FINAL RESTORATION PLAN / ENVIRONMENTAL ASSESSMENT FOR THE METAL BANK SUPERFUND SITE, PHILADELPHIA, PENNSYLVANIA

August 2024

Prepared by:

National Oceanic and Atmospheric Administration

on behalf of

U.S. Department of Commerce

The United States Fish and Wildlife Service

Commonwealth of Pennsylvania

Photo: K&T Trail along Delaware River waterfront, Philadelphia, PA (credit: NOAA)

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Executive Summary

The National Oceanic and Atmospheric Administration (NOAA), the U.S. Fish and Wildlife Service (USFWS), and the Commonwealth of Pennsylvania, acting through the Department of Environmental Protection (PADEP), the Department of Conservation and Natural Resources (DCNR), and the Fish and Boat Commission (PFBC) (collectively, the Trustees) have prepared this Final Restoration Plan/Environmental Assessment (Final RP/EA) to identify, evaluate, and propose alternatives to restore injured natural resources, including their supporting ecosystems and the services they provide, in order to compensate the public for the injury to natural resources resulting from releases of hazardous substances at and from the Metal Bank Superfund Site in Philadelphia, Pennsylvania (the "Site"). This Final RP/EA was prepared jointly by the Trustees in accordance with Section 111(i) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and its implementing regulations (43 C.F.R. § 11.93). This Final RP/EA describes the Trustees' restoration planning processes for the natural resources damage assessment (NRDA) and the restoration alternative that the Trustees propose to compensate the public for the natural resource injuries associated with the Site.

The Site is located on the western shore of the Delaware River in Philadelphia, Pennsylvania. According to available information, from 1962 to 1985, the Site was used for scrap metal storage. For approximately five years, during the late 1960s and early 1970s, electrical transformer salvage operations were performed at the Site. Some of the salvaged transformers contained oil-bearing polychlorinated biphenyls (PCBs), which were released to soils and groundwater at the Site, eventually seeping into the Delaware River and contaminating river surface water and sediment. These releases caused potential injuries to natural resources, including fish, benthic organisms, and benthic habitat. Literature studies indicate that exposure to PCBs at the concentrations observed at the Site can adversely affect biota (e.g., reduced reproductive success).

On March 17, 2021, the United States Department of Justice filed notice in the Federal Register of a proposed Settlement Agreement for claims for damages for potential injuries to natural resources resulting from the release of hazardous substances at or from the Site. Following a public comment period, this Settlement Agreement was finalized and executed on November 4, 2021. In the Draft RP/EA, issued in February 2024, the Trustees outlined potential restoration alternatives that could compensate the public for the potential injuries to natural resources resulting from releases of hazardous substances at or from the Site and identified the Trustees' preferred restoration alternative, which consists of one project on the mainstem Delaware River in Philadelphia at the Tacony Boat Launch. Following a public comment period where no comments were received on the Draft RP/EA, this Final RP/EA is the end step in the restoration planning process.

1 INTRODUCTION

1.1 Overview

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA S9607(f)(1)) identifies natural resource trustees (Trustees). The Trustees are responsible for recovering damages for injury to natural resources caused by the release of hazardous substances. Damages may include both the cost of restoring the resource services to baseline conditions (i.e., conditions without a release) and the value of recreation and ecological service losses from the time of injury until baseline is restored, as well as the reasonable costs of assessing such injuries.

This Final Restoration Plan/Environmental Assessment (Final RP/EA) has been developed jointly by the National Oceanic and Atmospheric Administration (NOAA), the U.S. Fish and Wildlife Service (USFWS), and the Commonwealth of Pennsylvania, acting through the Department of Environmental Protection (PADEP), the Department of Conservation and Natural Resources (DCNR), and the Fish and Boat Commission (PFBC) (collectively, the Trustees), to address natural resources, including ecological services, injured, lost, or destroyed due to releases of hazardous substances at the Metal Bank Superfund Site (the Site).

The Trustees and the Potentially Responsible Parties (PRPs) (Consolidated Edison Company of New York, Inc., Public Service Electric and Gas Company, Baltimore Gas and Electric Company, Jersey Central Power and Light Company, Long Island Lighting Company d/b/a LIPA, Metropolitan Edison Company, Orange and Rockland Utilities, Inc., PECO Energy Company, Potomac Electric Power Company, PPL Electric Utilities Corporation, Virginia Electric and Power Company, and Delmarva Power & Light Company) reached a cooperative settlement to resolve the PRPs' natural resource damages liability under CERCLA for the Site in 2021.

On November 4, 2021, the United States and the Commonwealth of Pennsylvania finalized and executed that settlement agreement. Under the Settlement Agreement, the PRPs were required to pay the Trustees $950,000 to pay for both (1) Trustee-sponsored natural resource restoration to compensate the public for lost or injured natural resources and lost natural resource services resulting from the releases of hazardous substances at the Site for the joint use and benefit of the Trustees, and (2) past and anticipated Trustee costs, including restoration planning. Approximately $535,000 of the total settlement funds are designated for restoration implementation.

This Final RP/EA describes the Trustees' assessment and restoration planning processes for this NRDA and the restoration alternative that the Trustees propose to compensate the public for the natural resource injuries associated with the Site.

1.2 Proposed Purpose, Need, and Action

Purpose. The purpose of the proposed actions is to restore, rehabilitate, replace, or acquire natural resources and their services to compensate for natural resources and natural resource services injured or lost as a result of releases of hazardous substances at the Site.

Need. In order to achieve this purpose, the Trustees must identify and evaluate potential alternative restoration options in order to determine whether these alternatives would appropriately compensate the public for natural resource injuries associated with the Site.

Proposed Actions. The Proposed Action is to restore nearshore and riparian habitat to compensate the public for natural resource injuries resulting from releases of hazardous substances at the Site. The Trustees are proposing to allocate restoration funds toward the implementation of the environmental enhancements associated with the shoreline restoration component of the Tacony Boat Launch project. The Trustees propose to stabilize the riverbank at the Tacony Boat Launch site along the K&T Trail, integrating a living shoreline in the design of the shoreline restoration, and restore freshwater tidal wetland.

1.3 Natural Resource Trustees and Authorities

This Final RP/EA was prepared jointly by the Trustees pursuant to their respective authority and responsibilities as natural resource trustees under CERCLA, 42 U.S.C. § 9601 *et seq*.; the Federal Water Pollution Control Act, 33 U.S.C. § 1251, *et seq*. (also known as the Clean Water Act or CWA), and other applicable federal or state laws, including Subpart G of the National Oil and Hazardous Substances Contingency Plan (NCP), at 40 C.F.R. §§ 300.600 through 300.615, and the CERCLA Natural Resource Damage Assessment regulations at 43 C.F.R. Part 11 (CERCLA NRDAR regulations), which provide guidance for this restoration planning process under CERCLA.

Under these regulations, the Trustees are authorized to act on behalf of the public to recover damages for injury to natural resources caused by a release of hazardous substances. Damages may include: (1) the cost of restoring the injured natural resources or ecological services to baseline conditions (i.e., conditions without a release); (2) the value of recreation and ecological service losses from the time of injury until baseline is restored; and (3) the reasonable costs of addressing such injury.

1.4 NEPA Compliance

Actions undertaken by the Trustees to restore natural resources or services under CERCLA and other federal laws are subject to the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 *et seq.*, and the regulations guiding its implementation at 40 C.F.R. Parts 1500 through 1508. NEPA and its implementing regulations outline the responsibilities of federal agencies under

NEPA, including the preparation of environmental documentation. In general, federal agencies contemplating implementation of a major federal action must produce an environmental impact statement (EIS) if the action is expected to have significant impacts on the quality of the environment. When it is uncertain whether a contemplated action is likely to have significant impacts, federal agencies prepare an environmental assessment (EA) to evaluate the need for an EIS. If the EA demonstrates that the proposed action will not significantly impact the quality of the environment, the agency issues a Finding of No Significant Impact (FONSI), which satisfies the requirements of NEPA, and no EIS is required. For a proposed restoration plan, if a FONSI determination is made, the Trustees may then issue a final restoration plan describing the selected restoration action(s).

NOAA is the lead agency for preparing this RP/EA. In accordance with NEPA and its implementing regulations, this Final RP/EA summarizes the current environmental setting, describes the purpose and need for restoration, identifies and evaluates alternative actions, including their applicability and potential impact on the quality of the physical, biological, and cultural environment.

The federal Trustees (NOAA and USFWS) have determined that the proposed restoration actions do not meet the threshold requiring an EIS; therefore, a FONSI has been issued for this Final RP/EA.

1.5 Public Participation

The Trustees first prepared a Draft RP/EA to provide the public with information on the natural resource injuries and service losses associated with the Site; the restoration objectives that have guided the Trustees in developing this plan; the restoration alternatives that have been considered; the process used by the Trustees to identify preferred restoration alternatives; and the rationale for their proposal. Public review of the restoration alternatives proposed in the Draft RP/EA is an integral and important part of the restoration planning process and is consistent with all applicable state and federal laws and regulations, including NEPA and its implementing regulations, and the guidance for restoration planning found within 43 C.F.R. Part 11. Notice of the Draft RP/EA's availability for public review was published in a NOAA web posting at https://darrp.noaa.gov/ and was also made available via NOAA's "Coastal Recovery DARRP Email Bulletin System." The Trustees did not receive any public comment on the restoration alternatives evaluated in the Draft RP/EA, and therefore, no substantive changes were made to the Final RP/EA.

1.6 Administrative Record

The Administrative Record for this NRDA can be accessed at

https://www.diver.orr.noaa.gov/web/guest/diver-admin-record/6215.

2 THE FORMER METAL BANK SITE - OVERVIEW

2.1 Background

The Metal Bank Superfund Site (the Site) is located on the western shore of the Delaware River in Philadelphia, Pennsylvania (Figure 2.1). According to available information, starting in 1962 and ending in 1985, the Site was used for scrap metal recycling and storage. For approximately five years, from 1968 or 1969 to 1973, electrical transformer salvage operations were performed at the Site. Some of the salvaged transformers contained oil-bearing polychlorinated biphenyls (PCBs). Prior to salvage, PCB-bearing oil was drained from these transformers and stored in an underground storage tank located at the Site. Spills of PCB-bearing oil during the salvage process and leaks from the underground storage tank resulted in releases into soils and groundwater at the Site, eventually seeping into the Delaware River and contaminating river surface water and sediment. Literature studies indicate that exposure to PCBs at the concentrations observed at the Site can adversely affect biota (e.g., reduced reproductive success).

