

POINT LOOKOUT

Sea-Level Rise
Resilience Design Plan



Point Lookout Sea-Level Rise Resilience Design Plan

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Executive Summary

Point Lookout State Park is valued for its rich culture and natural history. The park exhibits signs of rising sea-levels -- especially in low lying areas -- and needs extra care to build resiliency for the next 25-50 years.

A masterplan is presented here that addresses healthy marsh migration, oyster reef construction, and site-specific proposals for protecting and enhancing important site amenities. Issues of sea-level rise, habitat preservation, educational opportunities, and accessibility are given special consideration.

By implementing coastal resilience techniques, the plan aims to prepare the park to respond to its changing environment and accomodate users of all ages and abilities!



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Introduction

Goals and Objectives

Goals

The goals of the Maryland Park Service and Point Lookout State Park are as follows:

- To promote and expand public knowledge, understanding, appreciation and support for the resources and services managed by the park
- To operate in a manner that generates a cohesive, trustful and cooperative atmosphere at all levels of employment
- To manage in a manner that ensures the maximum benefit from each dollar and hour of labor expended
- To promote the management of natural and cultural resources to ensure the continuing benefits for present and future generations
- To provide diverse recreational services with an emphasis upon public safety and the provision of neat, clean and well-maintained resources

Mission

The mission of the Maryland Park Service is to manage the natural, cultural, historical, and recreational resources to provide for wise stewardship and enjoyment by people.

Brand Promise

The Maryland Park Service is committed to the following principles:

- Providing a place where visitors can bring their children that nourishes their well-being in ways that only nature can provide
- Connecting visitors with each other and their surroundings, through the beauty and serenity of nature, in a safe and welcoming space
- Preserving and providing opportunities for visitors to discover important historical sites and relics that tell inspiring stories of the people and events that give context and meaning to their lives today
- Creating an environment for relaxation with the reassuring presence of a friendly and dedicated Park Ranger who inspires and supports the desire to be a good steward
- Imparting visitors with a sense of well-being and happy memories, so when they leave they are feeling stress-free and revitalized

Source: Point Lookout State Park Strategic Management Plan, 2016



Figure 1: View of the Beach by the Causeway

History and Description

Description

Point Lookout State Park is located on a peninsula, nestled between the Chesapeake Bay and the Potomac River in St. Mary's County. The park is composed of around 1,000 acres and has rich history dating back to the Civil War era.



Figure 2: Point Lookout's Shore

History

- Prior to the 1700s, the land was occupied by the Piscataway Indians
- After Captain John Smith came to the region in 1608, and named it Maryland, the first settlement was established at St. Mary's City
- Point Lookout was also an important area during wars like in the War of 1812 and the American Civil War
- It became a lookout for American forces and even a landing point for British forces
- A lighthouse was constructed in 1830 on the point, and was in operation until 1966
- The lighthouse has been renovated as of spring of 2025 and is open to the public for tours
- In 1862, Hammond General Hospital was built and served as one of the largest hospitals during this time
- Located nearby was once the Prisoner of War camp (Camp Hoffman) that held 10,000 prisoners
- The camp was active between July 1863 to June 1865 where more than 52,000 Confederate prisoners passed through its gates
- After the Civil War, the Hammond General Hospital and Camp Hoffman were dismantled
- The peninsula had a segregated seaside resort in the 1920s and was razed in 1989

Natural Features

- Lake Conoy and Point Lookout Creek comprise of a brackish 300-acre tributary of the Potomac River, surrounded by 240 acres of marshland and extensive areas of submerged aquatic vegetation and native marsh grasses
- Over 3.5 miles of shoreline at the confluence of the Chesapeake Bay and the Potomac River including a mixture of constructed rip-rap, sandy beaches, tidal fringe marsh and low banks
- Located along the Atlantic flyway that makes it an important stopover for migratory birds and even other species like the monarch butterfly during migrations
- Habitats that supports rare and endangered species such as loggerhead sea turtles and Northern saw-whet owls
- Young forests of mature loblolly pine and sweet gum
- Lake Conoy has one of the top 30 largest great blue heron nesting colonies in the state

Significance Statement

The significance of Point Lookout State Park is:

- Conserving and interpreting an important and unique ecosystem where the Potomac River meets the Chesapeake Bay, including open water, high marsh, low marsh and shrub-scrub tidal wetlands, as well as a sandy beach and upland forest that comprise critical habitat for a wide variety of wildlife and migratory birds on the Atlantic flyway
- Providing visitors with opportunities to enjoy water-based recreation including boating, paddling, swimming, and fishing
- Providing a family-friendly picnic and camping experience
- Preserving and interpreting one of the largest Prisoner of War Camps constructed by the Union Army during the American Civil War
- Preserving and interpreting the historic 1830 Point Lookout Lighthouse, representing unique Chesapeake Bay maritime navigation history

Rising Seas and Floods

Increasing Water Levels

There has been a long-term increase in the world's ocean due to rising global temperatures. Global mean sea level has risen about 8-9 inches since 1880 and is continuing to rise.

Effects of the Rise

Over the next 25 to 50 years, sea levels are projected to rise by 2 feet. Projections indicate that without intervention, large portions of the park will be underwater in the upcoming years.

Point Lookout is at risk of losing a majority of their coastal marshes and wetlands, critical ecosystems for wildlife. It will theoretically push the marshes inland, starting something called marsh migration. The rising water levels are degrading the shoreline, beaches, cultural buildings and even infrastructure. A lot of the current loblolly pines could die due to the inundation and leave behind ghost forests.

In response to this, there are 4 strategies: retreat, resilience, restore, and embrace. This could mean moving amenities away from the expected areas that will be flooded, raising park features, or even making use of the rise for new activities and experiences.

Storm Surges

Storm surges are the abnormal rise in seawater during a storm, measured as the height of the water above the normal predicted astronomical tide. Surges are usually caused by storm winds pushing water onshore. The amplitude of the storm surge at any given location depends on the orientation of the coast line with the storm track.

Storm tide is the total observed seawater level during a storm. It combines the storm surge, predicted tide, and leaves room for any anomaly.

This can be dangerous as it can increase damage to buildings, the different plant and animal species, and even people.

When hand-in-hand with the rising water levels, the coastline of Point Lookout becomes vulnerable.

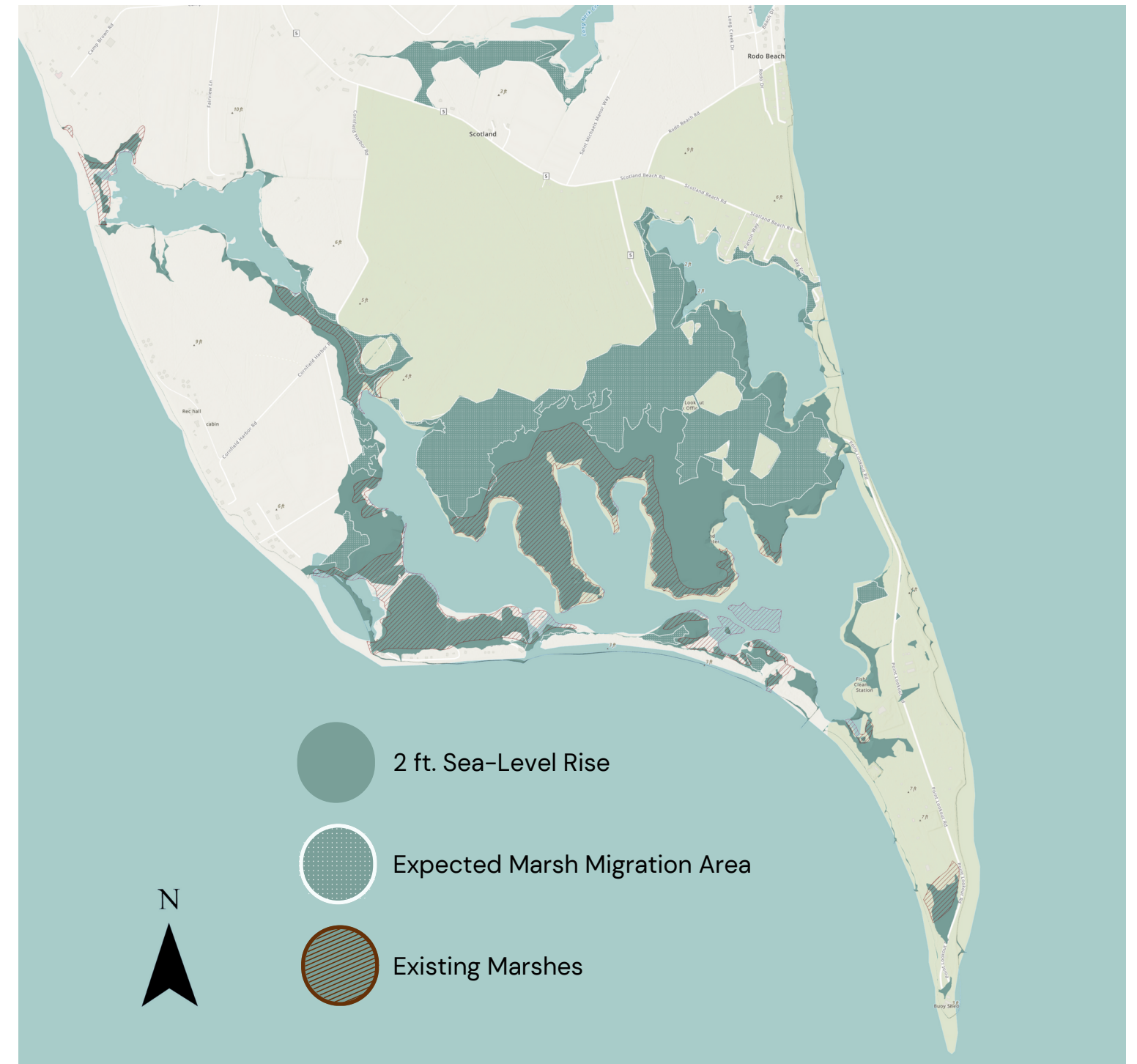


Figure 3: Sea Level Rise and Marsh Migration on Point Lookout



Park Amenities

Introduction

The park currently offers a diverse range of amenities that provide a range of experiences for the visitors at Point Lookout State Park.

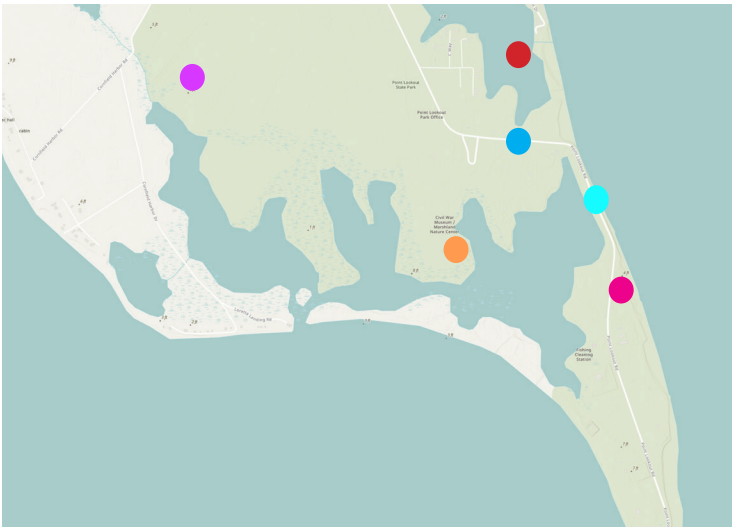


Figure 4: Map with General Location of Each Amenity

Amenities

The following are the main amenities offered at Point Lookout State Park. Each are described with the experience, any opportunities, and imposing threats.

Hunting Area



The Hunting Area, located near Jacobs Farm, contains an open forest that has 240 acres dedicated towards deer hunting. It contains native plantings such as loblolly pines and other integral wildlife species. There is the potential risk of this area being disrupted by invasive species, but also has the opportunity to become more accessible.

Bathhouses



Scattered throughout the park, the bathhouses provide visitors with toilets, and some offer showers. Restrooms are kept clean and open through most of the year. There is the opportunity to offer more of these services throughout the park's nature areas.

Campsites



The campsites provides visitors with the opportunity to engage with the natural environment, providing a relaxing activity. Many of the campgrounds are at risk due to rising water levels and the site is currently experiencing ponding. There is the opportunity to transform these campgrounds into picnic areas.

Marshland



The Marshland is an important ecosystem providing habitats for many species. This site provides the water trails. It is currently being affected by invasive species (*P. australis*), flooding, and marsh migration. There are opportunities to restore the native vegetation through controlling invasives.

Civil War Museum & Marshland Nature Center



This museum houses exhibits on the prison camp and the Union's Hammond Hospital They also showcase the wildlife and ecosystems around the Chesapeake Bay. Due to increases in flooding, the museum exhibits will likely be relocated to a new boating and visitor services center nearby.

Causeway



As the only connection to the point, the causeway is critical in accessing the peninsula. The narrow road is vulnerable to flooding during storms and tidal surges.

Park Amenities

● The Park Store



At the Park's Store, visitors can purchase snacks, fishing supplies, and souvenirs. Due to increases in flooding, the store will potentially be removed and the services relocated to a new boating and visitor center.

● Swimming Beach



This is a popular swimming area that gets crowded. There are opportunities to add living coastlines to combat the coastal erosion taking away areas of shore.

● Historic Sites



The point area has a rich past connected to American wars. Since it has housed historic sites like Camp Hoffman, there are opportunities to have a Comprehensive Historic Plan and educational signage. These areas are at risk of all their land being covered by water.

● Fort #3



Constructed near the end of the Civil War, this earthen fort held a strategic position at the opening of the Potomac. The barracks and other small buildings have since been reconstructed and give insight on the lives of the soldiers.

● Picnic Area



This is another popular spot that is right by the beach. It gets so crowded, the site has turned from first come first serve to designated reservable areas. There's opportunities for educational and fun spaces like playgrounds with signage. The site gets frequent puddles.

● The Lighthouse



This landmark was recently renovated for tours. It has the opportunity to continue to preserve and share its history of the light it provided to ships. The land it's on is at risk of being covered by water eventually.

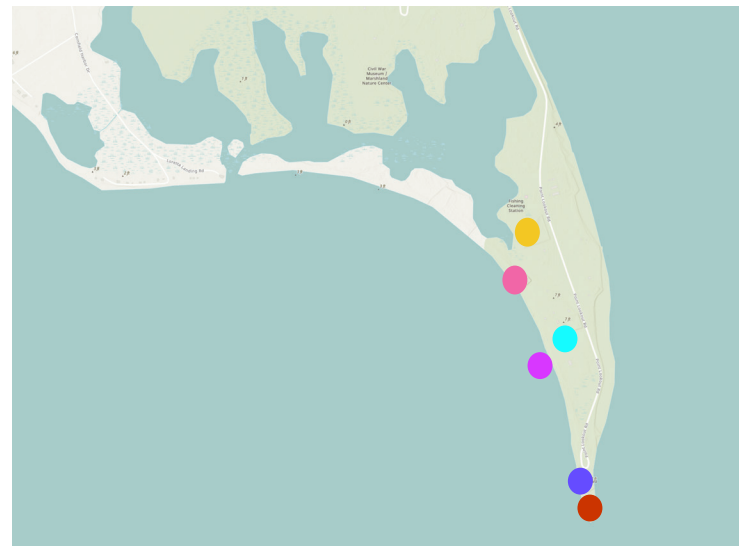


Figure 5: Map with General Location of Each Amenity

Environmental Threats

Key Threats

- Increasing Water Levels
- Shoreline Erosion
- Threat to Wetland Ecosystems
- Flooding of Trails & Infrastructure



Figure 6: View of Marshy Area Near Lighthouse

Impact of Rising Waters

Places near coastlines experience significant ecological changes due to rising waters. Over the next 25-50 years, sea levels are projected to rise by 2 feet, affecting landscapes and ecosystems.

Shoreline Erosion

Shoreline erosion is the process in which water rising, strong wave energy and flooding wears down the current shoreline. This results in the loss of coastal habitats, leading to damages and environmental changes.

Effects of Shoreline Erosion

Shoreline erosion results in the loss of land and property damages, habitat destruction -- which impacts the wildlife, and increased flooding and storm damages.

Shoreline Erosion

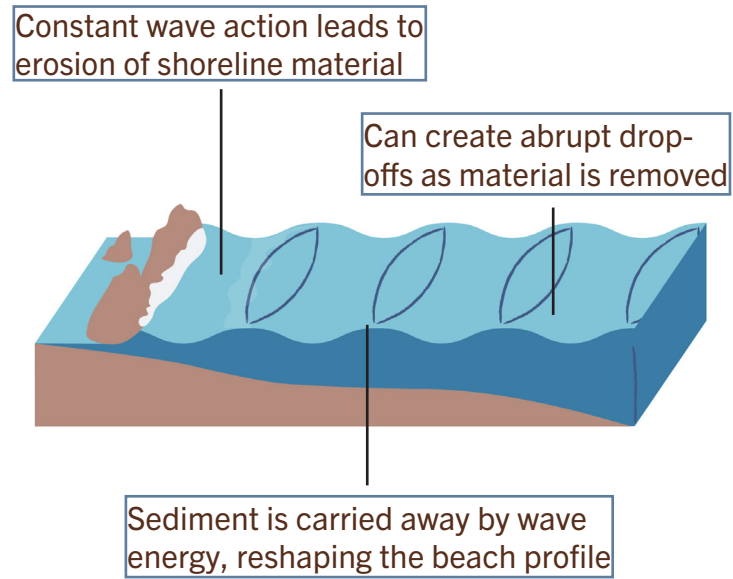


Figure 7: Shoreline Erosion Along Point Lookout



Figure 8: Dock in Green's Point Loop

Effects of the Park

These environmental threats have long lasting impacts on Point Lookout State Park:

- The loss of coastal marshes and wetlands, diverse ecosystems that are critical for the wildlife at Point Lookout
- Increased flooding of walking trails, roads, and visitor areas, making access to these services more difficult
- Threats to its historic sites due to these floodings that deteriorate the structural integrity of historical buildings.

Figure 9: Projected 2 Foot Sea Level Rise, Point Lookout

Future Risk

Projections indicate that without intervention, large portions of the park could be permanently underwater in the coming decades.

Environmental Opportunities

Adapting to Threats

There are a variety of methods that help adapt to the current environmental threats, including implementing nature based solutions such as planting appropriate vegetation and habitat restoration. There are also engineered solutions that can help adapt to these threats. Depending on location and situation, these solutions may be more or less effective as these decisions are based on case by case scenarios.

Solutions (Nature-Based)

Living Shorelines

Living shorelines are a natural approach to reducing erosion that is environmentally safe. This method uses marsh grasses, oyster reefs, and submerged aquatic vegetation to stabilize coastal edges that consists of existing plants, sand, and rocks which slow wave action and reduce erosion along existing shorelines.



