REIMAGINE MIDDLE BRANCH

Parks, projects & programs to connect communities in South Baltimore

The Reimagine Middle Branch Plan

Volume 1: Design Vision

February 2023

The Reimagine Middle Branch Plan is led by the City of Baltimore, South Baltimore Gateway Partnership, and Parks & People, working alongside a team of expert consultants, local and regional stakeholders, and South Baltimore residents.

The Reimagine Middle Branch Plan was prepared by a collaborative team of consultants, including:

Planning, Landscape Architecture
James Corner Field Operations
Mahan Rykiel Associates
DesignJones LLC
Waldon Studio Architects
Toole Design
P.E.L.A. Design, Inc.

Justice, Equity, Diversity, and Inclusion
Kofi Boone
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Equitable Development
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Engagement and Communications
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Feasibility and Costing
Dharam Consulting

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* *Changes to roads are conceptual, designed to inspire conversation. In practice these will require traffic studies to balance the needs of all users, including trucks.*

“This is about providing clean, accessible, and modern spaces that show our residents, particularly our young people, that they matter. That we care about them and are going to do everything in our power to give them the best quality-of-life possible.”

Mayor Brandon M. Scott

Acknowledgments

City of Baltimore

- Brandon M. Scott, Mayor
- Justin Williams, Deputy Mayor for Community & Economic Development
- *Ethan Cohen, Senior Advisor for Community & Economic Development
- Chris Ryer, Director, Department of Planning
- Reginald Moore, Director, Department of Recreation & Parks
- *Jazmin Kimble, Southern District Planner, Department of Planning
- *Kyle Leggs, Planning Supervisor, Department of Planning

South Baltimore Gateway Partnership

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- *Ethan Abbott, Transformational Projects Manager
- *Nan Rohrer, Consultant
- Geoffrey Washington, Chair, Board of Directors

Parks & People

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- Chris Ryer and Ethan Cohen, Co-Chairs

Steering Committee

- Dr. Franklin Lance, Chair

Community Advisory Committee

- Michael Middleton and Jazmin Kimble, Co-Chairs

JEDI Advisory Committee

- Stephanie Smith (Baltimore City Department of Planning) and Kyle Leggs, Co-Chairs

Public Planning Advisory Committee

- Nicole A. Davis and Jill Lemke, Co-Chairs

Science & Technical Advisory Committee

- Eric Schott, Ph.D. (University of Maryland Center for Environmental Science / Institute of Marine and Environmental Technology) and Brad Rogers, Co-Chairs

Planning Area Neighborhoods

- Baltimore Peninsula (Port Covington)
- Barre Circle
- Brooklyn
- Carroll-Camden
- Cherry Hill
- Curtis Bay
- Federal Hill
- Lakeland
- Locust Point
- Mount Winans
- Otterbein
- Pigtown
- Ridgely's Delight
- Riverside
- Saint Paul
- Sharp-Leadenhall
- Stadium Area
- South Baltimore
- Westport

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The Reimagine Middle Branch Plan was adopted by the Baltimore City Planning Commission on February 9, 2023

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Councilman Eric Costello
Sen. Antonio Hayes
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The Reimagine Middle Branch Plan
Volume 1: Design Vision

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Chapter 1

INTRODUCTION

Reimagine Middle Branch is a community-driven initiative to reconnect South Baltimore with a system of world-class parks, trails, programs, and economic development plans along the 11-mile shoreline of the Middle Branch of the Patapsco River.

By holistically addressing issues of environment, health, and equity, Reimagine Middle Branch strives to realize more than Baltimore's next great waterfront. This initiative is fundamentally about equity and justice, resilience, and health—a transformation of place supported by new connections, jobs, wealth-generation, and quality of life amenities that extend beyond the built environment.

In this volume (Volume 1) of the Reimagine Middle Branch Plan, the Design Vision incorporates these goals to create a blueprint for long-term physical changes to the Middle Branch and for initiatives that support and elevate the surrounding communities of South Baltimore.

Background

Project Scope & Vision

The scope of the Reimagine Middle Branch Initiative is purposefully expansive—it speaks to the power of new green and pedestrian networks to catalyze and improve urban systems including Access and Connection, Economic Equity, Cultural Programming, Environmental Resilience, and Community & Health. The project includes 11+ miles of shoreline, 598 acres of parkland, and extensive new trails connecting South Baltimore neighborhoods to the Patapsco River's Middle Branch and to one another.

Project Brief & Planning Context

The 2021 Reimagine Middle Branch Project Brief emphasizes the importance of justice, equity, diversity, and inclusion in the Plan and identifies five overarching project goals:

1. **Inclusive Programs and Activities**: Develop social space, activities, and events that reflect the people and communities around the Middle Branch.
2. **Access and Connections**: Strengthen existing and establish new, convenient, and safe pedestrian and bike access to and around the waterfront, and improve transit infrastructure, roads, and sidewalks connecting neighborhoods, jobs, education, and other amenities.
3. **Economic Equity**: Incentivize local development that does not displace established communities, but rather creates jobs, educational opportunities, and governance roles with local communities.
4. **Parks and Recreation**: Create new parks and public spaces that support diverse and affordable recreational amenities.
5. **Environmental Resilience and Health**: Support environmental sustainability, enhance climate resiliency, improve air and water quality including trash clean up, and enhance public health and quality of life.

The Project Brief also speaks to a "Continuum of Ideas" and summarizes key components of previous South Baltimore plans:

- The **2020 Cherry Hill Transformation Plan** identifies key sites for development in Cherry Hill, as well as locations for new housing, active corridors, and economic initiatives.
- The **2020 City of Baltimore Complete Streets Manual** specifies design guidelines for prioritization of bicycle, transit, and pedestrian connectivity throughout the city.
- The **2019 City of Baltimore Sustainability Plan** identifies goals and frameworks for a more sustainable and equitable city.
- The City's **2018 Hanover Street Corridor Study** provides recommendations for the Hanover Street corridor between Wells Street in South Baltimore and Reedbird Avenue in Cherry Hill, including the Vietnam Veterans Memorial Bridge and Potee Street north of Reedbird Avenue.
- The **2018 Baltimore Green Network Plan** highlights the importance of connecting people to parks and natural resources.
- The City's **2015 South Baltimore Gateway Master Plan** identifies comprehensive goals and associated city champions for initiatives throughout the entire Reimagine Middle Branch study area, excluding Brooklyn and Curtis Bay. Initiatives are grouped into nine categories: Transportation Connectivity, Environmental Sustainability, Safety, Community

Development and Revitalization, Economic Growth, Education, Health and Wellness, Quality of Life, and Infrastructure.

- The **Baltimore Regional Council's 2015 Baltimore Regional Plan for Sustainable Development** supports the development of an enhanced network of city services for residents.
- The **2007 Middle Branch Master Plan** details a strategy for conserving and enhancing the environment and open space along the Middle Branch shoreline.

To that end, the Reimagine Middle Branch Plan builds upon, expands, and further develops these previous plans and moves emphatically toward project implementation.

The Project Brief can be found on the Reimagine Middle Branch website: *www.reimaginemb.com.*

Previous plans can be accessed at the Department of Planning website: *https://planning.baltimorecity.gov/master-plans.*

Project Leadership & Stakeholders

Reimagine Middle Branch is led by the City of Baltimore (the City) and the South Baltimore Gateway Partnership (SBGP), working in collaboration with Parks & People, South Baltimore 7 Coalition (SB7), federal and state agencies, and a variety of other local organizations. Over 150 residents and technical experts serve on advisory committees, and over 1,000 community members have actively participated via surveys, events, and public input sessions.

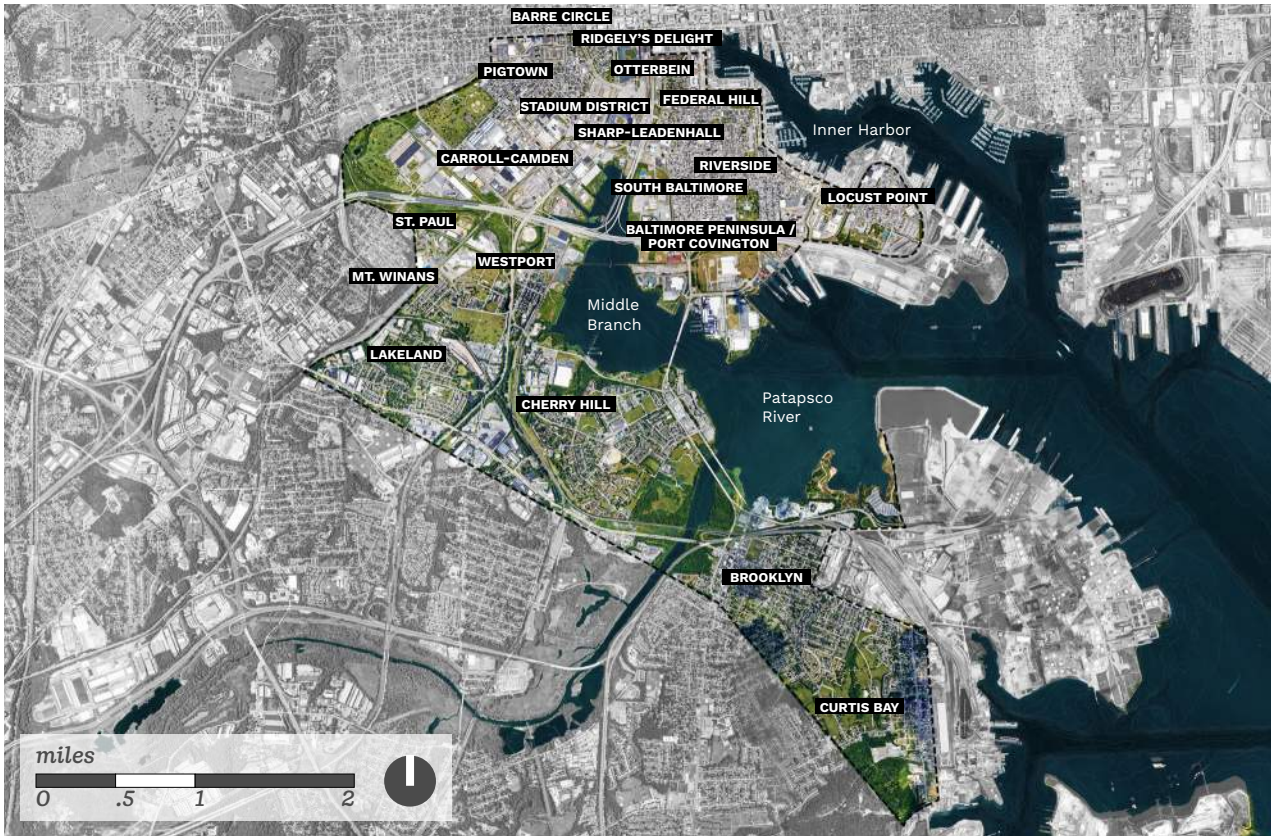
The Voices of the Middle Branch social media campaign uplifts local stories and individual voices not typically heard in traditional planning processes. Similarly, a fellowship with Morgan State University, a high school design lab, a traveling "project hub," and a water-themed community event has enabled feedback from a wide range of community members from South Baltimore and throughout the city and region.

The team of consultants whom the City and SBGP engaged to create the Reimagine Middle Branch Plan (the Planning Team) includes 16 local and national collaborators from a wide cross-section of disciplines, including Ecology and Marine Engineering, Mobility and Community Planning, Communications, Cultural Landscapes, and Justice, Equity, Diversity and Inclusion (JEDI) Planning. This team has guided the process and developed plans that are responsive and visionary, equitable, and technically feasible.

The Reimagine Middle Branch Plan

The Reimagine Middle Branch Plan (the Plan) presents a powerful, long-term vision for a new "park-shed" which connects South Baltimore neighborhoods to one another and to the waterfront. As a watershed is a land area that channels rainfall and snowmelt to creeks, streams, and rivers, the park-shed is the territory within South Baltimore that channels people to the Middle Branch shoreline via a network of parks and public open spaces.

The Plan's **study area** covers the bounded area and neighborhoods shown in the map at right within approximately 1.5 miles of the shoreline of the main basin known as the Middle Branch of the Patapsco. Technically, It also includes the Main Branch of the Patapsco, which separates Brooklyn from Cherry Hill and forms the border of Baltimore and Anne Arundel Counties. The study area encompasses all neighborhoods in the City's 2015 South Baltimore Gateway Master Plan, plus Brooklyn, Curtis Bay, and Locust Point. The intent is to include all neighborhoods from that earlier plan as well as these other neighborhoods that are connected to this unique part of Baltimore's waterfront.



While the Plan outlines the physical transformation of the Middle Branch, it is also meant to catalyze the intangible transformation of the place—to one that is just, equitable, diverse, and inclusive.

To that end, the Plan paves the way for new physical uses on-site along with programming, partnerships, policies, job creation, and equitable economic development.

Plan Organization

The Plan is organized as four volumes, each with a specific emphasis and purpose:

- Volume 1: Design Vision
- Volume 2: Implementation Strategy
- Volume 3: Engagement Summary
- Volume 4: Resource Guides

Volume 1: Design Vision

This volume, the Design Vision, begins with four "Equity Frameworks" that situate Reimagine Middle Branch in South Baltimore and form the organizing principles for the Plan's design proposals and strategies. "A Walk Around the Middle Branch" synthesizes these principles and applies them to locations around the shoreline and in the neighborhoods that surround it.

The frameworks presented in Chapters 2 through 5 are: Restore and Protect the Shoreline, Transform Barriers into Connections, Active and Inclusive Parks, and Equitable Development. These perspectives on the Middle Branch engage the entire study area and are described through diagrams, analyses, and strategies that address the project's goals. Within the frameworks, general principles are illustrated by design guidelines, specific projects, and recommended action steps. These visions for streets, trails, park structures, ecological restoration, and new developments will define the character and uses of the Middle Branch's public spaces. They are coupled with equity-based initiatives that will connect residents to opportunities spurred by these improvements.

In Chapter 6, the Walk Around the Middle Branch comprehensively illustrates a new, integrated network of parks, trails, and facilities that wrap the shoreline and connect back into the neighborhoods. The Walk narrates and illustrates each sub-area with illustrative plans, bird's-eye views, and renderings.

Volume 2: Implementation Strategy

Equally important to a strong design vision is technical feasibility and comprehensive intelligence of the Plan, as the vision needs to be buildable, implementable, and sustainable. The Implementation Strategy outlines recommendations on the following topics:

- A Funding Strategy that makes this ambitious vision credible
- A Phasing Strategy that organizes the work into manageable units
- A Permitting Strategy that provides a coherent approach to regulatory review
- A Management Strategy to ensure long-term organizational capacity for this effort

Volume 3: Engagement Summary

The Engagement Summary grounds the Plan as a community-driven initiative. It summarizes the engagement process as well as key feedback and input from the community and key stakeholders, which was gathered throughout an iterative and robust planning process.

Volume 4: Resource Guides

The Resource Guides, focused on equity, transportation, and funding, complete the four-volume Plan. They include detailed analyses, case studies, and precedents to further support the advancement of the design vision and Plan implementation.

Centering Equity

Communities in 19 South Baltimore neighborhoods live near or adjacent to one of the Chesapeake Bay's most neglected shorelines and are often separated from the waterfront by transportation infrastructure or industrial land uses. Amplified by the challenges of climate change, COVID-19, and systemic racism, environmental injustices at the Middle Branch diminish quality of life, especially for its working-class and communities of color.

As the City of Baltimore and its many partners engage in a transformative process to reinvest in the health and vitality of the Middle Branch, justice, equity, diversity, and inclusion (JEDI) are at the center of both the design and planning processes and are key to their successes. Building on principles from the City of Baltimore's Equity in Planning Committee (EIPC) as well as best practices from other communities, the project's sponsors and the Planning Team have evaluated the equity of the Plan through four lenses:

- **Procedural equity**: Are the planning and development processes transparent and collaborative?
- **Distributional equity**: Are the range and type of public amenities, services, and programs equitably distributed within neighborhoods and do they meet the needs of the community? Are projects mitigating against the negative impacts of gentrification?
- **Structural equity**: Are public spaces welcoming and connected without barriers or gates? Are the means of connection free and universally accessible?
- **Transgenerational equity**: Are projects addressing historic advantages and disadvantages? For instance, are they supporting the physical, mental, and economic health of historically disenfranchised communities with a healthy environment and opportunities for recreation, education, employment, and entrepreneurship?

These measurable criteria help to address systemic inequities through planning and design and allow us to realize the full potential of public open spaces to achieve more equitable and resilient cities.

Splash! event

For the Reimagine Middle Branch Plan, the following actions and initiatives have been key:

- Building a consultant team with local and national justice, equity, diversity, and inclusion (JEDI) experts
- Asset and inequity mapping of the entire project area
- Working closely with the Reimagine Middle Branch Community Advisory Committee to gather feedback and share project information via established community leaders
- Direct outreach on site and within all 19 project area neighborhoods
- Iteratively reviewing and tracking progress with the Reimagine Middle Branch JEDI Committee

In addition to creating an equitable planning process, the Planning Team led a series of activities concurrently with the creation of the Plan to catalyze and promote equity including:

MSU Fellowship Program

Mobile Project Hub

- **Job and education programs** for local students of color, including a graduate fellowship program with Morgan State University's School of Architecture and Planning and a paid internship program in environmental design and planning for South Baltimore high school students.
- **Community engagement events** that offered educational and recreational programming for nearby community residents, such as "Splash! A Community Waterfront Event" in August 2021.
- **A mobile project hub** that travels around South Baltimore neighborhoods to share progress on the Plan, gather feedback, and meet community residents where they are.
- **A storytelling initiative** called "Voices of the Middle Branch" that exists on social media.

Reimagine Middle Branch puts forward these mutually reinforcing strategies within an overall vision aimed at building equitable connections, diverse relationships, a more just environment, and inclusive communities, even before the physical transformation of the place begins.

Where Baltimore Meets the Bay

The Middle Branch of the Patapsco River is part of the Chesapeake Bay estuary, which is defined as a network of water bodies were saltwater from the ocean mixes with freshwater from rivers and streams to create a diverse range of habitats and support a wide web of different types of animal and plant species. The Chesapeake is actually the largest of more than 100 estuaries in the United States. It is known for the beauty and natural resources of its waterways, shorelines, and islands that make up its vast reach, and for the immense biodiversity they serve.

And yet, the Chesapeake is also an important thoroughfare for industry and commerce, as the Port of Baltimore is served by a shipping channel 50 feet deep and averaging 800 to 1000 feet wide, extending from the Virginia Capes to Fort McHenry.

The Middle Branch is the place where the intersection of industry and ecology is most evident and within close reach of tens of thousands of city residents. Unlike Baltimore's Inner Harbor or the working waterfront of our port facilities, many sections of the Middle Branch's once-industrialized shoreline have returned to a form of nature. This has occurred either by neglect – as industry left, dredging of the channel west of the Vietnam Veterans Memorial Bridge ceased, and the basin silted in – or by intention through visionary projects like Middle Branch Park and Masonville Cove, the nation's first Urban Wildlife Refuge Partnership.

Reimagine Middle Branch offers the opportunity to take advantage of this unique environment and achieve multiple goals: improving the water quality of the Patapsco and the Bay, restoring local habitat and environmental health for biodiversity within the Middle Branch, securing South Baltimore's resilience in the face of climate change and increasing natural disasters, and bringing the beauty and health-benefits of a restored ecology to within reach of South Baltimore's communities. And all this can be done while creating jobs and supporting the Port economy.

The Inner Harbor

The Port of Baltimore

Chesapeake Bay Estuary


Baltimore
Inner Harbor
Middle Branch
Patapsco River
Chesapeake Bay
Annapolis
Washington

South Baltimore and The Middle Branch

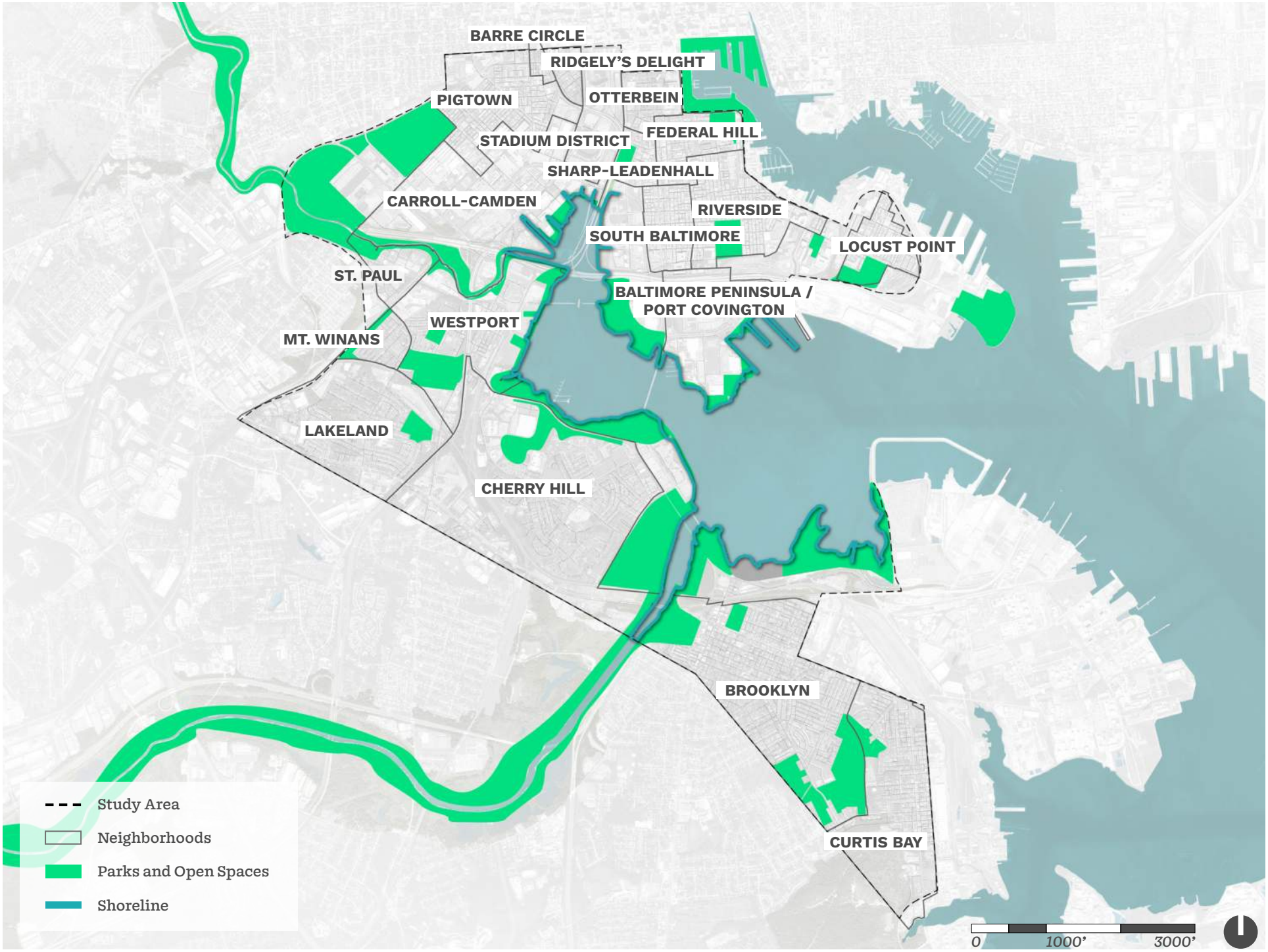
Within the Reimagine Middle Branch study area are 19 neighborhoods, over 30 parks and open spaces, and more than 11 miles of shoreline.

Reimagine Middle Branch extends from Curtis Bay and Brooklyn in the south to Cherry Hill, Lakeland, Westport, Mount Winans, and St. Paul west of the water; north to Carroll-Camden, Pigtown, Barre Circle, Ridgely's Delight, and the Stadium Area/Casino Entertainment District; and east to Sharp-Leadenhall, Federal Hill, Otterbein, Riverside, South Baltimore, Locust Point, and Baltimore Peninsula (Port Covington).