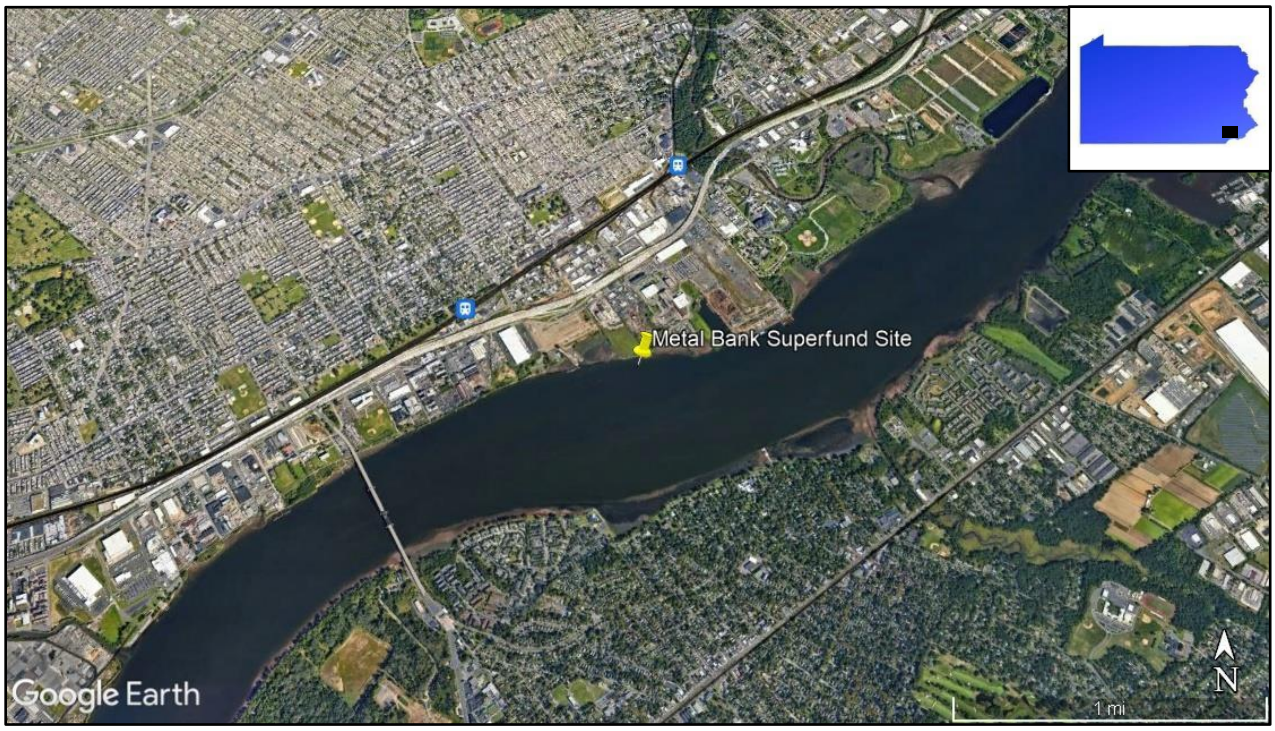

FIGURE 2.1. LOCATION OF METAL BANK SUPERFUND SITE.

The investigative history of the site began in 1972, when reports of oil seeping from the banks of the Delaware River at the Metal Bank site prompted the United States Coast Guard (USCG) to conduct a series of visual inspections of the Metal Bank site and the Delaware River bank. Throughout the course of the investigations, the USCG concluded that Metal Bank was the

source of the oil seeps. Furthermore, the USCG determined that the source of the oil on the Metal Bank site was a leaking oil containment system associated with the electrical transformer recycling activities. As a result of these inspections, the Metal Bank of America, Inc. (the owner of the Site) performed various remedial actions at the site from 1972 to mid-1973, following the recommendations of the USCG. In addition, Metal Bank of America, Inc. ceased all electrical transformer reclamation operations at the site in 1973. However, releases of hazardous materials resulting from these activities continued for many years afterward (Industrial Economics 2013).

The Site was added to the National Priorities List (NPL, or Superfund) under CERCLA on September 8, 1983. The United States Environmental Protection Agency (EPA) has been active at the Site in collecting and analyzing data and directing response and remedial activities. More information on these activities can be found at:

https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0300951

3 INJURY ASSESSMENT

This background section describes the Trustees' assessment strategy, including the approaches used to determine potential injuries to resources affected by hazardous substance releases from the Site.

Using readily available information, the Trustees developed an initial estimate of natural resource damages and identified potential restoration options. This estimate determines injury based on site-specific and literature-based information, quantifying where possible the likely ecological and human use services lost due to contamination. In addition, the Trustees described the expected benefits of a suite of restoration projects, some combination of which may adequately restore the injured resources and services and compensate the public for these losses.

3.1 INJURY DETERMINATION AND RESTORATION-BASED QUANTIFICATION

3.1.1 The Pathways of Contamination to Trust Resources

A first step in the assessment of natural resource injuries is to identify the pathways of contamination to natural resources. A pathway is the route or medium (for example, water or soil) through which hazardous substances are transported from the source of contamination to the natural resource of concern (43 C.F.R. § 11.14). The Trustees concluded that the primary transport pathways of concern in this NRDA was likely to be principally a result of PCB contamination, for soils, sediment, fish, piscivorous birds, and groundwater.

The most probable pathways for injury at and near the Metal Bank site occurred through direct

contact with sediments, surface water, and ingestion of food contaminated with PCBs (FWS 2007). The physical and chemical properties of PCBs allow them to be taken up by biota and bio-accumulated through the food web. Contamination on site poses a food web risk to migratory birds and other wildlife that are attracted to habitats present along the Delaware River including those found within the Site. Ingestion is expected to be the primary pathway for PCB injury to migratory birds and other wildlife at this site. Different species of migratory birds will have different pathways of exposure, depending on their feeding habitats, through ingestion of contaminated soils, sediments and/or prey items. Data showing PCBs in biological resources (e.g., fish) within the assessment area provide additional evidence of the contaminant pathway (Industrial 2013). Routes of exposure for PCBs that were identified for aquatic organisms in the Delaware River next to the Site include direct contact with NAPL (non-aqueous phase liquid), contaminated sediments and surface water, and ingestion of contaminated prey species with subsequent transfer through the food web.

Surface waters were exposed to PCBs discharged directly to the Delaware River or transmitted through the movement of contaminated soil particles and organic matter by surface water or groundwater, and through the remobilization and release of contaminants from sediment (e.g. natural scouring, pore water exchange, or bioturbation). Surface waters exposed to Site-related PCBs include, but may not be limited to, the Delaware River in the mudflat and river areas (Industrial 2011).

Groundwater resources are an important source of potable water, and provide essential ecological functions such as surface water recharge. Groundwater resources in the assessment area were exposed to Site-related PCBs via infiltration through soil in the riparian portion of the Site (Industrial 2011). Groundwater seeps would have been expected to occur in the periphery of the site, *i.e.*, in the steep banks along the Delaware, especially during periods of heavy and lengthy precipitation events (USEPA 1994).

3.1.2 Contaminants of Concern (CoCs)

CoCs in the assessment area include, but are not limited to, PCBs, polynuclear aromatic hydrocarbons (PAHs) and other semi-volatile organic compounds (SVOCs), pesticides, and metals. Of these contaminants, the Trustees identified PCBs as the primary CoC because they are persistent and bioaccumulative, data on exposure and effects are readily available, and remedial efforts focused on addressing PCB contamination (USEPA 2010).

PCBs are a class of compounds that consists of 209 chlorinated hydrocarbon chemicals. PCBs were manufactured from the 1930s until their production was banned in the United States by EPA in 1979, which required companies to phase out use of PCBs by 1985, except in cases where they were totally enclosed. PCBs were used primarily as insulating materials for electrical transformers and capacitors because of their chemical stability at high temperatures, but were also used in other industrial applications.

PCBs are relatively mobile in the environment, and can be volatilized and transported in the atmosphere and absorbed to soil particles in stormwater run-off that is deposited in water bodies. The chemical structure of PCBs also allows these compounds to accumulate in the fatty tissues of organisms and bioaccumulate and biomagnify through food webs (Industrial 2011).

In organisms, PCBs can cause a range of adverse health effects, including liver and dermal toxicity, reproductive effects, and neurological effects. Responses depend on the exposed species, the particular PCB to which they were exposed, and a number of other factors (Industrial 2011).

3.1.3 Physical Habitat – Natural Resources and Natural Resource Services at or Adjacent to the Site

The assessment area was defined as the geographic scope within which trust resources were directly or indirectly affected by Site-related contaminants (43 C.F.R. §11.14 (c)). The assessment area was limited to where Site-related sampling has occurred, divided into three sections based on habitat type and hydrologic features. These three sections were the riparian, mudflat, and river areas.

The Site serves as a critical stopover for migratory birds. Priority habitat identified within the site includes the mudflat area. Habitats for various species of migratory birds exist at and near the site. While most of the Site is kept mowed, several areas near the site perimeter (e.g., adjacent to the mudflat and Delaware River) support mixed shrub, tree and grassy habitats suitable for many species of migratory birds and small mammals upon which migratory birds might feed. The 3-acre mudflat adjacent to the Site supports snails, amphipods, flatworms, freshwater mussels, (invasive *Corbicula sp.*), scuds (*Gammarus sp.*) and other benthic invertebrates that would serve as a food source for many different bird species. Other native mussels occur in close proximity to the Metal Bank site, including Tidewater Mucket (*Leptodea ochracea*), Eastern Pondmussel (*Ligumia nasuta*), and Alewife Floater (*Utterbackiana implicata*). Adjacent to St. Vincent's School, a 2-acre wetland area dominated by arrow arum (*Peltandra virginica*) provides additional habitat. A variety of birds have been reported to use the site (FWS 2007).

In addition to migratory birds, anadromous fish are another trust resource that was affected by contamination at the Site. Numerous species of fish migrate close to the Site and reside in the area for extended periods during sensitive life stages. Eight species of anadromous fish use the river as a migratory corridor. Species of special interest due to their commercial importance or abundance in the area are the alewife (*Alosa pseudoharengus*) , American eel (*Anguilla rostrata*), American shad (*Alosa sapidissima*), blueback herring (*Alosa aestivalis*), striped bass (*Morone saxatilis*), and white perch (*Morone Americana*). The river near the Site also supports

populations of the federally endangered shortnose sturgeon (*Acipenser brevirostrum*) and Atlantic sturgeon (*Acipenser oxyrynchus oxyrynchus*).

