

Riverfront  
North |

# Greenway MASTER PLAN

**Master Plan Update**  
October 2020 DRAFT



# ACKNOWLEDGMENTS

Thank you to the over 300 people who attended public meetings and responded to surveys to help develop this Master Plan. The Riverfront North Greenway belongs to the people who enjoy it, and user input will help direct the next two decades of investments. Many thanks also go to the steering committee and the many stakeholders who hold a vested interest in the future of the Riverfront North Greenway. The contributions of these individuals to the Master Plan are appreciated!

## Steering Committee

<b>James Donaghy</b>	Vice Chair, Riverfront North Partnership Board of Directors
<b>Patrick Starr</b>	Executive VP, Pennsylvania Environmental Council; former Secretary of the Riverfront North Partnership Board of Officers
<b>Rob Armstrong</b>	Trails & Transportation Program Manager, City of Philadelphia Office of Transportation, Infrastructure, & Sustainability (Formerly with Parks & Recreation Department)
<b>Liz Lankenau</b>	Director of Infrastructure Program Coordination, City of Philadelphia Office of Transportation & Infrastructure Systems
<b>Kelley Yemen</b>	Director of Complete Streets, City of Philadelphia Office of Transportation & Infrastructure Systems
<b>David Kanthor</b>	Transportation Planner, Philadelphia City Planning Commission
<b>Vadim Fleysh</b>	Chief Design Engineer, City of Philadelphia Streets Department



## Stakeholder Committee

The following stakeholder organizations were involved in the update of this Master Plan:

Office of Councilmember Bobby Henon  
Office of PA Representative Mike Driscoll  
Office of PA Representative Joe Hohenstein  
City of Philadelphia Commerce Department  
City of Philadelphia Office of Transportation & Infrastructure Systems  
City of Philadelphia Streets Department  
City of Philadelphia Parks and Recreation Department  
Philadelphia Water Department  
Philadelphia City Planning Commission  
PennDOT  
Delaware Valley Regional Planning Commission  
Circuit Trails Coalition  
Bicycle Coalition of Greater Philadelphia  
East Coast Greenway Alliance  
Fairmount Park Conservancy  
Pennsylvania Environmental Council  
Pennsylvania Audubon Society  
Tookany/Tacony-Frankford Watershed Partnership  
Philadelphia Waterborne  
Tacony Community Development Corporation  
MaST Community Charter School  
Sanaghan Group

## Consultant Team

NV5  
Econsult Solutions  
Stokes Creative Group

This Project was financed in part by a grant from the Commonwealth of Pennsylvania, Commonwealth Financing Authority.

This Project was also financed in part by a grant from the Community Conservation Partnerships Program, Environmental Stewardship Fund, under the administration of the Pennsylvania Department of Conservation and Natural Resources, Bureau of Recreation and Conservation.







# TABLE OF CONTENTS

<b>What is the Riverfront North Greenway?</b>	<b>6</b>
<b>Executive Summary</b>	<b>8</b>
<b>Chapter 1 Intentions and Process</b>	<b>18</b>
<b>Chapter 2 Historic Context</b>	<b>32</b>
<b>Chapter 3 Previous Studies</b>	<b>44</b>
<b>Chapter 4 Connectivity</b>	<b>52</b>
<b>Chapter 5 Functionality</b>	<b>90</b>
<b>Chapter 6 Environment</b>	<b>104</b>
<b>Chapter 7 Experience</b>	<b>136</b>
<b>Sources</b>	<b>160</b>
<b>Appendix</b>	<b>A-1</b>

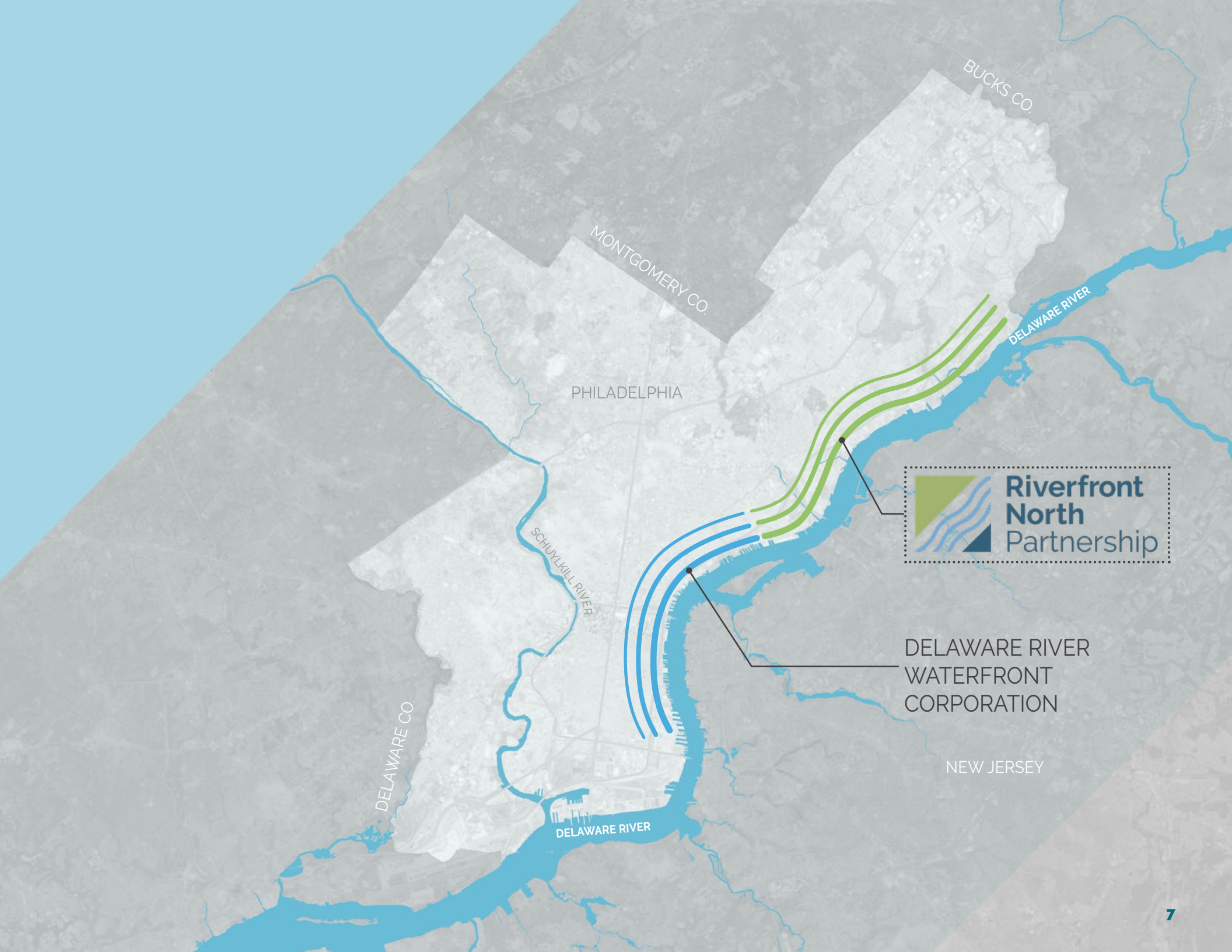
# WHAT IS THE RIVERFRONT NORTH GREENWAY?

**The Riverfront North Greenway** is nearly eleven miles of greenway in Northeast Philadelphia between Allegheny Avenue in the Port Richmond neighborhood and Poquessing Creek in Torresdale. The greenway consists of trails, parks, open space, restored habitats, and other recreational activities along the Delaware River and adjacent areas. **The Riverfront North Partnership** (RNP) is the non-profit organization working with Philadelphia Parks and Recreation to create, activate, and restore riverfront spaces along the Greenway.

## **Riverfront North Partnership's Mission**

*To complete and sustain the riverfront trail and network of parks along the Delaware River that connects residents of urban neighborhoods to nature, offering unparalleled recreation, community building, and environmental education activities.*





MONTGOMERY CO.

BUCKS CO.

PHILADELPHIA

DELAWARE RIVER

SCHUYLKILL RIVER

DELAWARE CO.

DELAWARE RIVER



DELAWARE RIVER  
WATERFRONT  
CORPORATION

NEW JERSEY



# EXECUTIVE SUMMARY

The Riverfront North Greenway has experienced significant change since the original *North Delaware Riverfront Greenway Master Plan & Cost Benefit Analysis* was completed in 2005. With eight miles of greenway trail completed, and three additional miles in the final design or construction phase, now is the time to consider the next two decades of investments to be made along Northeast Philadelphia's riverfront.

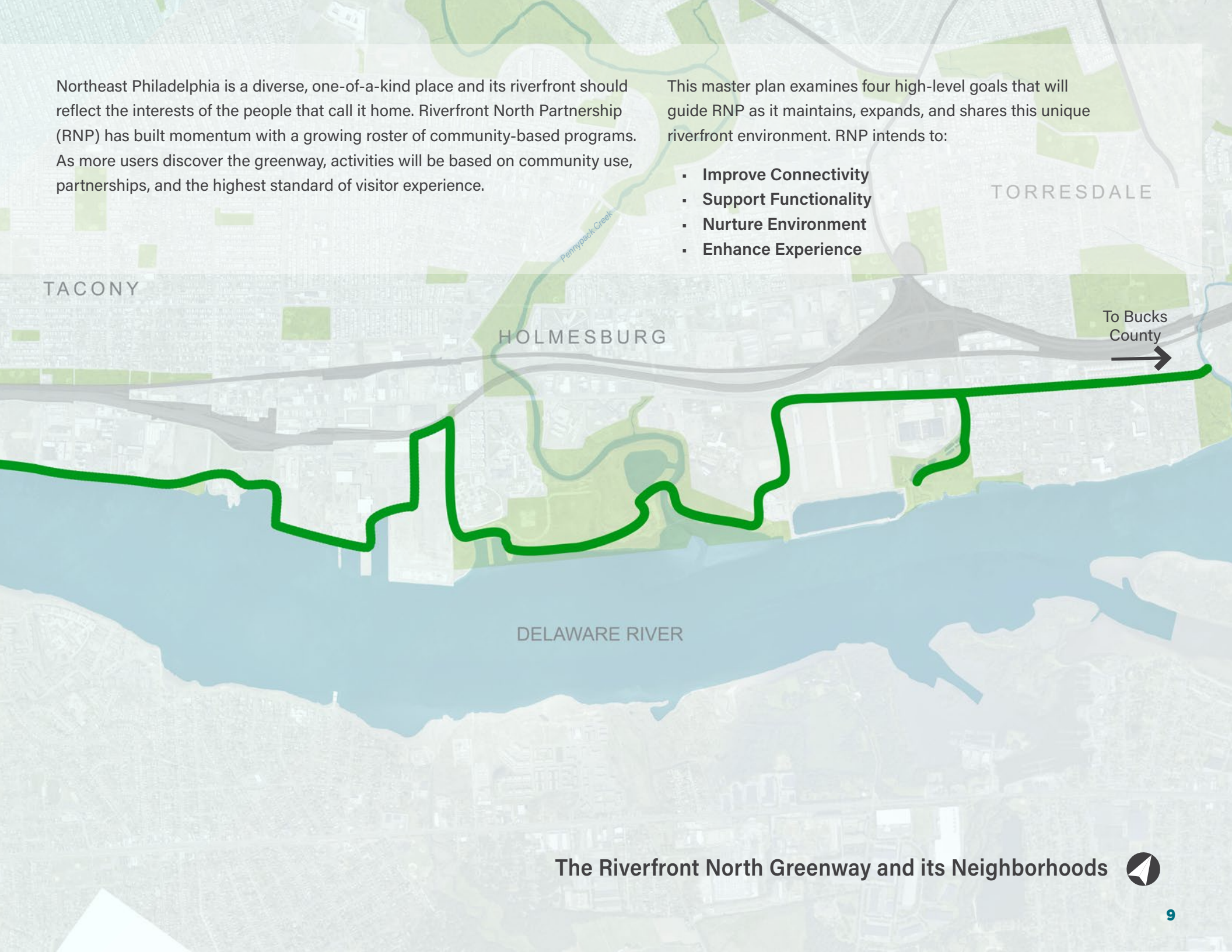


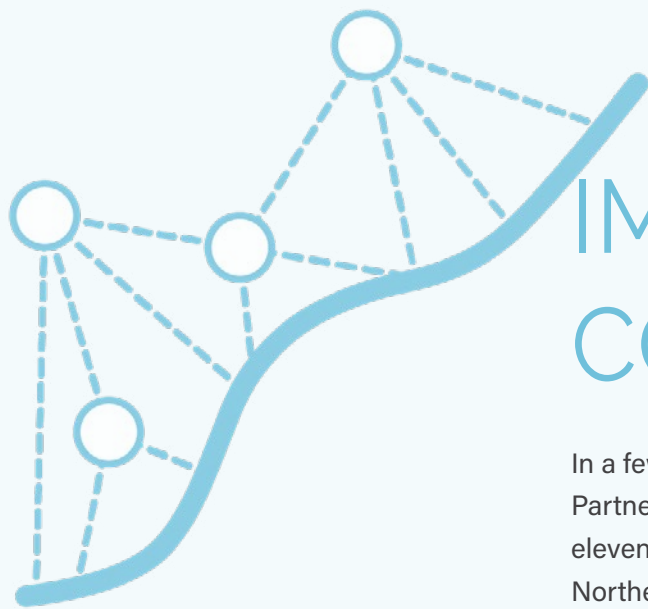


Northeast Philadelphia is a diverse, one-of-a-kind place and its riverfront should reflect the interests of the people that call it home. Riverfront North Partnership (RNP) has built momentum with a growing roster of community-based programs. As more users discover the greenway, activities will be based on community use, partnerships, and the highest standard of visitor experience.

This master plan examines four high-level goals that will guide RNP as it maintains, expands, and shares this unique riverfront environment. RNP intends to:

- **Improve Connectivity**
- **Support Functionality**
- **Nurture Environment**
- **Enhance Experience**





# IMPROVE CONNECTIVITY

In a few short years, Riverfront North Partnership (RNP) will have created eleven continuous miles of trail along the Northeast Philadelphia riverfront. It is now imperative to consider how the Riverfront North Greenway will interact with adjacent neighborhoods, the City of Philadelphia, and the region at large. Creating safe and intuitive walking, transit, and water-based connections will activate the riverfront and link to local, regional, and national multi-modal networks.

Properly implemented connector streets are an essential link that will directly connect hundreds of thousands of residents to the Delaware River. Connector streets will be designed to allow for better walking and bicycling conditions to the waterfront, and contain elements like increased tree canopy, traffic calming, and green stormwater infrastructure. By reducing or eliminating the barriers between Northeast Philadelphia neighborhoods and the waterfront, like dark underpasses and speeding traffic, RNP can

make nearby residents feel as though the greenway is right outside their front doors. By connecting neighborhoods more directly to the greenway, this will help foster a community ownership of the riverfront.

The Riverfront North Greenway is also a key piece of city, regional, and national trail networks. A high number of recreational trail users will soon be able to experience Northeast Philadelphia by way of connections through these networks. Wayfinding and unique attractions can help introduce visitors to the one-of-a-kind atmosphere in the Northeast.

As the health of the Delaware River improves, water-based recreation of all types is growing in popularity. More people are using motorized and non-motorized watercraft on the Delaware River, and the number and quality of waterfront attractions is growing on both sides of the river.





*Riverfront North Partnership will collaborate with PennDOT, the Philadelphia Streets Department, and other partners to develop safe and intuitive connections from Northeast Philadelphia neighborhoods to the riverfront. The rendering above illustrates potential improvements to connector streets.*





*Cultivating collaborative relationships with adjacent property owners will be key to encouraging future site development that enhances the greenway experience. Shown here is an example of the type of building that could be adaptively reused and benefit the adjacent K&T Trail near Comly Street.*





# SUPPORT FUNCTIONALITY

The Riverfront North Greenway has a long history of industrial and institutional land uses that are active today and will continue into the foreseeable future. RNP respects these dynamic land uses and will leverage the current functionality to activate the Greenway as a unique part of the Philadelphia waterfront, and to potentially seek revenue streams from increasing land values. RNP will continue to work with the City of Philadelphia to forge relationships that transform vacant riverfront parcels into

uses that serve all interested parties. The Riverfront North Partnership supports future redevelopment of currently vacant parcels with uses that will have a cooperative relationship with the riverfront greenway. The continued redevelopment of the area along the Riverfront North Greenway presents opportunities for strategic economic development measures that will contribute to the overall success of this active waterfront.



## NURTURE ENVIRONMENT

The Riverfront North Greenway has the potential to be one of the most accessible natural environments in the City of Philadelphia. By continuing the restoration of land- and water-based habitats along the waterfront, RNP and its stakeholders have an opportunity to create a lasting natural

corridor that will knit together the urban landscape and the expanse of the Delaware River. Increasing open space inventory along the river can support a growth in native plant and animal species, and enhance recreational activities such as bird-watching and fishing.



*By restoring shoreline habitat and providing safe access at the river's edge, the Riverfront North Partnership can help improve the Delaware River, while creating educational opportunities. Illustrated here is a concept for a possible living shoreline project south of the Tacony Boat Launch.*

Through resilient design, the impacts threatened by climate change can be tempered. By developing resilient, flood-accommodating environments along the riverfront, RNP can create enjoyable, recreational spaces for people and facilitate

access to the water during non-flooding events.

Parks and open space restoration along the Northeast Philadelphia riverfront make natural and recreational spaces accessible

to more diverse populations. By viewing the implementation of these spaces through an environmental justice lens, RNP can ensure that all riverfront spaces are inviting and accessible for an increasingly diverse community.





# ENHANCE EXPERIENCE

Momentum is building as RNP takes an active role in engaging its community. While the physical barriers created by adjacent industrial and highway facilities remain a major challenge to visitorship, the riverfront persists as a popular destination. RNP is well prepared to leverage the soon-to-be continuous greenway and is already offering a wealth of quality experiences to visitors.

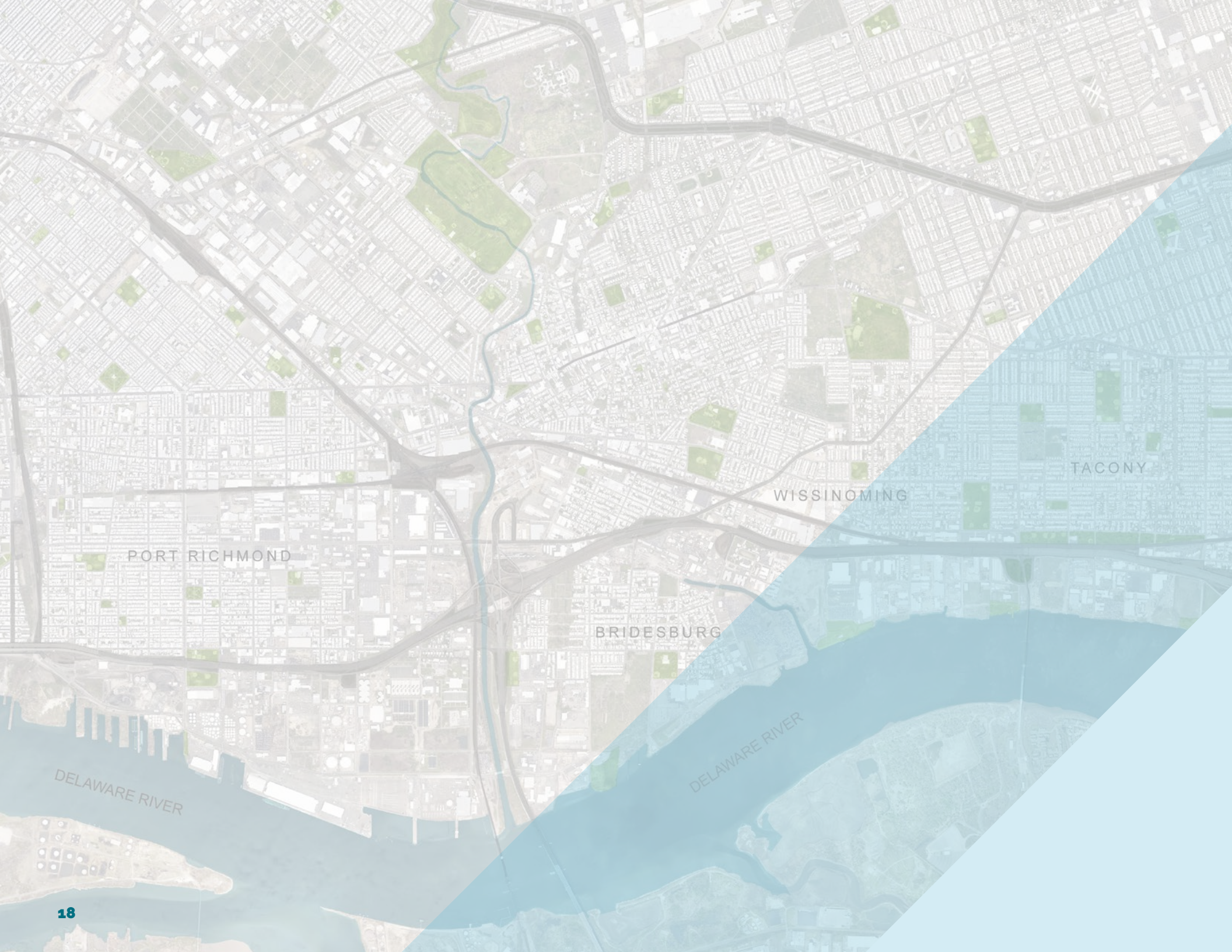
To build upon the types of experiences that will continue to grow a community of visitors and stewards, RNP will seek to:

- Expand stewardship through volunteers and service partnerships;
- Nurture relationships with private businesses that see the trail as an amenity to employees and stakeholders;
- Build robust programs that position the Greenway as a regional outdoor recreation destination;
- Practice creative placemaking with nonprofit and community partners; and
- Thoughtfully update features that respond to the community's needs.



*Riverfront North Partnership will continue to engage directly with local communities through volunteer stewardship, educational and outreach events, and activation of community spaces along the riverfront greenway. The photo depicts an outdoor musical performance at Lardner's Point.*





PORT RICHMOND

BRIDESBURG

WISSINOMING

TACONY

DELAWARE RIVER

DELAWARE RIVER



An aerial photograph of a residential area in Philadelphia, showing a grid of streets, green spaces, and a river. The image is partially obscured by a light blue diagonal overlay.

# 1 INTENTIONS & PROCESS

The founding Master Plan document for Riverfront North Partnership was published nearly fifteen years ago. With significant initiatives of that Master Plan completed, or nearing completion, it is time to examine the next generation of development along the Delaware River waterfront, while remaining contextual to the unique culture of Northeast Philadelphia.

## PURPOSE & GOALS

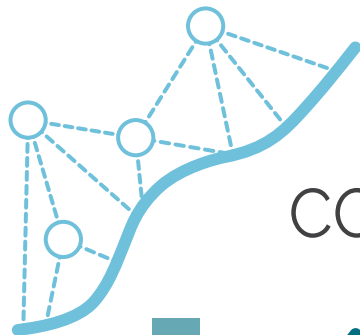
Riverfront North Partnership (RNP) has worked to realize its vision of a continuous system of trails and open space along the Delaware River waterfront in Northeast Philadelphia. As the initial vision nears completion, RNP now wants to examine their role in creating a lasting, resilient landscape for all to enjoy.

This updated master plan has four key intentions, illustrated to the right. This document will explore the intentions and their applications in subsequent chapters. These four principal intentions were established after examining the 2005 Master Plan work that has been performed, as well as those initiatives still in progress. The principal intentions of this plan were further developed through two rounds of public outreach, and by identifying the Strengths, Weaknesses, Opportunities, and Threats (SWOT) that the riverfront currently experiences or may experience in the future.

Nowhere else in the City of Philadelphia is there such a diverse mix of public parks, open space, and industrial land. The Master Plan's goal is not to duplicate other riverfront projects, but to create a unique and distinctive riverfront experience for the Riverfront North Greenway.



# THE FOUR KEY MASTER PLAN INTENTIONS:



## IMPROVE CONNECTIVITY

Provide multi-modal connections to waterfront; evaluate linkage opportunities, and make design recommendations for connector streets that can be implemented in phases.



## SUPPORT FUNCTIONALITY

Respect the riverfront's status as a functional landscape, and provide solutions that support the surrounding complexity of land uses that include industrial, recreational, and ecological spaces.



## NURTURE ENVIRONMENT

Recognize current environmental resources and make recommendations focused on habitat restoration, waterfront resilience, and healthy communities.



## ENHANCE EXPERIENCE

Enhance the greenway experience with amenities, activities, programs, and events, and by strengthening ties to local communities and destinations.

# SWOT ANALYSIS

## STRENGTHS

- A wealth of open spaces within the urban realm, particularly along the riverfront
- Northeast Philadelphia's cultural diversity and historical richness
- New energy brought to the area through immigrant population growth
- Active industry acts as a job creator
- Diverse park and open space amenities
- Open space and preserved land habitat functionality

## WEAKNESSES

- Negative environmental quality impacts from surrounding active industry
- Brownfield clean-up challenges
- Car-focused environment, with highways as barriers bisecting neighborhoods from the river
- Underpasses are perceived as dangerous and unpleasant barriers to connectivity
- Spatial segregation
- Gaps in public property ownership
- Lack of adjacent residential/commercial properties hinder greenway activation and economic development

## OPPORTUNITIES

- Economic redevelopment opportunities for local businesses
- Street corridor improvement projects support neighborhood connectivity
- Nearby commercial streets, architectural charm and vacant lots provide investment potential

## THREATS

- Crime and safety concerns
- Lack of public investment
- Greenway and adjacent parcel site contamination and remediation challenges
- Greenway is perceived of as the backyard of industrial parcels instead of as a public, neighborhood amenity



# DISTINCTLY NORTHEAST

Northeast Philadelphia is rich in landscapes, neighborhoods, and cultures, the likes of which are found nowhere else in the city. This individuality extends to the area's unique relationship to the Delaware River.

While developing this Master Plan, it was essential to remain conscious of the distinct culture and economic context of the Riverfront North Greenway. A guiding principle in this planning process was to respect the area as a working landscape. Land use recommendations must balance functionality and economic productivity with aesthetic appeal, recreational opportunity, and ecological value.



*Pulaski Pier is a popular destination for fishing or relaxing near the river. The existing bulkhead walls and guardrail were recently repaired, and new trees were planted in partnership with Philadelphia Parks and Recreation. Image: Riverfront North Partnership.*

# PROCESS OVERVIEW

The planning process began with a review of previous riverfront planning studies; meetings with numerous stakeholders engaged in activities in the proximity of the riverfront; an assessment of public perception regarding existing conditions; and a compilation of stakeholders' ideas for the future of the greenway.

## #1 Data Collection

At the onset of the project, the planning team performed a thorough review of the original 2005 *North Delaware Riverfront Greenway Master Plan & Cost Benefit Analysis* to examine what efforts came to fruition. This review led to an inventory of current and in-progress facilities along the riverfront. Other relevant planning and engineering studies, either commissioned by RNP or other agency partners, were also reviewed. Data collection efforts included an examination of property ownership, environmental records, and partner agency plans along the eleven miles of greenway. For further details and analysis of this data collection effort, please refer to Chapter 3.



*RNP and planners from NV5 on a corridor walk-through.*



## #2 Stakeholder Outreach and Steering Committee

RNP relies on collaboration with numerous stakeholders to achieve its goals. A series of three stakeholder meetings were held during the development of this Master Plan to review past work and reach a consensus on goal setting for the future. Stakeholders include various city and state agencies, local non-profit organizations, and neighborhood groups.



**Individual, detailed meetings were held with key stakeholder agencies including:**

- Philadelphia Parks & Recreation Department
- Philadelphia City Planning Commission
- Philadelphia Commerce Department
- Philadelphia Water Department
- Philadelphia Streets Department
- Office of Transportation, Infrastructure, and Sustainability (oTIS)
- Pennsylvania Department of Transportation (PennDOT) I-95 Sustainable Action Committee

The development of the Master Plan was guided by a focused steering committee consisting of seven representatives from the Riverfront North Partnership Board of Directors and key city agencies. The steering committee helped drive the direction of the planning effort, and provided valuable, high-level feedback on the goals of the master plan prior to community outreach.

### #3 Community Outreach

While establishing goals for the next generation of Riverfront North Greenway development, it was vital to take stock of the public's perception of existing conditions and desired future enhancements. The community outreach conducted for this master plan update consisted of three separate sessions: **Listening, Forming the Vision, and Confirming the Vision.**



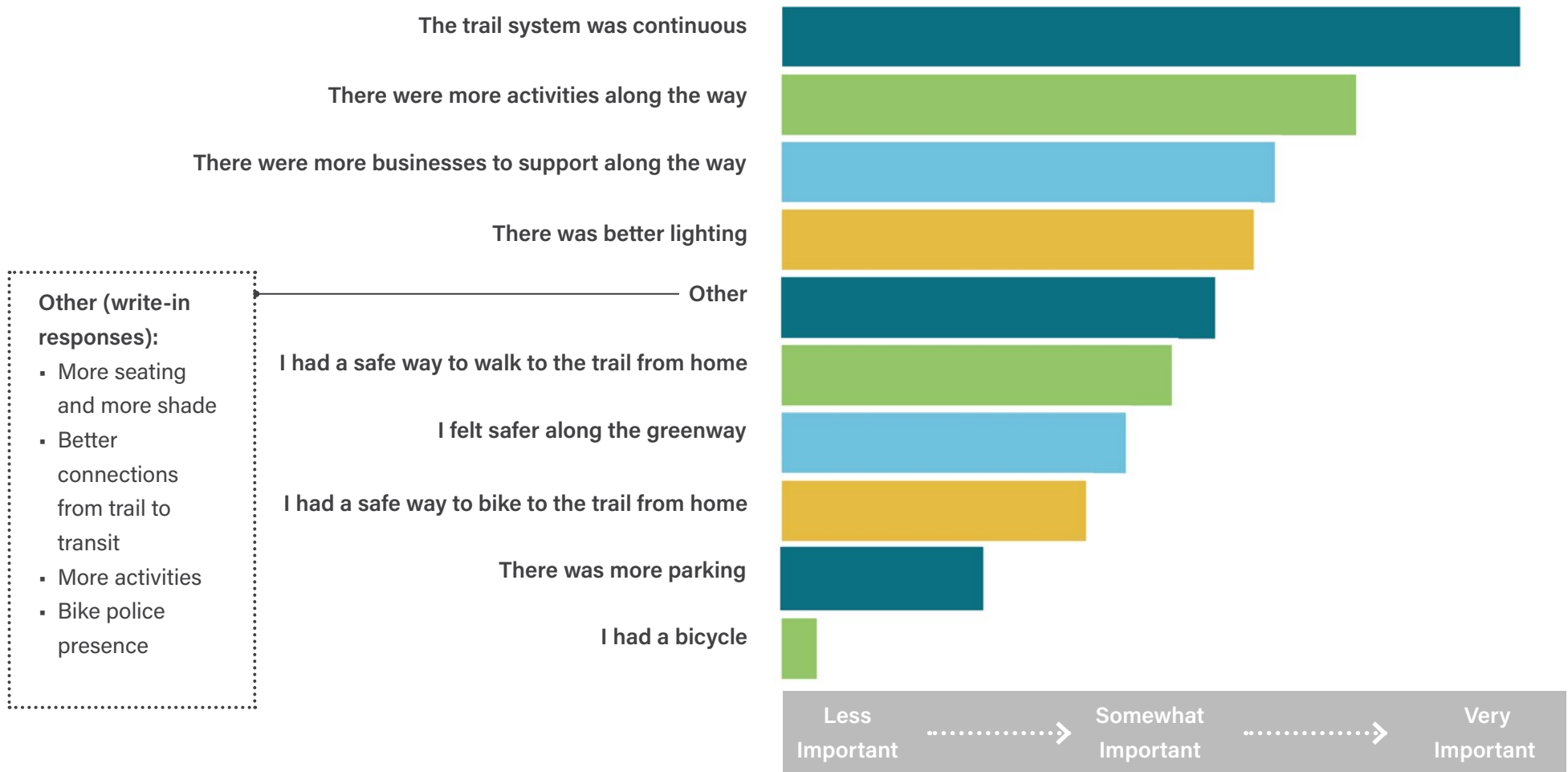
#### Listening (Summer 2018)

To kick off the project, the master plan team held listening sessions at the Holmesburg and Bridesburg Recreation Centers. These sessions consisted of large-format maps and images to aid in evaluating how often attendees used the greenway; what they perceive to be the most important amenities; and what programming ideas they might have. Surveys were performed on site at both public meetings, and were also advertised via RNP email newsletters and social media. Over seventy-one people participated in the survey either at meetings or online.

A snapshot of the feedback received during this first round of community outreach is shown on the next page. The complete results of the surveys can be found in the Appendix. The most significant finding from the survey data indicated a need to complete the greenway trail and to provide more activities along its length. There was also strong support for more businesses along the greenway, such as restaurants and equipment rental shops.



I would use the greenway more if...



## Forming the Vision (Spring 2019)

After a series of stakeholder meetings, the Master Plan team returned to the community to gauge reaction to preliminary concepts for future development. Meetings were held at the Tacony and Richmond Free Libraries, where the planning team solicited feedback on specific greenway activation ideas, design interventions for connector streets, and ideas for water-related activities and uses. Over 240 people participated in the survey either at the meetings or online.

### What would you like to see at the Riverfront?

ACTIVITY	WEIGHTED AVERAGE*	RANK	INTEREST
Yoga, running, or other organized athletic events	4.38	1	Very much wanted
Farmers' market	4.31	2	
Informal event/picnic space (for small gatherings)	4.29	3	
Attend events like art shows, flea markets, craft fairs, etc.	4.28	4	
Outdoor movies	4.12	5	
Recreational equipment rental (scooters, bikes, etc.)	4.08	6	
Community garden	4.03	7	
Food truck park (rotating food trucks parked at a specific location during set hours)	4.03	8	
Dog parks	3.94	9	
Outdoor fitness equipment	3.59	10	
Rental space for private events like weddings, birthdays, etc.	3.36	11	Somewhat wanted
Skate parks	2.99	12	

#### Write-in amenities:

- Bathrooms/drinking fountains
- Improved natural habitat
- Business fronts or pop-up businesses/food trucks
- Shade/seating
- Fishing
- Raised viewing space

"As much green space as possible. Tree cover and wildlife habitats are a must."

"Access to river bank for fishing, maybe a fishing pier, boat ramp."

"Art installations (like Graffiti Pier, Magic Gardens, etc.)"



### What water-related uses would you like to see here?

ACTIVITY	WEIGHTED AVERAGE*	RANK	INTEREST
More places to walk down to the water	4.7	1	Very much wanted
Water equipment rental	4.13	2	
Riverfront restaurants or other private-sector commercial businesses with marina access	3.8	3	
Ferries for excursions or commuting to Center City or Camden	3.74	4	
Increased public fishing areas	3.73	5	Wanted

### What else would you like to see here?

"Wetland vegetation, perhaps a small interpretive sign about what plants and aquatic animals inhabit the Delaware River and how water quality is important."

"Being able to touch the river like Penn Treaty park"

"Maybe a section for paddle boats, like at Penn's Landing, for those who cannot use a canoe or kayak."

"A 'Mr Trash Wheel' to collect trash at the mouth of the Frankford Creek."