Over 30 parks and open spaces

19 neighborhoods

More than 11 miles of shoreline


BARRE CIRCLE
RIDGELY'S DELIGHT
PIGTOWN
OTTERBEIN
FEDERAL HILL
STADIUM DISTRICT
SHARP-LEADENHALL
CARROLL-CAMDEN
RIVERSIDE
SOUTH BALTIMORE
LOCUST POINT
ST. PAUL
BALTIMORE PENINSULA / PORT COVINGTON
WESTPORT
MT. WINANS
LAKELAND
CHERRY HILL
BROOKLYN
CURTIS BAY
Study Area
Neighborhoods
Parks and Open Spaces
Shoreline
0
1000'
3000'

19 Neighborhoods

The 19 neighborhoods are diverse in their residents' backgrounds and income levels, as well as in their housing stock – which varies in type (rowhouses, single-family, apartments), tenure (rental, owner-occupied, public housing), age, physical condition, and property values. South Baltimore is also diverse in its land uses. Neighborhoods historically developed alongside industrial areas, as the Middle Branch, the harbor, and port-related commerce were the engines of economic growth for Baltimore and the region.


Barre Circle


Curtis Bay


Brooklyn


Federal Hill


Carroll-Camden Industrial Area


Lakeland


Cherry Hill


Locust Point


Mt. Winans

Ridgely's Delight


Saint Paul


Otterbein


Riverside


Stadium / Entertainment District


Pigtown


Sharp-Leadenhall


Westport


Baltimore Peninsula (Port Covington)


South Baltimore

30 Parks and Open Spaces

The 30 parks and open spaces in South Baltimore consists of nearly 600 acres. These spaces vary widely from more “citywide” destinations like Carroll Park and Federal Hill Park, to larger neighborhood parks such as Riverside Park and Lakeland Park, to small pocket parks and playgrounds – to accessible green spaces like Masonville Cove and West Covington Park that are not technically public parks. Nonetheless, many neighborhoods lack significant open spaces or recreation at their core. Brooklyn and Cherry Hill have waterfront parks along their edges, but these spaces have lacked in facilities, and high-speed roads make them difficult to access.


Archer Park


Curtis Bay Park


Federal Hill Park


Barre Circle Park


Ferry Bar Park


Baybrook Park


Florence Cummins Park


Broening Park


Garrett Park


Carroll Park


Conway Park


Gwynns Falls


Henry St. Park


Indiana Ave. Park


Middle Branch Park


Smith Cove


Lakeland Park


Mt. Auburn Cemetery


Latrobe Park


Penn & Melvin St. Park


Maisel St. Park


Reedbird Island


Solo Gibbs Park


S. Paca St. Park


Masonville Cove


Reedbird Park (Under Construction)


Swann Park


Riverside Park


Robert E Schautz Memorial Park


West Covington Park

11 Miles of Shoreline

The 11 miles of shoreline within the study area extend from Baltimore Peninsula to Ridgely's Cove, to the Gwynns Falls and the main stem of the Patapsco, and to Masonville Cove – essentially from commercial port facilities at the Maryland Cruise Terminal and Locust Point Marine Terminals on the northeast to the Masonville and Fairfield Marine Terminals on the southeast. Conditions along the shore vary greatly, as do opportunities for nearby residents or the public in general to reach the water.


West Covington Park


Swann Park


Ridgely's Cove


Gwynns Falls


Westport Waterfront


Smith Cove

Middle Branch Marina

Harbor Hospital

Reedbird Island

Patapsco River

Vulcan Materials

Middle Branch Park

Masonville Cove

Four Equity Frameworks

The transformation of the Middle Branch is organized into four equity-driven frameworks:

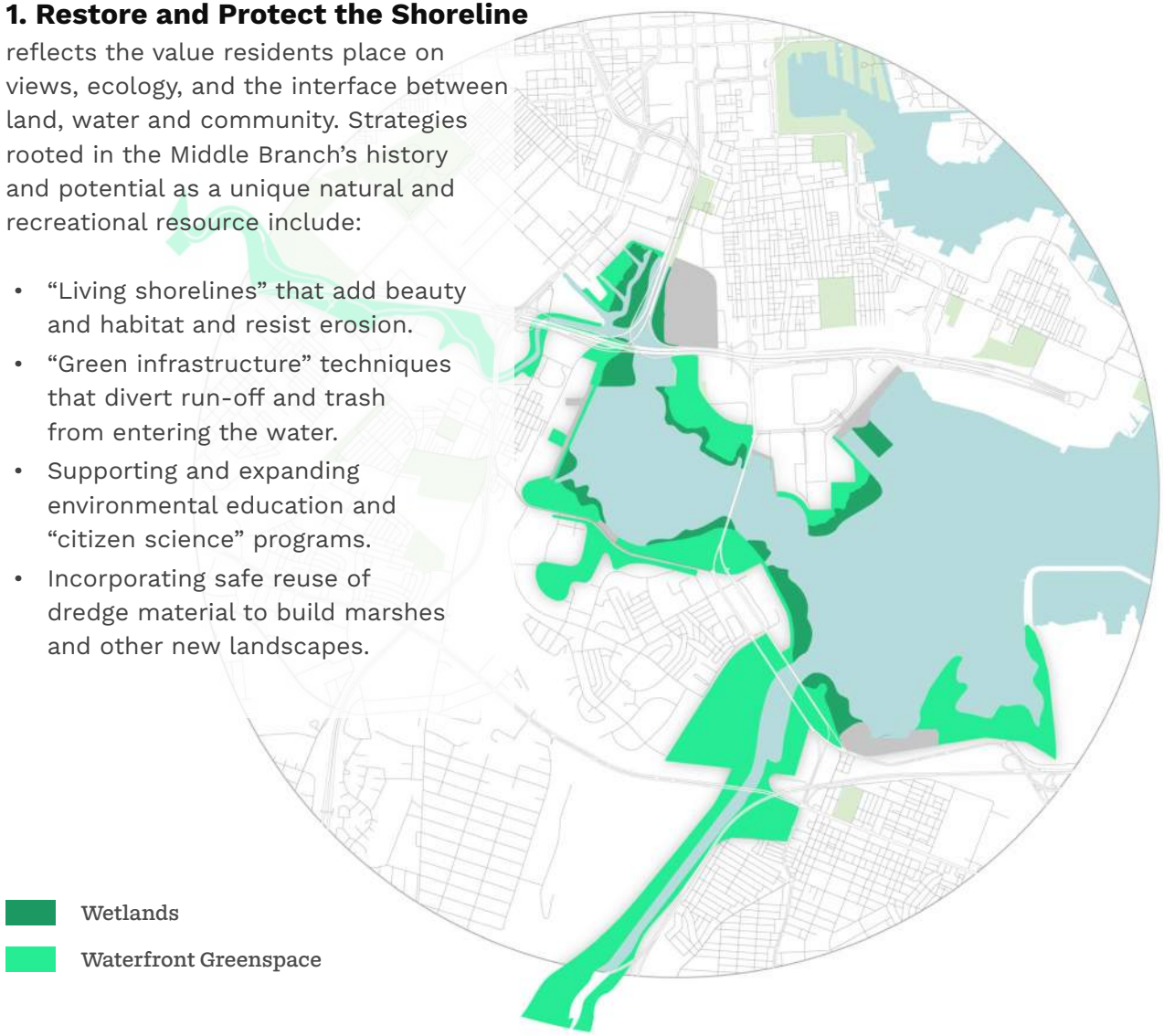
1. **Restore and Protect the Shoreline**
2. **Transform Barriers into Connections**
3. **Activated and Inclusive Parks**
4. **Equitable Development**

These frameworks translate community input into place-based transformations and people-oriented strategies that reflect the Plan's goals. Varying in scale and scope, these actions address historic challenges. They build on previous plans yet capture the momentum of projects currently underway.

The frameworks serve as guides for finding "co-benefits" among strategies and for leveraging opportunities with like-minded partners. They will inform the implementation of innovative solutions to place-making and community-building around the Middle Branch, along with tactics for funding long-term stewardship and ongoing operations.

1. Restore and Protect the Shoreline reflects the value residents place on views, ecology, and the interface between land, water and community. Strategies rooted in the Middle Branch's history and potential as a unique natural and recreational resource include:

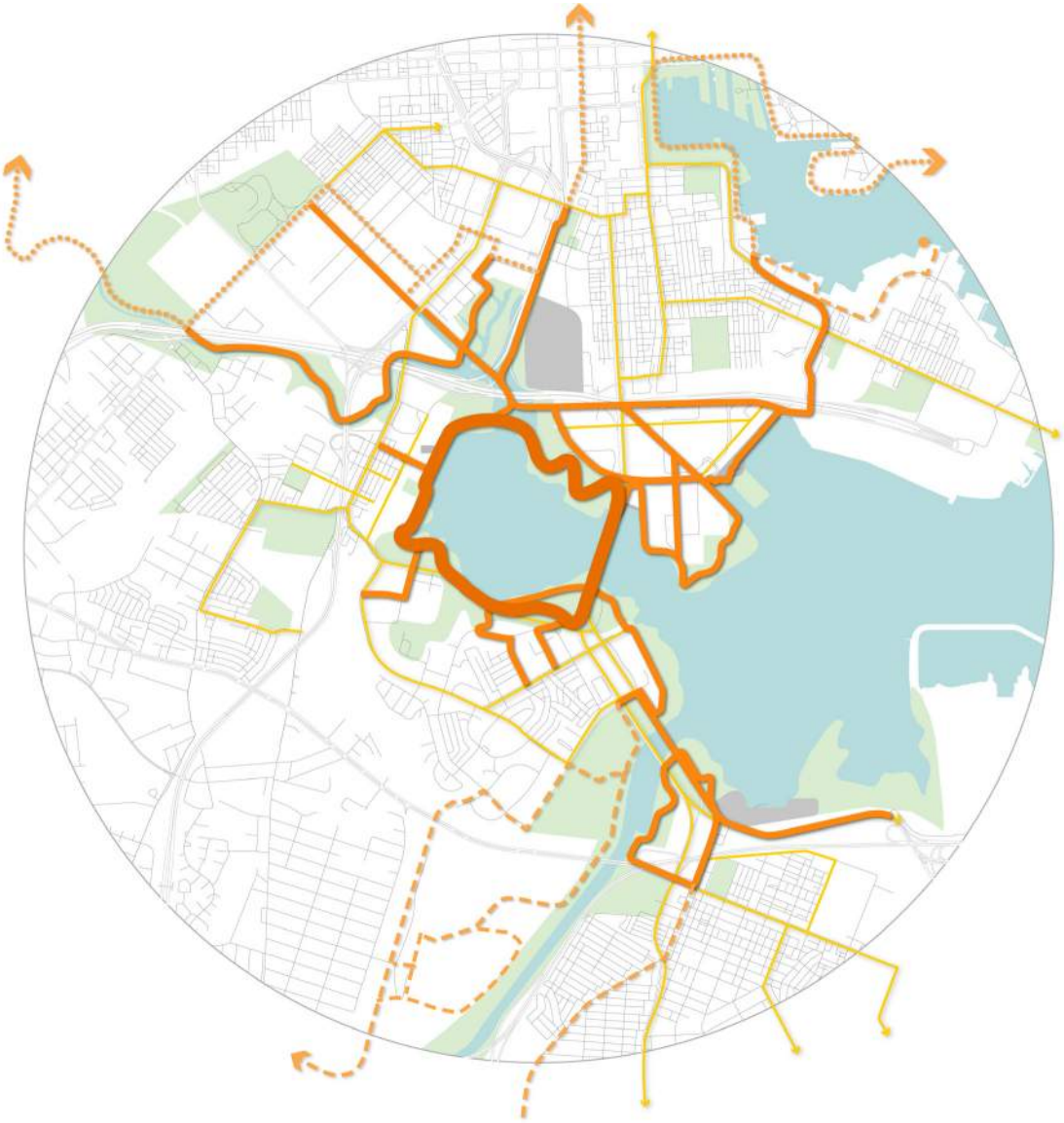
- "Living shorelines" that add beauty and habitat and resist erosion.
- "Green infrastructure" techniques that divert run-off and trash from entering the water.
- Supporting and expanding environmental education and "citizen science" programs.
- Incorporating safe reuse of dredge material to build marshes and other new landscapes.



2. Transform Barriers into Connections

advances the priority for "increased connectivity" where highways, railroads and arterials separate communities from one another and block access to water. Strategies that address this goal while balancing the need for efficient movement of vehicles for port-based businesses and other industries include:

- A Shoreline Trail with a central 3-mile "Loop Trail" around the water.
- A new East-West Pedestrian Bridge between Westport and Baltimore Peninsula.
- Complete Streets corridors that connect neighborhoods and parks to the water, transit, and goods and services.
- Improving truck freight routes from Frankfurst Ave. to Route 2 and I-95.



Proposed Trail Network

Proposed Regional Trails

Existing Trails

Complete Streets

Four Equity Frameworks

3. Activated and Inclusive Parks envisions a “park-shed” of high-quality, well-maintained facilities in neighborhoods, connected via safe, inviting pathways to a network of waterfront parks, trails and overlooks around the Middle Branch. Strategies that address this goal while creating equitable access and programming that reflects input from local communities include:

- Coordinating capital projects and programming across the park-shed.
- Linking shoreline parks and open spaces, and creating connections to neighborhood parks.
- Creating waterfront anchors that draw diverse uses and support operating costs.
- Expanding canoe/kayak and rowing programs with new boat houses, piers and landings.

Park Programming

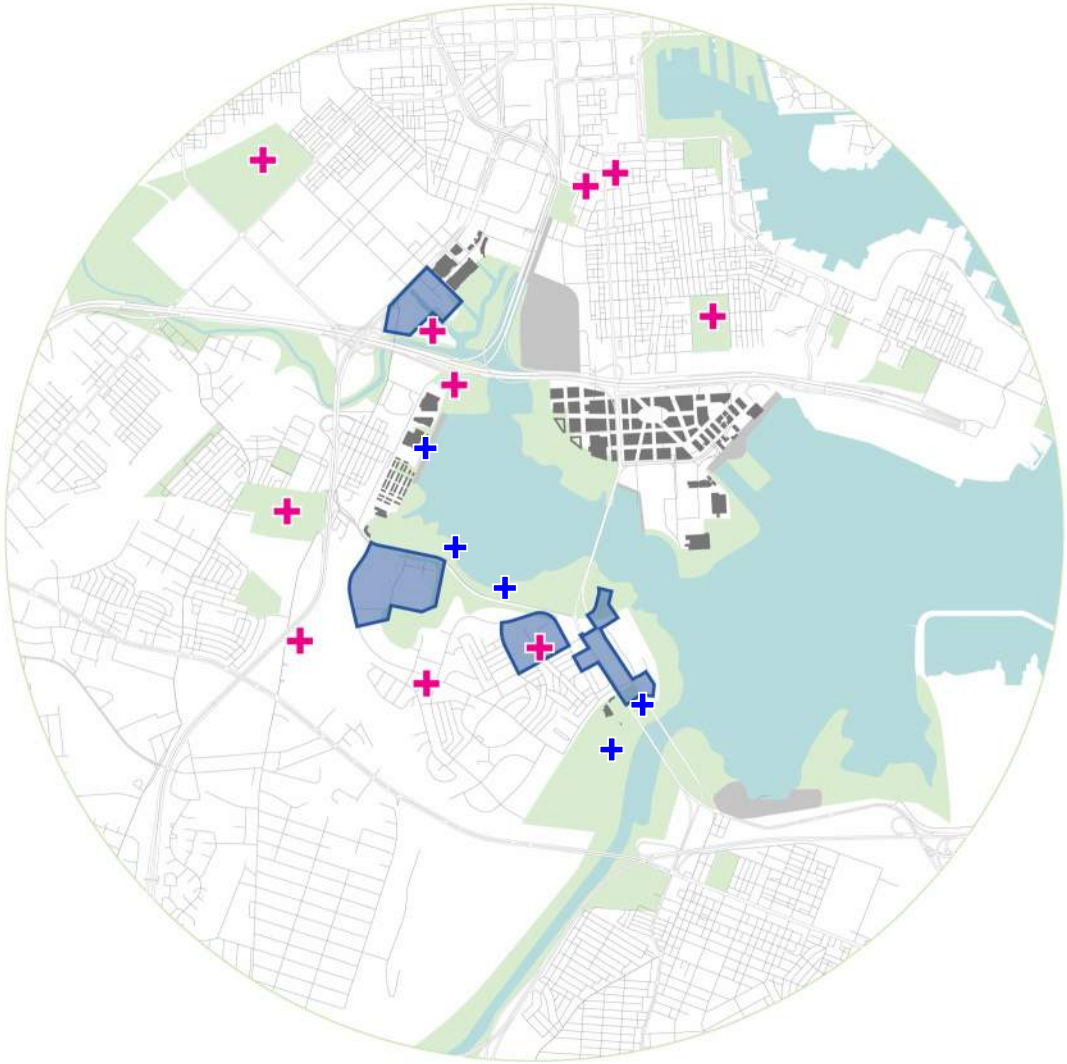
Water Access

Waterfront Parks

4. Equitable Development

is the framework for ensuring that current residents and future generations of South Baltimore participate in and benefit from "reimagining," restoring and revitalizing the Middle Branch. Strategies that leverage this vision to support the growth of existing communities include:

- Sustaining and expanding investments in youth, workforce development, small businesses, and CDC capacity-building.
- Assembling capital for equitable investment in housing and mixed-use development.
- Establishing an African American Heritage District rooted in historical commemoration AND current cultural expression.
- Support for "green" social venture enterprises and new business start-ups.



Heritage District Sites

Development Projects

Opportunity for Development

Private Development

Chapter 2

RESTORE AND PROTECT THE SHORELINE

The Middle Branch of the Patapsco is part of the Chesapeake Bay estuary, which is known for its beauty and natural resources. Historically, the Middle Branch had a gradual, natural, and resilient shoreline edge typical of the bay. Over time this edge was reshaped and hardened by industry and infrastructure, resulting in a shoreline that today is steep, thinly vegetated, fragmented, and impacted by trash, highways, vacancy, erosion, and the increasing frequency and intensity of natural disasters.

The Plan protects the shoreline by restoring the thick, green and resilient edge that once defined the Middle Branch. This transformed shoreline, built using dredge material from the Port, will provide the following benefits:

- Forging a unified character and identity for the Middle Branch as Baltimore's green, recreational waterfront.
- Creating a beautiful and distinctive place that evokes the Chesapeake Bay landscape.
- Aiding in incremental water quality improvements, with the long-term goal of safe swimming and fishing in the Middle Branch.
- Protecting critical infrastructure from flooding due to sea level rise and storm surge.
- Expanding habitat areas to encourage increased biodiversity.
- Preventing coastline erosion and ongoing degradation of the shoreline.
- Reducing marine trash.
- Filtering sediment and chemicals from water.

The Shoreline Today

Spanning approximately 11 miles from the eastern edge of Baltimore Peninsula to Masonville Cove, the shoreline of the Middle Branch is where water meets land, where the Chesapeake meets South Baltimore.

Yet, today the Middle Branch's water and shoreline are highly degraded natural resources.

Where there had once been industrial land uses with water access, the shoreline may consist of derelict piers, riprap, and timber or concrete bulkheads adjacent to vacant land. Unvegetated softer edges that experience periodic wave action often exhibit active erosion. Where there is vegetation, it is often dominated by the highly invasive "common reed" (Phragmites spp). Floatable trash and debris can be found to collect in certain areas due to prevailing wind and currents. Active and abandoned transportation structures like highways, local roads, transit, and freight rail also cross the water at numerous locations.

In addition to these conditions, other challenges to restoring the ecological health of the Middle Branch include:

- Filled shorelines and dredged channels
- Wetland loss
- Poor water quality from untreated stormwater runoff
- Terrestrial and aquatic soil contamination
- Flood and storm risk to major institutions, facilities, and transportation networks, exacerbated by climate change
- Mercury methylation from airborne deposition

In order to restore the Middle Branch, it will be necessary to address each of these interrelated issues. However, in doing so it is also necessary to keep three things in mind:

1. **Acknowledge Limitations:** There will be practical, financial, and legal barriers that narrow the available options. For example, while removing contaminated soils may be ideal, the best, most feasible solution is generally to encapsulate them in place.

2. **Resolve Tradeoffs:** Important goals may be in tension with one another. Irrespective of how appropriate or noble these goals may be, it may be impossible to simultaneously accomplish all of them. It will therefore be necessary to acknowledge competing goods, such as the desire to restore wetland habitat and protect water habitat.

3. **Avoid Paralysis**: Ecological restoration is a difficult and imperfect process, but this is not an excuse to do nothing.

Taken together, the water body and shoreline of the Middle Branch are in poor condition. The current situation is unacceptable and requires immediate action. Yet, with appropriate intervention, the Middle Branch presents the opportunity to provide ecological, social and recreational benefits to South Baltimore and the City as a whole, all while protecting nearby industries.

Industrial pollution

Erosion

Trash

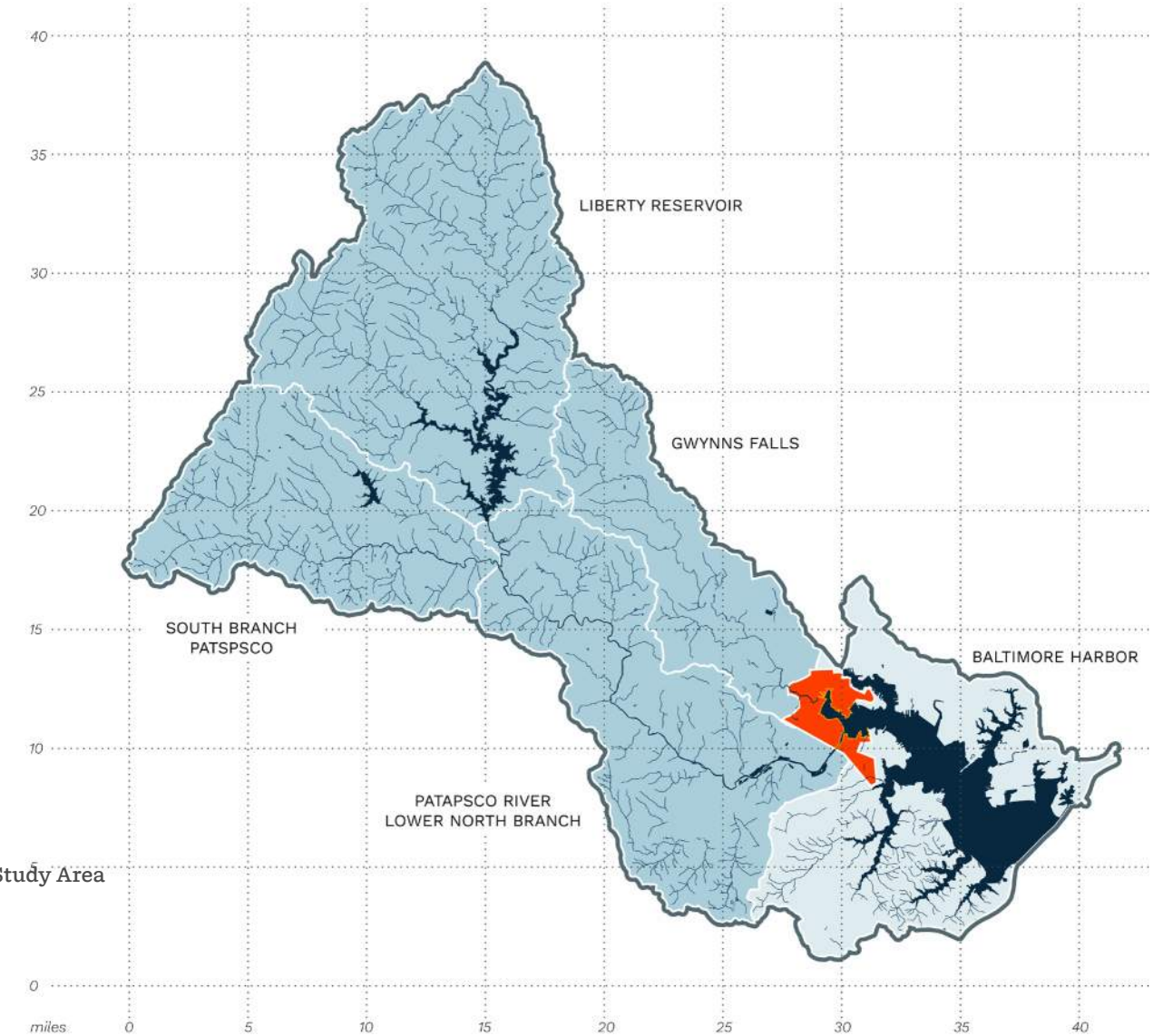
Transportation infrastructure

Vacant land

Invasive species

The Patapsco Watershed

The Patapsco watershed is vast, with over 350,000 acres draining into the Middle Branch. This watershed covers parts of Baltimore City, Baltimore County, Anne Arundel County, Howard County, and Carroll County. The Plan's study area, which covers 19 neighborhoods, is 6,000 acres, or just 1.7% of the total area of the watershed. Moreover, the combined daily discharge from the watershed is dwarfed by the volume of water from the outer Chesapeake Bay that enters the Middle Branch and the Baltimore Harbor through tidal action.