The Commonwealth of Pennsylvania currently has a consumption advisory on several fish species in the river due to concentrations of PCBs and chlordane above FDA Action Levels. White perch, channel catfish (*Ictalurus punctatus*), carp (*Cyprinus carpio*), flathead catfish (*Pylodictus olivaris*) and American eel are among the species included in the advisory (FWS 2007).

3.1.4 Injury Quantification

Based on information available to the Trustees, the contamination associated with the Site has resulted in injuries to natural resources under the jurisdiction of the Trustees, as well as the services provided by these resources, at the Site, its riparian areas, mudflat area, and within the Delaware River. Approximately 9.6 acres of riparian habitat associated with the Site were injured as a direct result of contamination and remedial actions, including removals and capping. The ecological losses for the Site were determined by evaluating injuries to Trust resources, including soil, sediment, and fish, on a habitat basis using habitat equivalency analysis (HEA) which included both the geographic and temporal scope of the injuries.

The Trustees determined that although human use losses attributable to Site-related contamination have occurred, it was appropriate to forego an estimation of these injuries. It was probable that contaminants attributable to the Site are partially responsible for the Fish Consumption Advisory (FCA) issued for the Delaware River. Although FCAs constitute an injury under the DOI NRDA regulations (43 CFR 11.62(f)(iii)), available data are insufficient to estimate FCA-related recreational fishing losses. Therefore, the Trustees did not quantify recreational fishing losses.

4 CERCLA RESTORATION PLANNING – IDENTIFYING POTENTIAL RESTORATION ALTERNATIVES AND EVALUATION CRITERIA

4.1 Restoration Goals and Objectives

The goal of the restoration planning process is to identify restoration alternatives that are appropriate to restore, rehabilitate, replace, or acquire natural resources and their services equivalent to natural resources and services injured or lost as a result of releases of hazardous substances. One restoration alternative may include multiple restoration actions, such as restoring multiple habitat types, or performing restoration across multiple sites.

4.2 Restoration Planning Process - Overview

In accordance with the CERCLA NRDA regulations, the Trustees identified and evaluated a reasonable range of project alternatives that could be implemented to create or enhance riparian, shoreline, and nearshore benthic habitat in or near the Delaware River in proximity to the Metal Bank Superfund site. The range of projects considered came from a focused scoping activity conducted by the Trustees that canvassed over 150 organizations, local governments, and resource agencies in the greater Philadelphia area. The Trustees reviewed available information to understand the potential benefits and feasibility of the specific projects identified. The Trustees evaluated the potential projects with the goal that selected restoration alternatives would be capable of providing multiple benefits or services. Additionally, the Trustees considered the potential restoration alternatives based on the criteria outlined below.

The results of that evaluation and the identification of the Trustees' preferred restoration alternative are provided in Section 5.0 of this Final RP/EA.

4.3 Identification of and Screening the Potential Restoration Alternatives

The Trustees received eight potential project responses to the scoping request issued in January of 2023 to consider for this NRDA. The Trustees then narrowed this list based on the following screening factors identified by the Trustees:

- Preference for restoration projects with a strong nexus to the injured resources;
- Preference for restoration projects within close proximity to the Metal Bank site;
- Preference for restoration projects that maximized limited Trustee funds to on-the-ground restoration in the near-term.

Applying these screening factors, the Trustees identified three currently viable, potential restoration alternatives from the list that would provide compensation to the public for natural resource injuries resulting from contamination associated with the Site:

- Kensington & Tacony Trail (K&T Trail) Living Shoreline and Tacony Boat Ramp Project– The proposed project would transform an eroding shoreline and industrial bulkhead into a naturalized and living shoreline through riparian plantings, on a site approximately ¼ mile south of the Metal Bank site. The park project includes: repair and stabilization of the riverbank at the Tacony Boat Launch and a wharf that is directly south along the K&T Trail; integration of living shoreline techniques in the design of the shoreline restoration; creation of a freshwater tidal wetland; and protection of Spatterdock (*Nuphar advena)* stands found in the work area, which are important fish habitat and refuge for juvenile fish. The existing dilapidated boat launch would be replaced as a co-occurring action with funds that are not part of this

settlement.

- Fairmount Park Creek Restoration and Sedge Meadow Project – The proposed Shedbrook Creek Restoration and Sedge Meadow Project is located in FDR Park, a 348-acre park in South Philadelphia. The FDR Park Plan calls for an "ecological core" at the center of the park to enhance and connect habitat areas and help mitigate problems associated with excess stormwater runoff. The project would restore and expand Shedbrook Creek and create a connecting wet meadow habitat area, restoring 3,700 linear feet of the currently impaired creek, establish 8.5 acres of riparian habitat through a 50-foot buffer on each side of the creek, and convert 8.5 acres of low-lying areas into a high-quality open wetland condition.

- South Philadelphia Wetlands Park Project – The proposed South Philadelphia Wetlands Park seeks to repurpose formerly industrial riverfront into more natural bank conditions designed to sustain and enhance upland, meadow, wetland, mudflat and in-water habitats for fish and wildlife. The proposed park is both a tidal wetland restoration as well as a new public park in a greenspace-deprived area of South Philadelphia. The project area comprises former Piers 64, 67, 68 and 70 South along the Delaware River.

In addition to these potential restoration alternatives, the Trustees considered a “No Action” (“Natural Recovery”) alternative, as required by NEPA and the NRDA regulations. Under this alternative, the Trustees would take no action to compensate the public for interim losses associated with the natural resource injuries resulting from the Sites.

Figure 4.1 shows the geographic location of each of the further evaluated projects, in relation to the Metal Bank Site.

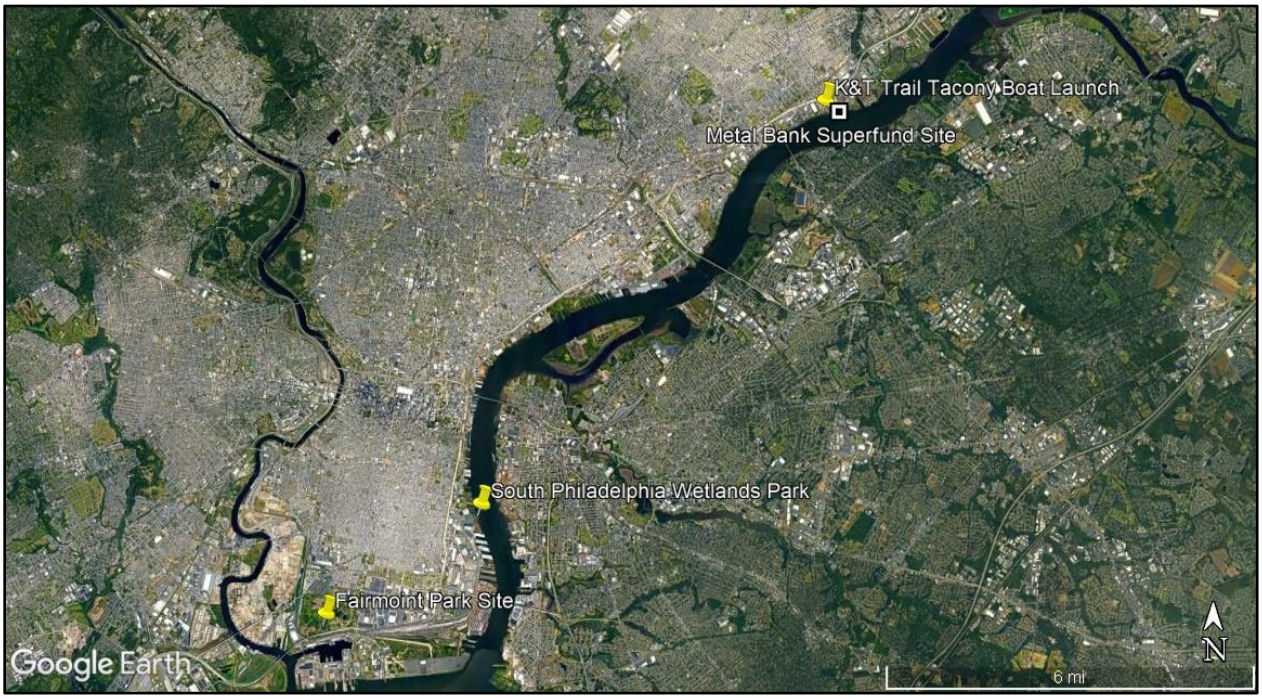

FIGURE 4.1. LOCATION OF ALLEVALUATEDPROJECTSITES INRELATION TOTHEMETAL BANK SUPERFUND SITE.

4.4 Restoration Alternatives for Consideration

4.4.1 Shoreline Restoration at the K&T Trail and Tacony Boat Launch

This proposed project, located approximately ¼ mile south of the Metal Banks site, would transform an eroding shoreline and industrial bulkhead into a naturalized and living shoreline through riparian plantings, improving habitats as these spaces become more accessible for passive recreation (Figure 4.2). Specific work would include:

- Repair and stabilization of the riverbank at the Tacony Boat Launch and a nearby wharf that is along the K&T Trail
- Integration of living shoreline techniques in the design of the shoreline restoration
- Creation of a freshwater tidal wetland
- Creation of an access path to the shoreline for maintenance, stewardship and educational activities; and
- Protection and potential enhancement of aquatic vegetation and Spatterdock stands found in the area.

The project would involve transforming a structurally unsound wharf into a living shoreline and fishing overlook. In total, 1,150 linear feet of living shoreline would be installed, as well as improved aquatic habitat for freshwater mussels, rainwater gardens, and native plantings. Additional site work is included in the full project as proposed, but would occur with external

non-settlement funds. These additional enhancements include improved recreational opportunities and public access by constructing a fishing overlook and adding ADA-accessible amenities to the park, such as a non-motorized boat ramp, restroom/storage, and sheltered pavilion.

FIGURE 4.2. PROPOSEDSITE PLAN FOR SHORELINE RESTORATION AND TACONY BOAT LAUNCH.

4.4.2 Shedbrook Creek Restoration and Sedge Meadow Project

The proposed Shedbrook Creek Restoration and Sedge Meadow Project would restore and expand Shedbrook Creek and create a connecting wet meadow habitat area. The project, located 12 miles downstream of the Site but not directly on the Delaware River, would restore 3,700 linear feet of the currently impaired Shedbrook Creek, creating positive flow, a healthy riparian environment, and a kayak access point. The project would also establish 8.5 acres of riparian habitat through a 50-foot buffer on each side of the creek. Additionally, the project would convert 8.5 acres of low-lying areas into a high-quality open wetland condition to create the Sedge Meadow. Channels would be constructed throughout the wet meadow to enable kayaking access from Shedbrook Creek. A 1,000 linear foot boardwalk would be constructed through the Sedge Meadow to connect to the trailhead at the center of the park, bridging the eastern and western halves of FDR Park (Figure 4.3).