*\*The weighted average considers a scale of 1.0 to 5.0, where 5.0 would mean that all surveyed participants selected the highest value (strongly agree) and 1.0 would mean all selected the lowest value (strongly disagree).*



*Kayaker, Image Credit: Riverfront North Partnership.*

#### Write-in water related amenities:

- River bank access ("touch the water")
- Observation decks
- Boat ramps (improve or increase)
- Kayaks/sailboats/paddleboards/other water sports
- Innovative ways for improved river cleanliness
- Improved, cleaner and more native habitat (green and blue space)
- Nature education
- Ferries/water taxi

## What improvements would you like to see on connector streets, to make your journey to the riverfront safer?

ACTIVITY	WEIGHTED AVERAGE**	RANK	INTEREST
Enhanced lighting at underpasses	5.84	1	Very much wanted
Separated or protected bike lanes	5.55	2	
More street trees, greenery, and landscaping along the way	5.49	3	
Safer and shorter crosswalks	5.04	4	
New or improved sidewalks and ADA ramps	4.83	5	
Lower speed limits for traffic	3.88	6	Somewhat Wanted
Wayfinding signage	3.34	7	
Painted murals along big empty walls	2.79	8	

30% of respondents chose enhanced lighting at underpasses as their #1 choice

*\*\*Survey participants were asked to rank these improvements in order of importance. The weighted average here reflects the average of all the rankings.*



*Lighting underpasses can encourage increased pedestrian travel between the communities and the river.*



# PUBLIC MEETING LOCATIONS

First Round : Listening



Second Round : Forming the Vision





*Tacony Neighborhood Architecture, Image Credit: Elliott, J., photographer.  
Historic American Buildings Survey, Library of Congress.*



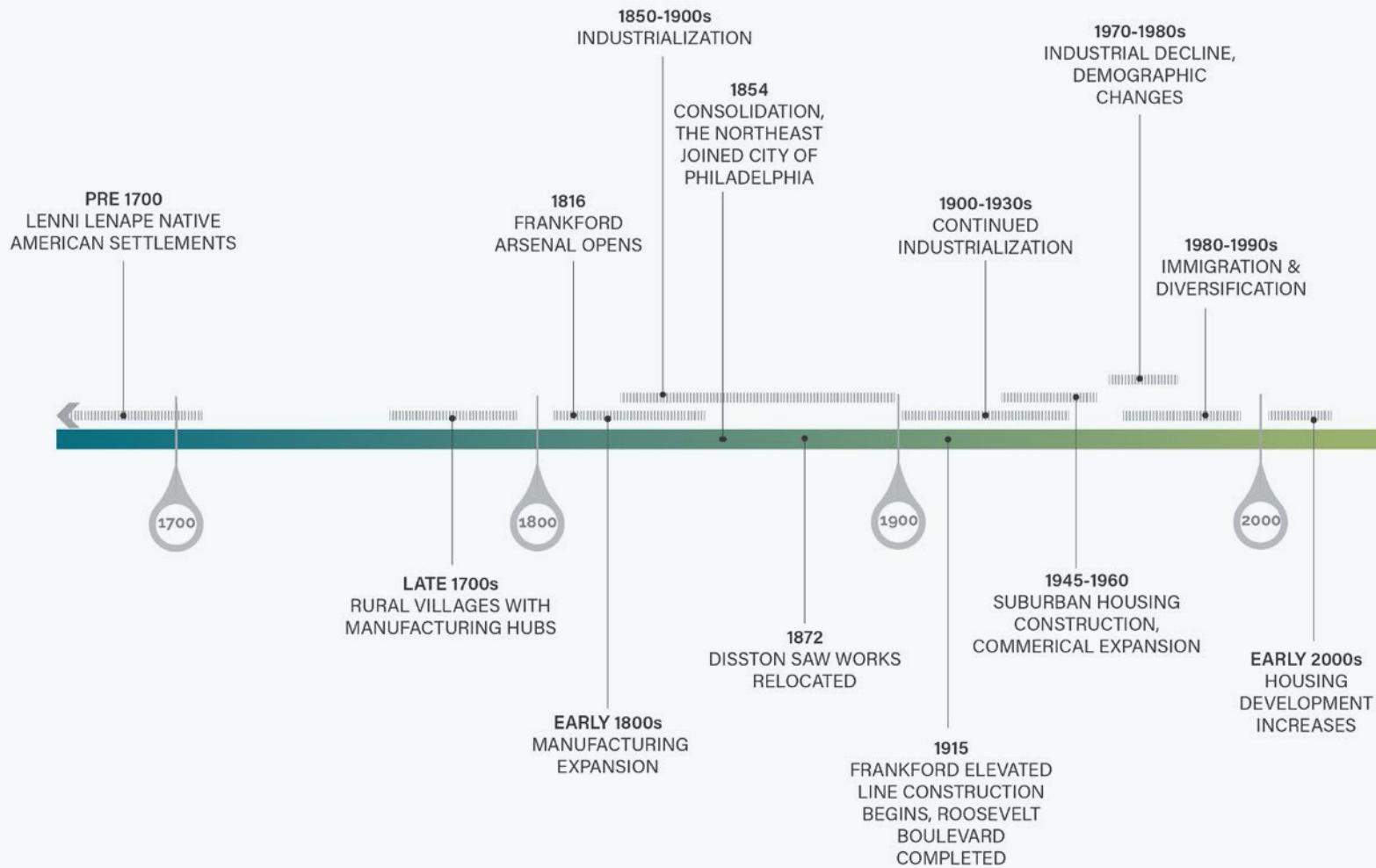


# HISTORIC<sup>2</sup> CONTEXT

Over the past 300 years, Northeast Philadelphia has evolved from a quiet rural landscape to a manufacturing powerhouse, with a complex network of residential communities, industrial land, and open space. The area's cultural history is a story of constant change, with immigration and demographic shifts reshaping its neighborhoods throughout centuries. The Delaware River has played a significant role in these transformations, supporting economic development and providing amenities for neighboring communities. Over time, the region's perception of the Delaware River has also shifted, from seeing it as a transportation and trade route, as the backyard of industry, and as an environmental and cultural resource.

This historical context has resulted in the vibrant and complex network of communities, industries, and landscapes seen today.

# TIMELINE





# HISTORY

## Early Settlement

Prior to European migration, the area surrounding the Delaware River was settled by the Lenni Lenape people. The earliest European settlement in the Northeast began in Frankford, initially a Swedish trading settlement. After William Penn's charter, Frankford grew as a center of commerce, thanks to its convenient location on the King's Highway (current day Frankford Avenue)<sup>1</sup>. The Delaware River supported the settlement's growth into a town by serving as an important transportation resource and trading network.

The Northeast was primarily rural land dotted with manufacturing villages in the 18<sup>th</sup> and 19<sup>th</sup> centuries, and was home to many mills along Frankford Creek. German and English immigrants settled in towns surrounding the Frankford commercial center, attracted by opportunities to process their raw materials and trade goods.



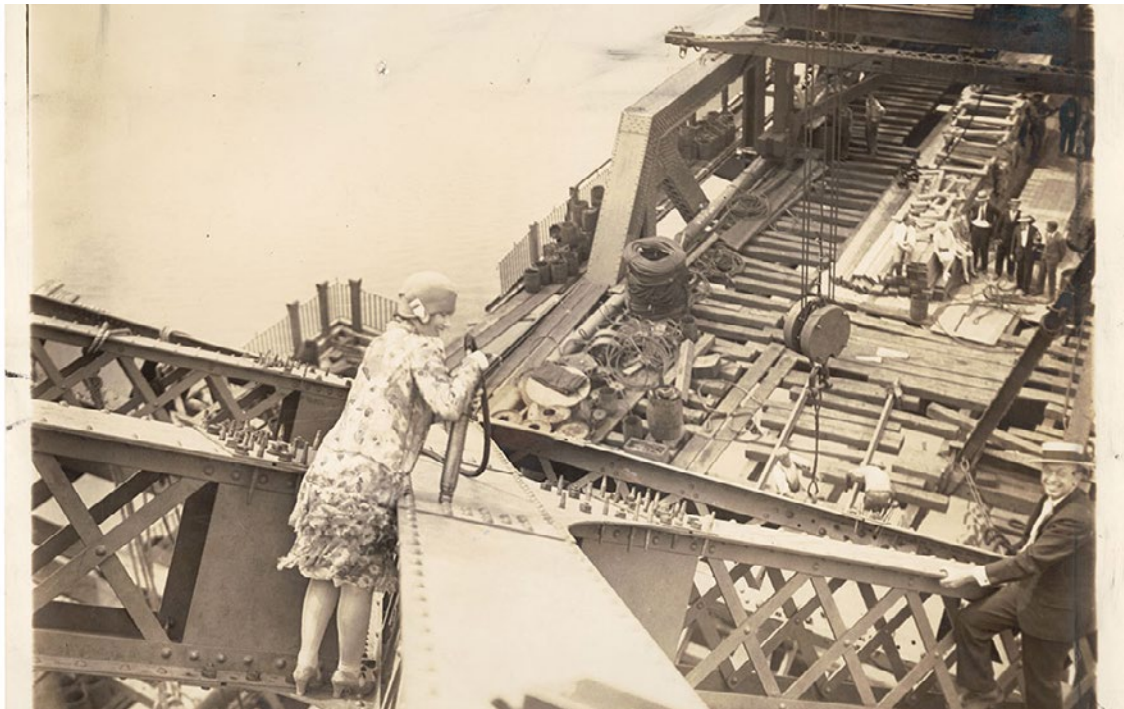
*Tacony Bakery, Image Credit: Elliott, J., photographer. Historic American Buildings Survey, Library of Congress.*

## Industrial Progress

Industry continued to thrive in the Northeast throughout the 19<sup>th</sup> and early 20<sup>th</sup> century, expanding in tandem with the City of Philadelphia's growth. Large-scale manufacturing companies grew in size, seeking out larger parcels of open space on the riverfront. The river made an

ideal site for manufacturing, allowing for the establishment of industrial ports on the Delaware and easing the movement of goods throughout the world. Growth in manufacturing led to an increase in the construction of housing for workers.

Tacony's formation typified the growth seen in Frankford. In 1872, industrialist



*Vivian Shirley, stunt reporter, driving a rivet on the Tacony-Palmyra Bridge (under construction). Image Credit: Evening Public Ledger (6/28/1929), Free Library of Philadelphia.*

Henry Disston moved his saw works from crowded Northern Liberties to Tacony. The relocated Disston Saw Works supported the development of Tacony into a company town. The steady work, fair pay, and economic benefits attracted European immigrants from Ireland, Poland, Italy, and Germany. The Disston Saw Works supported its workers by encouraging community; immigrants were able to buy homes and build equity for future generations.

The manufacturing boom in the Northeast included arms production, which

transformed the riverfront into a munitions center after the War of 1812. The Frankford Arsenal opened in 1816, and supported job growth and resettlement.

Stretching further northeast from the City, some of Philadelphia's wealthiest residents built riverfront mansions and estates along the Delaware in Holmesburg and Torresdale. Today, the most notable remaining estate is the Victorian Glen Foerd mansion, built in Torresdale in 1850.

In 1854, Northeastern Philadelphia County

became part of the City of Philadelphia as a result of the Consolidation Act, officially tying the Northeast region to the City.<sup>2</sup>

### Deindustrialization and Diversity

After over a century of continuous housing and job growth, the 1970s and 1980s brought about a decline in industrial jobs that greatly impacted Northeast Philadelphia.

In the 1970s and 1980s, deindustrialization and population loss impacted Northeast Philadelphia. White families with economic mobility relocated, often to the New Jersey suburbs. Simultaneously, Eastern European and Russian immigrants began moving into the northeast neighborhoods.

The following decades brought more demographic changes. The Pew Charitable Trust's 2011 population study found that Northeast Philadelphia's white population fell from ninety-two percent in 1990 to fifty-eight percent in 2010.<sup>3</sup> Today, Southeast Asian and Russian communities are common in the far Northeast. Many African American, Asian, and Latino households have relocated out of North Philadelphia into the lower Northeast neighborhoods<sup>4</sup>. This change represents a time of diversity and growth in the region. According to the Pew Charitable Trusts' 2018 report on immigration, the Northeast grew significantly from 2000 to 2014 as a result of immigration.<sup>5</sup>





*St. Adalbert Church is a Polish-style cathedral on Allegheny Avenue in Port Richmond, the center of Philadelphia's Polish community in the early 1900s.*





This 1862 map shows the development state of the Northeast, from Frankford to Pennypack Creek, shortly after the Northeast's unification with the City of Philadelphia in 1854. Image Credit: Atlas of the City of Philadelphia, Section 25, J.B. Lippincott & Co. (1862), The Free Library of Philadelphia.

# THE RIVER



"Shad fisherman making a 'haul', Washington Park on the Delaware River opposite Philadelphia" (1905), Image Credit: Library of Congress.

In the past century, the Delaware River has experienced varying levels of health.

In the late 19<sup>th</sup> century, the river was a thriving fish habitat. Shad fishing was a major regional industry, and the river supported the largest sturgeon fishery in the country. Industrial development of the late 19<sup>th</sup> century made the river a less hospitable environment for wildlife. By the middle of the 20<sup>th</sup> century, shad were nearly eliminated by pollution and overfishing. Household, industrial, and agricultural wastes were being dumped directly into the river, including the waste from slaughterhouses. These contaminants reduced the dissolved oxygen levels, resulting in a "dead river" uninhabitable for marine life. Around this time, it was reported that a strong, noxious smell coming from the Delaware so irritated Russian and British naval personnel docked there, that they were unable to stomach their lunches.<sup>6</sup>

In 1961, President John F. Kennedy signed the *Delaware River Basin Commission* (DRBC) into existence.<sup>7</sup> The DRBC was organized to test the river's pollution and require standards for industrial wastewater and pollution treatment. The DRBC, a coalition between the states of Pennsylvania, New York, Delaware, New Jersey and the federal government, was a first step towards attending to the river's health.



After the Cuyahoga River in Cleveland, Ohio caught fire in 1969, the growing environmental movement gained significant momentum. In response to environmentalist lobbying, Congress passed the *Clean Air Act* and the *Clean Water Act*, representing a major turning point in environmental regulations. President Nixon signed a bill creating the Environmental Protection Agency (EPA) in 1970. In 1972, the *Clean Water Act* made it illegal to dump pollutants into waterways without permits and set standards for industrial wastewater. In the 1980s, Philadelphia's sewage plants were updated, ensuring that wastewater discharged into the Delaware was treated before dumping. As a result of this legislation, the dissolved oxygen levels in the Delaware began to rise.<sup>8</sup>

Today, the Delaware River is a more vibrant and healthy river. It now supports recreational fishing, with more stable fish populations and over forty different species of fish.<sup>9</sup>

The river is also a popular recreation resource for boating, kayaking, and canoing.

Since the passing of the Clean Water Act, the Delaware River has gone from an industrial waste dumping ground to a popular urban amenity.



*Fishing at Pulaski Pier, which was named after a Polish military commander and Revolutionary War hero.*



Recognizing the river as a destination has spurred an increase in neighborhood investment, primarily in the form of housing and public space development. In 2019, for the first time in two decades, the governors of Pennsylvania, Delaware, and New Jersey publicly committed to the continued health of the river.<sup>10</sup> The Delaware River Basin Restoration Program, a partnership initiative of the U.S. Fish & Wildlife Service, grants funding for watershed improvement projects to support this effort.

Despite the improvements achieved over the past fifty years, the Delaware still faces contamination issues. The *Clean Water Act* does not yet address non-point source pollutants, and contaminants like pharmaceuticals, pesticides, and herbicides are not regulated. Combined sewer overflows flood the river with trash. Microplastics found in personal care products pose a new threat to marine life. Per- and polyfluoroalkyl substances (PFAS), a group of man-made chemicals found in home products and fire-fighting foam, is another unregulated contaminant that has

been found in fish tissue, threatening the health of the river.<sup>11</sup>

Historic bulkheads present a different challenge to the river and its adjacent habitats. Constructed as early as the mid-19<sup>th</sup> century, these bulkheads dramatically reshaped the natural shoreline into a hard constructed edge. Today, many of these bulkheads are not structurally sound and are deteriorating or failing altogether. Bulkhead removal presents an opportunity to restore the shoreline to a more natural form. Gently graded, planted shorelines benefit aquatic species and improve flooding resiliency during storm events, while providing opportunities for water access.

Climate change poses additional threats to the Delaware River. Increasingly forceful storm events, temperature changes, and rising sea levels could all impact riparian health. An increasingly robust protection system, utilizing bio-engineering and living shoreline approaches, in addition to flood-planning measures, is necessary to protect the riparian health of the Delaware in the future.



*Volunteers at an organized river clean-up effort, Image Credit: Riverfront North Partnership.*

# A VISION OF THE FUTURE WATERFRONT



U.S. Congressman Bob Borski at the groundbreaking of the K&T Trail (2016),  
Image Credit: Pennsylvania Environmental Council.

The vision of connecting residents with the neglected Northeast Philadelphia riverfront began in the mid-1990s. Congressman Bob Borski was the leader of this vision, and saw how the post-industrial riverfront could be transformed into a continuous greenway, with a string of parks and restored habitats linked by a continuous bicycle and pedestrian trail. In an effort to show people the hidden gems of the Delaware River, Congressman Borski led boating trips along the shoreline to showcase the riverfront's existing assets, and to help others see his dream of an open, accessible riverfront.

In 2001, the *North Delaware Riverfront, Philadelphia, a Long-Term Vision for Renewal and Redevelopment* report was released. The report explored possible redevelopment scenarios, the formation of a continuous riverfront park, and environmental issues of historic brownfield sites.





*The Delaware River City Corporation (DRCC) was formed in 2004 to oversee greenway development along the Northeast Philadelphia section of the Delaware River. DRCC was rebranded as Riverfront North Partnership in 2018 to more fully reflect its vision.*

As excitement was building around the transformation of the riverfront, the Delaware River City Corporation (DRCC) was formed in 2004 as a nonprofit organization to help shepherd the formation of the greenway in Northeast Philadelphia.



*Volunteers from Arcadia University, Image Credit: Riverfront North Partnership.*

The following year, with assistance from the Pennsylvania Environmental Council and various stakeholders, an initial master plan was developed to help guide the newly formed organization. *The North Delaware Riverfront Greenway Master Plan* was

released to the public in November 2005, and laid out the course for the DRCC, the City of Philadelphia, and other partners to create a vibrant riverfront greenway.





*Pleasant Hill Park wetland.*



# PREVIOUS STUDIES

# 3

Since the completion of the 2005 Master Plan, the Riverfront North Partnership has made significant progress in realizing the vision of a continuous riverfront greenway in Northeast Philadelphia. This founding document has laid the groundwork for several follow-up studies and numerous tangible investments made to the riverfront.



# THE 2005 MASTER PLAN

The 2005 *North Delaware Riverfront Greenway Master Plan and Cost Benefit Analysis* outlined a fifteen-year phased approach for the newly-formed DRCC to implement. The goals of that Master Plan were to:

- Expand publicly accessible open space;
- Create a new, continuous riverfront greenway trail with access to restored habitats, fishing facilities, and other amenities;
- Encourage and support large-scale mixed-use development along vacant riverfront parcels;
- Develop a “River Road” to provide access to the new riverfront amenities;
- Enhance neighborhood connector streets to allow Northeast Philadelphia residents to walk or bike to the greenway.

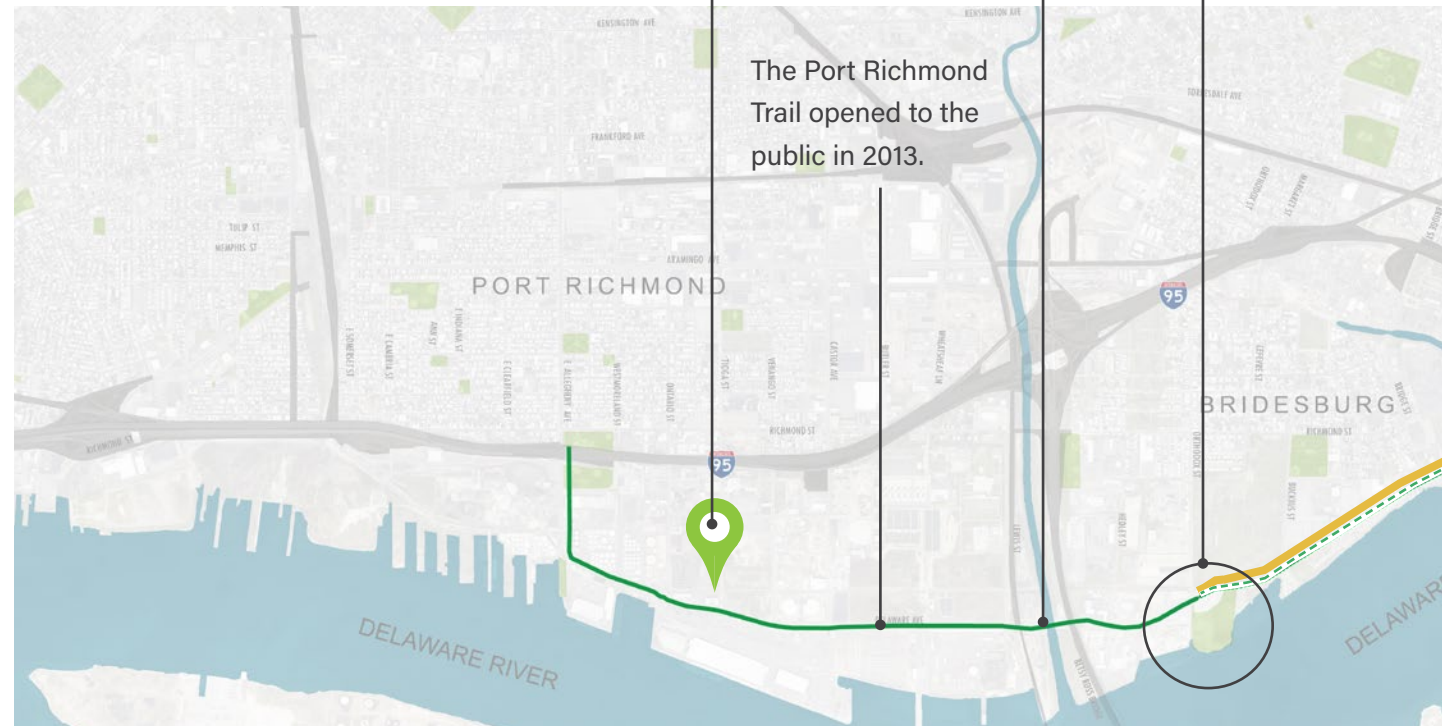
The 2005 Master Plan addressed the six-mile length of the Northeast Philadelphia riverfront between Frankford Creek and Linden Avenue. It was not until 2011 that DRCC’s jurisdiction grew to include the riverfront from Allegheny Avenue to Poquessing Creek, a length of about eleven miles.

**In the fourteen years since the initial Master Plan was released, RNP, in cooperation with the City and numerous stakeholders, has accomplished many of the plan’s goals.**

RNP staff has grown from one to nine members as of 2020. This growth has allowed the organization to take on more project management of park and trail projects, program events along open parks and trails, assist the Philadelphia Parks and Recreation Department with maintenance and stewardship, and engage the community to increase awareness of the Delaware River waterfront in Northeast Philadelphia.

Phase 1 of the Delaware Avenue Extension between Lewis and Orthodox Streets was opened by the City of Philadelphia in 2015, along with an extension of the Port Richmond Trail.

Final design is complete and fundraising is underway for Phase 1 construction of the Bridesburg Riverfront Park. Dependent on funding, the park could be open as early as 2022.



The Port Richmond Trail opened to the public in 2013.

Phase 2 of the Delaware Avenue Extension and riverfront trail (located between Orthodox Street and the Frankford Boat Launch) is currently in design by PennDOT. It is slated to break ground in 2022 and open in 2024.

Approximately **eight miles** of riverfront trail have been designed and built, and **three more miles** are currently in final design and due to open by the mid-2020s. Once completed, a continuous trail between Allegheny Avenue and Linden Avenue will exist, with bicycle lanes and sidewalks north of Linden Avenue to Poquessing Creek.

Lardner's Point Park was opened in 2012. The park features a "living shoreline" and restored land-based habitat on a former brownfields site.

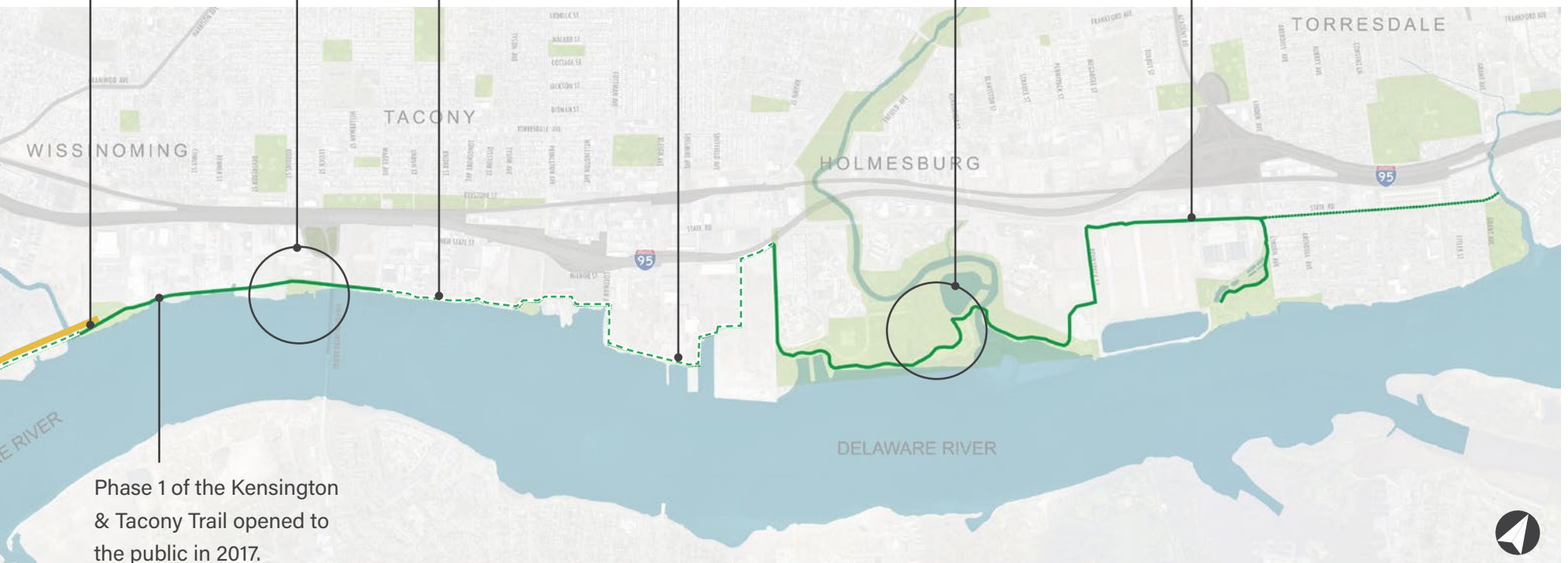
Phase 2 of the Kensington & Tacony Trail is slated to be open in 2021.

The Tacony-Holmesburg Trail will be open by the mid-2020s.

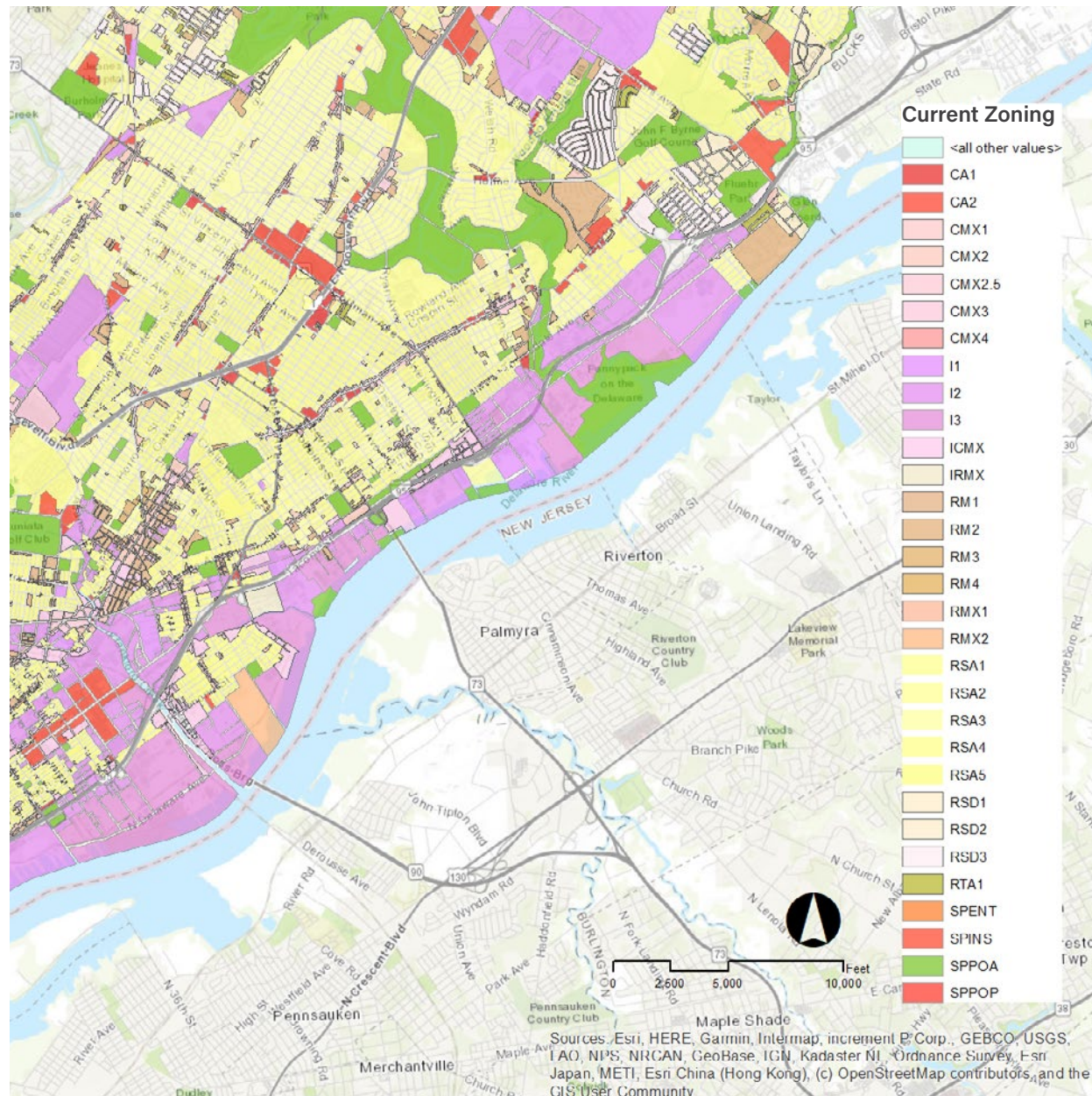
An expansion of Pennypack on the Delaware was opened in 2008, which included a trail extension and habitat restoration.

Construction on the Baxter Trail was completed in 2016.

Phase 1 of the Kensington & Tacony Trail opened to the public in 2017.



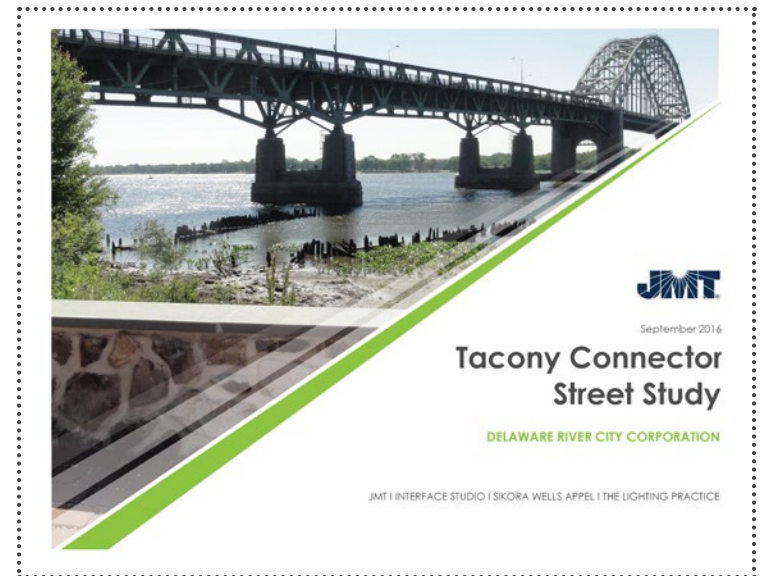




*The City of Philadelphia's current zoning map designates most of the riverfront as industrial (types I1, I2, and I3), shown in purple above. Yellow indicates residential, and peach denotes mixed-use residential. Pink indicates commercial space, and green denotes green open space.*

Some of the goals of the 2005 Master Plan were not executed for various reasons:

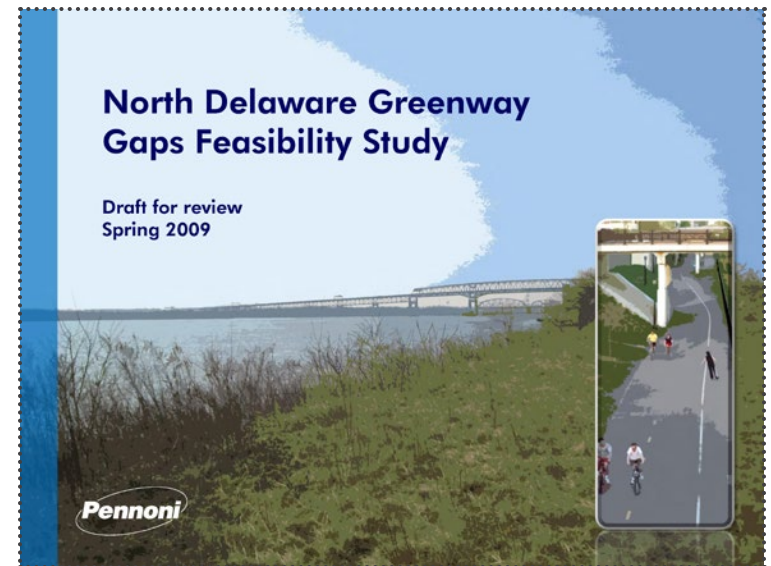
- A proposed “River Road” between Levick and Disston Streets was not advanced due to limited available right-of-way and the lack of need for additional north-south roadway capacity in this area.
- Industrial zoning along the river has grown, while assumed mixed-use zoning and accompanying private green space has not.
- Connector streets remain a secondary priority until the riverfront segments are continuous. Progress has been made in two areas:
  - The 2016 *Tacony Connector Street Study* examined Tacony neighborhood streets, and identified Magee Avenue as the best candidate for linking the neighborhood street grid to the Delaware River. Since this study, the MaST Charter School has constructed a ten-foot-wide concrete path within the former Magee Avenue right-of-way east of State Road, a potential site of riverfront linkage.
  - In 2017, the Pennsylvania Horticultural Society developed a concept design for a sidepath along Castor Avenue between Aramingo Avenue and Delaware Avenue. PennDOT is currently in the final design stages of a sidepath along Castor Avenue between Richmond Street and Delaware Avenue as part of the ongoing Interstate 95 reconstruction work.