- Study Area
- Watersheds Draining Directly Into Middle Branch Study Area
- Watersheds Draining Into Tidal Patapsco River
- Water Body

AGRICULTURAL RUNOFF

Excess nutrients, such as **nitrogen** and **phosphorus**, can enter the water system through use of fertilizers. Pesticides can also enter the water systems from agricultural runoff.

EROSION + SEDIMENTATION

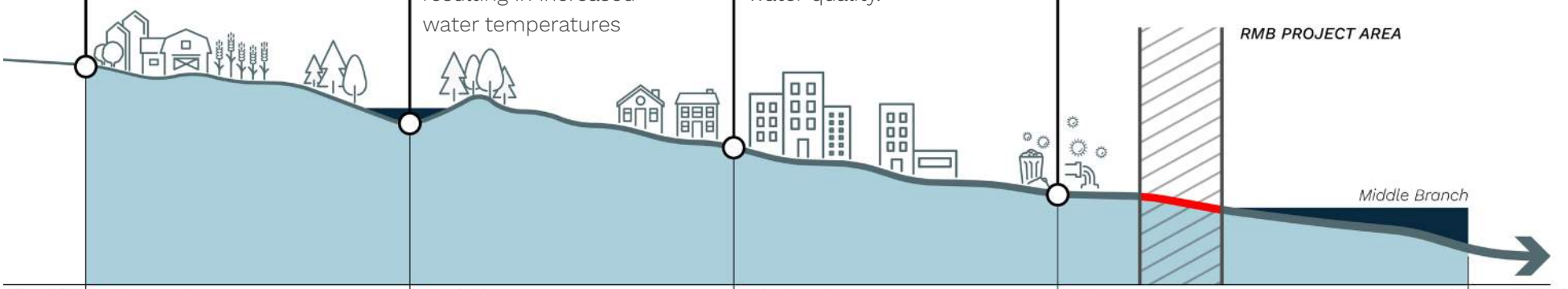
Stream bank and shoreline erosion introduces **suspended solids** and **sediment** into bodies of water, making it difficult for light to penetrate the water. Eroded banks can also result in less over-water vegetative cover, resulting in increased water temperatures

URBAN RUNOFF

Stormwater carries pollution off impervious surfaces such as roads and sidewalks. The pollutants, such as pet waste (**bacteria**), **trash**, road salt, and excess nutrients like **nitrogen** and **phosphorus**, can dramatically alter water quality.

SEWAGE

Sewage overflows and leaks can introduce harmful **bacteria** into the water system. Sewage can also lead to increased **nitrogen** and **phosphorus** in water bodies, and increase overall temperature.



IMPACTS				=
	↑ Chlorophyll a ↓ Dissolved Oxygen ↔ pH Imbalance	↑ Turbidity ↓ Water Clarity ↑ Temperature	↑ Conductivity ↑ Trash ↔ pH Imbalance ↓ Dissolved Oxygen ↑ Bacteria	↑ Bacteria ↑ Temperature ↑ Chlorophyll a	*Poor water quality*

Water Quality Today

This highly urbanized watershed carries significant amounts of pollutants in stormwater runoff to the Middle Branch. These pollutants remain suspended within the Middle Branch waters, affecting the local communities' abilities to enjoy this resource by restricting activities that involve contact with the water, such as fishing and boating. These pollutants also cause harmful algal blooms (or HAB's), when colonies of algae — simple plants that live in the sea and freshwater — grow out of control and produce toxic or harmful effects on people, fish, shellfish, marine mammals and birds.

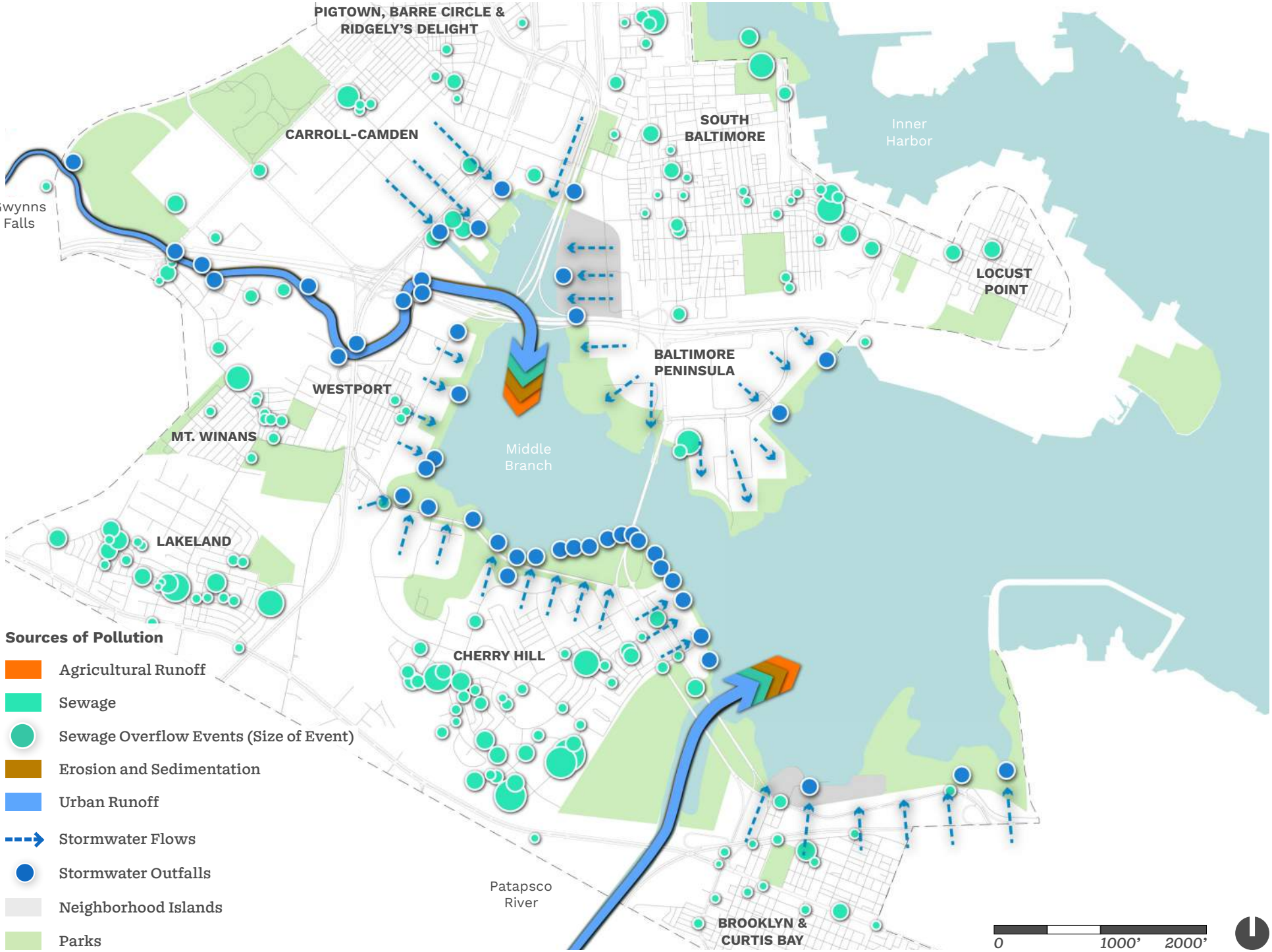
The map at the right illustrates multiple sources of pollution carried by water flowing into the Middle Branch and affecting its water quality. The two direct points of contaminants entering the Middle Branch are the Gwynns Falls and the main branch of the Patapsco River, both of which draw from watersheds covering a vast territory. Beyond these, there are numerous stormwater outfalls around the shoreline, and the large areas of impervious surface coverage (streets, sidewalks, parking lots) nearby intensify the amount of runoff draining into the Middle Branch.

The many sources of pollution within the watershed affect the Middle Branch in a variety of ways:

- **Agricultural runoff** carries significant amounts of excess nutrients from fertilizers and chemicals from pesticides.
- **Sewage overflows** result in untreated human waste spilling in the Middle Branch resulting in dangerous levels of bacteria.
- **Erosion and sedimentation** from large storms scour away river banks, leading to excessive sediment in the water – which blocks sunlight from reaching the submerged aquatic vegetation that provides essential habitat for fish, crabs, and other organisms.
- **Urban runoff** contains oils, chemicals, trash, pet waste, and many other untreated pollutants that all have a harmful effect on the Middle Branch.

Trash collection in Ridgely's Cove

Shoreline erosion at Middle Branch Park


PIGTOWN, BARRE CIRCLE & RIDGELY'S DELIGHT
CARROLL-CAMDEN
SOUTH BALTIMORE
Inner Harbor
Gwynns Falls
LOCUST POINT
BALTIMORE PENINSULA
WESTPORT
MT. WINANS
Middle Branch
LAKELAND
CHERRY HILL
Patapsco River
BROOKLYN & CURTIS BAY
Sources of Pollution
Agricultural Runoff
Sewage
Sewage Overflow Events (Size of Event)
Erosion and Sedimentation
Urban Runoff
Stormwater Flows
Stormwater Outfalls
Neighborhood Islands
Parks
0
1000'
2000'

Strategies for Improving Water Quality

The Plan seeks to implement a series of water quality improvements to help the Middle Branch become a safer place for local communities to better enjoy water-based activities such as fishing and boating. These strategies include:

Trash collectors at all storm drain outfalls to capture trash before it enters the Middle Branch. Examples already serving the Middle branch are the floating "trash cage" that BGE sponsored at its Spring Garden campus and **Gwynnda the Good Wheel of the West**, the fourth "trash wheel" sponsored by Waterfront Partnership's Healthy Harbor Initiative. Clearwater Mills LLC of Baltimore fabricated and operates both devices.

Stormwater management (SWM) facilities throughout the project area and upstream in the watershed to treat runoff and reduce localized flooding.

Living shoreline and constructed wetlands to stabilize shorelines, reduce erosion, filter the water of harmful pollutants, and create habitat for native species at the water's edge. Wetlands have a significant ability to remove nitrogen, phosphorous, and suspended sediments from the water. In an established urban environment, where it can be difficult to retrofit and maintain large numbers of inland bioretention beds, restoring lost wetlands is an extremely efficient strategy for improving water quality.

Forest Buffers within the project area and upstream to stabilize stream beds, reduce erosion, reduce flooding, and create new habitat for native species.

The **table below** details which pollutants each of these strategies can address, along with co-benefits and associated opportunities for community engagement and stewardship. It is worth noting that many are being implemented via the **Middle Branch Resiliency Initiative (MBRI)**, a comprehensive basin-wide effort for shoreline restoration currently underway.

	BACTERIA	TRASH	NITROGEN & PHOSPHOROUS	SEDIMENT & SUSPENDED SOLIDS	CO-BENEFITS	PUBLIC STEWARDSHIP OPPORTUNITIES
TRASH COLLECTOR	✗	✓	✗	✗	Public awareness	Trash pickups
SWM FACILITIES	✓	✓	✓	✓	Greening, Heat reduction	Pet waste clean-up, High grass height mowing
CONSTRUCTED WETLANDS	✓	✗	✓	✓	Resiliency, Biodiversity	Trash pick-ups, Wildlife monitoring
LIVING SHORELINE	✓	✗	✓	✓	Resiliency, Biodiversity, Water access	Trash pick-ups, Educational programs
FOREST BUFFERS	✓	✗	✓	✓	Biodiversity, Heat reduction	Trash pick-ups, Wildlife monitoring


PIGTOWN, BARRE CIRCLE & RIDGELY'S DELIGHT
CARROLL-CAMDEN
SOUTH BALTIMORE
Inner Harbor
Gwynns Falls
LOCUST POINT
Trash Wheel
BALTIMORE PENINSULA
WESTPORT
MT. WINANS
Middle Branch
LAKELAND
Trash Cage
CHERRY HILL
Water Quality Improvement Strategies
Existing Trash Wheel
Proposed Trash Wheel
Existing Trash Cage
Proposed Trash Cage
SWM Facilities
Stormwater Flows
Wetlands
Waterfront Parks & Open Spaces
Patapsco River
BROOKLYN & CURTIS BAY
0
1000'
2000'

Water Quality Monitoring and Research

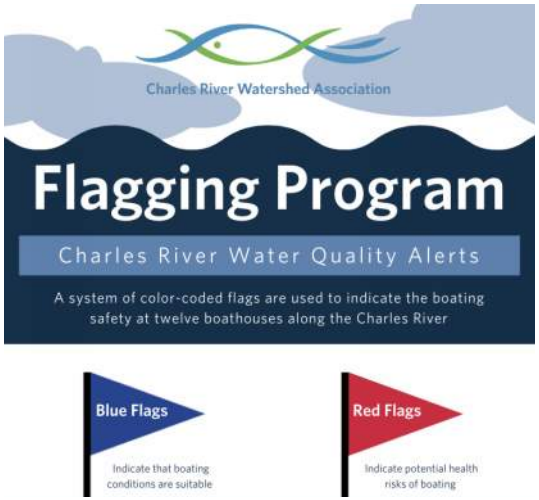
The first step to improving water quality is to understand actual conditions through a robust monitoring program. Collecting water quality data is an evidence-based means of understanding trends and whether policies being implemented at local, state, and federal levels are making an impact. In addition to understanding the concentration of pollutants impairing water quality on a day-to-day basis, it is also vitally important to understand the sources of those pollutants. Being that the Middle Branch is at the interface where freshwater from the Gwynns Falls and Patapsco watersheds mix with brackish water from the Chesapeake Bay, stemming the input of pollutants is only possible through regional policies.

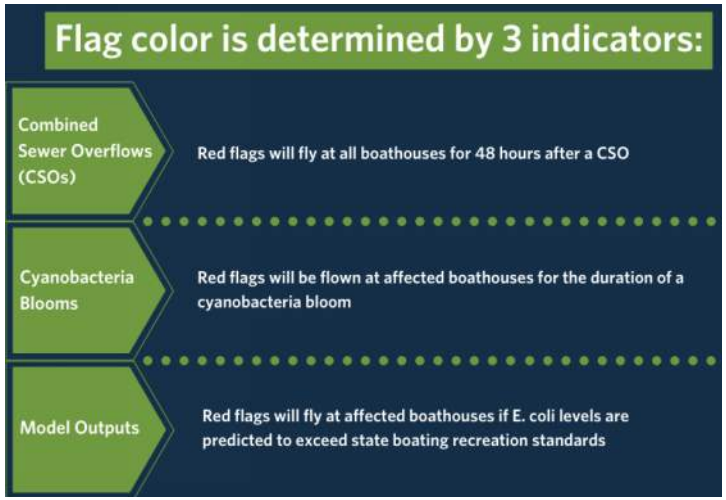
Blue Water Baltimore, a regional environmental organization whose mission is to restore the quality of Baltimore's rivers, streams, and harbor to foster a healthy environment, a strong economy, and thriving communities, actively collects water quality data in the Middle Branch. The frequency of the data collection varies from weeks to months between samples. To better understand daily conditions and suitability for safe recreational contact, a water quality monitoring program that includes continuous data collection and a daily communication of conditions is recommended. The program can build on the foundation established by Blue Water Baltimore and engage the local scientific community as project partners.

Daily communication of these conditions can be done in a number of ways, from social media messaging, to posted signs, to large-scale public art installations. The illustrations on the following page show two concepts for notifying the public of water conditions. A program for the Charles River in Boston uses different colors of flags around the water. The two photo-renderings envision an illuminated beacon at the Middle Branch Marina at night, which can complement the use of flags during the daytime.

In general, **the Plan recommends developing multiple messaging platforms to reach diverse audiences, prioritizing those that increase public awareness and inspire community engagement and stewardship of the water.**

Water quality signage example: Charles River, Boston





Existing Middle Branch Marina Radio Tower

Proposed Monitoring & Messaging: Safe conditions

Proposed Monitoring & Messaging: Potential risks

Wetland Loss and Restoration

Based upon historical maps of the Middle Branch, roughly 85% of the historic intertidal wetland habitat, or marshes, in the Middle Branch has been lost. The little remaining wetland habitat is impaired, eroding, and dominated by invasive, non-native species such as *Phragmites spp*. The end result is lost intertidal habitat, unfiltered stormwater pollution, high wave energy, and reflected wave energy from hardened shorelines.

This is a dramatic change from historic conditions. The Chesapeake Bay and its tributaries are characterized by a shallow, gently sloping topography with an often-blurry transition between water and land. This gradual transition from upland to estuarine habitat creates the perfect environment for tidal, tidally influenced, and non-tidal wetlands to flourish. These wetlands in turn provide essential habitat and breeding grounds for huge numbers of resident and migratory species of wildlife while providing a host of other functions and values including water quality and storm damage prevention.

Today the Middle Branch exhibits degraded upland and open water habitat zones with inadequate riparian buffers in between. This lack of wetlands not only reduces habitat complexity, it also fails to protect the shoreline from wave energy, as exhibited by both erosion escarpments and shoreline hardening with rock and rubble. **The Plan prioritizes the restoration of intertidal habitat and the type of shoreline geometry that supports it, which in turn provides greater protection for communities and properties on land.**

Since it is impractical to remove infrastructure and buildings, this re-balancing can only be achieved by building marsh in the expansive shallow water zone of the Middle Branch system. This clearly involves a trade-off, converting open water habitat to intertidal habitat. However, given the limited options for replacing the wetlands that were historically a part of this water body, this trade-off is worth making in a thoughtful manner. The map labeled “Proposed” at the far right shows the restoration of marshes along much of the shoreline.

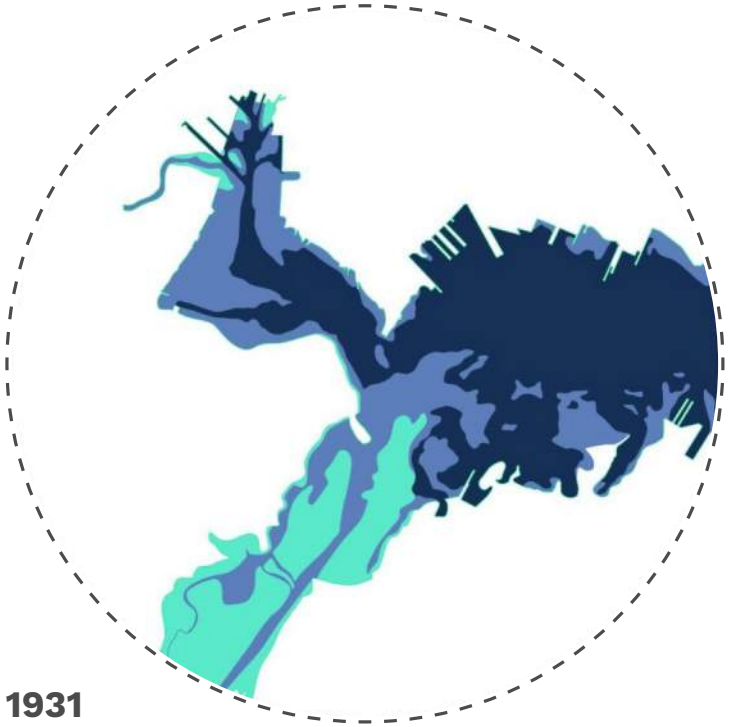
The **Middle Branch Resiliency Initiative (MBRI)**, a comprehensive basin-wide implementation effort for shoreline restoration, is already moving forward with the restoration of the first 25 acres of wetlands. This work is fully funded, and restoration projects are now moving into the design process.

Existing wetlands dominated by the invasive Common Reed (Phragmites spp.) at Reedbird Island

Proposed wetland restoration in Ridgely's Cove

Wetland Loss and Restoration

As illustrated by the series of maps below, more than a century of industrial uses along the Middle Branch has resulted in a channel with profoundly unnatural soil morphology. This includes both fill that has been placed along the shoreline, and underwater dredging for ship channels. It therefore lacks a gradual grade transition from upland habitat, through intertidal habitat, to open water habitat.

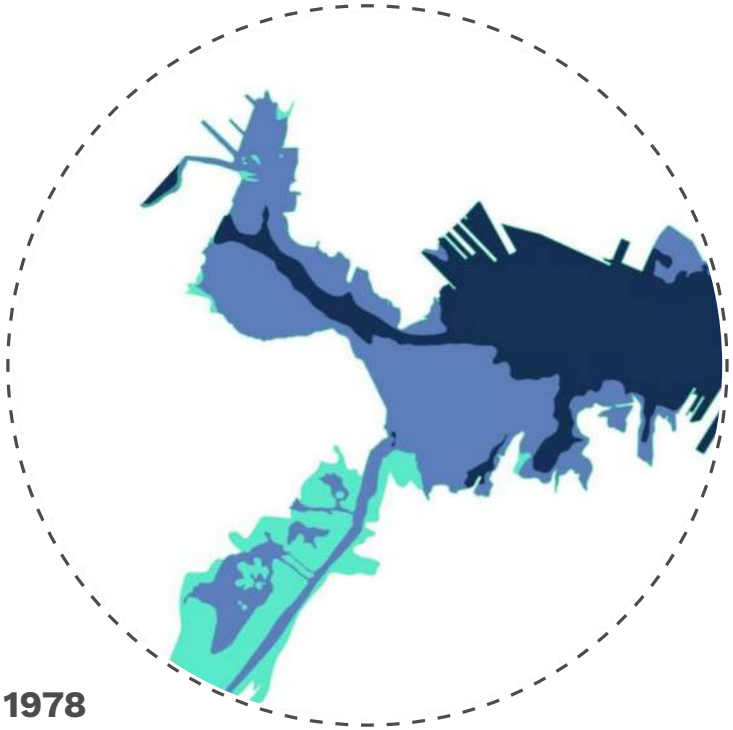


1931

Intertidal Zone	Shallow Water Zone
440 Acres	**800** Acres

Intertidal to Shallow Water Ratio

1:2



1978

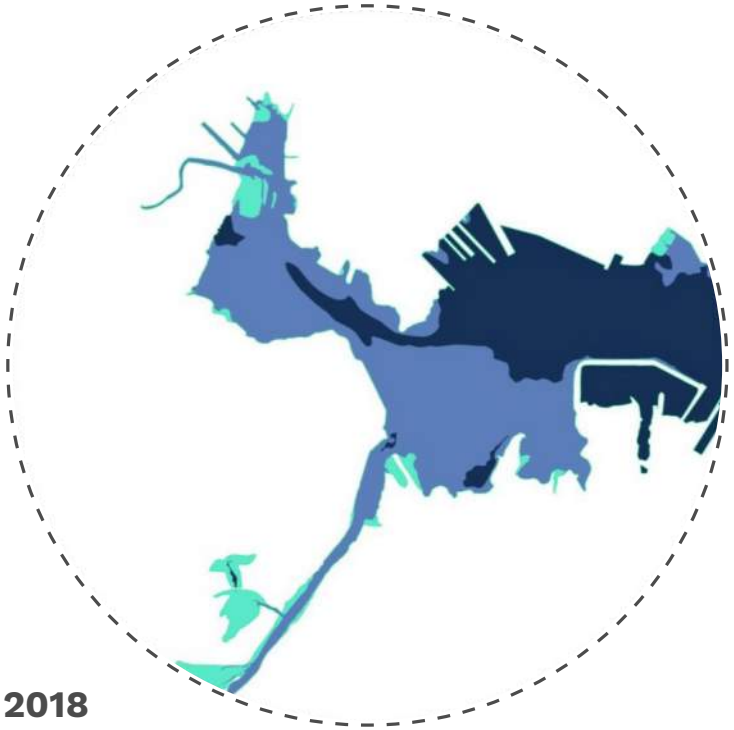
Intertidal Zone	Shallow Water Zone
320 Acres	**985** Acres

Intertidal to Shallow Water Ratio

1:3

* *All calculated areas are approximations based on the extents of historical maps and data. The plan's aim is to reverse the historic trends of intertidal habitat loss.*

Open water | Shallow water habitat | Intertidal habitat

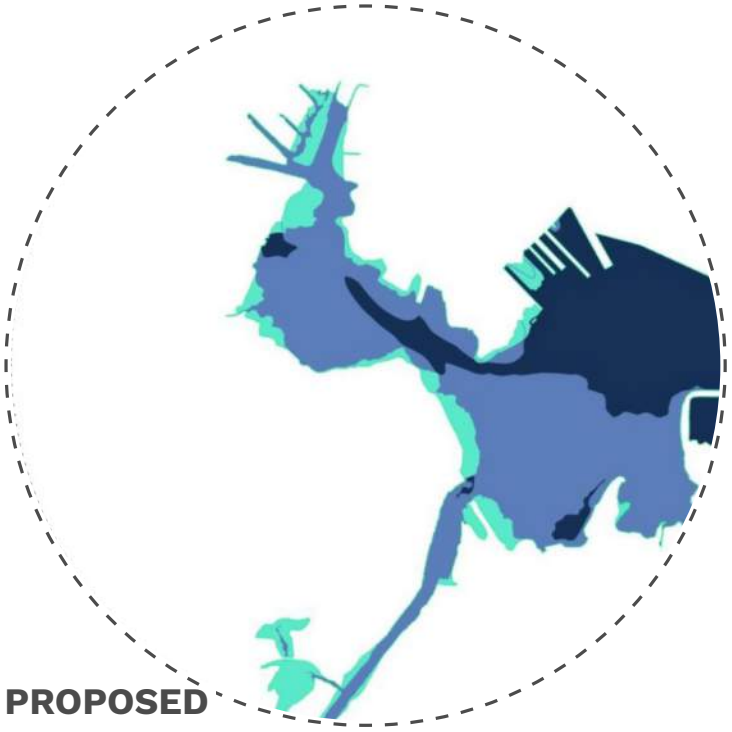


2018

Intertidal Zone	Shallow Water Zone
115 Acres	**865** Acres

Intertidal to Shallow Water Ratio

1:10



PROPOSED

Intertidal Zone	Shallow Water Zone
190 Acres	**790** Acres

Intertidal to Shallow Water Ratio

1:4

Resilience and Designing for Climate Change

The Middle Branch coastline was developed between the mid-1800s and mid-1900s – before the advent of contemporary flood plain or coastal zone regulations. This development destroyed most of the natural wetlands that historically protected the shoreline from storms and erosion.