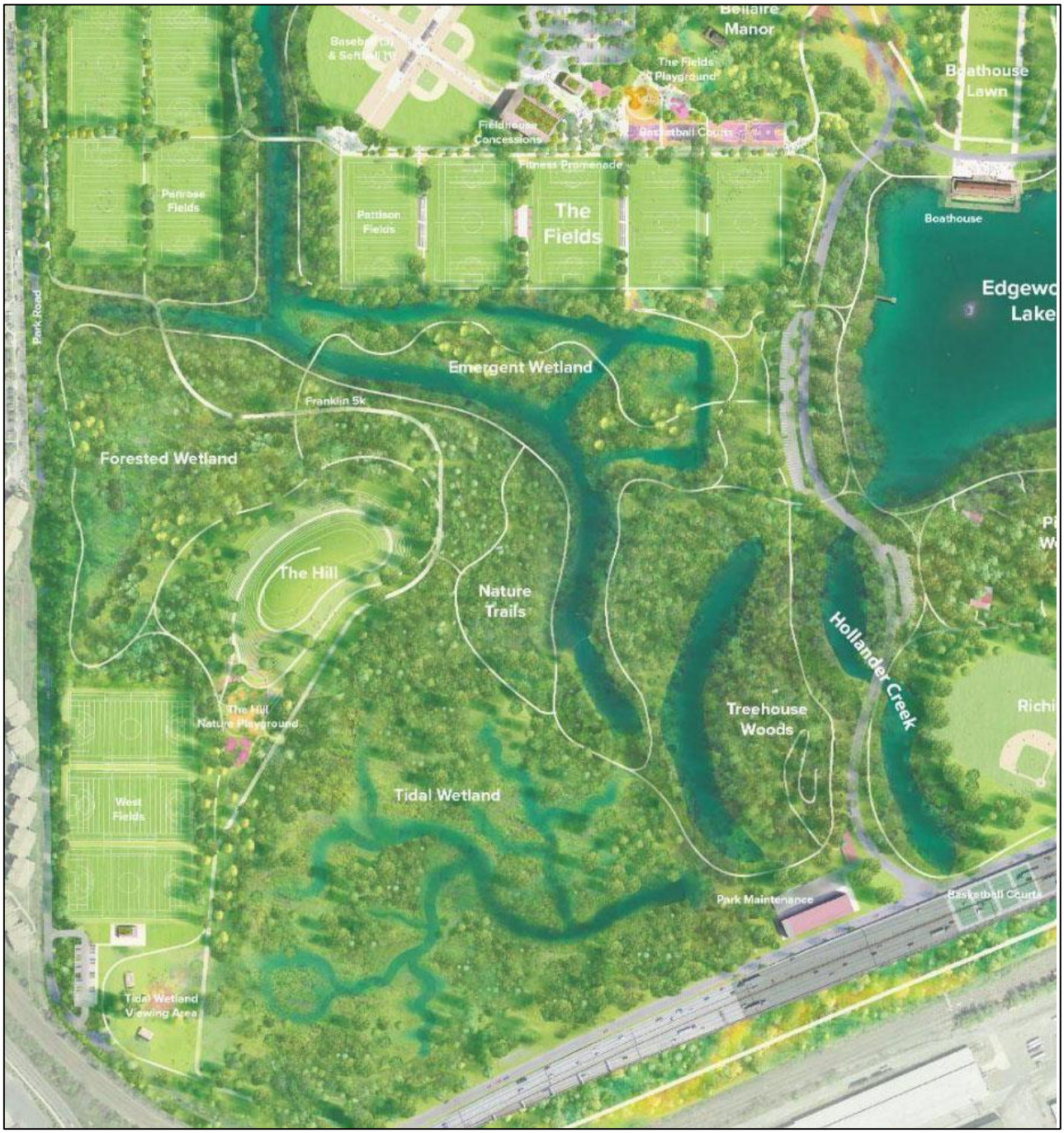

FIGURE 4.3 PROPOSED SHEDBROOK CREEK RESTORATION AND SEDGE MEADOW PROJECT.

Shedbrook Creek has been the lesser known of the two creeks that drain FDR Park for decades, as it was only visible to a small number of users of the former FDR Park Golf Course. The site of the creek restoration and sedge meadow conversion is located on the west side of FDR Park, within the footprint of the former driving range and fairways. This area consists of the existing, poor-quality creek and fragmented, disconnected wetlands, which suffers high pressure from invasive species growth.

4.4.3 South Philadelphia Wetlands Park

The South Philadelphia Wetlands Park Project would repurpose formerly industrial riverfront into more natural bank conditions designed to sustain and enhance upland, meadow, wetland, mudflat and in-water habitats for fish and wildlife. The proposed project is located on the Pennsylvania side of the Delaware River about eight miles downstream from the Site, comprising the former Piers 64, 67, 68 and 70 South (Figure 4.4).

The space between Piers 70 and 68 would be a testbed for establishing a re-naturalized riparian bank supporting upland forest, wet meadow, emergent wetland and vegetated mudflats in an urban context. The connector boardwalk would act as a wave attenuator to support growth of submerged aquatic vegetation. The existing and heavily utilized fishing facilities at Pier 68 would be enlarged as well.

The proposed Phase 1 includes one pier (Pier 70) and one berth - the fundamental units of the project - along with the full complement of upland and wetland habitat envisioned for the site. A combined boardwalk and wave attenuator would shelter new wetland plantings and provide a connection between Pier 70 and the existing park at Pier 68. The proposed Phase 1 would also include a floating canoe and kayak launch as well as a boathouse building with restrooms anchoring both water access and the southern trailhead of the Delaware River Trail. The remainder of the park could be built as one phase or a series of smaller phases. A timeline for construction of the additional phases has not yet been established, but would ultimately depend on the availability of funding.

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FIGURE 4.4. CONCEPTUAL PLAN OF SOUTH PHILADELPHIA WETLAND PARK.

4.4.4 No Action Alternative

Both the CERCLA NRDA and NEPA regulations require the Trustees to evaluate a "Natural Recovery" or "No Action" restoration alternative. Under this alternative, the Trustees would take no action to restore injured resources and their services or interim losses associated with the evaluated natural resources.

4.5 Monitoring and Adaptive Management of Selected Restoration Alternative(s)

Implementation of the selected restoration alternative will include project monitoring and adaptive management protocols for the restoration project(s), as funding is available. The workplan for the selected alternative will support a reasonable monitoring effort to meaningfully monitor and evaluate restoration outcomes. Trustees would coordinate with partners such as NOAA science centers and local universities to design, develop, and implement monitoring protocols. While standard metrics for restoration techniques will be included, the Trustees are interested in pursuing expanded metrics to further inform the science around restoration efficacy in the face of climate change and its impacts to coastal habitats.

4.6 The Trustees' Evaluation and Selection Criteria

In accordance with CERCLA NRDAR regulations, the following criteria were used to evaluate the potential restoration alternatives described above, including the No Action alternative:

- The extent to which the restoration alternative is expected to meet the Trustees' restoration goals and objectives: The Trustees consider the extent to which each alternative is expected to meet the Trustees' goals and objectives in returning the injured natural resource and services to baseline and/or compensating for interim losses. The Trustees consider the ability of a restoration alternative to provide resources and services of the same type and quality that were injured or lost. Alternatives that restore, rehabilitate, replace, enhance, or acquire the equivalent of the same type of resources and services injured by releases associated with the Site are preferred to alternatives that benefit similar, but different, resources or services.
- The cost to carry out the restoration alternative: The Trustees consider the cost of an alternative, including design, implementation, and long-term maintenance and monitoring, relative to the benefits of a project to the injured natural resources and services lost. Factors that can affect and increase the costs of implementing restoration may include project timing, access to the restoration site (for example with heavy equipment), acquisition of state or federal permits, acquisition of the land needed to complete a project, and the potential liability from project construction. Already designed and permitted projects are favored as funding primarily goes directly to habitat improvement rather than design, permitting or administrative costs.
- The likelihood of success of each restoration alternative: The Trustees consider the

technical feasibility of each alternative in achieving the restoration goals and the risk of failure or uncertainty that the goals can be met and sustained. The Trustees will generally not support an alternative which utilizes techniques that are unproven or that are designed primarily to test or demonstrate unproven technology. The Trustees also consider whether difficulties in project implementation are likely and whether long-term maintenance of project features is likely to be necessary and feasible.

- The extent to which each restoration alternative would avoid collateral injury to natural resources as a result of implementation: The Trustees consider whether a restoration alternative may harm natural resources and the environment. An alternative that avoids or minimizes adverse impacts to the environment and natural resources is preferred.
- The extent to which the restoration alternative may benefit more than one natural resource or service: The Trustees consider whether a restoration alternative will provide benefits that address multiple resource injuries or service losses, or that provides ancillary benefits to other resources or resource uses. This criterion addresses the interrelationships among natural resources, and between natural resources and the services they provide. Projects that provide benefits to more than one resource and/or yield more beneficial services overall, are viewed more favorably.
- The effect of the restoration alternative on public health and safety: The Trustees consider whether an alternative will pose unacceptable risks to public health and safety. Restoration alternatives that may negatively affect public health or safety would not be appropriate for Trustee implementation.

Throughout the planning process, the Trustees also recognized the importance of public participation and the acceptance of a potential project by the community as critical components for restoration. Accordingly, a potential restoration alternative was considered more favorable if it was complementary to other community development plans/goals. The results of the Trustees' evaluation and the identification of the Trustees' preferred restoration alternative are provided in Section 5.0 below.

5 EVALUATION OF POTENTIAL RESTORATION ALTERNATIVES

5.1 Evaluation of Alternative 1: Shoreline Restoration at the K&T Trail and Tacony Boat Launch (*Preferred*)

The proposed K&T shoreline restoration and Tacony Boat Launch project is the closest of the evaluated projects to the Site, located ¼ mile south on the mainstem of the Delaware River. Additionally, the shoreline type proposed for restoration has suffered similar physical impacts (fill and hardening) as the Site. The Delaware River shoreline along much of the North Delaware River Greenway has been marred by generations of industrial activity and bulkheads, largely eliminating critical nearshore shallow water habitats. The Delaware River has 6-7 foot tidal changes along the Greenway, coupled with high energy activity and events like regular freight ship traffic, recreational boating and storms that erode the shoreline, hindering establishment of native vegetation.