Figure 10: Living Shoreline Example

Oyster Reef Restoration

Oyster reefs can be used to reduce wave action and inhibit sea level rise. This method is done by either seeding and/or substrate. Seeding (a.k.a. spat-on-shell) plants juvenile oysters on an existing reef to help the reef reestablish itself. Substrate can be done with spat, this method is done in which there is no current reef, and instead a foundation is established through crushed oyster, shells, stone, concrete, or other materials. Juvenile oysters can be planted if the current conditions do not support oyster establishment. They also provide wildlife habitat and improve water quality by filtration.



Figure 11: Oyster Reef

Wetland Restoration

This method stabilizes wetlands by reestablishing native plant material. This protects the current wetland while acting as barriers against erosion and storm surges by slowing wave activity and erosion.

With the establishment of wetlands, it also provides an important ecosystem for wildlife to continue to thrive.



Figure 12: Bulkheads at Point Lookout

Solutions (Engineered)

Elevated and Flood Resistant Infrastructure

Elevated and Flood-Resistant Infrastructure include structures such as raising boardwalks, trails, and buildings to prevent damage from floodings.

Revetments, Seawalls, & Bulkheads

This method includes a series of different shore parallel structures that protect the land from high energy wave impacts that may cause severe damage. By holding soils in place behind them, they are meant to delay the effects of rising waters -- but are more often than not, actually accelerating erosion in the long-run.

Breakwaters

As an offshore shore-parallel structure, its design intends to break wave energy before reaching coastal edges. Typically made of rocks, breakwaters stabilize sediments, protecting wetlands, beaches, and overall land.



Figure 13: Living Breakwaters - SCAPE, Staten Island, NY

Terrestrial Habitats

Types of Habitats

What lies at the interface of the brackish waters and the coastline of Point Lookout is a thriving and diverse ecosystem. Tidal marshes are some of the most productive ecosystems on the planet, and provide crucial habitats for a range of vegetation and terrestrial species. Additionally, the vegetation and peat act as a natural filter, trapping pollutants and protecting the coastline from storm surges. Within the tidal marshes of Point Lookout lie three main zones: High marsh, low marsh, transitional zones, and forests. Each zone has specific characteristics, functions, and habitat conditions that support unique species

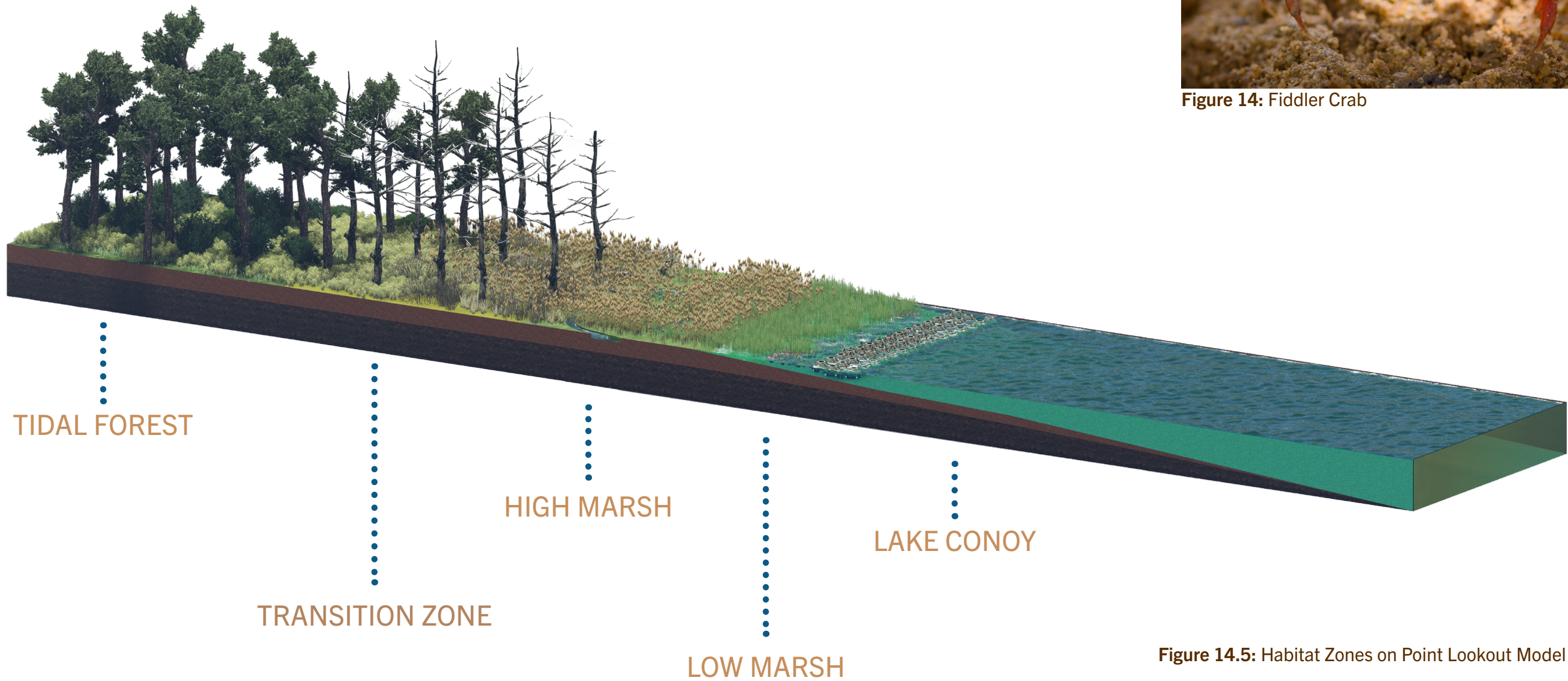


Figure 14: Fiddler Crab

Figure 14.5: Habitat Zones on Point Lookout Model

Terrestrial Habitats



Figure 15: Habitat Zones on Point Lookout Image

Terrestrial Habitats

Low Marsh

Low marsh zones are built on salt marsh peat, which is a mix of dead organic matter and sediment that helps protect against flooding and erosion. These zones consist primarily of *Spartina alterniflora*, which acts as a natural baffle to slow down wave energy and encourage sediment deposition. As sediment accumulates and the marsh habitat becomes more terrestrial, vertical zonation, the distribution of species based on elevation, begins. The salt marsh sparrow nests in this zone, and because of inundation they have a very narrow nesting range. Low marshes are important spawning grounds and nesting areas for waterfowl, invertebrates, and fish.



Figure 16: Point Lookout Low Marsh



Figure 17: Saltmarsh Sparrow (Vulnerable Status)

High Marsh

High marsh zones are a product of sediment accumulation. They are only flooded during high spring tides or storm surges, and are often dominated by the invasive species known as *Phragmites australis*, which often outcompetes the native salt marsh hay, *Spartina patens*, that also grows in high zones. *Phragmites* have an extensive root network that allows for rapid proliferation, and its tall height can block sunlight from reaching other species. The species can be seen dominating the high marshes of Point Lookout. Great blue herons are a prominent species in the marshes of Point Lookout, who rely on the marsh for food and the forest for protected nesting.



Figure 18: Point Lookout High Marsh



Figure 19: Great Blue Heron

Terrestrial Habitats

Transition Zone

As sea level rise begins, marsh migration occurs. Transition zones are known as the ecotone between tidal marsh and upland. As brackish water encroaches on the upland pine communities, signs of stress begin to develop. Loblolly pines cannot handle the inundation and high salinity levels, and will experience stunted growth, crown thinning, and mortality. These stretches of dead loblolly pines are the ghost forests seen along the coast, and act as major indicators of marsh migration. Species diversity in the transition zone is low, with bayberry and groundsel dominating the understory. Fiddler crabs can be found making their burrows in high marsh and transition zones.



Figure 20: Point Lookout Transition Zone



Figure 21: Fiddler Crab

Tidal and Coastal Plain Pine / Oak Forests

Along the edge of Point Lookout’s marshes are tidal forests. They are located along tidal rivers and creeks between high salt marshes and adjacent uplands, and are dominated by *Pinus taeda* -- loblolly pine. The Point Lookout grounds has diverse young forests of loblolly pine, sweetgum, red oak, and black cherry trees. Patches of dry calcareous forests and woodlands where dry sandy soils have an abundance of calcium are also present. The understory and herbaceous area is more lush in these areas. The American mink, red fox, muskrat, are a few species that can be observed in this zone.



Figure 22: Point Lookout Tidal Forest



Figure 23: Point Lookout Pine/Oak Forest



Figure 24: American Mink

Terrestrial Habitats

Impacts of Sea Level Rise on Marsh Habitat

In order to maintain healthy conditions, marshes must grow vertically at the same rate or faster than sea level rise. As sea levels continue to rise, tidal marshlands may not be able to maintain a healthy growth rate. As these marshlands become more inundated, plants that could previously withstand minimal amounts of flooding will die, resulting in ghost forests and more open water. Marsh migration also poses a threat to existing roads and buildings that deteriorate over time due to the standing water.

How Marshes Grow Naturally

This is a map of the Unvegetated to Vegetated Ratio (UVVR) at Point Lookout. The colors range from purple to green, with green indicating the most healthy vegetated to unvegetated ratio. The purple areas along the coast are expected behavior for marsh along open water. However, the white areas inland indicate an unbalanced vegetated ratio. These are likely areas that have suffered inundation. In these white areas, the best method to keep the marshland healthy is through spreading thin layers of sediment onto the marsh.

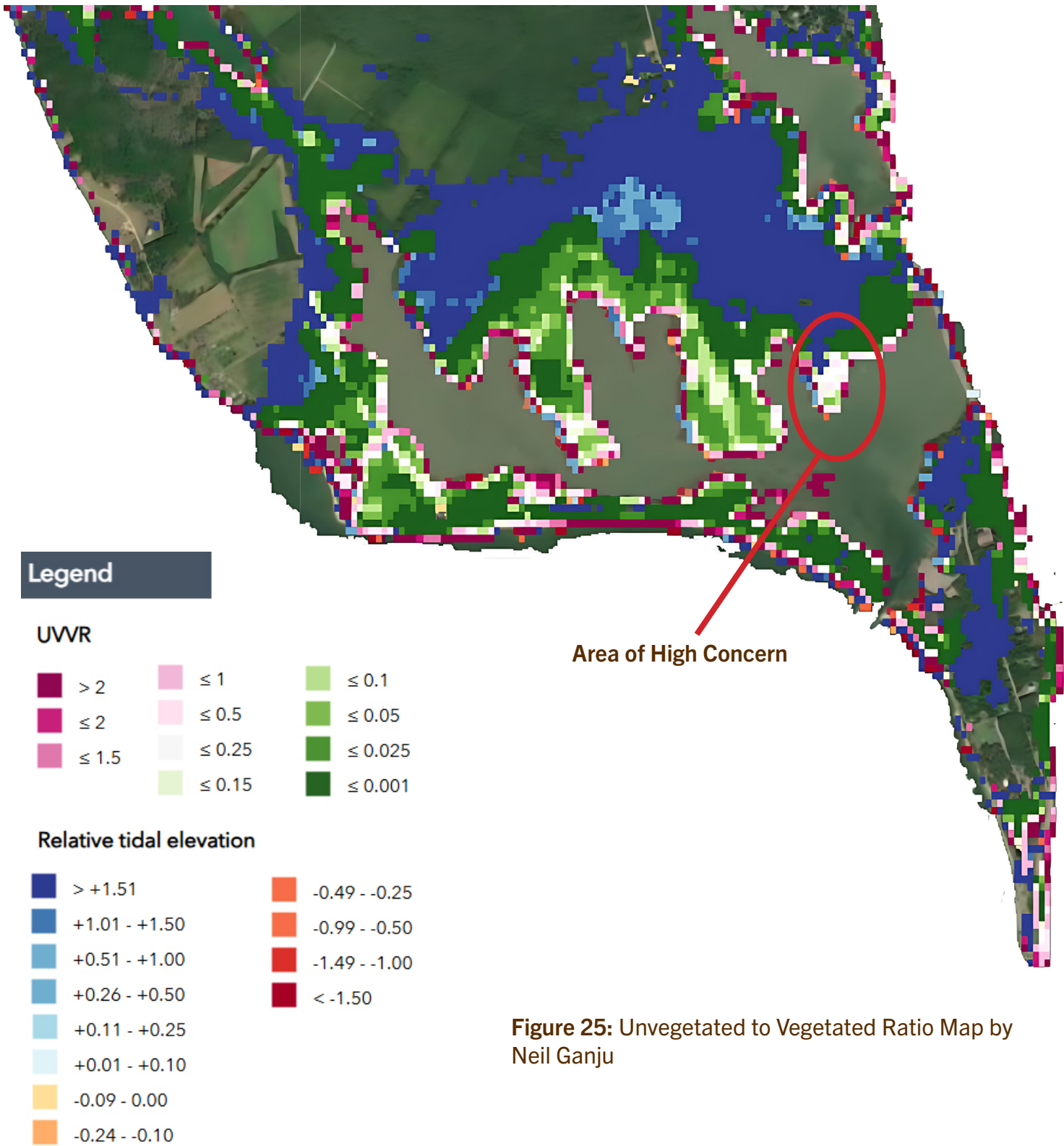


Figure 25: Unvegetated to Vegetated Ratio Map by Neil Ganju

Terrestrial Habitats

Thin Layer Sediment Placement

Thin layer sediment placement is a good way to restore or maintain marsh elevation relative to sea level rise. The sediment attaches to the root system and improves vertical growth, which keeps the low marsh from drowning. The migration barrier also keeps the marsh from migrating into built structures like roads or buildings. Below is a visual of how thin layer sediment placement works in restoring marsh health.

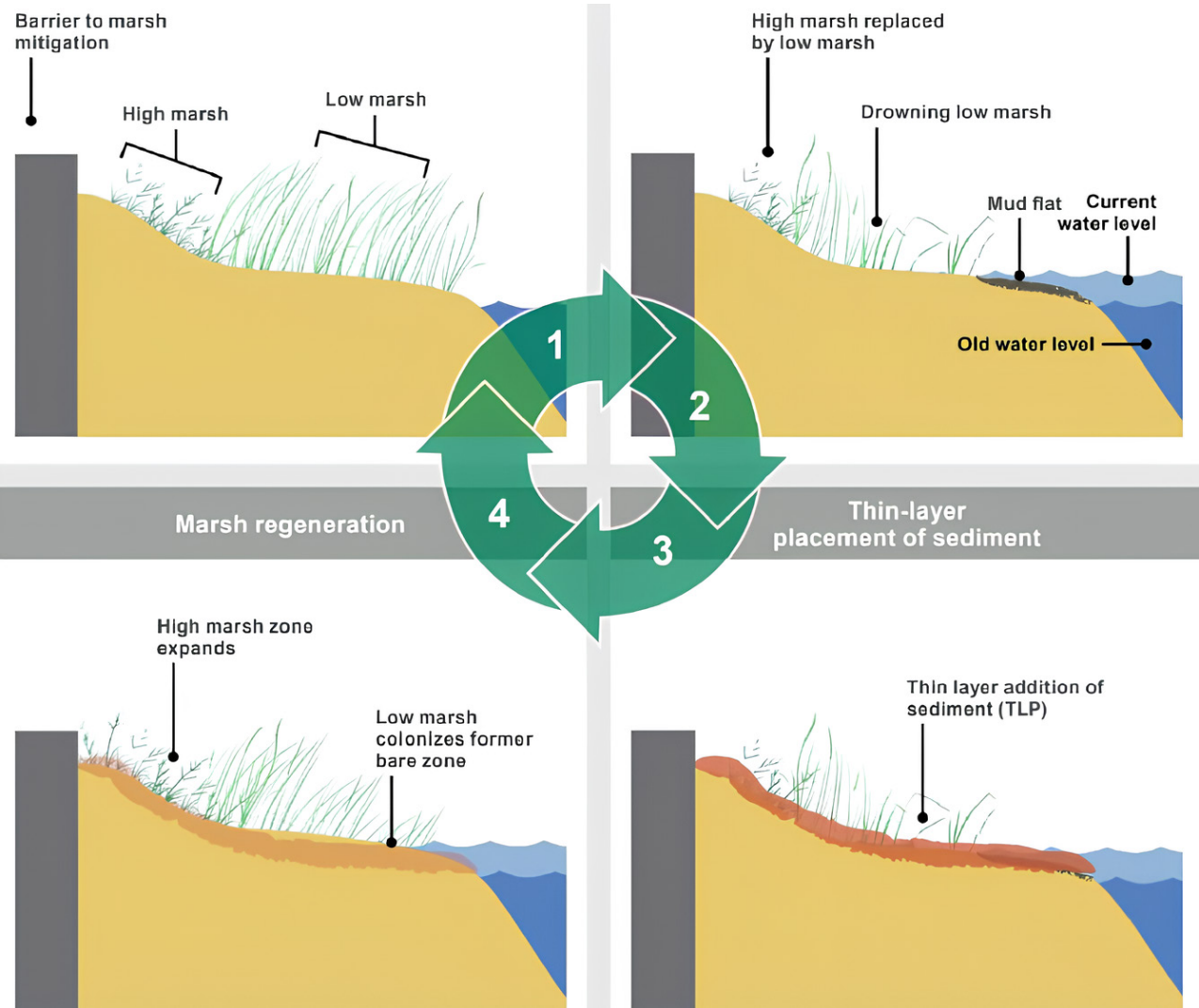


Figure 26: National Estuarine Research Reserve: www.nerra.org/tlp/



Figure 27: Point Lookout (Green's Point Loop)



Figure 28: Point Lookout (Green's Point Loop)

