workshop on how to save seeds (Howard County Library System, 2024). For maintenance, the Enchanted Garden

Club for tweens meets monthly to care for the garden and learn about various topics (Howard County Library System, 2014). A similar club could be implemented; however, it may need to be directed by library staff. The Miller Branch Library has a dedicated staff member to oversee the garden called the Enchanted Garden Coordinator (Howard County Library System, 2014). The library also relies heavily on Master Gardeners of Howard County to volunteer, maintain, and host workshops and classes (Howard County Library System, 2014). This may pose a challenge in a less populated area like Deale.

6.2 Opportunities for Future Work

If grant-funded, this project would likely need to be implemented in phases. However, if the Anne Arundel County Public Library System (AACPLS) undertakes a building renovation, it could provide an opportunity to integrate the new landscape into the overall site improvements. AACPLS may consider employing a more experienced maintenance crew for long-term upkeep rather than the conventional “mow and blow” approach. If that is not feasible, the Deale Community Library could explore partnerships with organizations such as the Master Gardeners or the Watershed Stewards Academy to assist with maintenance.

6.3 Reflections

As a Clemson University alumna raised in the American South, I have experienced a vast network of rural communities—some I have lived in, some I have visited, and many I have yet to see. During my final year at Clemson, I lived in a small town called Central, where a small library stood not far from my apartment. In

the sweltering August heat, I often found myself at the Central-Clemson Library instead of trekking to the university library for a quiet place to work. During my visits, I noticed that people from all over Pickens County came to read and check their emails, pay bills online, and access essential services. This was just a small moment, but in hindsight, it opened my eyes to something significant: I had taken my own internet access for granted. That realization made me see libraries in a new light, as more than just places for books but as critical resources for their communities. That memory eventually led me to design the Deale Community Library and to wonder how landscape architects can extend learning beyond the library walls and enhance these vital community spaces.

6.4 Final Thoughts

At a time when libraries face mounting challenges, this project is designed to expand their role beyond their walls, strengthening their presence and deepening their impact within the community. What began as a simple realization that libraries are not just about books but about access, connection, and opportunity ultimately shaped my understanding of their importance, especially in rural areas. These spaces have so much to gain from well-designed landscapes. Through this project, I sought to bridge the gap between landscape architecture and public libraries, demonstrating how thoughtful outdoor design can transform them into restorative, educational, and socially vibrant places.

Landscape architecture is about people interacting with their surroundings, finding comfort in nature, and how designed spaces can enhance their daily lives. This design is more than an enhancement to a single library. It is a statement on the

power of landscapes to support mental well-being, environmental stewardship, and community resilience. Rural libraries, often overlooked, have the potential to be anchors of social and ecological change. I hope this project inspires a shift in how we design for these spaces, ensuring that libraries are preserved and continue to evolve and thrive as beacons of knowledge, refuge, and connection. I also hope that these designs inspire homeowners to bring elements of them into their own yards, creating a ripple effect that fosters environmental awareness and a deeper relationship with nature at the individual level.

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