

Manhattan Waterfront Greenway Master Plan



City of New York
Michael R. Bloomberg, Mayor

Department of City Planning
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Executive Summary

Improving access to the waterfront and developing greenways is a cornerstone of the City's goal to improve the quality of life in New York City. In 2002 the City made a commitment to provide by 2003 a continuous shared-use pedestrian and bicycle path around Manhattan to enhance recreational opportunities for all New Yorkers and provide a green attraction for those outside of the City.

The City's commitment to implement the Manhattan Waterfront Greenway and other bicycle routes led to the creation of an interagency group. The working group sought in the short-term to develop new paths along the waterfront and to create a continuous inland route to connect to the waterfront; in the long-term the group is working to complete an uninterrupted waterfront path. These agencies combined efforts to select the route, gather and analyze traffic data, develop (with a consultant) a comprehensive sign plan for the greenway, and to present the planned interim route to affected communities for their comment and approval. An additional \$4.5 million in the capital budget was authorized for the project, and New York State contributed \$2.4 million in capital construction monies.

The City and State agencies successfully implemented a continuous route around Manhattan, at the water's edge and separated from vehicular traffic wherever possible, within a year's time. The interim route, opened to the public on September 30, 2003, includes more than two miles of new off-street paths along the water, five miles of new Class 2 on-street bicycle lanes, and two-and-a-half miles of new Class 3 on-street signed routes. Critical segments of the greenway that were completed in August 2003 include:

- New waterfront paths on the Harlem River Speedway between West 162nd Street and Dyckman Street and off-street access to this path via the West 155th Street on-ramp to the Harlem River Drive;
- A new off-road, multi-use path along the Henry Hudson Parkway;
- A widened and safer path along the Con Edison facility at East 12th Street;
- A new on-street contra-flow bicycle lane at Waterside Plaza;
- New bicycle lanes on East and West 119th and 120th streets, Dyckman Street, and Twelfth Avenue;
- A new bicycle traffic signal at Dyckman Street; and
- New greenway signs delineating the route.

150,000 copies of a brochure with a map of the route highlighting destinations were printed and distributed through bicycle shops, schools, libraries, and posted on the City's web site. A DCP web site describing the route and its short- and long-term plans was posted in October 2003. The route was incorporated into the revised and updated 2004 NYC Cycling Map, which details the existing and recommended 900-mile citywide bicycle network.

Future Improvements

The route completed in August 2003 under the interagency task force gives greenway users a path by which they can circuit Manhattan, but by necessity it diverges from the waterfront in many sections. Plans to convert currently occupied or otherwise unusable waterfront into greenway within the next five years will result in significant improvements. Along the East River the plans open up one of the largest sections of currently inaccessible waterfront. They also almost complete the waterside path along the Hudson River.

Greenway segments projected to be completed in the near future include:

- Creation of a waterfront path and park between West 125th and West 135th streets by spring 2006 as part of the development of Harlem Piers;
- Upgrading and creation of the Lighthouse Link (Dyckman Street to West 181st Street) section of the greenway by June 2005;
- Completion of the Battery Maritime section of the greenway by 2006;
- Reconstruction of the Battery, including new perimeter bicycle paths, by 2008;
- Creation of an esplanade along the United Nations site by 2008; and
- Creation of an esplanade between West 83rd and West 91st streets along the Hudson River by 2008.

In approximately ten years the new system of Harlem River parks will be well underway and for the first time the Harlem River will be largely open to bicycles and pedestrians.

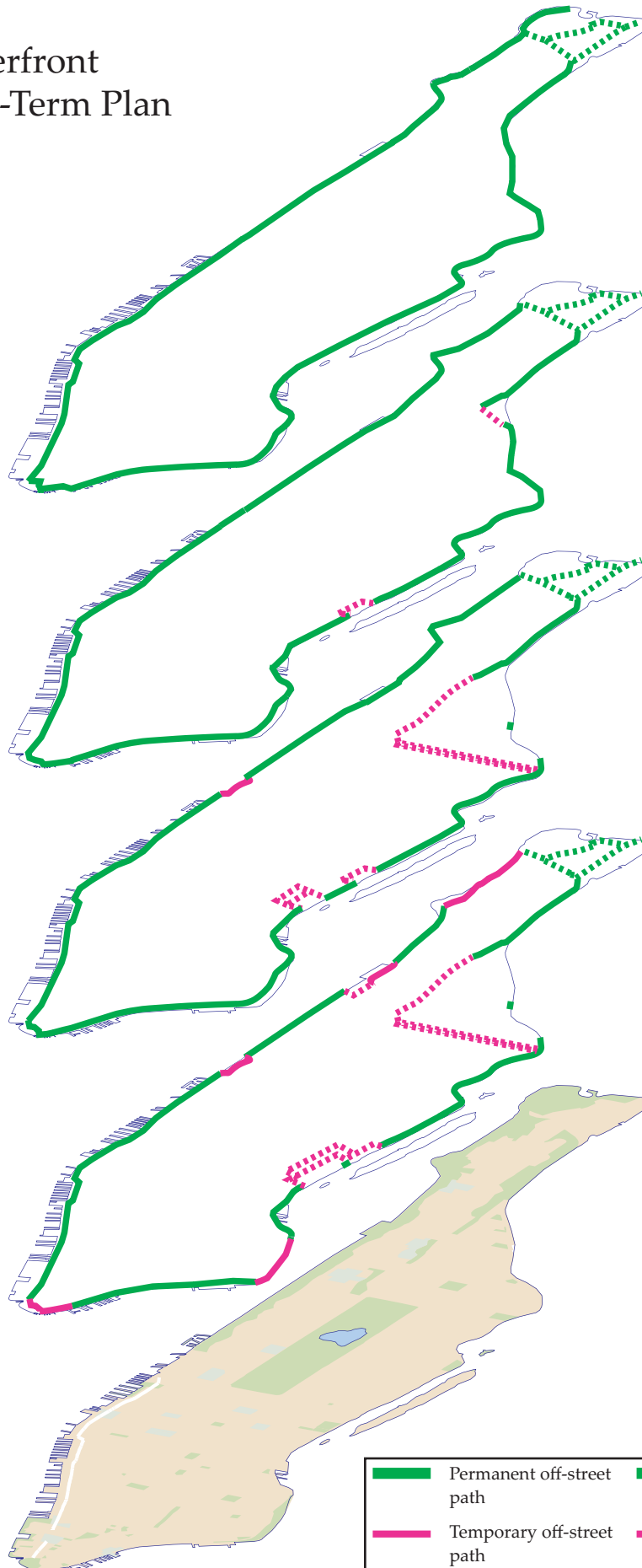
Map 1:
Manhattan Waterfront
Greenway Long-Term Plan

Future Vision

2018

2008

2004



Introduction

This report on the Manhattan Waterfront Greenway documents past plans for the greenway, recent improvements and current conditions on the greenway and the waterfront, and future greenway developments (see Map 1).

In 2002 the City announced that by August 2003 it would provide a mixed-use path circumnavigating Manhattan. To complete this goal, an interagency committee was formed to plan, design and implement the greenway. The agencies represented were the Department of City Planning (DCP), the New York City Department of Transportation (DOT), New York State Department of Transportation (NYSDOT), the Economic Development Corporation (EDC), and the Department of Parks and Recreation (DPR). This report seeks to give the reader a sense of the accomplishments of that committee by discussing in detail the existing greenway, highlighting recently completed projects and their planning, and outlining future plans for the greenway. As part of this project DCP developed a website on the Manhattan Waterfront Greenway. The website has similar information to the printed report and also features a streaming video of cyclists riding around Manhattan. The website can be accessed through DCP's home page (www.nyc.gov/html/dcp/).

The completed interim route for the Manhattan Waterfront Greenway culminates ten years of planning. It takes the rider or pedestrian along 23 miles of waterfront, including two new miles along the Harlem River and two new miles along the Hudson River. The completed route also includes approximately five miles of on-street bike lanes and signed routes to augment and connect the waterfront greenway. The on-street portions of the interim route bypass the waterfront because of inaccessibility due to a variety of uses, ranging from highways to bus yards to wetlands. All of the waterfront locations that lack a greenway are discussed in detail.

Over the next several years the City will build many of the waterfront components that are currently missing. By 2008 there will be new greenways along much of the East, Harlem, and Hudson rivers, as well as a new facility near the Battery Maritime Building. By 2015 most of the permanent waterfront greenway should be substantially complete or under construction. Those sections that remain unbuilt present extraordinary

challenges to implementation, either due to cost or current land use.

Master Plans

The desire for a continuous shared-use path along the Manhattan waterfront was first articulated in 1975 when the Department of City Planning drafted a greenway proposal to plan and build a bikeway and pedestrian promenade, building off of the existing Bobby Wagner Walk, for commuting and recreational purposes along the length of the East River. The proposal also recommended creating better links between the waterfront and residential communities, and bicycle and pedestrian links among and between parks, recreational facilities, hospitals, museums, housing, and other common destinations. The plan eventually grew to include the entire Manhattan coastline.

Several documents were developed that lay the planning framework for much of the current Manhattan Waterfront Greenway. DCP's *New York City Greenway Master Plan*, DCP and DOT's *New York City Bicycle Master Plan*, DCP's *New York City Comprehensive Waterfront Plan*, EDC's *East River Bikeway and Esplanade Master Plan Report*, DCP's *Harlem River Greenway Master Plan*, DPR's *Hudson River Valley Greenway Master Plan*, EDC's *West Harlem Master Plan* and the Environmental Impact Statement (EIS) for Route 9A form much of the basis for greenway construction over the last ten years.

As of spring 2003 more than 17 miles of greenway had been built along the 32-mile Manhattan waterfront. In recent years the reconfiguration of Route 9A (the West Side Highway) as an urban boulevard and the availability of federal transportation funds for non-motorized transportation have been instrumental in progress on the Manhattan Waterfront Greenway.

Goals and Objectives

- To create a continuous waterfront greenway on the shoreline of Manhattan
- To dramatically increase the accessible waterfront over the next 10 years
- To improve the existing waterfront esplanades in Manhattan where possible
- To improve access and connections to the waterfront for pedestrians and cyclists

This Document

This document describes the Manhattan Waterfront Greenway in its former, current, and future states by looking at it segment by segment in a counter-clockwise loop starting at the Battery. It calls out the improvements that the interagency task force implemented, the gaps that still exist, and the plans and timelines that exist to fill those gaps. It also gives, in its appendices, a description of the regulations and procedures for obtaining permission to build an outboard structure, a list of funded projects, a comprehensive list of gaps in the waterfront path, and a sign plan for the greenway. This document is also meant to serve as a record of the Task Force's work. All member agencies of the task force committed serious time and effort to the Manhattan Waterfront Greenway project as demonstrated by the dramatic improvements from the greenway in 2002 to the greenway today.