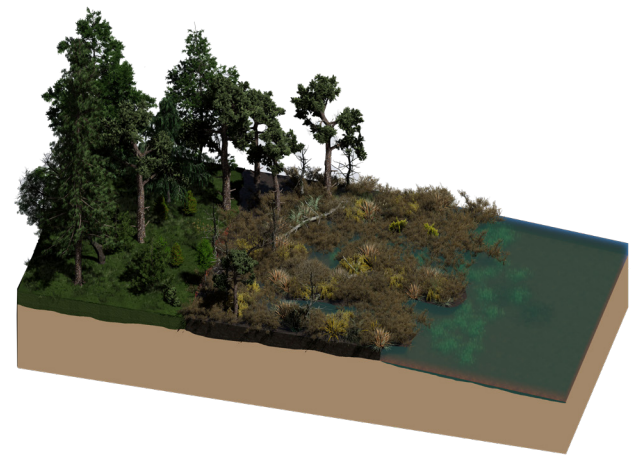


Figure 29a: Before Rapid Sea Level Rise

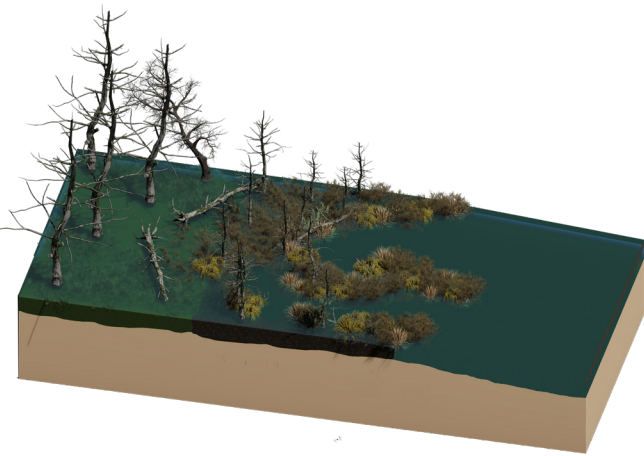
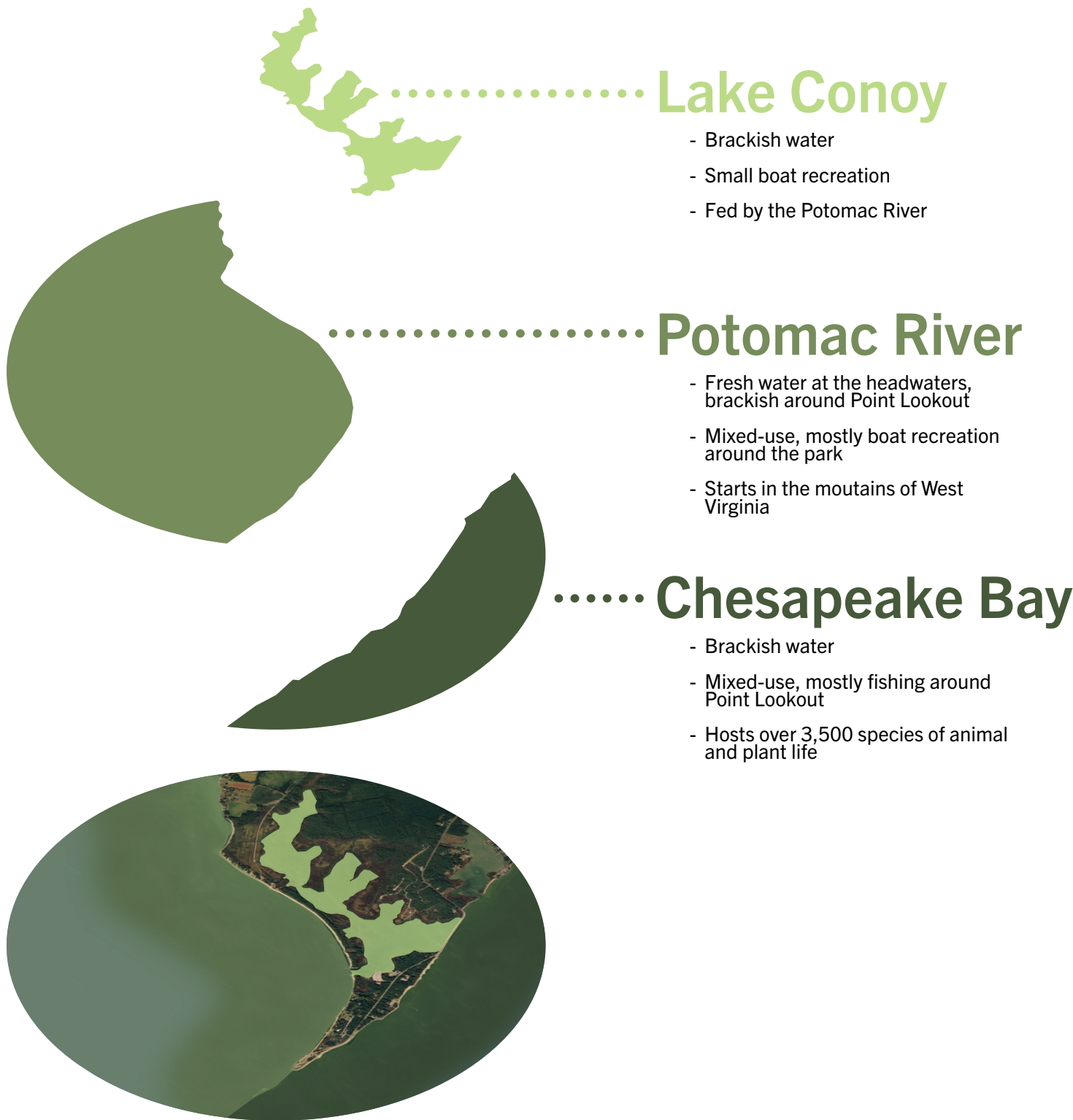


Figure 29b: After Rapid Sea Level Rise

An Effective Carbon Sink

As marshes grow, they remove carbon dioxide (CO₂) from the atmosphere, while simultaneously using it to stabilize their root systems. The carbon often remains in the soil long after the plant dies. This long term storage of CO₂ is known as carbon sequestration. Carbon sequestration makes tidal marshes very effective carbon sinks, keeping the amount of CO₂ in the atmosphere at manageable levels.

Aquatic Habitats



Lake Conoy

- Brackish water
- Small boat recreation
- Fed by the Potomac River

Potomac River

- Fresh water at the headwaters, brackish around Point Lookout
- Mixed-use, mostly boat recreation around the park
- Starts in the moutains of West Virginia

Chesapeake Bay

- Brackish water
- Mixed-use, mostly fishing around Point Lookout
- Hosts over 3,500 species of animal and plant life

Lake Conoy

The mix of water from the Potomac and Chesapeake results in a brackish water system, and swimming is not advised. The lake hosts a diverse range of wildlife, including one of Maryland’s largest great blue heron nesting colonies.

Potomac River

The Potomac River has brackish water around Point Lookout, which is not desirable for swimming. Underwater grasses throughout the river provide habitats but receive a B in quality by the river’s 2023 health report card (administered by the Potomac Conservancy). An oyster shoreline would reduce the water force along Point Lookout and improve wildlife habitats.

The Chesapeake Bay

Salinity Levels

- Mouth (where the bay meets the ocean): 25-30 parts per thousand (ppt)
- Head of bay and tidal rivers: less than 0.5 ppt
- Middle portion: more than 0.5 and less than 25 ppt

Storm Surges

Rising sea levels and frequent intense storms due to climate change in the Chesapeake Bay pushes the salty water into the Potomac River, increasing salinity levels.

Sediment Transport

The health of the bay has degraded due to excess sedimentation, derived from erosion in the watershed and through its tributaries, including the Potomac.

Figure 30: Bodies of Water Near Point Lookout

Aquatic Habitats

Wildlife Habitat

Shellfish beds of clams are found in all salinity levels. American oyster beds are found in mid to high salinity waters.

Submerged Aquatic Vegetation Beds (SAV)

SAV beds absorb nutrients, increase oxygen concentrations, reduce wave action, stabilize sediments, and reduce shoreline erosion. Salinity determines which aquatic plant species make up the bed.



Figure 31: Submerged Aquatic Vegetation

Benefits of Oyster Reefs

Oyster reefs improve ecological conditions by cleaning algae and suspended sediments from the water, allowing sunlight to reach plants. By supporting over 300 species, they improve biodiversity.

They can also act as breakwaters by reducing wave height by 50 - 90 %, therefore protecting marsh plants. By growing vertically, oyster reefs are more adaptable to sea level rise than typical concrete structures.



Figure 32: Oyster Reef

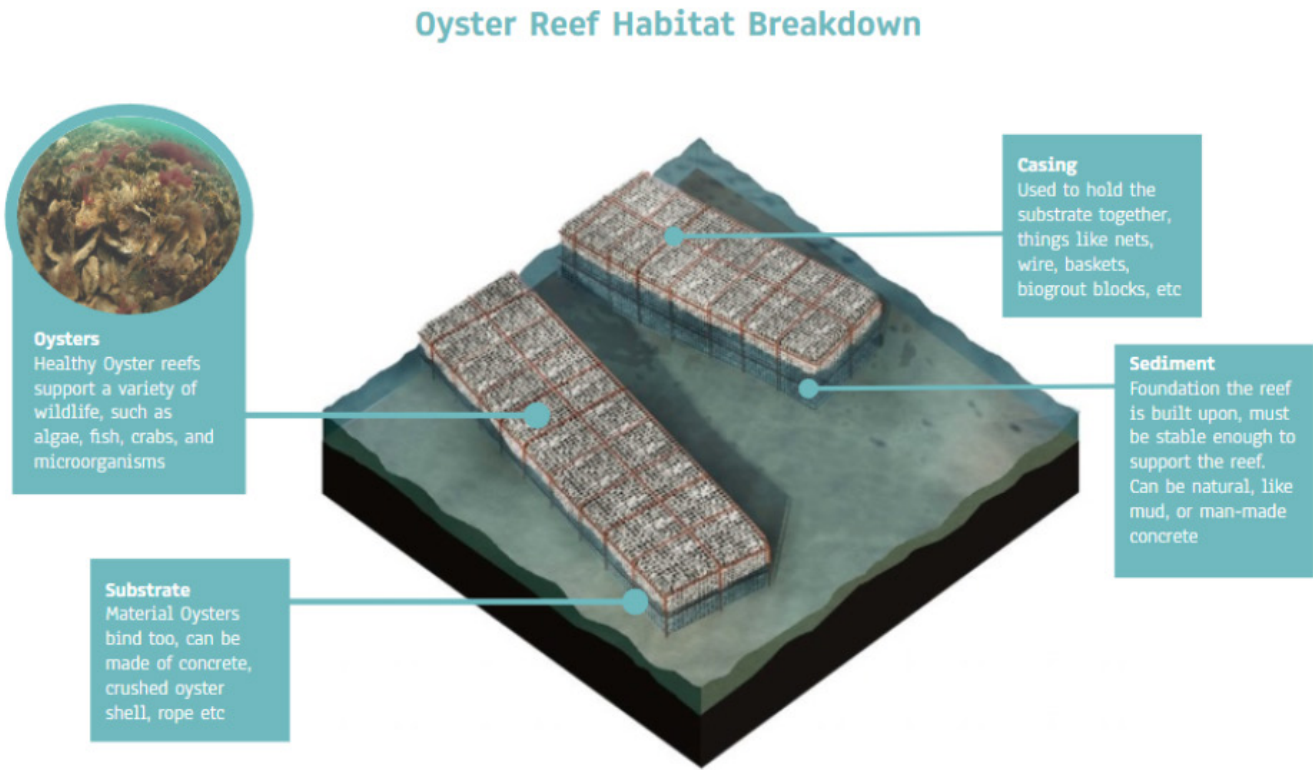


Figure 33: Oyster Reef Habitat



Figure 34a: Marsh with Oyster Reefs

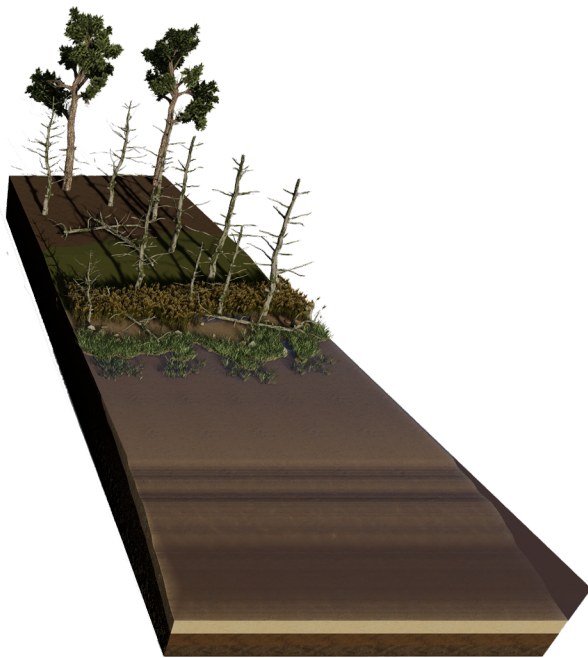


Figure 34b: Marsh without Oyster Reefs



Introduction

The following site designs address five locations on the park grounds where design interventions can strengthen the resiliency of the park.

These include:

1. Lake Conoy Overlook at Jacobs Farm
2. Green's Point Picnic Area and Beach
3. Causeway and Living Shoreline
4. Boating Dock and Visitor Services Center
5. Picnic Beach and Playground

Each of these site designs is discussed in detail in the following pages.



Figure 35: Map of the Site Design Areas



POINT LOOKOUT

Lake Conoy Overlook
at Jacobs Farm



Context & Introduction

The design balances subtle intervention with visual and experiential richness. Boardwalks use weather-resistant, sustainably sourced wood in a soft serpentine form to echo the natural flow of water. The viewing platform is a simple, elevated steel-and-wood structure with slatted sides that frame views while allowing light and air through. Native plants like switchgrass, seaside goldenrod, and swamp milkweed are planted in ecological zones to guide visitors through changing environments.

Sculptural trail markers, made of corten steel, serve as both wayfinding and interpretive elements. Small landform mounds near the entrance serve as gathering points, natural play zones, and visual anchors that reflect the site’s shifting topography. Altogether, the design respects the land’s story while creating a compelling, memorable, and educational visitor experience.

You Are Here:



Figure 36: The Site on a Map of Point Lookout



Figure 37: The Marsh Shoreline of Lake Conoy



Figure 37.5: Inundated Areas on Site

About the Site: Strengths and Opportunities

Routing trails around existing loblolly pines and incorporating elevated boardwalks in wet or steep areas reduces environmental impact while maintaining accessibility. Interpretive signage, QR codes, and telescopes can create an engaging, multi-sensory visitor experience. Material choices—such as sustainably sourced wood and recycled metal—enhance durability

Planning for marsh migration through designated buffers and conservation zones to proactively address sea level rise. Educational technology, like augmented reality experiences or digital field guides linked through QR codes, could deepen visitor learning and interaction

Weaknesses and Threats

The necessary clearing of grasses for the lookout platform, although minimized, disturbs a sensitive marsh ecosystem. Long-term success of shoreline stabilization and waste management depends on consistent maintenance. Seasonal flooding or weather events could further reduce access to features, around the boardwalks and viewing areas.

Rising sea levels and tidal encroachment remain the most significant threats to the long-term viability of the Point Lookout Park ecosystem. Without adequate space for marshes to migrate, essential habitats and natural storm barriers may be lost. Additionally, visitor behavior—including off-trail walking, littering, and misuse of facilities--can degrade sensitive areas

Site Masterplan

Design Objectives & Goals

The design for the overlook seeks to build resilience against sea level rise, preserve and restore ecological systems, create meaningful educational experiences, and ensure accessibility. These goals are realized through careful placement choices, ecological restoration, and an inclusive layout that fosters discovery and engagement with the site's unique natural history and environmental challenges.



Figure 38: Site Masterplan and Key

Response to Growing Sea Levels

Rising Above the Sea Levels

Point Lookout has experienced considerable ecological transformation due to sea-level rise, including marsh migration and shoreline retreat. Tidal encroachment is reshaping the coastline, and without space to migrate inland, salt marshes risk drowning, leading to loss of biodiversity and diminished storm buffering.

The design anticipates a 1.5–2.5 ft rise in sea level over the next 25–50 years. In response, we introduced elevated helical pier boardwalks to maintain access across flood-prone areas without compacting soils or impeding marsh migration. Wetland buffers and conservation zones are integrated to give marshes space to expand inland naturally. Strategic planting of native species along vulnerable shorelines will assist in erosion control and habitat stabilization. These interventions not only address future conditions but also help the public visualize the shifting landscape.



Figure 39: The Boardwalk Transitioning From Flat to Raised in an Inundated Zone

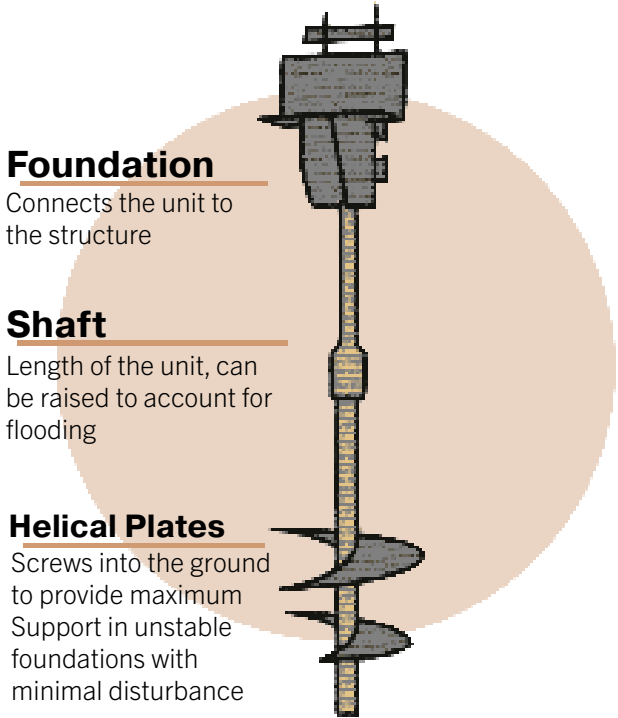


Figure 40: How Helical Piers Support Coastal Resilience

Response to Education

Signage

Educational signage along the trail system will interpret topics such as sea-level rise, local plant, and wildlife, forest succession, and marsh ecology. The viewing platform will include embedded graphics and QR codes that link to multimedia guides explaining the visible changes in landscape over time.

Interactive features--such as a changeable high-water marker or a native plant scavenger hunt--will engage both children and adults. Benches and shade structures at key learning nodes will encourage longer visits and thoughtful reflection. Programming space is also integrated into the design to allow for ranger talks or school group visits.

Signage Details

Sea Level Rise

This sign features a tactile diagram showing projected sea-level rise over the next 25–50 years, paired with a slider mechanism that visitors can move to see how marshland and infrastructure might change. QR codes will link to real-time NOAA data and animations explaining tidal cycles and future flood scenarios.

Wildlife of Lake Conoy

Positioned near the Lower Viewing Platform, this panel includes rotating wheels or flippable panels showing birds, amphibians, and aquatic life native to the marsh and lake. Visitors can match footprints or calls to species and learn how they interact with the wetland environment. It's ideal for families and school groups.

Marsh Migration Explorer

A long-format timeline graphic shows how the marsh at Point Lookout has shifted over the decades, supported by historical photos and aerial maps. A touch-sensitive map allows users to toggle between past, present, and projected future marsh boundaries. This feature helps people visualize marsh movement as a natural, and necessary process in response to sea-level rise.



Figure 41: Sea Level Rise Signage



Figure 43: Marsh Migration Signage



Figure 42: Wildlife of Lake Conoy Signage

Response to Accessibility

Vehicle Accessibility

The site features an expanded vehicle-accessible parking lot at the site entrance to accommodate more visitors. This lot includes designated accessible parking spaces with direct, barrier-free access to the suggested redesigned trailhead. The trailhead serves as a clear orientation node, featuring maps, and educational signage.

From here, visitors can access the trail network by foot, bike, or wheelchair. The helical pier boardwalks and gently sloped crushed gravel paths ensure comfortable movement through all terrain types, from forest to marshland.

The expanded parking lot is designed with permeable paving to reduce stormwater runoff and encourage groundwater recharge. It is framed by low native plantings to soften the edges and blend into the landscape. The improved trailhead includes a sculptural sign element, forming a welcoming and informative threshold to the site.

Accessible Paths

Trails and boardwalks

The parking area at the entrance connects directly to the primary trailhead from mulch trail to elevated boardwalk.