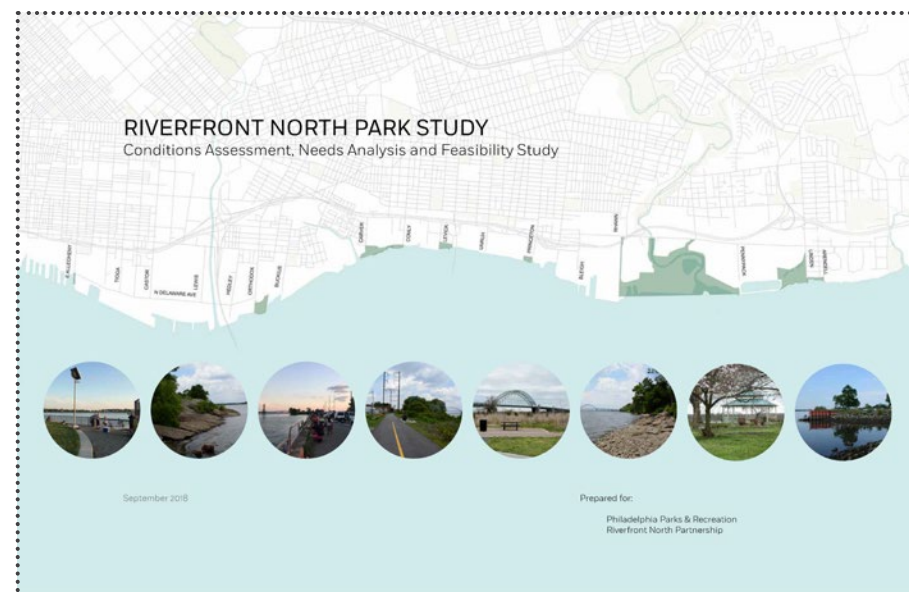


#### Related planning initiatives since 2005:

- North Delaware Greenway Gaps Feasibility Study (2009): Led by RNP, this study examined the three major trail gaps at the time. The Delaware Avenue Extension Phase 2 and the Tacony-Holmesburg Trail are both in final design as of 2020. The third gap is the future Torresdale State Road sidepath and road diet.
- North Delaware Riverfront Greenway Design Guidelines (2009): This document established guidelines for trail width, material selections, plantings, and site furnishings along the entire Riverfront North Greenway Trail system.
- New Kensington Riverfront Plan (2008): The New Kensington Community Development Corporation sponsored this study, which examined the riverfront and connector streets in the Fishtown and Kensington areas. The study was prompted by increased neighborhood development pressures and the upcoming Interstate 95 reconstruction.
- Philadelphia North Delaware River Greenway Ecological Assessment and Prioritization Report (2009): The Pennsylvania Environmental Council sponsored this report, which included a site assessment and prioritization of shoreline rehabilitation work along eight miles of the Delaware River between Frankford Creek and Poquessing Creek.



- Lower Frankford Creek Watershed U.S. EPA Brownfields Area-Wide Plan (2015): This study, led by the Philadelphia City Planning Commission, assessed the potential reuse of three brownfield sites along Frankford Creek. The former Philadelphia Coke and Rohm & Haas sites discussed in this report are located in Bridesburg along the future riverfront greenway route.
- Riverwards District Plan (2015) and North Delaware District Plan (2016): Developed by the Philadelphia City Planning Commission, these two district plans encompass the entire Riverfront North Greenway. Drawing upon neighborhood input, the plans led to the first major rezoning of the area in decades.
- Riverfront North Park Study (2018): An RNP and City of Philadelphia Department of Parks and Recreation co-sponsored initiative, this study aims to guide future investment and development in eight current and future parks along the Delaware River within RNP jurisdiction. **Due to the exhaustive effort undertaken in this study, this Master Plan will not go into detail about specific parks along the Delaware River waterfront.**







*Walking on the Greenway, Image Credit: Riverfront North Partnership.*



# 4 CONNECTIVITY

A robust riverfront greenway trail is fully realized when it is part of a larger, connected multi-modal network. Now that the foundation is set for this continuous eleven-mile trail, linking the greenway to adjacent neighborhoods is fundamental to making the riverfront part of the neighborhood fabric once again. In addition to serving the nearby community, the greenway will open up Northeast Philadelphia to local and regional visitors along a scenic, active transportation corridor.

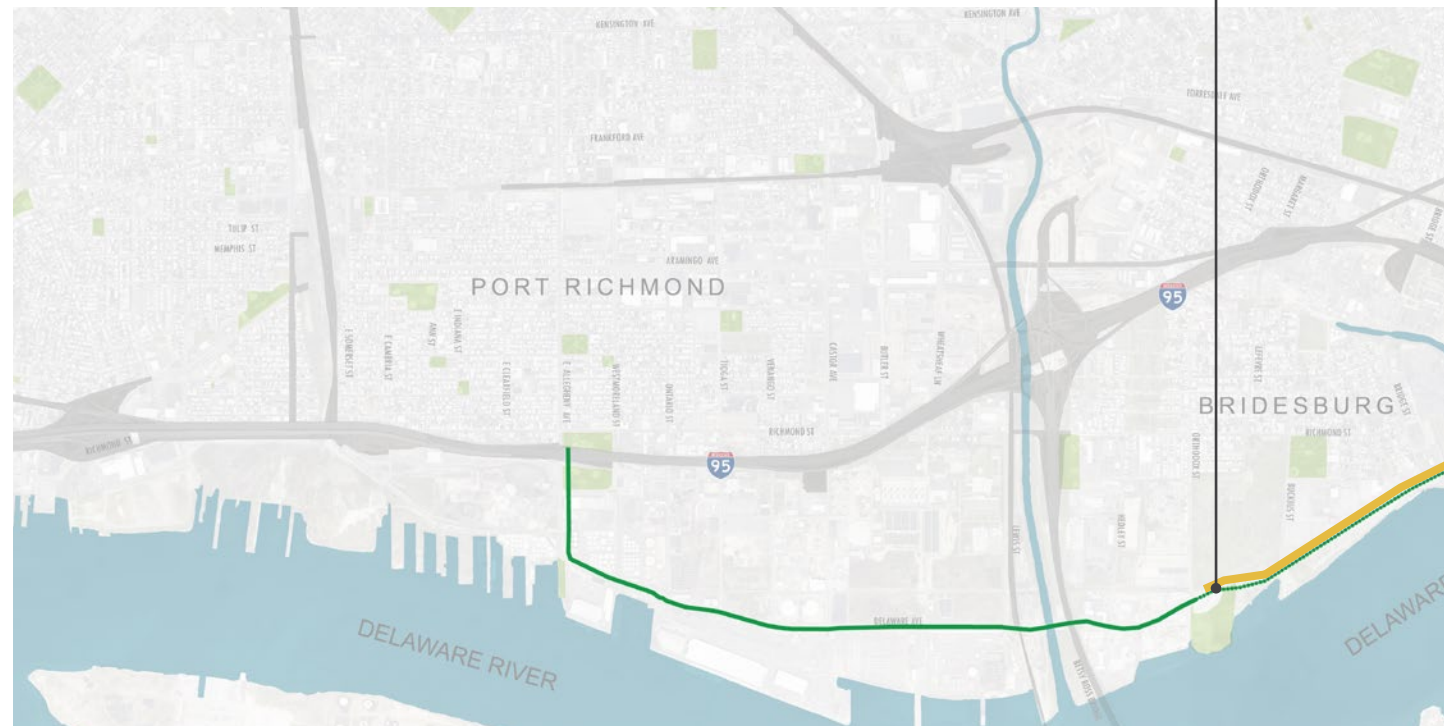


# IMPROVE CONNECTIVITY

The original vision of a continuous Riverfront North Greenway Trail between Allegheny Avenue and Poquessing Creek is currently in the final stages of implementation, and will come to full realization in the early to mid-2020s. The Riverfront North Partnership (RNP) is working with the City of Philadelphia, the Pennsylvania Department of Transportation (PennDOT), and other stakeholders to close the three remaining gaps in this linear trail (see adjacent map).

The completion of the Riverfront North Greenway will position an **eleven-mile**, uninterrupted cycling and walking corridor between riverfront parks and open spaces, and will usher in a large increase of Delaware River waterfront users to Northeast Philadelphia. The next significant series of infrastructure improvements will create safe, convenient, and intuitive **connections** to the riverfront from adjoining neighborhoods.

The Delaware Avenue Extension - Phase 2, currently in design by PennDOT, will feature a twelve-foot-wide paved trail on the river-side of the street and will close the gap between the Port Richmond Trail at Orthodox Street and the Kensington & Tacony Trail at the Frankford Boat Launch. The construction of this project is funded by the Federal Highway Administration.



The Tacony-Holmesburg Trail, located between Princeton Avenue and Pennypack on the Delaware, is currently in design and will be constructed in the early 2020s.

The second phase of the Kensington & Tacony Trail, between Magee Avenue and Princeton Avenue, will be open to the public in 2021.

### Why are external connections important?

Trail systems succeed when they are part of a greater multi-modal network. There are many circulation networks in play along the Riverfront North Greenway:

- Local street-grid network (connector streets)
- SEPTA rail and bus network
- City of Philadelphia trail network
- Regional trail network (Circuit Trails)
- National trail network (East Coast Greenway)
- Tidal Delaware Water Trail



The Riverfront North Greenway Gaps (as of 2020)





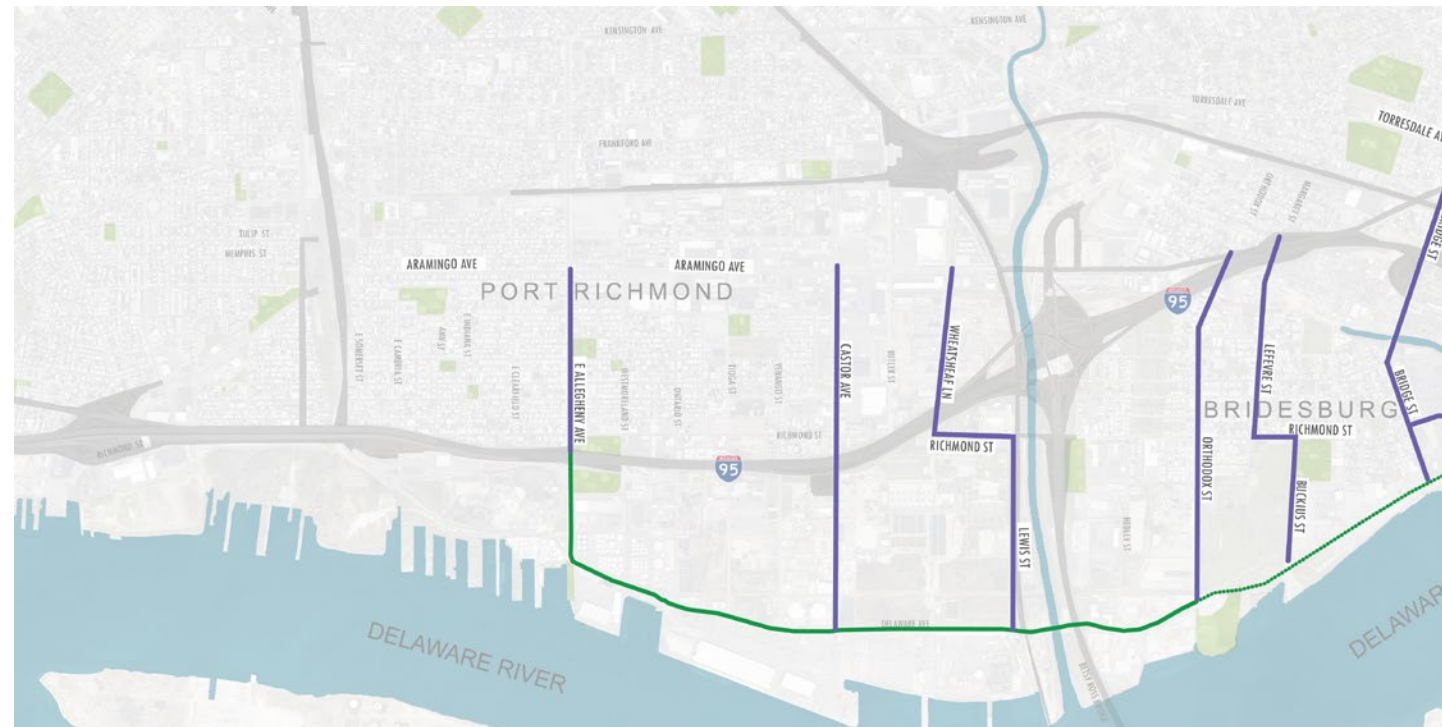
# CONNECTOR STREETS

The Riverfront North Greenway exists in close proximity to many Northeast Philadelphia neighborhoods. Over **296,000** people live within two miles of the greenway. However, the current built environment discourages those who want to walk, run, skate, or bike to the trail. It is imperative that nearby residents have the ability to choose one of these modes to get from their front doors to the trail. This connectivity is an essential function of a resilient transportation network and is required for the activation of the riverfront. The Riverfront North Greenway is currently separated from adjacent neighborhoods by several obstacles:

- Existing industrial land uses that create uninviting frontages against city streets
- Underpasses at Interstate 95 and the Amtrak rail line that can be dark, narrow, and appear unsafe
- Crosswalks on at-grade streets with highway speeds
- A lack of pedestrian- and cyclist-friendly low-speed streets allowing for access to the river from the west side of Interstate 95
- Higher volumes and faster-moving vehicular traffic on the few streets that cross beneath Interstate 95

This master plan identifies a series of connector streets that allow for a safe, comfortable, intuitive, and convenient way to travel by foot, bike, or car to the riverfront from adjacent neighborhoods. The connector streets are spaced between one-half-mile and one-mile apart from one other along the corridor. The spacing and location of these connector streets fully utilize the current built environment, and take into account future development plans, to create

direct connections between neighborhoods and the riverfront. The connector streets in this master plan start at, or near, the riverfront and extend west to the next major commercial street, typically to Aramingo or Torresdale Avenues.







# CONNECTOR STREET CONSIDERATIONS

The enhancement of connector streets to encourage walking and biking to the riverfront will involve a phased series of improvements along each specific corridor. Improvements can range from simply adding wayfinding signage to restructuring the entire cross-section of an existing street.

Because reimagining some of these connector streets can require significant capital to implement, a phased approach is recommended:

- Short-term projects, such as restriping bike lanes, can take place with the City's next scheduled round of repaving.
- Long-term projects, such as new sidepaths and green stormwater infrastructure retrofits, can be designed and constructed as funding opportunities become available.



*The recently completed Section CP2 of the I-95 reconstruction features this concrete formliner pattern at Unruh Street that celebrates the former Disston Saw Works, previously located nearby.*

The following pages detail specific **in-progress, short-term (2020-2025), medium-term (2025-2030), and long-term (2030-2035)** improvements to enhance the walkability and bikeability of each connector street, from Allegheny Avenue to Grant Avenue. A major factor in determining the phasing of these improvements is the on-going reconstruction of the Interstate 95 corridor between Interstate 676 and Cottman Avenue. PennDOT is currently undergoing a multi-decade, phased reconstruction of the highway that will involve numerous improvements to proposed connector streets. The suggested phasing in this chapter takes into account PennDOT's proposed schedule of improvements as of **November 2019**. RNP has worked with PennDOT to recommend the following improvements to all Interstate 95 overpasses that will be reconstructed:

- Improve lighting in all underpasses, and install consistent "wall-washer" white LED lighting
- Design street cartway widths that will accommodate future sidewalk and/or bicycle lane needs
- Continue the use of custom concrete formliners for all underpass abutments to give each connector street a unique identity

The phasing plan in the following pages examines each street and its local context, and provides a specific set of improvements for each street. Additionally, a number of general improvements to connector streets, not detailed in these phasing plans, should be considered by RNP, or other parties such as the Philadelphia Streets Department, as time and opportunity permit. Suggested general improvements include:

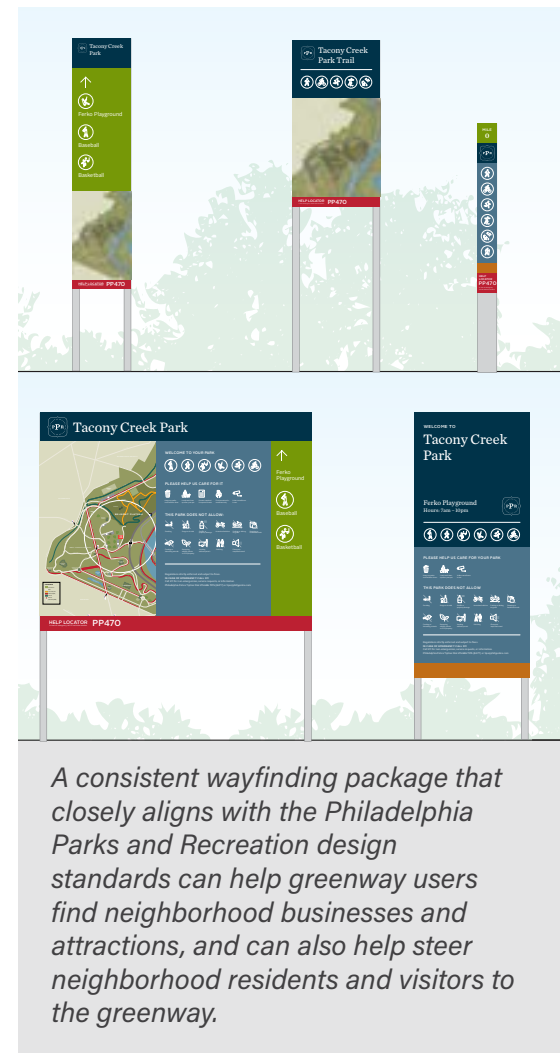
- **Sidewalk Improvements:** Perform an inventory of sidewalk, ADA ramp, and street lighting conditions for all connector streets. Identify where major deficiencies exist and create a phased improvement program to implement over a series of years. This sidewalk improvement program can also plan for new street tree planting.
- **Green Stormwater Infrastructure (GSI):** Work with the Philadelphia Water Department (PWD) to identify and install GSI as part of any significant street improvements implemented on connector streets. As of the publishing of this Master Plan, PWD has no plans for GSI on any connector streets.



- **Landscape Improvements:** RNP should work with stakeholders to complete landscaping improvements for connector streets. This can take on many forms, including:
  - › Rain gardens from PWD green stormwater projects, which would be installed and maintained by PWD;
  - › Street trees, installed and maintained by RNP or other non-profits such as the Philadelphia Horticultural Society Tree Tenders;
  - › Perennial landscaping beds, installed and maintained by neighborhood “Friends of” groups.
- **Signage and Wayfinding:** A comprehensive, branded wayfinding program should be created. This effort should be performed in conjunction with the Philadelphia Parks and Recreation Department, the Philadelphia Streets Department, the Office of Transportation, Infrastructure, and Sustainability (oTIS), and the Philadelphia City Planning

Commission. It is envisioned that the wayfinding will be a two-way effort: it will direct greenway users to attractions and businesses just beyond the riverfront; and it will drive nearby neighborhood residents and commercial business users from nearby Aramingo Avenue or Torresdale Avenue towards the riverfront. Wayfinding located along the commercial strips helps bring new visitors to the riverfront, as the short walking, biking, or driving distances to the greenway can be advertised to those who may not have previously considered making the trip.

- **Building Frontages:** RNP should reach out to building owners to encourage murals on existing building facades and walls along connector streets. Murals can help break up long stretches of buildings and make streets feel more inviting to all users. Funding can be sought for murals on private property that have a public frontage.



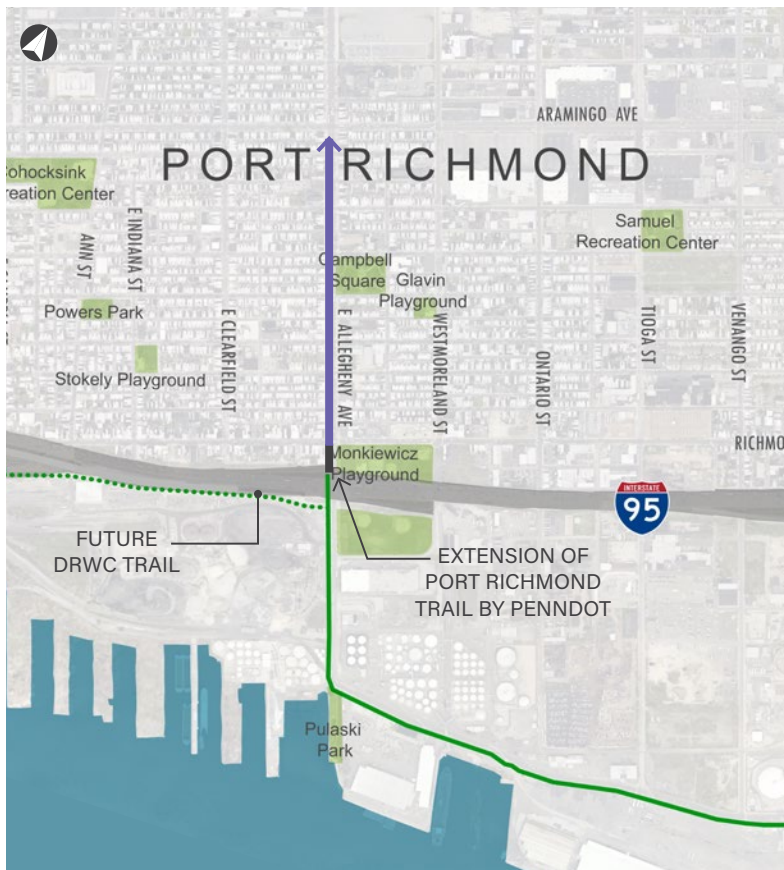
*A consistent wayfinding package that closely aligns with the Philadelphia Parks and Recreation design standards can help greenway users find neighborhood businesses and attractions, and can also help steer neighborhood residents and visitors to the greenway.*



*Streetscape at Hetzell Playground, Image Credit: Philadelphia Atlas.*

# CONNECTOR STREETS: SITE SPECIFIC RECOMMENDATIONS

The following pages detail the site-specific, phased improvement plan for each connector street.  
In-progress work is based upon PennDOT's Interstate 95 construction plans as of **November 2019**.



## Allegheny Avenue

**In-Progress:** As a part of the Interstate 95 reconstruction, PennDOT is currently designing an extension of the Port Richmond Trail west to Richmond Street, so that the transition to and from the bike lanes on Allegheny Avenue will occur at a safer intersection than at the current Interstate 95 ramp stoplight. The street redesign will also examine a narrower driveway apron at Pulaski Park. This work is scheduled to break ground in 2021 as a part of the "AF2" portion of the project.

**Short-Term Improvements:** The existing lane configuration of Allegheny Avenue west of Richmond Street currently consists of five-foot bike lanes with no buffer or protection from the travel lanes. With the next street repaving of Allegheny Avenue, the City of Philadelphia should consider narrowing the existing vehicular lanes to ten-foot wide, and adding bike lane buffers. The city could also investigate a lane configuration that allows for parking-protected bicycle lanes, if possible.

**Long-Term Improvements:** Allegheny Avenue west of Richmond Street contains generous 28' wide sidewalks. This width presents an opportunity to implement a fully protected, sidewalk-level bike lane, green stormwater infrastructure, and enhanced landscaping and streetscaping in an already vibrant commercial corridor.



## Castor Avenue

**In-Progress:** As part of the Interstate 95 reconstruction, PennDOT is currently performing a redesign of Castor Avenue between Richmond Street and Delaware Avenue. As a part of this reconstruction, a sidepath is proposed along the northern side of the right-of-way. This sidepath would be completed as a part of the “AF2” portion of the Interstate 95 project, scheduled to break ground in 2021.

**Short-Term Improvements:** The section of Castor Avenue west of Richmond Street is on the City’s Vision Zero High Injury Network. In conjunction with implementation of traffic calming measures, the City of Philadelphia should consider the removal of on-street parking on the north side of the street in order to install protected bicycle lanes.

**Long-Term Improvements:** The city could consider an extension of the sidepath trail west of Richmond Street.



Graphic from I-95 Section AFC Report, “Castor Avenue Near Neighbors Meeting Presentation,” Image Credit: 6/26/2019, PENNDOT and US Dept of Transportation Federal Highway Administration.



*Frankford Creek Greenway, Image Credit: The Philadelphia Atlas.*

## Frankford Creek Greenway (Lewis Street/ Richmond Street/Wheatsheaf Lane)

The Frankford Creek Greenway between Delaware Avenue and Aramingo Avenue was completed in 2018, and consists of a shared-use sidepath along Lewis Street and Wheatsheaf Lane, and on-street shared traffic/bicycle lanes on Richmond Street. The City of Philadelphia plans to install protected bicycle lanes on Richmond Street between Lewis Street and Berkshire Street, which will help connect Bridesburg to the Frankford Creek Greenway.

**Medium- or Long-Term Improvements:** Due to geometric limitations, a sidepath was not possible on Richmond Street during the construction of the Frankford Creek Greenway. In the future, an “All Ages and Abilities” bicycle facility on Richmond Street between Lewis and Wheatsheaf may be revisited. This could be a new sidepath or bicycle lanes. This street also lacks basic ADA-compliant sidewalks in some areas, and a sidewalk replacement program should be instituted.

## Orthodox Street

Orthodox Street will serve as a vital connector street between the Bridesburg neighborhood and the future Bridesburg Riverfront Park. The City of Philadelphia recently installed traffic calming speed cushions on Orthodox Street between Richmond Street and Bath Street, but further efforts are needed to make

this a comfortable walk or bike ride for neighborhood residents. Orthodox Street west of Richmond Street acts as a one-way pair with Lefevre Street.

**In-Progress:** PennDOT's reconstruction of Orthodox Street under Interstate 95 will allow for a future eastbound buffered bike lane to be striped by the City of Philadelphia.

**Short-Term Improvements:** The City of Philadelphia should consider:

- A one-way buffered bike lane eastbound between Aramingo Avenue and Richmond Street
- Green-backed sharrows between Richmond and Bath Streets
- Two-way marked bike lanes or green-backed sharrows east of Bath Street

**Medium-Term Improvements:** The 2016 Bridesburg Riverfront Park Report contained a concept plan of a redesign of Orthodox Street east of Garden Street, which consists of a ten-foot wide sidepath and rain garden bumpouts to induce traffic calming. The rain garden bumpouts are an opportunity to treat stormwater runoff, and will be designed in coordination with the Philadelphia Water Department.



*A rendering of a potential buffered bike lane on Orthodox Street.*

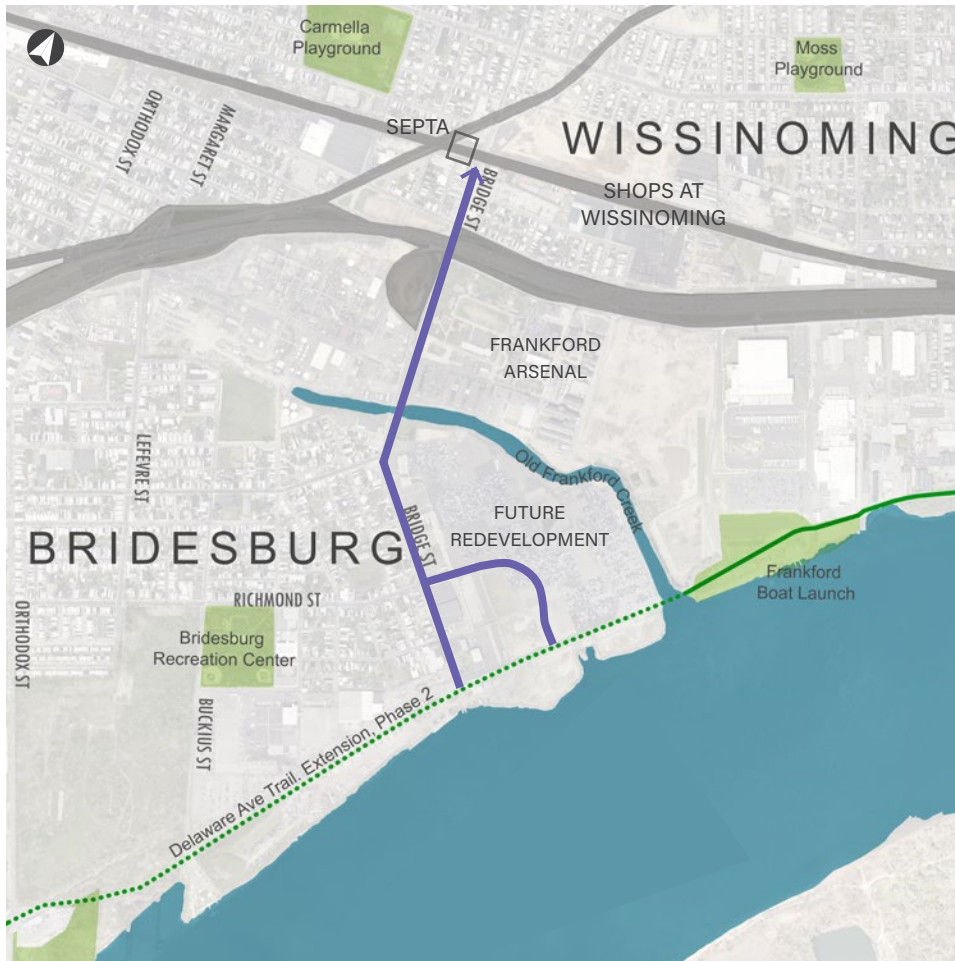




## Buckius/Lefevre/Margaret Streets

**In-Progress:** PennDOT is currently designing the Delaware Avenue Extension north of Orthodox Street. The design and construction of this project will include an extension of Buckius Street between its current terminus at Bath Street and Delaware Avenue. This Buckius Street extension will include a sidepath. Construction is due to be completed in the mid-2020s.

**Short-Term Improvements:** The City of Philadelphia should consider a one-way buffered bike lane westbound on Lefevre and Margaret Streets between Richmond Street and Aramingo Avenue. This would be the one-way complement to Orthodox Street.



## Bridge Street

**Long-Term Improvements:** Bridge Street has the potential to be a connector between the greenway and many other sites: several Bridesburg businesses, the future redevelopment of the Rohm & Haas and Frankford Arsenal sites, the Franklin Towne Charter High School, the Bridesburg SEPTA Regional Rail Station, and the recently constructed Shoppes at Wissinoming. PennDOT plans to remove the existing northbound Interstate 95 on-ramp by the mid-2020s as a part of the “BS2” portion of the Interstate 95 reconstruction. Once this ramp is removed, traffic should decrease on Bridge Street, and may present an opportunity to reimagine the corridor to make it much more walkable. The implementation of a road diet and streetscaping could help provide a link between the riverfront and residential areas, major redevelopment sites, and businesses.





*This rendering, looking towards the Delaware River, shows what a neighborhood greenway concept could look like on Van Kirk Street, as it transitions between the shared lanes east of Keystone Street to the protected bike lanes west of Keystone Street.*



## Wissinoming Connector

The Wissinoming Connector is the name being given to a series of improvements proposed along Van Kirk Street, Tacony Street, and the future Delaware Avenue Extension.

In the early 2020s, PennDOT plans to reconstruct the Interstate 95 bridge over Van Kirk Street as a part of the “BS1” project. The cartway width will be 36’ wide, which can allow for the installation of protected bike lanes between Keystone Street and Tacony Street by the City of Philadelphia after bridge construction is complete.

In the mid-2020s, the “BS2” project will construct the new Delaware Avenue interchange at Interstate 95, which will include the addition of a sidepath from the Frankford Boat Launch. PennDOT also plans on constructing a sidepath parallel to Tacony Street between Aramingo Avenue and Van Kirk Street.

A series of traffic calming elements such as curb bumpouts, speed tables, and pavement markings can be installed on Van Kirk Street between Torresdale Avenue and Keystone Street to slow vehicular traffic and give bicyclists and pedestrians priority. This concept, illustrated in the rendering to the left, is known as a neighborhood greenway. **Neighborhood greenways** are streets that feature low-cost interventions that make the street feel less stressful for all users.

## Magee Avenue

The Riverfront North Partnership initiated a planning study in 2015 to determine a specific connector street in the Tacony neighborhood. The *Tacony Connector Street Study* details the process and analysis that were used to decide that Magee Avenue made the most sense to use from a connectivity, user comfort, and cost perspective.

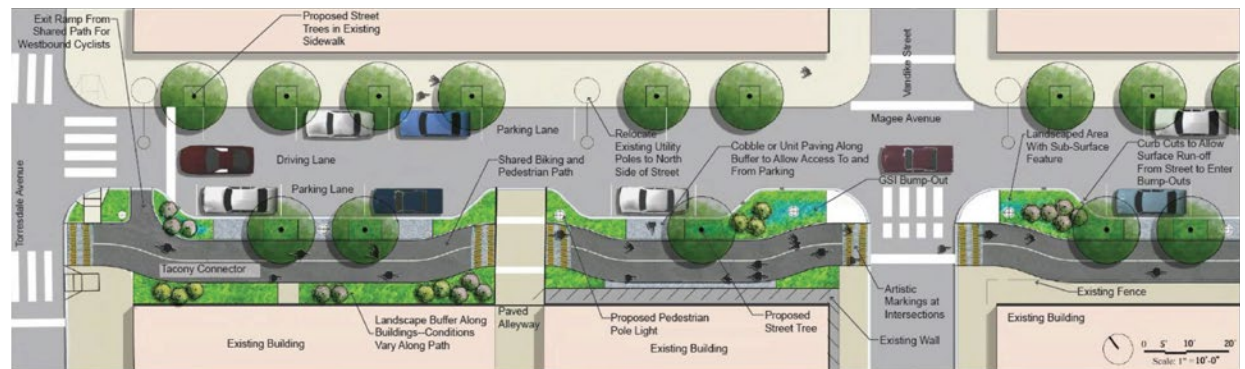
In line with this study, the MaST Charter School recently installed a ten-foot wide trail east of New State Road and approximately halfway to the river. RNP is currently seeking funding to extend this trail down to the river, where it will intersect the Kensington & Tacony Trail, and provide needed bicycle and pedestrian connections to Lardner's Point Park.

**Short-Term Improvements:** The City of Philadelphia should consider a neighborhood greenway concept on Magee between Torresdale Avenue and Keystone Street, with the transition to protected bike lanes east of Keystone. This work should be done as the connection between MaST and the K&T Trail is completed.

**Long-Term Improvements:** RNP should work to obtain funding to implement the full sidepath and green stormwater improvements as envisioned in the *Tacony Connector Street Study*.

