

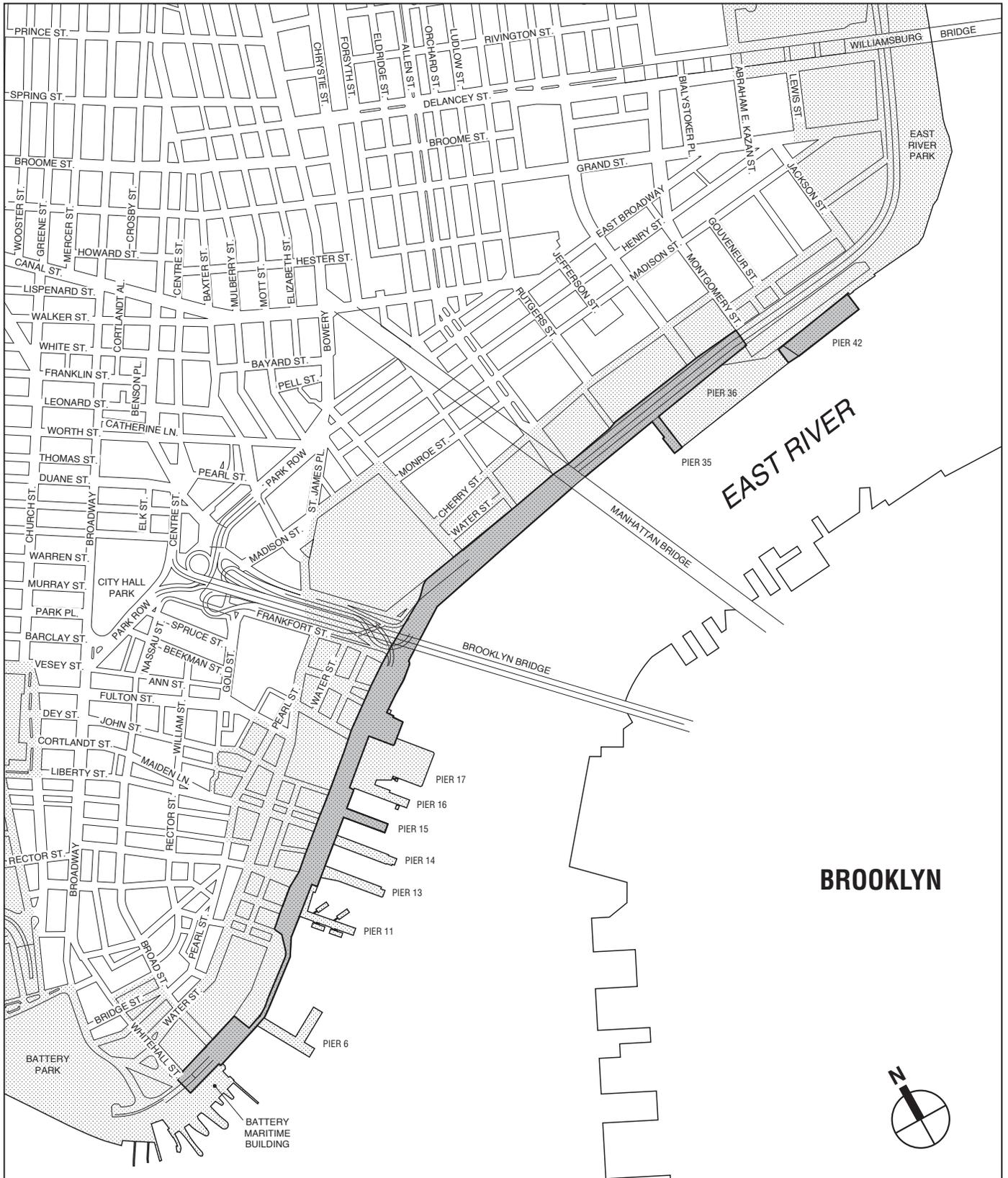
A. INTRODUCTION

The Proposed Action would improve an important part of New York City's waterfront for public use as recreational open space. The entire project site is located within New York City's Coastal Zone Boundary as outlined in the Department of City Planning's Coastal Zone Boundary of New York City (see Figure 11-1). This chapter examines the compliance of the Proposed Action with federal, state, and local coastal zone policies.