Today, the water is principally surrounded by low-lying properties, including utilities, active industrial facilities, formerly industrial brownfields in the process of redevelopment, institutional facilities, and publicly owned assets like the Baltimore Rowing and Water Resource Center (known as the Middle Branch Park Boathouse). These, in turn, are interlaced with critical transportation networks, including heavy rail, light rail, highways, bridges, and neighborhood streets. Many of these transportation routes serve as vital arteries for the Port.

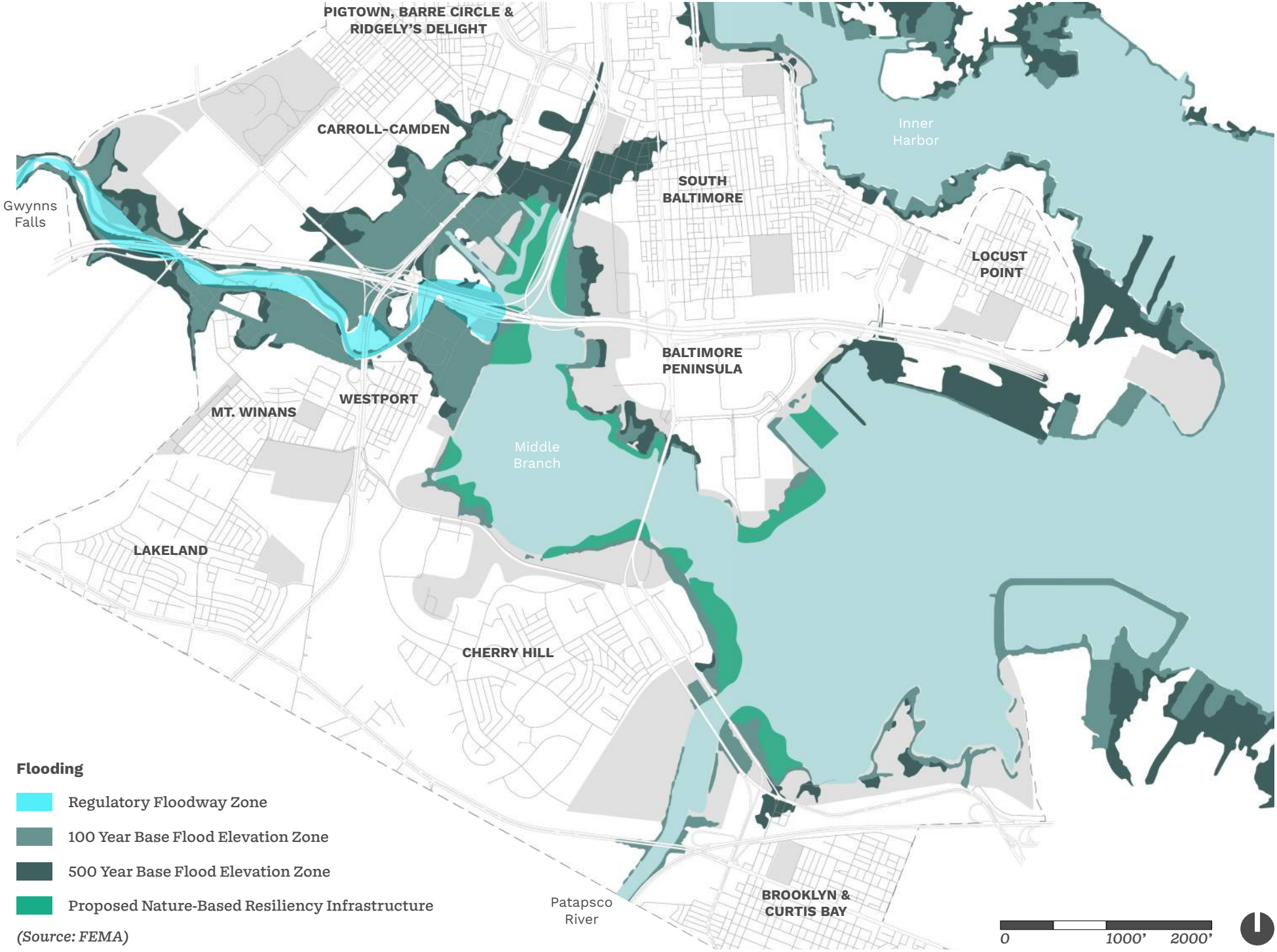
In an era of climate change and sea level rise, this situation places billions of dollars of essential infrastructure in harm's way. For example, if a storm were to damage BGE's Spring Gardens campus, this could disrupt natural gas distribution around the region, while also interrupting the steam and hot water loop servicing hundreds of buildings downtown. Similarly, flooding around MedStar Harbor Hospital could disrupt ambulance traffic as well as their helicopter landing pad. This topic is of such concern to the Maryland Department of Transportation that they are currently conducting a multi-year study of resiliency risks and opportunities along the Patapsco.

For these reasons, the Maryland Hazard Mitigation Plan emphasizes "Coastal Restoration to Mitigate Hazards for Vulnerable Communities" as a High Priority Implementation Strategy. This urgency is also reflected in the Baltimore City Disaster Preparedness and Planning Project (DP3) strategy, which calls for "enhanc[ing] the resiliency of the City's waterfront to better adapt to impacts from hazard events and climate change," and "new coastal buffer efforts and... wetlands and soft shoreline along coastal areas."

The Reimagine Middle Branch Plan recognizes nature-based resiliency improvements, such as living shorelines and constructed wetlands, as a necessary and critical step towards protecting critical infrastructure and property from flood and storm events. "Shoreline retreat" (i.e., relocating infrastructure and assets away from coastal sites) is simply not an alternative, as there are few practical options for relocating a multi-billion-dollar utility facility or a major regional hospital.

Nature-based solutions also generate multiple co-benefits. These benefits include shoreline protection, critical habitat regeneration, heat island effect reduction, air quality improvements, water quality improvements, and opportunities for outdoor recreation and education.

Dense vegetation and shallow waters within wetlands can slow the advance of storm surge.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LAKELAND
CHERRY HILL
Patapsco River
BROOKLYN & CURTIS BAY
Flooding
Regulatory Floodway Zone
100 Year Base Flood Elevation Zone
500 Year Base Flood Elevation Zone
Proposed Nature-Based Resiliency Infrastructure
(Source: FEMA)
0
1000'
2000'

Reshaping the Shoreline with Dredge Material

Working closely with the Maryland Port Administration, **the Plan seeks to utilize tested, underwater material dredged from the Port's shipping channel to reshape the Middle Branch's shoreline through a practice known as "beneficial use and innovative reuse of dredge material." The beneficial use and innovative reuse of dredged material are critical to the City's port economy, as the maintenance of deep channels is directly correlated to jobs for Marylanders.**

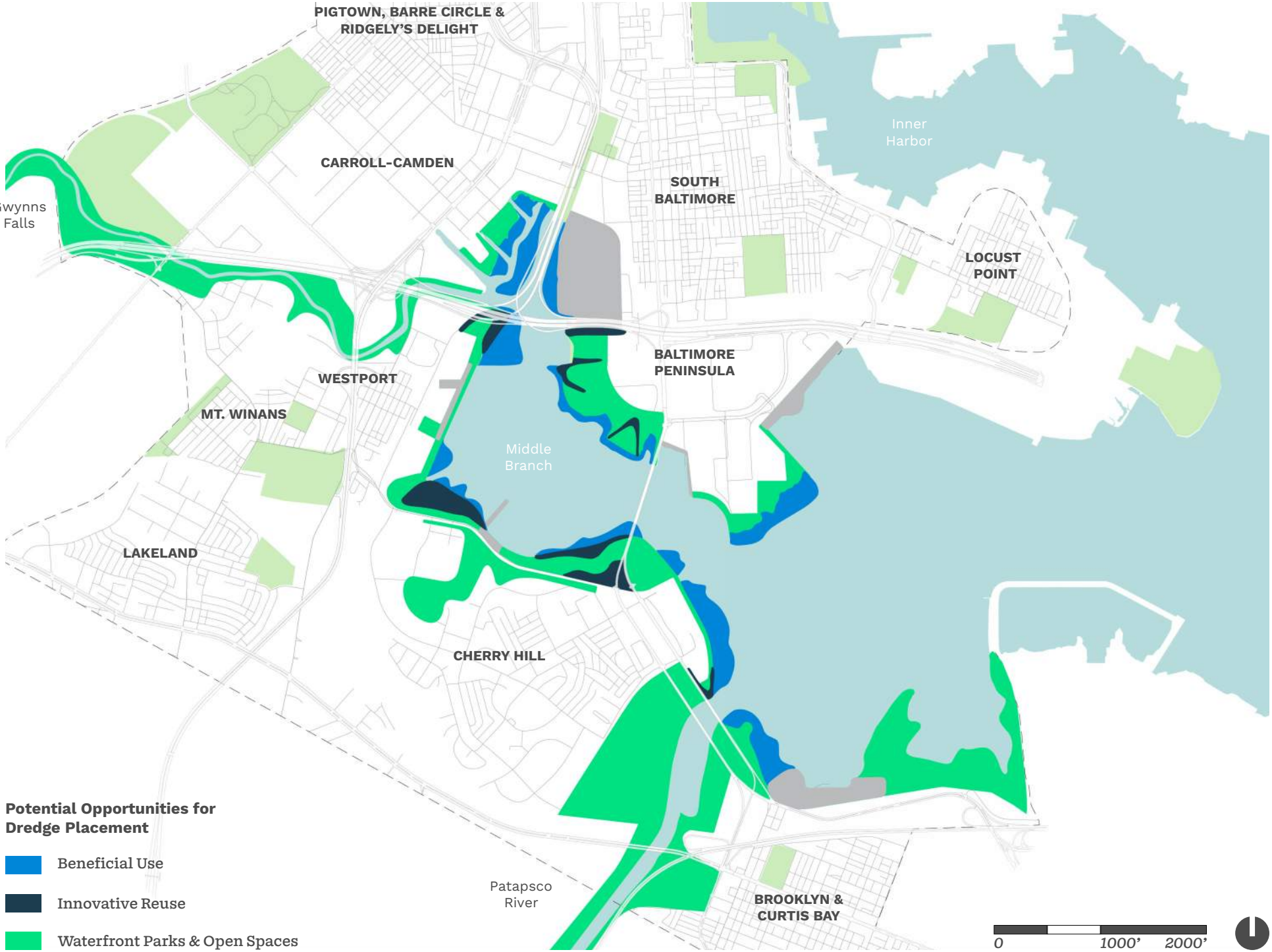
The Plan recommends a phased placement of dredge material, planned in coordination with the overall project timeline and availability of material from the Port. This material can be used to reshape the shoreline with large areas of marsh that expand intertidal habitat areas and encapsulate aquatic sediments. The Plan also incorporates the "innovative reuse" of dredge material in upland areas to create new landforms in waterfront parkland.

Beneficial use and innovative reuse of dredge material are priorities for the State of Maryland and the Port of Baltimore. Sediment from the Gwynns Falls and Patapsco River is routinely dredged from nearby federal navigation channels to ensure the Port can continue to operate as a world leader in economic trade. The sediment dredged from the navigation channels can be re-purposed to create living shorelines, constructed wetlands, and resiliency improvements within the Middle Branch, providing an opportunity to meet the goals of this Plan.

Beneficial use is not only important because it supports the City's port economy. Given the long history of industrial activity in the area, and the transport of materials via the Gwynns Falls and other tributaries, it is reasonable to assume that sediments across the Middle Branch contain a variety of contaminants. Currently, those sediments are unprotected, and exposed to the constant threat of mobilization from currents, storm events, and propeller wash. There is nothing encapsulating those sediments or isolating them from individuals who may intentionally or inadvertently enter the water. The current conditions are therefore highly unstable and undesirable.

The Plan recommends restoring wetlands on top of sediments to encapsulate historic contamination and thereby resolve this concern. However, it will be critical to perform this encapsulation in a manner that itself prevents sediment mobilization. This should include:

- Prior testing of representative sediments used to construct the wetlands, in order to prevent the accidental introduction of new contaminants to the construction site.
- Installing outbound sills and berms in the first step of construction, with subsequent construction moving inward towards shore.
- Installation of an anti-scour apron to encapsulate sediments during construction activities. This will create an engineered control to cap historical constituents that may be entrained within sediments underlying the near shore berm.
- Use of a turbidity barrier along the exterior of the construction zone during berm construction activities to prevent migration of fugitive sediment beyond the immediate location of the berms.
- Turbidity and specific conductance monitoring, using probes positioned in close proximity to berm construction activities to document minimal sediment disturbance.
- Implementation of a containment and countermeasures plan designed to respond to challenges throughout construction.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Patapsco River
BROOKLYN & CURTIS BAY
Potential Opportunities for Dredge Placement
Beneficial Use
Innovative Reuse
Waterfront Parks & Open Spaces
0
1000'
2000'

The Living Shoreline

A vital resource and amenity, **the Plan recommends creating a largely continuous living shoreline around the Middle Branch**—a mostly uninterrupted, barrier-free corridor, enabling access and freedom of movement for the community and wildlife. From an ecological perspective, continuity enables flora and fauna to find suitable niches to thrive and reproduce. And from a social perspective, the shoreline presents an expansive organizing feature that connects communities and people to nature.

As the cross-section view on these pages illustrates, a living shoreline can reintroduce natural systems, while helping people interact with their environment and one another. This diagram shows the intertidal wetlands, tidal creeks, upland meadows, and woodlands that comprise a natural Chesapeake shoreline. Intertidal habitat is critical for supporting the aquatic food web, as it is in this zone where small and young fish can avoid predation in shallow water, hiding beneath plants, while having ample food to forage. Waterfowl quietly stalk through tidal canals to feed. Bike paths, walking trails, boardwalks, and gathering spaces then connect people with this transformed waterfront.

There are clear ecological and social benefits to restoring the wetlands that historically lined the Middle Branch. However, this approach is not without its trade-offs. In order to restore an appropriate mix of open water habitat and intertidal habitat, it will likely be necessary to reduce the amount of open water surface currently available. The question is not whether wetlands are superior to shallow water habitat – the question is whether the overall ecosystem is improved by the availability of both.

While it is attractive to consider large-scale excavation strategies that would “retreat” from the shoreline, in practice this is extremely difficult. Portions of the shoreline fill are likely contaminated, making in-place encapsulation a necessity. Meanwhile, much of the shoreline is privately owned, with owners unlikely to decrease their land area or

relocate buildings. Even if the cost, complexity, and contamination issues could be resolved, it is unclear whether the state's Critical Area law would allow it. Therefore, although widespread excavation to restore the historic shoreline is not feasible, it is still recommended to restore the lost intertidal zone, even if this requires a tradeoff with shallow water habitat.

Shoreline Habitat

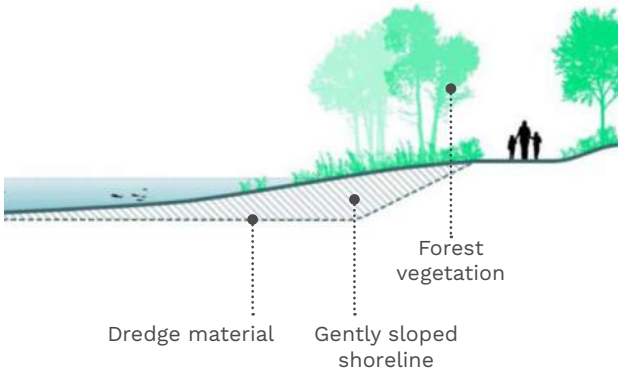
The continuous living shoreline around the Middle Branch consists of varied habitats for supporting diverse flora and fauna. To transform the existing shoreline from its industrial impacts, **the Plan envisions the large-scale implementation of various design interventions that consider site context.**

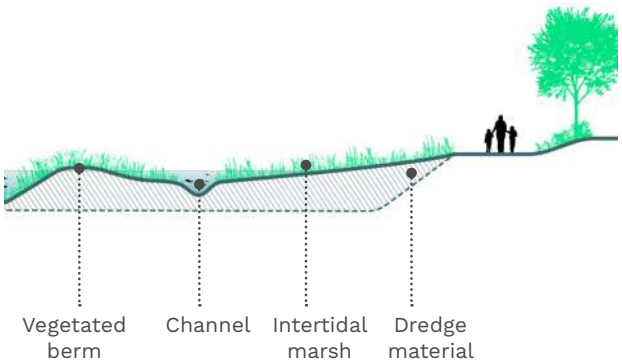
Along quiescent areas, a **maritime forest** may consist of a gently sloping embankment planted with native trees and marsh grasses. Where more space is available, that living shoreline may expand to provide the functions of the historic **marshes** that once ringed the basin. These marshes will be protected from "fetch," or erosion due to wave action, by **vegetated berms**, which function like an elevated levy between marsh and open water.

Sandy beaches in select locations enable community access for boating (and, ideally in the future, swimming) or can serve as nesting areas for diamondback terrapins. In locations where wind and wave energy are high, the water deep, or land-side space is limited, a **rocky edge** can support "sessile" organisms like mussels and provide shelter for larger fish. Where bulkheads need to be maintained, designing **living bulkheads** can incorporate native plants and create opportunities for habitat.

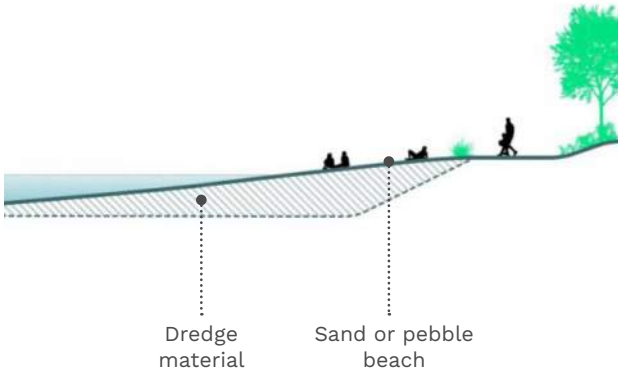
Maritime forest

Marsh & vegetated berm

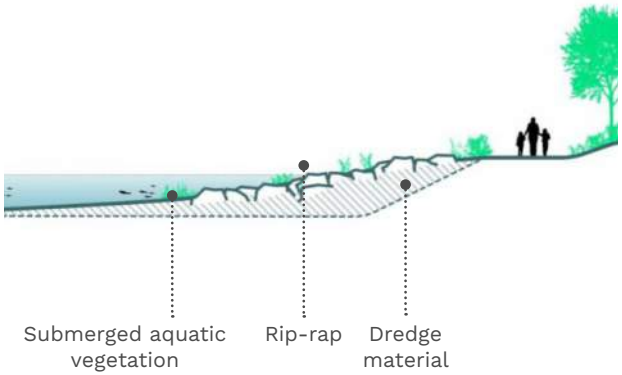




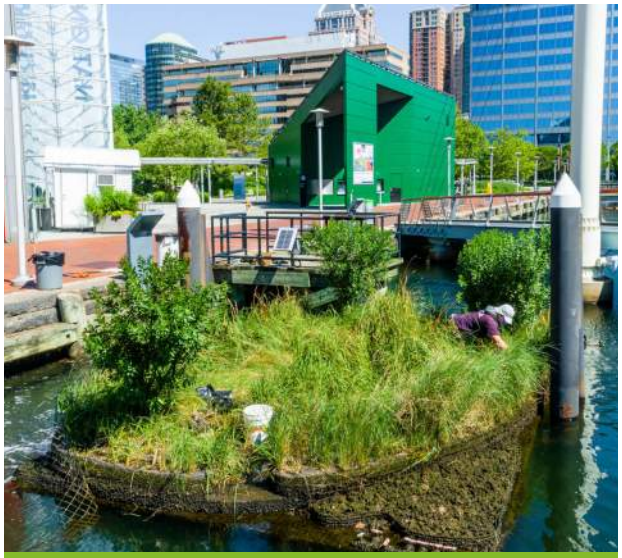
Sandy beach

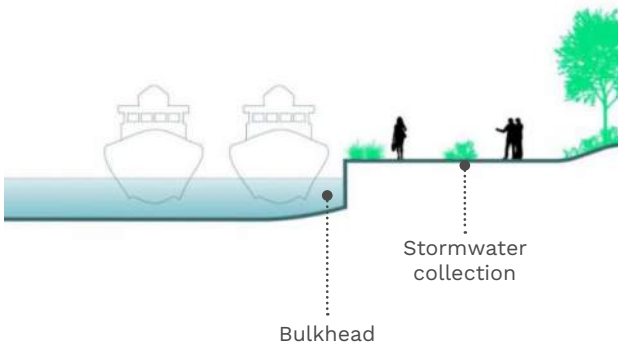


Rocky edge



Living bulkhead





Upland Habitat

Moving upslope from the water's edge, the flora transition from salt tolerant grasses to woody shrubs and trees. Above the tide line, a healthy shoreline is supported by a buffer of upland meadow or forest.