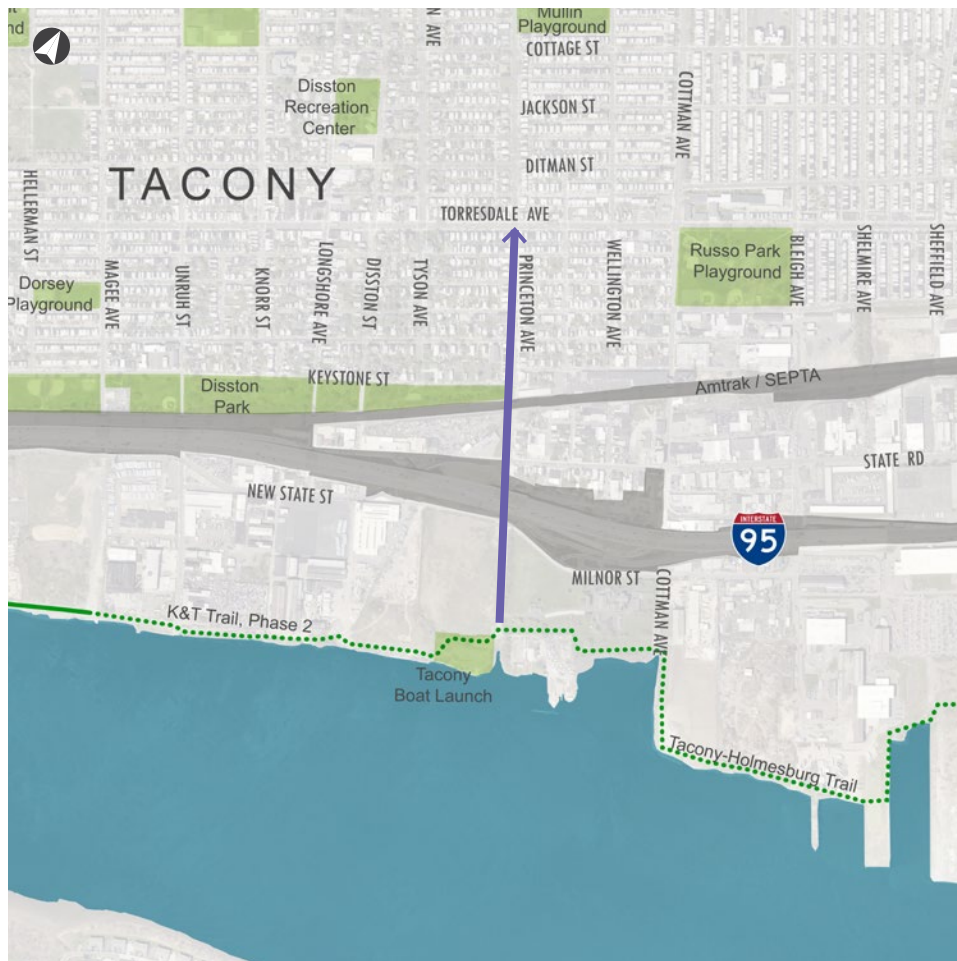


*An example of the short-term neighborhood greenway concept on Magee Avenue at Hegerman Street.*



*A Typical Tacony Connector Street Configuration: Magee Avenue is reimagined as a multi-modal, green street in the 2016 *Tacony Connector Street Study*.*

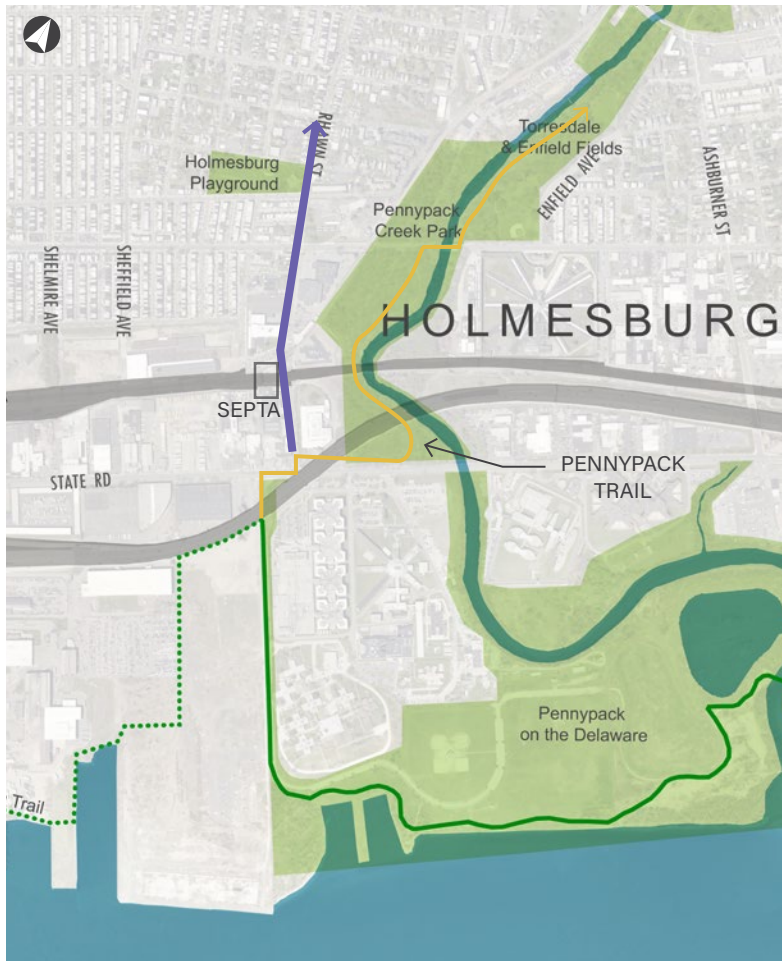




## Princeton Avenue

Princeton Avenue between Torresdale Avenue and State Road was reconstructed in 2009. The reconstruction included the conversion from one-way traffic to two-way, and added bicycle lanes, curb bumpouts, and trees. However, the bicycle lanes end abruptly before State Road, and the sidewalks are narrow in some places.

**Short-Term Improvements:** PennDOT is currently working on improvements to Princeton Avenue near State Road. **NV5/RNP to get an update from Elaine on this soon.** Princeton Avenue will be reconstructed between Milnor Street and the Tacony Boat Launch, which will include a sidepath to connect to the K&T and Tacony-Holmesburg Trail. This work is currently slated to be completed by the developer of the property at the southeast corner of Princeton Avenue and Milnor Street.



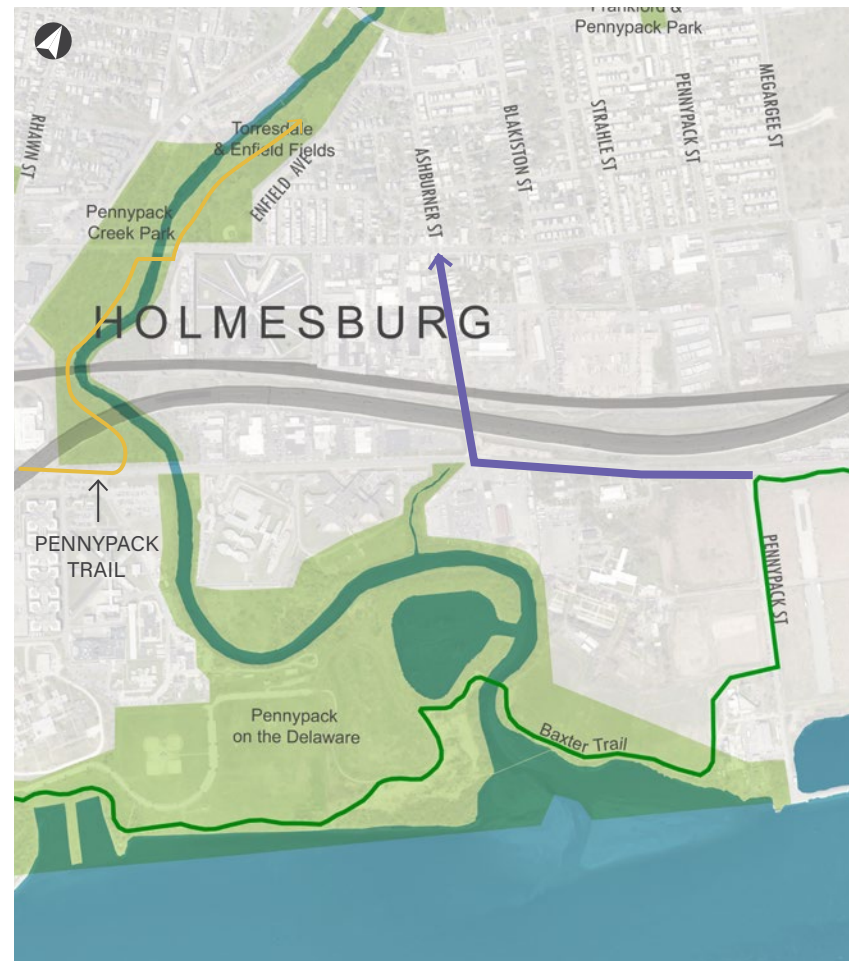
## Rhawn Street (Pennypack Trail)

**In-Progress:** The Pennypack Connector project, which will close the Pennypack Trail gap at the intersection of State Road and Rhawn Street, is due to be constructed in 2020. The section of the Pennypack Trail between State Road and the southern end of Pennypack on the Delaware Park is due to be reconstructed as a part of the Tacony-Holmesburg Trail in the early 2020s.

**Medium- to Long-Term Improvements:** In addition to the installation of new ADA pedestrian ramps, sidewalks could potentially be widened, and street trees installed wherever possible on Rhawn Street between Torresdale Avenue and State Road. The possibility of a multi-use path spur to the Holmesburg Junction SEPTA Regional Rail Station from the Pennypack Trail should also be explored (see the 2015 *Trenton Line Access Study* by DVRPC). In addition, wayfinding at the intersections of Rhawn Street and Torresdale Avenue and at Frankford Avenue can help residents connect more easily to the Pennypack Trail.

## Ashburner Street/State Road

**Long-Term Improvements:** Since Ashburner Street ends at State Road, a potential sidepath along State Road could connect Ashburner Street to the current Baxter Trail. Improvements could also include the completion of sidewalks on Ashburner Street, along with traffic calming installations, since this street is on the City's *Vision Zero High Injury Network*.

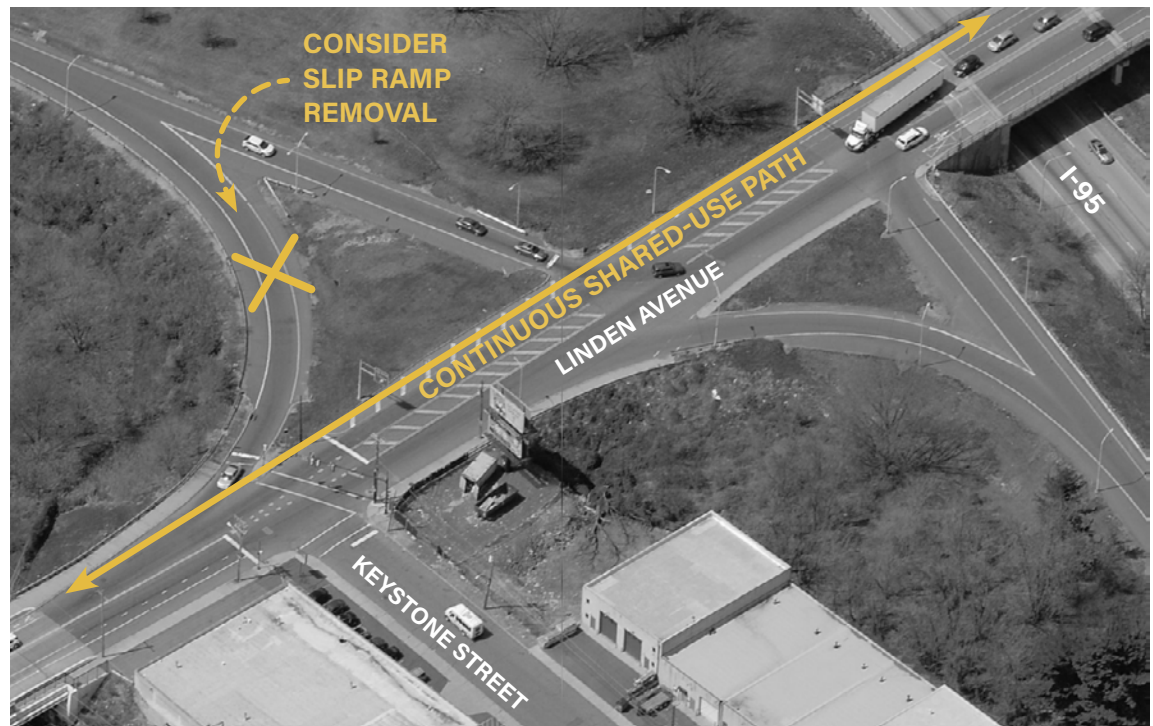




## Linden Avenue

This street is also on the City's *Vision Zero High Injury Network*. The City recently installed buffered bicycle lanes as part of a repaving project.

**Long-Term Improvements:** The slip ramps to and from Interstate 95 on Linden Avenue present a major barrier to safe biking and walking. In coordination with PennDOT, there should be consideration to remove the slip ramps and reconfigure the interchange so that both sides of the street are safe to cross. A protected, landscaped sidepath on Linden Avenue would provide a better way to connect Torresdale residents to the riverfront and Pleasant Hill Park. This sidepath would link to the existing bicycle network and Jacobs Playground at Torresdale Avenue and could potentially extend as far west as Frankford Avenue.



*Long-term updates to Linden Avenue could include a reconfiguration of one side of the street to add a shared-use path and remove the high-speed slip lanes.*

## Grant Avenue/Poquessing Creek Greenway

The Philadelphia City Planning Commission (PCPC) recently obtained funding for a *Poquessing Creek Greenway Feasibility Study*. It is assumed that this greenway corridor will be located within the Grant Avenue right-of-way between Interstate 95 and State Road. The PCPC previously made a series of recommendations in the 2016 *North Delaware District Plan* in this vicinity, which also includes a connection to the Torresdale SEPTA Station.

**Short-Term Improvements:** Following the completion of the *Poquessing Creek Greenway Feasibility Study*, the trail connection between Interstate 95 and Glen Foerd should be prioritized. The city should also investigate the feasibility of extending the existing Grant Avenue bike lanes east of Frankford Avenue.

### Improvements to the Area Around Torresdale Station



Several improvements are recommended for the underpass at Grant Avenue and the Torresdale Station. These include making the pedestrian and bicycle realms safer as well as providing for stormwater management.



There is no pedestrian access to Glen Foerd at the intersection of Grant Avenue and State Road, but it presents the best opportunity for a point of entry close to the Torresdale Station.

The "Philadelphia2035: North Delaware District Plan" contains conceptual improvements to Grant Avenue near State Road (March 2016), Image Credit: Philadelphia City Planning Commission.

## The following table summarizes potential infrastructure improvements to connector streets.

Additional Connectivity action items are summarized on pages 88 - 89.

Summary of Connector Street Action Items (Organized by Timeline)	Timeline	Responsible Party and Key Partners	Costs by RNP or Others	Next Steps for RNP
Allegheny and Castor Avenues east of Richmond Street to be reconstructed by PennDOT	In-progress: construction scheduled for 2021-2023	<u>PennDOT</u>	<i>Funded by FHWA/PennDOT</i>	Maintain communication with PennDOT through Sustainable Action Committee
Add buffered or protected bike lanes to Allegheny Avenue west of Richmond Street	Short-term: when street is due for repaving	<u>OTIS, Streets</u> , PennDOT, RNP	<i>Performed as part of routine city repaving</i>	Maintain communication with OTIS on connector street requests
Install protected bicycle lanes, traffic calming, and street trees to Castor Avenue (Aramingo to Richmond)	Short-term: ideally, before I-95 Section AF2 is completed (2023)	<u>OTIS, Streets</u> , PennDOT, RNP	<i>Potentially performed as part of routine city repaving</i>	Maintain communication with OTIS on connector street requests
Orthodox Street bike lanes and traffic calming	Short-term: (2020-2025)	<u>OTIS, Streets</u> , RNP	<i>Performed as part of routine city repaving</i>	Maintain communication with OTIS on connector street requests
Buckius Street and sidepath to be constructed as part of Delaware Avenue Extension (east of Bath Street)	Short-term: (2020-2025)	<u>PennDOT</u> , RNP, OTIS	<i>\$1.5 million, (sidepath cost only). Fully funded by FHWA/PennDOT</i>	Maintain communication with PennDOT through Sustainable Action Committee
Install buffered bike lane on Lefevre/Margaret Streets (Richmond to Aramingo)	Short-term: (2020-2025) ideally, before Delaware Ave. extension is completed (2025)	<u>OTIS, Streets</u> , RNP	<i>Performed as part of routine city repaving</i>	Maintain communication with OTIS on connector street requests
Install sidepath for Wissinoming Connector (from Van Kirk/Tacony St. intersection to K&T Trail)	In-progress: construction scheduled for 2022-2024 as part of I-95 Section BS2	<u>PennDOT</u> , RNP	<i>Funded by FHWA/PennDOT</i>	Ensure maintenance agreement between PennDOT and city is executed
Finish 10' wide trail between MaST Charter School and K&T Trail, and implement Neighborhood Greenway on remainder of Magee	Short-term: (2020-2025)	<u>RNP, OTIS</u> , MaST, Streets, PPR	<i><u>Varies, depending on scope: \$50,000-\$200,000</u></i>	Currently working on fundraising for design costs for segment between MaST and K&T
Complete Princeton Avenue improvements between Amtrak and Boat Launch	Short-term: (2020-2025)	<u>PennDOT, Private Developer</u> , RNP	<i>Funded by FHWA/PennDOT and private developer of warehouse</i>	Maintain communication with PennDOT through Sustainable Action Committee and continue outreach with private developer
Replace/repair sidewalks on Richmond Street where necessary (Wheatsheaf to Frankford Creek)	Medium-term: (2025-2030)	<u>Streets</u> , Property Owners	<i>\$50,000-\$100,000</i>	Encourage Streets to enforce sidewalk maintenance by commercial property owners
Orthodox Street sidepath and green stormwater	Medium-term: (2025-2030)	<u>RNP, OTIS</u> , PWD, Streets	<i>Varies, depending on scope (\$750,000-\$1,250,000); funded by combination of <u>grants</u> obtained by RNP and PWD funding</i>	Continue conversations with PWD on funding GSI installation
Implement Wissinoming Connector Neighborhood Greenway on Van Kirk Street (Torresdale to Tacony)	Medium-term: (2025-2030) after I-95 Section BS2 is completed	<u>RNP, OTIS</u> , Streets	<i><u>Varies, depending on scope: (\$25,000-\$100,000)</u></i>	Obtain funding for design and construction of improvements
Widen sidewalks and add street trees to Rhawn Street (Torresdale to State)	Medium-term: (2025-2030)	<u>RNP</u> , Streets	<i><u>\$50,000-\$100,000</u></i>	Identify a neighborhood group to assist with tree planting
Allegheny Avenue Streetscape and Green Stormwater Infrastructure (west of Richmond)	Long-term: (2030-2035)	<u>PCPC</u> , RNP, PWD, OTIS, Streets	<i>Varies, depending on scope (&gt;\$1,000,000); funded by combination of <u>grants obtained by RNP and PWD funding</u></i>	Work with PCPC and PWD to initiate a project to reimagine the streetscape

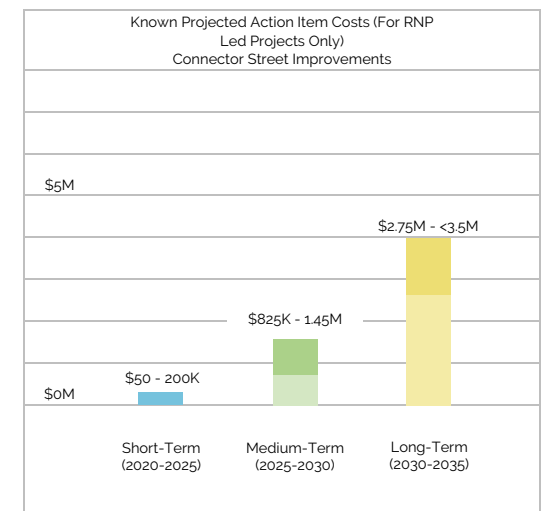


Summary of Connector Street Action Items (Organized by Timeline)	Timeline	Responsible Party and Key Partners	Costs by RNP or Others	Next Steps for RNP
Castor Avenue sidepath and Green Stormwater Infrastructure (Aramingo to Richmond)	Long-term: (2030-2035)	<u>PWD</u> , <u>OTIS</u> , Streets, RNP	Varies, depending on scope (\$500,000-\$1,000,000); funded by combination of <u>grants obtained by RNP and PWD funding</u>	Continue conversations with PWD on funding GSI installation
Install "All Ages and Abilities" bicycle facility on Richmond Street (Wheatsheaf to Lewis)	Long-term: (2030-2035)	<u>OTIS</u> , <u>Streets</u> , PPR, RNP	Varies, depending on scope (\$10,000-\$350,000)	Work with OTIS and Streets to determine bicycling and parking needs in the corridor
Bridge Street Road Diet/Streetscaping (Delaware Avenue to Aramingo)	Long-term: (2030-2035)	RNP, Bridesburg neighborhood organizations, Arsenal businesses, PCPC, PWD, OTIS, Streets, PennDOT	Varies, depending on scope (>\$1,000,000)	Identify responsible party and scope of work to be done
Sidepath and Green Stormwater on Magee Avenue between Torresdale Avenue and New State Road (Tacony Connector)	Long-term: (2030-2035)	<u>RNP</u> , <u>OTIS</u> , PWD, Streets, PennDOT	Varies, depending on scope (>\$1,000,000); funded by combination of <u>grants obtained by RNP and PWD funding</u>	Reengage the community to ensure the planned sidepath is still desirable
Trail spur between Pennypack Trail and Holmesburg Junction SEPTA	Long-term: (2030-2035)	<u>RNP</u> , <u>OTIS</u> , PPR, SEPTA, private property owner	\$250,000-\$500,000	Connect with SEPTA to gauge interest in connection; may depend on future development of private parcel along tracks
Ashburner Street Connector Street and State Road sidepath connection	Long-term: (2030-2035)	<u>RNP</u> , <u>OTIS</u> , Streets,	Varies, depending on scope (\$500,000-\$1,000,000)	Reach out to Holmesburg neighborhood to gauge needs for connector street and desired capital improvements
Linden Avenue Sidepath/Slip Ramp Removal (Frankford to Pleasant Hill Park)	Long-term: (2030-2035)	<u>RNP</u> , <u>PennDOT</u> , <u>OTIS</u> , Streets	Varies, depending on scope (<\$1,000,000)	Discuss potential project with PennDOT and OTIS

#### Notes:

Costs shown are estimated construction costs unless otherwise indicated. Estimates are high-level ranges based on comparable projects in 2020 dollars (escalation/inflation are not included). Further study should be performed to determine more detailed costs at the time of study. Costs borne by RNP are assumed to be obtained through grants. Long-term cost sources not yet identified are not underlined or *italicized*.

Abbreviations: Riverfront North Partnership (RNP), Philadelphia Parks & Recreation Dept. (PPR), Streets Department (Streets), Mayor's Office of Transportation, Infrastructure, and Sustainability (OTIS), Philadelphia Water Department (PWD), Philadelphia City Planning Commission (PCPC).



# SEPTA RAIL AND BUS NETWORK

One of the most efficient ways to travel across the city and region to the Riverfront North Greenway is by SEPTA rail or bus. While SEPTA does not currently access the riverfront directly, stops and stations are located along connector streets, and allow for a short walk or bike ride to the greenway.

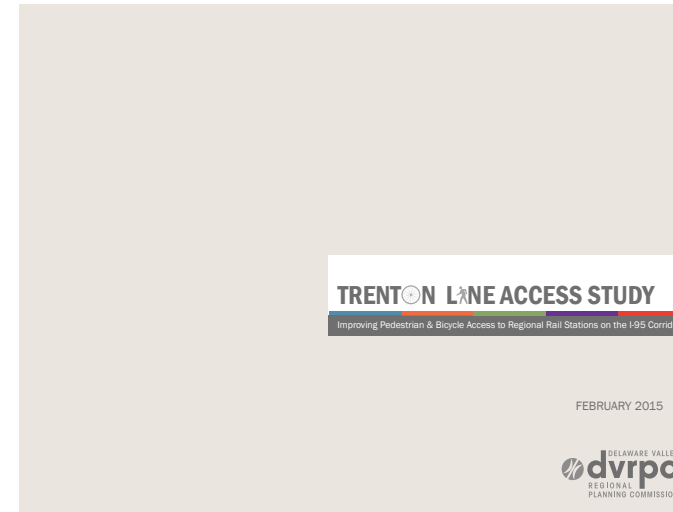
SEPTA is currently undergoing a bus network redesign, which may impact some of the bus routes near the Riverfront North Greenway. It is unknown at this time what impacts, if any, may occur to current routes, but it should be emphasized that major stops and transfer points should be located along connector streets. Bus shelters should also be installed along State Road, Tacony Street, and Richmond Street where routes stop at connector streets.

In addition, three Trenton Line Regional Rail stations are located along connector streets, including:

- Bridesburg (Bridge Street)
- Holmesburg Junction (Rhawn Street)
- Torresdale (Grant Avenue)

The Tacony rail station is not located along a connector street but is a short walk from both Magee and Princeton Avenues.

The *Trenton Line Access Study*, completed by DVPRC in 2015, details a series of improvements that could be made at the Holmesburg Junction and Torresdale rail stations to improve walking and bicycling access to the stations. These improvements are in line with recommendations made in this Master Plan.



# TRAIL NETWORKS

When completed, the Riverfront North Greenway will be a roughly eleven-mile trail parallel to the Delaware River, which will link walkers and cyclists to many parks, natural open spaces, and other riverfront attractions. However, this trail will not act as a standalone path, but rather, it will be part of a system of local and regional networks, and part of the significant interstate East Coast Greenway trail.

The City of Philadelphia has outlined the city trail network in the *Philadelphia Trail Master Plan*, first released in 2013, and subsequently updated periodically. The trail network includes over 200 miles of existing and proposed trails across the city, including the Riverfront North Greenway. Several city trails intersect with the Riverfront North Greenway, including:

- **Delaware River Trail:** This portion of trail is under the purview of the Delaware River Waterfront Corporation (DRWC), and includes the extension of the riverfront trail south of Allegheny Avenue. At this time, due to active use of the riverfront between Lehigh Avenue and Allegheny Avenue, it is

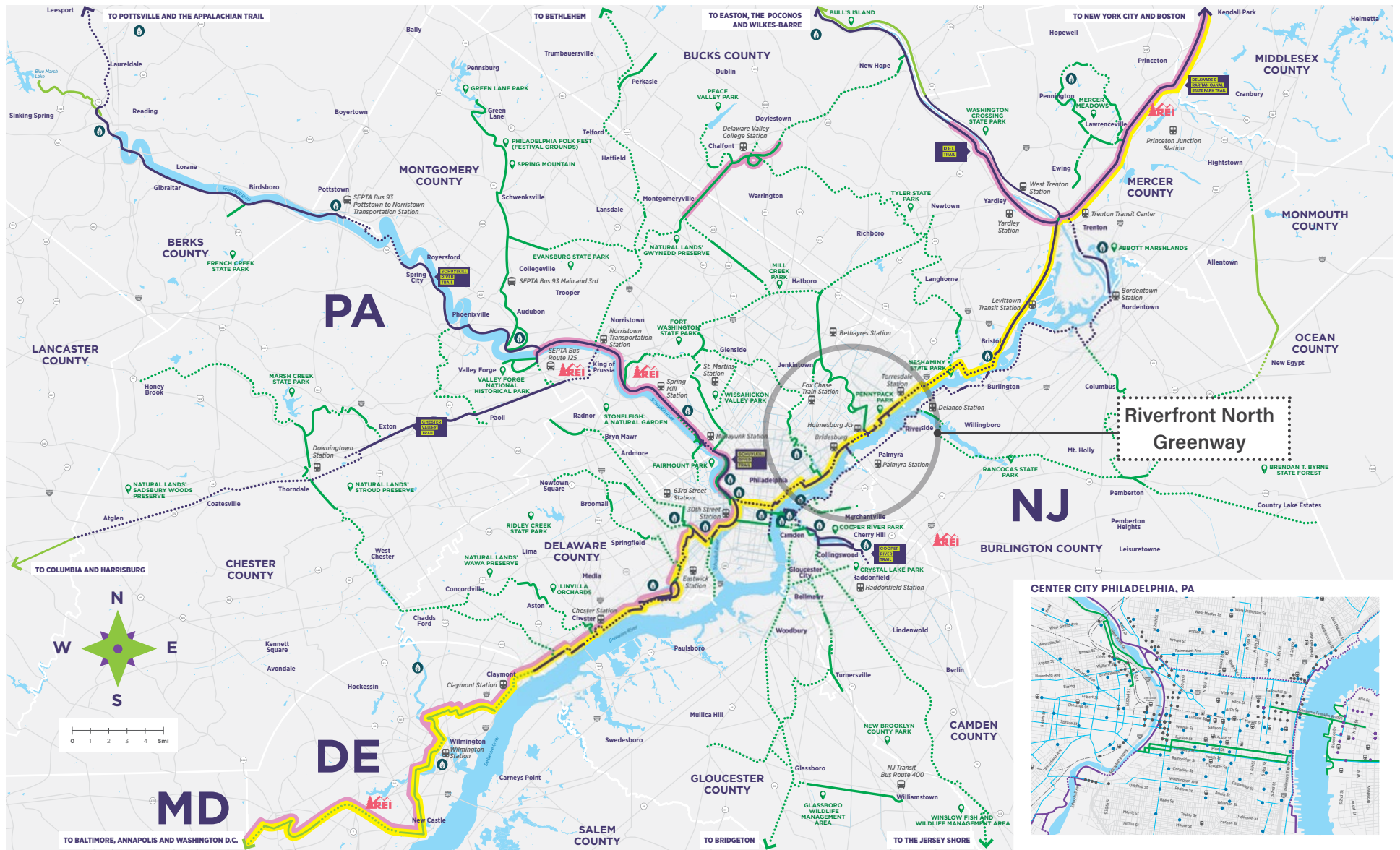
proposed that the trail south of Allegheny Avenue will use the current Allen Street detour ramp, which is a one-lane paved road along Interstate 95 constructed by PennDOT in 2015. PennDOT's need for the detour ramp will end by the early-2020s, and it is assumed that control of the ramp will be transferred to the City of Philadelphia or DRWC. It is anticipated that this transition of use can occur before the completion of the remaining Riverfront North Greenway gaps. The Delaware River Trail will continue south to Pier 70 Boulevard in South Philadelphia.

- **Frankford Creek Greenway:** The Frankford Creek Greenway connection to the Riverfront North Greenway was completed in 2018. Portions of this greenway north of Aramingo Avenue are currently in development. The Frankford Creek Greenway will eventually connect to the Tacony Creek Trail and extend into Montgomery County.
- **Pennypack Trail:** The Pennypack Connector project, which will close the Pennypack Trail gap at the intersection

of State Road and Rhawn Street, is due to be constructed in 2020. The section of the Pennypack Trail between State Road and the southern end of Pennypack on the Delaware Park is due to be reconstructed as part of the Tacony-Holmesburg Trail in the early 2020s. The existing Pennypack Trail otherwise continues north through the City of Philadelphia and extends into Montgomery and Bucks Counties.

- **Poquessing Creek Greenway:** The Philadelphia City Planning Commission (PCPC) recently obtained funding for a Poquessing Creek Greenway Feasibility Study, which will study a potential route along the creek and close gaps of currently constructed trail. It is assumed that this greenway corridor will be located within the Grant Avenue right of way between Interstate 95 and State Road, and connect to Glen Foerd.





The Circuit Trails Map shows the network of trails supporting and surrounding the Riverfront North Greenway, Circuit Trails Map, used with permission from the Circuit Trails Coalition. From the Circuit Trails website: [www.circuittrails.org](http://www.circuittrails.org). Published September 2019.

The **Circuit Trails** network is a regional trails network made of 800 miles of current and future trails across nine counties in the greater Philadelphia region. The entire Riverfront North Greenway has been designated as a Circuit Trail, along with the Delaware River Trail, the Frankford Creek Greenway, and the Pennypack Trail. Additional Circuit Trails that intersect the Riverfront North Greenway include:

- **Tacony-Palmyra Bridge Sidepath:** The Tacony-Palmyra Bridge is the only Delaware River crossing between the Ben Franklin Bridge and the Lower Trenton Bridge (a distance of about 30 miles) that has a specified bicycle and pedestrian sidepath. The connection between the Riverfront North Greenway and the Tacony-Palmyra Bridge would require a dedicated path through Lardner's Point Park and the busy, complex interchange at the base of the bridge. Work has been ongoing between DVRPC, the Bicycle Coalition of Greater Philadelphia, and other stakeholders to develop a dedicated, safe connection to the bridge through the existing interchange.
- **Bensalem Greenway:** Bensalem Township plans to extend the riverfront trail north of the Philadelphia County line at Poquessing Creek. The township plans to install a sidepath on the south side of State Road, which will link up with the Riverfront North Greenway.

The **East Coast Greenway** is a national, interstate trail that extends from Key West, Florida, to the Canadian border at Calais, Maine, and is considered the urban complement to the Appalachian Trail. The entire Riverfront North Greenway, once completed, will be part of the East Coast Greenway. The East Coast Greenway through Philadelphia also includes sections of the Cobbs Creek Trail, Schuylkill River Trail, and Delaware River Trail.



*The East Coast Greenway Alliance Map*

# FUTURE RIVERFRONT NORTH TRAIL ENHANCEMENTS

As stated at the beginning of this chapter, there are three remaining gaps in the Riverfront North Greenway that are due to be completed by the early to mid-2020s. Once these three gaps are bridged, it will allow for a continuous bicycle and pedestrian route along the entire Riverfront North Greenway. Aside from these already planned improvements, there are a few longer-term potential trail enhancements that would benefit the greenway.

**Baxter Water Treatment Plant:** Riverfront North Partnership has expressed interest in someday creating a direct trail connection between the Baxter Trail at Pennypack Street and Pleasant Hill Park through the current Baxter Water Treatment Plant. This would involve a trail being constructed on or adjacent to the current maintenance driveway between the plant's raw water basin and the underground water storage reservoirs. The Philadelphia Water Department (PWD) has security concerns about public access to this area, and has indicated that they are not open to the idea at this time. However, there are several instances of public trails adjacent to water treatment facilities across the United States, including Grandville, MI, Brick, NJ, and West Hartford, CT. The Ashokan Rail Trail, for example, runs along a reservoir that provides drinking water for New York City. It is hoped that the conversation between PWD and RNP can continue in the future if interest is renewed in a direct trail connection here.