From there, a loop system accommodates walkers, bikers, strollers, and wheelchairs. Elevated helical pier boardwalks provide a level, accessible path across wetlands while preserving sensitive ground below. Trail gradients are gentle, with ample rest stops and signage that uses both text and symbols. Bike racks are placed at the main entry, and materials used for trails are slip-resistant and tactilely distinct for wayfinding. The design ensures every visitor, regardless of mobility, can reach the viewing platform and interpretive areas comfortably.



Figure 44: Renovated Parking Lot Design



Figure 45: Proposed Boardwalk Design

Response to Ecological Preservation

Thinking About Plantings

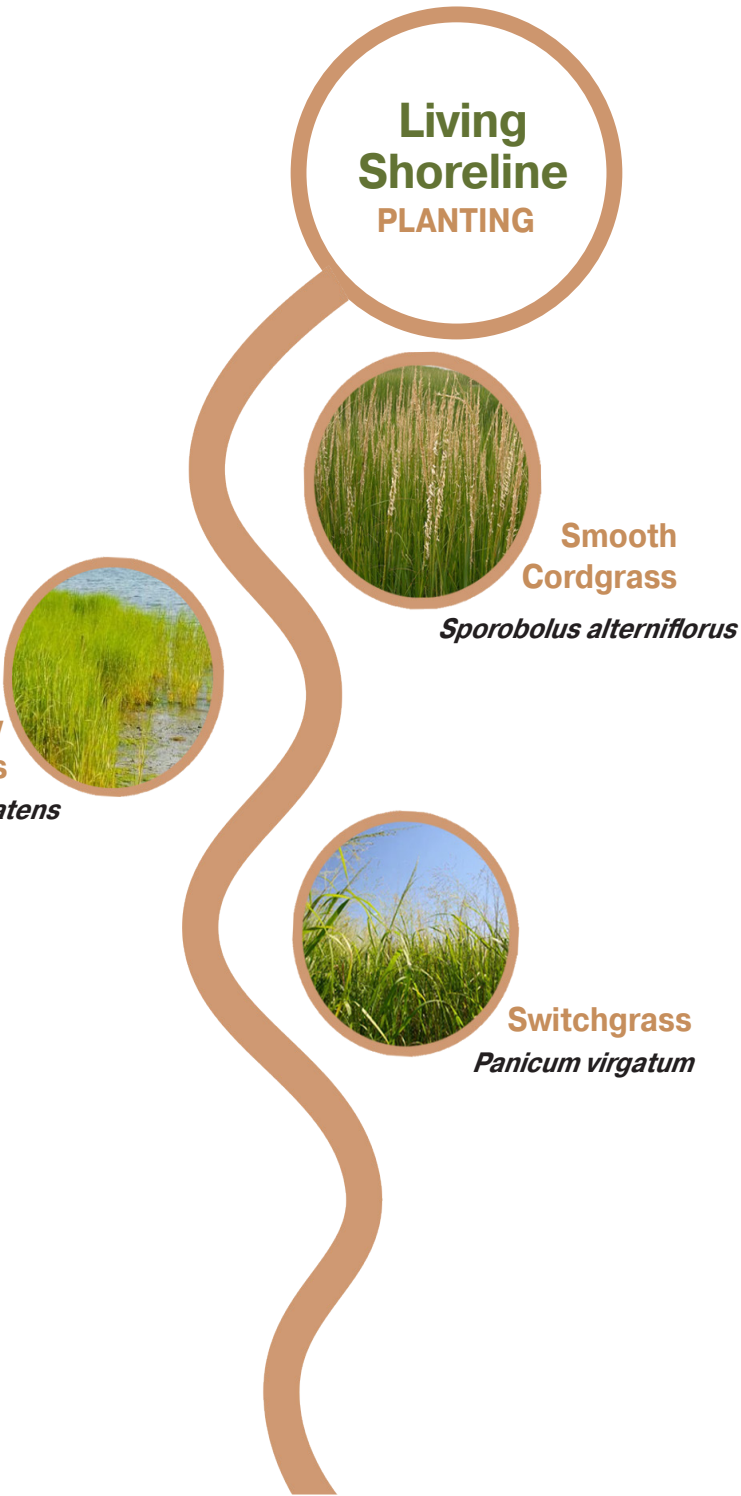
The site encompasses multiple ecotones--upland forests, loblolly pine groves, salt marshes, and tidal shorelines. Key species include loblolly pine, juniper, American holly, tall marsh grasses, and phragmites.

The design routes pathways and structures around existing tree root zones and clusters to avoid unnecessary clearing. Trail materials are permeable and lightweight to reduce compaction and support soil health. In the marsh zone, vegetation disturbance was minimized during tower construction by using a helical pier foundation system and reducing the footprint of cleared areas. Also, the plan aims to restore the shoreline with living shoreline plantings and coir logs to prevent erosion while maintaining habitat for birds, fish, and invertebrates. New plantings will use native species to enhance resilience and ecological function.



- 1 Elevated Boardwalk
- 2 Upper Viewing Platform
- 3 Lower Viewing Platform
- 4 Living Shoreline
- 5 Lake Walk

Figure 46: Proposed Design Plan with Key and Plantings



The Lookout Walk & Perspective

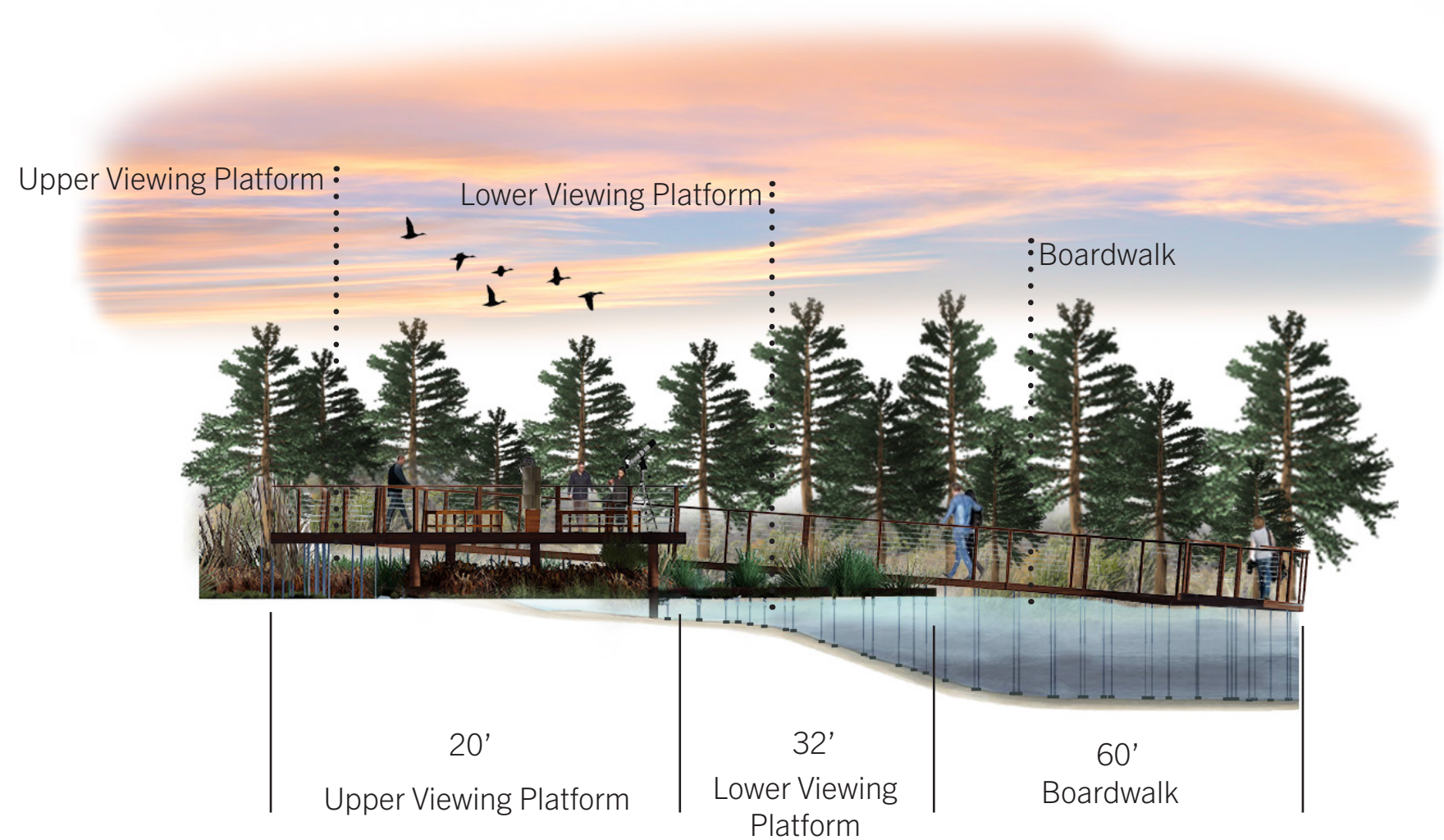


Figure 47: Proposed Boardwalk Section

Section

The Lookout Walk showcases a section cut of a key experiential feature of the site design, offering layered opportunities for observation, education, and ecological sensitivity. This linear boardwalk sequence guides visitors through the forest and toward the marsh edge via a gradual descent from an upper viewing platform to a lower viewing platform, before extending over the wetland via a 60-foot elevated boardwalk.

This design intentionally steps down with the natural grade, allowing for a smoother transition between ecotones and viewsheds. The two-tiered platform structure enhances accessibility and visitor experience by offering multiple opportunities for viewing wildlife. The structure is supported by helical plate foundations, which screws directly into the ground, offering stable support in soft, marshy soils while minimizing ground disturbance.

Perspective

Designed not only for daytime immersion but also as a safe and inspiring space for nighttime stargazing. Subtle, low-level integrated LED lighting is embedded directly into the boardwalk railing and decking to softly illuminate the path without creating light pollution.

These lights use warm, downward-cast beams that maintain visibility for safety while preserving the dark sky necessary for observing stars, plants, and nighttime wildlife activity.

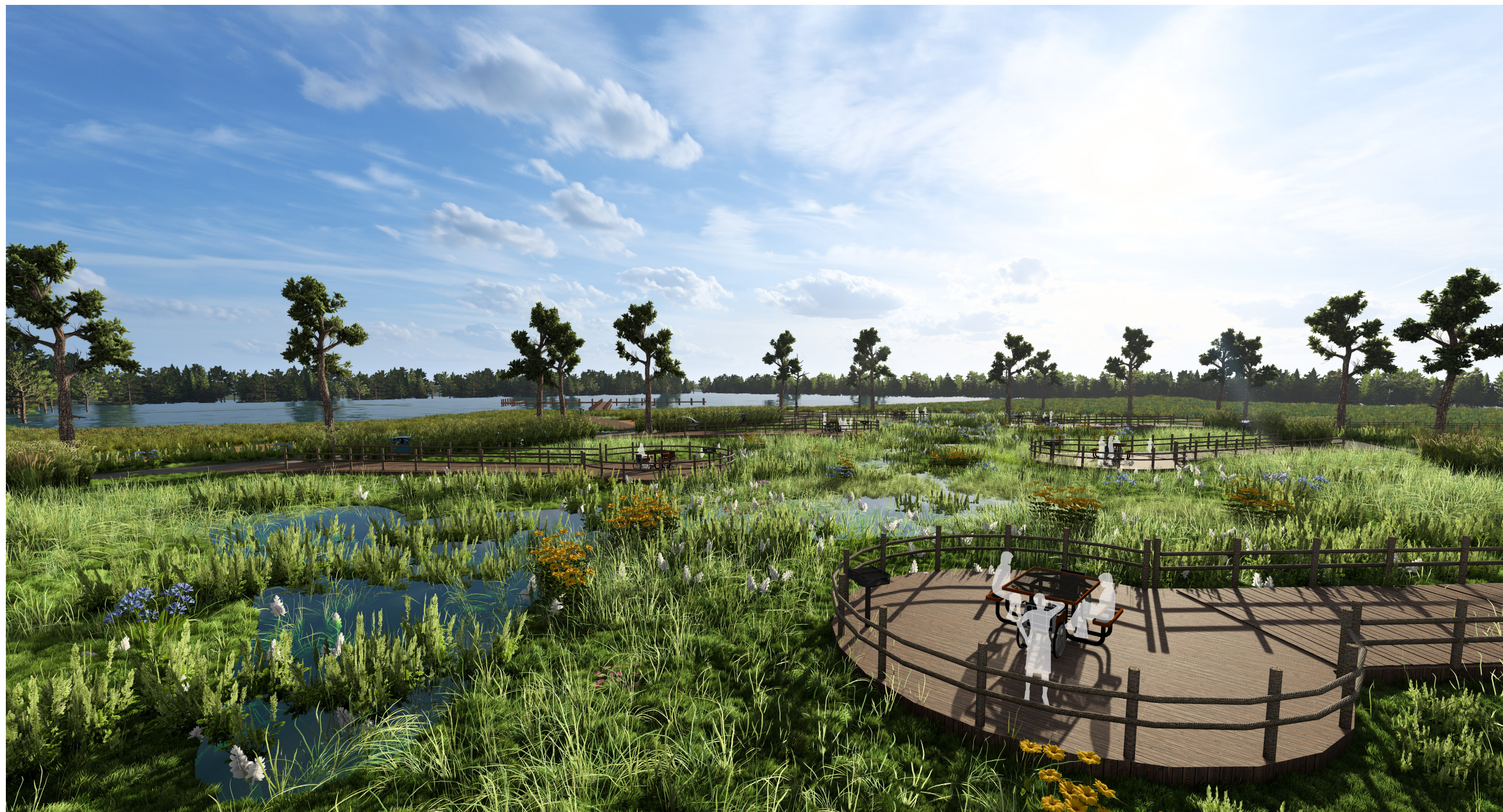


Figure 48: Starry Night at the Boardwalk Area



POINT LOOKOUT

Green's Point Picnic
Area & Beach



Context & Introduction



Figure 49: The Site on a Map of Point Lookout



Figure 50: Ponding in Campsite



Figure 51: View of Established Campground

Site Introduction

Green’s Point is currently a closed campsite with plans to turn the site into a bustling picnic area. This site offers an immersive experience surrounded by marshland, within view of Lake Conoy. As a result of the ocean levels increasing, Green’s Point faces marsh migration and constant ponding, in addition the spread of invasive species such as *P. australis* (phragmites). These events make access to services at Green’s Point more difficult, threatening its continued use as a campsite.

Opportunities

Within the ponding, there are opportunities to educate and enhance the beauty of the site. The ponding in the central area leaves room to experiment with wet meadows. Plantings such as rough goldenrod, white turtlehead, and New York aster are excellent plants for these conditions. Other opportunities include educating visitors about combating sea level rise via living shorelines, turtle nesting, and breakwaters.

Site Plan



Design Objectives & Goals

1. Making the Site More Accessible

While Green's Point is relatively flat, the design considering sea level rise will feature platforms raised above ground. The platforms will be ramped to allow for those with wheelchairs to comfortably access the site.

2. Preserving the Ecological Habitat

Within Green's Point, there are turtles that nest on the outer camp sites. Once these camp sites are removed, the turtles will need a habitat to continue nesting safely with the influx of more people. For this reason, the design features a turtle nesting beach inaccessible to the public. However, visitors can view the nesting beach safely from the pier. Also proposed, phragmites will be removed to allow for better visibility and less competition between native plants.

3. Education on the Green's Point

The site will feature pathways that go through the wet meadows with signage explaining plantings, turtle nesting, and oyster reef restoration. There will also be paths going near the breakwaters and living shorelines.

Figure 52: Site Plan of Proposed Design

Response to Growing Sea Levels

Currently on Green's Point

Projections indicate that in the coming 15 - 20 years, about 50% of the land mass on Green's Point loop will experience flooding, leading to a majority of the site becoming under water. The effects of rising water can be seen on the site already, as the site has multiple instances of ponding and standing water, some parts of the site becoming harder to access due to muddied flooring.

Marsh Migration

As sea levels continue to increase, the current marsh on Green's Point migrates. The marsh continues to move inwards, encroaching on the site and its current amenities, such as the campgrounds. This makes it difficult for the current amenities to be used to its fullest capabilities. Along with the migration, invasive plant material such as phragmites continue to overtake the native marsh vegetation. Thus, the current marsh is at risk as the sea continues to rise.



Figure 53: Current Ponding on Green's Point Loop

Addressing Sea Level

Helical Piers and Boardwalks

This design addresses the muddied pathways and ponding through the implementation of helical piers and boardwalks. Helical piers are less invasive towards the environment as they drill inwards into the ground to create a solid foundation for boardwalks. Moreover, helical piers are movable, having the ability to adjust the heights of the boardwalk to the height of the water. These boardwalks are implemented throughout the site, from being the base foundation for the proposed picnic sites, to creating an accessible pathway to the restroom, and leading out into Lake Conoy. This allows for visitors to comfortably interact with Green's Point and the natural services it offers.

Breakwaters

Breakwaters will be added near the beach into Lake Conoy. This slows down the wave activity that actively erodes the coastal edges on Green's Point Loop, maintaining protection of the implemented dredged beach.

Living Shorelines and Dredged Beach

With the implementation of a dredged beach along the west side of Green's Point and living shorelines along the coastal edges, this slows the effects of sea level rise by keeping sediments in place, softening wave activity from Lake Conoy, and reestablishing the native vegetation. Moreover, the dredged beach will act as a turtle nesting site, not fit for human activity. Visitors can access these sites from a safe distance on the boardwalks.



Figure 54: Lumion Render of Breakwater



Figure 55: Lumion Render of Living Shoreline

Response to Education

Signage on Site

Signage encompasses all aspects of the site, and is concentrated along the pathways near the breakwaters, living shorelines, and wet meadows. The signs include information about plants of the wet meadows, turtles and their nesting habits, oyster reef restoration efforts throughout Point Lookout, and how Green's Point will react and respond to sea level rise in the upcoming years. Along the breakwater and living shorelines, the signage focuses on how these features work to combat sea level rise and shore erosion. Currently, there is well maintained signage at Green's Point detailing the early travelers of the Chesapeake Bay. They act as educational opportunities, based on the existing information present.



Figure 56: Current Signage at Green's Point

Close Contact Interaction

Educational Wet Meadow Walk

An educational pathway is featured to the north of the site, leading to the bathrooms. Currently, the pathways leading to the bathrooms are unpaved and inaccessible. The design introduces elevated paved boardwalks that surround the bathrooms and extend through the wet meadows. The wet meadows are a major part of the educational opportunities at Green's Point, as visitors will understand how and why they function. Wet meadows are essentially made up of plants that thrive in wet soils, simulating a naturalized environment that is suitable for a site surrounded by marshlands and pine forests. Wet meadows provide several benefits to Green's Point, including flood prevention. As sea levels rise and continue to inundate the picnic area, the plants absorb a lot of that water and provide further soil stability. In addition, wet meadow plantings provide opportunities for more diverse flora and fauna in the area. The wet meadow plants include white turtlehead, rough goldenrod, and New York aster. These plants are not aggressive and do not grow more than 6' tall to ensure visitors have an overview of the entire site while in the picnic area.