The shoreline restoration would improve ecological needs of fish and wildlife habitat through a variety of habitats including living shoreline, rainwater gardens, and native tree and shrub plantings in the 3.2 acre park. The project would not only preclude introduction of invasive riparian buffer and tidal wetland plants, but would also re-establish habitat in an important wildlife corridor for beavers, fox, osprey, and eagles. Small forage fish and juvenile estuarine species would utilize the shallow nearshore areas enhanced by the living shoreline structure and wave dampening, which would also improve and maintain water quality, since less erosion would occur.

Also co-occurring in the proposed park (utilizing funds separate from those provided for in this settlement) are opportunities for public access and recreation by repurposing an unsafe wharf into a fishing overlook and adding ADA-accessible amenities to the park, including a non-motorized boat ramp, restroom/storage, and sheltered pavilion.

Table 5.1 summarizes the evaluation of Alternative 1 based on the evaluation and selection criteria described in Section 4.6.

TABLE 5.1. EVALUATION OF ALTERNATIVE 1 (PREFERRED)

Alternative 1: Shoreline restoration at the K&T Trail and Tacony Boat Launch	
Restoration Criteria	Rationale
Meets Trustees' restoration goals and objectives effectively:	Yes; Creates and restores shallow water, wetland, and upland buffer habitats to offset injury.
Delivers benefits cost-effectively:	Yes; Cost effective relative to the resource and service losses and expected benefits.
High probability of success:	Yes; Proven approach and project team with prior demonstrated success. Elimination of bulkhead and grading result in immediately realized shallow water habitat.
Avoids collateral injury to natural resources:	Yes; Poses no long term direct or indirect impacts to injured or other natural resources. Reverses a man-made condition into a more nature like habitat that would have existed prior to disturbance.
Benefits more than one natural resource and/or service:	Yes; Provides nearshore and shallow water fishery habitats; supports habitat complexity, species diversity (including migratory birds), nursery grounds, enhanced water quality, and provides buffer to planned park area. Overall project also provides recreational benefits via co-occurring (non-case settlement fund support) recreational amenities.

Ensures protection of human health and safety:	Yes; Poses no significant risk to public health and safety.

5.2 Evaluation of Alternative 2: Shedbrook Creek Restoration and Sedge Meadow Project (*Non- Preferred*)

The proposed Shedbrook Creek Restoration and Sedge Meadow Project is located about 12 miles downstream of the Site, just inside the mouth of the Schuylkill River off the mainstem of the Delaware River. The ponds and lagoons are remnants of the tidal marsh and channel system which originally occupied the area between the Schuylkill and Delaware rivers. Diking, draining and filling of these marshes probably started with the first settlement of the area, culminating in the installation of a tide gate designed to permit drainage from the park while minimizing inflow from the Delaware River.

The proposed restoration of Shedbrook Creek would improve the quality of the stream, which is currently low to no flow, subject to anoxic conditions, and disconnected from the site's hydrology. The expanded creek and sedge meadow would serve multiple functions to include providing additional water storage capacity and creating and enhancing habitat areas. The proposed project would increase the overall connectivity of the park's natural landscapes by creating connections between the wet meadow landscape of the Sedge Meadow, the restored Shedbrook Creek, and the established riparian habitat. Restoring and connecting these landscapes would also increase the diversity of flora and fauna, improve natural corridors for wildlife habitat, and combat the growth of invasive species such as phragmites and duckweed. The Pennsylvania Audubon Society has designated the park as an Important Bird Area (IBA). Birds that have natural habitats in the park include shovelers, gadwall, wigeon, ring-necks, bufflehead, redhead, scaup, ruddys, pintail, pied-billed grebes, snow geese, Canada geese, and herons.

While the focus of the proposed project for the use of these settlement funds would be the ecological restoration within Shedbrook Creek and the connected meadow and riparian habitats, the proposed park would also have opportunities for public access and recreation through co-occurring enhancements to boardwalks, kayak launches and other recreational amenities on-site (from non-case settlement funding).

The proposed Shedbrook Creek restoration project within FDR Park is one of the most heavily used sites in the entire Philadelphia park system and sits within some of Philadelphia's most diverse and fast-growing communities. The proposed project would dramatically change how park users interact with the park's water bodies, providing recreational value through increased opportunities to get on the water and explore and connect with nature in meaningful ways. Community members expressed a strong interest in benefits such as these during the 18-month community engagement process that drove the FDR Park Plan. A new kayak access

point to Shedbrook Creek would be constructed and channels throughout the wet Sedge Meadow would allow kayakers and boaters to traverse these different landscapes. The boardwalk, which would be constructed through the Sedge Meadow, would also open these areas to create overlooks for passive recreation. The project would create access points from the eastern half of the park into a natural experience in the western half of the park that would be highly accessible regardless of an individual's mobility.

Table 5.2 summarizes the evaluation of Alternative 2 based on the evaluation and selection criteria described in Section 4.6.

TABLE 5.2. EVALUATION OF ALTERNATIVE 2 (NON-PREFERRED)

Alternative 2: Shedbrook Creek Restoration and Sedge Meadow Project	
Restoration Criteria	Rationale
Meets Trustees' restoration goals and objectives effectively:	Uncertain; Restoration would be expected to restore and enhance freshwater isolated wetlands to offset injury; but there is no direct stream channel connection to the Schuylkill or Delaware Rivers that would allow fish access to the site, limiting the benefits to resident fish.
Delivers benefits cost-effectively:	Yes; Stream and freshwater wetlands creation would be cost-effective relative to the resource and service losses and expected benefits.
High probability of success:	Yes; Restoration technique is a proven approach.
Avoids collateral injury to natural resources:	Yes; Poses no long term direct or indirect impacts to injured or other natural resources. Potential impacts to wetlands due to board walk installation is negligible.
Benefits more than one natural resource and/or service:	Yes; Improves creek and freshwater wetland hydrology and water quality; benefits freshwater fishery habitats; supports habitat complexity; species diversity (including migratory birds); nursery grounds; and enhanced water quality. Community services from co-occurring proposed recreational amenities would improve recreational experiences.
Ensures protection of human health and safety:	Yes; Poses no significant risk to public health and safety.

5.3 Evaluation of Alternative 3: South Philadelphia Wetlands Park (*Non-Preferred*)

The proposed South Philadelphia Wetlands Park project would be located on the mainstem of the Delaware River about 8 miles downstream of the Site. Additionally, the shoreline area proposed for restoration has suffered similar physical impacts (fill and hardening) as the Site. The piers and berths of the South Wetlands Park site were once part of an extensive tidal ecosystem of river, marsh, and mudflat. As Philadelphia developed and expanded, the wetlands were diked and drained for agriculture and then filled to make way for urbanization and port activity. When the departure of manufacturing and port activities left the site abandoned, the piers were left to decay and re-vegetate with the berths silting in between.

Habitat establishment at South Philadelphia Wetlands Park would restore long lost functional benefits to the city and watershed via living shorelines and riparian habitat, while also stabilizing banks and reducing coastal erosion. The proposed constructed wave attenuators would enable marsh establishment adjacent to a commercial shipping channel, which could protect the created marsh and shoreline and allow for the deposition of sediment while also serving as mussel habitat.

Due to the scale and cost of the proposed project (phase 1 is estimated at $6-7M, and later phases could be up to $27M), construction would be phased, allowing for the park to be built as funds become available, but also providing the opportunity for learning through monitoring and adaptive management. Co-occurring in the proposed park (through non-case settlement funding), significant public access and recreation amenities would occur by repurposing portions of the piers as fishing sites, public spaces, boardwalk area and kayak launches.

Table 5.3 summarizes the evaluation of Alternative 3 based on the evaluation and selection criteria described in Section 4.6. The project area

TABLE 5.3. EVALUATION OF ALTERNATIVE 3 (NON-PREFERRED)

Alternative 3: South Philadelphia Wetlands Park	
Restoration Criteria	Rationale
Meets Trustees' restoration goals and objectives effectively:	Yes; Restoration would be expected to restore and enhance coastal wetland, tidal creek, and benthic habitats to offset injury, although connection to the Site is somewhat weaker than other alternatives considered.
Delivers benefits cost-effectively:	No; Marsh creation would result in high value habitat, but per-acre costs are much higher than other alternatives and available funds.

High probability of success:	Uncertain; Restoration technique is a proven approach, but proposed project involves some novel conversion/creation of habitats within a constructed protected area.
Avoids collateral injury to natural resources:	Uncertain; Proposed conversion of nearshore habitat types within project plan could result in regulatory concerns from resource agencies, and if not addressed would pose long term direct or indirect impacts to natural resources.
Benefits more than one natural resource and/or service:	Yes; Improves tidal and subtidal habitats; benefits benthic and nearshore forage fish habitats; supports habitat complexity, species diversity, nursery grounds; and enhanced water quality. Community services from co-occurring (non-case settlement funds) proposed recreational amenities would improve recreational experiences.
Ensures protection of human health and safety:	Yes; Poses no significant risk to public health and safety.

5.4 Restoration Alternative 4: No Action

Under this alternative, the Trustees would take no action to create, restore, or enhance estuarine marsh or other natural resources and resource services to compensate for the resource losses attributed to the Sites. The Trustees determined that natural resources and resource services were lost due to injuries caused by releases of hazardous substances from the Sites. While the remedial activities are expected to have included the actions needed to allow injured resources at the Sites to recover to baseline, the remedial activities did not compensate the public for interim losses.

Under CERCLA, natural resource trustees seek to compensate the public for these interim losses through restoration. Under the No Action alternative, restoration actions needed to make the environment and the public whole would not occur. This is inconsistent with the goal of NRD provisions under CERCLA and the purpose of this restoration plan.

Accordingly, while the No Action alternative has been considered in this Final RP/EA as required by NEPA, the Trustees find that the No Action alternative does not meet the Trustees' restoration goals and objectives.

Table 5.4 summarizes the evaluation of Alternative 4 based on the evaluation and selection criteria described in Section 4.6.

TABLE 5.4. EVALUATION OF ALTERNATIVE 4 (NON-PREFERRED)

Alternative 4: No Action	
Restoration Criteria	Rationale
Meets Trustees' restoration goals and objectives effectively:	No; Does not meet Trustees' restoration goals or objectives to compensate for injuries to natural resources and services.
Delivers benefits cost-effectively:	Not applicable.
High probability of success:	No; Interim losses due to contamination associated with the Site would not be restored.
Avoids collateral injury to natural resources:	Not applicable.
Benefits more than one natural resource and/or service:	No; Benefits no resources or services.
Ensures protection of human health and safety:	Not applicable.