*See [page 85](#) for the Baxter Water Treatment Plant's location*



**State Road Sidepath:** While the current bicycle lanes and sidewalk on State Road between Linden Avenue and Poquessing Creek (Bucks County Line) are considered a part of the Riverfront North Greenway, future plans call for a fully separated off-road trail. The alternatives for an off-road trail here were studied in the 2009 *North Delaware Greenway Gaps Feasibility Study*. There are two options to make this trail connection:

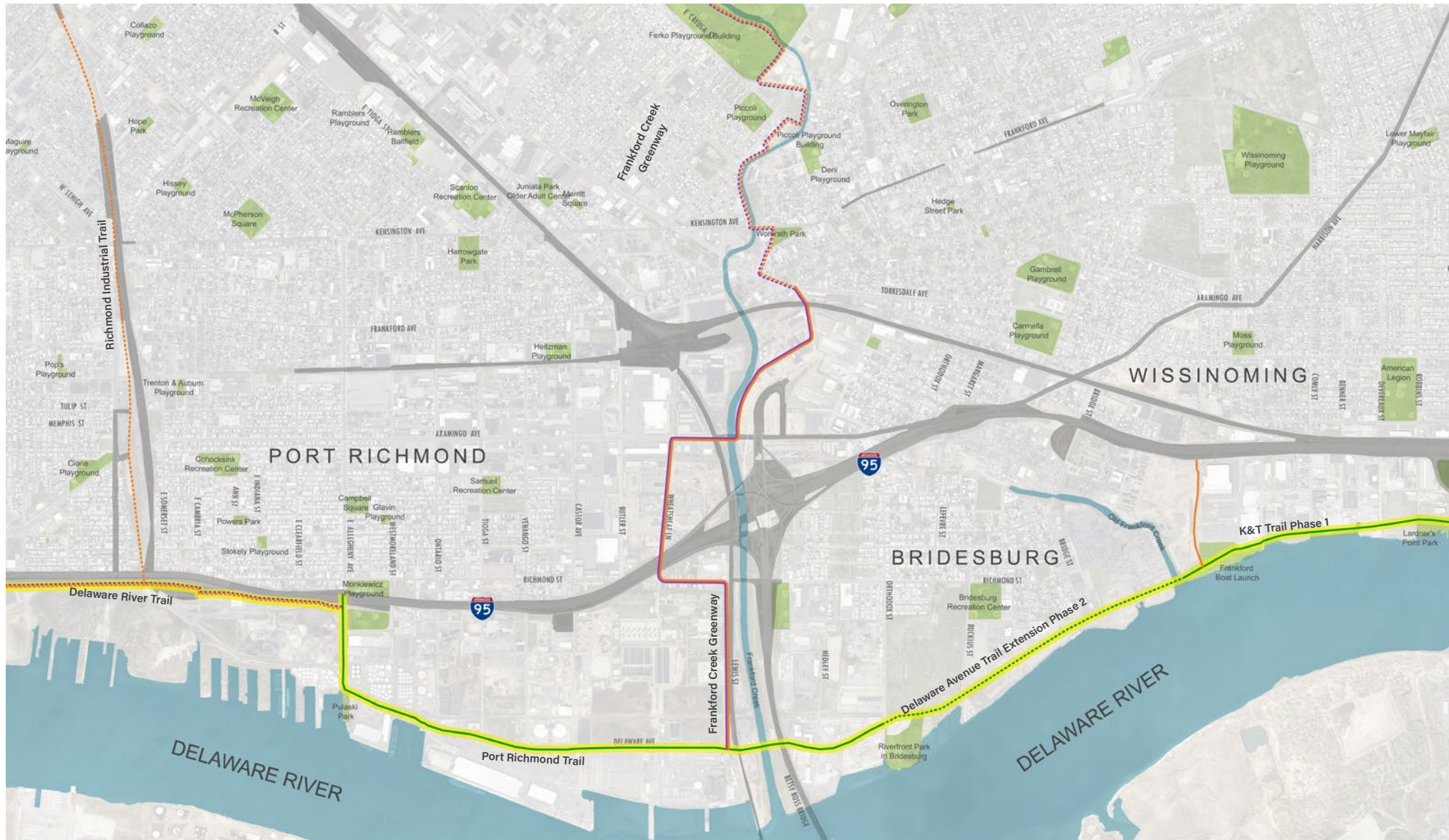
- **Option 1** The recommended alignment is a new sidepath along the eastern side of State Road. This would involve a road diet on State Road by removing the existing bicycle lanes and a parking lane.
- **Option 2** An alternative to this sidepath route would involve moving the trail along the riverfront between Linden Avenue and Fitler Street. This would require easements on three privately-owned multi-family residential communities.

Given the length of time since the initial study, it may be prudent to reexamine the route alternatives in the future before a final decision is made on an eventual off-street trail route.

See [page 85](#) for the location of these alternatives



# TRAILS











*Kayak group on the Delaware, Riverfront North Partnership*

# WATER CONNECTIONS

## Tidal Delaware Water Trail and Watercraft Access

The Tidal Delaware Water Trail consists of 56 miles of accessible tidal river from Trenton, New Jersey to Marcus Hook, Pennsylvania. The water trail links parks, historic sites, boat access, and natural resources. Access to the Delaware River by boat can be achieved at the following locations:

- **Frankford Boat Launch:** Located near the mouth of Old Frankford Creek, this boat ramp caters mainly to motor boats, although non-motorized craft are allowed to launch. Sufficient parking is available. Due to the Dietz & Watson land swap in 2014, and the construction of the K&T Trail in 2016, the site has been somewhat reconfigured. The site, formerly owned by the Pennsylvania Fish and Boat Commission, is now owned by the City of Philadelphia.
- **Tacony Boat Launch:** This facility, located at the end of Princeton Avenue, will soon provide river access for motorized and non-motorized boats. Riverfront North Partnership has obtained funding for the design of a public space that will contain

a boat launch for canoes and kayaks, and act as a trailhead for other greenway users. Design will begin in 2020 with construction to follow after securing further funding.

- **Pleasant Hill Park:** The boat ramp at Pleasant Hill Park on Linden Avenue is open to both motorized and non-motorized watercraft.
- **Glen Foerd:** The Glen Foerd Board of Directors has received grant funding from the William Penn Foundation to install a new non-motorized boat launch on site.

The boating facilities along the Riverfront North Greenway provide public access to the Delaware River that is otherwise hard to find in the City of Philadelphia, and allow easy access to intertidal habitats on both the Pennsylvania and New Jersey sides of the river. With Petty's Island Preserve due to be open to the public soon, utilizing non-motorized watercraft will be an exciting way to explore another restored habitat.

## Ferry Access

The original 2005 Master Plan discussed the possibility of passenger ferry landings, specifically in Bridesburg and at the St. Vincent's site in Tacony. Due to the lack of viable facilities and demand, no ferry service has materialized in Northeast Philadelphia. Currently, the only ferry service on the Delaware River is the RiverLink Ferry, which shuttles passengers between Penn's Landing and the Adventure Aquarium in Camden. The Master Plan for the Central Delaware discusses the possibility of ferry service or water taxis stopping at more points along the Delaware River along Center City and beyond, but efforts to start a service have been hindered. If the Delaware River Waterfront Corporation, or another third party, were to commence a multi-stop ferry or water taxi service, the Riverfront North Partnership would be interested in investigating landings to link the Northeast Philadelphia riverfront with attractions near Center City and Camden.



The table below summarizes Connectivity-focused action items discussed in this chapter.

Summary of Connectivity Action Items	Timeline	Responsible Party and Key Partners	Costs by RNP or Others	Next Steps for RNP
Complete K&T Trail Phase 2	In-progress: trail to break ground in 2021	RNP, PPR, Streets, OTIS	<u>\$1.5 million (funds secured)</u>	City to manage construction
Complete Tacony-Holmesburg Trail	Short-term: (2020-2025)	RNP, PPR, Streets, OTIS	<u>\$5 million (partially funded)</u>	RNP and PPR to oversee design and ROW acquisition
Complete Delaware Avenue Extension, Phase 2, and accompanying trail	In-progress: projected to be open in 2025	<u>PennDOT</u>	<u>\$3.4 million (trail only, fully funded by FHWA/PennDOT)</u>	PennDOT to manage design and construction
Implement Connector Streets (refer to separate table on page 76 & 77)	Varies	Varies	Refer to separate table on page 76 & 77	
Implement comprehensive wayfinding program on trails and connector streets	Medium-term: (2025-2030)	RNP, PPR, Streets, OTIS, PCPC	<u>\$75,000-\$175,000 for study, design, fabrication and installation</u>	Discuss wayfinding strategy with key parties; engage wayfinding consultant
Perform sidewalk, ADA, lighting inventory for Connector Streets	Medium-term: (2025-2030)	RNP, Streets, OTIS	<u>\$20,000-\$50,000</u>	Engage consultant for inventory or consider using RNP staff
Initiate discussions with building owners for murals (specifically Castor Ave. and Orthodox Street)	Medium-term: (2025-2030)	RNP, Mural Arts	<u>Costs to be covered by grants or partnership with Mural Arts</u>	Reach out to specific property owners
Encourage rail station updates at Holmesburg Jct. and Torresdale rail stations in line with DVRPC study	Long-term: (2030-2035)	SEPTA, DVRPC	<i>To be determined</i>	Meet with SEPTA to discuss rail station upgrades and wayfinding project
Complete connection to DRWC section of the Delaware River Trail (via current PennDOT detour on Allen Street)	As soon as PennDOT is finished with use of the detour ( <b>update from Elaine on timeline?</b> )	<u>DRWC</u> , PennDOT, OTIS	n/a	Must wait for PennDOT to complete current phase of GR4 ( <b>to be confirmed by PennDOT</b> )
Work with Bensalem Township to make transition between State Road bike lanes and future ECG route along State Road at Bucks County line	Unknown	RNP, Streets, PennDOT, OTIS, Bensalem Twp.	<i>Costs for pavement markings and barriers (if any) within cartway to be funded by Streets or PennDOT</i>	Confirm timeline with township and coordinate with OTIS/Streets
Complete Pennypack Connector project at State Road to close gap in Pennypack Trail	Short-term: (2020-2025)	<u>PPR, OTIS</u> , Streets, PennDOT	<u>\$500,000 (funded by CMAQ grant)</u>	City currently managing design and construction
Poquessing Creek Greenway Feasibility Study to study connection between Riverfront North and Holy Family University	Short-term: (2020-2025)	<u>PCPC</u> , PPR, RNP, OTIS	<u>Partially funded by \$25,000 DCNR grant to PCPC</u>	RNP will act as a stakeholder to PCPC
Create safe connection between K&T Trail and Tacony-Palmyra Bridge to complete Delaware River Heritage Trail gap	Short-term: (2020-2025)	<u>PennDOT</u> , Burlington Co. Bridge Commission, RNP, DVRPC, Bicycle Coalition, Streets, OTIS	To be determined	Convene meeting with all key parties to discuss concepts

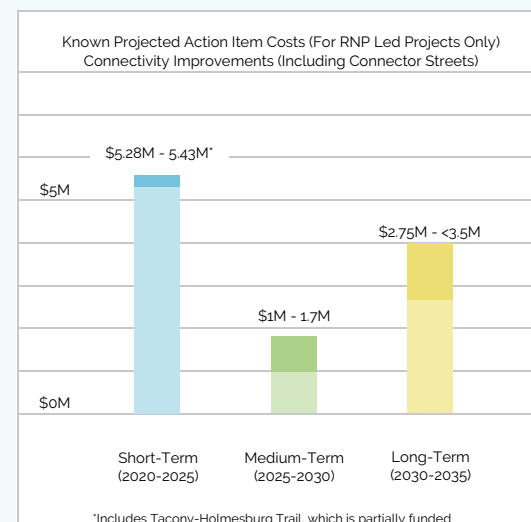


Summary of Connectivity Action Items	Timeline	Responsible Party and Key Partners	Costs by <u>RNP</u> or <i>Others</i>	Next Steps for RNP
Explore future trail along Baxter Water Treatment Plant reservoir	Long-term: (2030-2035)	<u>RNP</u> , OTIS, PPR, PWD	<u>To be determined</u>	No immediate need to pursue this trail alternative
Explore future separated sidepath along State Road or waterfront trail north of Linden Avenue	Long-term: (2030-2035)	<u>RNP</u> , OTIS, Streets, PennDOT	<u>To be determined</u>	No immediate need to pursue this trail alternative
Redesign of Tacony Boat Launch into a trailhead and non-motorized boat launch	Short-term: (2020-2025)	<u>RNP</u> , <u>PPR</u>	\$232,000 for design; <u>Construction unknown</u>	Engage design consultant
Installation of non-motorized boat launch at Glen Foerd	Short-term: (2020-2025)	<u>Glen Foerd</u> , PPR	<i>Glen Foerd has obtained over \$500,000 in grants for the construction of a dock and launch</i>	n/a
Encourage third party to investigate ferry stops in Northeast Philadelphia, with connections to Center City and Camden	Long-term: (2030-2035)	<u>RNP</u> , <u>private third-party operator</u>	<i>Unknown, likely to be borne or shared by third-party</i>	Discuss future interest with DRWC, Cooper's Ferry Partnership, etc.

#### Notes:

Costs shown are estimated construction costs unless otherwise indicated. Estimates are high-level ranges based on comparable projects in 2020 dollars (escalation/inflation are not included). Further study should be performed to determine more detailed costs at the time of study. Costs borne by RNP are assumed to be obtained through grants. Long-term cost sources not yet identified are not underlined or *italicized*.

Abbreviations: Riverfront North Partnership (RNP), Philadelphia Parks & Recreation Dept. (PPR), Streets Department (Streets), Mayor's Office of Transportation, Infrastructure, and Sustainability (OTIS), Philadelphia Water Department (PWD), Philadelphia City Planning Commission (PCPC).



# MARJAM

SUPPLY COMPANY

- DRYWALL
- CEILINGS
- ADHESIVES
- INSULATION
- LUMBER
- FLOORING
- ROOFING
- DOORS
- MASONRY
- TOOLS
- FASTENERS
- HARDWARE

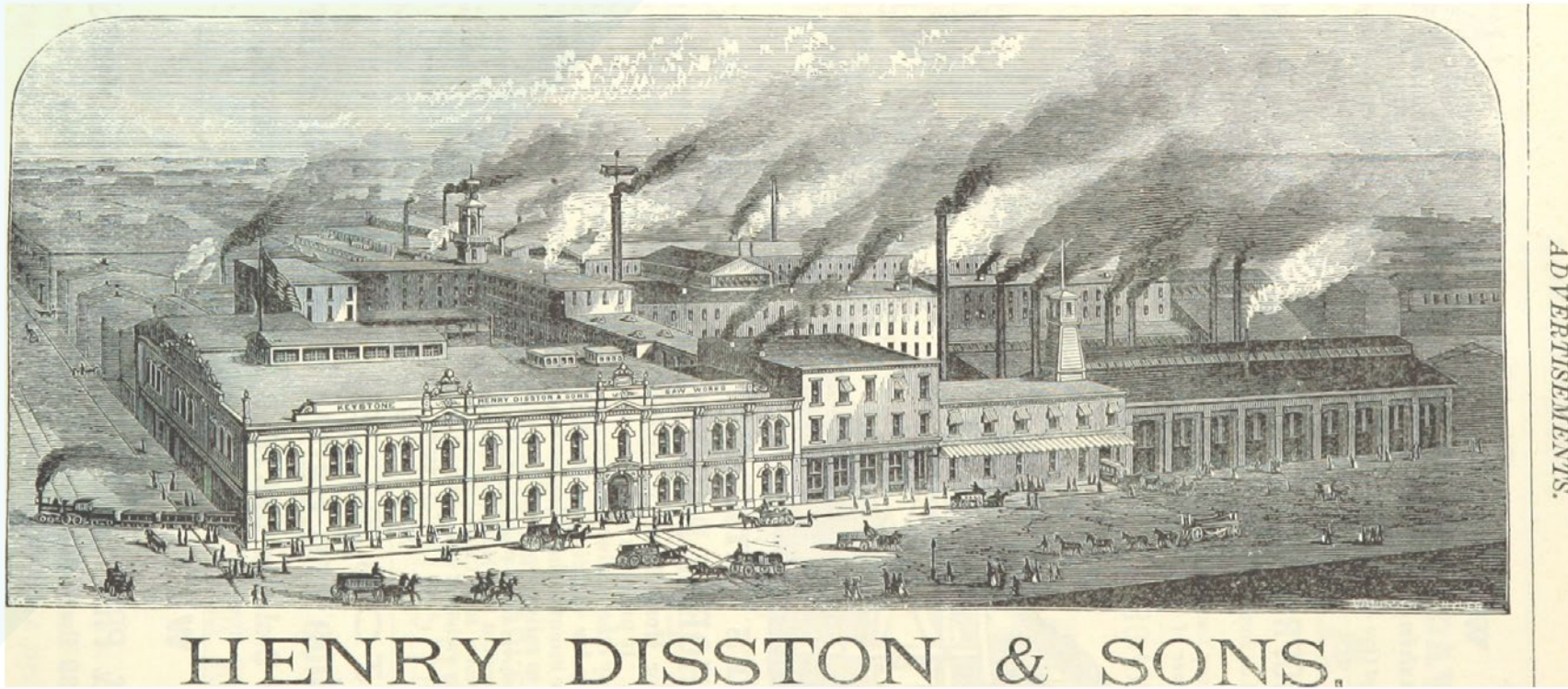


# 5 FUNCTIONALITY

The legacy of industry along the Delaware River presents a unique set of challenges and opportunities for the execution of a robust waterfront greenway. Riverfront North Partnership must continue to be flexible as it works to create a fully functional riverfront amid dynamic industrial, manufacturing, warehousing, and other land use activities.



# LAND USE CONTEXT



*The Henry Disston & Sons Keystone Saw Works in Tacony once employed 2,500 workers and covered 64 acres.  
Image Credit: page 748 of 1776 "American Enterprise". 1876. Burley's United States Centennial Gazetteer and Guide.  
Charles Holland. Original held and digitized by the British Library.*

As discussed in Chapter 2, the historical land uses of the Delaware River waterfront in Northeast Philadelphia over the past 150+ years have generally been industrial in nature, especially south of Rhawn Street. Businesses such as the Tacony Chemical Works, Henry Disston & Sons, and Quaker City Rubber Company once lined the riverfront. The location of these businesses were ideal; they were

located close to dense residential areas that had an abundant supply of labor, and they were also located along a major shipping channel, which also included access to railroads for shipping to inland areas.

Since those industries first appeared in the late 19th century, many changes have occurred to the names and types of businesses, but the six-mile stretch of the Delaware River waterfront between Allegheny



*Remnants of the area's industrial past create visual interest along the greenway.*

Avenue and Rhawn Street is still home to a variety of industrial, manufacturing, and processing businesses. However, numerous vacant lots now proliferate the riverfront, emblematic of the decline of manufacturing in the second half of the 20th century.

North of Rhawn Street, the land uses along the river tend to be recreational, institutional, or residential. These land uses have remained relatively constant over the past century. The Baxter Water Treatment Plant, originally known as the Torresdale Filter Plant, opened in 1907. The correctional facility complex has been located near the mouth of Pennypack Creek since the late 19th Century, with several additions since.

Prior to the Great Recession, multiple mixed-use residential developments were proposed for several of the large, vacant lots along the river. The original *2005 North Delaware Riverfront Greenway Master Plan* reflected

these ambitious redevelopment plans along the riverfront. However, as the economy contracted in the later part of 2000s, the plans to build were withdrawn.



## Riverfront Zoning

In 2011, the Philadelphia City Planning Commission started an ambitious process to revamp the city's zoning code and mapping. The *River Wards District Plan* was released in 2015, followed by the *North Delaware District Plan* in 2016. These two District Plans (which border each other at the Old Frankford Creek channel) include all of the Delaware River waterfront overseen by the Riverfront North Partnership. Some of the empty parcels of land, previously zoned to support residential or mixed-use zoning prior to the recession, were remapped for industrial land uses.

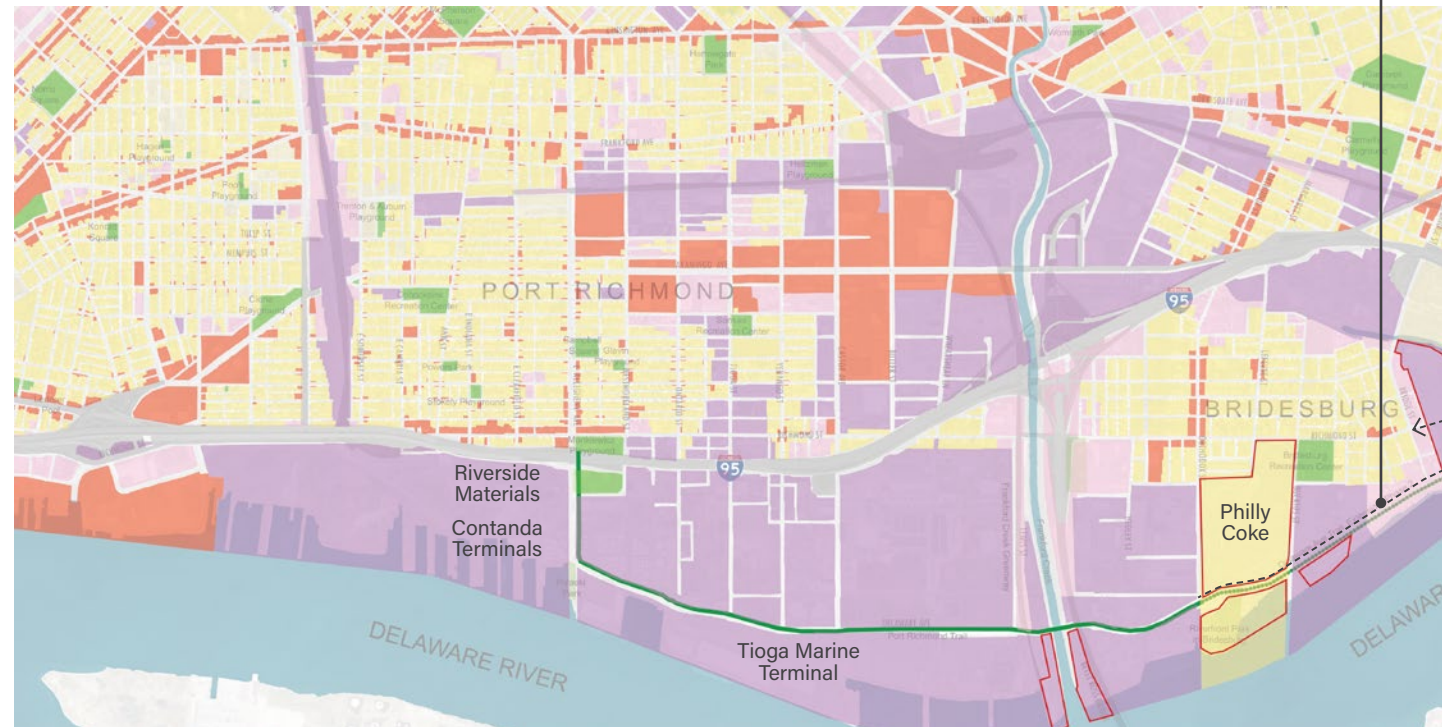
The desired land use along the Northeast Philadelphia riverfront presents an interesting case in zoning. Relative to the riverfront greenway, it is desirable to have some housing development in close proximity to the trail and parks. This nearby population gives the corridor a sense of activation and safety, especially during off-peak hours. However, other important factors informed this remapping of the riverfront to favor industrial uses.

Many stakeholders view the riverfront between Allegheny Avenue and Rhawn

Street as some of the most valuable land in the city for industrial uses, primarily because of:

- The proximity to Interstate 95 for transportation purposes
- The separation of the industrial properties from adjacent neighborhoods (due to Interstate 95 and passenger rail lines)
- The historical contamination of the properties make them much more amenable to industrial uses than commercial or residential
- The 100-year floodplain limits the ground floor commercial and residential uses in some areas

Approximate location of the Delaware Avenue Extension, anticipated completion 2025.



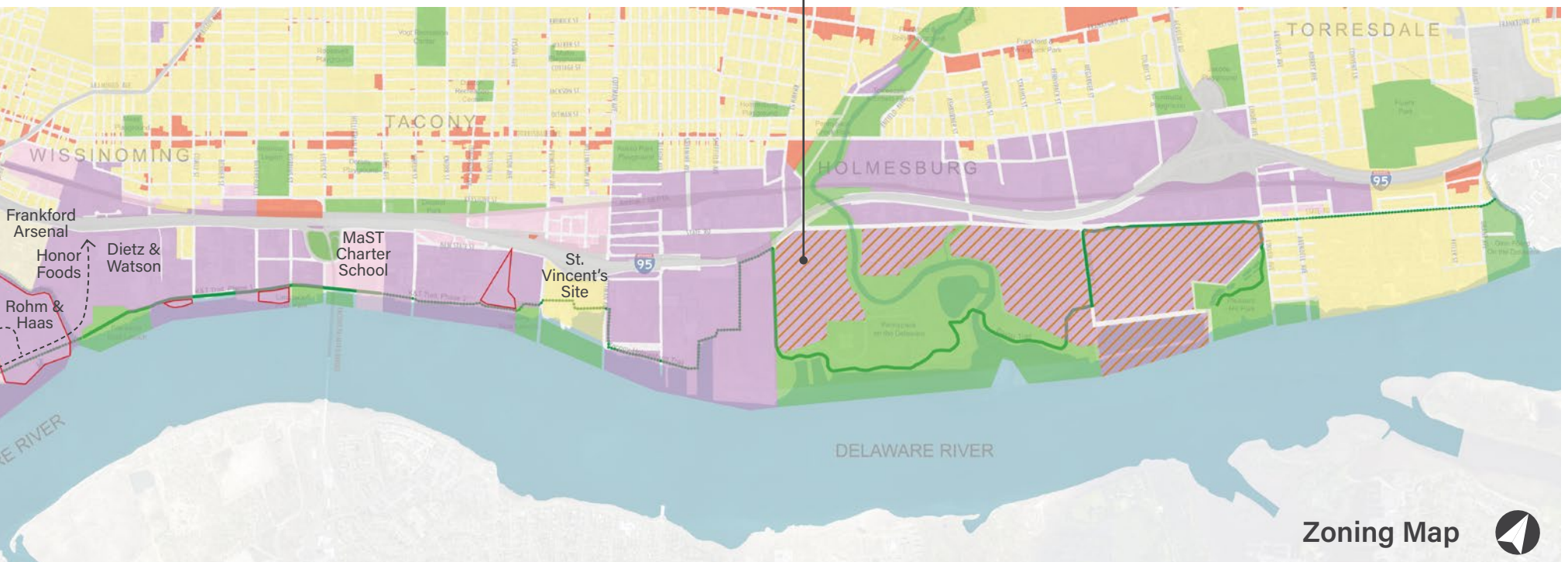


When viewed on a city-wide scale, Philadelphia has a limited amount of developable space for industrial uses. With the increase in e-commerce, warehousing space is becoming more valuable, and distributors are eager to be located closer to a growing population base. Production space of all sizes is being sought by new and growing manufacturing firms within the City, who desire to be close to creative young people. The Delaware Avenue extension, due to be opened by the mid-2020s, will open up several riverfront parcels for development. The riverfront greenway provides a valuable amenity for employees at these industrial properties and enhances active transportation options for these facilities.

Although designated Industrial, the parcels shown with diagonal hatching are used in a more institutional capacity. This area includes the correctional facility.

#### Riverfront Zoning (as of 2020)

-  Industrial Commercial Mixed-Use
-  Industrial Residential Mixed-Use
-  Special Purpose - Entertainment
-  Special Purpose - Institutional
-  Special Purpose - Parks & Open Space
-  Commercial / Commercial Mixed-Use
-  Industrial / Industrial Mixed-Use
-  Zoned Industrial w/ Institutional Function
-  Residential / Residential Mixed-Use
-  Major Vacant Riverfront Parcels



# A GREENWAY THAT SERVES ALL

The Riverfront North Partnership supports future redevelopment of currently vacant parcels with uses that will have a cooperative relationship with the riverfront greenway. Several examples of successful redevelopment along the Delaware River in Northeast Philadelphia include:

- The “land swap” among the city, the Pennsylvania Fish and Boat Commission, and the Philadelphia Industrial Development Corporation that resulted in the successful relocation of a major Dietz & Watson facility to the city, and preserved riverfront land for what will soon become the Riverfront Park in Bridesburg.
- North of the Tacony-Palmyra Bridge, the recently constructed MaST Charter School, which opened in September 2019. School officials are enthusiastic about the educational opportunities the greenway will offer, and its potential as a future transportation alternative to New State Road.

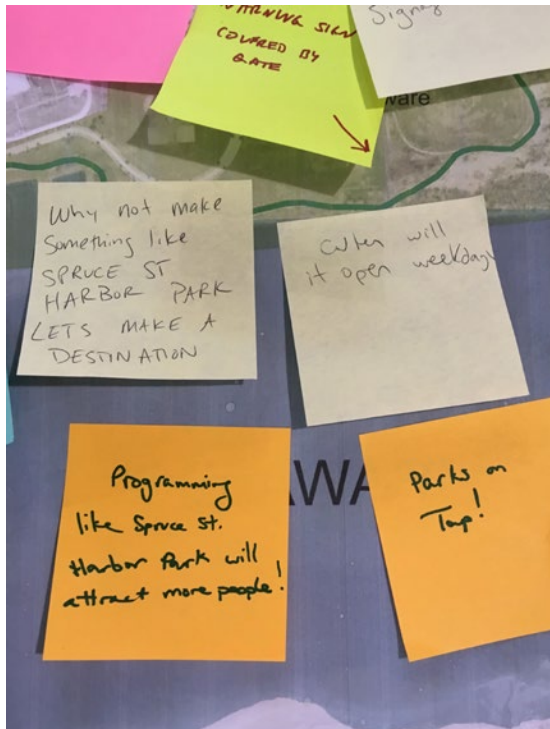


*Kids biking on the greenway.  
Image Credit: Riverfront North Partnership*

"Where possible, it would be great to encourage trail-side businesses like bike shops, food, and others to encourage community investment in the trail's success."

"Bring in business space with small restaurant spaces with outdoor dining or revolving places for local restaurants to share."

*Comments from the master plan public meeting survey.*



*During public meetings, participants indicated interest in additional activities, events, and consumer-oriented businesses along the greenway.*

During the public outreach for this master plan, several neighborhood residents noted the importance of nearby businesses along the greenway. Implementing trail-oriented businesses along a largely industrial or institutional corridor is not an easy task. The most logical location for a business that may cater to trail users, such as a restaurant, brewery, bike shop, or fitness studio, is in a location that is also convenient to non-trail users (i.e., walkable to existing or future residential uses). Given Bridesburg's proximity to the riverfront and future ease of connection with the new Delaware Avenue Extension, it may be the most feasible location for waterfront commercial activity, as is exemplified in the Lower Frankford Creek Watershed US EPA Brownfields Area-Wide Plan, near the area of Buckius Street. Any future commercial development would likely be done by a third party, outside of the purview of Riverfront North Partnership.





*The Ponce City Market, shown here, is one of many businesses that face the popular Atlanta Beltline Trail.  
Image Credit: Sarah Dorio, Courtesy of Jamestown.*



*Businesses along the Atlanta Beltline Trail.*

## CATALYST FOR ECONOMIC DEVELOPMENT

As Philadelphia and other cities are experiencing, riverfront trails are a catalyst for redevelopment. In the report entitled *Active Transportation and Real Estate: The Next Frontier*, the Urban Land Institute details multiple case studies where trails have had an impact on local real estate (or vice versa)<sup>12</sup>. A study performed by real estate firm CBRE found that office rents in Atlanta, Georgia were climbing faster along the Atlanta Beltline Trail than in other parts of the city, including downtown<sup>13</sup>.

Both the *Lower Frankford Creek Watershed US EPA Brownfields Area-Wide Plan* and the *North Delaware District Plan* suggest future land uses along the river that utilize a variety of light or mixed-use industrial, as well as office and retail space. These kinds of redevelopment patterns, along with revitalization of connector streets,

can help bridge the gap between the riverfront greenway and the adjacent neighborhood development, and can help create trail activation during non-peak times. Investment in the riverfront greenway will make this revitalization even more attractive to property owners.

The area surrounding the greenway has other catalysts for future redevelopment and growth, including the Keystone Opportunity Zones (KOZs) and the Federal Qualified Opportunity Zones (QOZs) that have been designated nearby.

- KOZ is a state designation that abates certain taxes for property owners and businesses located and operating in the zone. Because the KOZ program is meant to be a job growth mechanism for the state, businesses that locate in these

designated zones must meet criteria that increase full-time employment in a given zone, or make other capital investments.

- OZs encourage investment in economically distressed communities and retain the designation for ten years. Investors can reinvest capital gains liabilities into an Opportunity Fund and defer their capital gains taxes until the investment is sold or exchanged. Taxes are reduced in proportion to the length of time the investment is held, meaning the longer the investment, the greater the reduction.

Because of these incentives, the area's proximity to transportation networks, and the reinvestment that the Riverfront North Partnership will bring to the trail network, the areas along the greenway are well-positioned for redevelopment and growth.



# LEVERAGING DEVELOPMENT

The continued redevelopment of the area along the Riverfront North Greenway will support economic growth and could drive catalytic impacts along the corridor. Studies show that trails add economic value in four ways within their communities: economic activity, environmental services, health and recreation, and home and property values. In particular, trails serve as a public investment and desirable amenity—similar to parks, good schools, and proximity to jobs—that can elevate the value of neighboring properties. Studies show that the price premium related to the presence of trails can be as much as five percent for properties within walking distance<sup>14</sup>.

This dynamic is important because these economic impacts demonstrate a positive Return on Investment (ROI) for the development of these resources. Not only do households and property owners benefit from a new asset that supports their community, but also from the increased equity and wealth-building captured when a home is sold. Local governments benefit from the increased value of property, which results in higher tax revenues.

There are several tools that RNP may be able to leverage in the long-term to benefit from the area's redevelopment and create a virtuous cycle of ongoing investment and programming to encourage the use of the waterfront and trails. These tools could be used to help increase funding for ongoing RNP resources, such as capital for major infrastructure projects, or for maintenance and operations. Below are two potential sources of revenue that could be explored further by Riverfront North Partnership as future needs are determined.

## **Tax Increment Financing (TIF)**

Tax increment districts are contiguous and geographically-defined areas that have their property tax assessments tied to a base value (the properties' total value at the time of the district's creation) for a predetermined number of years. Any additional funds (the "tax increment") that would have otherwise been used for tax payments resulting from increased property values are put into a separate fund for economic development. TIFs serve as a way to self-finance major infrastructure, capital investments, or potentially ongoing operations for an organization such as RNP, without raising taxes or diverting other resources. This strategy could be appropriate in the longer term as development momentum builds in the Northern segment of the Delaware River and can incrementally grow the tax base.

To initiate a TIF district, RNP would need to coordinate with the Philadelphia Industrial Development Corporation (PIDC), who would set up and administer the TIF designation in collaboration with appropriate City departments, such as Commerce and City Council. The funds would be collected and held by PIDC.

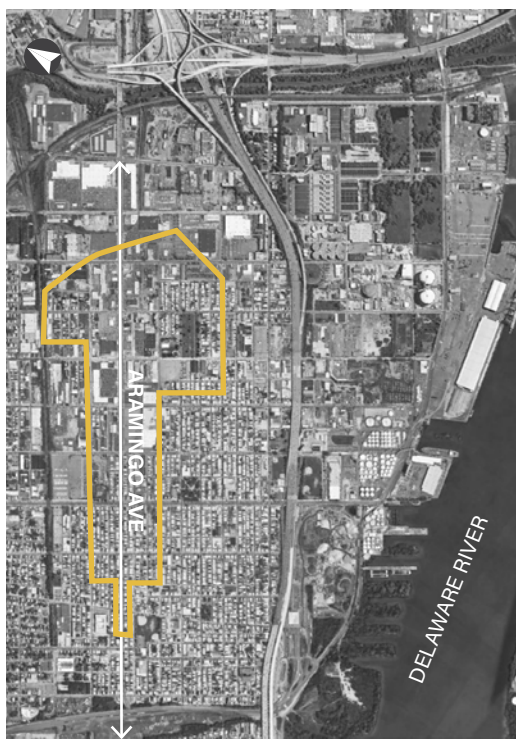




*Events on the Schuylkill River Trail at Conshohocken Brewing Company attracts visitors.*

## Special Improvement Districts (SID)

A special improvement district is a geographically-defined area that collects or receives an assessment from business owners, residents, or other entities active within its boundaries. Special improvement districts (SIDs), business improvement districts (BIDs), neighborhood improvement districts (NIDs), and special services districts (SSDs) share a general structure, in which property owners within a service area pay an assessment or fee to support services such as street cleaning, lighting, and branding, in addition to those provided by the city. SSDs support a fixed geography and are funded by either a mandatory tax or fee, or a voluntary contribution made by property owners, anchor institutions, or businesses within the geography. This framework could allow RNP to connect contributions provided by nearby businesses, organizations, and residents to the services and amenities that enhance the area's quality of life and attractiveness.