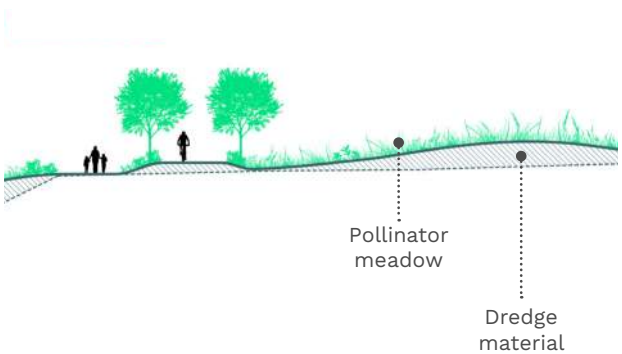
The Plan recommends expanding upland habitat areas around the Middle Branch by converting spaces in parks from large expanses of "turf" or lawn to forest and meadow plantings that frame lawns for views and gathering spaces.

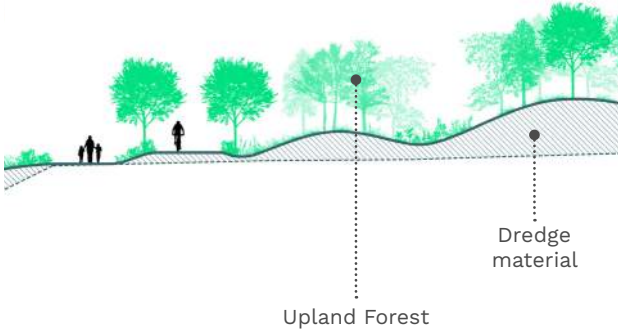
The flora that grows in the upland are deep rooted, holding soil from erosion while filtering runoff. **Pollinator meadows** can increase ecological health and support biodiversity around the Middle Branch while creating a more varied setting for walking and enjoying nature. **Upland forests** provide a structure for birds to nest, bats to roost and mammals to forage. As trees extend skyward, they help regulate the micro-climate by slowing the wind and cooling the air through evapotranspiration.

Healthy shorelines are not separated from uplands by roads or pavement. Rather, they contain zones of connected habitat where plant and animal species can grow in number and diversity.

Pollinator meadow

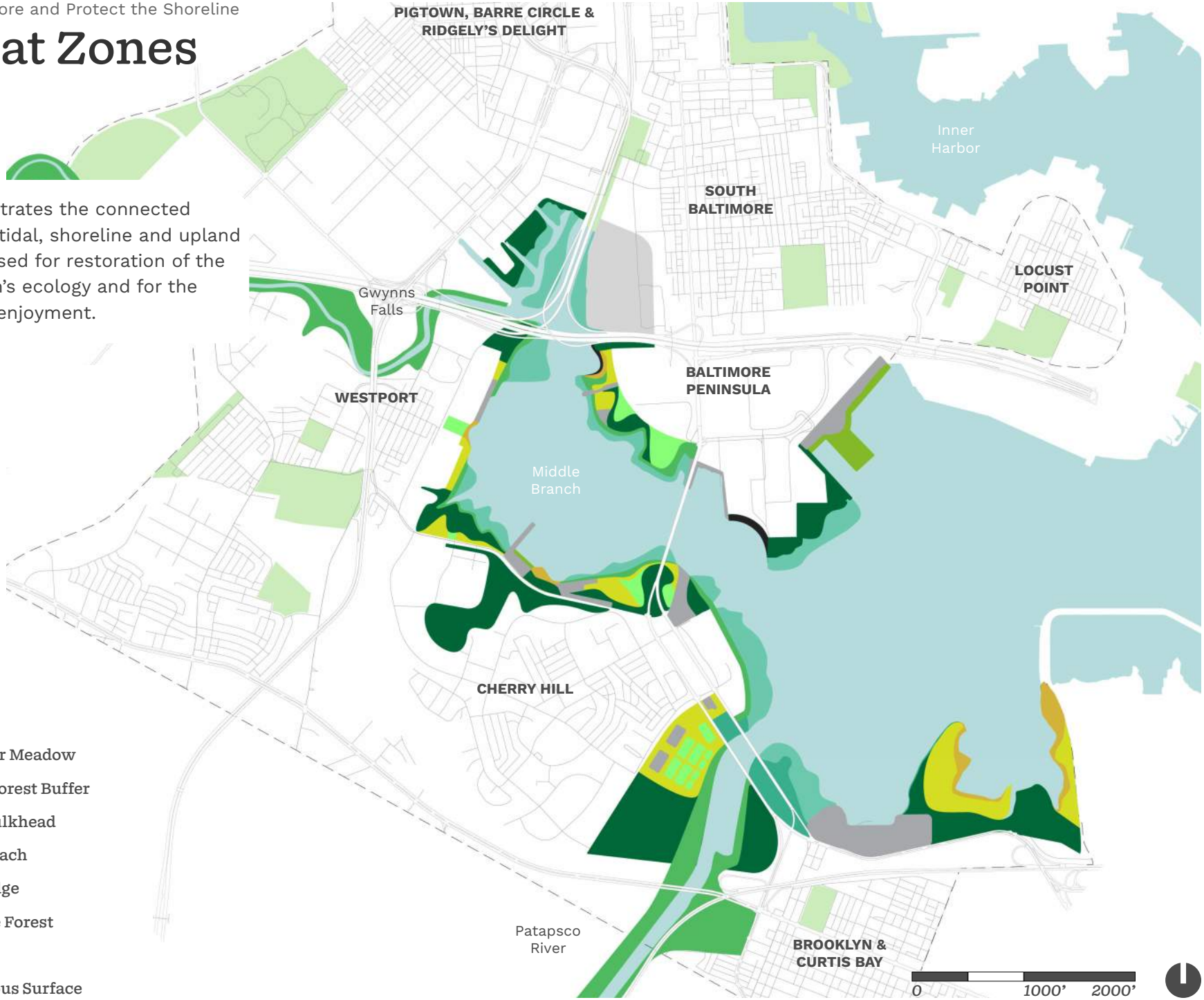
Upland forest buffer





Habitat Zones

This map illustrates the connected zones of intertidal, shoreline and upland habitat proposed for restoration of the Middle Branch's ecology and for the community's enjoyment.



Habitat Zones

- Lawn
- Pollinator Meadow
- Upland Forest Buffer
- Living Bulkhead
- Sandy beach
- Rocky Edge
- Maritime Forest
- Marsh
- Impervious Surface

Key Plant Species

Intertidal, shoreline, and upland habitats will be created, expanded, and restored with a palette of native plant species. Examples of characteristic species are included here:

Marsh

Distichlis spicata, **Seashore Saltgrass**
Spartina alterniflora, **Smooth Cordgrass**
Carex hyalinolepis, **Shoreline Sedge**
Alnus serrulata, **Smooth Alder**

Maritime Forest

Carya cordiformis, **Bitternut Hickory**
Quercus michauxii, **Southern Red Oak**
Liquidambar styraciflua, **Sweetgum**
Magnolia virginiana, **Sweetbay Magnolia**
Ilex opaca, **American Holly**
Taxodium distichum, **Bald Cypress**

Pollinator Meadow

Rhus glabra, **Smooth Sumac**
Ceanothus americanus, **New Jersey Tea**
Sorghastrum nutans, **Indiangrass**
Andropogon gerardii, **Big Bluestem**
Liatris spicata, **Blazing Star**
Heliopsis helianthoides, **Smooth Oxeye**
Pycnanthemum incanum, **Mountain Mint**

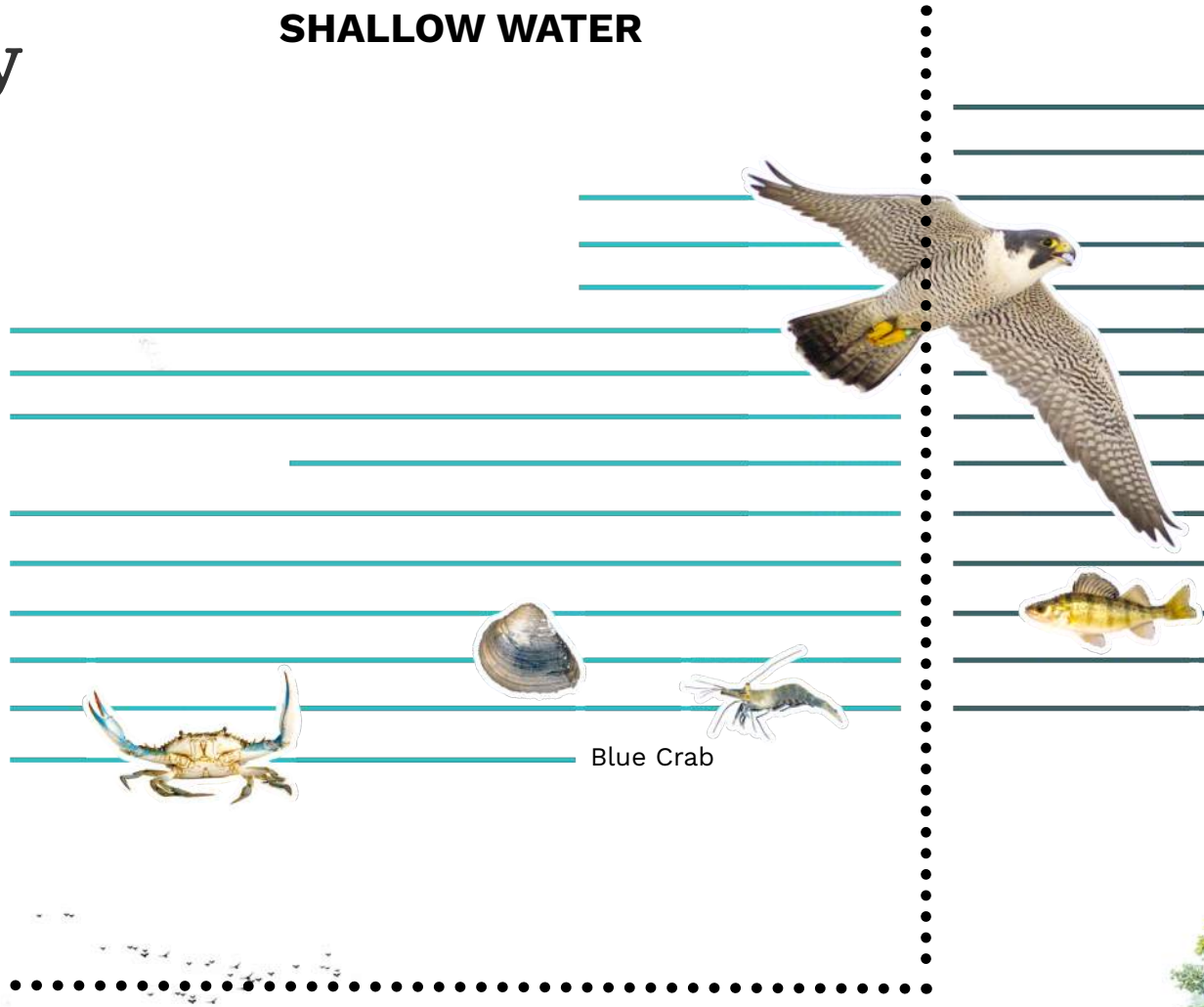
Forest Buffer

Ilex opaca, **American Holly**
Carya cordiformis, **Bitternut Hickory**
Quercus michauxii, **Southern Red Oak**
Magnolia virginiana, **Sweetbay Magnolia**
Andropogon gerardii, **Big Bluestem**

Increasing Biodiversity

With the protection of the shoreline and expansion of intertidal habitat, the Middle Branch has the potential to become an urban wilderness that supports a wide array of wildlife. At Masonville Cove alone, more than 650 species of flora and fauna have been observed, documented and enjoyed, including bald eagles, river otters, snapping turtles, and monarch butterflies.

Though the number of species documented is impressive, the population of each of these species has significant room for improvement. By creating a largely continuous 11-mile living shoreline with varied habitats, barriers to movement minimized, and invasive species managed, the opportunity for native species to find food, refuge, and a means to complete their life cycle, it is a reasonable expectation that more native flora and fauna will thrive.



INTERTIDAL ZONE






Banded and Mummichog Killifish

White Perch

Brackish Clam

Grass Shrimp

River Otter

UPLAND

Baltimore Checkerspot

Monarch Butterfly

Osprey

Barn Swallow

Green Heron

Black Crowned Night Heron

Peregrine Falcon

Big Brown Bat

Little Brown Bat

Diamondback Terrapin

Conclusion and Summary of Recommendations

The Middle Branch is missing most of its historic intertidal zone – the thick band of shallow wetlands that characterizes a Chesapeake shoreline. This missing habitat undermines the local ecosystem, fails to filter pollutants out of the water, and contributes to erosion. At the same time, underwater sediments that may have legacy contaminants in them are exposed to current, tide, storm surge, and propeller wash. And major examples of critical infrastructure around the shoreline remain vulnerable to storms, flooding, and sea level rise.

Each of these issues is improved by restoring wetlands along the shoreline. Areas of tidal marsh can reduce erosion, remove pollutants, provide habitat, and encapsulate sediments. They can also provide recreational amenities for neighborhoods that have long lived with degraded environmental conditions. And, when designed properly, they can protect against storm and flood damage.

This large-scale restoration effort (currently underway as the Middle Branch Resiliency Initiative) is also a tremendous opportunity to support the port economy through the beneficial and innovative use of dredge material.

The living shoreline – a mostly uninterrupted, barrier free corridor – enables access and freedom of movement for wildlife and the community. From an ecological perspective, continuity enables flora and fauna to find suitable niches to thrive and reproduce. From a social perspective, the shoreline presents an expansive organizing feature that connects communities and people to nature.

While it is true that wetland restoration involves certain tradeoffs – such as the conversion of shallow-water habitat to intertidal habitat – the net benefit is profound and desperately needed. The current conditions are unacceptable, and sea levels are rising. Failing to act will only exacerbate the longstanding environmental justice burdens that residents have suffered with for generations.

Native grass planting at Masonville Cove

Image courtesy of National Aquarium

A Platform for Science

Implementation of the Reimagine Middle Branch will not all happen at once and will take years to unfold. The first sites where living shoreline, marsh, meadows and forests are restored represent an opportunity for education and research. **The Plan encourages the scientific community to use the Middle Branch as a platform for exploration and scientific research**. Whether the interest is associated with the success of the plantings in dredge material or increased biodiversity, there is opportunity to set up experiments, collect data, and conduct community science to evaluate observed trends and determine whether better outcomes are possible for future project phases.

Restore and Protect the Shoreline: Summary of Recommendations	
1.1	Work with the Maryland Port Administration to utilize tested, underwater material dredged from the Port's shipping channel to create living shorelines through "beneficial use and innovative reuse of dredged material."
1.2	Phase placement of dredge material, planned in coordination with the overall project timeline and availability of material from the Port.
1.3	Utilize a range of strategies to create living shoreline zones that respond to site conditions and uses, such as marsh, sandy beach, and rocky edges.
1.4	Implement air and water quality testing and improvements in concert with the living shoreline, including green infrastructure for stormwater management facilities, trash collectors, and upland forest buffers.
1.5	Expand upland habitat areas around the Middle Branch by converting spaces within parks from large expanses of turf grass to a mix of forest and meadow plantings that frame lawns for views and gatherings.
1.6	Develop multiple messaging platforms that share information about Middle Branch's air and water quality and can reach diverse audiences, public awareness and inspire community engagement and stewardship.
1.7	Encourage the regional scientific community to use Middle Branch as a case study for education and research. Early restoration sites present opportunities to conduct long-term evaluations and develop best practices.


PLUG INTO
SAVINGS.
BGE

Chapter 3

TRANSFORM BARRIERS INTO CONNECTIONS

Transportation infrastructure, in the form of roads, railways, and highways, dominates the landscape of South Baltimore. This infrastructure–intended for good reason to move people, vehicles and freight within the region–contributes to real and perceived barriers within and between nearby neighborhoods.

This second equity framework aims to overcome these barriers by creating an improved "network of connectivity" that links South Baltimore communities to one another, to parks and open spaces, and to the waterfront, while continuing to support essential movement through South Baltimore. Strategies to improve connectivity include linking, expanding, and upgrading the existing pedestrian and bike trails, and identifying priority streets for "Complete Streets" upgrades, per Baltimore City's Complete Streets law and manual.

The Plan acknowledges that detailed traffic engineering studies are required to test these ideas, and that the ultimate vision for these corridors will be costly and take long to implement. Thus, following the City's Complete Streets manual, "quick-build" projects are recommended for testing out solutions at some locations sooner and at a relatively low cost, while also helping to confirm assumptions about behavior and impacts.

South Baltimore's Transportation Network Today

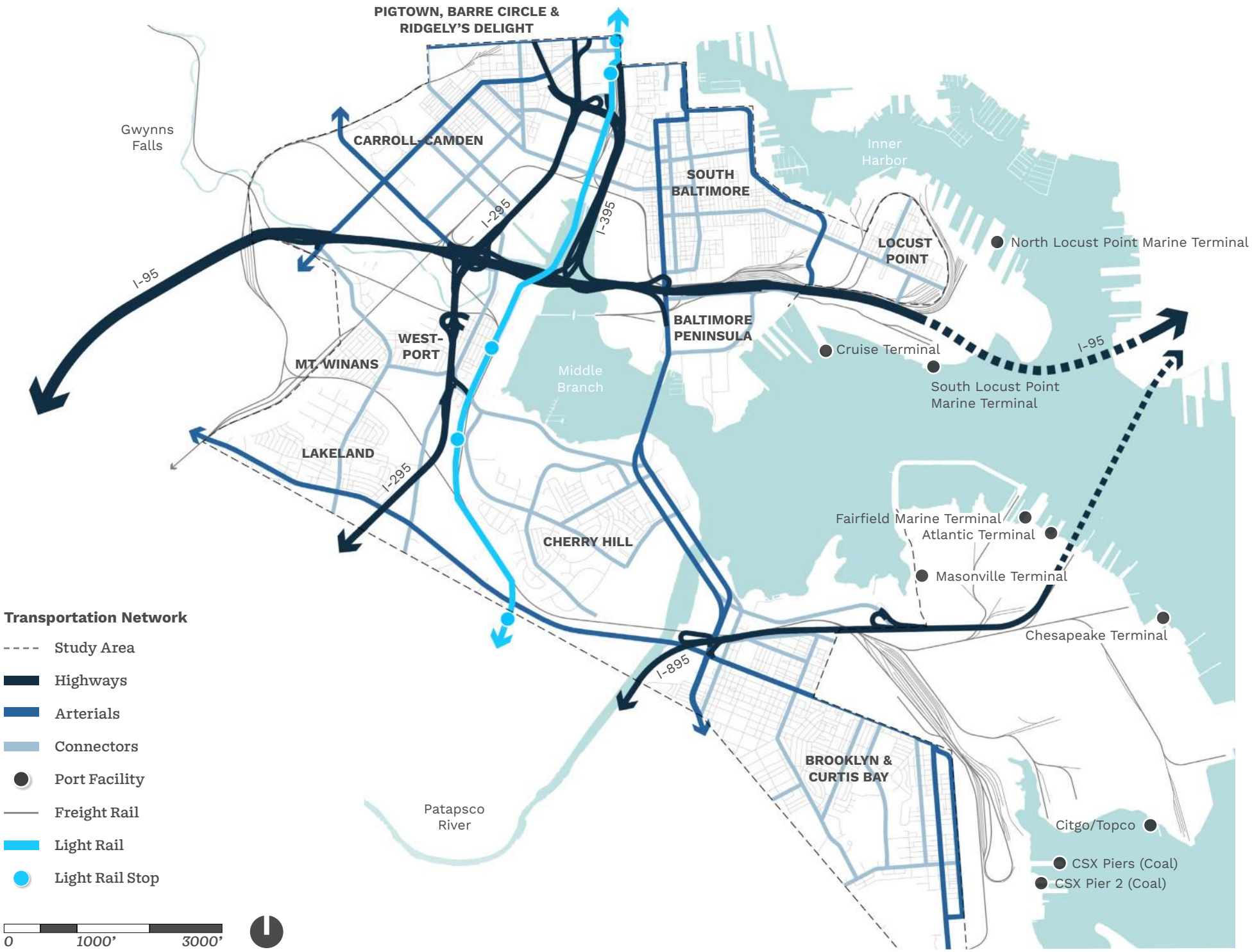
Baltimore is a port city, and this is reflected in the transportation network of South Baltimore, which dominates the landscape and prioritizes moving traffic in and out of the city. Meanwhile, I-95 carries tens of thousands of vehicles daily (31 million annually) through South Baltimore along one the busiest stretches of interstate highway in the U.S. Major thoroughfares are primarily intended for commuters and commercial shipping routes, and today carry huge volumes of traffic every day.

The Middle Branch itself directs movement into two major north-south corridors – the Hanover/Potee/Route 2 Corridor from Anne Arundel County into downtown Baltimore, and the Russell Street/Annapolis Road/Maryland 295 Corridor linking southern Baltimore County with downtown. Currently, only I-95 crosses the Middle Branch from east to west, affording no pedestrian or transit access over the water.

Reaching I-95 efficiently and with multiple options is critical for freight-truck traffic serving port-related businesses in Fairfield, Masonville and Wagner's Point and for other industrial and commercial zones around the Middle Branch. Any solution must balance the efficient transport of goods for these businesses with the simultaneous need of local communities to connect to services and amenities, like the waterfront.

Mass transit also operates along radial corridors extending outward from downtown, making travel difficult within the neighborhoods of South Baltimore. The Middle Branch is remarkably well-served by MTA light Rail, with five stations within or near the study area. However, pedestrian and local bus connections to these stations are not always direct, and bus circulation within many neighborhoods is limited.

Highway interchange over Ridgely's Cove


PIGTOWN, BARRE CIRCLE & RIDGELY'S DELIGHT
Gwynns Falls
CARROLL-CAMDEN
SOUTH BALTIMORE
Inner Harbor
I-295
I-395
I-95
LOCUST POINT
North Locust Point Marine Terminal
BALTIMORE PENINSULA
WEST-PORT
MT. WINANS
Middle Branch
Cruise Terminal
South Locust Point Marine Terminal
LAKELAND
CHERRY HILL
Fairfield Marine Terminal
Atlantic Terminal
Masonville Terminal
Chesapeake Terminal
I-895
BROOKLYN & CURTIS BAY
Patapsco River
Citgo/Topco
CSX Piers (Coal)
CSX Pier 2 (Coal)
Transportation Network
Study Area
Highways
Arterials
Connectors
Port Facility
Freight Rail
Light Rail
Light Rail Stop
0
1000'
3000'

Community Barriers

Industrial and port facilities are critical elements of the regional economy, and this Plan calls for them to be preserved and sustained. The Plan does not propose any downzoning or conversion of industrially zoned land, or the relocation of valuable industrial jobs away from South Baltimore. It also does not call for the removal or relocation of existing truck routes.