Funding

The majority of the recent projects to plan and build the greenway have been funded through the federal government with matching funds from the City of New York through the Congestion Mitigation Air Quality (CMAQ) Program of the Intermodal Surface Transportation Efficiency Act (ISTEA) and its successor, the Transportation Equity Act of the 21st Century (TEA-21). CMAQ grants are available only in areas such as New York City which do not currently meet air quality standards. The passage of ISTEA marked the first time that Federal Highway Administration (FHWA) funds could be used for the planning, design and construction of bike and greenway projects to improve air quality and reduce motor vehicle use. City agencies have been particularly aggressive in pursuing these funds.

This document and the accompanying website were prepared for the New York State Department of State with funds provided under Title 11 of the Environmental Protection Fund.

Planning Framework

The City of New York has shown initiative in planning and implementing urban greenways. Ten years ago DCP created a master plan for an ambitious system of off-street greenways throughout the five boroughs, then subsequently integrated the greenways into an extensive and comprehensive system of bicycle trails and lanes.

The 1993 *New York City Greenway Master Plan* (DCP) has as its principle recommendation the creation of an urban greenway system of 350 miles of landscaped bicycle and pedestrian paths across the City (see Map 2). In the 1997 *New York City Bicycle Master Plan* (DCP/ DOT) this recommendation was expanded to include an additional 550 miles of on-street lanes and routes. Also, the *New York City Comprehensive Waterfront Plan* (DCP) and the *Comprehensive Manhattan Waterfront Plan* (Manhattan Borough President) discuss a bike route along the Manhattan waterfront. A major goal of all four of these plans is to complete a continuous esplanade around the shoreline of Manhattan.

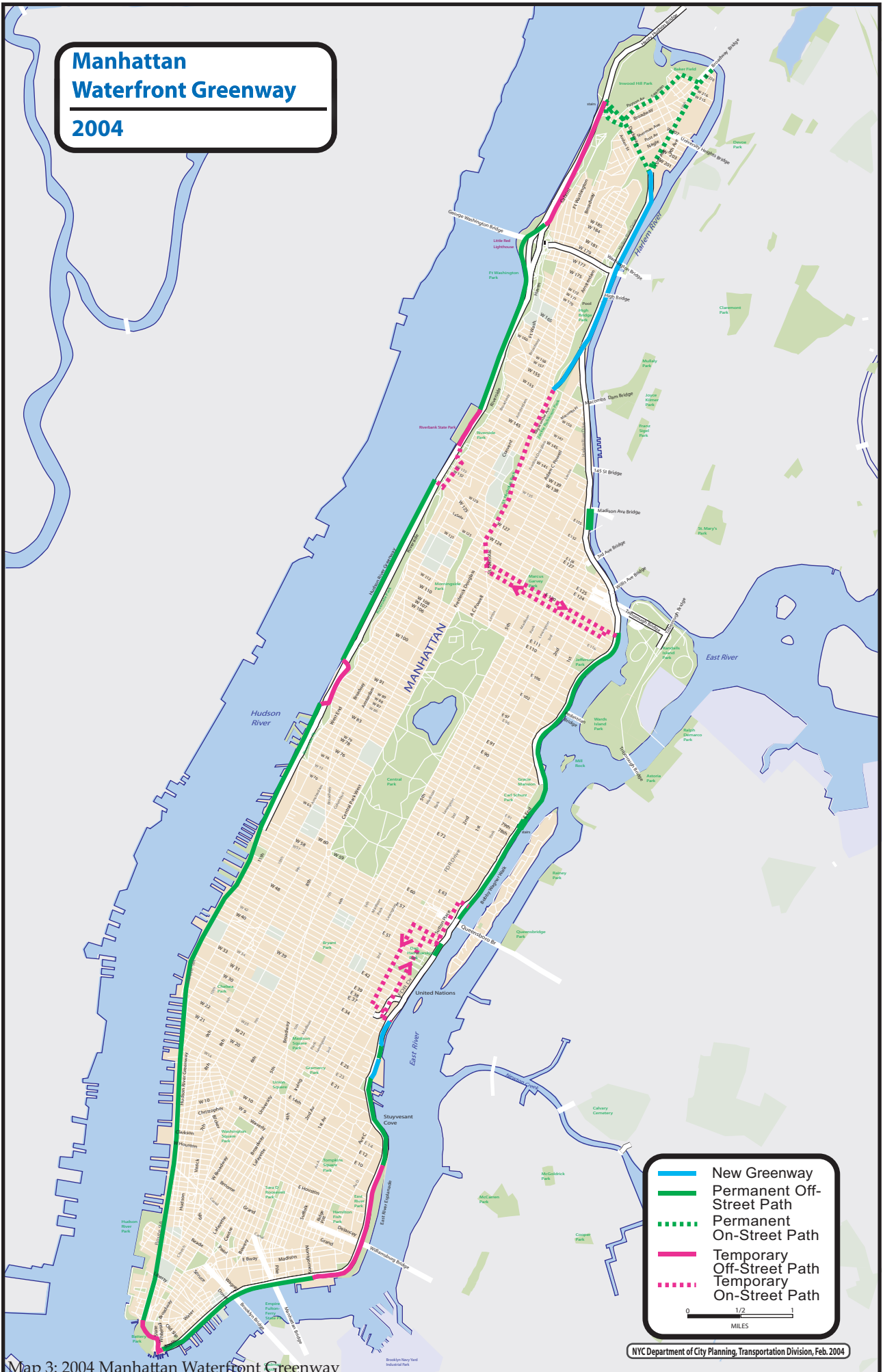
Master plans and other documents for specific segments of the route have been completed and many of these have been at least partially implemented. The several plans that relate directly to the Manhattan Waterfront Greenway are discussed in the body of the document.



Map 2: New York City Greenways

Manhattan Waterfront Greenway

2004



- New Greenway
- Permanent Off-Street Path
- ⋯ Permanent On-Street Path
- Temporary Off-Street Path
- ⋯ Temporary On-Street Path

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MILES

Map 3: 2004 Manhattan Waterfront Greenway

The Route

As mentioned in the introduction, before the Mayor’s task force began its efforts to create a circumferential path around Manhattan, there were 17 miles of esplanade on the waterfront. At the end of 2002, waterfront paths similar to what exist now were in place on the East River from Old Slip to East River Park, from East 14th Street to East 23rd Street, from East 32nd Street to East 34th Street, from East 60th Street to East 84th Street, and from East 90th Street to East 125th Street. On the Harlem River there were two short esplanades between East 135th and East 139th streets, and East 142nd and West 145th streets. On the Hudson River there were esplanades from West 179th Street to West 145th Street, from West 125th Street to West 91st Street, and then from West 83rd Street to Battery Place; often where paths terminated there was no indication of where the route continued. The task force filled many of these route gaps with waterfront paths, and in the others implemented on-street and signed routes that connected the waterfront esplanades. The route as it is, was, and will be, is described in a counter-clockwise direction starting at the Battery in Lower Manhattan.

East River: The Battery to East 125th Street

From the Battery to East 125th Street along the East River the permanent Manhattan waterfront greenway is off-street or complete between Old Slip and West 25th Street and north of East 63rd Street. Recent interim improvements permit the continuation of the route between East 25th Street and Glick Park at East 37th Street, where the waterfront route terminates. The development of a waterfront esplanade between East 37th and East 63rd streets is a long-term project, given the lack of land between the FDR Drive and the waterfront. The interim route travels north-south along First and Second avenues, major arterial streets that are not recommended for inexperienced riders.

The Battery to East 25th Street

On the East River south of East 23rd Street, the majority of the esplanades that were in place before the task force began its work were developed and constructed by EDC under its *East River Esplanade Master Plan Report*. EDC’s *East River Bikeway and Esplanade Master Plan Report*, released in 1996, calls for a continuous bikeway and esplanade to run the length of the East River, from the Battery to East 125th Street. It divides the East River waterfront from the Battery to East 63rd Street (the greenway already existed between East 63rd and East 125th streets) into ten sections and examines the characteristics of and possibilities for each one.

The *Master Plan Report* also addresses design guidelines for mixed-use paths, on-street bike lanes, landscaping and other architectural elements along the path. It specifies schematic designs for all sections of the East River esplanade, discusses the implementation of these designs and offers costs and alternatives for each of the designs. The sections that have been developed under the *Master Plan Report* were and continue to be delightful.

Before EDC’s efforts there were no specific greenway facilities along the Battery and all the way to Old Slip. Though there were pedestrian sidewalks and esplanades in the park and along South Street, there were no facilities for cyclists.

The new interim improvements begin at Battery Place in the Battery (see Map 4). Here pedestrians now take the waterfront esplanade that also serves as a queuing space for those waiting to ride the Ellis and Liberty Island ferry. Cyclists, park-walkers and others share a signed inland path that weaves through the park past “The Sphere,” the World Trade Center memorial. Previously cycling was not allowed in the park, but as part of the goal to create off-street paths where possible, DPR opened an inland path to cyclists and other wheeled users. Conditions in the park are not particularly good for cyclists as the area surrounding “The Sphere” and the interior paths of the park are generally clogged with tourists and locals.



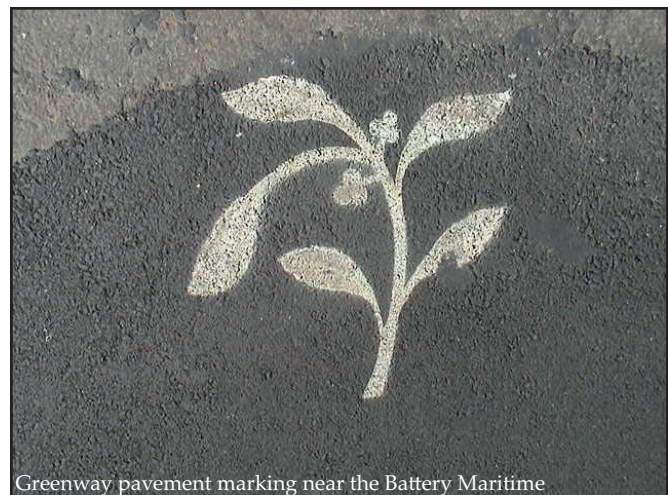
Coming out of the Battery, the path to the ferry terminal follows Whitehall Street and Peter Minuit Plaza. Whitehall Ferry, the Battery Maritime Building and the surrounding area are all under construction at this time, with most of the potential path space taken up by building materials, activities and parking. The temporary path that DOT implemented for the opening of the interim route is two-way and shared by all users. It is currently as narrow as four-and-a-half feet in some locations and it is difficult to navigate as it is truly part of a construction zone. The greenway is, in some places, delineated by signs and sidewalk stencils that mark the route to follow to South Street.