5.5 Conclusions for Preferred Alternative

The K&T Trail Shoreline Restoration and Tacony Boat Launch Project (Alternative 1) is the Trustees' preferred restoration alternative because it would most efficiently and effectively compensate the public for natural resource injuries resulting from hazardous releases at and from the Site. The shoreline restoration, riparian habitat, and nearshore improvements would provide restoration benefits with a strong nexus to the injury and a close proximity to the Site. This project is currently feasible to implement, with established implementation partners identified, who are prepared to work with the Trustees at this time. Additionally, the proposed ADA-accessible recreation and co-occurring restoration plans would result in additional recreational benefits that, while not part of the quantified injury and settlement, result in enhanced opportunities for the community.

The Trustees are confident that with the available settlement funds and additional secured funding for the remainder of the proposed work, that the project can be successfully completed and realize the benefits envisioned in the design and outreach.

6 NEPA ENVIRONMENTAL CONSEQUENCES

This section describes the Trustees' analysis of the environmental consequences anticipated to result from the restoration alternatives evaluated in this Final RP/EA. For the restoration alternatives evaluated in this document, the geographic context for considering potential significance of the alternatives is local or regional, as opposed to national or worldwide.

6.1 Affected Environment

This section describes the general environmental resources that could be affected by the implementation of restoration alternatives evaluated in this Final RP/EA. It includes information on the physical, biological, social, economic, cultural, and historic resources. Further detail is provided on specific resources that could be affected—either beneficially or adversely—by the implemented restoration alternatives.

6.1.1 The Physical Environment

The restoration alternatives evaluated in this Final RP/EA are situated along the South Atlantic coast between 32.8 and 32.3 degrees north latitude in the urban Philadelphia area. Philadelphia is situated in a humid continental climate zone where precipitation is well distributed throughout the year, with eight to eleven wet days per month, at an average annual rate of 44.1 inches (1,120 mm). Associated hazards include storm surge, inland flooding, extreme precipitation, wind, and northeaster storm events (NOAA 2023).

Geologically, the restoration alternatives are situated within watersheds of Philadelphia. The city encompasses 142.71 square miles (369.62 km2), of which 134.18 square miles (347.52 km2) is land and 8.53 square miles (22.09 km2), or 6%, is water. Natural bodies of water include the Delaware and Schuylkill rivers, lakes in FDR Park, and Cobbs, Wissahickon, and Pennypack creeks. The largest artificial body of water is East Park Reservoir in Fairmount Park (Wikipedia 2023).

The lowest point is sea level and the highest point is in Chestnut Hill about 446 feet (136 m) above sea level on Summit Street near the intersection of Germantown Avenue and Bethlehem Pike. Philadelphia is located on the Atlantic Seaboard Fall Line that separates the Atlantic Plain from the Piedmont (Wikipedia 2023).

Philadelphia exhibits a land use breakdown as would be expected of a highly urbanized area. Pockets of open space and undeveloped areas exist within highly developed corridors. Table 6.1 shows the land use analysis from 2015 data for the entire Philadelphia area.

TABLE 6.1. LANDUSE COVERANALYSISFORPHILADELPHIA, PENNSYLVANIA, 2015 ANALYSIS (SOURCE: DELAWARE VALLEY REGIONAL PLANNING COMMISSION, 2020)

Land Use Type	Acreage
Residential	29,985 (33.0%)
Industrial	23,039 (25.8%)
Transportation/Utility	22,087 (24.3%)
Commercial	4,929 (5.4%)
Military/Mining	211 (0.2%)
Recreation/Institutional	10,999 (12.1%)
Agriculture	197 (0.2%)
Wooded	7,949 (8.7%)
Water	5,177 (5.7%)
Undeveloped	4,141 (4.6%)
Total	90,991 (100%)

Air quality in Philadelphia, according to the American Lung Association's 2020 "State of the Air" report found the Philadelphia-Reading-Camden, PA-NJ-DE-MD metro area ranked as the 12th most polluted city in the nation for its year-round average levels of fine particle pollution and as the 23rd most polluted for days with high levels of ozone smog. Ozone and particle pollution are the nation's most widespread air pollutants, and both can be deadly. In contrast, the report found that Philadelphia's measure for daily spikes of fine particle pollution improved to its best level ever.

The Philadelphia region experiences various stressors from global climate change. Primary climate change stressors include sea level rise (SLR), severe weather, flooding, warming temperatures, drought, and ocean acidification. These stressors impact the physical environment with cascading impacts on the habitats, natural resources, and communities connected to the restoration alternatives evaluated in this Final RP/EA. The Delaware River is rising about an inch per decade, with projected sea level rise in Philadelphia to increase by 7 to 11 inches by the 2030s, 14 to 19 inches by the 2050s, and 24 to 38 inches by the 2080s. Flooding due to tide levels alone is also becoming a threat (SLR.org 2023)

Historic trends in severe weather show that over the past 82 years, precipitation in

Philadelphia has continued to increase, with six of the 10 wettest years on record occurring after 1990. Precipitation is estimated to increase 5 to 12% by the 2050s, and 8 to 16% by the 2080s (SLR.org 2023).

6.1.2 The Biological Environment

The Delaware River flows in a southerly direction for approximately 330 miles from its headwaters in the Catskill Mountains in New York to the Atlantic Ocean at Delaware Bay. The watershed encompasses 13,600 square miles of undeveloped, residential, and industrial land within four states: New York, New Jersey, Pennsylvania, and Delaware. The Delaware River provides drinking water, supports industries (e.g., transportation of goods), and provides habitat for ecologically, recreationally, and commercially important biota (DRBC 2008). The Delaware River Basin is home to a large variety of plants, wildlife and aquatic life, including more than 400 bird species and more than 100 species of fish.

The mainstem Delaware River and many of the tributaries in the Philadelphia area have populations of migratory fishes, including striped bass, shad, river herring, American eel, and sturgeon (DRBC 2019). Nearshore shallow habitats, including mudflats, tidal channels, and shallow nursery areas all provide food sources, refuge, nursery habitat and other essential fish habitat (EFH) for these species, in addition to the forage fish and resident fish (NOAA 2023). The Delaware River is located within the Mid-Atlantic Coast Bird Conservation Region, and is a critical stopover for migratory birds.

Federal and Pennsylvania state listed threatened and endangered species (T&E) and their critical habitats could occur in the evaluated restoration alternatives project areas. Table 6.2 provides a list of federal and Pennsylvania recognized T&E animal and plant species that are potentially found in Philadelphia. The proposed alternative would need to consult with state and federal agencies to avoid and/or mitigate for any adverse impacts to listed species.

TABLE 6.2: FEDERAL AND STATE LISTED THREATENED AND ENDANGERED SPECIES AND THEIR CRITICAL HABITATS., PHILADELPHIA, PENNSYLVANIA. (58 PA CODE §75)

Species	Critical Habitat	Federal Status	State Status
Amphibians			
Eastern Cricket Frog *Acris crepitans*	n/a	n/a	Endangered
Coastal Plain Leopard Frog complex, *Lithobates sphenocephalus/kauffeldi*	n/a	n/a	Endangered
New Jersey Chorus Frog, *Psuedacris kalmi*	n/a	n/a	Endangered

Birds			
Bald Eagle *Haliaeetus leucocephalus*	n/a	Protected	n/a
Insects			
Monarch Butterfly *Danaus plexippus*	n/a	Candidate	n/a
Mammals			
Northern Long-eared Bat *Myotis septentrionalis*	n/a	Threatened	n/a
Fish			
Atlantic sturgeon *Acipenser oxyrinchus*	n/a	Threatened/ Endangered	Endangered
Shortnose sturgeon *Acipenser brevirostrum*	n/a	Endangered	Endangered
Reptiles			
Northern Red-bellied Cooter *Pseudemys rubriventris*	n/a	n/a	Threatened
Southeastern Mud Turtle, *Kinosternon subrubrum subrubrum*	n/a	n/a	Endangered

6.1.3 The Social and Economic Environment

The restoration activities evaluated in this Final RP/EA are situated within the City of Philadelphia, Pennsylvania. According to the 2020 U.S. Census Bureau's tabulation, there were 1,603,797 people residing in Philadelphia, representing a 1.2% increase from the 2019 census estimate. The racial composition of the city was 39.3% Black alone (42.0% Black alone or in combination), 36.3% White alone (41.9% White alone or in combination), 8.7% Asian alone, 0.4% American Indian and Alaska Native alone, 8.7% some other race, and 6.9% multiracial. 14.9% of residents were Hispanic or Latino. 34.8% had a Bachelor's degree or higher. 23.9% spoke a language other than English at home, the most common of which was Spanish (10.8%). 15.0% of the populations foreign born, roughly half of whom are naturalized U.S. citizens. 3.7% of the population are veterans. The median household income was $52,889 and 22.8% of the population lived in poverty.

Philadelphia's economic sectors include financial services, health care, biotechnology, information technology, trade and transportation, manufacturing, oil refining, food processing, and tourism. Metropolitan Philadelphia is one of the top five American venture capital hubs, credited to its proximity to New York City's financial and tech and biotechnology ecosystems. Financial activities account for the largest economic sector of the metropolitan area, which is also one of the largest health education and research centers in the United States. The city's two largest employers are the federal and city governments. Philadelphia's largest private

employer is the University of Pennsylvania, followed by the Children's Hospital of Philadelphia.

6.1.4 Cultural and Historic Resources

Philadelphia is known for its extensive contributions to American history, especially the American Revolution, and for its contemporary influence in business and industry, culture, sports, and music. The city served as the capital of the Pennsylvania Colony during the British colonial era, and went on to play a historic and vital role as the central meeting place for the nation's founding fathers whose plans and actions in Philadelphia ultimately inspired the American Revolution and the nation's independence following the Revolutionary War. Philadelphia hosted the First Continental Congress in 1774, preserved the Liberty Bell, and hosted the Second Continental Congress during which the founders signed the Declaration of Independence. The U.S. Constitution was later ratified in Philadelphia at the Philadelphia Convention of 1787. Philadelphia served as the nation's first capital from May 10, 1775 until December 12, 1776 and on four subsequent occasions during and following the American Revolution, including from 1790 to 1800 during the construction of the new national capital of Washington, D.C. (Wikipedia 2023).