The federal Coastal Zone Management Act (CZMA) of 1972 was enacted to support and protect the distinctive character of the waterfront and to set forth standard policies for reviewing proposed development projects along coastlines. The program responded to City, State, and federal concerns about the deterioration and inappropriate use of the waterfront. The CZMA emphasizes the primacy of State decision-making regarding the coastal zone. In accordance with the CZMA, New York State adopted its own Coastal Management Program (CMP), designed to balance economic development and preservation by promoting waterfront revitalization and water-dependent uses while protecting fish and wildlife, open space and scenic areas, farmland, and public access to the shoreline, and minimizing adverse changes to ecological systems and erosion and flood hazards. The New York State CMP provides for local implementation when a municipality adopts a local waterfront revitalization program, as is the case in New York City.

The Waterfront Revitalization Program (WRP) is the City's principal coastal zone management tool. The WRP was originally adopted in 1982 and approved by the New York State Department of State (NYSDOS) for inclusion in the New York State CMP. The WRP encourages coordination among all levels of government to promote sound waterfront planning and requires consideration of the program's goals in making land use decisions. NYSDOS administers the program at the State level, and the DCP administers it in the City. The WRP was revised and approved by the City Council in October 1999. In August 2002, the NYSDOS and federal authorities (e.g., the U.S. Army Corps of Engineers [USACOE] and the U.S. Fish and Wildlife Service [USFWS]) adopted the City's 10 WRP policies for most of the properties located within its boundaries.

As shown in the analysis presented in this chapter, the City has developed plans for the East River Esplanade and Piers to be consistent with and support all the applicable federal, state, and local coastal zone policies. The Proposed Action reflects a commitment to consistency with WRP coastal policies and the WRP's goals of enlivening the waterfront and attracting the public to the city's coastal areas. The Proposed Action is an appropriate coastal zone development because it would attract the public to the project area and create livelier pedestrian corridors along the East River waterfront. The Proposed Action would enliven and improve the East River waterfront by connecting Whitehall Ferry Terminal and Peter Minuit Plaza to the East River Park with a continuous walkway/bikeway and esplanade as well as adding retail and cultural uses that would attract visitors to the area. The Proposed Action would be consistent with WRP policies, as discussed below.



-  Project Site
-  Coastal Zone Boundary

0 2000 FEET
SCALE

B. METHODOLOGY

New York City's WRP includes 10 policies designed to maximize the benefits derived from economic development, environmental preservation, and public use of the waterfront, while minimizing the conflicts among those objectives. The WRP policies for development and use of the waterfront provide a framework for evaluating discretionary actions in the coastal zone. Therefore, this chapter assesses the consistency of the Proposed Action with applicable federal, state, and local policies by examining it in relation to each of the policies of the WRP.

C. PROBABLE IMPACTS OF THE PROPOSED ACTION

Policy 1: Support and facilitate commercial and residential development in areas well-suited to such development.

Policy 1.1: Encourage commercial and residential redevelopment in appropriate coastal zone areas.

The Proposed Action would consist of a Program Zone under the FDR Drive for pavilions and temporary outdoor activities; a Recreation Zone along the edge of the water with seating, play spaces, and plantings; and creation of a uniform sidewalk and bikeway along South Street. Approximately 14 pavilions totaling up to 150,000 square feet would be built in the Program Zone under the FDR Drive. They would be programmed and built for community, cultural, and commercial uses. In addition to the pavilions, the open space under the FDR Drive could be programmed for temporary uses such as farmers markets, performances, and exhibitions. Pavilions in the South Street Seaport Historic District would be designed to be in keeping with the character of the historic district. As envisioned, the pavilions would have glass skins to promote transparency and openness. The New Market Building, located on a pier just north of Pier 17, would be redeveloped to house retail and cultural uses. The retail and cultural space would draw visitors to the waterfront; therefore, it would be appropriate to the area. The Proposed Action does not include any residential development. Thus, the Proposed Action is consistent with this policy.

Policy 1.2: Encourage non-industrial development that enlivens the waterfront and attracts the public.

As described above under Policy 1.1, the Proposed Action would include retail and cultural uses that would draw people to the waterfront and enliven the area. In addition, existing open spaces would be enhanced and new open space would be created. Plantings and seating would be provided to enhance passive recreation opportunities in the Recreation Zone. Components would include benches, railings, planters, and arbors. The railing could include enhanced lighting, fishing pole holders, and brackets for attaching historic placards and viewfinders for sights of interest. Arbors along the esplanade would provide shade, swings, and built-in lighting.

The Proposed Action would encourage considerable public attractions to the project area. The construction of the new pavilions, temporary outdoor activities, seating along the waterfront, play spaces and plantings would attract the public to the East River Waterfront. The Proposed Action would enliven and revitalize the two-mile-long waterfront area. The Proposed Action would therefore be consistent with this policy.

Policy 1.3: Encourage redevelopment in the coastal area where public facilities and infrastructure are adequate or will be developed.