Along South Street the greenway consists of a wide waterfront sidewalk shared by cyclists and pedestrians. Both northbound and southbound travelers are encouraged to use this route, which had greenway signs implemented as part of the interim route and which will be improved with the completion of the ferry terminal reconstruction. At Old Slip the permanent greenway begins.

The Battery area, including the park, the Whitehall Ferry Terminal and the Battery Maritime building is not in its final form. The Battery Conservancy is planning to construct a permanent bike path along the northern and eastern edges of the park (see Figure 1). It will connect to Route 9A and to the path at the Whitehall Ferry. The path should be complete by 2008. The Whitehall Ferry Terminal, the Battery Maritime Building and the surrounding area are under NYCDOT jurisdiction. The immediate area, including the greenway, consists of roads, sand piles, building materials and parking areas from the construction. The construction is being orchestrated by EDC under its *East River Esplanade Master Plan*, and will be completed in 2006. The esplanade will run



Battery Park greenway sign



Greenway pavement marking near the Battery Maritime

on South Street under the Whitehall Ferry Terminal and then continue on South Street in front the Battery Maritime Building and along the East River. The esplanade is being built as part of the reconstruction. It is fully funded by CMAQ and will provide a direct link to the East River Greenway and the Battery for those commuting from Staten Island.



Figure 1: Battery Master Plan with bike path in pink
Image courtesy of the Battery Conservancy



Battery Maritime construction



East River Park esplanade

The greenway that begins at Old Slip (see map 4) is an asphalt and asphalt paver two-way, dual-carriage (see appendix A), off-street path for most of the distance to East River Park. In this part of the greenway, travelers go along the waterfront, with cyclists occasionally dipping under the FDR. By turning inland from the water travelers can connect to the Brooklyn, Manhattan, and Williamsburg bridges, as well as to on-street routes. On the route itself, travelers pass the South Street Seaport, the Fulton Fish Market, and several small waterfront parks. The greenway connects to East River Park at Montgomery Street (see Map 5).

Through East River Park the esplanade is a wide path that does not have separate markings for pedestrians and cyclists. Through the southern part of the park one can walk along the waterfront, but at Corlears Hook travelers have to turn inland and move along a shared-use path between the FDR and the park. After Corlears Hook the waterfront portion of the park is closed to the public because of a crumbling bulkhead and cable relocation and removal by Con Edison.

In the park there is access to gardens, sports facilities, sculptures and other amenities, but travel through the park is limited to the 21½-foot, asphalt path along the western edge. The waterfront route will be under construction for the next few years as Con Edison continues construction and DPR repairs and refurbishes the bulkhead. Con Edison and DPR are working in complementary phases on this project, and will have refurbished the whole bulkhead by 2007, with much of the bulkhead in the north of the park finished earlier. When the waterfront path is complete DPR plans to permanently reopen it to pedestrians and temporarily open it to cyclists as it improves the inland bicycle path to have better drainage and clearer markings. This should be complete by 2008.



Map 5: East River Park



Crumbling bulkhead in East River Park

As travelers exit East River Park at East 12th Street, a greenway sign warns that the path narrows as it abuts the Con Edison facility that lies between East 12th and East 14th streets. After negotiations with Con Edison through the spring and early summer, in late July of 2003 NYSDOT reconstructed the path and the fence that marks the path between the FDR and the Con Edison facility. Previously the path was four feet wide for the entire stretch between East 12th and East 14th streets. NYSDOT improved the site so that there is a wide asphalt path of 17½ feet until the Con Edison building abuts the road, where the path is only four feet. Farther along the Con Edison plant, the path widens to six-and-a-half feet until it comes to the very narrow (three- to three-and-a-half-foot) bridge that crosses East 14th Street and takes travelers to the waterfront. Though this is not the recommended course of action in the *East River Esplanade Master Plan Report* (which recommended a flyover), it does provide an excellent path improvement where previously cycling was difficult and even dangerous.



Widened path next to Con Edison at East 12th Street



Stuyvesant Cove



Map 6: Stuyvesant Cove

After exiting the Con Edison site, the shared-use path widens to between seven and thirteen feet, changes from asphalt and concrete to asphalt pavers, and abuts the tree- and bench-lined waterfront until East 18th Street. From East 18th Street to East 23rd Street is Stuyvesant Cove (see Map 6), where the greenway becomes a dual carriageway with the bicycle path and walkway separated by greenery and land with benches and informational display panels. This section of the path and the surrounding park were completed in 2002 by EDC as part of the implementation of the East River Master Plan. The waterfront pedestrian path is made of asphalt pavers and is 14 to 25 feet wide. The slightly inland bicycle path is a nine-foot wide asphalt path with directional markings. Between the two paths is a landscaped area with awnings and mulched paths open to pedestrians. The plantings and structures made of environmentally-friendly materials make the path and park stand out as innovative spaces that are a pleasure to use and improve the quality of the surrounding area. From East 23rd Street to East 25th Street there is a clearly marked greenway.

East 25th Street to East 37th Street

Implementing a bike path between East 25th and East 29th streets has been a challenge for many years (see Map 7). A waterfront esplanade at Waterside Plaza, a private housing complex built on a platform over the East River, has been long closed for repairs, and is unlikely to be reopened in the near future. The United Nations International School, which sits on the water at East 25th Street, has security concerns and bus and other transit needs that make a true waterfront greenway difficult to build.

The current best solution for the greenway along Waterside Plaza is to implement a contra-flow bike path on the service road. The resulting separated, southbound contra-flow lane of four-and-a-half feet lies on the City-owned northbound service road next to Waterside Plaza. Northbound cyclists ride with the very light traffic in the road, and pedestrians take the sidewalk to East 29th Street. Both pedestrians and cyclists, if they are willing to walk or carry their bikes, may enter the second-story courtyard and waterfront open space in Waterside Plaza via the pedestrian ramp over the service road.

At East 29th Street the Waterside Plaza complex ends and there is a 22½-foot concrete sidewalk along the water. New signs and a bicycle crosswalk direct cyclists and pedestrians to take this sidewalk to East 30th Street, where the Water Club restaurant is located. Pedestrians are encouraged to continue along the five- to twelve-foot sidewalk and boardwalk of the Water



Club and then along the water north of it. Cyclists are to ride in the FDR service road that abuts the Water Club parking lot; in practice, however, many cyclists will ride through the parking lot because of the lower traffic volumes and speeds. Though this is not the permanent solution recommended in EDC's *East River Esplanade Master Plan Report*, it is a good accommodation for pedestrians and a usable and safe route for cyclists.

From East 32nd Street to East 34th Street along the water's edge is the City's busiest heliport. Though its function negates the possibility of a greenway next to the water, EDC will be renovating the heliport shortly and the possibility of an improved greenway exists at this site.

In the long term the route of the greenway between East 25th and East 34th streets is unclear. NYSDOT will shortly begin reconstructing the FDR here, and it would be ideal if they could incorporate a bike path in the design, much as they did in the reconstruction of Route 9A on the west side of Manhattan. Negotiations are still underway between the State and the City as to the eventual route of the highway and the greenway that may come along with it.



The most likely route and form for the greenway to take between East 25th to 34th streets is that proposed in EDC's *East River Master Plan*. This plan includes a two-way bicycle facility in front of Waterside Plaza and the Water Club, a two-way bike path with a mountable curb adjacent to the FDR service road from East 30th Street to East 34th Street, a park near East 34th Street, directly north of the heliport, and a two-way greenway north through Glick Park and the Con Edison site. These improvements, done separately from the highway reconstruction, would cost approximately \$1.5 million dollars. All of these improvements depend greatly on the shape that the FDR reconstruction eventually takes. The FDR construction in this area should be predominantly complete by 2008.



Esplanade in Glick Park

At the East 32nd Street heliport the greenway path crosses the FDR service road and sits, as it did before the interim route was implemented, on the thirteen-foot median under the FDR until East 34th Street. At East 34th Street, the task force improved the greenway links and the path again crosses the service road and lies along the river. This branch of the path, which passes the East 34th Street ferry terminal and an NYU parking lot, is ten to seventeen feet wide and made of asphalt pavers. Because of the traffic at the ferry terminal and the parking lot, the path is signed and kept clear of vehicles for cyclists by NYPD officers stationed or parked there. EDC will begin construction on a new ferry terminal just north of the existing one in January of 2005, and will complete the construction in 2006. The project includes implementation of a new bike path and walkway. *The East River Esplanade Master Plan Report* calls for a park at the terminus of east 34th Street, but its eventual construction is not certain.



Map 8: United Nations

In Glick Park, a lovely space with benches and trees along the waterfront between East 36th and East 38th streets, the greenway becomes an 11-foot wide red asphalt paver path. Public access to the waterfront terminates at the Con Edison parking lot, which begins at 38th Street.

East 37th Street to East 63rd Street (Map 8)

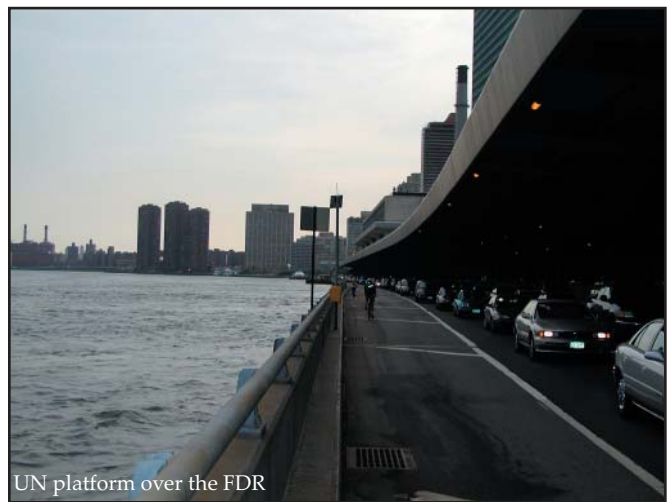
A Con Edison parking lot lies along the waterfront between East 38th and East 41st streets. Con Edison leases the land from the City, but the plant is being decommissioned and operations will cease at the site by 2012, at which point the parking lot will be ceded to the City to become parkland. There has been discussion of an overhead platform with a greenway that connects to the UN facility, but there are no final plans for the site. Currently the site is not open to the public.

From East 41st Street to East 48th Street the water's edge is occupied by the FDR and the United Nations (UN), which platforms over the FDR. There is no public access at these sites due to security concerns at the UN and lack of space along the FDR. Currently, however, the UN is planning a major renovation of its headquarters. In order to facilitate this construction it seeks to build a new structure on Robert Moses Park, adjacent to its property. The loss of parkland must be mitigated, and the UN has agreed to build an esplanade on its property from East 41st Street to East 51st Street that connects to First or Second Avenue or to Sutton Place. Designs for the esplanade are not yet complete; currently an EIS is being produced. All plans for an esplanade have it running outboard of the FDR. The UN esplanade is tentatively scheduled for completion by 2008. The FDR continues to run along the water's edge until East 60th Street. Its proximity to the water makes a waterfront greenway impossible without outboard structures.