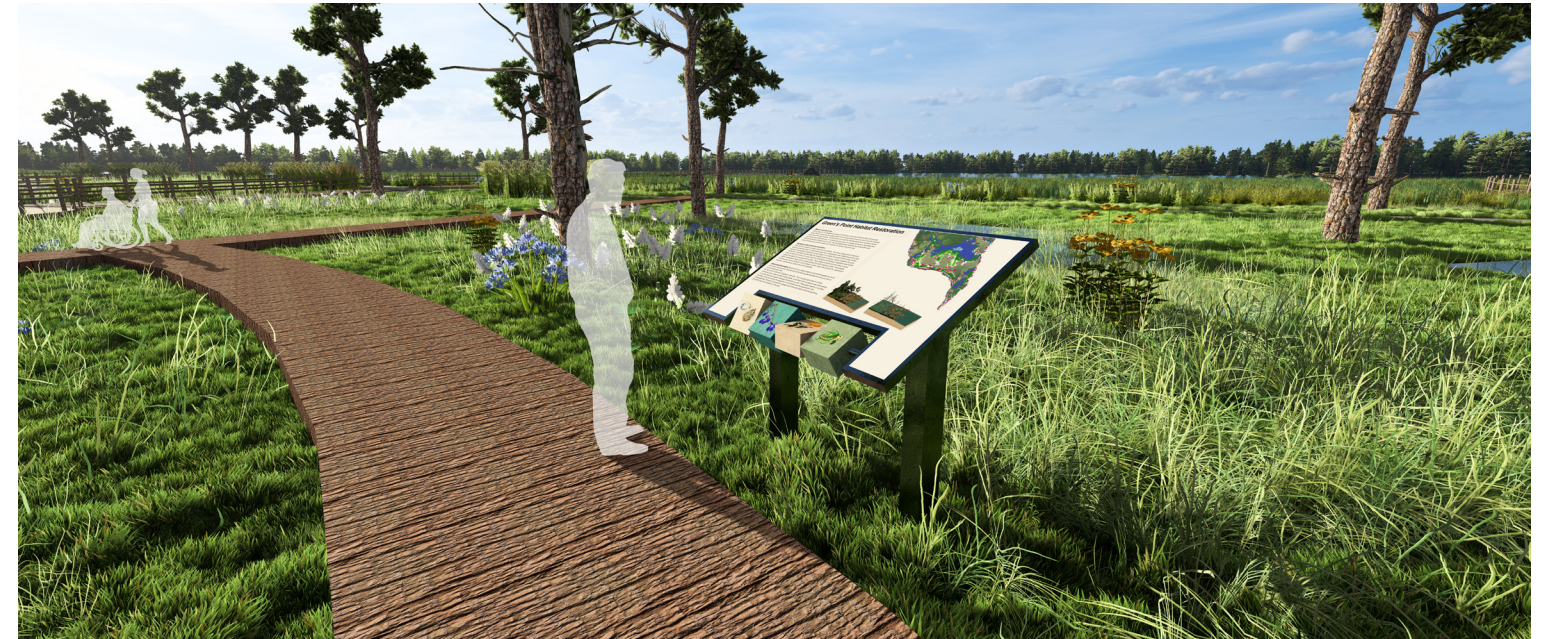


Figure 57: Signage Along Educational Walk



Figure 58: Walk Through the Marshlands

Response to Accessibility

Current Accessibility

Due to the ponding on site, many of the current pathways on Lake Conoy are hard to access due to the mud. Moreover, as the marsh continues to migrate, the vegetation takes over the pathways as well. Overall, the site faces difficulty with having clearer access to amenities such as the campgrounds and bathroom areas.

Opportunities for Accessibility

Picnic Sites

As the main amenity offered for Green's Point will be picnic areas, this design provides wheelchair accessible picnic tables, fit for 2 wheelchair users. Moreover, these areas will be accessible through ramps and as the picnic tables are fitted for a boardwalk, they allow for visitors to comfortably reach and interact with the site.



Figure 59: Access to Bathrooms

Parking

Parking will be offered on Green's Point Loop, being placed near the entrances of each respective picnic area. One of each set of parking allows for accessibility with a wider size and landings dedicated for those who need the space. Also, as a way to fit the essence of Green's Point, some parking spaces are on dedicated grassy areas. Plantings are added to hide vehicles from view in order to not disrupt the natural experience.

Boardwalks

As mentioned prior, with the implementation of boardwalks and helical piers, visitors have better access to experiences such as viewing Lake Conoy, the turtle nesting beach, the marsh habitat, and establishes safe pathways to utilities such as the bathroom and picnic areas.



Figure 60: Lumion Render of Boardwalk Leading to Lake Conoy

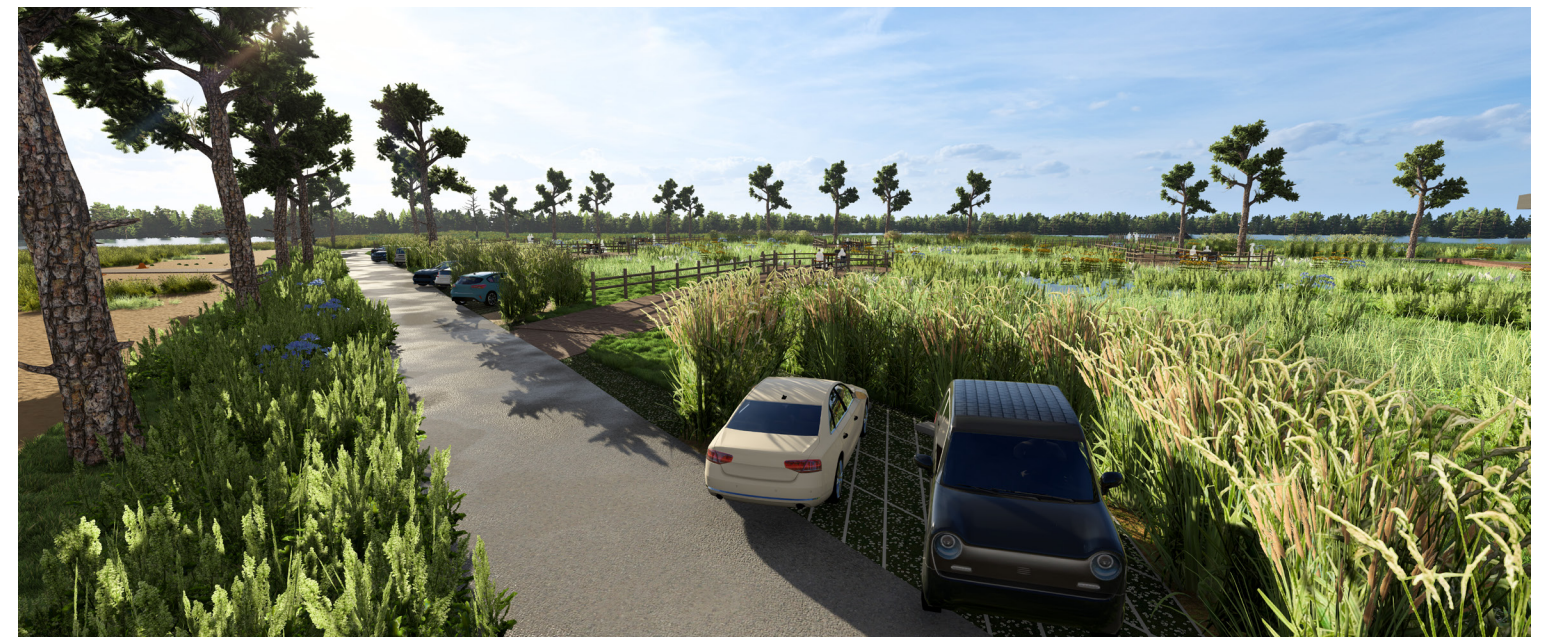


Figure 61: Lumion Render of Naturalized Parking Spaces

Helical Boardwalk Section



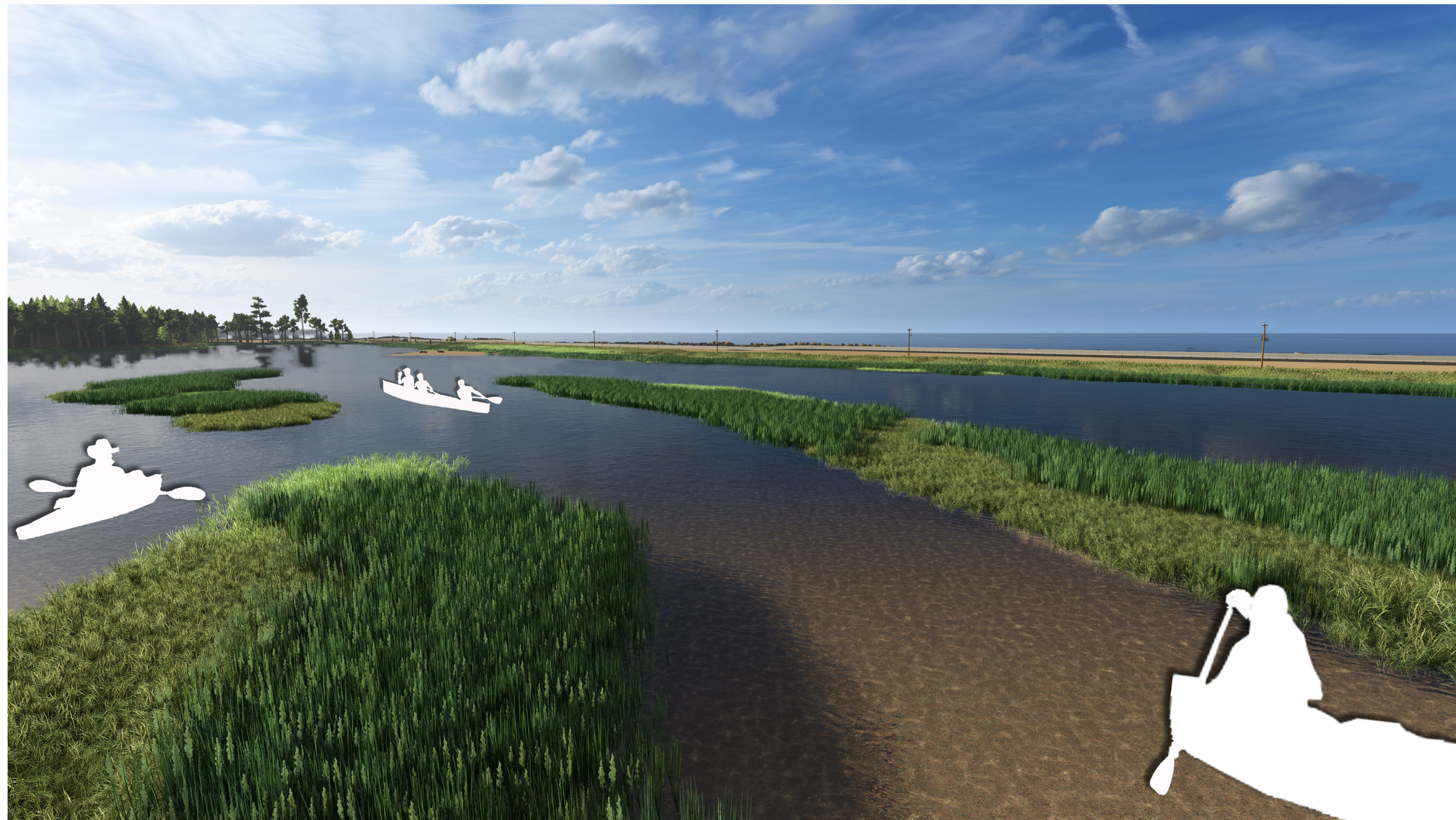
Picnic Area Section





POINT LOOKOUT

Causeway & Living
Shoreline



Context & Introduction



Figure 62: The Site on a Map of Point Lookout



Figure 63: Revetments along the Chesapeake Bay side



Figure 64: Overlooking Lake Conoy

Site Introduction

The Point Lookout Causeway is a thin section of Route 5 between Lake Conoy and the Chesapeake Bay that measures approximately 2,000 feet. It is armored on either side by seawalls that impede erosion and protect the road infrastructure but provide limited habitat for wildlife. Before the next century and as soon as within the next 25 years, Point Lookout is expected to experience at least 2 feet of sea level rise, making design changes imperative for the long-term survival of the park.

Marsh Restoration

Marshes are critical coastal ecosystems, providing essential services such as flood protection, water filtration, and habitat for diverse species. These wetlands act as natural barriers against storm surges and sea level rise, preventing flooding and stabilizing coastlines. However, rising sea levels pose a significant threat to marshes.

Site Plan



Plan Key

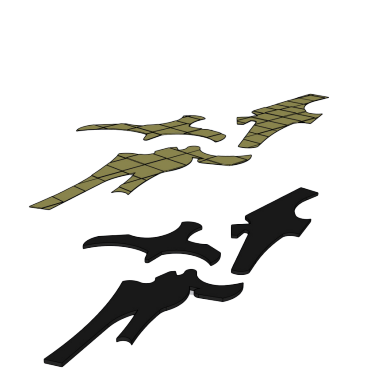
- 1 Multi-use trail
- 2 Route 5
- 3 Oyster education boardwalk
- 4 Rock wall
- 5 Living shoreline
- 6 Kayak beach
- 7 Kayak trail
- 8 Wetland education boardwalk
- 9 Floating wetland

Design Objectives & Goals

- 1. Elevate and extend the exisiting sea wall
- 2. Design a living shoreline on the Lake Conoy side
- 3. Incorporate bicycle infrastructure
- 4. Include educational signage

Essential Elements

Design elements that increased the aesthetic appeal, character, or functionality of the site.



Floating Wetlands



Oyster Cages



Helical Piers



Kayak Trail

Figure 65: Site Plan of Proposed Design

Response to Growing Sea Levels

Adapting to Sea Level Rise

Rising sea levels, a result of climate change, pose a significant threat to marshes. As the sea encroaches on coastal areas, vegetation like coastal hardwoods must shift to new locations to survive, but human-made obstacles--seawalls, roads, and urban development--often prevent this natural migration. Without the ability to move inland, marshes are at risk of shrinking or disappearing, jeopardizing the ecosystem services they provide. To support marshes in adapting to these changes, it is crucial to allow for a managed retreat in vulnerable areas like Point Lookout. Restoration efforts, such as introducing oyster reefs, establishing living shorelines, and engineering adaptable structures can help marshes maintain their essential functions and continue to protect both wildlife and human communities from the impacts of rising seas.

Living Shoreline

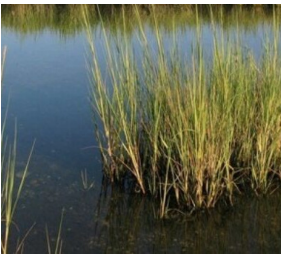
Revetment implementation is one of the most effective, widely-utilized, and quickest method for adapting to sea level rise. There are a variety of methods, including living shorelines and tree revetments, which provide wildlife habitat in addition to erosion control. We have proposed that the entire length of the causeway along Lake Conoy be a living shoreline planted with native grasses that can aid in habitat restoration and flood management.

Planting Palette

Native plantings of grasses can help revitalize the shore's edge alongside Lake Conoy. Plants such as black needlerush, saltmeadow cordgrass, and species of glasswort in a living shoreline would remove pollutants, prevent erosion, store carbon, provide wildlife habitat, and reduce the effects of flooding.



black needlerush
Juncus roemerianus



saltmarsh cordgrass
Spartina alterniflora



Virginia glasswort
Salicornia virginica



switchgrass
Panicum virgatum



saltgrass
Distichlis spicata



saltmeadow cordgrass
Spartina patens

Response to Education

Oyster Cages

For an interactive educational experience, “oyster cages” were included to teach children and people of all ages about the benefits of oyster reefs, how they function, and the direct ways in which they impact Point Lookout State Park.

The oyster cages are placed underneath the northern boardwalk and are tied to the cable railings to allow them to be pulled up and observed by park visitors. The cage netting will prevent the removal of oysters from their respective cages.

Signage will remind visitors to return the cages to the water when they are done observing them.

Examples of fun facts included in the signage would be:

- Oyster habitats support over 300 species
- If abundant enough, oyster reefs can filter the entire volume of the Bay in just a few months
- The water depth must be between 4 and 20 feet to introduce an oyster reef

Wetland Overlook

The floating wetland overlook includes a glass wall feature to allow children to view the wetlands without struggling to look over the railings.

The etched bird motif on the glass also allows visitors to understand the shape of the wetlands, which may be challenging to see from the lookout spot as the sea level rises and the wetlands float upwards.

Educational signage about sea level rise, how the floating wetlands work, and about native birds is included adjacent to the overlook location.



Figure 66: Oyster Cage Education Walk

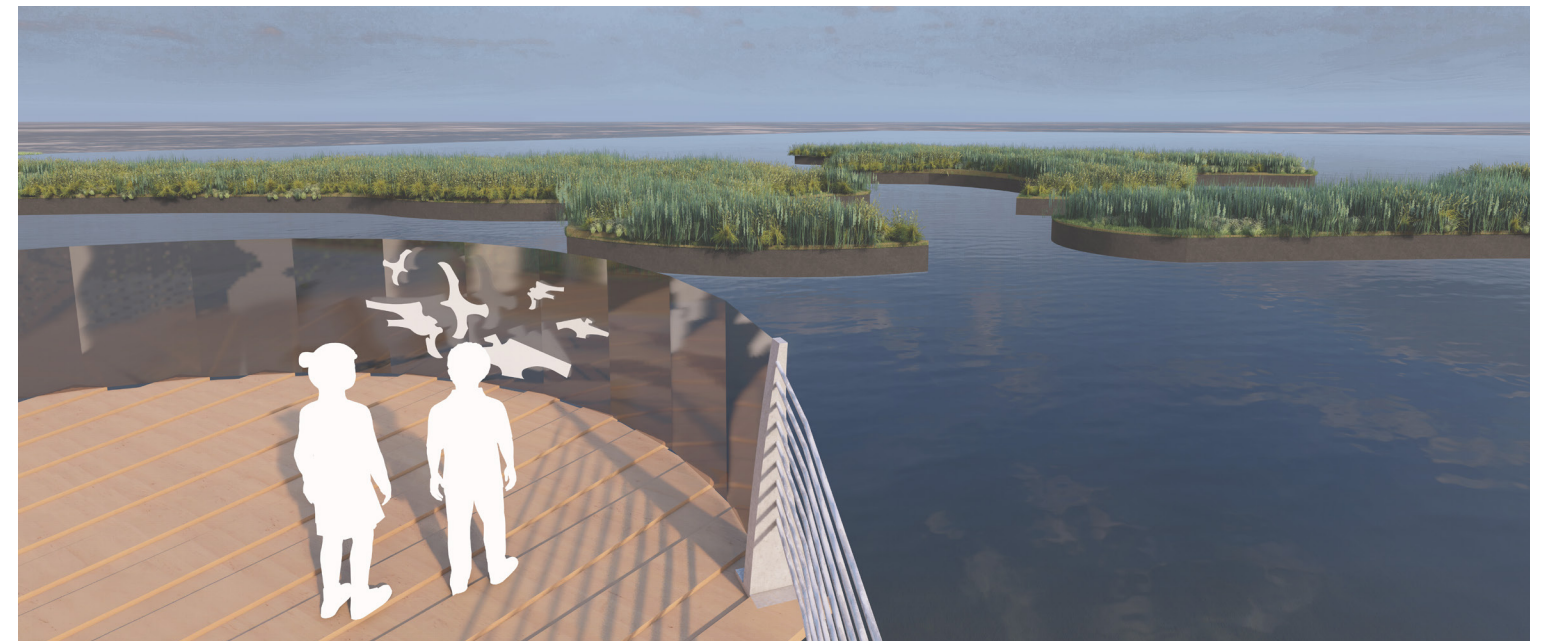


Figure 67: Floating Wetland Overlook

Response to Accessibility

Boardwalk

The boardwalk is 10 feet wide to spaciously accommodate two wheelchairs with cable railings that do not inhibit the view. The cable railings are 36 inches high with no more than 4 inch gaps between to prevent children and pets from slipping through.