The Proposed Action would be located in an area with existing police services, fire services, water infrastructure, and sewer infrastructure. Public facilities, including police stations, fire departments, healthcare facilities, and security services in the project area are adequate to handle the Proposed Action. New utility connections may be needed for some of the uses on the new and repaired piers. However, utilities are present in the nearby areas and any extension would be relatively minor. Therefore, the Proposed Action would be consistent with this policy.

Policy 2: Support water-dependent and industrial uses in New York City coastal areas that are well-suited to their continued operation.

Policy 2.1: Promote water-dependent and industrial uses in Significant Maritime and Industrial Areas.

The project area is not located in a Significant Maritime and Industrial Area. Therefore, this policy is not applicable.

Policy 2.2: Encourage working waterfront uses at appropriate sites outside the Significant Maritime and Industrial Areas.

The project area is not located in proximity to any Significant Maritime and Industrial Areas, nor is the project site appropriate for most working waterfront uses. While there are ferry services largely used by commuters along the esplanade at Pier 11, there are no water dependent industrial uses along the project site. Most working waterfront uses left the area decades ago and piers have been demolished or fallen into disrepair. The piers that existed along this part of the East River were too small and lacked the loading areas needed for modern maritime industry. The City's policy goals for the site aim to increase waterfront access and recreational use. Because the area and its remaining piers are not appropriate for working waterfront use, this policy is not applicable to the Proposed Action.

Policy 2.3: Provide infrastructure improvements necessary to support working waterfront uses.

The Proposed Action does not include working waterfront uses. Therefore, this policy does not apply to the Proposed Action.

Policy 3: Promote use of New York City's waterways for commercial and recreational boating and water-dependent transportation centers.

Policy 3.1: Support and encourage recreational and commercial boating in New York City's maritime centers.

The Proposed Action would increase recreational boating opportunities along the East River waterfront. As part of the Proposed Action, Pier 15 would be reconstructed. The pier is expected to have two levels and enclosed uses. It would be designed to allow vessels to dock along both sides. In particular, *The Wavertree*, a historic vessel currently berthed near Pier 17, would be moved to Pier 15. It would serve as an attraction to tourists and other visitors to the area. A new transient marina would be created at the New Market Building pier to provide opportunities to temporarily berth small- to mid-sized vessels. Farther north at Pier 35, a launch for small boats may also be provided. At the east end of Pier 36, a cove would

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be created for temporary mooring of small boats. Therefore, the Proposed Action would be consistent with this policy.

Policy 3.2: Minimize conflicts between recreational, commercial, and ocean-going freight vessels.

The Proposed Action would not provide facilities for commercial or maritime freight, but would provide facilities for recreational craft. As described above, the Proposed Action includes recreational boating facilities at the New Market Building pier, where a marina with a capacity for up to 98 recreational craft would be constructed; at the eastern end of Pier 36, where a portion of that pier would be removed to create a cove where small boats could moor temporarily; and possibly at Pier 35, where a floating platform for launching small craft (e.g., kayaks, canoes) may be provided.

There are no commercial facilities or marine industrial ports along this side of the East River in the immediate vicinity of the project site with which the Proposed Action's boating uses could conflict. However, there is significant recreational, commercial, and ocean-going freight traffic in the river, which includes large recreational and touring craft, commercial ferries and water taxis, and maritime shipping including freighters, tugs, and barges.

The proposed marina would have wave attenuators. The marina and boat launches would be in protected areas along the existing bulkhead and well clear of the East River travel zone which is used by the larger commercial and maritime freight vessels. Thus, the project would not create any structures that would conflict with the travel channel for commercial and maritime traffic along the river.

The proposed project would introduce a limited number of recreational craft to the river. This is not expected to result in conflicts with other recreational, commercial, and ocean-going freight traffic in the river. Since there are no commercial, industrial or recreational facilities adjacent to or in the immediate vicinity of the proposed recreational facilities, none of recreational traffic associated with the Proposed Action would interact with commercial and maritime freight traffic until reaching the channel. All recreational vessels must be operated on the river in a safe manner consistent with navigational laws. This would include avoiding conflicts and yielding to vessels already underway.

For the reasons above, the Proposed Action is consistent with this policy.

Policy 3.3: Minimize impact of commercial and recreational boating activities on the aquatic environment and surrounding land and water uses.