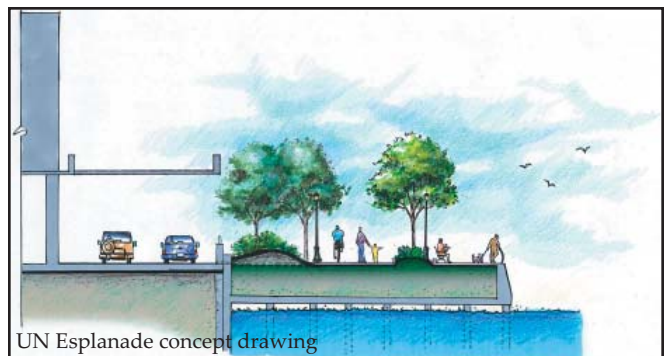
NYS DOT plans to shortly commence reconstruction of the FDR between East 53rd and East 60th streets. Though there is a temporary cantilevered structure being built to accommodate traffic during the reconstruction, NYS DOT did not receive a DEC permit to place a more permanent outboard path along the FDR that might eventually be used for a greenway. It is thus unclear when or if there will be a permanent greenway in this area.



Con Edison parking lot at East 38th Street



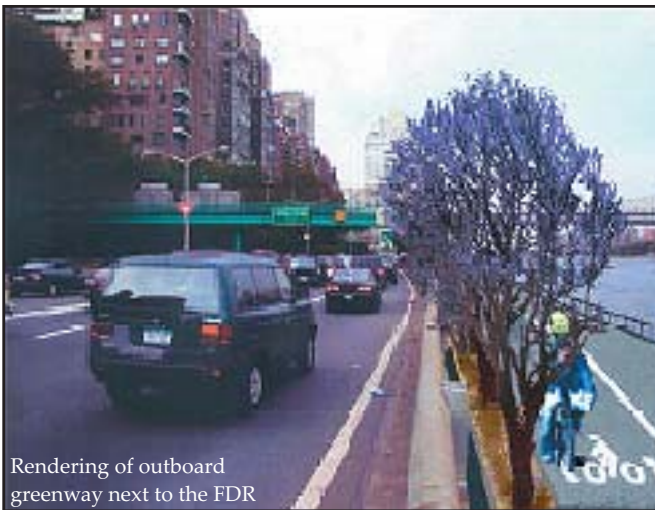
UN platform over the FDR



UN Esplanade concept drawing



FDR near East 50th Street



Rendering of outboard greenway next to the FDR



First Avenue near East 48th Street

While it would be possible for a future path to run on a cantilevered outboard along the FDR, construction would be very expensive (\$15.9 million). There might be difficulty securing a DEC permit for this construction, and it is unlikely to happen outside of FDR reconstruction. EDC believes that a better long-term plan would be to create an inland route on Sutton Place. This would be considerably easier and less expensive, but not on the waterfront.

Due to the current impossibility of a waterfront greenway between Glick Park and East 61st Street, the interim path goes inland at East 37th Street, where there is an underpass beneath the FDR; a greenway sign points users to northbound First Avenue. Southbound cyclists should take Second Avenue and head east on East 38th Street. Though the task force would have liked to have a path closer to the waterfront than First and Second avenues, the waterfront conditions and the lack of a street closer to the water negated that possibility for the interim route.

First and Second avenues have both been signed, but neither is appropriate for inexperienced riders. Because of heavy traffic all cyclists should use extreme caution on these streets. First Avenue is, in general, easier to ride than Second Avenue. Though First Avenue is still quite busy, between East 41st and East 48th streets, the traffic underpass for the UN makes riding at street level much safer and less crowded. At East 48th Street where the underpass ends, it is again crowded with vehicles. Second Avenue is very busy from East 37th Street to East 55th Street. There are three city buses that run on Second Avenue between East 42nd and East 49th streets, and it is a primary route for vehicles exiting the Queensboro Bridge. Overall, both streets are busy and should be used only with extreme caution.

From First and Second avenues, cyclists take eastbound East 54th Street and westbound East 55th Street to reach or exit Sutton Place and York Avenue. On the streets a signed route connects users to the East 63rd Street pedestrian bridge over the FDR and to Bobby Wagner Walk, the northern portion of the East River esplanade.

East 63rd Street to East 125th Street (Map 9)

From East 63rd Street to 125th Street is Bobby Wagner Walk, the oldest portion of the Manhattan Waterfront Greenway. Built in 1939 as part of the construction of the East River Drive, Bobby Wagner Walk is a multi-use path with no separation of cyclists and other wheeled users from pedestrians. Bikes were previously not allowed in Carl Schurz Park, which lies between East 84th and East 90th streets. A set of stairs at East 80th Street and park rules effectively separated cyclists from the park and required that they either bypass it on East End Avenue or carry their bikes up the stairs and then walk them through the park.

Along Bobby Wagner Walk the route has not been altered except for routine repairs. As part of the task force's effort to keep the path on the waterfront, though, DPR opened up Carl Schurz Park to cyclists. At East 80th Street, the site of the stairs to the park, the task force installed a bike rail to make it easier to carry one's bike up and down the stairs. The path continues through Carl Schurz Park and follows the previously existing route to East 120th Street.

After the park the esplanade continues north to East 125th Street, with access to Randall's and Wards islands and their greenways and recreational facilities via the Wards Island pedestrian bridge at East 103rd Street. The bridge has limited hours of operation in the off-season.

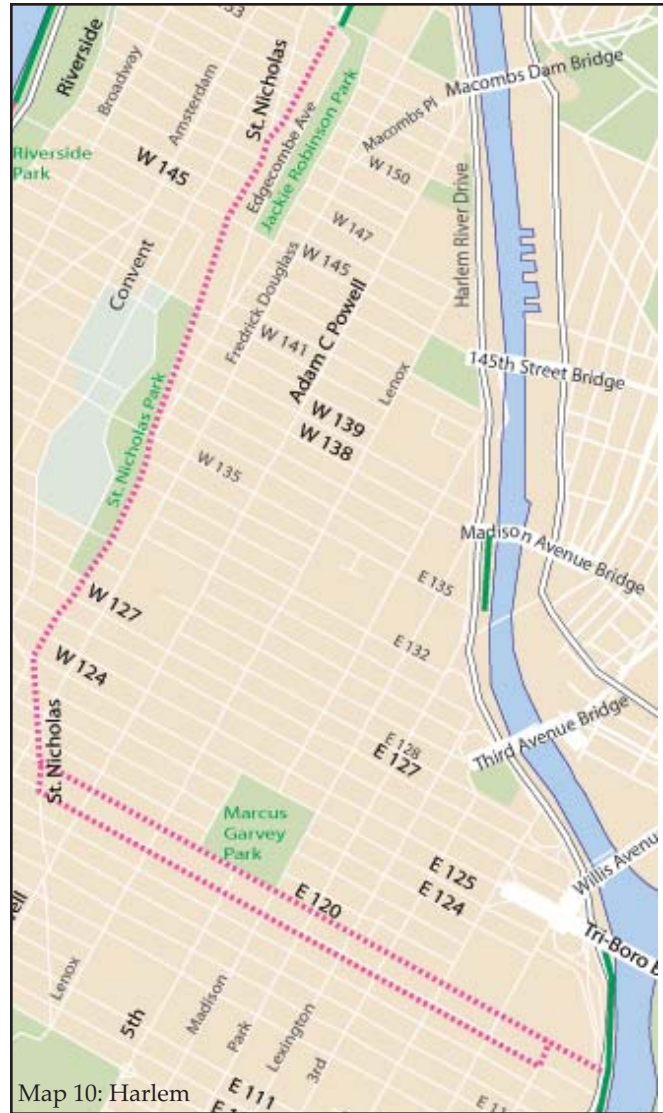


Bobby Wagner Walk near East 106th Street

Harlem River: East 125th Street to Broadway Bridge

Currently there is no esplanade along the Harlem River waterfront between West 125th and East 162nd streets. DOT is currently rebuilding the Harlem River bridges and DPR has planned parks and greenways in line with the *Harlem River Greenway Master Plan* in several locations, but in others it will be very difficult to put the path on the waterfront because of private ownership and topography. The most recent accomplishment along the Harlem River is the reconstruction of the Harlem River Speedway, a beautiful esplanade along the Harlem River bluffs that has long been accessible only from the northern end. Thanks to a new ramp built by NYSDOT and path refurbishment by DPR, the Speedway is once again a wonderful path and destination.

The Harlem River did not have any significant stretches of greenway before the interagency task force’s implementations. The portions that were in place were from East 135th Street to East 139th Street and from East 142nd Street to West 145th Street. The more southern piece is part of the new Harlem River Park being planned and implemented by DPR with CMAQ funds. The northern piece was put in place by NYSDOT. Unfortunately, the short greenway from East 142nd Street to West 145th Street has not been maintained and is now in poor repair.



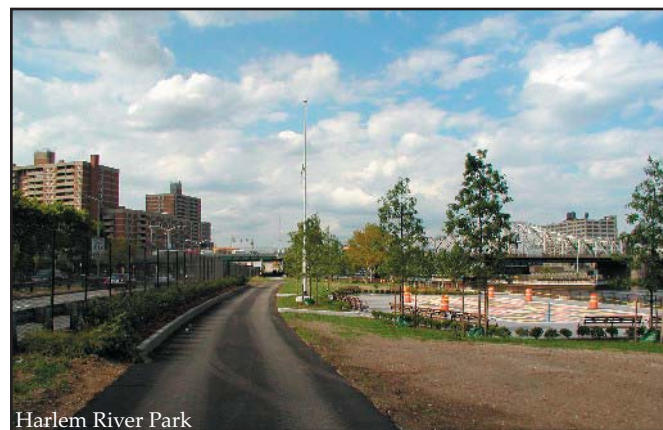
Map 10: Harlem



NYCDOT bridge staging area



Salt yard near Triborough Bridge



Harlem River Park

Manhattan Waterfront Greenway Master Plan

East 120th Street to West 153rd Street (Map 10)

Between East 125th and East 128th streets is a Department of Sanitation salt yard. It will soon move to Louis Cucillier Park, at First Avenue and East 124th Street. Between East 128th and 135th streets is a DOT staging area for the reconstruction of the Willis Avenue, Third Avenue, and Madison Avenue bridges, which will be completed in 2016. These two sites are currently not open to the public, but upon completion of the bridge construction both will be ceded to DPR to create a waterfront park.