*Aramingo Shopping District*

### **Case Study: Aramingo Shopping District**

The Aramingo Shopping District, established in 2008 under Philadelphia's NID law and managed by Impact Community Development Corporation, includes all taxable commercial properties along a 1.9-mile stretch of Aramingo Avenue, in addition to selected sections of adjacent streets. A total of 89 properties are included in the District as of its most recent renewal in 2018. The District's 2019 budget totals \$398,000, and includes cleaning, maintenance, and public safety; marketing and promotion; and personnel and administration. Assessments are calculated as a portion of the total property value of all commercial properties within the district, with each property paying its share of the total amount billed. This assessment includes an allowance for nonpayment and is authorized to increase by 2.2% annually through the five-year term of this extension.<sup>15</sup> While this example leverages a business corridor that is not exactly comparable to the types of uses along the greenway, the case is instructive in demonstrating the dynamics and scale of implementing a BID model along the greenway.

### **Case Study: University City District**

The University City District was established in 1997 through voluntary contributions from anchor institutions such as the University of Pennsylvania and Drexel University. As a voluntary special services district, the UCD leverages funding from its neighboring institutions, businesses, and organizations to provide clean and green initiatives, workforce development training, and public programming and activities, in order to maintain a vibrant, active, and safe neighborhood for residents and visitors. The UCD also pursues key capital investments in the neighborhood that will enhance quality of life for residents. The UCD has a strong network of existing businesses and institutions today, but it was started by just a few invested organizations, showing how neighborhood reinvestment creates a virtuous cycle. RNP could use a similar system of voluntary contributions to build momentum and additional support for operational costs and programming along its trail.

The table below summarizes the Functionality-focused action items discussed in this chapter.

Summary of Functionality Action Items	Timeline	Responsible Party and Key Partners	Costs by <u>RNP</u> or <i>Others</i>
Continue to cultivate strong relationships with active industrial tenants along the Riverfront North Greenway.	Ongoing	<u>RNP</u> , Private Industry	n/a
Foster collaborative relationships between future developers/tenants and RNP to encourage site improvements that enhance the Greenway and benefit site users ( <i>example: Princeton Avenue improvements are being implemented by the developer of the former Tacony Army Warehouse site</i> ).	As new developments are proposed	<u>RNP</u> , PCPC, Councilperson, Developer	Varies, to be borne by developer
Encourage the donation or sale, either to a land trust or the city, of select privately-owned parcels between the Riverfront North Greenway Trail and the Delaware River for the preservation of open space and enhancement of riverfront ecology.	See Environment Action Items in Chapter 6 for task details.		
Encourage private sector business development that can thrive with greenway traffic, and can also encourage greenway visits (food trucks, restaurant, event space, equipment rentals, etc.)	Medium-term: (2025-2030)	<u>RNP</u> , PPR, PCPC, Councilperson, Developer	Varies, to be borne by developer/business
Investigate the possibility of the implementation of Tax Increment Financing (TIF) or a Special Improvement District (SID) that could potentially create a long-term source of revenue, especially as new development along the future Delaware Avenue Extension may flourish.	Short-term: (2020-2025)	<u>RNP</u> , Commerce Department, PCPC	<u>-\$20,000 for a study</u>

**Notes:**

Costs shown are estimated construction costs unless otherwise indicated. Estimates are high-level ranges based on comparable projects in 2020 dollars (escalation/inflation are not included). Further study should be performed to determine more detailed costs at the time of study. Costs borne by RNP are assumed to be obtained through grants. Long-term cost sources not yet identified are not underlined or *italicized*.

Abbreviations: Riverfront North Partnership (RNP), Philadelphia Parks & Recreation Dept. (PPR), Streets Department (Streets), Mayor's Office of Transportation, Infrastructure, and Sustainability (OTIS), Philadelphia Water Department (PWD), Philadelphia City Planning Commission (PCPC).





*Arcadia University Volunteers at Pennypack on the Delaware.  
Image Credit: Riverfront North Partnership.*



# 6 ENVIRONMENT

The Riverfront North Greenway is set within a unique context for Philadelphia. Wildlife habitat coexists with both recreational and active industrial uses, along a riverfront that will continue to face environmental opportunities and challenges over the next several decades. In this chapter, both the opportunities and challenges will be examined, and how the challenges can be leveraged to create a more resilient greenway.

# OPEN SPACE

Open space is defined as undeveloped land that is accessible to the public. Increasing the amount of open space along the river will improve ecological conditions, enhance aesthetics, and improve the visitor experience.

The Riverfront North Greenway is already punctuated by a series of existing open spaces, but increasing the number of these spaces will help define the riverfront as a recreation destination and provide connective habitat.

The map shown here indicates the existing open spaces along the greenway, or near connector streets/trails, and planned or proposed open spaces along the riverfront. The planned or proposed sites are parcels that would make excellent candidates for future open space, or are in the process of becoming open spaces. These potential open spaces are available in key riverfront locations, and have the potential to increase contiguous open space for habitat and ecological value.

Because of limited resources from the Philadelphia Parks and Recreation Department, acquisition of open space could be handled by a third party (i.e.: a land trust), with maintenance also performed by

a third party (in this document, 'third party' excludes RNP). The proposed open spaces should be less programmed sites designated as preserved habitat, as opposed to active recreation parks. Sites should be designed to limit human interference with habitat. For example, a low-impact trail system that avoids ecologically sensitive areas would be preferable to sport courts.

**Five Mile Point** This site at the mouth of Frankford Creek is currently undeveloped land and a popular unofficial fishing spot. The Point should be considered as a permanent conservation opportunity. Currently zoned industrial, the narrow site has limited accessibility, high flooding risk, and is not a good candidate for buildings or structures. Undeveloped, it provides valuable aquatic and terrestrial riparian habitat within an otherwise continuous span of developed waterfront.





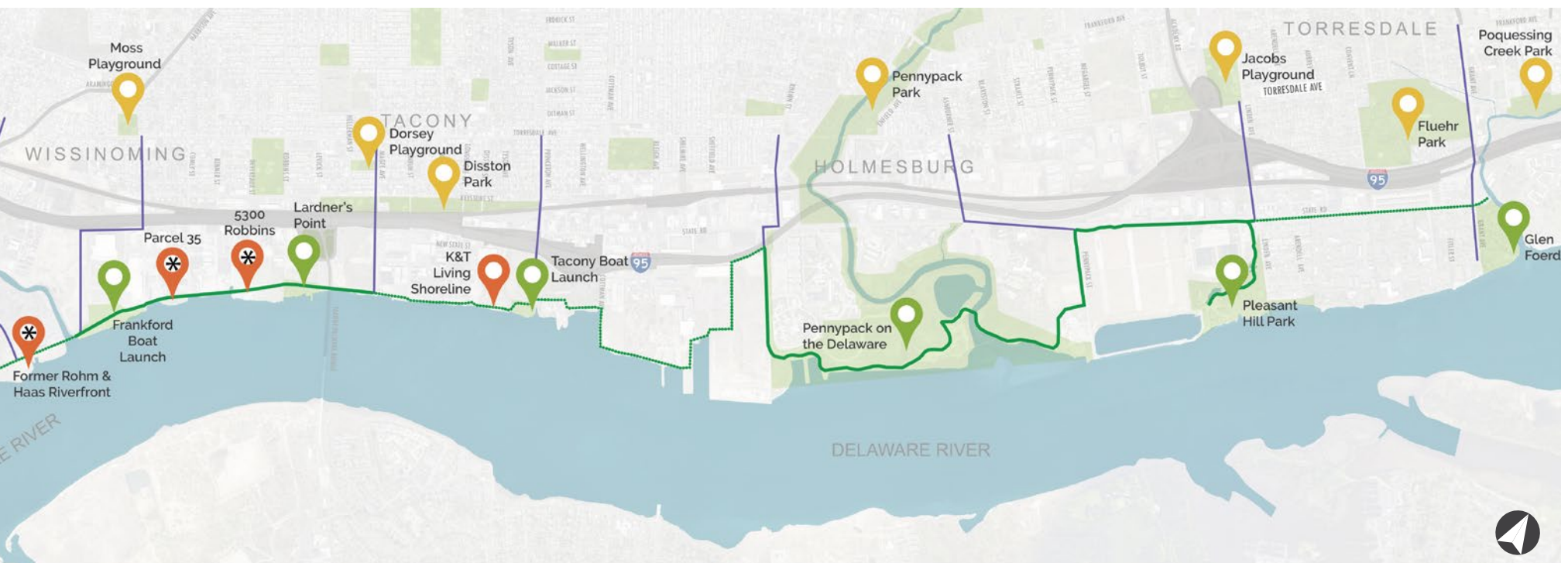
**Riverfront Park in Bridesburg** Currently in the permitting and fundraising phase, this public park will provide a diverse array of natural environments, mixed with recreational elements. The park's master plan includes managed woodland, meadows and riparian buffers, which will bring a range of managed habitats to the riverfront and a public space resource for the residents of Bridesburg.

**Former Rohm & Haas Riverfront** This brownfield site, discussed on [page 127](#), will be impacted by the future Delaware Avenue Extension. The resulting riverfront parcel's size, and its location next to the historic Frankford Creek channel, make it an ideal open space and habitat restoration site. Vegetated buffer plantings could help manage runoff into the river.

**Parcel 35** This undeveloped site is located in the Wissinoming Neighborhood at Comly Street. The site is currently unmanaged woodland and is attractive to bird communities. The *Riverfront North Park Study* recommends developing Parcel 35 as a natural area with passive recreation. The site's topography provides a diverse range of habitat opportunities.

**5300 Robbins** The acquisition of this four-acre, privately-owned parcel presents an opportunity to extend Lardner's Point Park south along the Delaware River.

**K&T Living Shoreline** Adjacent to the 2nd phase of the K&T Trail, this bulkhead conversion project spans approximately 500 linear feet and envisions removing the existing concrete bulkhead, regrading a natural slope to the river, and creating a rich living shoreline with a variety of dynamic ecological zones. This project is currently in the conceptual design phase.



# BIODIVERSITY

Although located inside the City boundary, the study area includes a diverse network of open spaces and preserved lands, and a surprisingly complex network of biodiversity. Large lot sizes and the overall lower density of development present great opportunities for ecological restoration along the greenway. Gaining one parcel for open space would be a major improvement for ecological habitat.

Mapping shows that areas of currently preserved land have the highest recorded

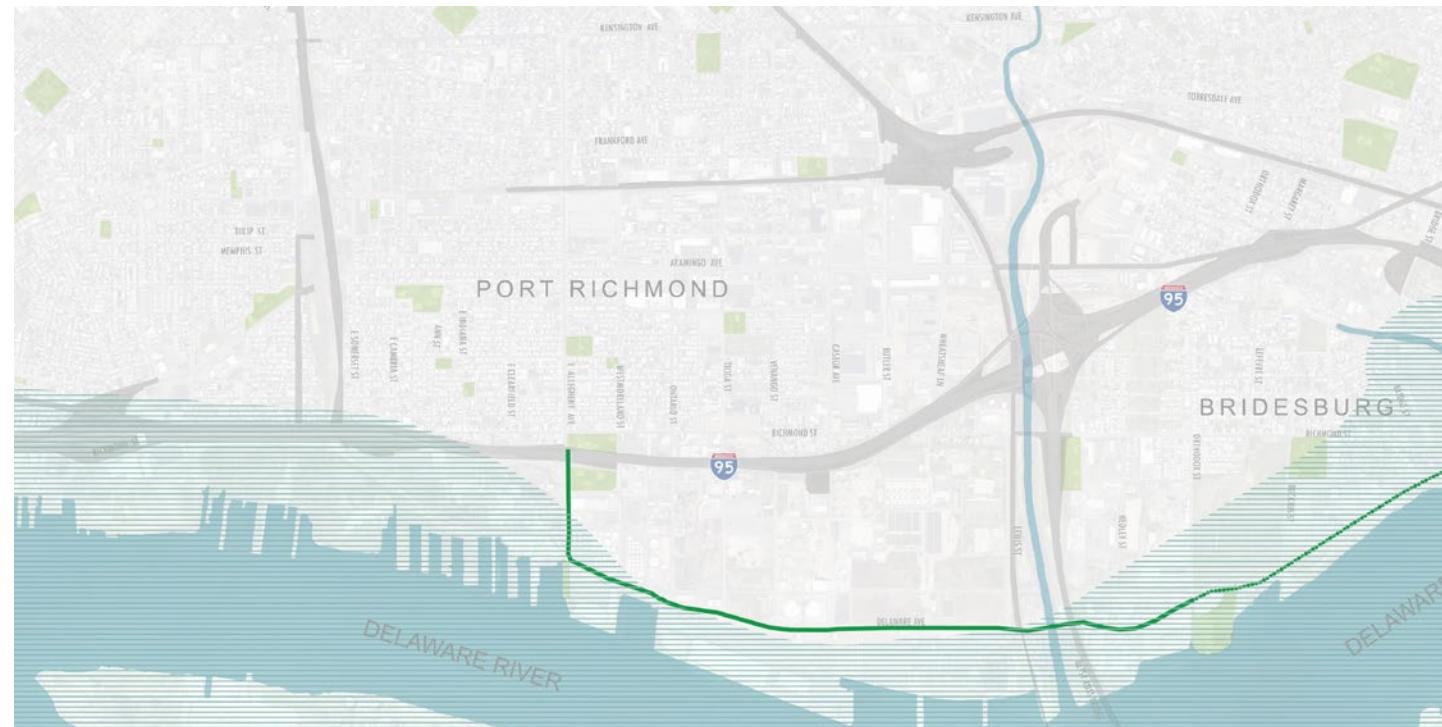
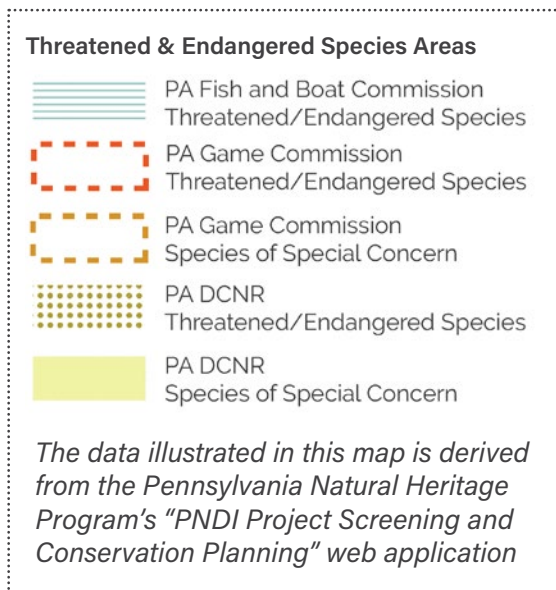
numbers of important or threatened species. Continued monitoring and study at the confluence of the Pennypack Creek and the Delaware River is particularly important.

To continue to support ecological diversity, key parcels of land should be selected for conservation and habitat construction. Parcels should be selected and designed to support a wide range of habitats for accommodation of diverse species.

Fragmentation is an issue facing these pockets of rich biodiversity. The greenway

is an opportunity to provide a continuous ecological corridor, and link the greener Bucks County regions with the more developed Center City. A few parcels recommended for acquisition were outlined on pages 106 and 107.

**Federal and State Protected Species Review and the Natural Heritage Program Review for Protected Species are explored in Environmental Screening, Appendix B.**







*Volunteers from TD Bank plant native trees to build habitat and biodiversity, Image Credit: Riverfront North Partnership.*

According to PNDI mapping, the confluence of Pennypack Creek and the Delaware is the most likely location for species of concern or threatened/ endangered species near the greenway.





# BIRDS

Sites along the greenway include critical habitat for native birds. The greenway is an opportunity to preserve or improve bird habitat by increasing conserved open space and plantings. Adding bird habitat will also draw birders and other wildlife enthusiasts to the riverfront.

Protecting and expanding natural habitats is especially crucial in this area as the Delaware River is a migration corridor which is heavily developed, with very little usable habitat remaining for wildlife. Increasing ecological value by adding native plantings

along the trail could provide corridors to link fragmented habitats. An important asset for the greenway is the diversity of ecological communities, which include mudflats, wetlands, tree groupings, and meadows. This diversity attracts a range of bird types. Native plantings play an important role in bird species health, by increasing habitat and attracting pollinators. Feral cat colonies threaten bird species in the area, and should be managed in accordance with Philadelphia Parks and Recreation policies currently in development.

Birding attracts enthusiasts who would support local businesses and advocate for ecological restoration initiatives. To support observation of wildlife along the greenway, RNP could consider adding birding blinds and viewing platforms.

**Federal and State Protected Species Review and the Natural Heritage Program Review for Protected Species - including the "Important Bird Area" designation - are explored in Environmental Screening, Appendix B.**

## Bird Species Diversity Observed



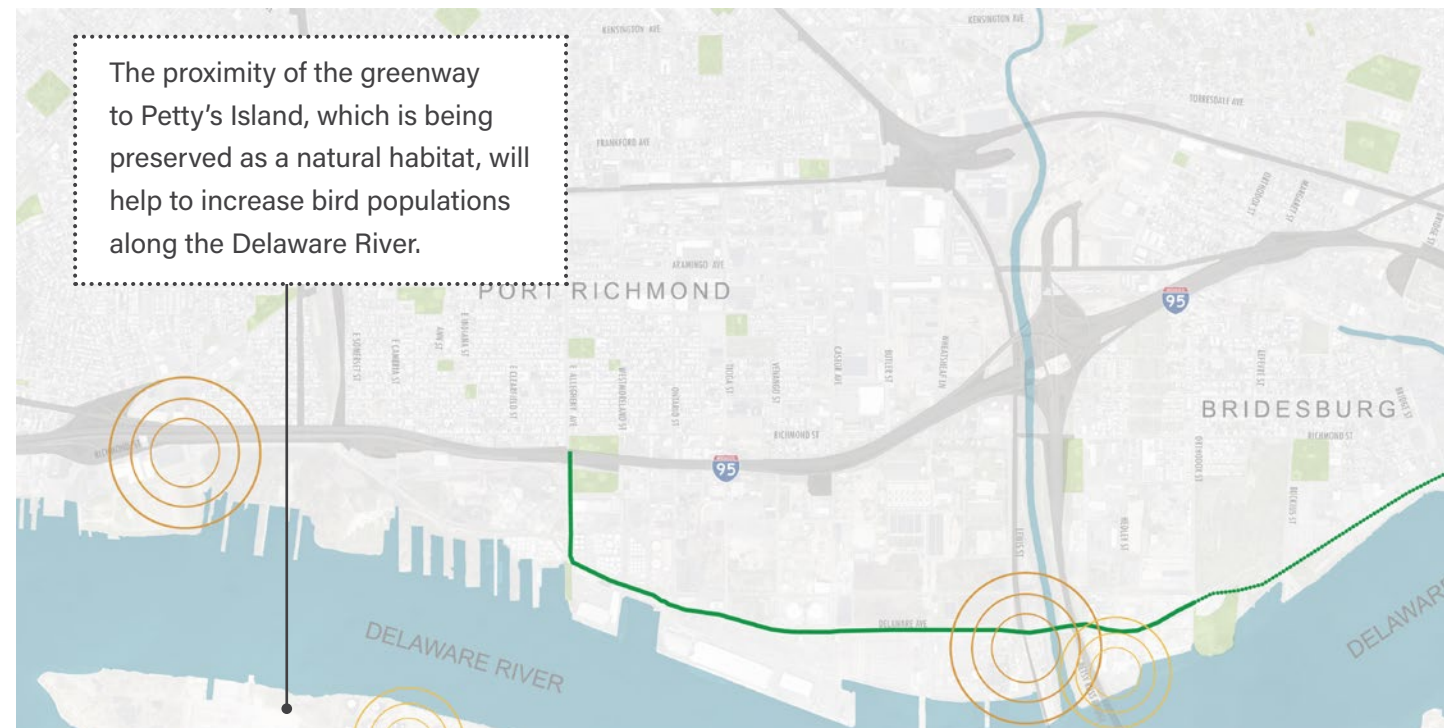
Very Many Bird Species Observed  
200+ species recorded

Many Bird Species Observed  
150+ species recorded

Multiple Bird Species Observed  
100+ species recorded

Some Bird Species Observed  
50+ species recorded

*Some birders track their findings on the eBird web application, defining birding "hotspots" with high species diversity. This map identifies birding hotspots, as reported through eBird.*

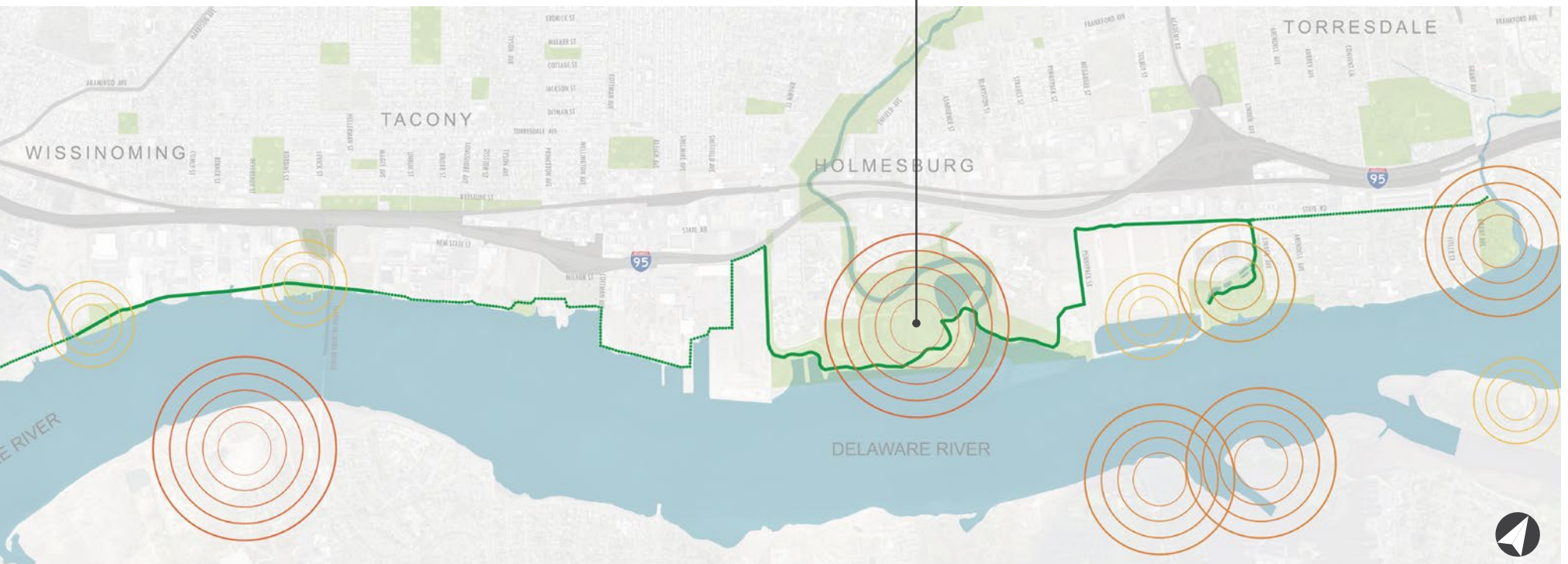




*Tookany/Tacony-Frankford Watershed Partnership Bilingual Bird Walk  
- Together We Explore!// Juntos Exploramos, Image Credit: Riverfront  
North Partnership*

Visitors at Pennypack on the Delaware have identified 250 species of birds, according to eBird data. Within Philadelphia, this makes it second only to the John Heinz National Wildlife Refuge in numbers of species identified.

Bald Eagles have been observed nesting in Pennypack Park since 2009.





# FISH

Previously one of the Delaware River's major industries, fishing is now a popular recreational activity.

In the City's early years, the Delaware was teeming with shad. Shad fishing was a major industry, supporting the development of the Fishtown neighborhood. Shad are still regularly seen in the river today, with the fishing season for Hickory and American shad in early spring.

The Atlantic Sturgeon also played a major role in Philadelphia fishing industry history. In the late 19th century, 75 percent of the sturgeon caught in the U.S. came from the Delaware River, and caviar was a major regional export.<sup>17</sup> Overfishing and poor water quality caused sturgeon population to drop. By 2012, the fish were designated endangered.

## PP&R and Fishidy-Identified Fishing Locations



Philadelphia Parks & Rec identified fishing locations



Fishidy user identified fishing locations

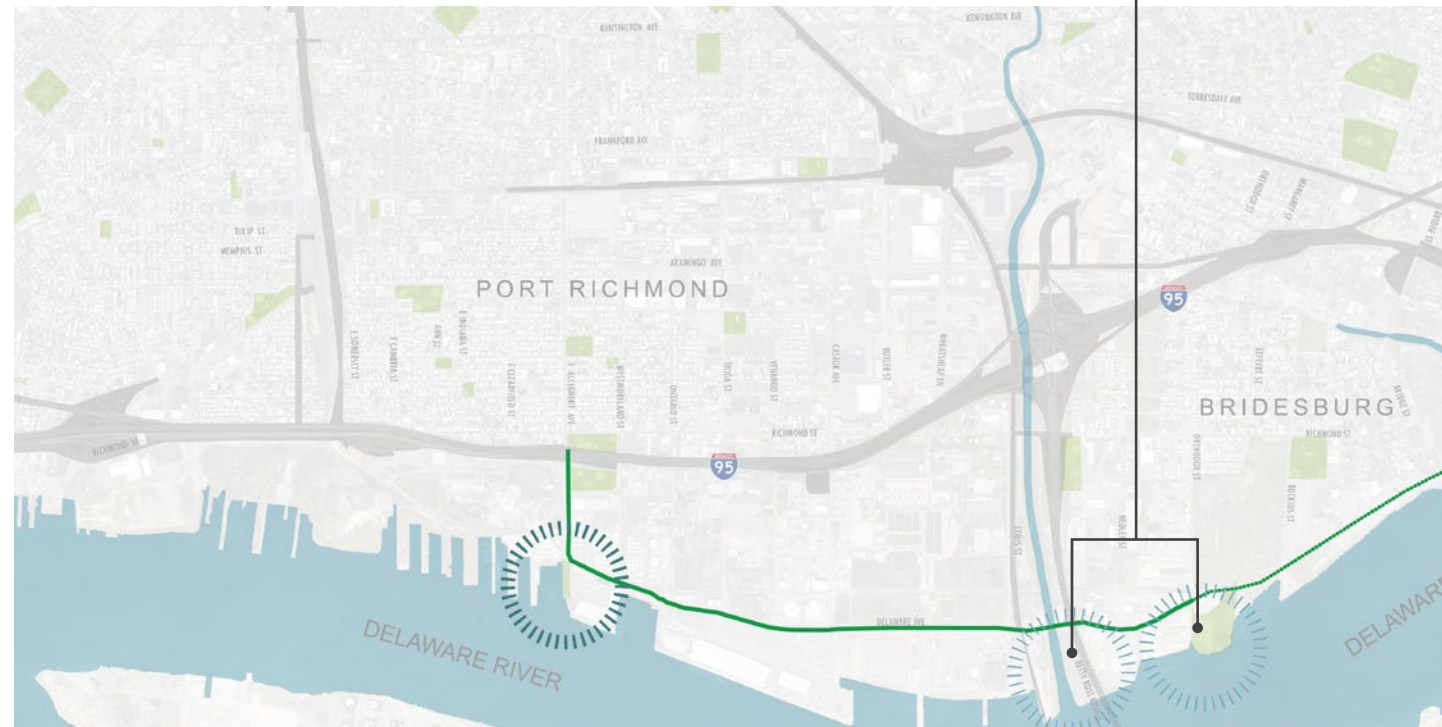
*Some fisherman track their catches in to Fishidy, defining potential fishing hotspots.*

In late spring, striped bass or “stripers” begin their migration upstream to spawn<sup>18</sup>. Stripers, also known as Rockfish, prefer piers, jetties and rocky outcroppings. Striper season is possibly the most popular fishing season on the Delaware. Other common fish in the river include channel catfish, white perch, smallmouth bass, and largemouth bass.

To support the diverse needs of different fish, the river should offer a range of edge conditions. Projects like living shorelines that remove bulkheads and create riverfront diversity will support multiple species<sup>19</sup>.

To encourage fishing, informal fishing spots could be designated to support legal access. Piers could be constructed to provide a range of fishing experiences. Five Mile Point, at the mouth of Frankford Creek, could be an ideal spot for formal fishing infrastructure.

The Delaware River today has recorded over 40 fish species. Some rare fish, like the endangered Atlantic sturgeon, are even reported to be spawning in the river again. To continue to support fish in the Delaware, water quality must continue to be improved and riparian health protected.





Federal and State Protected Species Review and the Natural Heritage Program Review for Protected Species - including protected fish - are explored in Environmental Screening, Appendix B.

**Five Mile Point and Riverfront Park in Bridesburg** - both sites are listed as fishing spots on the Fishidy app - making these places a formal public park would support fishing activities



Atlantic Sturgeon Sketch

*Each spring, Atlantic sturgeon travel upstream to spawn in freshwater rivers. Sturgeon face challenges on the urbanized stretch of the Delaware between Trenton and Wilmington, including low dissolved oxygen, flow, and salt water encroachment.*



# WETLAND



*A wetland in Pennypack on the Delaware, Image Credit: Philadelphia Atlas.*

Wetlands are some of the most productive ecosystems in the world, providing multiple ecological, economic and social benefits. The Riverfront North Greenway presents an opportunity to bring visitors closer to wetland habitats to observe these special ecosystems.

A wetland's shallow water levels and unique plant life support a range of fish, amphibians,

shellfish, insects and birds. More than one-third of the United States' threatened and endangered species live exclusively in wetlands, and nearly half use wetlands at some point in their lives<sup>20</sup>. Wetland microbes and plants are part of the global nitrogen water and carbon cycles, and their plants store carbon and help moderate global climate conditions. Wetlands provide natural water quality improvement, flood

protection, shoreline erosion control, and opportunities for recreation and wildlife observation. They also work to recharge groundwater, reduce flooding, and provide clean drinking water. Unfortunately, over half of America's wetlands have been lost since 1780, and wetland losses continue today<sup>21</sup>. This highlights the urgent need for wetland preservation and reestablishment.



As part of the National Wetlands Inventory (NWI), established by the US Fish and Wildlife Service, the study area contains the following wetland types:

TYPE	<div></div> Freshwater Forested / Shrub Wetland	<div></div> Freshwater Emergent Wetland	<div></div> Freshwater Pond	<div></div> Lake	<div></div> River
CODE	PFO, PSS	PEM	PUB,PAB	L	R
DESCR.	Woody wetlands; forested swamp, shrub bog	Herbaceous marsh, fen, swale or wet meadow	Pond	Lake or reservoir basin	River or stream channel

Riverine is the dominant wetland type on site, but there are also some notable pond and forest wetlands indicated. Pennypack on the Delaware includes a major forest/emergent wetland, shown in the aerial photo on the previous page. It's important to note that the NWI is a guide for finding wetlands—care should be taken to find wetlands not inventoried in the field and to mark for protection.

Areas of wetland complexity should be identified for conservation or preservation. To provide wetland connectivity, designed and constructed wetlands should be considered in place of vacant land.

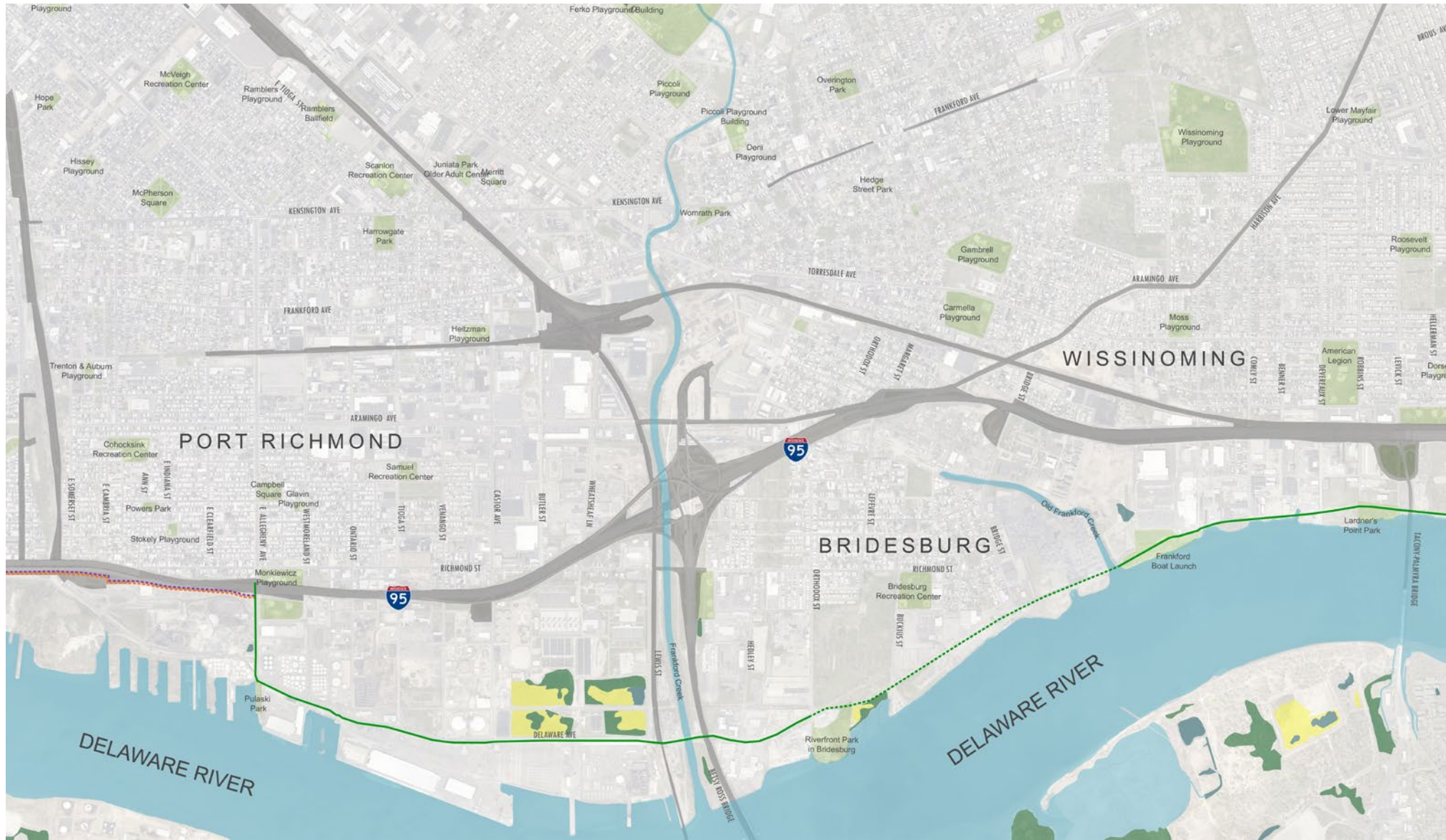
**Wetland designations along the Riverfront North Greenway are mapped on pages 116-117.**



*Wetland Monitoring, Image Credit: the National Park Service.*



# NATIONAL WETLANDS INVENTORY (NWI) MAPPING







Data provided by the National Wetlands Inventory (NWI), established by the US Fish and Wildlife Service



# LIVING SHORELINE

The City's development over time has changed the nature of the riverfront, adding "hard" shoreline stabilization measures such as bulkheads and stone revetments. These hard edges have stabilized shorelines but have also degraded or eliminated critical riparian habitats.

More recently, new shoreline stabilization approaches that rely on natural materials and native plantings have grown in use. These "living shorelines" reduce erosion and support habitat, while restoring ecological function.

Living shoreline installations align well with the goals of the Riverfront North Greenway. In 2009, the Pennsylvania Environmental Council commissioned the *Philadelphia North Delaware River Greenway Ecological Assessment and Prioritization Report*. The report assessed and prioritized shoreline improvements on eight miles of the Delaware in Northeastern Philadelphia, from the Betsy Ross Bridge to Poquessing Creek. It remains a useful tool for identifying future living shoreline projects.