The Proposed Action would provide docking facilities for small to mid-sized boats. However, as described in Chapter 9, "Natural Resources," these are not expected to have an adverse affect on the aquatic environment. Given the water depth within the proposed New Market Building transient marina, and the proposed use for small to mid-size vessels, boat operations would not be expected to result in increased suspended sediment within the project area. The wakes of vessels using the marina are not expected to be more energetic than the normal wind waves or the wake of channel traffic already affecting the area; regardless, most of the project shoreline is armored to prevent erosion or other shoreward impacts. Marina activities present a small increase in the potential for accidental petroleum or sewage spills to the river; however, the small sizes of the anticipated vessels limit the likelihood of a large-scale accidental discharge. Operation of the marina would not be expected to result in significant adverse impacts to water quality.

Therefore, the Proposed Action is consistent with this policy.

Policy 4: Protect and restore the quality and function of ecological systems within the New York City coastal area.

Policy 4.1: Protect and restore the ecological quality and component habitats and resources within the Special Natural Waterfront Areas, Recognized Ecological Complexes, and Significant Coastal Fish and Wildlife Habitats.

The Proposed Action is not located within a Special Natural Waterfront Area or Recognized Ecological Complex, nor does it contain any Significant Coastal Fish and Wildlife Habitats. While the Proposed Action includes in-water construction activities such as pile driving and dredging, it is unlikely to affect fish and invertebrates through increased sediment suspension, loss of benthic habitat, or underwater noise. Dredging to support the relocation of the *Wavertree* would temporarily increase suspended sediment and would result in the disturbance of benthic, infaunal habitat. However, as described in Chapter 9, “Natural Resources and Water Quality,” any temporary increase in suspended sediment associated with pile driving, pile repair, dredging and other in-water construction activities resulting in sediment disturbance would be localized and expected to dissipate shortly after the completion of the sediment disturbing activity and would not be expected to result in significant adverse impacts to water quality or aquatic biota.

The Proposed Action would not result in increased shade to aquatic habitat during project construction. Storm water release would be controlled as part of the project design, and plantings of trees and groundcover would reduce run-off through increased pervious surface, and contribute to increased habitat diversity for bird and mammal species. Marina and esplanade activities would not adversely affect threatened or endangered species. Therefore, the Proposed Action is consistent with this policy.

Policy 4.2: Protect and restore tidal and freshwater wetlands.

As described in Chapter 9, “Natural Resources and Floodplain,” the USFWS National Wetlands Inventory classifies the waters in the project area as estuarine subtidal wetlands with unconsolidated bottom. Since the waters within the project area do not contain tidal wetland plants, USACOE would not classify portions of the project area as wetlands.

The New York State Department of Environmental Conservation (NYSDEC) designates the East River as littoral zone. However, NYSDEC regulations state that *actual* water depths determine whether or not an area is a littoral zone. Water depths recently recorded within the project area range from approximately 6 feet or less to approximately 40 feet at mean low water (MLW). Areas with water depths at or shallower than 6 feet at MLW, classified as littoral wetland by the NYSDEC regulations, occur near the shoreline immediately north of the BMB, in isolated areas between Piers 6 and 11, and along the shoreline from the New Market Building north to approximately Catherine Street. Construction of the new esplanade expansion between the BMB and Old Slip, construction of the marina at the New Market Building pier, the reconstruction of Pier 15, the reinforcement of the New Market pier, and dredging to allow the mooring of ships at Pier 15 would occur in this area. The driving of new piles and pile repair would result in the permanent loss of NYSDEC littoral zone tidal wetlands within the footprint of the piles. However, the loss of littoral zone tidal wetlands from pile driving and pile repair would be small and therefore is not expected to result in significant adverse impacts to tidal wetlands resources within the project area or the East

River. Elsewhere, the Proposed Action would not disturb the littoral zone. Therefore, the Proposed Action would be consistent with this policy.

Policy 4.3: Protect vulnerable plant, fish, and wildlife species, and rare ecological communities. Design and develop land and water uses to maximize their integration or compatibility with the identified ecological community.

The National Marine Fisheries Service indicated that the federally listed and state-listed endangered shortnose sturgeon (*Acipenser brevirostrum*) and four species of marine turtle (loggerhead, green, Kemp's ridley, and leatherback) may be present in the project area as seasonal transients (see Chapter 9, "Natural Resources"). However, the shortnose sturgeon would not be expected to migrate from the Harbor Estuary through the East River to Long Island Sound because this species generally only uses marine waters associated with the estuary of the river in which it spawns, which is the Hudson River. Fish that may pass through the lower East River would be expected to use the deeper channel areas as opposed to the near-shore areas in the project area.