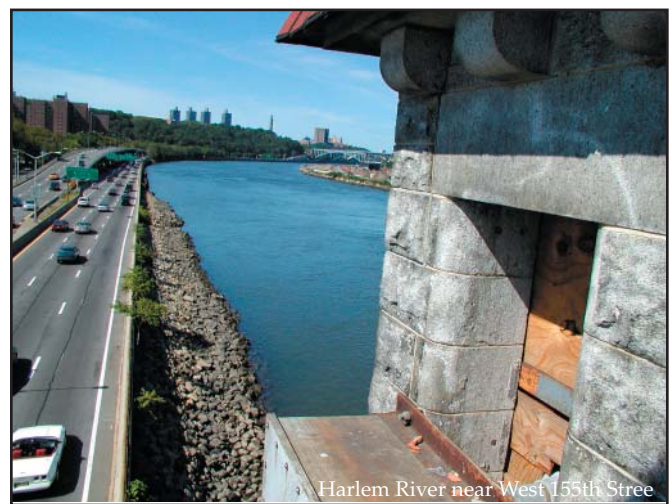
From East 135th Street to East 139th Street there is a new park with a short waterfront greenway. It is a pleasant destination; however it is not connected to any larger greenway system and is not readily accessible from any on-street routes. From East 139th Street to West 145th Street there is no greenway. Previously there was a greenway from East 142nd Street to West 145th Street, but this has fallen into poor repair. From East 139th to East 142nd Street, DPR has CMAQ funding to implement a greenway and park and plans to do so by 2008. Plans and funding to renovate the path from East 142nd to West 145th streets need to be made and secured to complete the planned Harlem River Park Bikeway and Esplanade.

DPR's CMAQ application for the Harlem River Park Bikeway and Esplanade (2000) plans a greenway for the stretch of the Harlem River from East 125th Street to West 145th Street. The application lists the benefits to the community and the comprehensive system of parks and greenways that the Harlem River Park Bikeway and Esplanade link would add, and gives the phasing plan for implementation. The program and goals listed in the application are in part based on the *Comprehensive Manhattan Waterfront Plan* put out by then-Manhattan Borough President Ruth

Messinger in spring of 1995. The Borough President's plan for the Harlem River calls for a "Harlem Beach Esplanade" that would include traditional waterfront uses in addition to the conventional esplanade activities of strolling, biking, jogging and sitting.

West 145th Street to West 150th Street is leased by the City to the private Esplanade Gardens Housing, which currently uses the waterfront for parking and garbage dumpsters. Plans should be made to meet with Esplanade Gardens Housing to discuss the implementation by 2008 of an easement through parking lot to create a 12-foot wide path adjacent to the existing bulkhead along the waterfront.

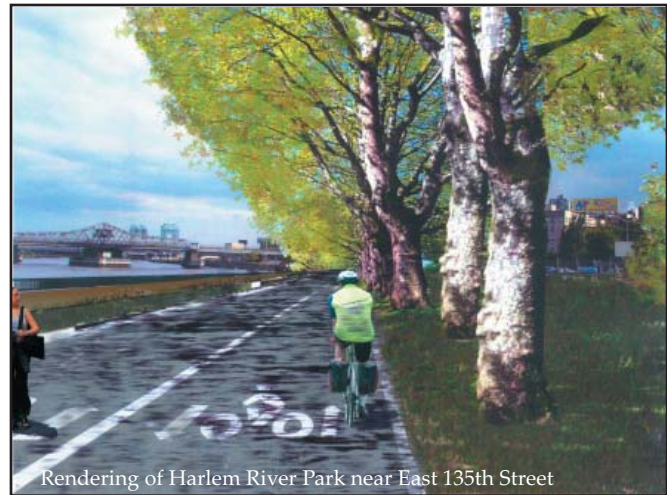
Between West 150th and West 163rd Street the Harlem River Drive is elevated; for most of this length its easternmost lane travels over the river. The setup of the highway makes it incredibly difficult for a greenway to be implemented along the waterfront.



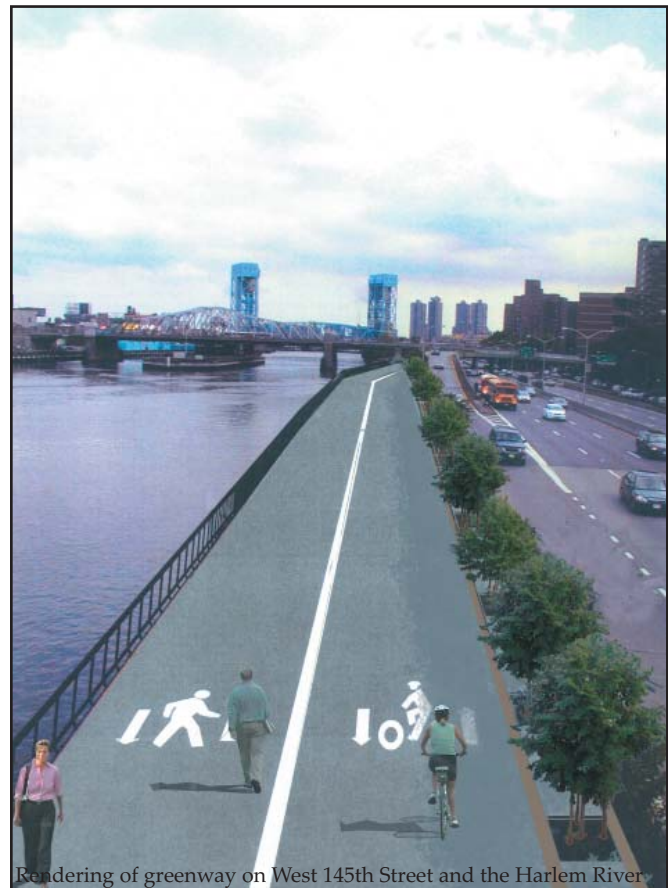
From East 145th Street to the Broadway Bridge DCP's *Harlem River Greenway Master Plan* outlines the possibilities for the waterfront. The plan's goal is the creation of a multi-use path that runs the length of the Harlem River. It gives the history of the area, lists landmarks, presents existing conditions and destinations, and describes a recommended route, including on-street alternatives for sections that are difficult to implement. The *Harlem River Greenway Master Plan* pays particular attention to waterfront access and highlights the Harlem River Drive as a central and easy place for waterfront access to happen. Because of the many different owners along the waterfront, the plan recommends a multi-phase implementation that could take several decades. The *Harlem River Greenway Master Plan* also discusses the difficulties in implementation that result from the topography of the area and presents design guidelines that are appropriate for the different types of shoreline.

The plans for a pathway along the Harlem River are directly linked to the renovation of several of the bridges along the river and the subsequent creation of park space there. Though DPR currently has funding (CMAQ) to create these parks and paths, because of DOT bridge reconstruction, the earliest date they may start park construction is 2012, when NYCDOT will have completed their bridge reconstruction and the land from East 125th to East 135th Street will have been ceded to DPR. By 2018 DPR will have created a park there that includes a waterfront greenway. This will connect to the existing greenway through Harlem River Park. In this area and all along the Harlem River there is a need to provide many pedestrian footpaths over the Harlem River Drive.

An esplanade along the water from West 155th Street to West 163rd Street would be difficult to implement, because of private ownership and topography. Any greenway here would have to be a cantilevered structure as the shore is too narrow for any path to be implemented. North of these streets a similar situation is faced between Dyckman and Street and the Broadway Bridge. Here, however, it seems possible that plans created by an existing Sherman Creek task force may include a greenway. Any greenway would have to be at least a partially cantilevered structure.



Rendering of Harlem River Park near East 135th Street



Rendering of greenway on West 145th Street and the Harlem River



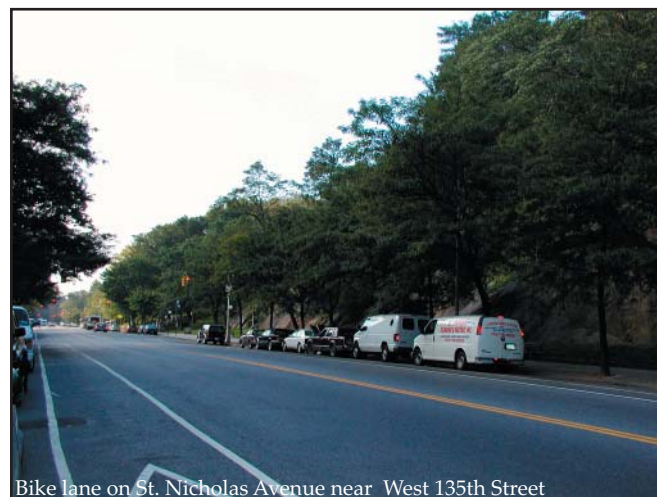
Until some of the improvements outlined in the master plans can be made, an interim inland route has been implemented by the task force to connect Bobby Wagner Walk and the Harlem River Speedway.

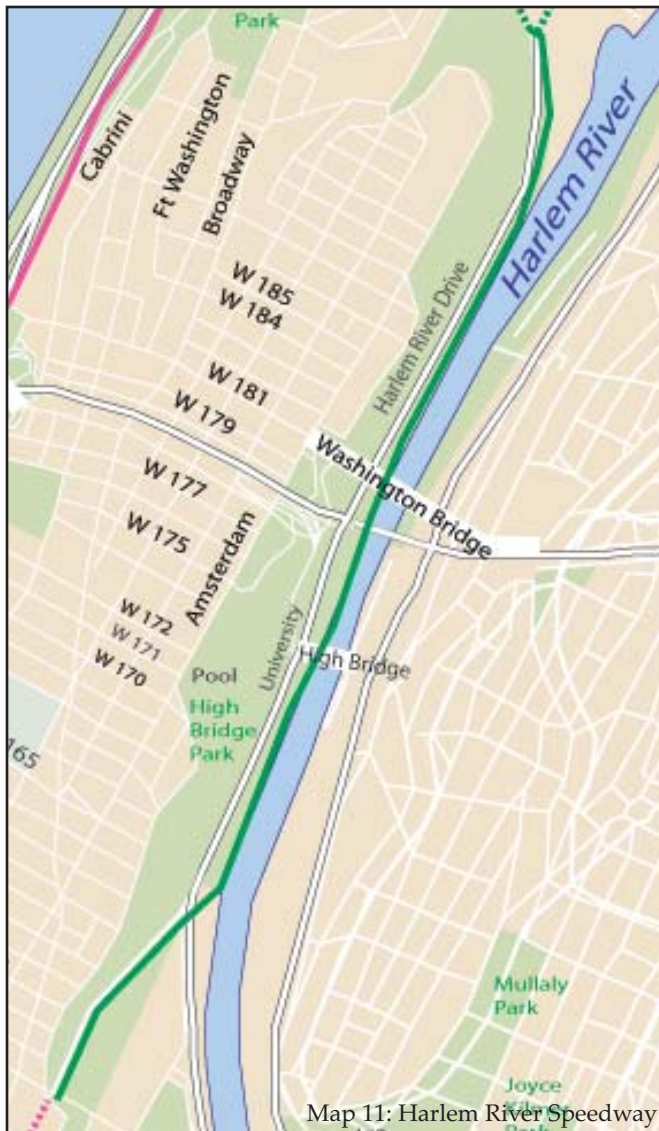
The inland route along Harlem's streets links the East River Greenway and the new Harlem River Speedway, a multi-use path along the Harlem River from West 163rd Street to Dyckman Street. It connects to Bobby Wagner Walk via a pedestrian bridge over the FDR at East 120th Street. Two routes were considered when trying to design an inland connection through Harlem. The first stayed close to the river and traveled through several existing parks that line eastern Harlem. This route had the advantages of being closer to the water, highlighting existing small parks, and being more adaptable to change as the waterfront is developed. However, it would have required greenway users to make frequent turns and the removal of parking

places to implement bike lanes on street. The other route discussed, and the one eventually chosen, takes riders along East and West 119th and 120th streets and connects to the existing lane on St. Nicholas Avenue. This route has the advantages of being direct and simple and utilizing a previously existing bike route. It is, however, quite far from the Harlem River.