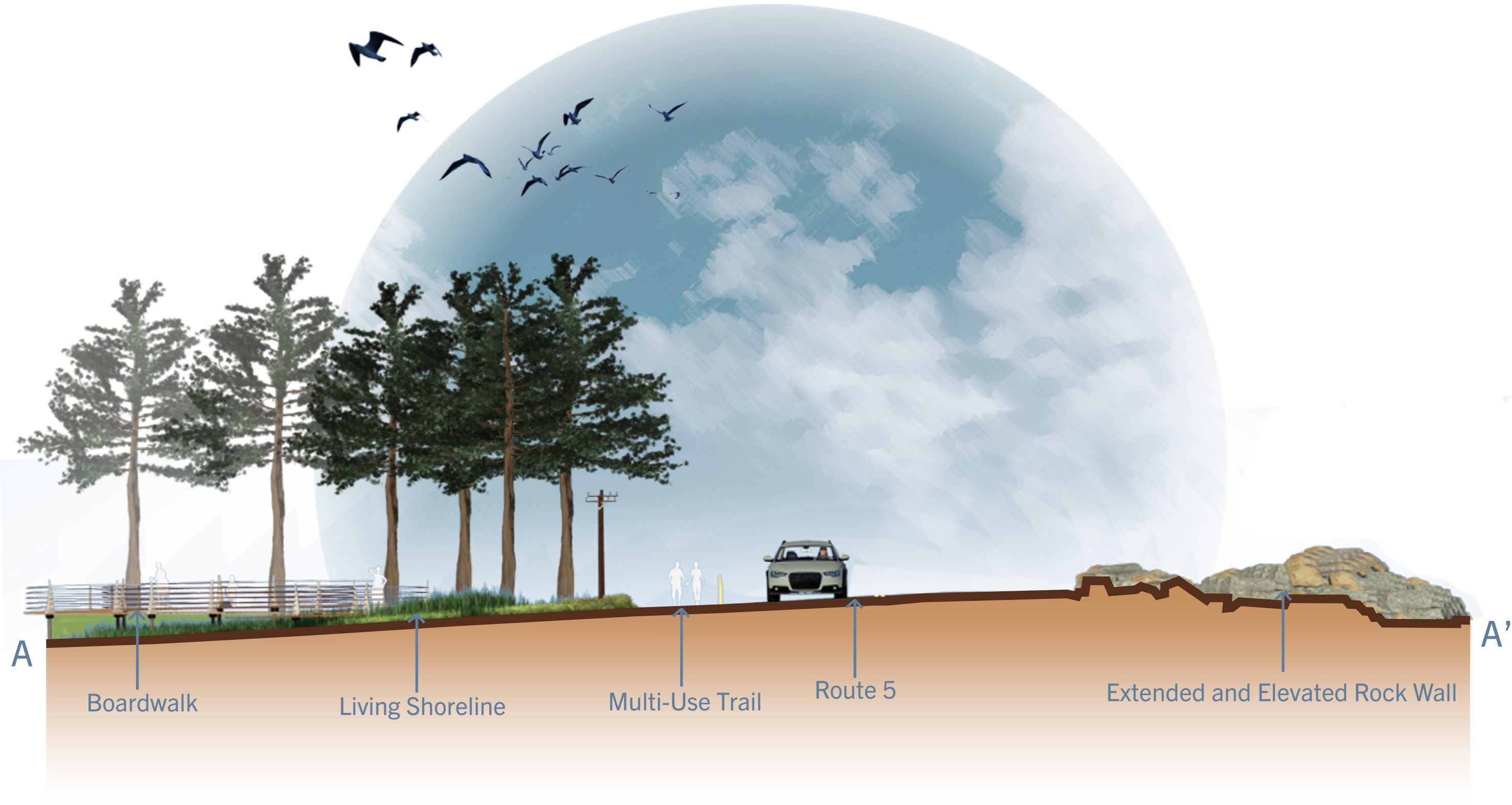
Multi-Use Trail

The multi-use trail is made from porous asphalt to provide a smooth surface for wheelchairs, while also allowing water to drain through it. It's 10 foot width allows for bikers, joggers, walkers, and people in wheelchairs to comfortably share the path. Bollards provide a safety barrier against cars on Route 5.



Figure 68: Looking North on Route 5

Causeway Section





POINT LOOKOUT

Boating & Visitor
Services Center



Context & Introduction



Figure 69: The Site on a Map of Point Lookout



Figure 70: Existing Park Store



Figure 71: Eroded shoreline behind existing dock

Site Introduction

With changing conditions at Point Lookout, the existing park store and amenities require relocation and re-imagining. The proposed Boating and Visitors Services Center features ecological, educational, and recreational amenities, improving the visitor experience and adapting the site for future conditions.

Visiting the site provided context for the existing conditions, which showed age and ecologically poor conditions.

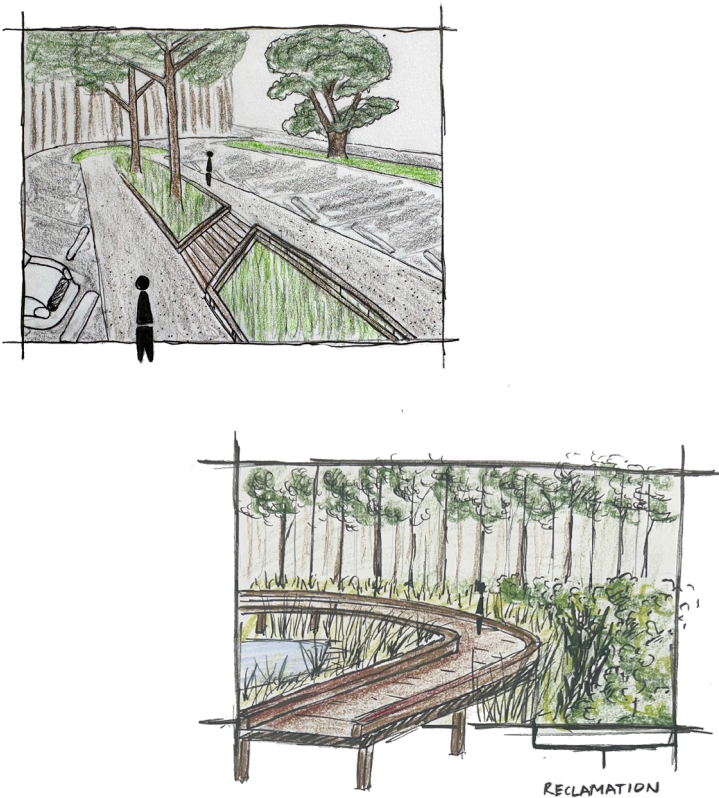


Figure 72: Beginning Design Sketches

Site Plan

ECOLOGICAL

- 1 Storm Water Management
- 2 Green Roof
- 3 Marsh Restoration

EDUCATIONAL

- 1 Boating and Visitor Services Center
- 2 Observation Deck
- 3 Marsh Exploration Boardwalk

RECREATIONAL

- 1 Improved Parking Circulation
- 2 Kayak Launch
- 3 Universally Accessible Site Trails

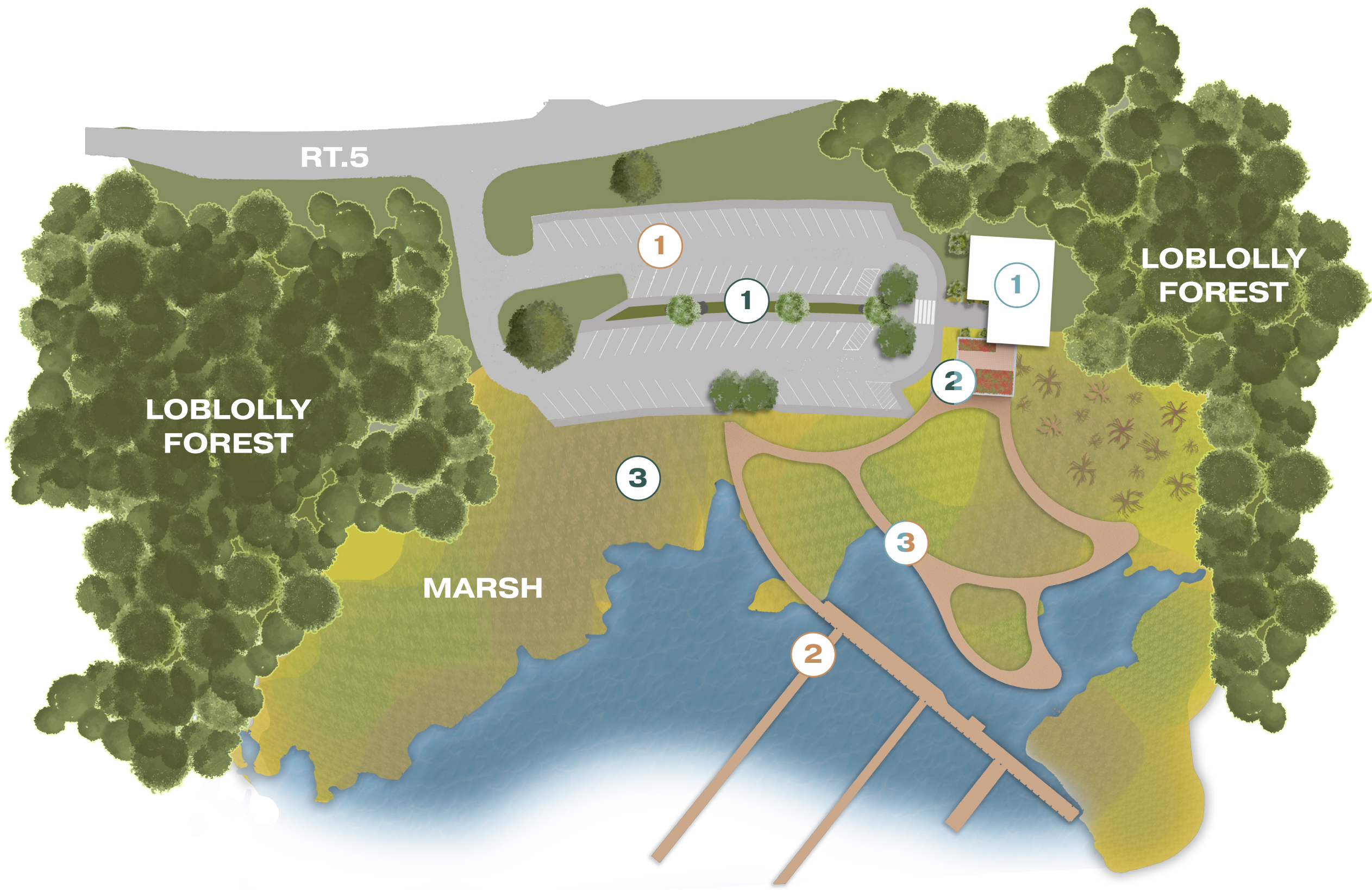


Figure 73: Site Plan for Proposed Design and Key

Response to Growing Sea Levels

Marsh Restoration

The shoreline adjacent to the existing parking lot is currently a compacted, sandy beach used by visitors to launch kayaks. After learning that the kayak launch will be relocated to the existing boat launch site, the plan was made to further assess the suitability of this area for marsh restoration efforts. Existing marsh surrounds the site on either side, which inspired the idea to “reconnect a broken marsh.”

For restoration planting to be successful, a site must meet certain criteria. Key indicators of success include a low elevation gradient, sandy soils with some sedimentation, full sun exposure, and shelter from high-energy wave action. The proposed site meets these criteria, and because it is already graded and cleared, both cost and labor may be reduced.

Arguably the most important criterion for suitability is that the site lies within the tidal frame, ensuring regular inundation necessary for plant survival. Using data from NOAA, patterns of nuisance flooding—flooding that occurs during high tide—were analyzed. These patterns helped guide the zonation of the site into areas suitable for low and high marsh plants (Figure 76). A planting palette was developed to include a mix of native species that will gradually establish, helping stabilize the shoreline, combat flooding, and prevent further erosion.

Tidal Flood Patterns

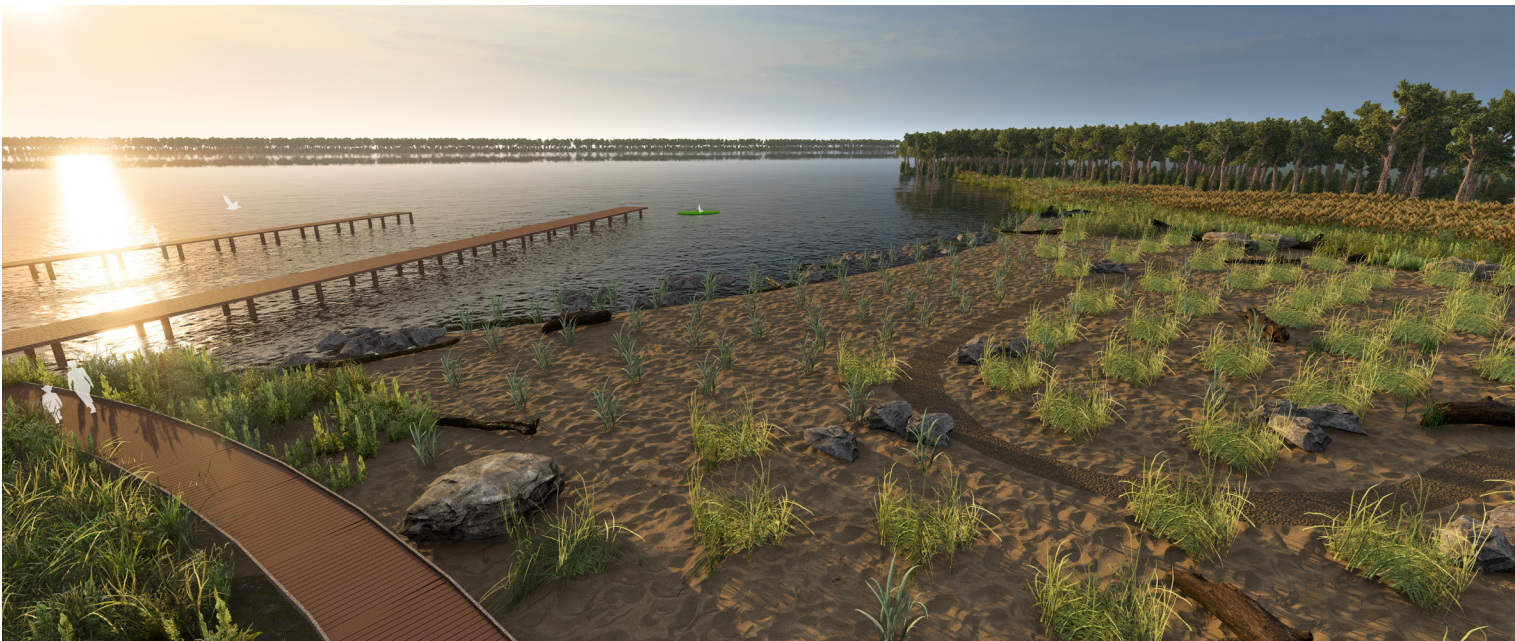
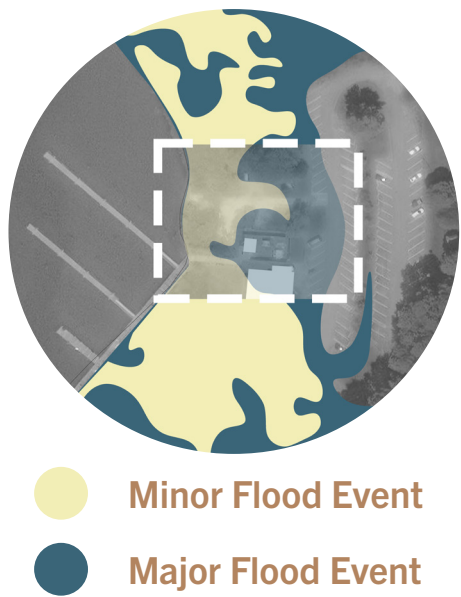