Four species of marine turtles, all state and federally listed, can occur in New York Harbor. Juvenile Kemps ridley (*Lepidochelys kempii*) and large loggerhead (*Caretta caretta*) turtles regularly enter the New York Harbor and bays in the summer and fall. The green sea turtle (*Chelonia mydas*) and leatherback sea turtle (*Dermochelys coriacea*) are usually restricted to the higher salinity areas of the Harbor (see Chapter 9, "Natural Resources and Floodplain"). All four turtle species generally inhabit Long Island Sound and Peconic and Southern Bays. They neither nest in the New York Harbor Estuary, nor reside there year-round; therefore it is unlikely that these turtle species would occur in the project area in the lower East River except as occasional transients. Consequently, the Proposed Action would not result in adverse impacts to vulnerable plant, fish, and wildlife species.

Policy 4.4: Maintain and protect living aquatic resources.

As described above under policies 4.1, 4.2, and 4.3, the Proposed Action would not result in adverse impacts to water quality or aquatic biota. Therefore, the Proposed Action would be consistent with this policy.

Policy 5: Protect and improve water quality in the New York City coastal area.

Policy 5.1: Manage direct or indirect discharges to waterbodies.

Implementation of erosion and sediment control measures during construction of the Proposed Action would minimize potential impacts to water quality in the East River. As described in Chapter 9, "Natural Resources and Water Quality," in-water project elements such as pile removal, pile driving, and dredging at Pier 15 have the potential to result in temporary adverse impacts to fish and macroinvertebrates due to increases in suspended sediment, noise associated with pile driving, and loss of bottom habitat and associated benthic invertebrates. However, associated stormwater runoff from construction activities on upland areas and the piers, including demolition of existing structures, removal of the existing impervious surface within the esplanade and pavilion area, debris removal, and possible grading, would be minimized with the erosion and sediment control measures. These measures would be in accordance with the NYSDEC's New York Standards and Specifications for Erosion and Sediment Control.

The operation of the proposed esplanade, pavilions, and reconstructed and repaired piers would not be expected to result in an increase in stormwater runoff. Discharges from the

pavilions would result in minimal increase to the municipal combined sewer system and would not result in an adverse impact to water quality from increased combined sewer overflows or discharges from the water pollution control plant that exceed the effluent quality limits. In fact, the Proposed Action would reduce stormwater flow to the river with the introduction of pervious surface on Piers 35 and 42. In addition, the total area of benthic and intertidal habitat within the project area would increase with the addition of the proposed cove. Therefore, the Proposed Action would not adversely impact water quality, sediment quality or aquatic biota of the East River and would be consistent with this policy.

Policy 5.2: Protect the quality of New York City's waters by managing activities that generate non-point source pollution.

As discussed in Policy 5.1, the Proposed Action would not result in an increase in the discharge of sewage and stormwater to the East River; therefore, the Proposed Action would be consistent with this policy.

Policy 5.3: Protect water quality when excavating or placing fill in navigable waters and in or near marshes, estuaries, tidal marshes or wetlands.

Construction of the Proposed Action would not require any placement of fill in navigable waters or near marshes, estuaries, tidal marshes, or wetlands. However, Pier 15 would be designed to allow vessels to dock along both sides. In order to berth *The Wavertree* at Pier 15, dredging would be required. The dredging would be carried out in accordance with USACOE and NYSDEC permits. Therefore, the project would be consistent with this policy.

Policy 5.4: Protect the quality and quantity of groundwater, streams, and the sources of water for wetlands.

The project site does not contain any potable groundwater, nor does it contain streams or the source of water for wetlands. Groundwater in the vicinity of the project is typically found at approximately 10 to 60 feet below project grade and may be influenced by the East River tidal cycle. Within the project area, groundwater generally flows toward the East River. Groundwater resources in Manhattan are not used for potable water, thus construction and operation of the Proposed Action would not affect potable water supplies. Therefore, this policy is not applicable.

Policy 6: Minimize the loss of life, structures, and natural resources caused by flooding and erosion.

Policy 6.1: Minimize losses from flooding and erosion by employing non-structural and structural management measures appropriate to the condition and use of the property to be protected and the surrounding area.

The project area is within the 100-year floodplain (area with a 1 percent chance of flooding each year). The 100-year flood elevation is 10 feet above National Geodetic Vertical Datum (NGVD), which approximates mean sea level. The Proposed Action would not alter the natural features of the shoreline, nor any structural or non-structural flood or erosion control measures. Additionally, because the Proposed Action would not increase the amount of impervious surface on the site, it would not result in an increased exposure to flood hazards in or near the project area. Therefore, the Proposed Action would be consistent with this policy.

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Policy 6.2: Direct public funding for flood prevention or erosion control measures to those locations where the investment will yield significant public benefit.

The Proposed Action does not involve public funding for flood prevention or erosion control measures. Therefore, this policy is not applicable.