Over the summer of 2003 both East and West 119th and 120th streets were improved with Class 2 bike lanes, which connect to the existing north- and southbound bicycle facility on St. Nicholas Avenue between West 118th Street and West 168th Street. Greenway signs were also placed on these streets to make it clear that they are a link in the waterfront route. These lanes will remain part of the City's comprehensive network of on-street bicycle lanes even after the waterfront greenway is completed.

From the interim on-street route, bikers may use the recommended on-street routes at East 138th, East 139th, and West 145th streets to connect to the Harlem River and the Madison Avenue and 145th Street bridges to the Bronx.





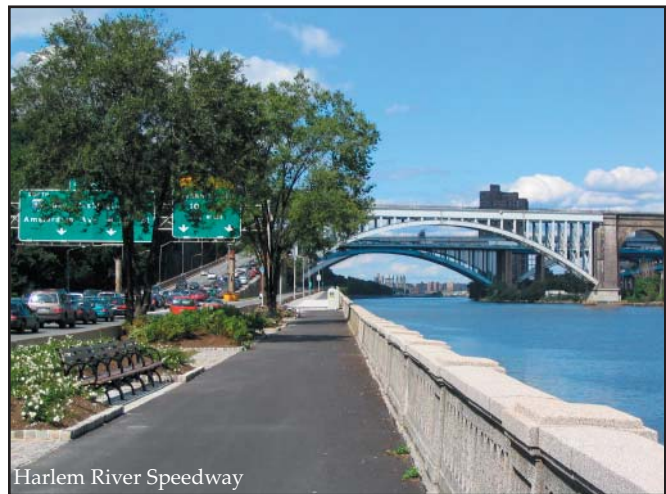
Map 11: Harlem River Speedway

West 153rd Street to Dyckman Street (Map 11)

At West 153rd Street, greenway users should take St. Nicholas Place to the West 155th Street on-ramp for the Harlem River Drive. In the summer of 2003 NYSDOT implemented a narrow but separated bike path along this ramp, allowing greenway users to access the new 2.5 miles of greenway between West 163rd and Dyckman streets. The new Harlem River Speedway, which was a highlighted project in the *Harlem River Greenway Master Plan*, is actually a reconstruction of the riverside walkway that abutted a carriage path; the original path and walkway date to 1898. The new path is a Class 1 facility that takes riders along a beautiful stretch of the previously inaccessible Harlem River. The speedway ranges from seven to 26 feet, with the wider portions on the



Entrance ramp to the Harlem River Speedway



Harlem River Speedway



Bike light on Dyckman Street at the Harlem River Speedway

northern section of the speedway, and has stunning views of the High Bridge, the Alexander Hamilton Bridge, and the Washington Bridge. Access to the new Speedway is limited to West 155th Street from the south and Dyckman Street from the north.



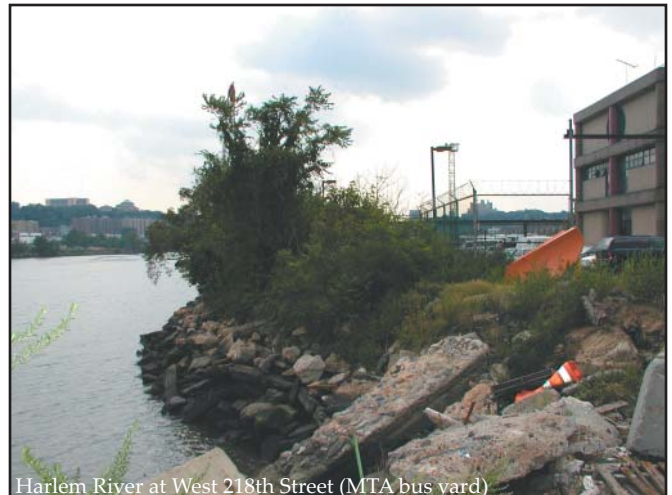
Bike crossing at Dyckman Street

At the northern entrance to the Harlem River Speedway DOT installed a new bike light and bike crossing as part of the improvements for the interim route. The bike light is the first of its kind in the City; its timing is distinct from both the pedestrian and vehicle phases, and in conjunction with the bike crossing allows cyclists to safely cross this three way intersection (this is the terminus of the Harlem River Drive, the eastern terminus of Dyckman Street, and the continuation of Tenth Avenue).

Dyckman Street to Inwood Hill Park (Map 12)

Between Dyckman and 201st streets is Sherman Creek. South of Sherman Creek is parkland, and north is Con Edison-owned land that includes a power generating facility and an empty lot sometimes used for parking. The City is currently spearheading a Sherman Creek initiative to dramatically alter this part of Manhattan's shoreline and the area immediately surrounding it through increased waterfront access, increased residential density, and mixed-use development. The shoreline is accessible in the park, but there is no greenway.

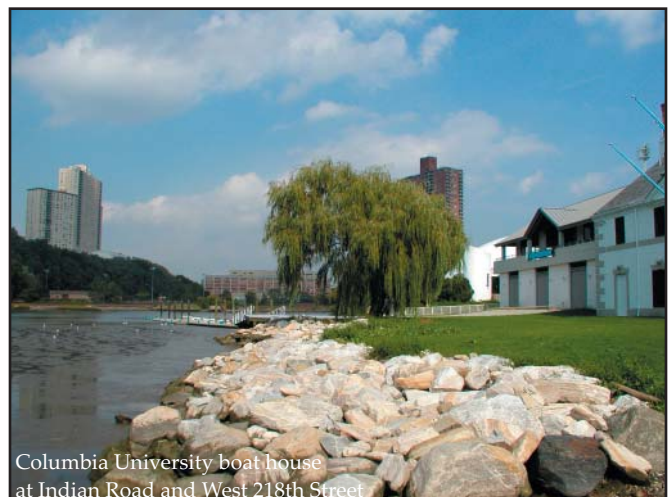
From East Academy Street to the Broadway Bridge there is access to the waterfront at the terminus of only two streets, West 202nd and West 215th streets, but there is no access along the water. Many sites along the waterfront are publicly owned. The Department of Business Services, NYCTA, and DOS all own sites, as do Paragon Cable and a realty company, but many of these sites are industrial and fenced off, preventing public access. Though part of the Sherman Creek initiative's long-term plan is to extend the greenway north, because of the significant barriers due to ownership, it is unlikely to happen in the near future.



Harlem River at West 218th Street (MTA bus yard)

The shoreline between Academy Street and the Broadway Bridge is nearly impossible to access. If a greenway user wishes to continue close to the water, he or she should use Tenth Avenue, an on-street recommended route in the *NYC Cycling Map* and the *Harlem River Greenway Master Plan*. Tenth Avenue will take a user to the Broadway Bridge, and from there the cyclist can either cross to the Bronx or travel south along West 218th Street and Seaman Avenue, both of which are Class 2 routes that connect to the western end of Dyckman Street. Seaman Avenue and West 218th Street are part of the permanent greenway route around Manhattan.

From the Broadway Bridge to Dyckman Street along the waterfront is a 1.49-mile bike-free stretch that runs through a Columbia University athletic facility and Inwood Hill Park. It is unlikely that the waterfront along the Harlem River side of the park will ever have a bike path due to the shoreline bluff and the designation of a wilderness area, and Columbia's Wien Stadium to the east. Pedestrians are welcome in the park, however, and should feel free to use its paths instead of the sidewalks along Seaman Avenue.



Columbia University boat house at Indian Road and West 218th Street

Riders and pedestrians bound for the Hudson River should turn onto Dyckman Street, which DOT striped with Class 2 bicycle lanes from Tenth Avenue to Nagle Street and from Broadway to Riverside Drive as part of the interim route. The striped segments of the street are connected by a Class 3 signed route between Nagle Street and Broadway where commercial uses and double parking characterize the street. Cyclists should use caution even in the bike lanes due to high traffic volumes and double parking along Dyckman Street.



Hudson River: Broadway Bridge to the Battery

The Hudson River had a largely developed system of esplanades when the task force began its work. The major accomplishment of the task force on the Hudson River was implementing a separated, shared-use pathway from Dyckman Street to the George Washington Bridge. DPR's *Hudson River Valley Greenway Master Plan* examines the New York City portion of the Hudson River Greenway along the entire Hudson River shore of the Bronx all the way down to West 155th Street in Manhattan. The section on Manhattan discusses the development of the plan for the greenway in New York City, the existing conditions of the waterfront and surrounding neighborhoods, plans and alternatives for the greenways along the Hudson River, and detailed inventories of the existing paving in locations close to the water. It is a thorough documentation of the plans and process for the Manhattan and Bronx sections of the Hudson River Valley Greenway.

Inwood Hill Park to Dyckman Street (Map 12)

Eventually a bike route will be marked along the Hudson River in Inwood Hill Park beside the Amtrak line. It will connect to the Bronx via the Henry Hudson Bridge in compliance with the Hudson River Greenway Act of 1991, but the details of this path segment are yet unplanned.