Figure 74: Marsh Restoration - Initial Planting

Proposed Restoration Zones

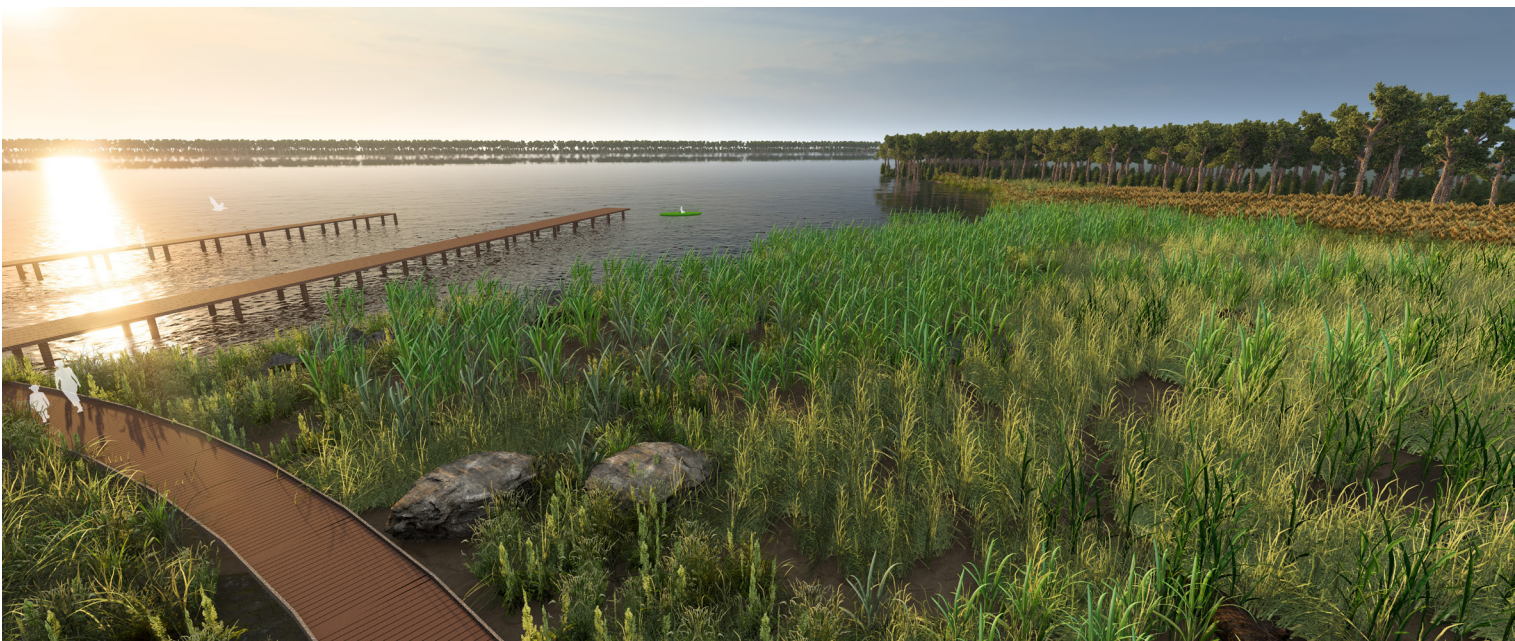
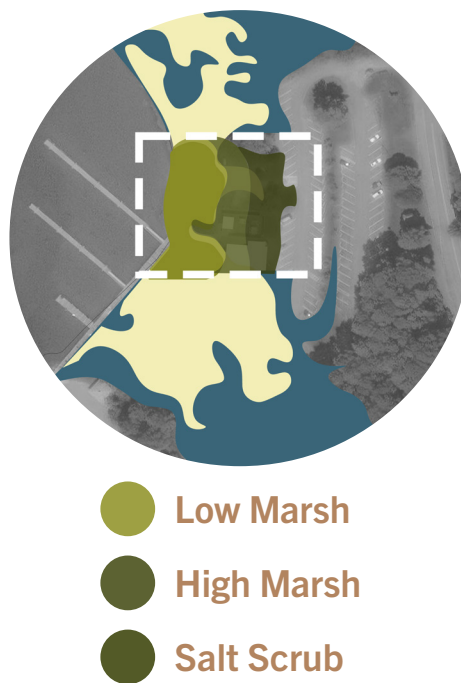


Figure 75: Marsh Restoration - Growth Over Time

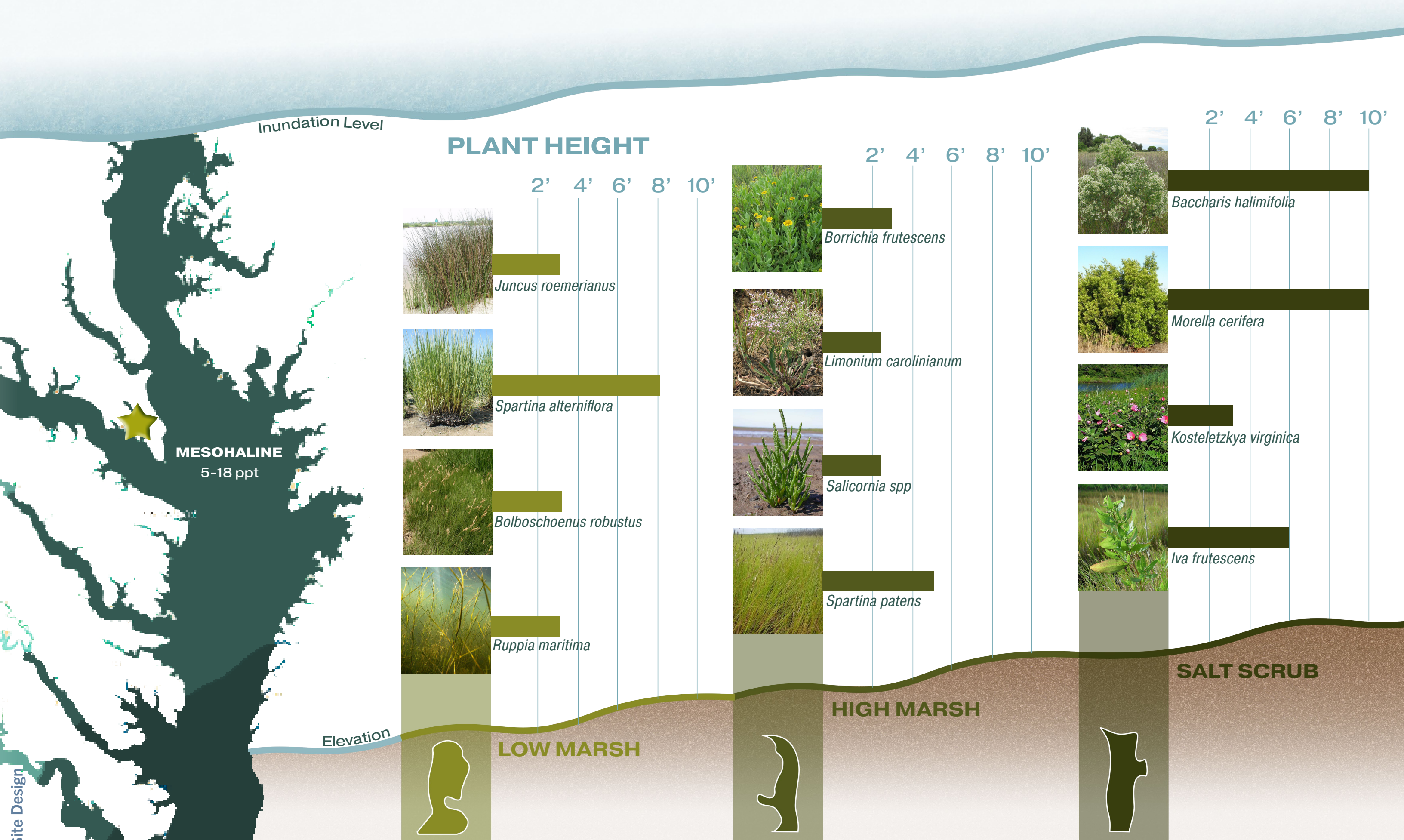


Figure 76: Restoration Planting Palette

Response to Education

Immersive Learning

The Boating and Visitor Services Center is used as the foundation for immersive learning experience opportunities. Connected to the building is a new boardwalk that will wind through the existing marsh on the site. Visitors will be able to get a close look at the unique flora and fauna of the marsh habitat, with a specific focus on the problems posed by the invasive phragmites that dominate the area.

In addition to the boardwalk, the Boating and Visitor Services Center design includes a viewing deck equipped with binoculars. From this vantage point, visitors can look out over Lake Conoy and observe both the existing and restored marsh.

The marsh restoration efforts will also provide volunteer opportunities for visitors to engage in planting and site maintenance until the vegetation is fully established. Visitors will be able to witness how the marsh spreads and evolves over time, while learning about the importance of restoration and the criteria necessary for its success.



Figure 77: Boating and Visitors Center Observation Deck

Accessibility at the Boating & Visitors Center



Figure 78: Rooftop Viewing Platform



Figure 79: Existing Parking Lot Median and Sketch

Accessible Design

The design for the new boating and visitor services center at Point Lookout State Park was guided by a strong commitment to inclusion, ensuring that all visitors can experience the site fully and comfortably.

One of the central features is a network of accessible boardwalks that extend over the surrounding marshland. These raised paths invite people of all abilities to immerse themselves in the unique wetland ecology, bringing them closer to the landscape while protecting its sensitive habitats.

At the heart of the new building is a rooftop viewing deck, designed to be shared by everyone. An elevator inside the center provides access to the top level, where visitors can take in expansive views of the Chesapeake Bay and surrounding marshes. This elevated space encourages connection, reflection, and enjoyment without physical barriers.

While fully detail interpretive signage was not included in the proposal, it as an important future opportunity to support a wide range of visitors. Inclusive signage could include features such as tactile elements, audio descriptions, and high-contrast graphics, helping all guests engage meaningfully with the site’s ecological and historical context.

In response to an existing site challenge, water pooling in the grassy medians of the parking area, the lot is reimagined with pedestrian-friendly paths between parking rows. These new walkways provide a safer and more reliable route from car to center, especially during or after rain. Designated accessible parking spaces are included near entrances to ensure ease of access from arrival onward.

Each of these features reflects a broader intention: to create a place where everyone--regardless of ability, age, or background--can explore, observe, and enjoy the distinctive coastal landscape of Point Lookout.





POINT LOOKOUT

Picnic Beach, & Playground



Site Design

Context & Introduction



Figure 80: The Site on a Map of Point Lookout



Figure 81: Current Picnic Forested Area



Figure 82: Current Breakwaters on Shore

Site Introduction

The picnic and swimming beach area on Point Lookout is a popular and well-visited place in the park. It gets crowded with people going there with families and friends to swim, eat, and play.

Currently there is no reservation system, so the scattered picnic tables usually get picked and moved by families or groups on a first come first served basis.

The existing breakwaters are parallel to the shoreline where visitors swim. They are not oyster reefs either.

Aside from the picnic tables, bathrooms, and beach, there are no other amenities on site. Open fields on the northern and southern sides of the forested picnic area are more open fields. Some visitors come and play soccer.

Design suggestions were created and rendered to fit the goals of the park’s strategic management plan, the recommendations from the park, and with a goal of educational yet fun amenities.

Designs were also created to address growing sea levels, educational opportunities, accessibility, and ecological preservation.

Site Plan & Sections



Figure 83: Proposed Design Site Plan and Key

Design Objectives & Goals

- Design a playful and educational playground and picnic area with a swimming beach
- Redesign the breakwaters to provide a marine habitat as well as beach protection
- To address the rising sea levels which are altering the existing uses and ecosystems
- Resist, Restore, Retreat, & Embrace



Figure 84: Section Through the Playground



Figure 85: Section Through the Boardwalk and Restoration Area

Response to Growing Sea Levels

Existing Structures

Due to being one of the most visited areas of Point Lookout State Park, the site has several existing stormwater management features already in place. These include basic drainage infrastructure such as culverts. These interventions have proven effective at handling current weather patterns and visitor impact, contributing to the overall functionality and safety of the site.

Because of these existing measures, sea level rise (SLR) is not currently posing an immediate threat to this part of the park. Flooding and erosion have not yet become prominent issues at the beach or picnic areas. However, regional sea levels are steadily rising due to climate change, small areas of ponding and inundation have begun forming during harsh rainy events.

Marsh Engagement

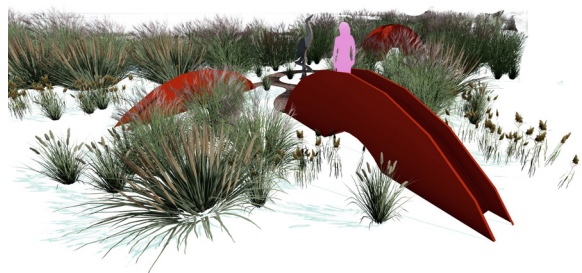


Figure 86: Marsh Overlooks

It can be an expensive and time-consuming process to try to get rid of all of the invasive phragmites. So to view the beauty of the marshes, overlooks were thought to be good for people to look over them.

Planting Choices

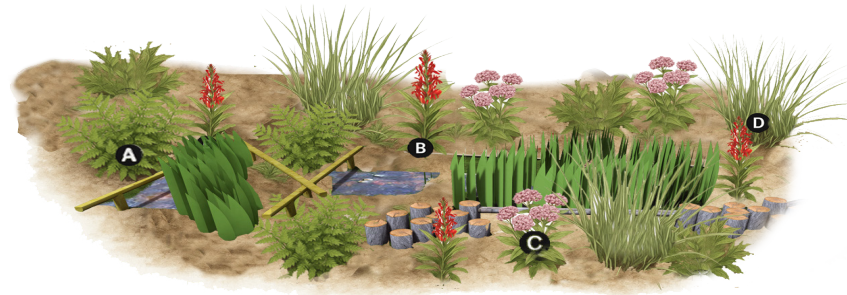


Figure 87: Proposed Mini Wet Meadow

- A. Marsh Fern (*Thelypteris palustris*)
- B. Cardinal Flower (*Lobelia cardinalis*)
- C. American Beachgrass (*Ammophila breviligulata*)
- D. Swamp Milkweed (*Asclepias incarnata*)

Rather than building hard barriers against rising waters, the plan aims to work with natural processes of sea level rise. The core idea involves transforming areas prone to inundation into functional spaces by integrating elevated play structures above wet meadows. By placing play structures over these areas, we create spaces for recreation and community engagement which are naturally resilient to fluctuating water levels, offering a healthy and sustainable solution that embraces, rather than fights, the changing environment.



Figure 88: Puddling Seen on Site



Figure 89: Existing Breakwater



Figure 90: Proposed Northward Living Breakwaters

Living Shoreline

The design proposes oyster reef breakwaters to enhance the function of the shoreline. These structures aim to create diverse habitats and environmental niches that support a range of native aquatic species

Along the shore, coastal restorative plantings are included to complement the reef structures and establish a more complete living shoreline. These native plantings help stabilize the soil, reduce erosion, and act as a natural buffer against the effects of rising sea levels.

Response to Education

Opportunities

With this site being one of the most visited areas for recreational activities, there are big educational opportunities. With an emphasis on engagement and fun, multiple interpretive signs and play structures were thought of to connect visitors to the cool features of Point Lookout.

These design features were placed in various parts of the playground to the boardwalk to provide a sense of connection.

The Playground

After being recommended by Point Lookout to create a marshy theme for the Playground, the theme considered was “Migration: Marshes & Species.” In reference to the migrating marshes that are coming inland from rising sea levels and migrating birds that visit the park who also are being affected by the increasing levels of water.

There were also references to key features and aspects of Point Lookout from a lighthouse slide to saltmarsh sparrow play structures.



Figure 91: The Playground

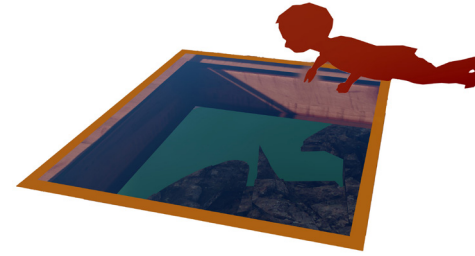


Figure 92: Glass panels on the boardwalk that allows people to see the oyster reefs and how they mitigate wave energy



Figure 93: Sign on the boardwalk to provide a textile experience for people to be able to learn about what the oysters do and how they feel



Figure 94: Sign on the boardwalk about the power of poetics with poetry taken from the Hammond Gazette and modern scientists

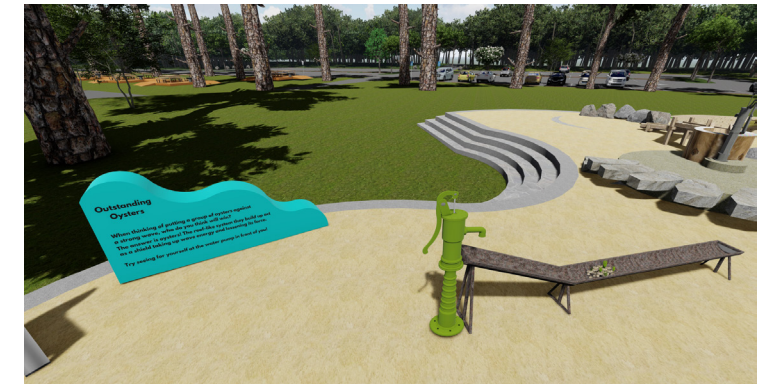


Figure 95: Waterpump activity to simulate and simplify how oyster reefs mitigate wave energy

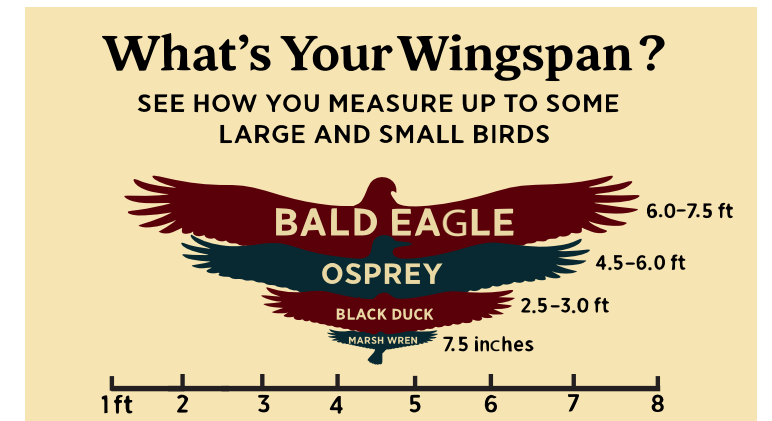


Figure 96: Sign to compare armspan to the wingspan of birds that live on Point Lookout State Park

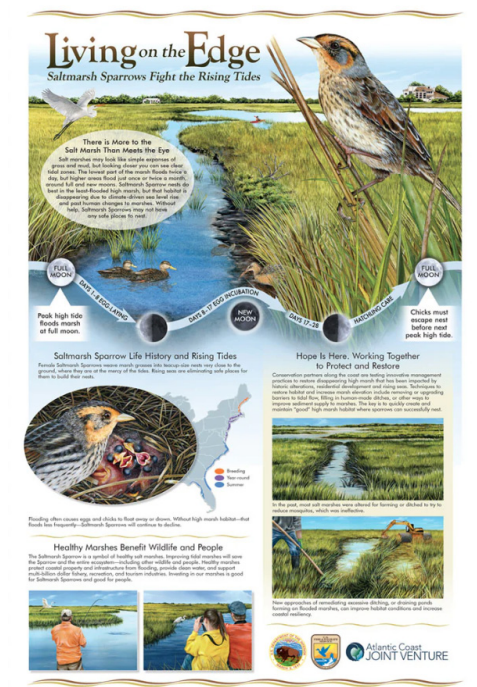


Figure 97: Informational sign about Saltmarsh Sparrows and how they are impacted by rising tides

Response to Accessibility

Accessible Picnic Areas

These picnic areas are designed to provide comfortable and versatile outdoor dining and gathering spots for visitors. They feature a mix of setups, including individual picnic tables placed directly on flat ground, and others situated on elevated wooden platforms. These platforms, evenly placed within the larger park setting, allows each group to feel as if they have their own space on the site.

Many of the elevated platforms are specifically equipped with smooth, gradual ramps, ensuring that individuals using wheelchairs, strollers, or those with mobility challenges can easily access the tables.

Accessible Considerations

- Boardwalks at least 6 foot wide, with fencing and limited slope
- Firm, stable, and slip-resistant surface materials throughout the site.
- Accessible routes to all key amenities
- Accessible parking spaces and routes from parking to amenities.