Policy 6.3: Protect and preserve non-renewable sources of sand for beach nourishment.

There are no non-renewable sources of sand at the project site. Therefore, this policy does not apply.

Policy 7: Minimize environmental degradation from solid waste and hazardous substances.

Policy 7.1: Manage solid waste material, hazardous wastes, toxic pollutants, and substances hazardous to the environment to protect public health, control pollution, and prevent degradation of coastal ecosystems.

The solid waste generated by the Proposed Action would be collected by New York City Department of Sanitation's (DSNY) collection trucks and disposed at out-of-city locations, as is occurring for solid waste currently being generated within the project area. DSNY would be responsible for the handling and disposal of solid waste in a manner that would protect the public and coastal areas.

As described in Chapter 10, "Hazardous Materials," any toxic or hazardous waste encountered during construction activities associated with the Proposed Action would be handled in accordance with New York City Department of Environmental Protection (NYCDEP), NYSDEC, Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements. Therefore, the Proposed Action would be consistent with this policy.

Policy 7.2: Prevent and remediate discharge of petroleum products.

Any petroleum products encountered during construction activities associated with the Proposed Action would be managed and mitigated according to pertinent NYCDEP, NYSDEC, OSHA, and EPA requirements. Storage and handling of petroleum products would follow applicable regulations. Therefore, the Proposed Action would be consistent with this policy.

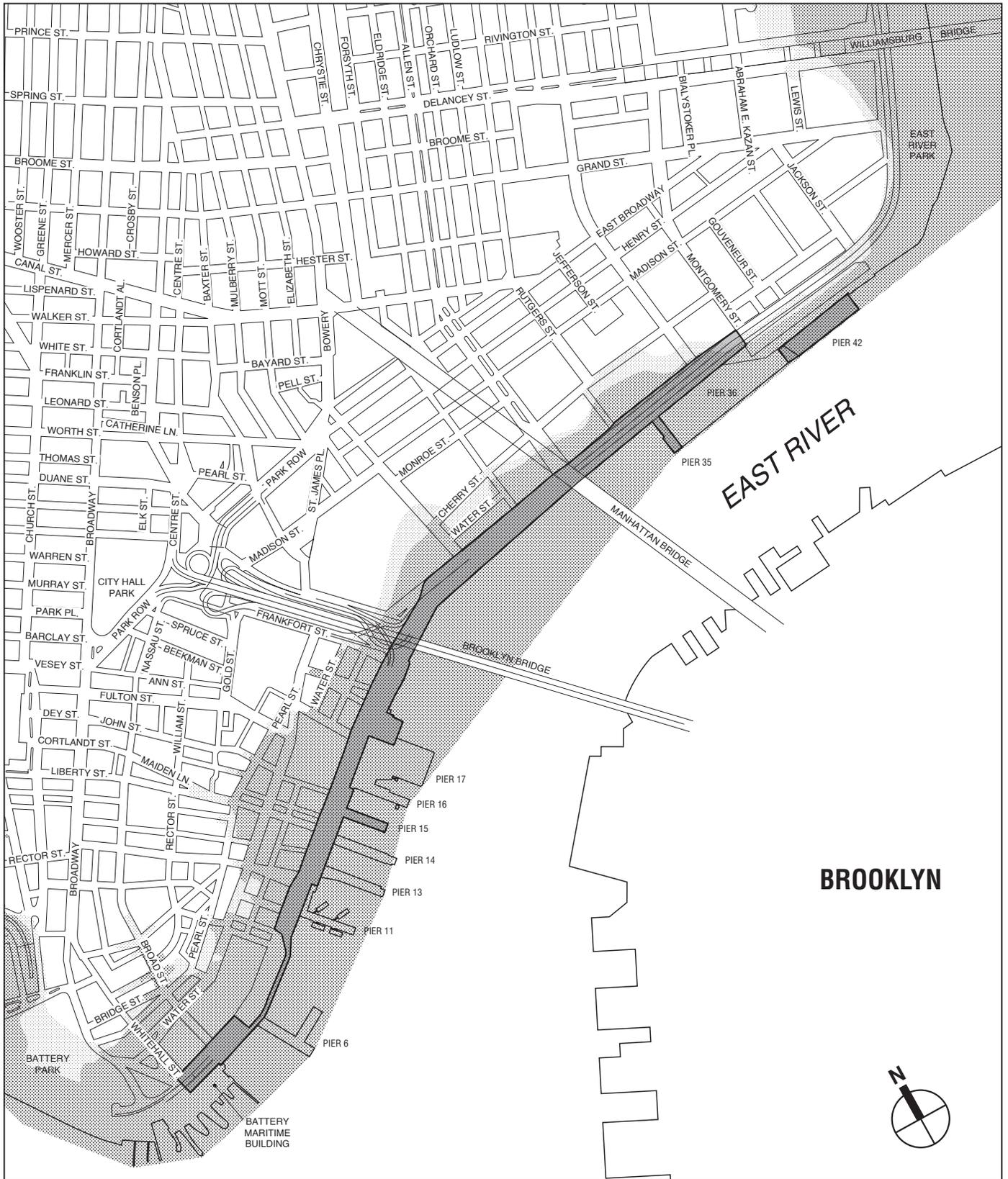
Policy 7.3: Transport solid waste and hazardous substances and site solid and hazardous waste facilities in a manner that minimizes potential degradation of coastal resources.