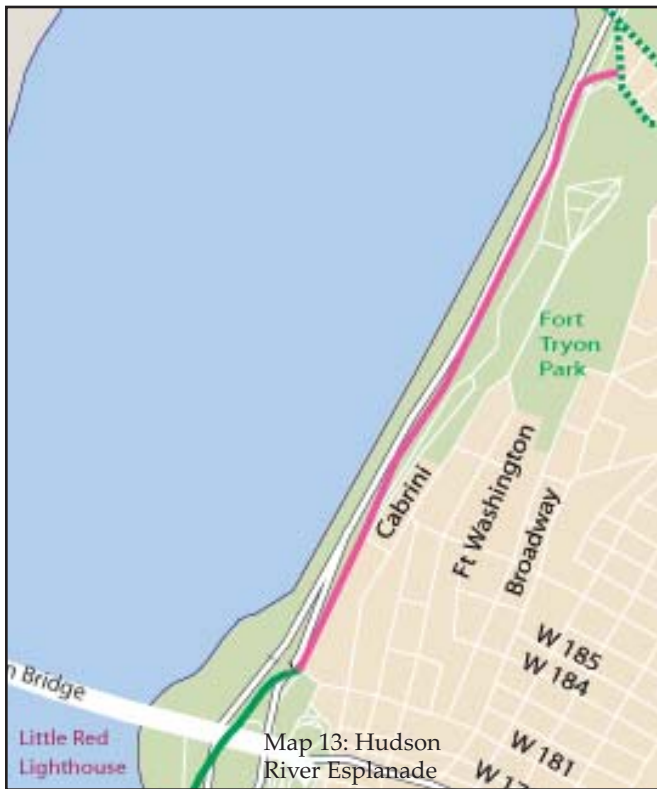


Dyckman Street to West 181st Street

The waterfront from Dyckman to West 187th Street is currently unpaved, but still open to cyclists and pedestrians (and popular with both). The unpaved path runs just to the west of the Amtrak Empire Line track, from Dyckman to West 187th Street. After 187th Street the formal path ends and an informal, unpaved path begins. While it is possible to continue on foot to the area under the George Washington Bridge from West 187th Street, there is no maintained path and thus this option is suited neither for the casual walker nor for any cyclist.

DPR plans to improve this path by 2006. From Dyckman Street to West 187th Street the path will run along an existing gravel path, but this path will be upgraded and paved as per the *Hudson River Greenway Master Plan*. From West 187th Street to West 181st Street the path will be cantilevered. DPR has acquired \$2 million in TEA-21 Enhancement grants for this construction and needs \$2.7 million more in local match money to complete the project. DPR has a completed design for this portion of greenway, including a paved shared-use path with barriers, and plans to have the construction of this path completed by 2006.

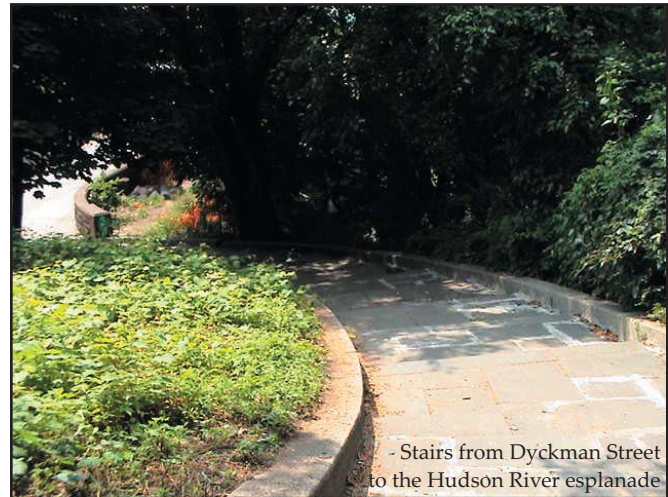




From the waterside there is no upland access between Dyckman Street and West 181st Street. The waterfront is separated from Fort Tryon Park by the rail lines, Riverside Drive, a sheer face and the Henry Hudson Parkway. Thus if a greenway user chooses to go along the water, it is important for her/him to know that the path essentially dead-ends at West 187th Street, and that she/he must either turn around or continue on a sub-par route.

To connect to the Hudson River esplanade from Dyckman Street, cyclists can take either Dyckman Street or Riverside Drive and connect to the path along the Henry Hudson Parkway. There are plans to develop the waterfront path. Because it would be necessary to build an outboard structure from West 187th Street to West 181st Street, it was not possible to do for the interim improvements. Instead the task force decided to improve an existing path that runs along the Henry Hudson Parkway above the water and the Amtrak rails (see Map 13).

The path along the Henry Hudson Parkway was improved between Dyckman and West 181st streets. This path has long been popular with joggers and dog walkers, but was resurfaced, signed, and generally improved in the summer of 2003 as a ten-foot wide asphalt path with pavement markings for pedestrians and wheeled-users. To access it from Dyckman Street, users must climb a set of stairs. This more upland path segment has no connections to the waterfront or the eastern side of the Henry Hudson Parkway between Dyckman and West 181st streets. At West 181st Street it connects to the previously existing waterfront greenway.



West 181st Street to West 145th Street (Map 14)

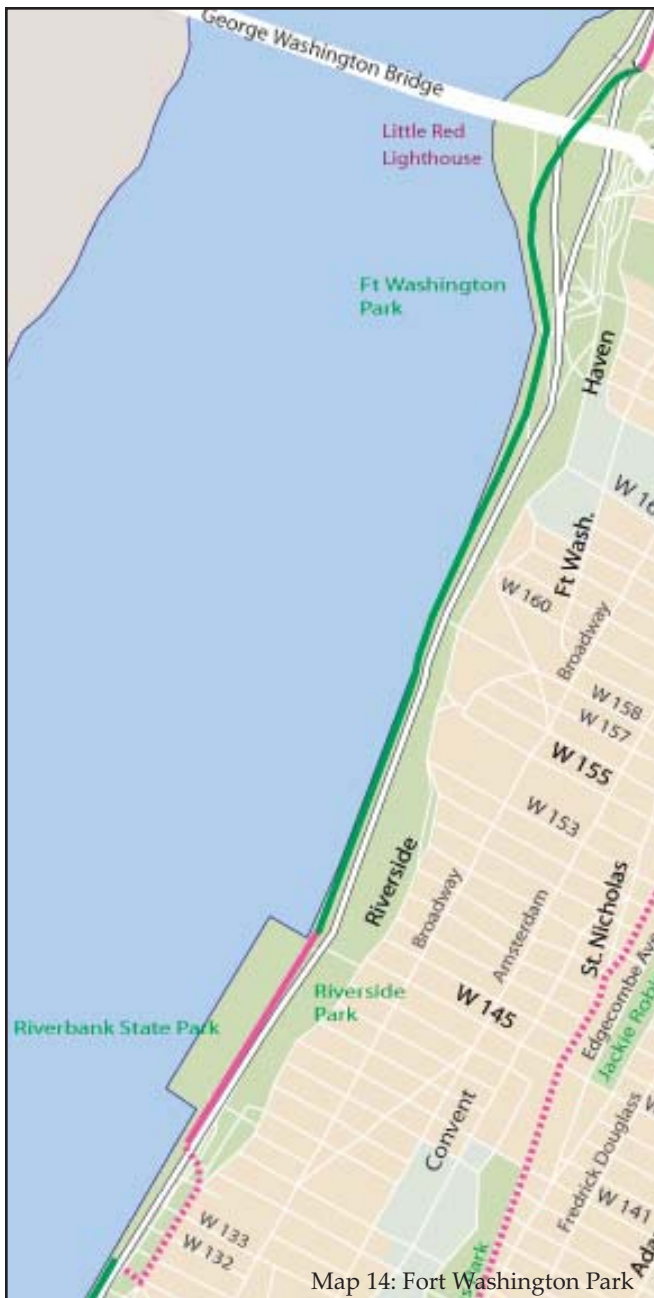
From the George Washington Bridge to West 145th Street there was an existing waterfront greenway. The greenway, which runs through Fort Washington Park, begins at West 179th Street, south of the George Washington Bridge and is a 12-foot wide path. Adjacent to the park's lighting, benches, tables, and ball fields, the path offers spectacular views of the Hudson River. However, upland access to Fort Washington Park and the greenway is limited to West 181st, 158th, and 155th streets. West 155th Street is the border of Fort Washington Park and Riverside Park. From West 155th Street to West 146th Street the greenway continues through Riverside Park as a 12-foot wide multi-use path with limited upland

access due to the Henry Hudson Parkway. Existing waterfront uses prevented previous construction of a path between West 145th and West 125th streets.

West 145th Street to West 125th Street

Between West 145th and West 135th streets there is no waterfront access because here Riverbank State Park lies on top of the pollution control plant built on a structure cantilevered over the water. The greenway does not connect to the park because of the difference in grade between the rooftop and the street. Bike riding is not allowed in the park.

At West 145th Street wheeled users turn east from Riverside Park and head along a Department of Environmental Protection haul road inland of the pollution control plant that sits on the waterfront. The path was repaved and re-signed as part of the interim improvements. DPR has full funding to realign, landscape, and separate the path from the vehicular route and will do so shortly.



Between West 135th and West 125th streets a Fairway Supermarket parking lot blocks the waterfront. Pedestrians can easily go through the lot, but cyclists are detoured to Twelfth Avenue, which was signed northbound and striped southbound as part of the interim greenway link improvements. There is again access to the waterfront at West 125th Street, the northern end of Cherry Walk.

EDC's *West Harlem Master Plan* (2002) outlines goals for the area between West 135th Street and St. Clair Place. These include the creation of a waterside park with a dual-carriage pathway, recreation, excursion, and fishing piers, a kayak float, woodland, and a mixed-use commercial building. The master plan discusses the character of the neighborhood, gives design guidelines for the path, and discusses the connections to other pieces of the greenway. It also nicely details the context of the path. It places the greenway in the larger design of a waterfront park, and discusses its links to other transportation systems in the area. The improvements are fully funded and will be complete in 2006.



Twelfth Avenue bike lane



Fairway parking lot



Rendering of West Harlem Park (image credit: EDC)

Manhattan Waterfront Greenway Master Plan

West 125th Street to West 59th Street (Map 15)

From West 125th Street to West 100th Street is Cherry Walk, a waterfront greenway that takes users along one of the most natural sections of coastline in Manhattan. This was completed with CMAQ funds in 2001, and is a beautiful separated-use, tree-lined section of greenway with the Henry Hudson Parkway on the east. From West 100th to West 91st Street the greenway continues along the waterfront on the western side of the Henry Hudson Parkway.

From West 91st Street to West 83rd Street there is a 0.41-mile inland detour through Riverside Park because the Henry Hudson Parkway comes so close to the waterfront that there is only space for a narrow pedestrian path. DPR has plans to create an outboard 12- to 14-foot shared-use path along the waterfront, and has full funding as of 2006 to replace the bulkhead and complete the project. For the interim route DPR added greenway link signs and pavement markings in the upland detour, but south of West 125th Street the Hudson River greenway is predominantly as it was before these improvements were made.



Cherry Walk



Riverside Park upland path



Entrance to waterfront path at West 91st Street



Map 15: Riverside Park

At West 83rd Street all greenway users again go to the waterfront, and there the greenway continues to the end of Riverside Park. From West 72nd to West 59th Street is Riverside South, the Trump office and housing development. The park and esplanade at Riverside South was City-mandated in conjunction with permission to build the housing. It was ceded to and planned in conjunction with DPR. The City approved the Riverside South Master Plan in 1992 and construction began shortly thereafter. The park and esplanade are predominantly complete, but are not in their final form. Currently for most of its 13 blocks the Riverside South esplanade is a wide and well paved two-way path that is adjacent to the water. For a spell, however, it is a dual-carriage pathway with the pedestrians along the waterfront and the cyclists under the elevated highway.