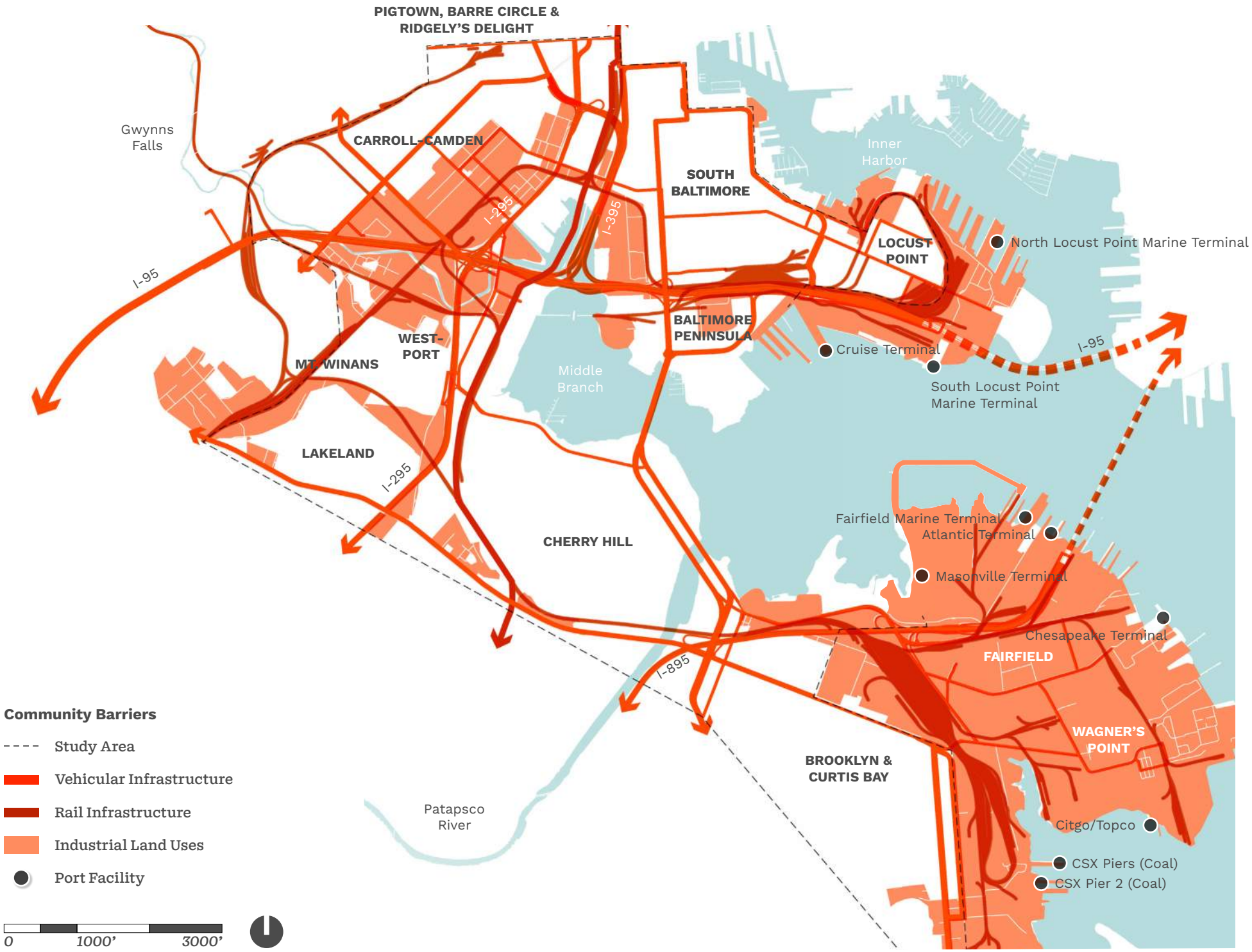
That said, it is also true that industrial land uses and the existing transportation network create barriers that burden the people living in South Baltimore—particularly the communities of color in the south and west portions of the study area.

The map on the right illustrates these barriers, which create challenges for local residents in the following ways:

- Highways or high-speed corridors prioritize through-travel over short, local trips.
- Arterials or wide, multi-lane roads with large turning radii designed to accommodate trucks carry high volumes of traffic moving at high speeds, and have limited intersections and pedestrian crossings.
- Local connector streets within and between neighborhoods are often dead-ended or lack sidewalks and safe pedestrian crossings
- Heavy and light rail routes limit the number of safe routes from one place to another.
- Industrial areas lack access and services for communities.

I-895, CSX rail line, and Waterview Ave.

Substation in Westport


PIGTOWN, BARRE CIRCLE & RIDGELY'S DELIGHT
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I-295
Fairfield Marine Terminal
Atlantic Terminal
CHERRY HILL
Masonville Terminal
Chesapeake Terminal
FAIRFIELD
I-895
WAGNER'S POINT
BROOKLYN & CURTIS BAY
Patapsco River
Citgo/Topco
CSX Piers (Coal)
CSX Pier 2 (Coal)
Community Barriers
Study Area
Vehicular Infrastructure
Rail Infrastructure
Industrial Land Uses
Port Facility
0
1000'
3000'

Neighborhood Islands

Historically, these barriers have created "neighborhood islands" around the Middle Branch: single neighborhoods or small groups of neighborhoods that function in isolation and lack easy access to nearby assets and opportunities. The Plan seeks to connect neighborhoods to assets, overcoming the barriers that exist today without disrupting vital industries or transportation networks.

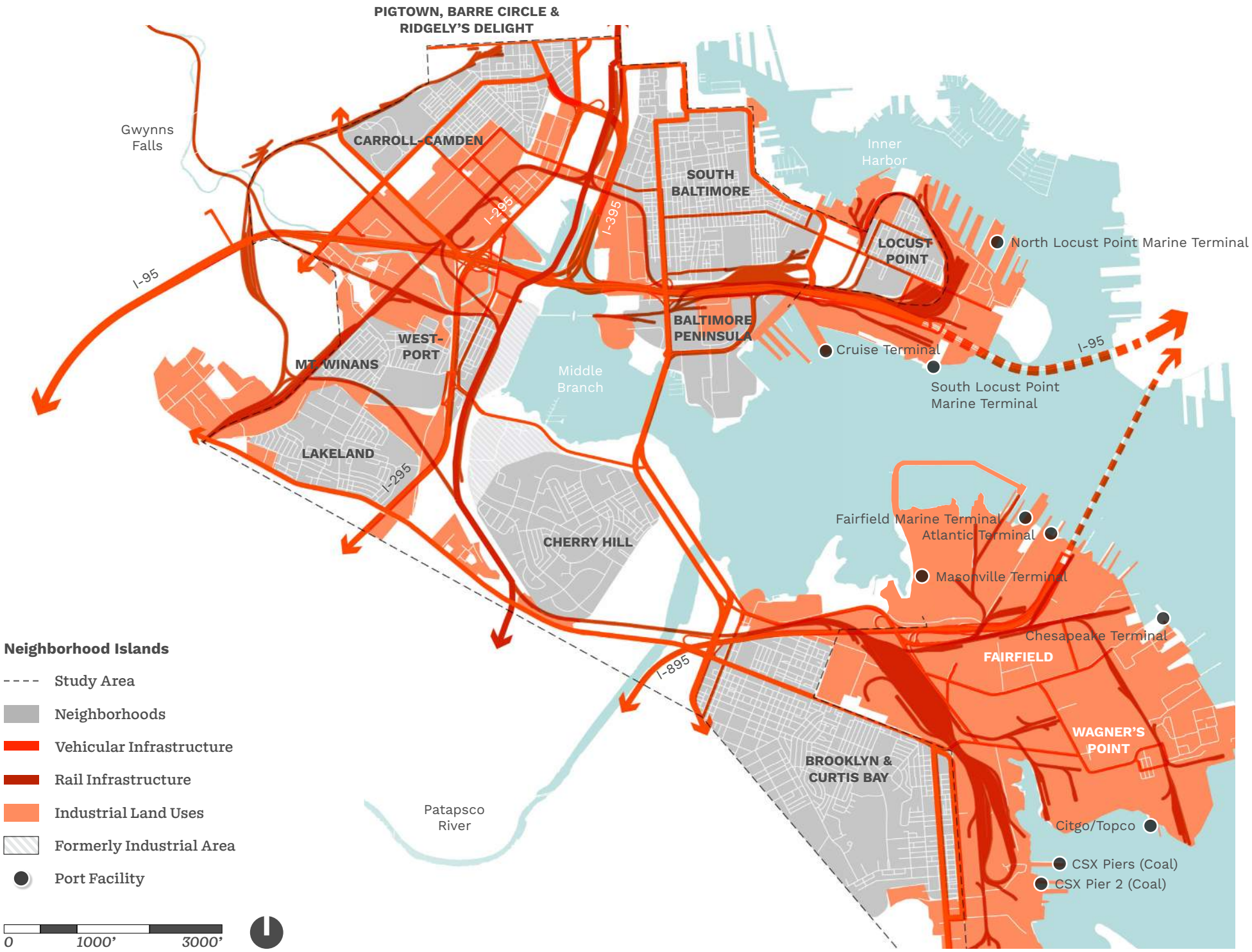
The map on the following page shows residential areas separated by the historic pattern of industrial land use, railroads, highways, and major arterials. The photo on this page provides a concrete example of what this is like in practice.

And yet, while longtime industrial uses are certainly here to stay, the landscape of South Baltimore is changing. Around Ridgely's Cove, the Horseshoe Casino, Topgolf, and Paramount will anchor the Warner Street Entertainment District. Mixed-use projects like McHenry Row and Silo Point occupy the once-industrial edges of Locust Point.

South of I-95, the Baltimore Peninsula development, a new Under Armour headquarters, and the redevelopment of Locke Insulator are all in the works. The approved One Westport development plans include a combination of residential and commercial uses, alongside a public waterfront trail and park spaces. And in Cherry Hill, the City's 2016 TransForm zoning code reclassified blocks near the MTA Light Rail station for Transit-Oriented Development (TOD).

As these new developments come online, it is essential that historic barriers between these areas and existing neighborhoods are not reinforced. **Through increased connectivity in the transportation network, we can leverage private investment in these areas to reconnect residents of lower-income neighborhoods and communities of color with parks and recreation, goods and services, transit, and economic opportunity.**

Westport neighborhood divided from the water by existing infrastructure


PIGTOWN, BARRE CIRCLE & RIDGELY'S DELIGHT
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CSX Piers (Coal)
CSX Pier 2 (Coal)
Neighborhood Islands
Study Area
Neighborhoods
Vehicular Infrastructure
Rail Infrastructure
Industrial Land Uses
Formerly Industrial Area
Port Facility
0
1000'
3000'

A New Network of Connectivity

Reimagine Middle Branch envisions a transportation network with increased connectivity — something long called for by South Baltimore residents. **The Plan seeks to connect neighborhoods to assets, overcoming the barriers that exist today, while supporting the industrial uses essential to Baltimore's economy.**

Achieving this goal involves a range of strategies in order accommodate all users, including trains, truck traffic, bicycles, and pedestrians. These include:

- A **system of new and expanded trails** connecting neighborhoods, parks, and the shoreline.
- Identifying a set of priority streets for **"Complete Streets" improvements** to enable all modes of traffic to coexist safely.
- Supporting established plans for **Transit Oriented Development (TOD)**, particularly near light rail.
- Identifying future locations for **water transit** service.

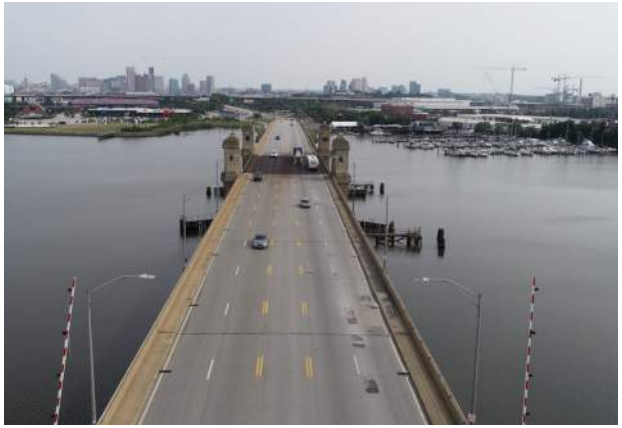
Enhanced Freight Routes and Industrial Access

The Plan recognizes industrial access and freight routes as critical to the overall health and vitality of South Baltimore. In addition to new and improved facilities for pedestrians and bikes, the proposed connectivity network enhances freight routes and access to industry by:

- Maintaining all existing truck routes.
- Improving truck access to southbound Route 2 – as well as I-95 via Patapsco Avenue and South Caton Avenue (Exit 50), with a new left turn from westbound Frankfurst Avenue onto Potee Street.
- Conforming to the Complete Streets Manual adopted by Baltimore City, proposing appropriate designations for each road segment while ensuring that those designations accommodate trucks on all existing truck routes.
- Requiring all truck routes to maintain minimum SHA standards for lane width.
- Conforming to the existing 2018 Hanover Street Corridor recommendations for the Vietnam Veterans Memorial Bridge, with one important improvement: the originally proposed pedestrian facilities are now consolidated on the western side of the bridge, behind a barrier, thereby reducing pedestrian/vehicle conflicts by at least 50%.

Implementing new trail routes and changes to the street network will require traffic analysis and detailed design studies that are beyond the scope of this Plan. However, these additional studies will be important to balance the needs of all users and ensure full integration into South Baltimore's transportation network.

Existing Vietnam Veterans Memorial Bridge




PIGTOWN, BARRE CIRCLE & RIDGELY'S DELIGHT
CARROLL-CAMDEN
Inner Harbor
SOUTH BALTIMORE
Gwynns Falls
LOCUST POINT
BALTIMORE PENINSULA
WESTPORT
MT. WINANS
Middle Branch
LAKELAND
CHERRY HILL
BROOKLYN & CURTIS BAY
Patapsco River
New Middle Branch Connectivity Network
Regional Trail Connections
Water Transit Stop
Trail Network
Complete Streets
Existing Trail Networks
Proposed Regional Trail Networks
Water Transit
Light Rail
0
1000'
2000'

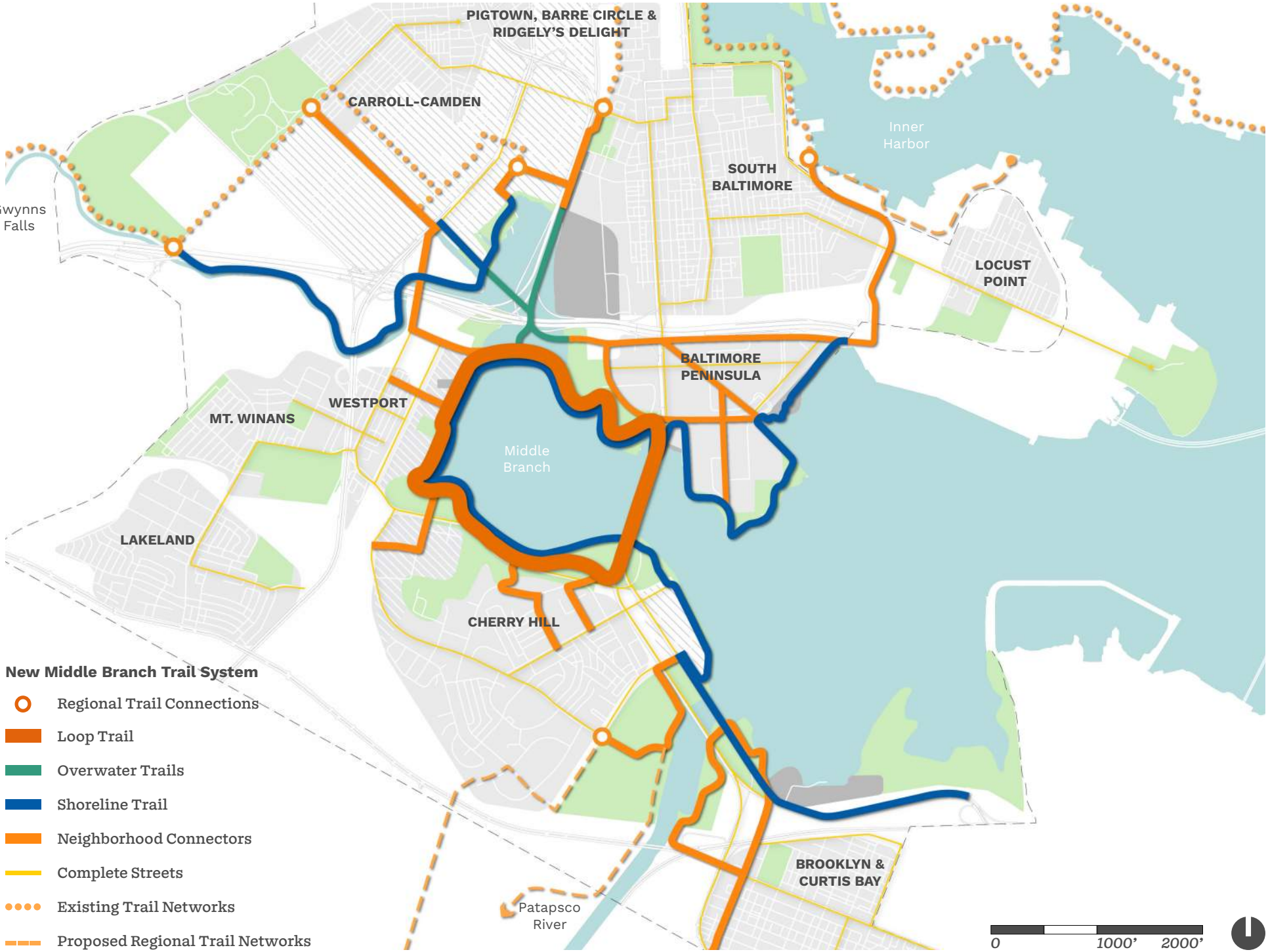
The Middle Branch Trail System

As illustrated in the map at right, **the Plan proposes a coordinated set of trails, that together create a system for bikes and pedestrians to safely and conveniently access the waterfront and South Baltimore's primary open spaces, and connect to the larger regional trail network**. To connect across the Middle Branch, several bridges are included in this system as well.

The various trails and bridges are detailed in the following pages:

- The Middle Branch Loop Trail, a continuous, 3-mile separated-use facility for recreational biking, walking, and jogging.
- The Shoreline Trail extending the full length of the Middle Branch's 11-mile waterfront.
- Connector Trails linking upland to neighborhood cores and regional open spaces, including an extension of the Gwynns Falls Trail to Carroll Park.
- Links to regional trail networks along the Patapsco River and Gwynns Falls, in accordance with the City's Green Network Plan.
- A multi-modal Vietnam Veterans' Memorial Bridge, consistent with the recommendations of the 2018 traffic engineering study.
- A new East-West Pedestrian Bridge linking Westport and Baltimore Peninsula.
- A set of future water transit stops around the Middle Branch.

Bike trail at Hunters Point, New York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BROOKLYN & CURTIS BAY
Patapsco River
New Middle Branch Trail System
Regional Trail Connections
Loop Trail
Overwater Trails
Shoreline Trail
Neighborhood Connectors
Complete Streets
Existing Trail Networks
Proposed Regional Trail Networks
0
1000'
2000'

The Middle Branch Loop Trail

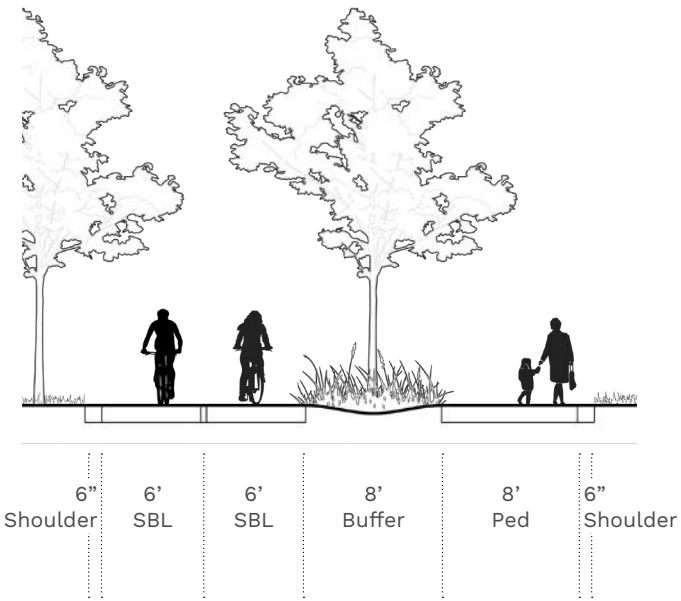
At the heart of the network is the 3-mile Loop Trail, which will circumnavigate the Middle Branch and connect Middle Branch Park to the future Westport Waterfront and West Covington Parks via a reconfigured Hanover Street / Vietnam Veterans Memorial Bridge and a new East-West Pedestrian bridge that spans the water.

The Loop is designed as a separated-use facility, with generous lanes for both bikes and pedestrians, creating high-quality connectivity and recreation opportunities. Specialty paving, wayfinding, lighting, and furnishing help to define the Loop as a special destination within the Middle Branch.

The rendering at the right illustrates how the route of the Loop Trail improves segments of the existing Gwynns Falls/Middle Branch Trail through Middle Branch Park. Two-way bike lanes are separated by trees and other plantings from a walking and jogging path.

From Middle Branch Park the Loop follows the waterfront to “Smith Cove” (a habitat area west of the Middle Branch Marina) and turns north to Westport, where a public waterfront trail is planned in the One Westport development. The East-West Bridge is proposed near Clare Street and south of the proposed “Black Sox Park”, where it links to the public water trail network planned for the Baltimore Peninsula development. Improvements on the Vietnam Veterans Memorial Bridge complete the circuit, landing in Middle Branch Park near Waterview Avenue. These connections link to regional trails along the Patapsco River and Gwynns Falls, in accordance with the City’s Green Network Plan and the Complete Streets network.

The Loop Trail



SBL: Separated-Use Bike Lane

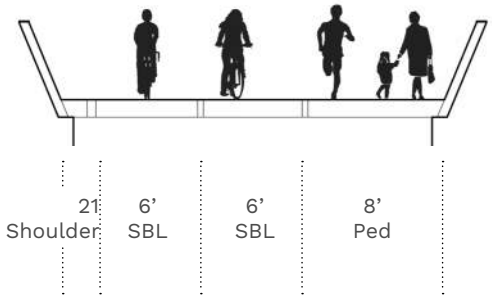
0 5 10 20

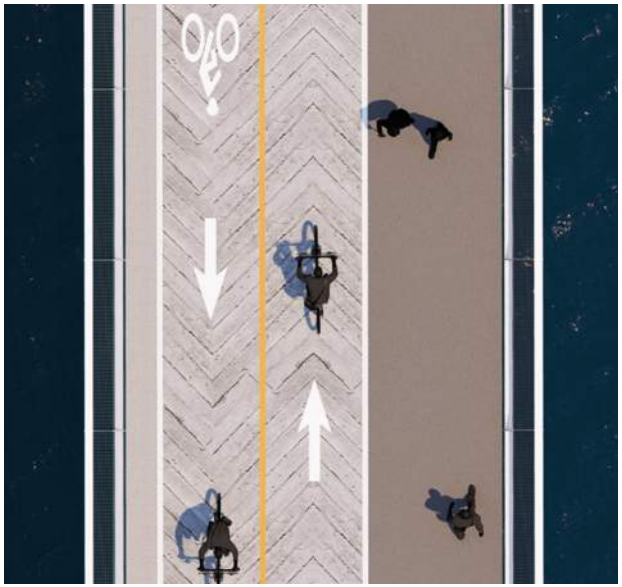
Middle Branch Loop Trail at Middle Branch Park

East-West Pedestrian Bridge

The Plan recommends the construction of a new pedestrian bridge aligned east-to-west across the Middle Branch south of I-95 will "close the Loop" and connect pedestrians and cyclists between Westport and Baltimore Peninsula. The bridge will span over 1600 feet and land in public parks – the new Westport Waterfront Park and "Swann Landing" located north of an expanded West Covington Park. At the midpoint of the span, the bridge will align near the historic CSX swing bridge, an industrial relic and iconic landmark in the Middle Branch.

The rendering on the right shows an aerial view of the East-West Pedestrian Bridge from its eastern end at Baltimore Peninsula. Although the footbridge is proposed as a separate structure from the historic CSX rail bridge, the Plan recommends eventually connecting to the central swing-truss, creating a public over-water destination with wide, panoramic views across the Middle Branch. The Plan also envisions the pedestrian bridge intersecting a set of boardwalks or "overwater trails" that connect through new, expanded wetlands and land at points around Ridgely's Cove.