The Proposed Action does not include the siting of solid or hazardous waste facilities. As described above under Policy 7.1, any toxic or hazardous waste encountered during construction activities associated with the Proposed Action would be handled in accordance with NYCDEP, NYSDEC, OSHA, and EPA requirements. Therefore, this policy is not applicable to the Proposed Action.

Policy 8: Provide public access to and along New York City's coastal waters.

Policy 8.1: Preserve, protect and maintain existing physical, visual, and recreational access to the waterfront.

The Proposed Action would enhance existing public open spaces along the waterfront as well as create new waterfront recreational space. The vibrant, active and welcoming water's edge would increase public use of the East River waterfront. Access to the BMB would be



-  Project Site
-  100-Year Floodplains
-  500-Year Floodplains

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SCALE

improved. In addition, the Proposed Action would provide appropriate amenities, including retail, cultural and community uses, which would encourage use of the waterfront by adjacent communities and neighborhoods. The proposed pavilions beneath the FDR Drive would be located so as to preserve view corridors to the waterfront. Therefore, the Proposed Action would be consistent with this policy.

Policy 8.2: Incorporate public access into new public and private development where compatible with proposed land use and coastal location.

The Proposed Action would improve the esplanade and bikeway/walkway extending from the Peter Minuit Plaza to East River Park. New public open space would be created on Piers 15, 35, 36, and 42. New public access to the waterfront would be provided at the New Market marina and on Piers 35, 36, and 42. Therefore, the Proposed Action would be consistent with this policy.

Policy 8.3: Provide visual access to coastal lands, waters, and open space where physically practical.

The Proposed Action would increase the area from which the East River is visible. As described in Chapter 7, “Visual Resources,” the Proposed Action would maintain the existing view corridors to the East River and would offer greater access and provide elevated views of the East River. Pier 15 would be rebuilt as a two-level structure with enclosed space. A two-tiered open space on the existing Pier 35 platform would be designed to enhance the open space. In addition, a cove with steps down to the river would be created at the north end of Pier 36 for public enjoyment. A new urban beach would be created on Pier 42. The Proposed Action would greatly improve visual access to the waterfront and is therefore consistent with this policy.

Policy 8.4: Preserve and develop waterfront open space and recreation on publicly owned land at suitable locations.

As discussed above in Policies 8.2 and 8.3, the Proposed Action would enhance and facilitate public use of the East River waterfront and, would therefore be consistent with this policy.

Policy 8.5: Preserve the public interest in and use of lands and waters held in public trust by the State and City.

The Proposed Action would not hinder current accessibility to the waterfront nor interfere with the continued use or ownership of land and waters held in the public trust. The Proposed Action would increase public access to the waterfront and create new opportunities for recreational use of the waterfront. Thus, the public interest in the use of lands and water held in public trust would be encouraged and preserved, and the Proposed Action would be consistent with this policy.

Policy 9: Protect scenic resources that contribute to the visual quality of the New York City coastal area.

Policy 9.1: Protect and improve visual quality associated with New York City’s urban context and the historic and working waterfront.

The visual character of the East River waterfront consists of an urban landscape with a mix of office, commercial, and residential buildings. The Proposed Action would enhance the East River waterfront streetscape and would be in character with the existing visual

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resources. Views of the Brooklyn and Manhattan Bridges would be available from more locations. The Proposed Action would be consistent with this policy by protecting and enhancing the existing scenic values and character of the area.

Policy 9.2: Protect scenic values associated with natural resources.

With the exception of the East River, natural resources are limited within the project area. The Proposed Action would not affect the current scenic values associated with the East River. Therefore, the Proposed Action would be consistent with this policy.

Policy 10: Protect, preserve, and enhance resources significant to the historical, archaeological, and cultural legacy of the New York City coastal area.