Prior to the arrival of Europeans in the early 17th century, the Philadelphia area was home to the Lenape (Delaware) Indians in the village of Shackamaxon. They were also called the Delaware Indians, and their historical territory was along the Delaware River watershed, western Long Island, and the Lower Hudson Valley. Most Lenape were pushed out of their Delaware homeland during the 18th century by expanding European colonies, exacerbated by losses from intertribal conflicts. Lenape communities were weakened by newly introduced diseases, mainly smallpox, and conflict with Europeans. The Iroquois occasionally fought the Lenape. Surviving Lenape moved west into the upper Ohio River basin. The American Revolutionary War and the United States' independence pushed them further west. In the 1860s, the United States government sent most Lenape remaining in the eastern United States to the Indian Territory to present-day Oklahoma and surrounding territories under the Indian removal policy. (Wikipedia 2023).

Philadelphia remained the nation's largest city until the late 18th century. It also was the nation's financial and cultural center until ultimately being eclipsed in total population by New York City in 1790. In 1816, the city's free Black community founded the African Methodist Episcopal Church (AME), the first independent Black denomination in the country, and the first Black Episcopal Church. The free Black community also established many schools for its children with the help of Quakers. Large-scale construction projects for new roads, canals, and railroads made Philadelphia the first major industrial city in the United States.

In 1950, the population peaked at more than two million residents, then began to decline with the restructuring of industry that led to the loss of many middle-class union jobs. In addition, suburbanization enticed many affluent residents to depart the city for its outlying railroad commuting towns and newer housing. The resulting reduction in Philadelphia's tax base and the resources of local government caused the city to struggle through a long period of adjustment,

and it approached bankruptcy by the late 1980s. Revitalization and gentrification of neighborhoods began in the late 1970s and continues into the 21st century with much of the development occurring in the Center City and University City neighborhoods. But this expanded a shortage of affordable housing in the city. After many manufacturers and businesses left Philadelphia or shut down, the city started attracting service businesses and began to market itself more aggressively as a tourist destination. Philadelphia eventually began experiencing a growth in its population in 2007, which continued with gradual yearly increases through the present (Purcell and Simmons 2013).

6.1.5 Environmental Justice

Executive Order 14096, Executive Order on Revitalizing Our Nation's Commitment to Environmental Justice for All, requires each federal agency, as appropriate and consistent with applicable law, "to identify, analyze, and address disproportionate and adverse human health and environmental effects (including risks) and hazards of [f]ederal activities, including those related to climate change and cumulative impacts of environmental and other burdens on communities with environmental justice concerns" (EO 14096, §3(i)). Executive Order 14096 reiterates and strengthens Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations) regarding federal actions and environmental justice. Executive Order 14096 also requires that each agency shall, as appropriate and consistent with applicable laws, carry out environmental reviews under NEPA "in a manner that analyzes direct, indirect, and cumulative effects of [f]ederal actions on communities with environmental concerns" (EO 14096, §3(ix)(A)). These impacts are described in Section 6.2, Environmental Consequences below.

The US Census Bureau's American Community Survey Data indicate that the Site is in an area in which 21% of its residents are at or below the poverty line, nearly double of the 12% rate in Pennsylvania, and 49% of residents identify as Black, Hispanic, or Asian. Northeast Philadelphia has long been a magnet for new Americans because of its affordable housing and manufacturing jobs. Holmesburg, an adjacent neighborhood has seen a rise in households below the poverty line from 2% to 19% in just the last decade. In addition to changing demographics, the I-95 interstate, an active shipping port, and industrial plants have historically made the river a place of utility, not recreation.

6.2 Environmental Consequence Analysis for Restoration Alternatives

This section describes the Trustees' analysis of the environmental consequences that would be likely to arise from implementation of the restoration projects that comprise the Trustees' preferred and non-preferred alternatives, as well as the No Action alternative (Tables 6.3 - 6.5).

The following definitions were generally used to characterize the nature of the various impacts (effects) evaluated with this RP/EA:

- Short-term or long-term impacts: These characteristics are determined on a case-by-case basis and do not refer to any rigid time period. Short-term impacts are those impacts that would occur only with respect to a specific activity or a finite period. Long-term impacts are those that would more likely persist or be chronic.

- Direct or indirect impacts (effects): Direct effects are caused by the action and occur at the same time and place (40 CFR § 1508.1(g)(1)). Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable (40 CFR § 1508.1(g)(2)).

- Negligible, minor, moderate, or major impacts: These relative terms are used to characterize the magnitude of an impact. Negligible impacts are generally not quantifiable and do not have perceptible impacts on the environment. Minor impacts are generally those that might be perceptible but, in their context, are not amenable to measurement because of their relatively inconsequential effect. Moderate impacts are those that are more perceptible and, typically, more amenable to quantification. Major impacts are those that, in considering the potentially affected environment and the degree of effects of the proposed action, have the potential to have significant effects (40 CFR § 1501.3(b)) and thus warrant heightened attention and examination for potential means for mitigation to fulfill NEPA requirements.

- Adverse or beneficial impacts: An adverse impact is one having adverse, unfavorable, or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on the man-made or natural environment. A single act might result in adverse impacts on one environmental resource and beneficial impacts on another resource.

- Cumulative impacts (effects): Cumulative effects are defined as “effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR § 1508.1(g)(3)).

TABLE 6.3. ENVIRONMENTAL CONSEQUENCES FOR ALTERNATIVE 1 (PREFERRED)

Environmental Consequences	Alternative 1: Shoreline Restoration at the K&T Trail and Tacony Boat Launch
Physical Resources	
Hydrology and Water Quality	Short-term, direct, minor, adverse impacts to hydrology and water quality would occur during construction due to turbidity. Impacts from earth moving activities would be minimized using best management practices. Long-term, direct and indirect, beneficial impacts to water quality and hydrology would occur through improved hydrological flow from riparian, wetland, and shoreline restoration.
Air Resources	Short-term, direct, minor, adverse impacts to air resources would occur from exhaust emissions during construction. No anticipated long-term beneficial or adverse impacts to air resources.
Sediment/Geology	Short-term, direct, minor adverse impacts to sediments and geology would occur during construction due to moving sediments and substrate. Impacts from earth moving activities would be minimized using best management practices. Long-term, direct, beneficial impacts to sediments and geology would occur from hydrologic connection to the tidal creeks.
Climate Change	Short-term, direct, minor, adverse impacts to climate change would occur during construction due to the release of exhaust emission, including greenhouse gas emissions (GHG) into the atmosphere during construction and the dislodging of sequestered carbon by vegetation removal and sediment excavation. Impacts from construction activities would be minimized using best management practices. Long-term, direct, beneficial impacts to climate change would occur from the creation of new marsh habitat – an effective carbon sink – and the promotion of marsh habitat resilience to sea level rise through the conservation of upland marsh migration corridors.

Biological Resources	
Fish and Habitats	Short-term, direct, minor, adverse impacts to fish and associated habitats, including EFH (Essential Fish Habitat), would occur in the immediate vicinity of the project site during construction, due to potential for construction noise and disturbances. No long-term, direct or indirect, adverse impacts to fish and estuarine habitats are anticipated. Shoreline habitat and nearshore habitat improvements would provide long-term, direct and indirect, beneficial impacts to fisheries species by creating new habitats for feeding and shelter for fish and benthic species, including species of recreational and commercial importance. The Trustees will complete Endangered Species Act (ESA) and EFH consultations prior to project implementation.
Threatened and Endangered Species	Short-term, direct, minor, adverse impacts to T&E species and associated critical habitats may occur in the immediate vicinity of the project site during construction, due to potential for construction noise and disturbances. No long-term, direct or indirect, adverse impacts to T&E species and their critical habitats are anticipated. Shoreline habitat creation could provide long-term, direct and indirect, beneficial impacts to some T&E species by creating new habitats for feeding and shelter. The Trustees will complete ESA consultations prior to project implementation.
Wildlife and Habitats	Short-term, direct, minor, adverse impacts to wildlife would occur in the immediate vicinity of the project site during construction, due to potential for construction noise and disturbances. No long-term, direct or indirect adverse impacts would occur due to construction. Habitat restoration would provide long-term, direct and indirect, beneficial impacts by creating new wetland and subtidal habitats for birds and other estuarine wildlife.

Socioeconomics	
Cultural and Historical Resources	There are no known cultural or historical resources that would be negatively impacted during activities in or around the proposed project. A letter of concurrence as part of National Historic Preservation Act (NHPA) Section 106 consultation with the State Historic Preservation Office (SHPO) will be requested prior to the project implementation.
Recreation	No anticipated short- or long-term, direct or indirect, adverse impacts to recreation and tourism because these activities do not currently exist at and around the project sites. Long-term, direct and indirect beneficial impacts are anticipated for tourism and recreational use within the project area because co-occurring proposed actions are expected to improve habitat quality and provide public access.
Transportation	No anticipated short- or long-term, direct or indirect, adverse or beneficial impacts to transportation.
Public Health and Safety	No anticipated short- or long-term, direct or indirect, adverse impacts to public health and safety.
Environmental Justice	This project does not have the potential to negatively or disproportionately affect these populations with EJ concerns in the area, including economically, socially, recreationally, or in terms of conditions affecting their health. Habitat restoration and recreational amenities would provide long-term, direct and indirect, beneficial impacts by creating access to public green space and enhanced natural resources.

TABLE 6.4. ENVIRONMENTAL CONSEQUENCES FOR ALTERNATIVE 2 (NON-PREFERRED)

Environmental Consequences	Alternative 2: Shedbrook Creek Restoration and Sedge Meadow Project
Physical Resources	
Hydrology and Water Quality	Short-term, direct, minor, adverse impacts to hydrology and water quality would occur during construction due to turbidity. Impacts from earth moving activities would be minimized using best management practices. Long-term, direct and indirect, beneficial impacts to water quality and hydrology would occur through improved hydrological flow and enhanced wetland habitat.
Air Resources	Short-term, direct, minor, adverse impacts to air resources would occur from exhaust emissions during construction. No anticipated long-term beneficial or adverse impacts to air resources.
Sediment/Geology	Short-term, direct, minor adverse impacts to sediments and geology would occur during construction due to moving sediments and substrate. Impacts from earth moving activities would be minimized using best management practices. Long-term, direct, beneficial impacts to sediments and geology would occur from enhanced hydrologic connection to the floodplain and riparian areas.
Climate Change	Short-term, direct, minor, adverse impacts to climate change would occur during construction due to the release of exhaust emission, including GHG emissions into the atmosphere and the dislodging of sequestered carbon by vegetation removal and sediment excavation. Impacts from construction activities would be minimized using best management practices. Long-term, direct, beneficial impacts to climate change would occur from the promotion of resilience to flooding through the improved hydrologic processes.