SBL: Separated-Use Bike Lane

0 5 10 20

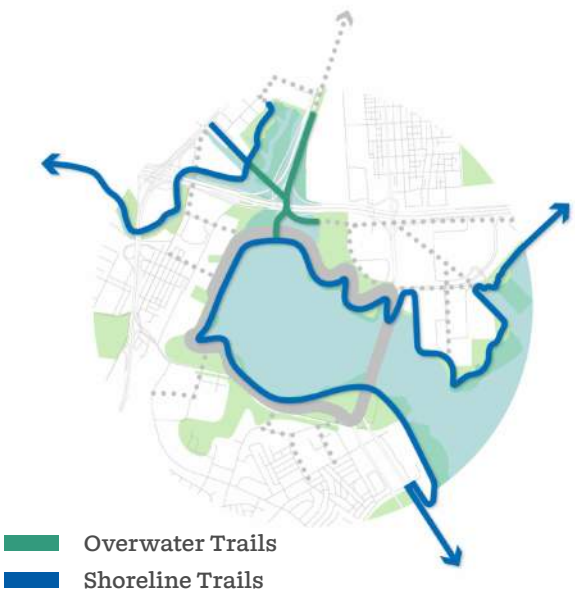
East-West Pedestrian Bridge connecting Baltimore Peninsula and Westport

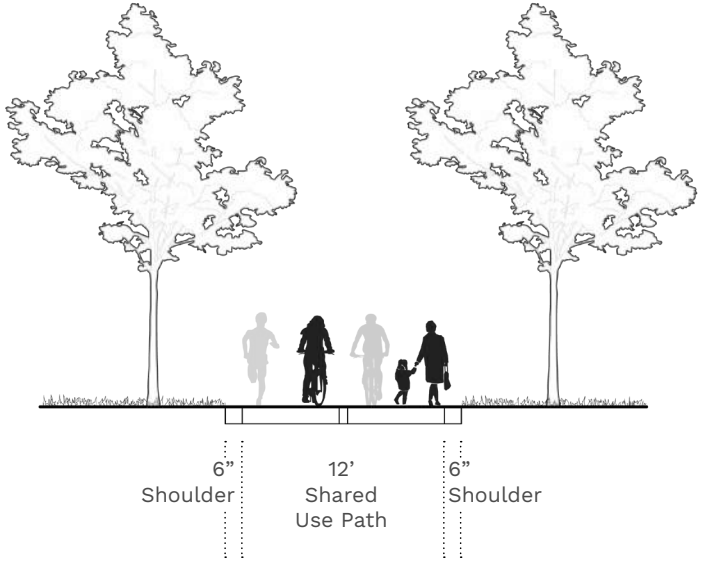
Shoreline Trail and Overwater Connectors

The Shoreline Trail provides continuous access along 11 miles of shoreline from Port Covington and Locust Point to Brooklyn and Masonville Cove. The Plan recommends implementing this trail over time in conjunction with adjacent development and shoreline resiliency projects.

Around the central Middle Branch, the Shoreline Trail shares a facility with the Loop Trail. Outside the central loop the Shoreline Trail utilizes a protected, multi-use facility parallel to Frankfurst Avenue to reach Masonville Cove Environmental Education Center. Other segments expand upon and connect with existing projects in Ridgely's Cove to the north and the Baltimore Peninsula (Port Covington) shoreline path to the east.

Overwater Connectors in the form of boardwalks provide a smaller loop around Ridgely's Cove, where continuous shoreline access is not feasible. The main boardwalk is envisioned to run from the mid-point of the East-West Pedestrian Bridge and the CSX swing-truss, through the columns supporting I-395 to an extension of Sharp-Street near Stockholm Street, where it would join the Gwynns Falls Trail. A spur connects to the east side of Ridgely's Cove, just north of the New Black Sox Park, and links to the Gwynns Falls Trail Extension and a Neighborhood Connector on Bush Street.





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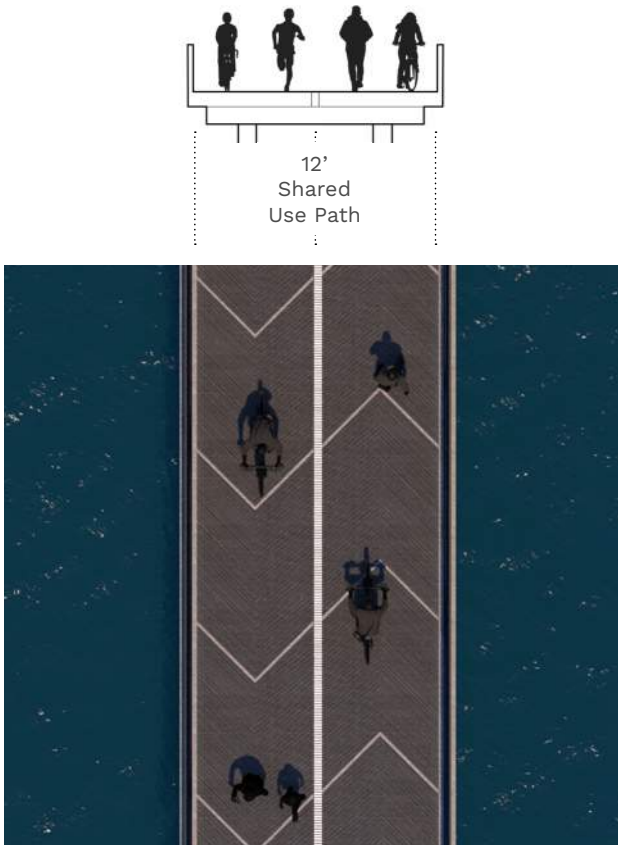

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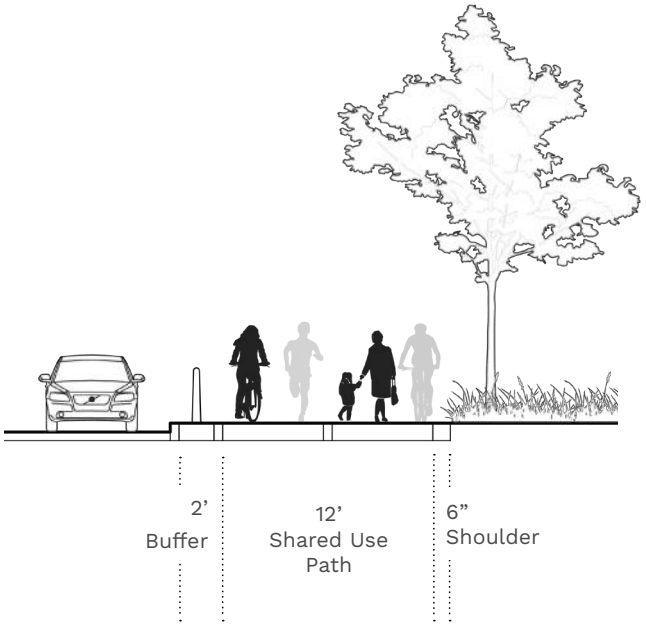
Boardwalk in Ridgely’s Cove

Neighborhood Connectors

Like spokes around a wheel, **the multi-use Neighborhood Connectors extend from the central Middle Branch Loop Trail to neighborhoods and regional trails.**

Several of the neighborhood connectors are longstanding partner projects that have been integrated the Reimagine Middle Branch Plan, such as the Baybrook Connector (from MedStar Harbor Hospital through Brooklyn to the BWI Trail,) MPA's Proposed Masonville Cove Connector (from Hanover Street to Masonville Cove Environmental Education Center), the Warner and Stockholm Street improvements (creating a separated, multi-use facility for the Gwynns Falls Trail), and a waterside trail following the Gwynns Falls to Carroll Park (fulfilling the original vision of the Gwynns Falls Trail master plan.) Additional connections include:

- Annapolis Road in Westport via Clare Street.
- Along the Gwynns Falls to Carroll Park.
- Connecting Middle Branch Park to Cherry Hill Town Center via Seamon Avenue.
- Smith Cove to the Cherry Hill Light Rail Station through the adjacent TOD zone.



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Neighborhood Connector with planted buffer

South Baltimore Complete Streets

Complete Streets give people walking, rolling, bicycling, and taking transit the same access to safe and comfortable streets as those who are driving. Baltimore City's Complete Streets ordinance of 2018 and its Complete Streets Manual (adopted in 2021) embody this approach. The goals of applying a Complete Streets approach around the Middle Branch in South Baltimore are:

- Address disparity in access.
- Rectify the predominantly car-oriented design of many roadways.
- Balance the needs of through traffic with the many local needs reported by residents (i.e., improved access to parks, recreation, shopping, healthcare, and transit).

The Reimagine Middle Branch Plan recommends implementing Complete Streets improvements on the major corridors that encircle the Middle Branch, including:

- Russell Street/ Annapolis Road.
- South Hanover Street/ Potee Street/ Route 2.
- Waterview Avenue.

It also recommends similar improvements on a variety of neighborhood streets, in order to better connect neighborhoods (including places like Mt. Winans or Lakeland, which are not near the water) to the waterfront. These have been intentionally chosen to connect with small neighborhood parks (like Florence Cummins Park) and larger regional parks (like Carroll Park).

That said, Complete Streets are not pedestrian-only streets. It is equally important to accommodate passenger cars and trucks that transport freight. One example of improvements to the freight network is the intersection of Frankfurst Avenue and the Route 2 corridor, allowing westbound traffic to turn south onto Potee Street.

As mentioned earlier, **this Plan does not call for removing or relocating truck routes.** Recommendations align with Baltimore City's Complete Streets Manual, which outlines design standards based on how each road is used. The Reimagine Middle Branch Plan supports applying these standards, while ensuring adequate traffic capacity for all "local" and "through" truck routes. Changes in truck routes must also comply with mandatory SHA standards for freight movement.

Lastly, it is worth noting that the **redesign of roadways is beyond the scope of this Plan. All illustrations showing roadway designs are conceptual, intended to spur conversation of what is possible.** In practice, such changes require traffic studies and engineered plans.

A professional design process, combining the design guidelines of the Complete Streets Manual with detailed traffic and engineering studies, will enable these corridors to safely accommodate the diverse needs within the available road right-of-way.

Protected bike lane with prominent crossing

Raised bike lane and buffer

Complete street accommodating cars, bikes, and pedestrians

South Baltimore Complete Streets

The map at right highlights the priority streets identified by the Plan and assigns appropriate street typologies per the Complete Streets manual. Typologies are determined by a combination of factors including volume of traffic served, adjacent zoning and land use, and community input. These typologies are summarized here and described in more detail in the City's Complete Streets Manual.

Complete Streets Typologies (text and images from the Baltimore Complete Streets Manual)

Industrial Access Streets are adjacent to industrial and manufacturing land uses. They are designed to accommodate large volumes of large vehicles such as single unit trucks, tractor trailers and other delivery vehicles. *Accommodates local/through truck routes*.

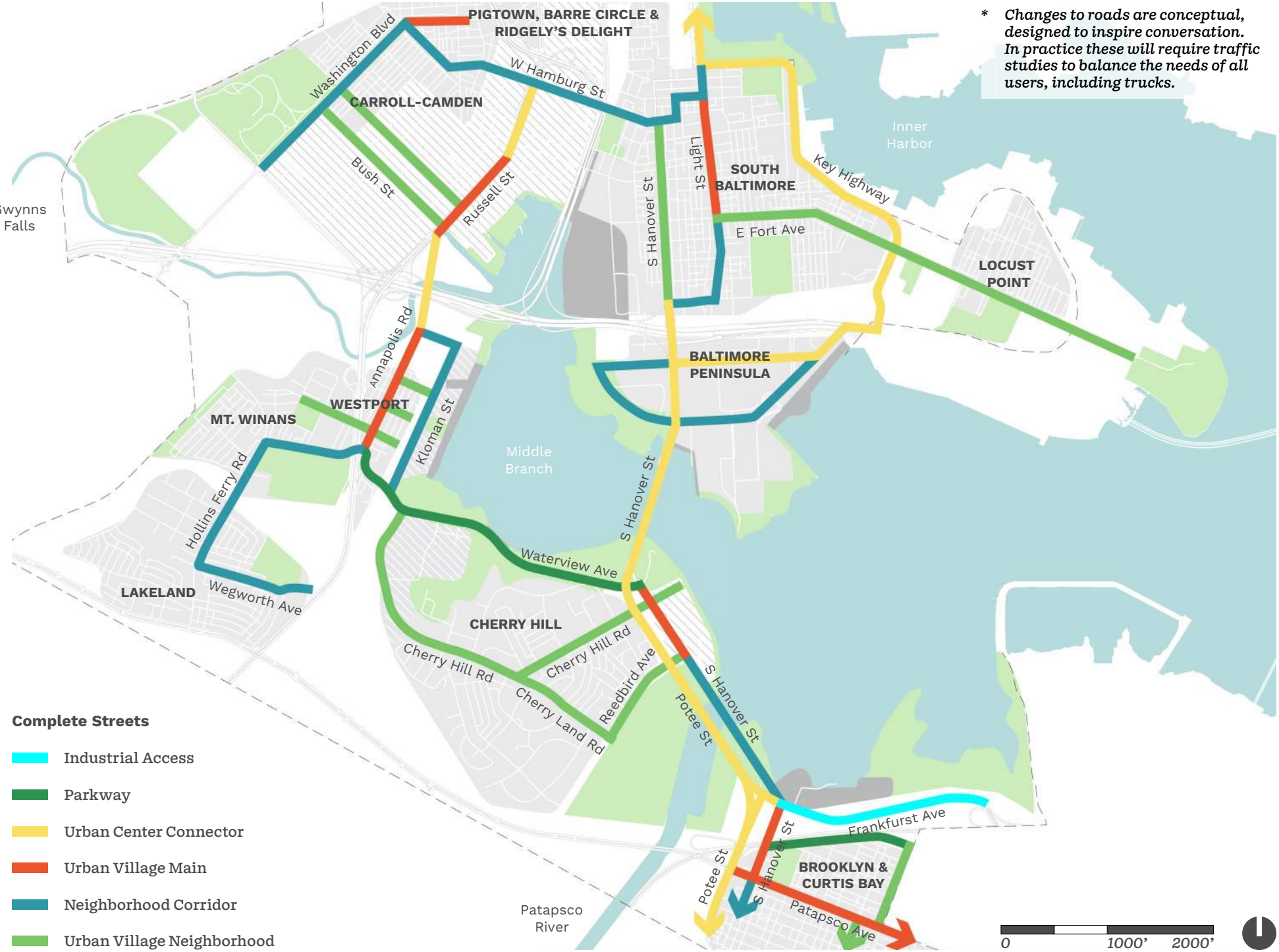
Parkways extend through or along natural areas or large parks where there is a desire to maintain or create a park-like feel to the street. *Accommodates local/through truck routes*.

Urban Center Connectors can be streets identified as truck routes, and/or frequent transit routes, where a high level of public and private investment in pedestrian and transit infrastructure is anticipated to support high quality, reliable transit service. *Accommodates local/through truck routes*.

Urban Village Main Streets are the spines of Baltimore's urban villages and centers (outside of Downtown), providing residents and workers with daily essentials and visitors a range of services and entertainment. *Accommodates local/through truck routes*.

Neighborhood Corridor Streets are adjacent to single family and low-rise residential land uses and play an essential role in moving people between different neighborhoods, Urban Villages, Downtown, and the regional transportation network. *Accommodates local truck routes*.

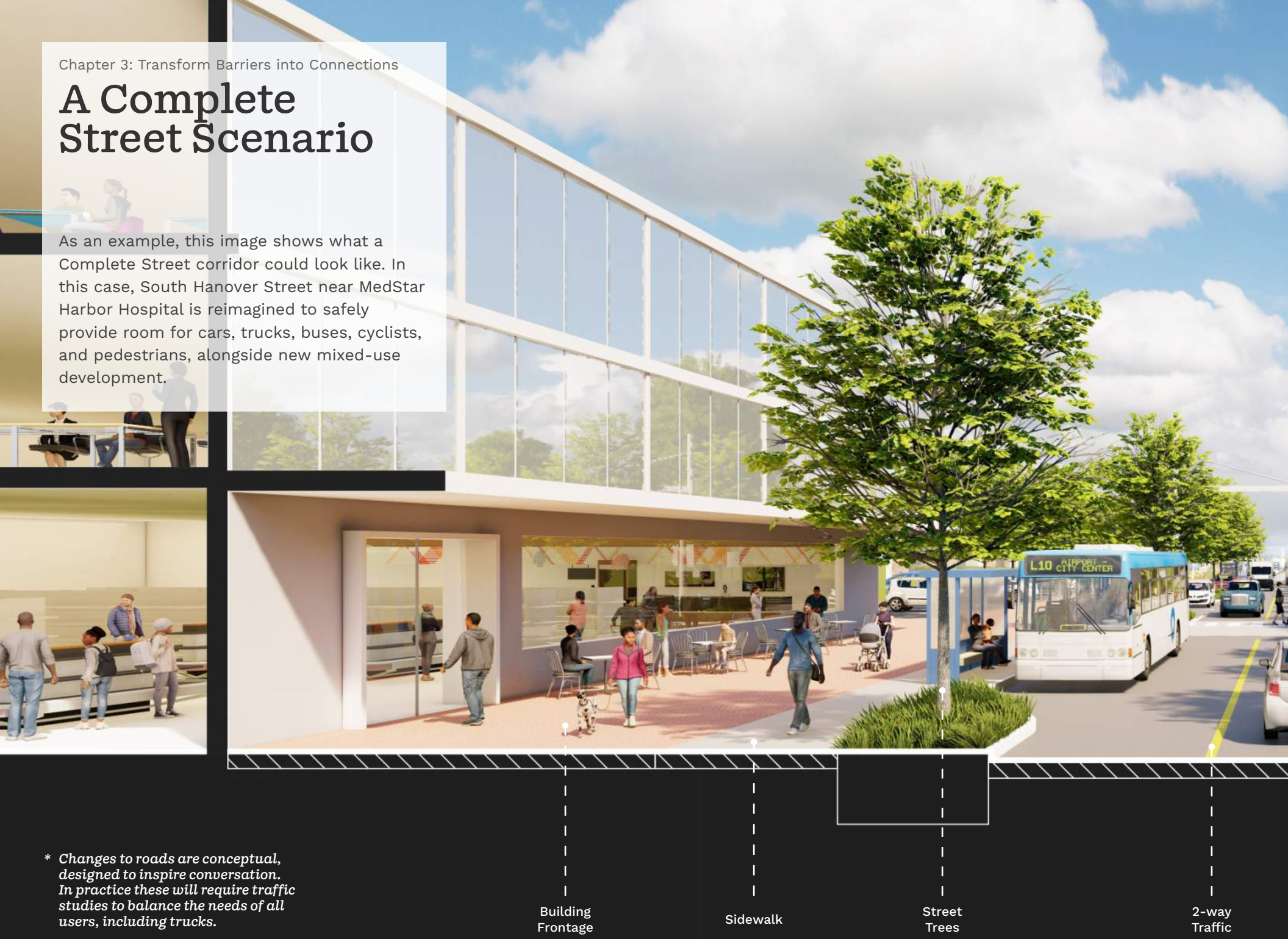
Urban Village Neighborhood Streets play a supporting role to Urban Village Main Streets by serving a variety of land uses, with more emphasis on residential and curbside uses that provide amenity and activation.



* *Changes to roads are conceptual, designed to inspire conversation. In practice these will require traffic studies to balance the needs of all users, including trucks.*

A Complete Street Scenario

As an example, this image shows what a Complete Street corridor could look like. In this case, South Hanover Street near MedStar Harbor Hospital is reimagined to safely provide room for cars, trucks, buses, cyclists, and pedestrians, alongside new mixed-use development.



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Green Stormwater Infrastructure

Bike Lane

Sidewalk

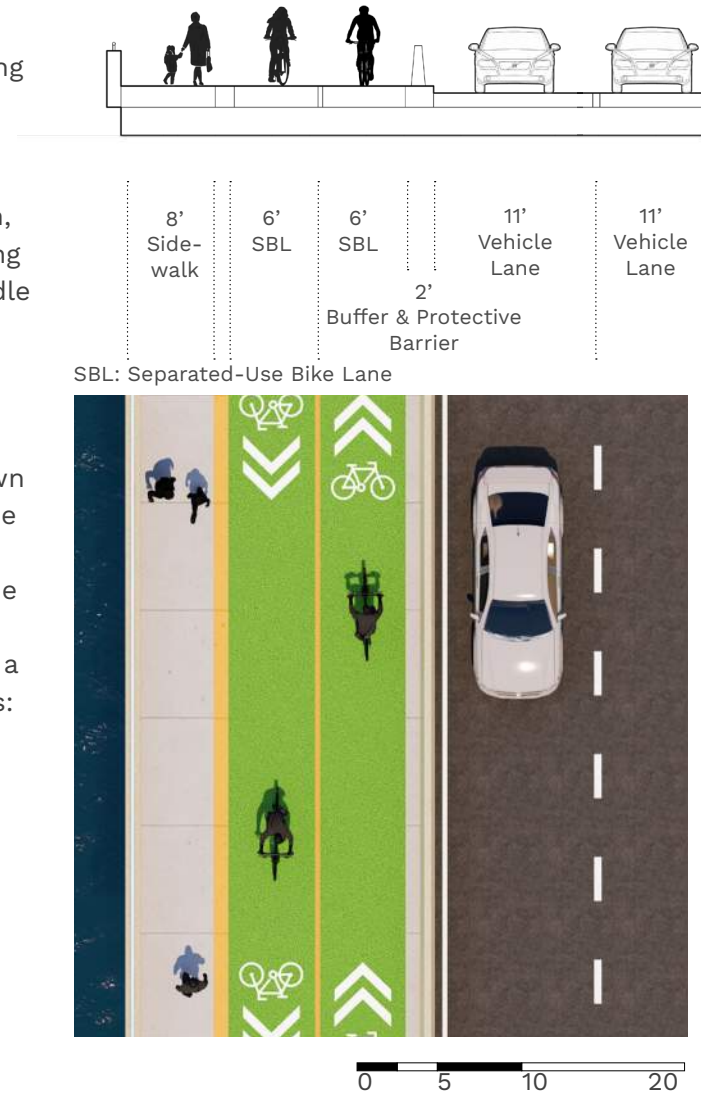
The Vietnam Veterans Memorial Bridge

The Vietnam Veterans Memorial Bridge provides critical north-south connectivity for local traffic between Cherry Hill and South Baltimore and for regional traffic within the Maryland Route 2 corridor. However, in its current condition the historic structure is unwelcoming and unsafe for pedestrians and cyclists and presents ongoing maintenance challenges. **The Plan recommends consolidating through-traffic on the bridge while improving the pedestrian and bike facilities, and exploring options for its long-term reuse, if this proves necessary.**

In 2018, the City of Baltimore Department of Transportation commissioned the Hanover Street Corridor Study, which included the Vietnam Veterans Memorial Bridge. After a thorough traffic analysis, that study found that "the bridge cross section (number of lanes) will not have a significant impact on corridor travel time or queueing since the proposed signalized intersections north of the bridge are the constraints in the corridor." It recommended removing the central flex lane, reducing the number of lanes from five to four, and dedicating the remaining width for bike lanes and expanded sidewalks on either side of the bridge.

As illustrated at right, the Reimagine Middle Branch Plan follows this study's recommendations but proposes consolidating all bike and pedestrian facilities on the western side of the bridge, with a robust separation from vehicles. This greatly improves upon the safety of the 2018 design, reducing traffic conflicts by 50% and allowing the bridge to become a segment in the Middle Branch Loop Trail.

The Plan acknowledges that the Vietnam Veterans Memorial Bridge needs significant repairs, the extent of which remains unknown until a detailed structural assessment can be performed. Supporting this assessment is a key short-term action steps of the Reimagine Middle Branch initiative. If the assessment reveals that the bridge is beyond repair and a new bridge is needed, the Plan recommends: 1) prioritizing generous multimodal facilities on the bridge and connectivity with the Middle Branch trail and Complete Streets networks, and 2) the City and its partners evaluate if the historic structure can be refurbished as a linear "park bridge," rather than being demolished.



Vietnam Veterans Memorial Bridge looking north

* *Design taken from 2018 traffic and engineering study, with expanded pedestrian lanes moved to one side for safety.*

Changes to roads are conceptual, designed to inspire conversation. In practice these will require traffic studies to balance the needs of all users, including trucks.

A Transformed Hanover-Potee Corridor

Initial analysis suggests that Hanover and Potee Streets in Cherry Hill have excess capacity given the volume of traffic they are servicing. This finding is informed by the 2018 Hanover Street Corridor Study, which analyzed the impact of its recommendations (including removing one lane of the Vietnam Veterans Memorial Bridge) through to the year 2040. The Reimagine Middle Branch planning effort corroborated the 2018 study's findings with multiple observations taken at various times of day over 12 months between 2021 and 2022. During this time, construction periodically reduced the Vietnam Veterans Memorial Bridge to as little as one lane in each direction, without generating routine backups.

As can be seen in the cross sections below, Hanover and Potee Streets south of the bridge each currently carry three one-way lanes in each direction. This pattern encourages travel speeds in excess of posted limits, with the pair of streets functioning more like a separated highway than urban connectors and cutting off the neighborhood from MedStar Harbor Hospital and the waterfront.