Figure 98: View of Boardwalk Entrance



Figure 99: Reservable Picnic Spaces with Ramps



Figure 100: Two Accessible Picnic Spaces

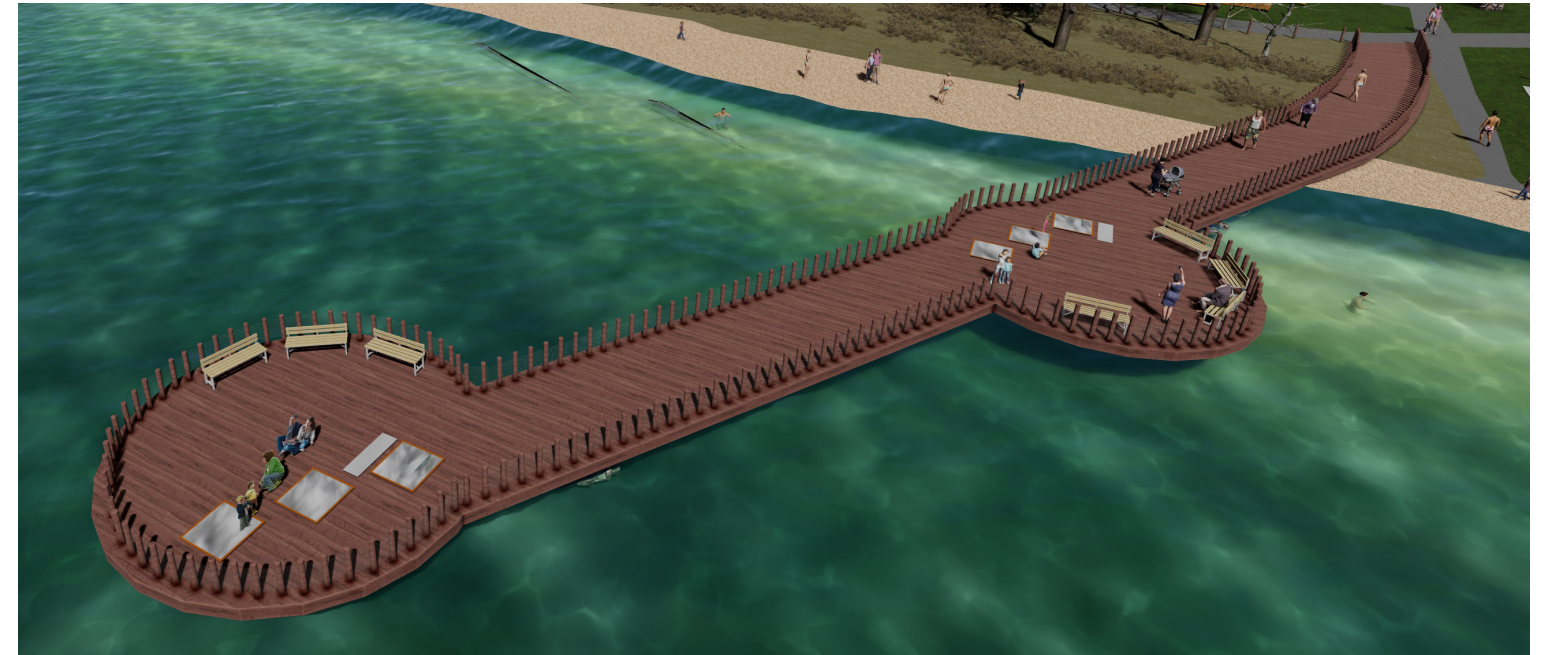


Figure 101: Flat Wooden Boardwalk

Boardwalk Over Breakwater

The flat wooden boardwalk extends out over the water, creating a unique pedestrian pathway and gathering space, specifically designed as a solution to combat a projected 2-foot sea level rise. Its design incorporates several distinct sections, including wider platforms at the end and along the sides, inviting people to stop and enjoy the surrounding views. The structure's most notable feature is its placement over a vertically rotated breakwater.

This design offers a blend of functionality and community engagement. The elevated nature of the boardwalk, ensures access and interaction with the shoreline even as sea levels rise. This allows for direct human engagement with the environment, offering a close-up view of the ecosystem and activity on the water, without succumbing to inundation. The use of natural wood creates an aesthetic that complements the coastal setting, while the benches and platforms encourage social interaction and relaxation.

Response to Ecological Preservation



Figure 102: Proposed Northward Breakwaters

Existing Conditions

Currently on site, there are seven breakwaters that are parallel to the shore. With the purpose to mitigate wave energy.

There are also areas on the shore that people are not allowed to walk through filled with plantings. The plantings chosen are meant to support coastal erosion and are beneficial to other species that live on the shoreline.



Figure 103: Existing Conditions of the Shoreline

Supporting On-Going Efforts

By shifting the position of the breakwaters to a northward angle, we want to help catch sediment that flows down the Potomac River. That can help add more material and sand to the shoreline, helping the restoration efforts that are currently going on.

Also, along the shoreline between the paths that go from the picnic sites to the beach, there are blocked off areas with restorative plantings. The design wants to bolster the planting efforts by adding in more plants that help with coastal erosion.

This includes:

- *Spartina alterniflora*
- *Ammophila breviligulata*
- *Crassostrea virginica*



Figure 104: Blocked Off Restorative Planting Areas

Response to Public Engagement



Figure 105: Proposed Recreational Soccer Field

Multi-Functional Recreation Field

Originally an unused empty field, the northern parts of the site were transformed into an outdoor space designed with a focus on both active recreation and tranquil enjoyment. It features an expansive green field laid out for soccer, complete with goals, suggesting a lively area for sports and play. Additionally, a distinctive garden bed is located as a stopping point of the area, showcasing a variety of plants arranged to create a fragrant sensory experience. On a windy day, these aromas might waft across the space, further complementing both the active and peaceful parts of the site.



Figure 106: Proposed Seating Pavillion Facing Soccer Field

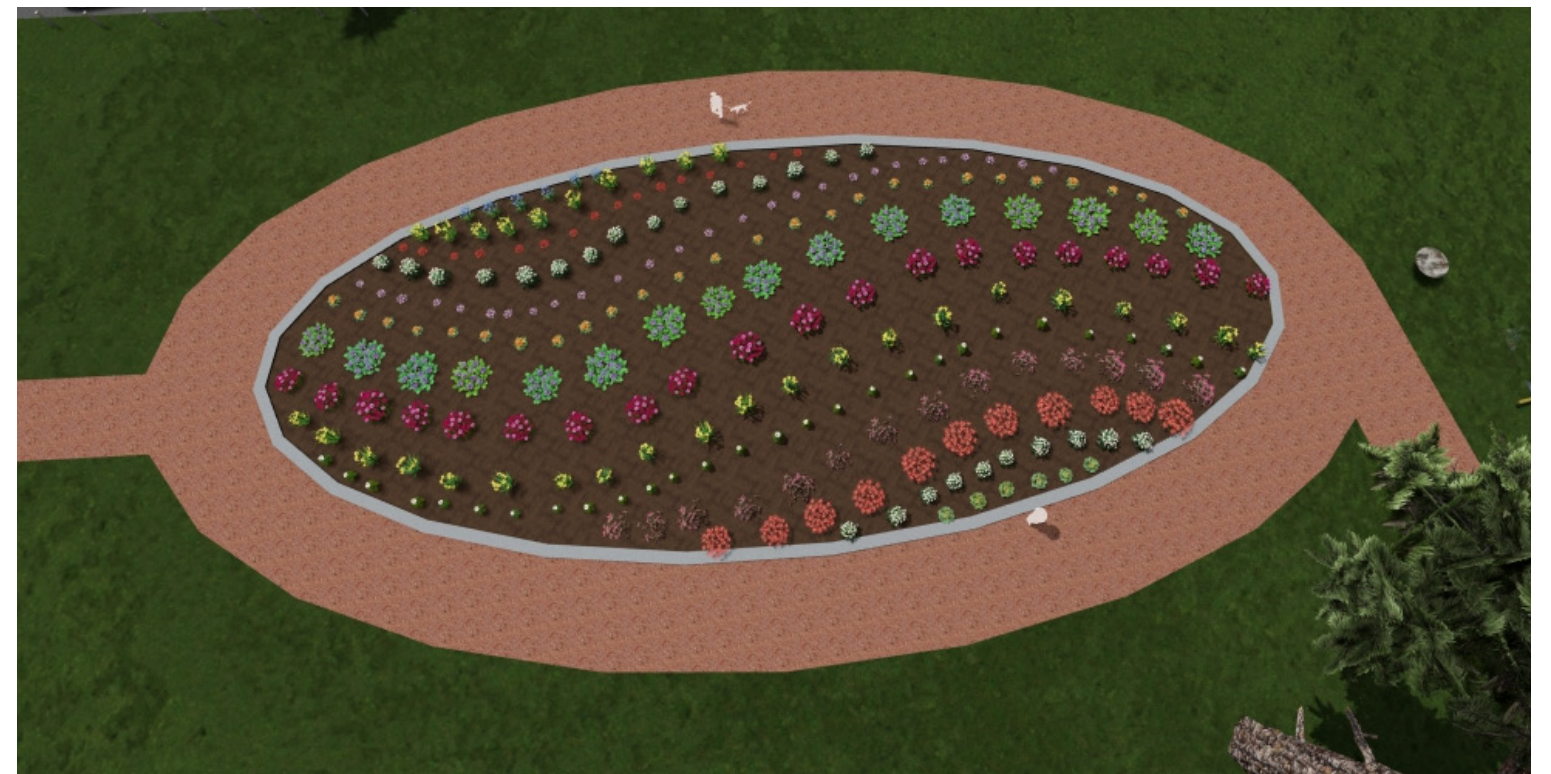


Figure 107: Planter Featuring A Fragrant Sensory Garden

FINAL SITE RECOMMENDATIONS

To compile all the recommendations in one spot, here is a summary of each unique area's final designs that address the site level concerns at Point Lookout State Park.

The intended goals to address and implement:

- Effects of sea level rise (if any)
- Ecological preservation and restoration
- Educational experiences
- Accessibility by car, bike, foot, wheelchair/walker

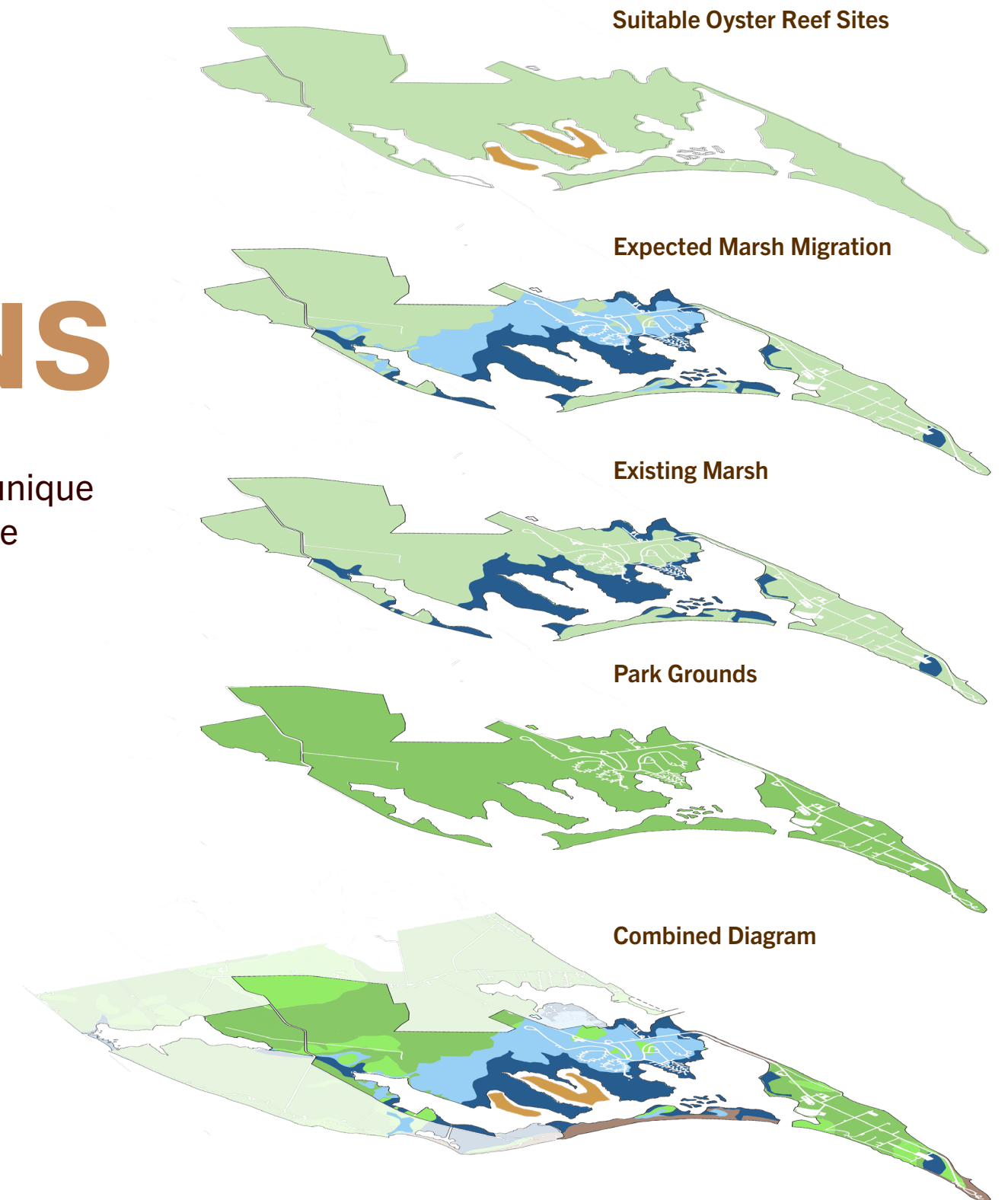


Figure 108: Exploded Diagram of Point Lookout State Park

Site Design Summaries

Recommendations for Sea Level Rise

- Elevated structures like helical piers to maintain access even in flooding or periods of inundation
- Wetland buffers that give marshes space to expand inland, assisting in marsh migration
- Addition of oyster reef breakwaters near shorelines to mitigate wave energy
- In addition to breakwaters, including softer green edges in general like living shorelines planted with native grasses



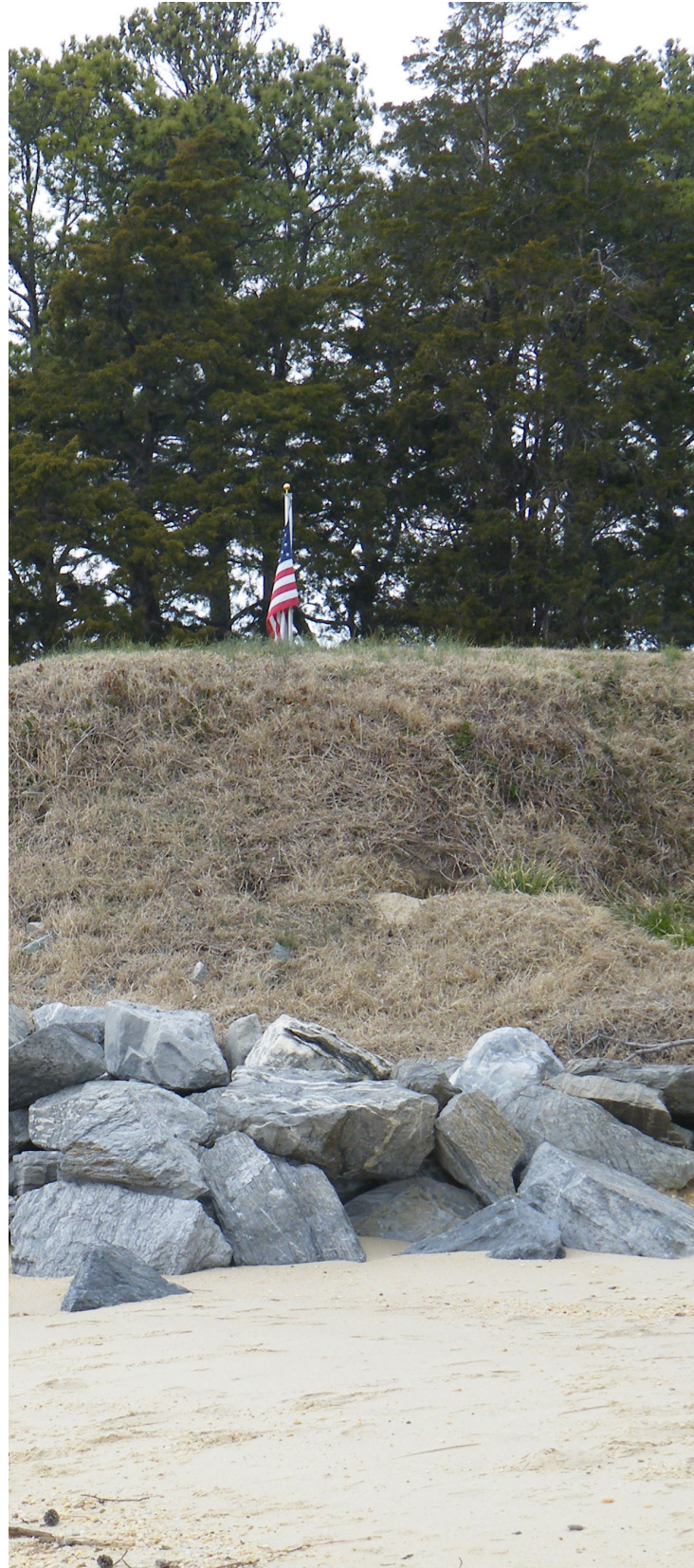
Recommendations for Educational Experiences

- Educational signage along paths, trails, and recreation structures
- Having the topics of signs be related to the features and history of Point Lookout State Park
- Placing signs near the subject it may be describing or referencing
- Making sure the signages and features are interactive, engaging, and can compliment additional programming
- Viewing decks with binoculars to observe the beauty of the park
- Opportunities for programming like volunteering in planting and site maintenance
- Overall immersive education experiences through tools such as virtual reality, and interactive elements like oyster cages



Recommendations for Accessibility

- Boardwalks that are hard and flat with railings to support level, accessible paths
- Sculptural trail markers for wayfinding
- Interpretive signage with QR codes that can lead to more resources, different languages, and sound options
- Parking lots with designated accessible parking spaces
- Having structures that specifically accommodate wheelchair users such as specially designed picnic tables that fit the usual chair sizes and ramps where needed
- Railings that are at least 36 inches high
- Elevators in the new building design



Recommendations for Ecological Preservation

- Boardwalks made of weather-resistant, sustainably sourced wood or alternatives
- Living shorelines with elements such as native plants that can help assist with shoreline erosion and habitat stabilization
- Permeable paving in areas such as parking lots to reduce stormwater runoff and encourage groundwater recharge
- Planning new structures to be built around existing tree root zones and clusters to avoid unnecessary clearing
- Permeable trail materials that are lightweight to help minimize compaction and support soil health
- Stormwater management implementations such as green roofs and other green infrastructure
- Marsh restoration through native planting choices
- Implementation of wet meadows to accommodate long-periods of flooding



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