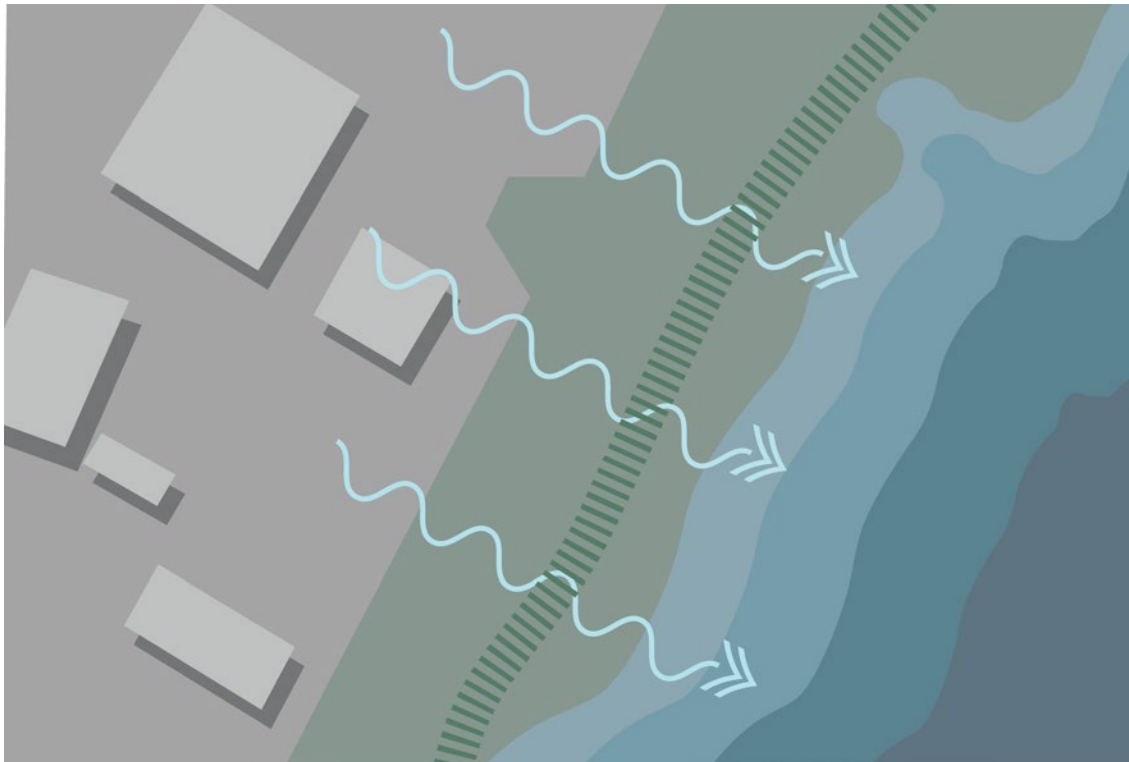
*Lardner's Point in Tacony is an example of an implemented living shoreline on the Delaware.*



*The K&T Trail Living Shoreline project proposes removal of 500 feet of concrete bulkhead and replacement with a dynamic, gently-graded riparian landscape near the Tacony Boat Launch.*



# RIPARIAN BUFFERS



*Buffer planting helps protect water quality by filtering impervious surface run-off.*

In addition to restoring natural shorelines, riparian buffers are an excellent means of protecting river health.

A tree-covered riparian buffer improves stormwater runoff quality before it enters the river. This buffers the river from pesticides, fertilizers, and development impacts. Riparian buffers also provide high-quality habitat for a range of species <sup>22</sup>. Planted buffers help improve resiliency, as roots provide protection from erosion during flooding and storm events.

Planting riparian buffers is a relatively low cost effort that yields a myriad of benefits, and should be implemented wherever possible. Along the greenway, the riparian buffer at Lardner's Point filters runoff and provides connected wildlife habitat.

# GREEN STORMWATER INFRASTRUCTURE



*A raingarden installed as part of Philadelphia's Green Stormwater Infrastructure (GSI) projects. GSI are intended to reduce combined sewer overflows, which will ultimately improve the health of the Delaware River.*

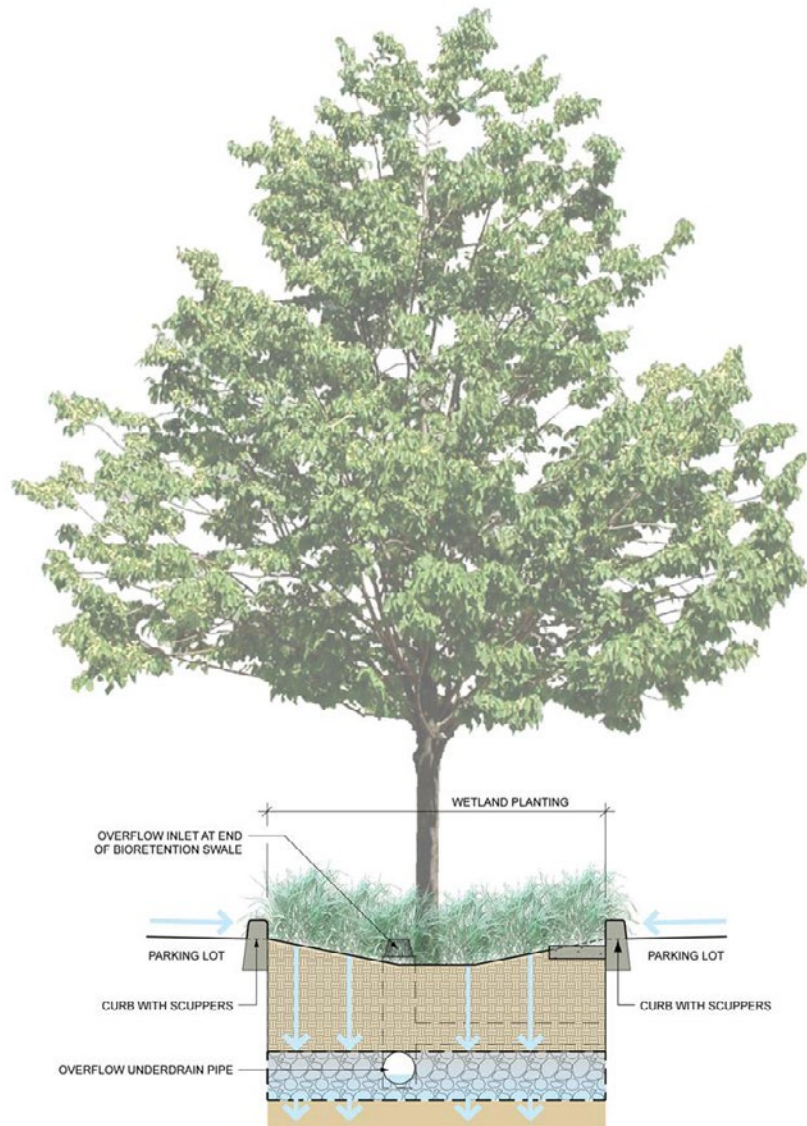
Within the City limits, there are over 69 square miles of impervious cover that cannot absorb rainfall <sup>23</sup>. These impervious surfaces contribute excess stormwater runoff to the storm sewer system and into natural waterways.

Green Stormwater Infrastructure (GSI) reduces pollution from stormwater and combined sewer overflows through a variety of soil-water-plant systems. The principle of GSI is to capture rainwater close to where it falls, rather than collecting and treating it elsewhere. GSI systems can infiltrate stormwater into the ground, evapotranspire into the air, or release slowly back into the sewer system<sup>24</sup>.

In 2009, The Philadelphia Water Department (PWD) introduced *Green City, Clean Waters* as a 25-year plan to protect watersheds and



the city's water supply through green stormwater infrastructure. PWD prioritizes installing GSI in areas of Combined Sewer Overflow (CSO). The majority of the Riverfront North Greenway is outside of the Combined Sewer Service Area, and will not be prioritized by PWD. However, many of the connector streets are within this boundary. Connector street improvements, as recommended in Chapter 4, offer an opportunity to install green stormwater infrastructure and capture impervious runoff.



*This diagram illustrates a bioswale that captures, cleanses, and infiltrates runoff. A green street system could use bioswales to treat stormwater. GSI could be located in curb bump outs or planting medians between streets and sidewalks.*



# FLOODING, STORM EVENTS AND CLIMATE CHANGE

## Flooding Vulnerabilities

According to the City's 2015 report *Growing Stronger: Toward a Climate-Ready Philadelphia*, Philadelphia's key climate vulnerabilities are heat impacts and flooding. Flooding is already a challenge, and rising sea levels and coastal storm events are expected to increase flooding's destructive impacts. This will increase both disaster recovery costs, and day-to-day operating costs. To improve resiliency, riverfront parcels should transition to vegetated open space where possible. Along the greenway, underused parcels present opportunities to increase open space, and improve riverfront resiliency.

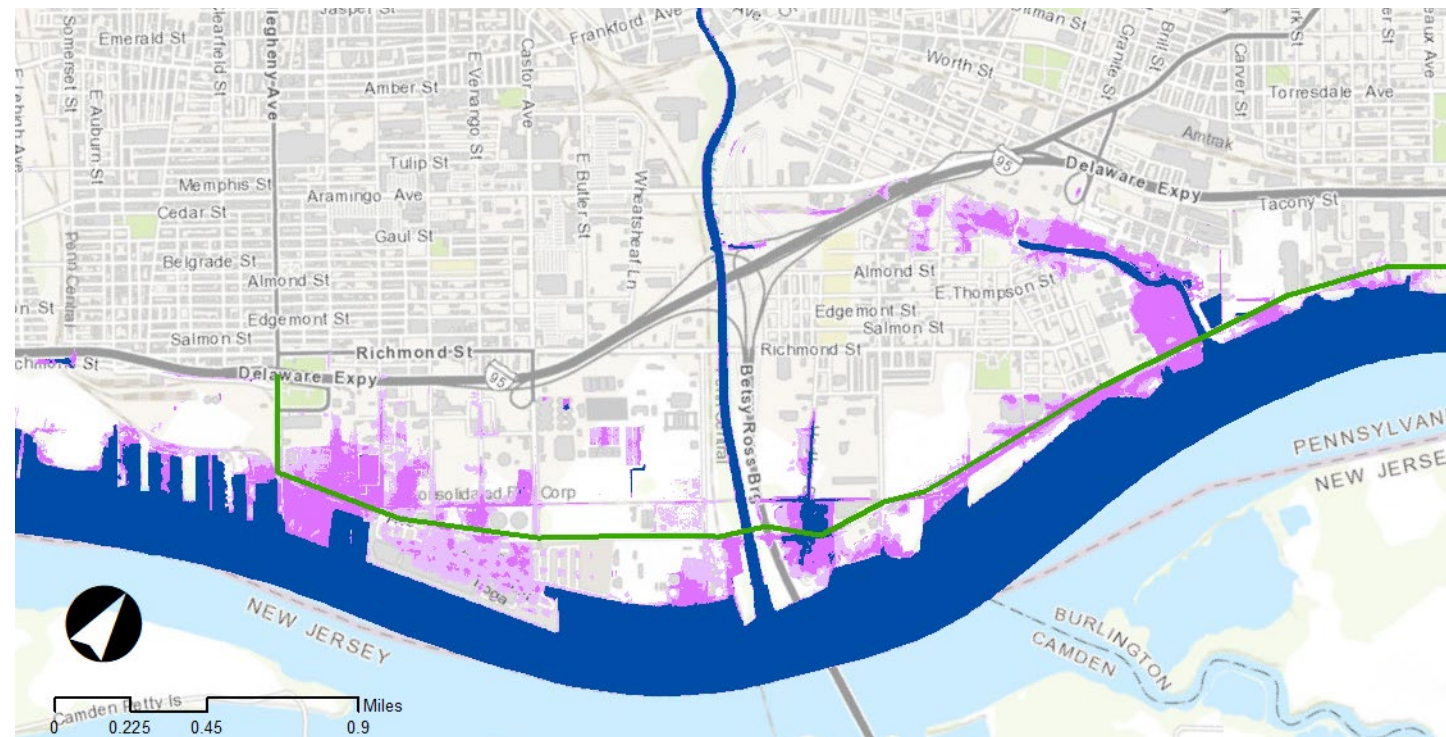
Of the neighborhoods surrounding the greenway, Port Richmond is the area most impacted by flooding risk. Bridesburg has some flooding risk in areas west of the Old Frankford Creek channel, including near the Frankford Arsenal. In Holmesburg, correctional facilities neighboring Pennypack Creek are in the floodway, presenting a risk to inmates and officers.

In the region surrounding the Riverfront North Greenway, industrial land is frequently in the flood zone. Reverting former industrial parcels or vacant land to greenspace will improve riverfront resiliency. The greenway is an opportunity to bring added plant cover to the river edge, making the Delaware more adaptable to regular nuisance flooding and to major storm events.

Flooding has the potential to impact the Riverfront North Greenway. Nuisance flooding presents a regular challenge,

damaging facilities and incurring higher maintenance costs. In designing new trails, resiliency guidelines should be followed to increase project lifespans. This could impact project siting or material choices. Trails are often a recommended use in flood-prone areas.

**The map on this page displays the projected 2050 sea level changes in the high tide and storm events along the Riverfront North Greenway. To see current (2020) FEMA Floodplain and Floodway maps, refer to Appendix B.**



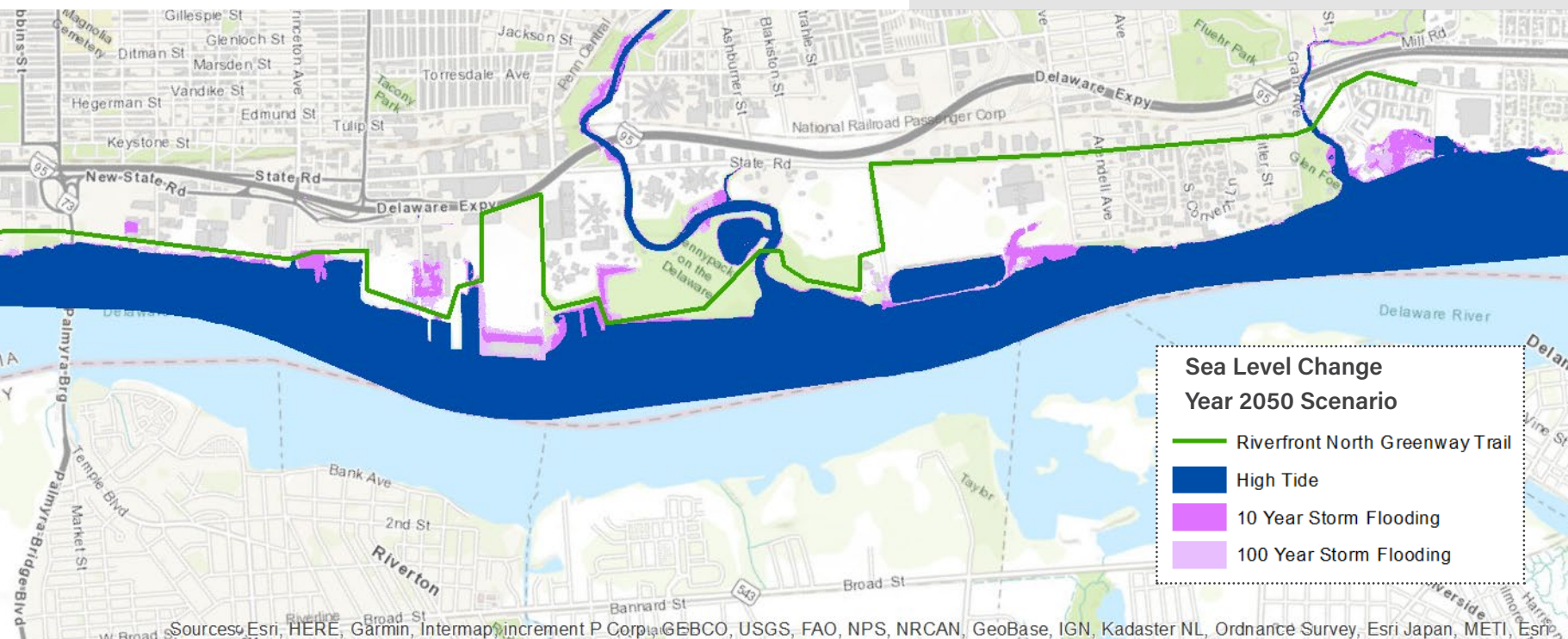
## Storm Events

The combined effects of sea level rise and storm events could increase waterfront vulnerability in Philadelphia.

According to the map from *Growing Stronger: Toward A Climate-Ready Philadelphia*, areas of Port Richmond are the most vulnerable, with two feet of sea level rise and a Category 1 hurricane (this category indicates the largest storm Philadelphia has experienced). Property along the River, around the Old Frankford Creek channel, and around Pennypack Park and the Correctional Facility are also vulnerable.

**Pennsylvania Coastal Resiliency Map**, courtesy of the Delaware Valley Regional Planning Commission.

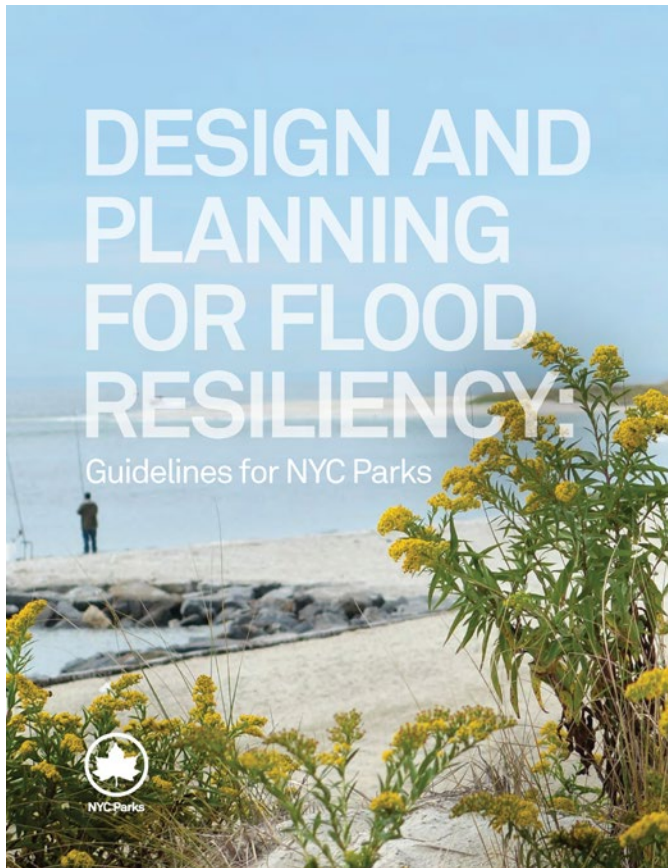
The map below shows projected sea level rise for 2050. "Under this emissions scenario, by 2050, sea level in this region is likely to rise between 1.0 and 1.8 feet above the height of sea level in the year 2000. The middle value of this range, known as the central estimate, is 1.4 feet." DVRPC. For more information, explore the [PA Coastal Resiliency Story Map](#).





# CONSIDERING CLIMATE CHANGE

Future projects along the Riverfront North Greenway should address sea level rise through a host of resiliency efforts. This means designing and planning for future occasional flooding, increased maintenance, and proper material selection. Resiliency efforts do not mean simply raising adjacent grades or shutting off access to the river. By creating habitats along the riverfront that intentionally flood during nuisance events (extreme high tide and/or storm events) and by promoting materials and uses that are appropriate for occasional flooding, Riverfront North Partnership can create environments that are enjoyable, allow recreation during non-flooding events, and sustain projected extreme events. The following guides are meant to be an aid in these resiliency efforts.



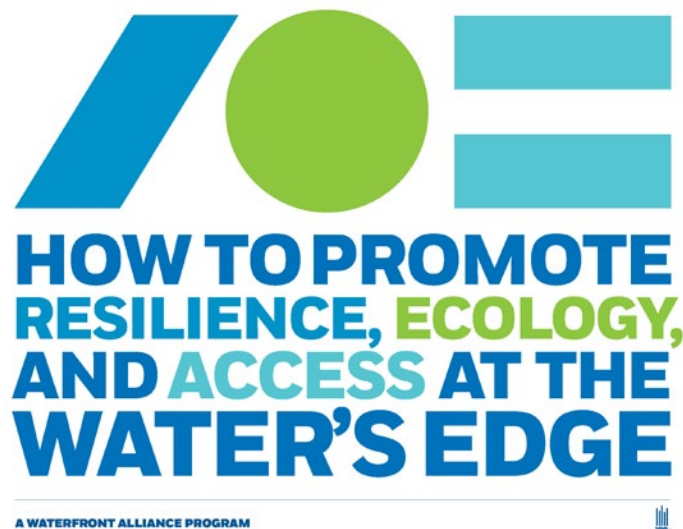
## Designing and Planning for Flood Resiliency: Guidelines for NYCParks

To address concerns about New York City's parks in the face of climate change, from sea level rise to increasingly frequent storm events, the NYC Parks Department prepared *Designing and Planning for Flood Resiliency: Guidelines for NYCParks*. The *Guidelines* serves as a tool for planners, designers, engineers and consultants.

The *Guidelines* address multiple site types, including managing recreation centers, marinas docks, wetlands and other natural areas. The *Guidelines* also provide recommendations for materials and components, from hardscape materials to electrical systems.

The *Guidelines* provide a useful tool for the Riverfront North Greenway as it progresses through the design process, to ensure the greenway is resilient in an unknown climate future.





## WEDG Design Guidelines

*The Waterfront Edge Design Guidelines* (WEDG), developed by the Waterfront Alliance, is a tool for communities to promote ecology, access and resiliency. WEDG provides waterfront design best practices to inform design decisions for developers, maritime businesses, professionals, government regulators and communities. A credit-based rating system establishes a certification process to review a project's performance relative to ecology, access and resiliency.

Projects can gain points through six categories:

- Category 0: Site Assessment & Planning
- Category 1: Responsible Siting & Coastal Risk Reduction
- Category 2: Community Access & Connections
- Category 3: Edge Resilience
- Category 4: Natural Resources
- Category 5: Innovation

All projects must achieve 115 out of 215 possible points in order to achieve WEDG Certification. The WEDG guidelines also provide tools for shoreline stabilization decision making and models for site assessment and performance. WEDG is applicable for the Riverfront North Greenway, and strives to strike a balance among the variety of needs and land uses along urban shorelines, with value given to both ecological restoration and active industrial uses.

# BROWNFIELDS

A brownfield is defined by the Environmental Protection Agency as a property that “the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.”

The goal of the Lower Frankford Creek Watershed US EPA Brownfields Area-Wide Plan is to provide an implementable approach for economically and environmentally beneficial redevelopment of key brownfield sites. Catalyst sites are sites that could be redeveloped to create a positive economic impact on a neighborhood. The Plan identifies two catalyst projects adjacent to the Riverfront North Greenway.

**Philadelphia Coke Co./National Grid** - The Philadelphia Coke company once manufactured gases and industrial coke at its Bridesburg plant. The facility closed in the early 1980s. The site is 67 acres, currently vacant, and largely covered by vegetation. The *Plan* recommends that the parcel could include new commercial structures, vegetated storm water buffers, and riverfront park space. The planned Delaware Avenue Extension will pass through the east edge of the site near the old K&T Railroad right-of-way.

The Riverfront North Greenway will run along the east end of this parcel, and presents an opportunity to link any future development to the river and to the planned Bridesburg Riverfront Park.



*The Philadelphia Coke Co./National Grid Open Space + Pedestrian Connections Map makes recommendations for parcel uses, From the Lower Frankford Creek Watershed Brownfields US EPA Area-Wide Plan, Philadelphia Planning Commission 2015, page 3.7.*

**Rohm and Haas/Dow Chemical Company** - The former Rohm and Haas manufacturing plant in Bridesburg is located at the confluence of Delaware River and the old Frankford Creek Channel. Now owned by Dow Chemical Company, the site is 68 acres, classified as vacant, and mostly covered in impervious pavement.

The *Plan* recommends the site could include proposed development carefully sited to encourage riverfront access, with stormwater management systems and a riverfront park space. The parcel is adjacent to the Riverfront North Greenway, and greenway visitors could use it as an access point to reach Bridesburg and its amenities, including the nearby Frankford Arsenal. The planned Delaware Avenue Extension will also pass through this site, and provide a direct connection to I-95.

The Rohm and Haas/Dow Site is currently undergoing remediation and is listed for sale.

**Hazardous material sites are explored further in Appendix D.**



*The Rohm & Haas/DOW Open Space + Pedestrian Connections Map makes recommendations for parcel uses. From the Lower Frankford Creek Watershed US EPA Brownfields Area-Wide Plan, Philadelphia Planning Commission 2015, page 3.5.*



# ENVIRONMENTAL JUSTICE & EQUITY

Environmental justice is the fair treatment of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies <sup>25</sup>. The goal of environmental justice is for everyone to be equally protected from environmental and health hazards.



*The communities surrounding the greenway are set in a wide variety of environments, with varying access to high-quality open space.*

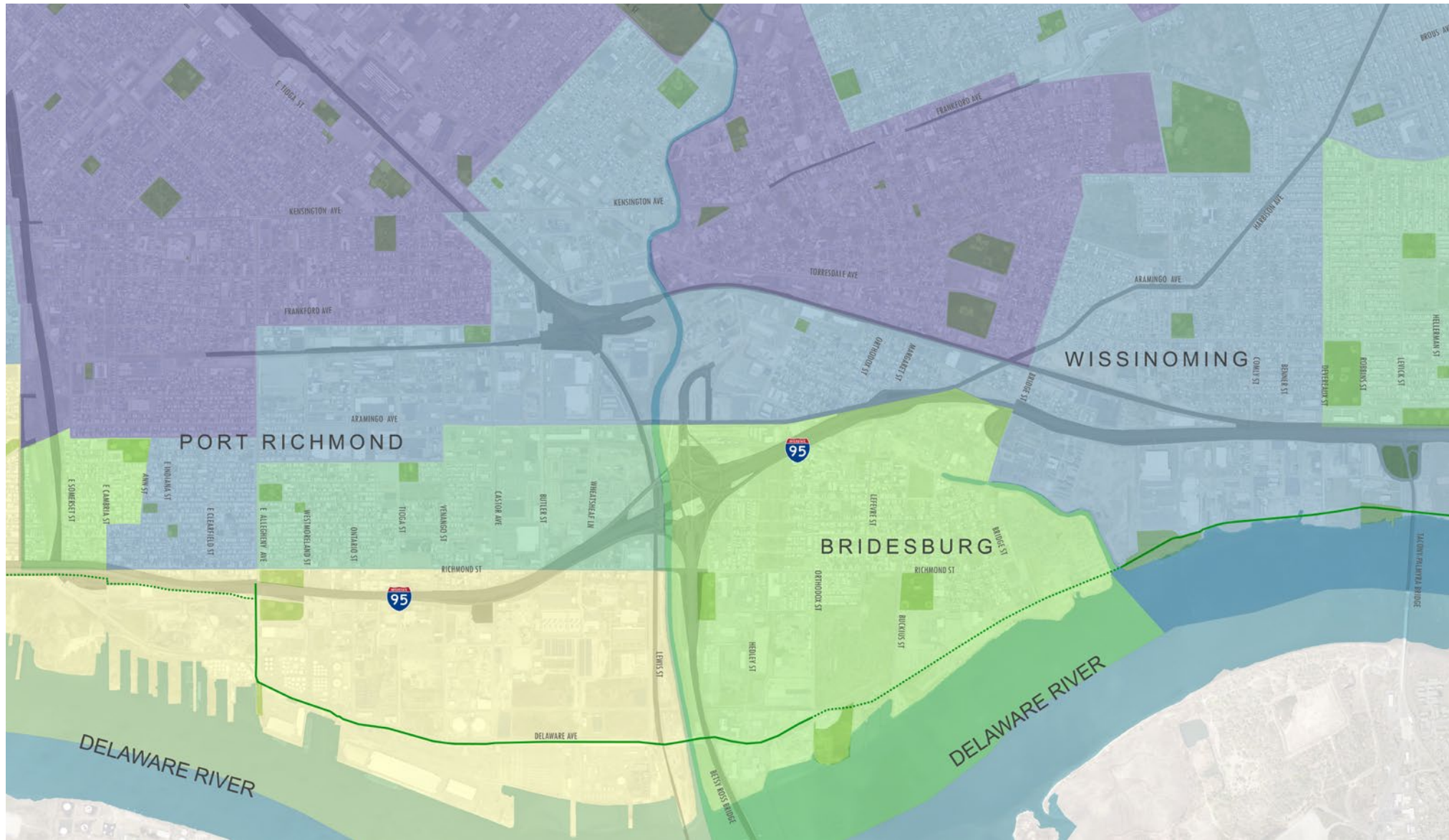
The mapping on the following pages was developed by the Delaware Valley Regional Planning Commission (DVRPC) to attach an *Indicators of Potential Disadvantage (IPD) Score* to all census tracts in the region. The IPD score is developed from data gathered on the following nine demographics. The data is gathered through American Community Survey projections:

- Youth
- Older Adults
- Female
- Racial Minority
- Ethnic Minority
- Foreign-Born
- Limited English Proficiency
- Disabled
- Low-Income

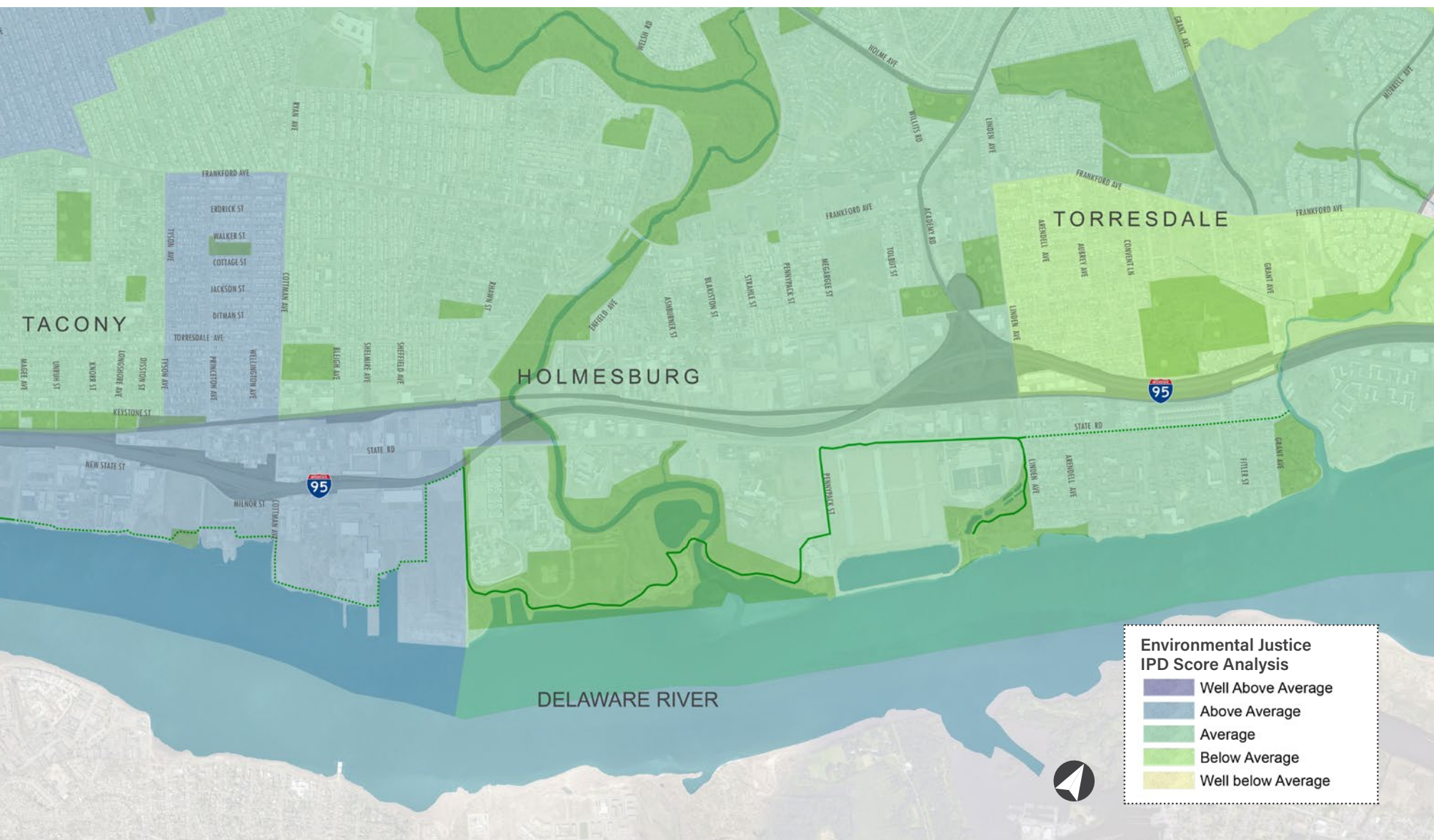
Higher IPD scores indicate higher percentages of the nine specific population groups listed above. Looking at residential areas near the Riverfront North Greenway, regions of Port Richmond, Wissinoming and Tacony show the highest indicators of potentially disadvantaged populations. The highest IPD scores are found to the west of Port Richmond and Wissinoming, farthest from the riverfront. Looking north, the majority of Tacony and Holmesburg show lower IPD scores. Bridesburg and Torresdale have the lowest IPD scores in the study area. Regions that include no residential housing, like the riverfront tracts in Port Richmond, are not relevant to this study.

Throughout the development of future greenway connections, programs and other amenities, it is essential to plan public spaces that are equitable and accessible for people of all demographics and backgrounds.

# ENVIRONMENTAL JUSTICE







Map data derived from the Delaware Valley Regional Planning Commission (DVRPC)'s work to attach an Indicators of Potential Disadvantage (IPD) Score to all census tracts in the region.

## Investing in Park Equity

In many situations, low-income neighborhoods and communities of color have had less access to quality open spaces. The Urban Institute's 2019 Report, *Investing in Equitable Urban Park Systems: Emerging Strategies and Tools*, documents strategies and funding models that cities are using to help ensure that all residents have reasonably equal access to quality park space.

To bridge equity gaps, the report explores how to quantify the benefits of parks and how to revise funding models to focus on equity. The report makes recommendations on leveraging private, philanthropic and community resources to build and maintain green spaces in underserved communities.

The report could serve as a useful tool for the Riverfront North Partnership as it plans to increase the amount of public space along the northeast riverfront. Traditional revenue sources will likely continue to remain the most important source of park funding, but exploring new methodologies could help build partnerships or blended funding sources that help bridge capital gaps. Ensuring that equity is at the center of park development and financing will help build quality public spaces for all people.



*A well-attended ribbon cutting event at the new Penn Treaty Park playground.*



## Middle Neighborhoods

Middle neighborhoods are neighborhoods that are reasonably stable and are neither in a high growth or decline state, nor have low income or high property values. In his report *America's Middle Neighborhoods: Setting the Stage for Revival*, Allan Mallach identifies the characteristics and challenges of these neighborhoods in American cities. Near the greenway, portions of Port Richmond, Bridesburg, Wissinoming, Tacony, and Holmesburg all qualify as middle neighborhoods.