The Plan recommends a thorough engineering study to evaluate options for redesigning the Hanover-Potee corridor from Waterview Avenue in Cherry Hill to East Patapsco Avenue in Brooklyn, with the goal of rationalizing traffic and improving safety and access for crossings by pedestrians and vehicles. While more analysis is warranted, the 2018 Study and further assessment during the Reimagine Middle Branch planning process suggest the following measures are feasible:

- Convert Hanover and Potee Streets from one-way in each to direction to two-way. This option was not precluded in the 2018 traffic study, yet further study is still required. If this change proves unfeasible, a "road diet" is recommended for the one-way pair.
- Reduce lane widths to 11 feet – the minimum to accommodate freight-truck traffic and buses under the City's Complete Streets Manual.
- Dedicate leftover lane width for wider sidewalks, bike lanes, and a hybrid zone for street trees and stormwater management, on-street parking and bus stops.
- Upgrade intersections between Cherry Hill Road and Reedbird Avenue with traffic signals and cycle-timing and adding curb extensions at all pedestrian crosswalks.
- Prioritize redesign of Waterview Avenue and Frankfurst Avenue intersections in order rationalize through-travel and, among other improvements, enable a southbound turn from Frankfurst Avenue onto Potee Street/Route 2. This last improvement will enable Port traffic to reach I-95 via Patapsco Avenue and South Caton Avenue (Exit 50).

Further analysis of these intersections and the corridor overall is found in the Resource Guides

* *Changes to roads are conceptual, designed to inspire conversation. In practice these will require traffic studies to balance the needs of all users, including trucks.*

Hanover-Potee Corridor looking north

Early Win Opportunity: Quick Build Projects to Catalyze Connectivity

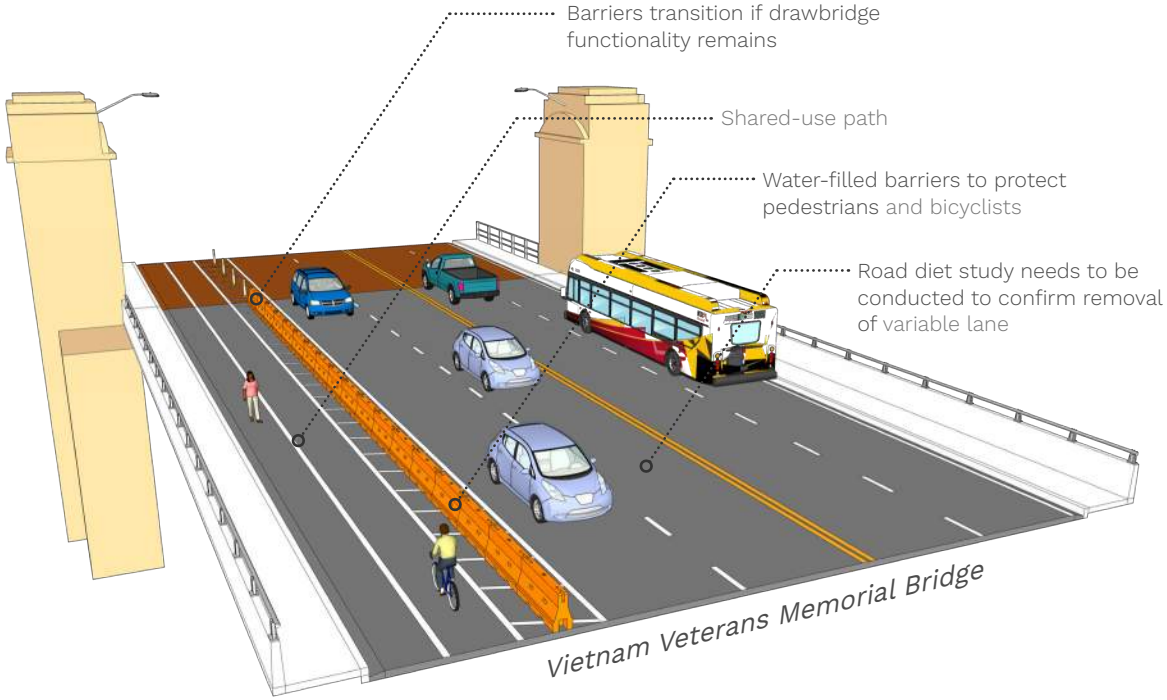
Inspired by the success of Baltimore's Big Jump, which connects the neighborhoods in central and northwest Baltimore to Druid Hill Park and one another across I-83, **the Plan recommends a series of Quick-Build projects to establish an interim loop trail around the Middle Branch.**

Using temporary low-cost materials and pavement makers, Quick-Build projects achieve fundamental safety goals in a short period of time. Moreover, they may be easily modified or removed based on measured data, field observations, and community feedback. Although the images on these pages are not final designs, they provide schematic approaches to how these improvements can be made, tested, and adjusted over time.

Interim improvements to the following four locations will improve access to the Middle Branch in the near future as permanent trails are designed, funded, permitted and built:

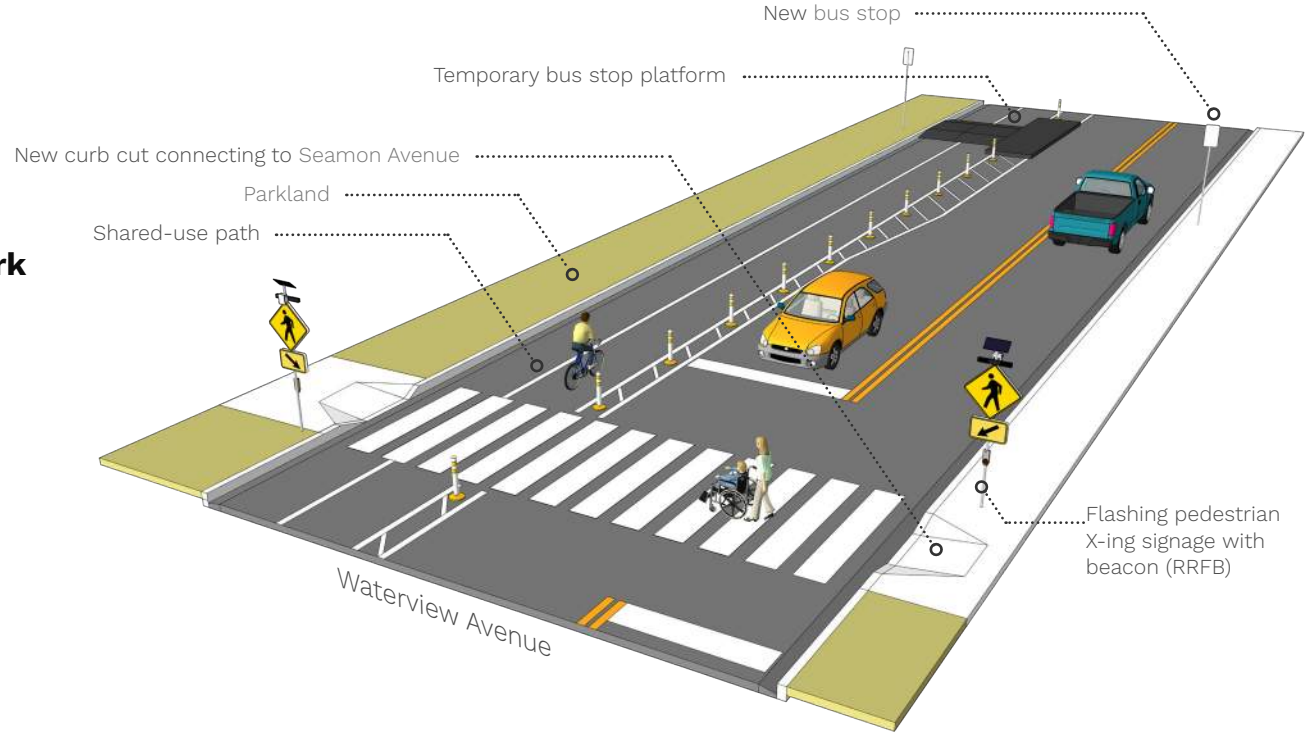
1. Vietnam Veterans Memorial Bridge

This quick-build project introduces bike and pedestrian facilities to the bridge by re-striping the bridge, removing the flex lane and shifting all vehicular lanes to the east side of the bridge. These changes create space for a protected bike and pedestrian facility on the west side of the bridge, which will be separated from traffic by a double row of water-filled protective barriers.



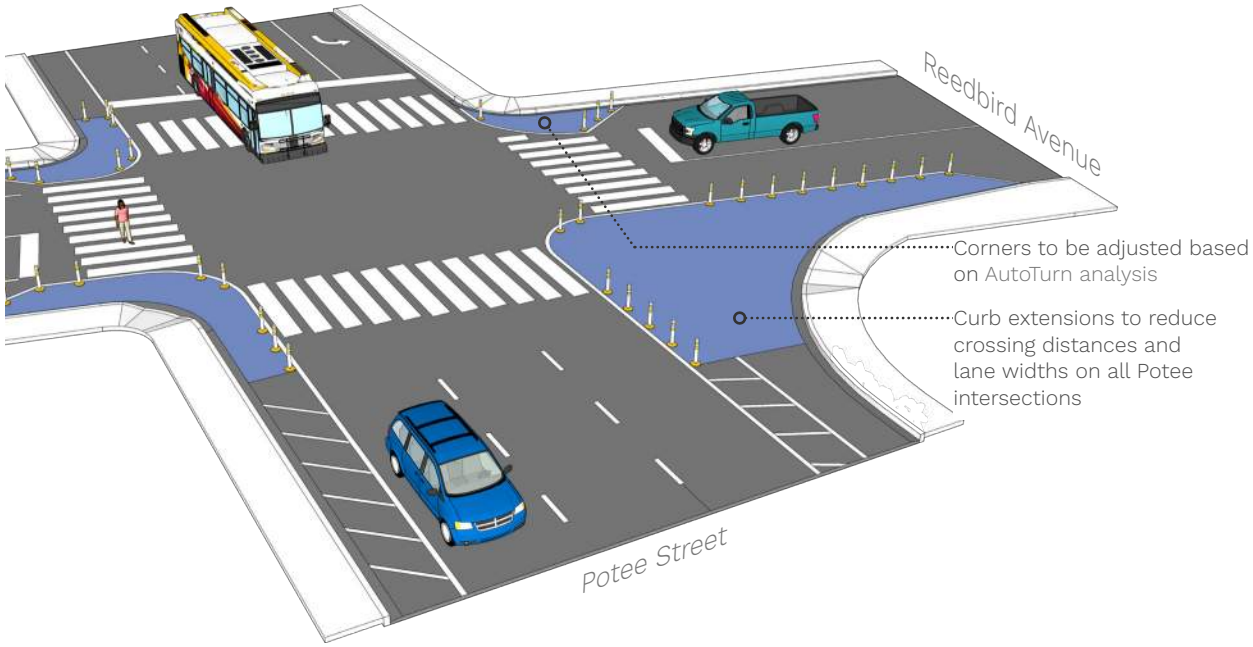
2. Waterview Ave. at Middle Branch Park

Create a new crosswalk connecting Seamon Avenue to Middle Branch Park, providing pedestrian protections for the informal route that residents often take, and add an on-street bike facility on the north park-side edge of the street.



3. Potee and Hanover St. Crossings

Enhance crosswalks by using flexible bollards and paint to reduce east-west crossing distance in places where these are unlikely to interfere with large numbers of truck turns. This will be particularly useful where Reedbird Avenue crosses both Hanover and Potee Streets, connecting the new Middle Branch Fitness and Wellness Center with the overflow parking lot south of MedStar Harbor Hospital.



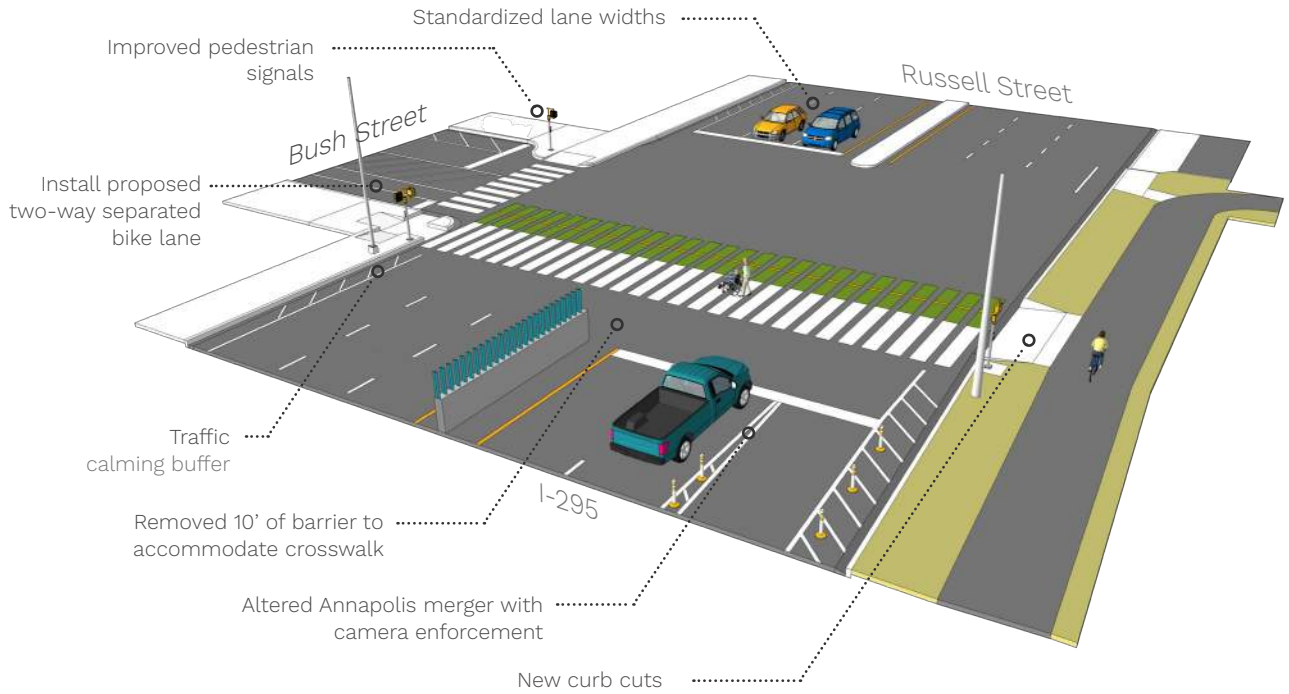
Early Win Opportunity: Quick Build Projects to Catalyze Connectivity

4. Gwynns Falls Trail Between Bush Street and Clare Street

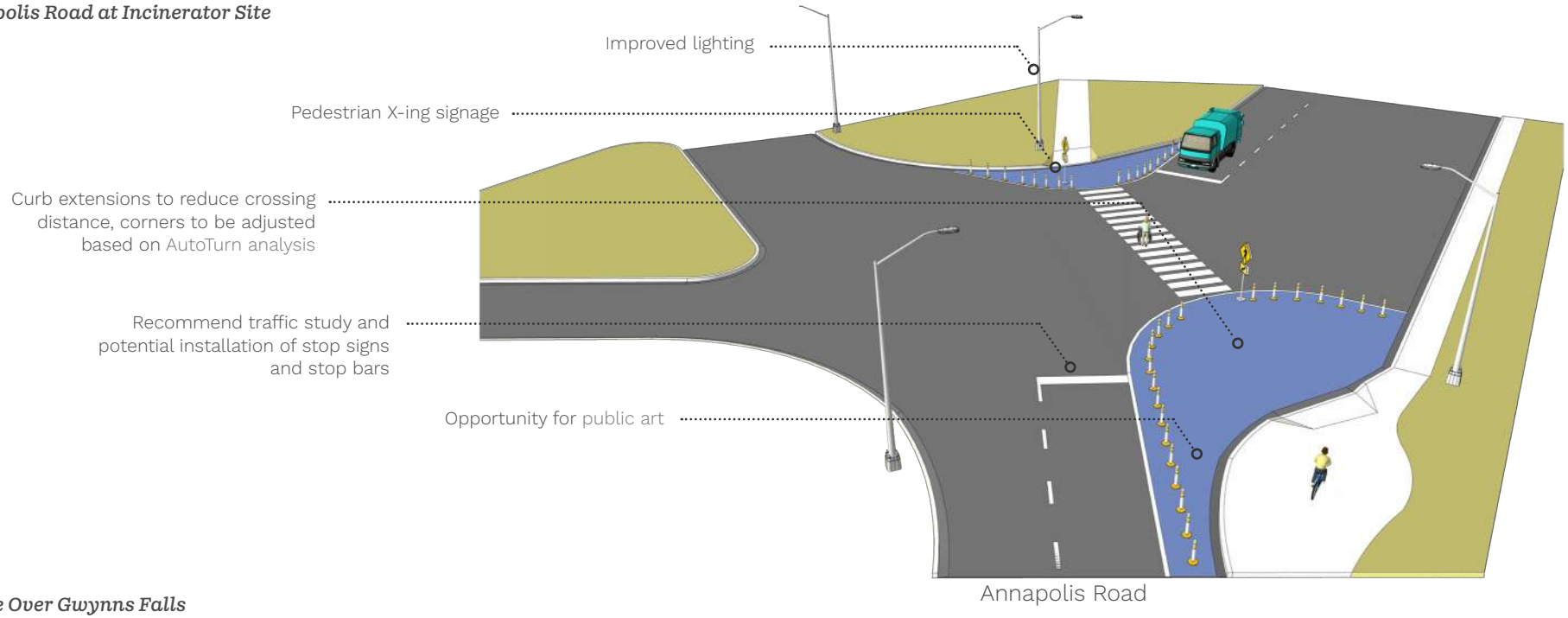
Enhance the safety of the existing Gwynns Falls trail, which currently directs bicyclists across unsafe intersections such as Russell Street and across the Wheelabrator Incinerator driveway at Annapolis Road. For more information, see the Quick-Build Strategies section of the Baltimore Complete Streets Manual.

For more information, see the Quick-Build Strategies section of the Baltimore Complete Streets Manual.

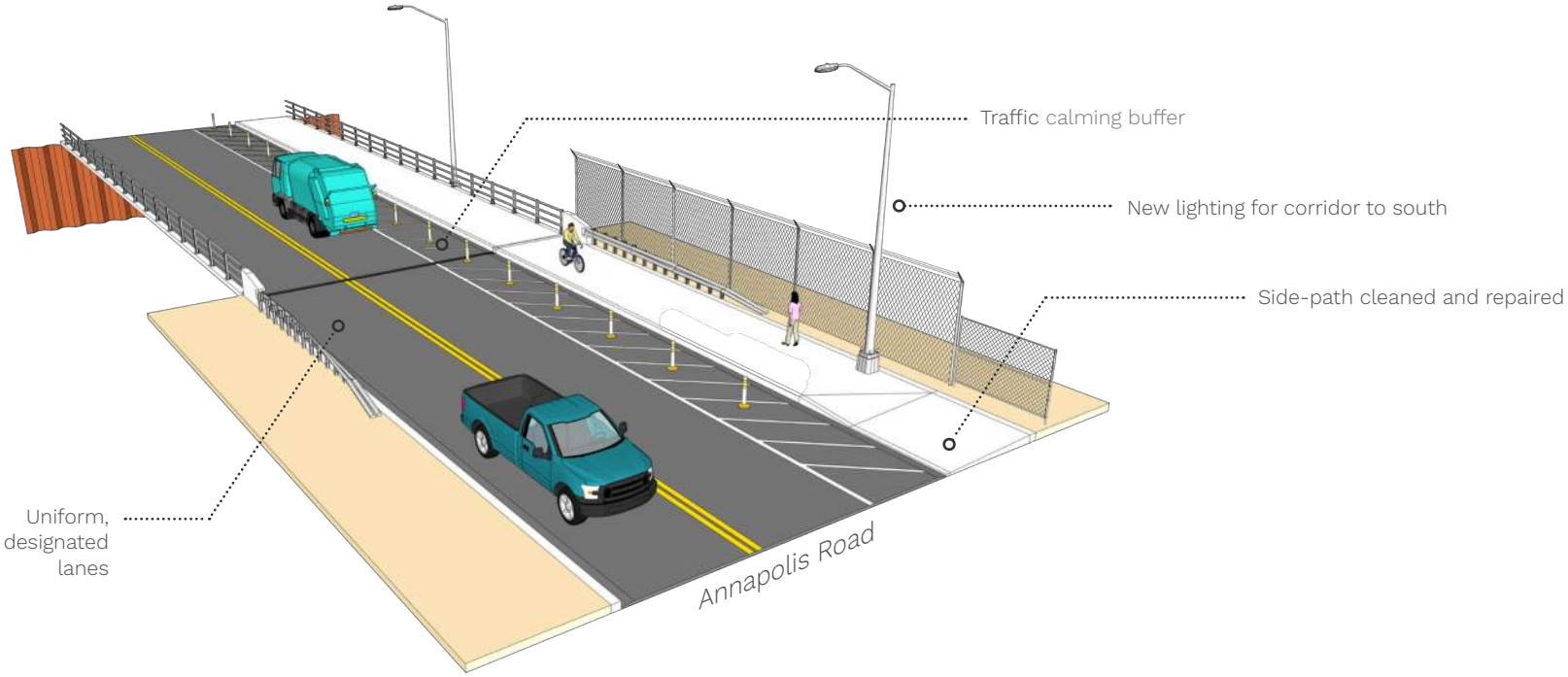
4a. Russell & Bush St. Intersection



4b. Annapolis Road at Incinerator Site



4c. Bridge Over Gwynns Falls



Conclusion and Summary of Recommendations

The East-West Pedestrian Bridge

South Baltimore's transportation network dominates the landscape and prioritizes traffic moving in and out of the city. Major thoroughfares are primarily intended for commuters and commercial shipping routes, and today carry huge volumes of traffic every day. Today, industrial land uses and the existing transportation network separate community residents from the waterfront and create isolated "neighborhood islands."

This Plan recognizes the importance of balancing the legitimate need to transport goods from port and industrial facilities with the equally legitimate need of local communities to connect to one another and their waterfront – especially when so many residents lack regular access to cars.

With this in mind, the Plan proposes a new and comprehensive network of connectivity that improves movement and mobility for all, connecting neighborhoods to assets and overcoming the barriers that exist today, while supporting the industrial uses essential to Baltimore's economy.

Transform Barriers into Connections: Summary of Recommendations	
2.1	Conduct a comprehensive engineering study to evaluate Hanover-Potee/Rte. 2 corridor, including structural capacity of Vietnam Veterans Memorial Bridge, rationalizing through-traffic and improving access for pedestrians, bikes and local traffic.
2.2	Improve multi-modal access on Vietnam Veterans Memorial Bridge by limiting vehicle traffic to 4 lanes and grouping protected bicycle and pedestrian paths on west side of bridge.
2.3	Create a 3-mile "Loop Trail" as a separated-use facility with generous lanes for both bikes and pedestrians, which encircles the Middle Branch and creates high-quality connectivity and recreation opportunities.
2.4	Construct a new East-West Pedestrian Bridge south of I-95 that closes the "Loop" and connects Westport with Baltimore Peninsula (Port Covington).
2.5	Create a continuous Shoreline Trail for public access along 11 miles of shoreline from Port Covington and Locust Point to Brooklyn and Masonville Cove.
2.6	Create Neighborhood Connector trails linking the Middle Branch Loop Trail and Shoreline Trail to neighborhood parks and regional trails.
2.7	Implement Complete Streets improvements to increase connectivity within neighborhoods and to the waterfront; implement "quick-build" projects to test routes while long-term capital projects are in planning and design phase.
2.8	Collaborate with MTA & DOT (Charm City Circulator) to improve transit to goods and services, local employers such as Port and industrial firms nearby, and regionally, including water transit.
2.9	Enhance truck freight access between Port and highways with southbound turn from Frankfurst Avenue onto Potee Street, to reach I-95 via Patapsco Avenue and South Caton Avenue.
2.10	Maintain through-truck and local truck routes, balancing modes according to City's Complete Streets Manual and SHA standards; engage industry, Port/MDOT and City DOT in updating City's Truck Route Map, acknowledging business trends and last-mile distribution needs.