Biological Resources	
Fish and Habitats	Short-term, direct, minor, adverse impacts to fish and associated habitats would occur in the immediate vicinity of the project site during construction, due to potential for construction noise and disturbances. No long-term, direct or indirect, adverse impacts to fish and estuarine habitats are anticipated. Hydrologic enhancements and riverine habitat enhancement would provide long-term, direct and indirect, beneficial impacts to fisheries species by creating new stream habitats for feeding and shelter for fish.
Threatened and Endangered Species	Short-term, direct, minor, adverse impacts to T&E species and associated critical habitats may occur in the immediate vicinity of the project site during construction, due to potential for construction noise and disturbances. No long-term, direct or indirect, adverse impacts to T&E species and their critical habitats are anticipated. The Trustees would complete ESA consultations prior to project implementation.
Wildlife and Habitats	Short-term, direct, minor, adverse impacts to wildlife would occur in the immediate vicinity of the project site during construction, due to potential for construction noise and disturbances. No long-term, direct or indirect adverse impacts would occur due to construction. Habitat enhancement would provide long-term, direct and indirect, beneficial impacts by enhancing wetland and riparian habitats for birds and other wildlife.

Socioeconomics	
Cultural and Historical Resources	There are no known cultural or historical resources that would be negatively impacted during activities in or around the proposed alternative areas. A letter of concurrence as part of NHPA Section 106 consultation with the SHPO would be requested prior to the project implementation.

Recreation	No anticipated short- or long-term, direct or indirect, adverse impacts to recreation and tourism because these activities do not currently exist at and around the project sites. Long-term, direct and indirect beneficial impacts are anticipated for tourism and recreational use within the project area because proposed actions are expected to improve opportunities and recreational experience.
Transportation	No anticipated short- or long-term, direct or indirect, adverse or beneficial impacts to transportation.
Public Health and Safety	No anticipated short- or long-term, direct or indirect, adverse impacts to public health and safety.
Environmental Justice	This project does not have the potential to negatively or disproportionately affect populations with EJ concerns in the area, including economically, socially, recreationally, or in terms of conditions affecting their health. Hydrologic restoration would provide long-term, direct and indirect, beneficial impacts by enhancing recreational and subsistence fisheries resources and improving water quality. Enhanced resilience to climate change and flooding impacts noted above would extend to the broader community including populations with environmental justice concerns.

TABLE 6.5. ENVIRONMENTAL CONSEQUENCES FOR ALTERNATIVE 3 (NON-PREFERRED)

Environmental Consequences	Alternative 3: South Philadelphia Wetlands Park Project
Physical Resources	
Hydrology and Water Quality	Short-term, direct, minor, adverse impacts to hydrology and water quality would occur during construction due to turbidity. Impacts from earth moving activities would be minimized using best management practices. Long-term, direct and indirect, beneficial impacts to water quality and hydrology would occur through improved hydrological flow and enhanced wetland habitat.
Air Resources	Short-term, direct, minor, adverse impacts to air resources would occur from exhaust emissions during construction. No anticipated long-term beneficial or adverse impacts to air resources.
Sediment/Geology	Short-term, direct, minor adverse impacts to sediments and geology would occur during construction due to moving sediments and substrate. Impacts from earth moving activities would be minimized using best management practices. Long-term, direct, beneficial impacts to sediments and geology would occur from enhanced hydrologic connection to the tidal shoreline.
Climate Change	Short-term, direct, minor, adverse impacts to climate change would occur during construction due to the release of exhaust emission, including GHG emissions into the atmosphere and the dislodging of sequestered carbon by vegetation removal and sediment excavation. Impacts from construction activities would be minimized using best management practices.

Biological Resources	
Fish and Habitats	Short-term, direct, minor, adverse impacts to fish and associated habitats, including EFH, would occur in the immediate vicinity of the project site during construction, due to potential for construction noise and disturbances. No long-term, direct or indirect, adverse impacts to fish and estuarine habitats are anticipated. Hydrologic connection and tidal marsh enhancement would provide long-term, direct and indirect, beneficial impacts to fisheries species by creating new habitats for feeding and shelter for fish and benthic species, including species of recreational and commercial importance. The Trustees would complete ESA and EFH consultations prior to project implementation.
Threatened and Endangered Species	Short-term, direct, minor, adverse impacts to T&E species and associated critical habitats may occur in the immediate vicinity of the project site during construction, due to potential for construction noise and disturbances. No long-term, direct or indirect, adverse impacts to T&E species and their critical habitats are anticipated. The Trustees would complete ESA consultations prior to project implementation.
Wildlife and Habitats	Short-term, direct, minor, adverse impacts to wildlife would occur in the immediate vicinity of the project site during construction, due to potential for construction noise and disturbances. No long-term, direct or indirect adverse impacts would occur due to construction. Habitat enhancement would provide long-term, direct and indirect, beneficial impacts by enhancing wetland and subtidal habitats for birds and other estuarine wildlife.

Socioeconomics	
Cultural and Historical Resources	There are no known cultural or historical resources that would be negatively impacted during activities in or around the proposed alternative areas. A letter of concurrence as part of NHPA Section 106 consultation with the SHPO would be requested prior to the project implementation.

Recreation	No anticipated short- or long-term, direct or indirect, adverse impacts to recreation and tourism because these activities do not currently exist at and around the project sites. Long-term, direct and indirect beneficial impacts are anticipated for tourism and recreational use within the project area because proposed actions are expected to improve opportunities and recreational experience.
Transportation	No anticipated short- or long-term, direct or indirect, adverse or beneficial impacts to transportation.
Public Health and Safety	No anticipated short- or long-term, direct or indirect, adverse impacts to public health and safety.
Environmental Justice	This project does not have the potential to negatively or disproportionately affect populations with EJ concerns in the area, including economically, socially, recreationally, or in terms of conditions affecting their health. Hydrologic restoration would provide long-term, direct and indirect, beneficial impacts by enhancing recreational and subsistence fisheries resources and improving water quality. Enhanced resilience to climate change and flooding impacts noted above would extend to the broader community including populations with environmental justice concerns.

TABLE 6.6. ENVIRONMENTAL CONSEQUENCES FOR NO ACTION

Environmental Consequences	Alternative 4: No Action
Physical Resources	
Hydrology and Water Quality	Project area water, air, and geological/sediment conditions would not be affected since no restoration would occur. Any ecological benefits that may result from proposed alternatives would not occur, and the trajectory of any ecologically degraded areas would remain unchanged. Climate change would continue as currently predicted.
Air Resources	
Sediment/Geology	
Climate Change	
Biological Resources	
Fish and Habitats	Project area fish, wildlife, vegetation, habitats, and threatened and endangered species would not be affected since no restoration would occur. Any benefits to biological resources would not occur.
Threatened and Endangered Species	
Wildlife and Habitats	
Socioeconomics	
Cultural and Historical Resources	Project area socio-economic variables would not be affected since no restoration would occur. Potential economic benefits as a result of the enhanced recreational opportunities would not be realized.
Recreation	
Transportation	
Public Health and Safety	
Environmental Justice	This alternative does not have the potential to negatively or disproportionately affect populations with EJ concerns in the area, including economically, socially, recreationally, or in terms of conditions affecting their health. Any benefits to such populations from proposed alternatives would also not occur.

6.3 Cumulative Impacts of Preferred Alternative

The preferred alternative proposed for selection is expected to result in cumulative, long-term, beneficial impacts by increasing the area and ecological function of shoreline and nearshore habitat. The project would install 1,150 linear feet of living shoreline and create new rainwater gardens and native tree and shrub plantings in the 3.2 acre park, and the overall ecological function of the larger estuarine habitat at the restoration sites would be benefitted by the restored function.

The project alternative would have a minor beneficial effect to the economic activity in the area,

though the larger planned restoration on site would contribute economically. The restoration would contribute to the overall ecological health of the restoration areas. There is the direct potential to improve water quality through riparian restoration and erosion protection at the site. Additionally, the proposed living shoreline approaches of the preferred alternative would result in the creation and enhancement of fish and wildlife habitat supplementing existing habitat in the restoration areas. Thus, overall, a net beneficial cumulative impact may result from the implementation of the preferred alternative, and those would occur in synergy with the proposed on-site recreational activities. Cumulative impacts would not occur at a regional scale and are not expected to be significant.

6.4 Cumulative Impacts of Non-Preferred Alternatives

The non-preferred alternatives would have no major adverse impacts on area habitats, lands, or waterways. The alternatives may result in minor, adverse impacts during restoration construction, but those impacts would be localized and short-term. When considered with other past, present, and reasonably foreseeable future actions, the alternatives are not anticipated to have adverse cumulative impacts, but may result in localized, long-term, beneficial impacts to physical and biological resources. Cumulative impacts would not occur at a regional scale and are not expected to be significant.

6.5 Cumulative Impacts of No-Action Alternative

Under the No Action alternative, natural resources and their services would not return to baseline, and interim service losses would not be compensated. However, because No Action would be taken there would be no cumulative impacts, beneficial or adverse.

7 COMPLIANCE WITH OTHER KEY STATUES, REGULATIONS, AND POLICIES

7.1 Federal Laws

Additional federal laws may apply to the preferred alternative at the time of final selection. All federal state and local laws will be complied with prior to project implementation. Federal laws, regulations and executive orders that may be applicable include, but are not limited to:

- Endangered Species Act (16 U.S.C. § 1531 *et seq*.)
- Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 *et seq*.)
- Coastal Zone Management Act (16 U.S.C. § 1451 *et seq*.)
- National Historic Preservation Act (16 U.S.C. § 470 *et seq*.)
- Migratory Bird Treaty Act (16 U.S.C. § 703 *et seq*.)
- Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.
- Clean Air Act (42 U.S.C. § 7401 *et seq*.)
- Federal Water Pollution Control Act (Clean Water Act) (33 U.S.C. § 1251 *et seq*.) and/or

Rivers and Harbors Act (33 U.S.C. § 401 *et seq*.)

- Executive Order 11988: Floodplain Management
- Executive Order 11990: Protection of Wetlands
- Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- Executive Order 14096: Executive Order on Revitalizing Our Nation's Commitment to Environmental Justice for All
- EO12962: Recreational Fisheries
- EO13007: Indian Sacred Sites
- EO13112: Safeguarding the Nation from the Impacts of Invasive Species
- EO13175: Consultation and Coordination with Indian Tribal Governments
- EO13186: Responsibilities of Federal Agencies to Protect Migratory Birds
- EO13693: Planning for Federal Sustainability in the Next Decade

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