Policy 10.1: Retain and preserve designated historic resources and enhance resources significant to the coastal culture of New York City.

The Proposed Action would enhance the waterfront of the South Street Seaport Historic District and the setting of other historic resources in the area of potential effect. New structures in the historic district would be designed to be in keeping with the character of the historic district and the review of any design elements that would affect the East River bulkhead would be included in a Programmatic Agreement between LMDC and SHPO (see Chapter 6, “Historic Resources”). The Proposed Action would be consistent with this policy.

Policy 10.2: Protect and preserve archaeological resources and artifacts.

As part of this environmental analysis, archaeological resources have been considered (see Chapter 6, “Historic Resources”). Based on potential effects due to on-site construction activities, and also to account for the project’s potential visual and/or contextual impacts, the area of potential effect (APE) for architectural resources was defined as the streetfront opposite the project site, as well as the full boundary of the South Street Seaport Historic District and Extension. While extensive subsurface disturbance has occurred, there is the potential for undisturbed archaeological resources in certain areas:

- **Riverbottom Remains:** These resources include sunken vessels, discarded and lost cargo, and discarded material from shoreline activities.
- **Landfill Deposits:** The landfill process in the project area was gradual and continued through the 20th century as the areas between piers were filled in, eventually creating South and Marginal Streets. Landfill can contain artifactual material, particularly in the strata closest to the surface. Such archaeological evidence is important for documenting past lifeways, as well as for dating when and how fill was deposited.
- **Landfill Retaining Structures:** Devices for retaining fill, such as cribbing and bulkheads, have been a subject of archaeological investigation for many decades, and docks, wharves, and slips are known to have existed throughout the APE.
- **Piers and Wharves:** Prior to the construction of South Street, the APE was punctuated by numerous wharves, piers, and docks which, as landfill progressed, were incorporated into the made land. The project site could contain elements of these 18th- and 19th-century structures, as well as remains of the buildings associated with them.
- **Land Transportation Elements:** As the center of commerce, the South Street waterfront was the terminus for multiple horse-drawn trolley cars and omnibuses during the 19th century. The discovery of an undisturbed section of 1836 stone pavement at South and

Clinton Streets (discussed in Chapter 6, “Historic Resources”) indicates that track from these railway lines may still be present within the APE. The study of small sections of track rails can be useful in the study of technological adaptations and processes in the evolution of transportation and transportation systems.

- **Wooden Water Mains:** Prior to the introduction of Croton water in 1842, water was distributed in mains composed of hollowed-out logs, which were replaced with cast iron pipes and hydrants beginning in 1827. The Manhattan Company maintained numerous mains in Lower Manhattan during its existence from 1799 to 1842. The wooden mains were shallowly-buried so that they could be tapped by firemen in the course of their duties, and were most recently encountered within four feet of the surface in Coenties Slip, west of the APE. North of Rutgers Slip, South Street had not been filled before 1834; therefore, potential wooden mains could have been present in the APE from Whitehall to Rutgers Slip, but not north of Rutgers Slip.

Based on the preliminary assessment disturbance report prepared by Historical Perspectives, Inc., there are a number of areas within the archaeological APE for which additional research will need to be conducted in order to fully understand documented disturbance and the potential for historic-period archaeological sensitivity to still exist. Thus, there is the potential that the project could have adverse effects on historic-period archaeological resources. Phase 1A(s) will be prepared for the APE, with the exception of two areas. The esplanade area that is outside of the pavilions would experience minimal disturbance (less than two feet in depth). South Street north of the Brooklyn Bridge would be repaved with the Proposed Action; however, this repaving would only affect the top one to two feet of the roadbed. Therefore, Phase 1A(s) will not be prepared for these areas. The Phase 1A will include an analysis of the potential for riverbottom remains to exist in the in-water areas that would be affected by the proposed project. These areas include: Pier 15, the proposed New Market Pier marina, and the widened esplanade between Broad Street and Old Slip, beyond the existing bulkhead, where new pile driving would be required; the end of the New Market Pier, where a breakwater could be constructed; and the area around the Wavertree, which could require dredging to move the ship to the reconstructed Pier 15.

To avoid the potential for adverse effects, based on the conclusions of the Phase 1A(s), and in consultation with SHPO and LPC, a suitable treatment plan would be devised for any areas of potential sensitivity. The treatment plan could include monitoring or field testing, depending on the nature of the potential resources identified and the extent of construction that would take place in specific locations. The preparation of any research not completed as part of the EIS, as well as the preparation of the treatment plan, would be part of the PA to be developed between LMDC and SHPO.

Therefore, the Proposed Action would be consistent with this policy.

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