These neighborhoods often receive less attention and city investment than economically distressed or wealthy neighborhoods. Despite this, they often make up the majority of cities. Mallach estimates 43% of Philadelphians live in middle neighborhoods <sup>26</sup>. These neighborhoods offer opportunities for economic mobility, home buying and equity growth for middle class and working class Americans. Middle neighborhoods also tend



to have less income segregation and racial segregation than other neighborhoods. In an effort to understand the relationship between the Northeast and the Delaware River, it's important to consider the unique status and vulnerabilities of middle neighborhoods. Cultivating their health

and progress through city investment and infrastructure improvement—including the planned Riverfront North Greenway—will ensure these neighborhoods thrive.

**"These neighborhoods were the residential underpinning to the economic prowess of the American industrial city."**

**- Alan Mallach, on middle neighborhoods**



## The table below summarizes the Environmentally-focused action items discussed in this chapter.

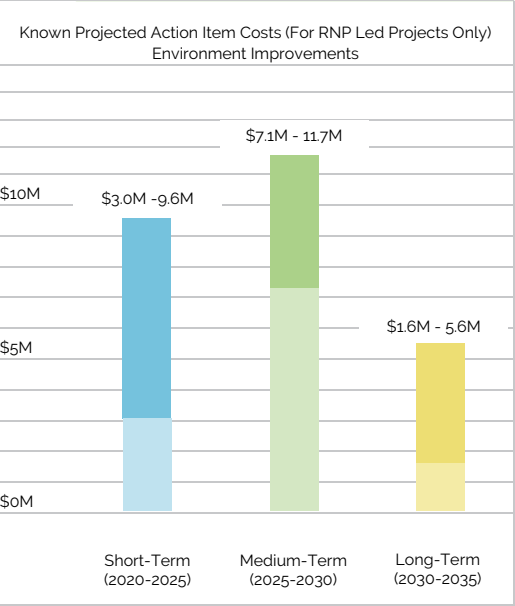
Summary of Environment Action Items	Timeline	Responsible Party and Key Partners	Costs by RNP or Others	Next Steps for RNP
Encourage the donation or sale, either to a land trust or the city, of select privately-owned parcels between the Riverfront North Greenway Trail and the Delaware River for the preservation of open space and enhancement of riverfront ecology.				
5300 Robbins, and Five Mile Point sites	Short-Term (2020-2025) and/or Medium Term (2025-2030)	RNP, PPR, PCPC, DCNR, Land Trust, Councilperson	Varies, \$90,000 to \$220,000 per acre depending on assessment and site-specific variables (funding through <u>grants</u> or <i>land trust</i> )	Initiate conversations with property owners and perform appraisals if needed.
Parcel 35 Site	Long-Term (2030-2035)			
Former Philly Coke and Rohm & Haas Riverfront Sites	As sites are developed			Monitor sale of Rohm & Haas site and initiate conversation with new owner.
Construct Phase 1 of Bridesburg Riverfront Park	Short-term: (2020-2025)	RNP, PPR	<u>\$4.7 million (funds secured)</u>	Final design is currently underway
Construct Phase 2 of Bridesburg Riverfront Park	Medium-term: (2025-2030)	RNP, PPR	<u>\$5.0 million</u>	Currently working on fundraising for Phase 2 construction
Continue efforts for restoration of shoreline and landside habitats (living shoreline, riparian buffer, tidal wetland restoration/preservation, climate resiliency)				
Pennypack Creek shoreline stabilization	Short-Term (2020-2025)		<u>\$500,000 (funds secured)</u>	Currently in design
K&T Trail Living Shoreline (currently in conceptual design, no further funding as of 2020)	Short-Term (2020-2025)	RNP, PPR, PWD, DCNR, DEP, NOAA, Land Trust	<u>Cost for each site, including design and construction, could range from \$500,000 to \$1,750,000 depending on size and scope</u>	Continuously seek funding for design and construction of these efforts. Occasionally reevaluate priority based on land acquisition and resource needs.
Frankford Boat Launch Living Shoreline and Riparian Restoration (see <i>Riverfront North Park Study</i> )	Short-Term (2020-2025)			
Pennypack on the Delaware Tidal Wetland and Woodland Restoration (see <i>Riverfront North Park Study</i> )	Medium-Term (2025-2030)			
5300 Robbins Woodland Restoration	Medium-Term (2025-2030)			
Parcel 35 Tidal Wetland and Woodland Restoration	Long-Term (2030-2035)			
Five Mile Point Habitat Restoration	Long-Term (2030-2035)			
Former Philly Coke Riverfront	Long-Term (2030-2035)			
Former Rohm & Haas Riverfront	Long-Term (2030-2035)			
Installation of bird blinds and/or viewing platforms at Parcel 35 or Pennypack Park	Medium-Term (2025-2030)	RNP, Audubon Society, PPR	<u>Bird blinds can be as low as a few thousand dollars; viewing platforms can range from \$50,000 to \$150,000</u>	Engage the Audubon Society and other avian stakeholders to strategize on scope and location of facilities.
Encourage the installation of Green Stormwater Infrastructure along connector streets	Ongoing as a part of PWD's Green City, Clean Waters program	RNP, <u>PWD</u> , Streets	<i>Costs vary by project, and are funded by PWD</i>	Engage PWD as connector street projects are proposed in CSO areas.

**Note:** Other park-specific action items can be found in the 2018 *Riverfront North Park Study*

### Notes:

Costs shown are estimated construction costs unless otherwise indicated. Estimates are high-level ranges based on comparable projects in 2020 dollars (escalation/inflation are not included). Further study should be performed to determine more detailed costs at the time of study. Costs by RNP are assumed to be obtained through grants. Long-term cost sources not yet identified are not underlined or *italicized*.

Abbreviations: Riverfront North Partnership (RNP), Philadelphia Parks & Recreation Dept. (PPR), Streets Department (Streets), Mayor's Office of Transportation, Infrastructure, and Sustainability (OTIS), Philadelphia Water Department (PWD), Philadelphia City Planning Commission (PCPC).





*Two fisherman at Pulaski Park, which is surrounded by active industrial uses.*





# 7 EXPERIENCE

The Riverfront North Greenway will provide a range of experiences for the community. Activities and functions will embrace people of all ages, cultures and abilities, in spaces that are both local treasures and regional destinations.



*Students from La Salle University during a volunteer clean-up event, Riverfront North Partnership*

# BRINGING PEOPLE TO THE RIVER

Creating positive and memorable experiences for greenway users is key to successful greenway activation.

Building relationships with the local community will build active, vibrant spaces and create a sense of ownership. Enhancing the Riverfront North Greenway experience with amenities, activities, programs, and events is critical to attracting people of all ages and abilities to the waterfront and to encourage repeat visits. Building relationships with local communities and specific interest groups can encourage regular visitorship and ongoing support.

As connections to the greenway extend to neighborhoods and public destinations in adjacent communities via bicycle- and pedestrian-friendly streets, the greenway will become part of a larger network of parks and recreational facilities. Placing kiosks, exhibits, and artwork along the greenway, connector streets and at nearby destinations can be part of a comprehensive wayfinding system. This system will inform and entice residents to visit the waterfront while encouraging greenway users to explore nearby community attractions and

commercial districts. Strengthening connections between the waterfront and nearby attractions and services benefits both the greenway and the local communities.

The scenic and historic waterfront is a regional attraction that can draw visitors from a wider area, especially when the greenway is continuous and connects with other walking and bicycling paths. Volunteer events, such as clean-ups or invasive plant removals can be opportunities to grow volunteer stewardship and build networks.

Community engagement and partnerships help to generate support and participation in greenway programs. In addition to raising public awareness and support, community partners can assist in extending user services, facilities, programs, and events beyond what can be offered solely by RNP.

Building long-term relationships with volunteers, civic and friends groups, advisory panels, and visitors is essential for the success of the greenway.



# HISTORIC AND CULTURAL FEATURES

Historic and culturally significant features can enrich the experience of greenway users and encourage visits to the surrounding neighborhoods and commercial streets.

Several sites and districts of historic significance that are near the greenway are listed on the [Philadelphia Registry of Historic Places](#) and the [National Register of Historic Places](#). Although listings recognize historic significance, they do not require public access or programming. Designated historic districts that do not have public access can still be enjoyable to walk to and through, especially if interpretive signs or brochures are available.

Three notable designated historic places near the greenway are the Fish Hatchery at Pleasant Hill Park, the Tacony Disston Community Development Historic District and the Frankford Arsenal. All of these sites are accessible from the Riverfront North Greenway via connector streets.





### Fish Hatchery at Pleasant Hill Park

The Fish Hatchery at Pleasant Hill Park, a Philadelphia city Parks and Recreation facility, is a culturally significant site within the 35-acre Park along the Delaware River. The history of the hatchery extends back to the early 20th century, when a section of the park property was part of the Pennsylvania's Department of Fisheries' Torresdale Fish Hatchery. While the hatchery is no longer in operation today, visitors to Pleasant Hill Park can still enjoy events at the park's stocked hatchery ponds.



### Frankford Arsenal along Tacony Street National Register Designation, 1973

The Arsenal is a former United States Army ammunition plant located adjacent to the Bridesburg neighborhood north of the original course of Frankford Creek. Opened in 1816 on 20 acres of land purchased by President James Madison, it was the center of U.S. military small-arms ammunition design and development until its closure in 1977. The Frankford Arsenal was an entity unto itself, a virtual city within a city, and contained everything from its own police and fire departments, dining halls, motor pool, and a complete medical facility. The site currently houses a light-industrial office space, a popular charter high school, and a new cafe.



### Tacony Disston Community Development Historic District National Register

Designation in 2016; roughly bounded by 4500-4900 blocks of Magee Street, Princeton Avenue, and Tyson Avenue, Disston Park, and the 6900 block of Cottage Street. The District is significant for its association with and important place in the history of Pennsylvania company towns. This tight-knit, self-sufficient "town within a city" was established in the 1870s. The community of workers that supported the operations of the Disston's family company, Keystone Saw, were located along the Delaware River waterfront. The Tacony Disston development was built to serve one of the largest complexes in the city, in an age when Philadelphia's economy was based on such heavy industry. Notable within the district is the **Tacony Music Hall**, which was listed as a historic site on the National Register of Historic Places in 1990.

# COMMUNITY FACILITIES

The Riverfront North Greenway provides users with outstanding views, access to the Delaware River, and opportunities to enjoy activities and facilities in seven riverfront parks. The parks are both access areas and destinations along the greenway. The Riverfront Park in Bridesburg, currently under development, will be another greenway destination. As discussed in Chapter 6, there are numerous opportunities for the expansion of public open space.

The waterfront greenway is also part of a network of recreational facilities in the adjacent communities. There are a number of neighborhood parks, playgrounds, and recreation centers in proximity to the greenway and connector streets. Residents who make use of community facilities are likely candidates to visit and enjoy activities along the riverfront if informed

and supported by facilities and programs. Outreach, wayfinding and programming coordination with these community facilities have the potential to increase the number of greenway users and expand recreational opportunities.

Schools within walking distance of the greenway or connector streets can become important RNP partners and raise awareness of the greenway among students and their families. The greenway can be used for outdoor classrooms, venues for events, and athletic competitions. The Maritime Academy Charter School on Bridge Street in Bridesburg and the MaST Community Charter School II's Tacony Campus are examples of schools with potential to collaborate with Riverfront North Partnership and facilitate greenway use. Franklin Towne Charter High School, located

in the Frankford Arsenal campus, is a long-term stewardship partner with RNP.

Outreach to community institutions with constituencies that may benefit from access to the greenway, such as older adult centers, will be important to strengthen community ties.

## Community Facilities within 1/2 mile of the Riverfront North Greenway:

20 Parks

8 Playgrounds

7 Recreation Centers

11 Schools  
(Elementary to High School)



### Riverfront North Park Study (2018)

*The Riverfront North Park Study*, September 2018, provides a wealth of valuable information and recommendations for improving publicly owned park facilities and increasing the number of parks. The purpose of the study is to “guide future investment and development in Philadelphia riverfront parks north of center city along the Delaware.” The study includes a detailed assessment of existing conditions, use, facilities, and programming, from Pulaski Park in Port Richmond to Pleasant Hill Park in Torresdale.



#### *Glen Foerd on the Delaware*

*Many of Philadelphia’s first families built their country estates on the banks of the Delaware River. They came by ferry, carriage, and later train, to escape the heat of summers in the city. It was at these grand estates they entertained some of the most prominent figures in the history of the nation.*

*Glen Foerd on the Delaware is a historic riverfront estate in Torresdale that is listed on the National Register of Historic Places. The park is a quiet and shady oasis with outstanding views of the river and is a unique asset along the greenway.*

*The Glen Foerd grounds comprise a public park, open from dawn to dusk and free to visit.*

*Photograph of Glen Foerd on the Delaware, Image Credit: Smallbones.*

# AMENITIES

Amenities are desirable or useful features along or near the greenway that increase user comfort and convenience, such as seating and viewing areas, water fountains (including for dogs), restrooms, and bicycle racks.

The presence of amenities can make the greenway accessible to a larger number of people and extend the time they stay per visit. Riverfront North Partnership and the City have worked together to add new amenities for the trail and park spaces along the waterfront.

The type and mix of amenities should address the needs of greenway users of all ages and abilities, from young people to seniors, including families and people with disabilities. Amenities should be available for people on foot, bicycle, scooters, wheelchairs, or other wheeled transport, and support the activities that attract people to the greenway and riverfront destinations. The presence of amenities can make the difference in how frequently visitors return.

Regardless of what activities greenway users enjoy, a positive experience will depend on the comfort and convenience that amenities offer.

Lighting, security cameras, and emergency phones are amenities that contribute to safety. Because people perceive that the environment is safer when these types of amenities are present, they are more likely to make use of the greenway. Technological advances have made safety features such as solar-powered lighting more cost effective. Trail lighting scored as the top requested amenity in the initial public outreach survey during this Master Plan development.

Amenities include facilities that expand the types of activities available and draw people to the waterfront and encourage greater use. Providing a wide range of opportunities for activities that appeal to different interests and age groups makes the greenway a lively and more attractive destination. Picnic areas, play areas, and docks are examples of popular attractions that can be sited along the greenway.

Services that support or facilitate activities can also be considered amenities. Examples are recreational equipment rentals (bicycles, skates, kayaks), bikeshare programs, and food trucks. These services are typically contracted out to third-party vendors.

**Respondents to the community outreach survey indicated the following amenities to be very important:**

- #1 Trail Lighting**
- #2 Garbage/Recycling Cans**
- #3 Seating/Benches**
- #4 Restrooms**
- #5 Open Space**

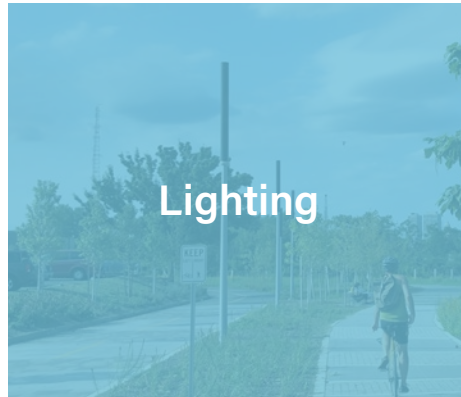
For more information, see the initial public outreach survey results in Appendix A.



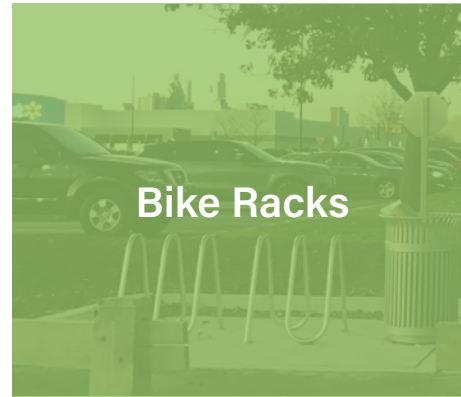
**Amenities can include:**



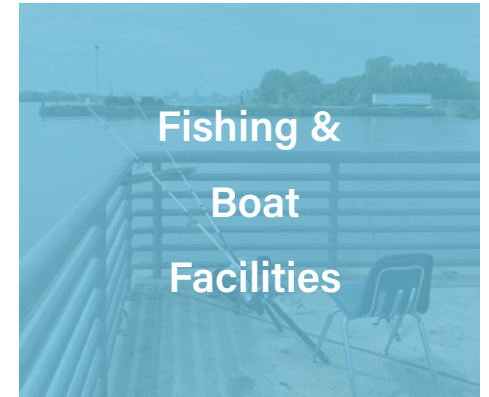
**Drinking  
Fountains**



**Lighting**



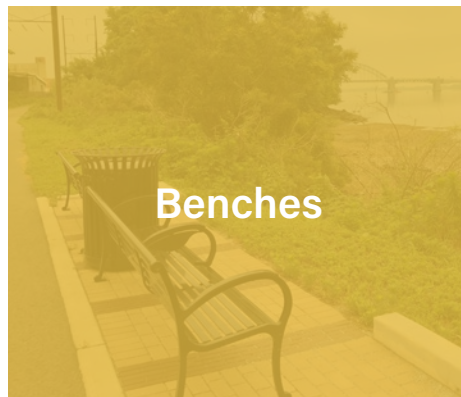
**Bike Racks**



**Fishing &  
Boat  
Facilities**



**Restrooms**



**Benches**



**Litter  
Receptacles**



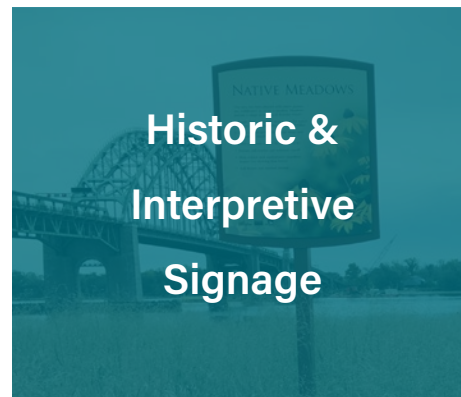
**Artwork**



**Bike Share**



**Shade  
Structures**



**Historic &  
Interpretive  
Signage**



**Picnic Areas**

*Images from USF&W, National Park Service, and NV5*



# PLACEMAKING



*Yoga on the Delaware River, Image Credit: Riverfront North Partnership.*

Placemaking is the process of planning, designing, and managing public spaces based on a local community's assets and aspirations. It is a people-centered approach that results in creating places that reflect the physical, cultural, and social identities of the people who will use them. Placemaking takes into consideration the unique characteristics of a community in the development of public spaces to create unique and memorable places and experiences.

The Delaware River and nearby neighborhoods have a rich and diverse cultural history that can be an inspiration for creative placemaking not only along the waterfront, but also along the connecting streets. Examples of placemaking include adding small nodes along the trail where artwork can be displayed, or a large gathering place where formal events take place. Creating a chain of special places along the Riverfront North Greenway, of all shapes and sizes, can give users an experience that is different from other trails in the region.



*Live music at Lardner's Point Park, Image Credit: Riverfront North Partnership.*



# VOLUNTEER STEWARDSHIP



*Volunteers working together to clean up the riverfront, Image Credit: Riverfront North Partnership.*

Through volunteer stewardship, participants learn valuable skills for protecting and restoring the greenway environment. Volunteers can be all ages, abilities, and knowledge levels. Volunteer events can include: riverfront cleanup efforts, invasive species management, trail maintenance, and planting. Volunteer stewards currently play an essential role in improving habitat along the greenway, and an

expanded volunteer stewardship program will increase the positive impacts.

By encouraging a lasting sense of ownership, volunteerism helps build support for RNP and the greenway, while advancing healthy and functional landscapes.



# PRIVATE BUSINESS AND COMMERCIAL ACTIVITY

The greenway's proximity to commercial corridors presents opportunities for local businesses while providing services and experiences to greenway users. Local commercial corridors include: Allegheny Avenue, Torresdale Avenue, Castor Avenue, Aramingo Avenue, Princeton Avenue and State Road. Greenway users can be enticed to visit nearby restaurants, cafes, and shops if they are made aware of what is available and are given directions and incentives. Information about services and business locations can be displayed at greenway access points and on commercial streets with wayfinding strategies.

The Tacony Hoagie Trail is an example of a creative strategy to draw greenway visitors to local businesses and explore adjacent communities. The Hoagie Trail is a themed tour with a pre-established route linking hoagie shops.

The Trail Town Program, created by Progress Fund, is a good resource for ways to strengthen the connection between trails and local businesses that generate economic benefits for communities. Although the program

focuses on rural communities, many of the same principles apply to urban areas.

Private businesses can also open satellite locations on the greenway to provide services that are beyond the capacity of greenway managers. These can be temporary, seasonal, or permanent facilities. Food services and recreational equipment rentals (bicycles, kayaks, cross country skis) are typical offerings, but there may be other business opportunities that add value to user experience.

Enticing local businesses to participate in ventures on the waterfront will require collecting the kind of information needed to determine if there is a large enough market to support the cost. Developing relationships with potential local businesses and keeping them informed of greenway development and activities is the first step. Conducting periodic greenway user counts and intercept surveys will provide critical information necessary to determine the viability of greenway business ventures. Pertinent data includes the number, type, and characteristics of greenway users.

# PROGRAMS AND EVENTS

With a continuous riverfront trail due to be completed by the mid-2020s, increasing programming, outreach, and stewardship opportunities will be among the next critical initiatives. Over the past several years, RNP has built a strong momentum with a variety of events along the riverfront. There is now a diverse offering of programmed events like fishing derbys, 5k races, movie nights, and festivals. RNP actively engages with its neighbors in Northeast Philadelphia through educational activities like nature walks. They have also embraced a stewardship model that attracts many volunteer groups and individuals from all walks of life.

The diversity of these events creates a wide appeal for visiting the greenway. A continuous greenway and a network of pedestrian and bicycling connections to neighborhoods, main streets, and nearby destinations will attract both local and regional visitors. Events will increase the interest in and visibility of the greenway, and help ensure visitors bring their friends and family for repeat trips.

As the greenway nears completion, Riverfront North Partnership can activate the riverfront with activities and attractions that will bring residents of adjacent neighborhoods to the greenway regularly. These events could provide positive, engaging, and exciting experiences that draw first-time visitors and give them incentives to return. Programs and events should be diverse enough to accommodate various types of people, from children to seniors, and athletes to the less-mobile. Events should be designed at a wide range of scales and feature something for everyone. Programs that attract larger crowds can be held in the parks where parking, restrooms and other support services are available.



**Program and Event Objective:** Attract a critical mass of regular greenway users through activities, events, and programs for all ages and abilities.







*Farmers Market in West Lafayette, Tippecanoe County, Indiana,  
Image Credit: John Schanlaub.*

### Park Activities

Park sites are ideal for a range of on-going programs, activities, and support services to encourage repeat and frequent visits by both local neighbors and regional visitors. Parks have the infrastructure and amenities to support a wide range of events. These could include:

- Community gardening events
- Farmers markets
- Organized workouts
- Food truck round ups
- Pop-up art events (shows and performances)
- Athletic competitions (mini triathlons, fun runs, 5ks)
- Festivals and celebrations (beer festivals, centennial events)

Park sites can be locations for smaller scale activities, or large annual events. Larger events, such as a music festival with food vendors, combine attractions to appeal to all age groups. Regular seasonal events associated with holidays and nationally recognized days such as Earth Day present opportunities for visitors to mark their calendars and spread the word about the greenway.



*Canoeing and kayaking, Image Credit: Hagerty Ryan, USFWS.*

### River Activities

Beyond Park events, the river itself can also host programs and events to draw visitors to the greenway. Programs and activities could include:

- **Fishing events** Fishing events have the potential to bring a wide range of visitors to the river, from the novice fisherman to long-time anglers. Fishing events aimed at children could help them gain an understanding and appreciation of the wildlife of the Delaware, and foster a lifelong interest in protecting the River.
- **Boating Events** Non-motorized boating events could range from introductory lessons to competitive races or relays. Canoeing and kayaking group events are a way for visitors to gain a skill in a safe and supportive environment, and gain a new perspective on the river. Kayaking and canoeing are excellent exercises that could attract visitors with a range of mobilities and abilities.





*Visitors enjoying the Winterfest ice rink, Image Credit: Camden County.*

### **Winter Activities**

Winter events could bring visitors to the greenway during the more inhospitable seasons and encourage year-round use. Winter activities could include holiday events and festivals, which could feature ice rinks, mulled cider stands, and seasonal markets. The greenway could be included in Christmas tree lighting events or even trail lighting experiences.

During times of heavy snowfall, the trail could serve as a cross-country ski route or snowshoe route. Cross country skiing and snow shoeing could be encouraged through workshops and equipment rentals.





*Earth Day Volunteer at Lardner's Point Park,  
Image Credit: Riverfront North Partnership.*

## Community Engagement

Riverfront North Partnership can facilitate events and programs on the greenway by cultivating partnerships with community organizations that can support, initiate, and lead an expanded program of activities. Engaging a wide and diverse range of partners can extend RNP's ability to expand programs and events while raising community awareness and visitorship.

RNP currently has relationships with many community organizations that provide a wide range of support, from financial support to participation in hands-on programs. RNP may consider staff-sharing arrangements and programs that structure ways to engage the community in stewardship programs such as "Adopt a Trail". RNP plans to investigate strategies and opportunities to leverage partnerships in a future strategic planning initiative.

### Community Partners can include:

- Schools
- Businesses/Corporations
- Local Organizations
- "Friends of" groups
- Historic Preservation/Education Organizations

## Vendors

Partnering with third-party vendors can help Riverfront North Partnership expand the services and experiences available to greenway visitors. This could include leasing arrangements or vendor contracts. Leasing arrangements and partnerships could provide services and programs (for example, Earth Day events with MaST Charter School). Contracts with private third-party vendors could also be explored for revenue-producing services and events, with a portion allocated to support stewardship activities and capital projects.

Third-party vendors suggested during community outreach include:

- Concession stands, food trucks/trailers
- Recreational equipment rental (bicycles, kayaks, cross country skis, ice skates)
- Public events (flea markets, craft fairs, kayak races)
- Private events (weddings, reunions)

## Flexible Event Venue

A flexible, three-season events space located along the riverfront presents a unique opportunity for Riverfront North Partnership and the Philadelphia Parks and Recreation Department. By partnering with a private third-party to finance and construct an open-air pavilion, the greenway can capitalize on the serene riverfront views and parking availability to create a space that is hard to find elsewhere in the region.

One example of such a place is the Butler Pavilion at the Hutton Brickyards in Kingston, New York. Located along the Hudson River and the Empire State Trail, the pavilion is a 21,000 square foot space that hosts weddings, flea markets, festivals, concerts, and corporate events.





*Field and Supply Makers Craft Fair at the Butler Pavilion, Kingston, NY.  
Image Credit: Field and Supply, <http://www.fieldandsupply.com/>*



The table below summarizes the Experience-focused action items discussed in this chapter.

Summary of Experience Action Items	Timeline	Responsible Party and Key Partners	Costs by RNP or Others	Next Steps for RNP
Continue relationship-building with local communities through volunteer stewardship	Ongoing	<u>RNP</u> , volunteer organizations, local businesses, schools, and civic associations	<u>Part of RNP operating expenses</u>	
Continue educational and outreach events with partner organizations	Ongoing	<u>RNP</u> , educational and environmental partners, schools	<u>Varies by event</u>	
Evaluate small placemaking opportunities along the trail between existing parks	Medium-term: (2025-2030)	<u>RNP</u> , PPR	<u>To be determined</u>	Work with PPR and other community partners to identify locations.
Conduct Pleasant Hill Park Master Plan	Short-term: (2020-2025)	<u>RNP</u> , PPR	<u>To be determined</u>	
<b>Enhanced Amenities:</b>				
Work with PWD to install water stations at strategic locations along trail route	Medium-term: (2025-2030)	<u>RNP</u> , PWD	<i>\$20,000 each</i>	Coordinate with PWD to set up fountains
Work with City of Philadelphia to explore Indego bike share along trail system	Medium-term: (2025-2030)	<u>RNP</u> , OTIS	<i>Variable, based on user model and number of bikes/docks</i>	Coordinate with OTIS after full trail completion to investigate system expansion
Work with third-party vendor to establish equipment rental business along greenway (water sports, bicycles, etc.)	Medium-term: (2025-2030)	<u>RNP</u> , PPR, third-party vendor	<i>Costs borne by vendor</i>	Work with PPR to investigate potential site for vendors and issue RFP.
Explore installation of solar trail lighting and security cameras for trail system	Long-term: (2030-2035)	<u>RNP</u> , PPR, Streets	<u>Up to \$600,000 per mile</u>	Initiate study and design to determine full costs.
Work with local stakeholders or vendors to create events to activate greenway (community gardens, farmer's markets, flea markets, etc.)	Long-term: (2030-2035)	<u>RNP</u> , PPR, civic associations, stakeholders, vendors	<i>Costs borne by stakeholder or vendor</i>	Continue community outreach to determine optimal locations for specific activation events. Identify stakeholders/vendors for each event.
Explore winter events to generate interest in Riverfront North Greenway year-round (skating, trail lighting, etc.)	Long-term: (2030-2035)	<u>RNP</u> , PPR, third-party vendor	<u>To be determined</u>	Continue community outreach to determine optimal locations and desired events. Identify stakeholders/vendors for each event.

**Note:** Other park-specific action items can be found in the 2018 *Riverfront North Park Study*

**Notes:**

Costs shown are estimated construction costs unless otherwise indicated. Estimates are high-level ranges based on comparable projects in 2020 dollars (escalation/inflation are not included). Further study should be performed to determine more detailed costs at the time of study. Costs by RNP are assumed to be obtained through grants. Long-term cost sources not yet identified are not underlined or *italicized*.

Abbreviations: Riverfront North Partnership (RNP), Philadelphia Parks & Recreation Dept. (PPR), Streets Department (Streets), Mayor's Office of Transportation, Infrastructure, and Sustainability (OTIS), Philadelphia Water Department (PWD), Philadelphia City Planning Commission (PCPC).







*Disston Park*

The background is a solid teal color. A diagonal line runs from the top-left corner towards the bottom-right, creating a lighter teal triangular area in the top-left. In the top-left corner, there is a photograph of a tree branch with green leaves. The word "SOURCES" is centered in the teal area.

# SOURCES

# SOURCES

1. Smalarz, M. (2014). Northeast Philadelphia. Retrieved November 18, 2019, from <https://philadelphiaencyclopedia.org/archive/northeast-philadelphia-essay/>.
2. Kosmin, I. (1990). Northeast Article. Retrieved November 18, 2019, from <https://www.workshopoftheworld.com/northeast/northeast.html>.
3. Philadelphia 2019: The State of the City [PDF file]. Pew Charitable Trust. (2019, April). Retrieved November 18, 2019. <https://www.pewtrusts.org/en/research-and-analysis/reports/2019/04/11/philadelphia-2019>
4. Global Philadelphia Association. (2019). Retrieved November 18, 2019, from <http://globalphiladelphia.org/communities/>
5. Philadelphia's Immigrants [PDF file]. Pew Charitable Trust. (2018, June). Retrieved November 18, 2019. <https://www.pewtrusts.org/en/research-and-analysis/reports/2018/06/07/philadelphias-immigrants>
6. Bate, D., & Phillips, S. (2019, January 15). WHYY. Timeline: The Delaware River and the Clean Water Act. Retrieved November 18, 2019, from <https://whyy.org/articles/the-delaware-river-before-and-after-the-clean-water-act/>.
7. Remembering President Kennedy. (2013, November 22). Delaware River Basin Commission. [https://www.nj.gov/drbc/home/newsbytes/approved/20131122\\_JFK.html](https://www.nj.gov/drbc/home/newsbytes/approved/20131122_JFK.html)
8. Phillips, S. (2019, January 15). WHYY. How the Clean Water Act fixed the Delaware River's pollution problem. Retrieved November 18, 2019, from <https://whyy.org/articles/how-the-clean-water-act-fixed-the-delaware-rivers-pollution-problem/>.
9. The Delaware River. (n.d.). Retrieved November 18, 2019, from <https://phillyfishing.weebly.com/the-delaware-river.html>.
10. Kummer, F. (2019, May 16). The Philadelphia Inquirer. Pa., N.J., and Del. governors meet in Philadelphia, commit to health of Delaware River. Retrieved November 18, 2019, from <https://www.inquirer.com/science/climate/governor-wolf-pennsylvania-murphy-new-jersey-carney-delaware-river-20190516.html>.
11. Bate, D., & Phillips, S. (2019, January 15). WHYY. The Delaware River's invisible threat. Retrieved November 18, 2019, from <https://whyy.org/articles/the-delaware-rivers-invisible-threats/>.
12. Norris, M. (2016, March 24). Urban Land Institute. Active Transportation and Real Estate: The Next Frontier. Retrieved November 18, 2019, from <https://americas.uli.org/report/active-transportation-real-estate-next-frontier/>
13. Green, J. (2017, Jan 7). Curbed: Atlanta. Report: Atlanta Beltline's impact on retail, office rents has been staggering. Retrieved November 18, 2019, from <https://atlanta.curbed.com/2019/1/7/18172079/atlanta-beltline-retail-office-rent-cost>
14. "The Relative Impacts of Trails and Greenbelts on Home Price." Asabere, P.K. & Huffman, F.E. J, from <https://thequeensway.org/wp-content/uploads/2014/08/Economic-impact-of-trails-on-property-values.pdf>



15. Exhibit A: Plan for the Aramingo Avenue Shopping District, City Council of Philadelphia Bill 180893, <https://phila.legistar.com/LegislationDetail.aspx?ID=3703617&GUID=430A688B-6440-4582-A506-00B274989C32&FullText=1>
16. The Pennsylvania Game Commission. Threatened & Endangered Species. (2019). Retrieved November 18, 2019, from <https://www.pgc.pa.gov/Wildlife/EndangeredandThreatened/Pages/default.aspx>.
17. Edwards, R. (2016, May 20). Restoring an Ancient Nursery for Atlantic Sturgeon. Retrieved February 27, 2020 from <https://blog.nature.org/science/2016/05/20/restoring-an-ancient-nursery-for-atlantic-sturgeon/>
18. Walsh, C. J. (2016, April 6). Philadelphia's Spring Run. Retrieved November 18, 2019, from <https://www.onthewater.com/philadelphias-spring-run>.
19. The Delaware River. (n.d.). Retrieved November 18, 2019, from <https://phillyfishing.weebly.com/the-delaware-river.html>.
20. Wetlands. (2018, June 13). Environmental Protection Agency. Retrieved November 18, 2019, from <https://www.epa.gov/wetlands/why-are-wetlands-important>.
21. National Wetlands Inventory. (2019, October 15). US Fish & Wildlife Service. Retrieved November 18, 2019, from <https://www.fws.gov/wetlands/>.
22. Riparian Buffers: Pennsylvania's Best Solution for Protecting Its Waters. (2017, March 30). Retrieved November 18, 2019, from <https://extension.psu.edu/riparian-buffers-pennsylvanias-best-solution-for-protecting-its-waters>.
23. Green Stormwater Infrastructure Planning & Design Manual [PDF file]. (2018, April). The Philadelphia Water Department. Retrieved November 18, 2019.
24. Stormwater Retrofit Guidance Manual [PDF file]. The Philadelphia Water Department. (n.d.). Retrieved November 18, 2019.
25. Environmental Justice. (2019, November 12). The Environmental Protection Agency. Retrieved November 18, 2019, from <https://www.epa.gov/environmentaljustice>.
26. Mallach, A. (2018). America's Middle Neighborhoods: Setting the Stage for Revival. Lincoln Institute of Land Policy. Retrieved from [https://www.lincolninst.edu/sites/default/files/pubfiles/mallach\\_wp18am2.pdf](https://www.lincolninst.edu/sites/default/files/pubfiles/mallach_wp18am2.pdf)