Riverside South multi-use path

West 59th Street to The Battery (Map 16)

From West 59th Street to Battery Park Place the greenway runs between Route 9A and the waterfront. It is a 36-foot separated-use path with a planted buffer and curb between greenway users and vehicles as described by the EIS for the Route 9A reconstruction. Recently DOT installed bicycle lights at intersections along the path.



Map 16: Route 9A

The EIS for the Route 9A reconstruction (1994) and the reconstruction's planting and urban design guidelines (1996), while not focused on the creation of a multi-use path, do include pertinent materials. The EIS specifies that as part of the reconstruction, a multi-use path will be built along the Hudson River, and gives a suggested route as well as alternatives. It references the Hudson River Greenway Act of 1991 as an impetus for the creation of the path. The design guide gives specifications of the layout of the path, its planting scheme, and the materials to be used to construct it. The Route 9A greenway was completed prior to September 11, 2001. After the World Trade Center disaster it was rapidly reconstructed to a usable level.



Conclusion

For the Manhattan Waterfront Greenway City and State agencies successfully implemented a continuous route around Manhattan. The interim route, opened to the public on September 30, 2003, includes:

- New waterfront paths on the Harlem River Speedway and the Henry Hudson Parkway;
- A widened and safer path along the Con Edison facility at East 12th Street;
- A new on-street contra-flow bicycle lane at Waterside Plaza;
- New bicycle lanes on East and West 119th and 120th streets, Dyckman Street, and Twelfth Avenue;
- A new bicycle traffic signal at Dyckman Street; and
- New greenway signs delineating the route.

Future planning and projects include:

- Creation of a waterfront path and park between West 125th and West 135th streets by spring 2006 as part of the development of Harlem Piers;
- Upgrading and creation of the Lighthouse Link (Dyckman Street to West 181st Street) section of the greenway by June 2005;
- Completion of the Battery Maritime section of the greenway by 2006;
- Reconstruction of the Battery, including new perimeter bicycle paths, by 2008;
- Creation of an esplanade along the United Nations site by 2008; and
- Creation of an esplanade between West 83rd and West 91st streets along the Hudson River by 2008.

150,000 copies of a brochure with a map of the route highlighting destinations were printed and distributed for the project, and a DCP web site describing the route and short- and long-term plans was posted in October 2003.

The greenway has so far met the City's goals: it has enhanced recreational opportunities for New Yorkers and provided a green attraction for all.

Appendix A Design Guidelines

Class 1: Multi-Use/Dual Carriageway Trail

A multi-use trail (see Figure 2) is separated from the roadway and delineated by pavement markings and regulatory signs. Trails are usually shared by multiple users, including cyclists, pedestrians, joggers, and in-line skaters, and have a clear zone of at least two feet on either side of the path to separate it from its surroundings. (In practice, space constraints in the City sometimes do not allow for clear zones of more than one foot). Typical widths of a shared-use path are 12 to 16 feet, though in some locations around the City there are shared-use paths as narrow as seven feet that function well.



Multi-use path along the Henry Hudson Parkway

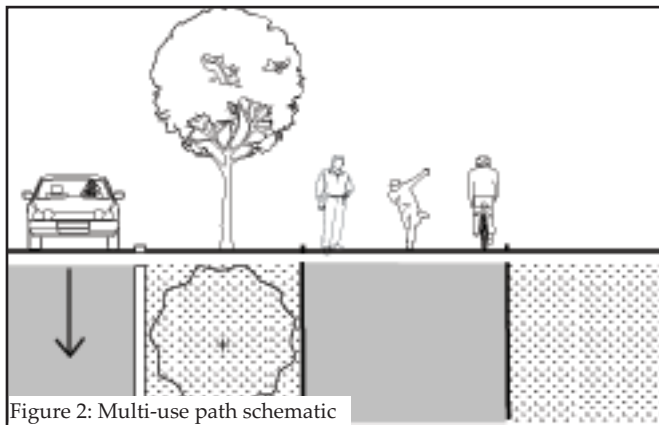


Figure 2: Multi-use path schematic



Dual carriageway along route 9A

Dual carriageway trails (see Figure 3) separate foot and wheeled traffic. They should be a minimum of 18 feet and include tactile and visual separations between cyclists and pedestrians. It is preferable to have a physical barrier, such as plants or benches, between cyclists and pedestrians, but in some places this is not possible. At trail and roadway intersections the design treatment should include bollards and landscaping to prevent access to the trail by motorized vehicles other than maintenance and emergency vehicles.

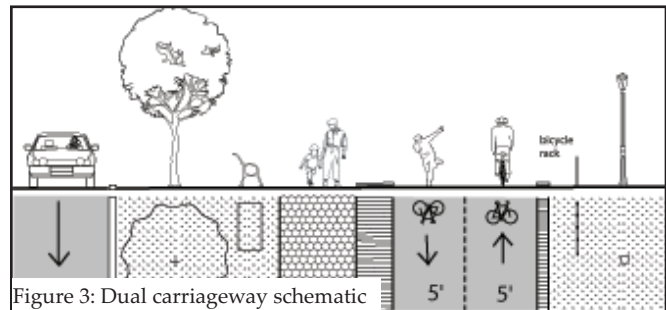


Figure 3: Dual carriageway schematic

Bike trails are typically constructed of hot-rolled asphalt with a differently-textured surface, such as asphalt pavers or asphalt impregnated with recycled glass, as a clear zone. Occasionally, though, when part of a multi-use path, they are made of concrete plates, which are more expensive but provide greater durability; gravel, which is more environmentally friendly; or asphalt pavers, which are ideal for pedestrians, but still comfortable for wheelchairs and cyclists (though not as comfortable for in-line skaters).



Bike lane on Seaman Avenue

Class 2: On-Street Bicycle Lane

A bicycle lane (see Figure 4) is part of the roadway and delineated by pavement markings and regulatory signs. The lane is usually next to the curb parking lane, but may also be adjacent to the curb where parking is prohibited. The lane is usually separated from motorized traffic by a striped buffer. A sidewalk complements a bike lane to form a greenway connection for multiple users. A striped bike lane is typically five feet wide with a four- to five-foot striped buffer, though, particularly in New York, buffers are frequently not possible.

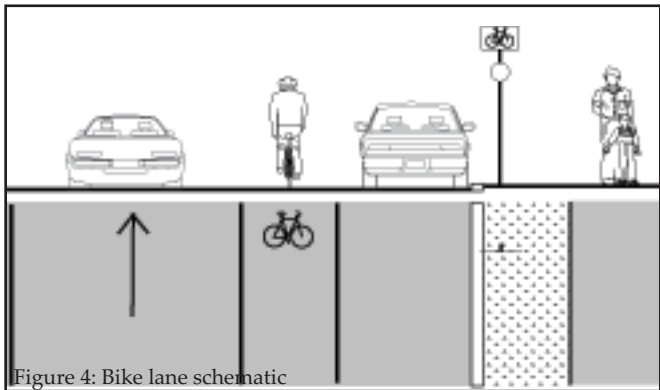


Figure 4: Bike lane schematic

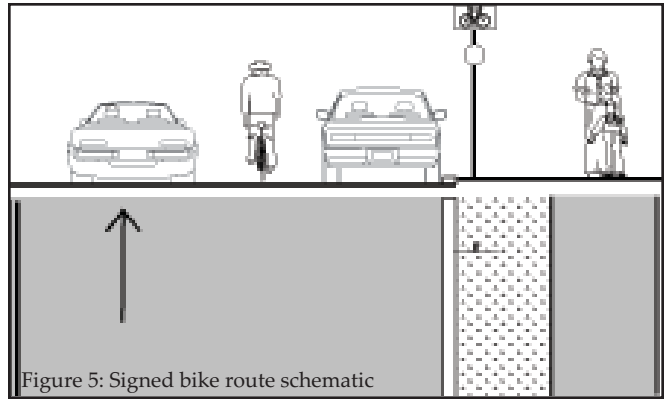
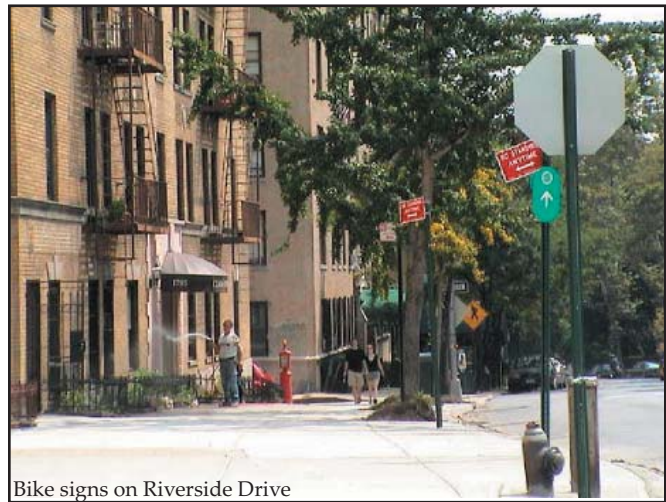


Figure 5: Signed bike route schematic

Class 3: Signed or Bicycle Route

A signed route (see figure 5) has informational signs only. These are typically located on each block along the route. Bicyclists share the roadway with motorized vehicles without special delineation. A signed route is typically located on lightly-traveled streets, neighborhood streets, or where space conditions do not allow the striping of a separate bike lane. A signed route also provides information directing users to bicycle lanes or multi-use trails.



Bike signs on Riverside Drive

Appendix B Regulations and Processes for Outboard Structures

There are seven locations around Manhattan where a cantilevered or other outboard pathway over the water or over rip rap will be necessary to implement a waterfront esplanade:

- Adjacent to the UN;
- From East 51st Street to East 60th Street;
- Between West 155th and West 163rd streets on the Harlem River;
- Between West 201st Street and the Broadway Bridge on the Harlem River;
- From West 187th Street to West 181st Street on the Hudson River; and
- Near West 135th Street, and between West 91st and West 83rd streets.

These seven locations must go through similar review processes in order to gain approval.

Application Process

There are four governmental groups to which one must apply and four applications and consistency forms that must be filled out in order to begin the process of gaining approval for a outboard structure. In the City of New York, control over the implementation of cantilevered structures is vested in the City Planning Commission (the Commission) through the *New Waterfront Revitalization Program (WRP)*, the New York State Department of State (NYS DOS) through its Coastal Management Program, the Army Corps of Engineers (ACOE), and the Department of Environmental Conservation (DEC). The WRP and NYSDOS each require a consistency assessment form. The ACOE and DEC require only one application between them, the Joint Application for Permit, but also require an environmental questionnaire and the NYSDOS Federal Consistency Form.

The WRP “is the city’s principal coastal zone management tool... [It] establishes the city’s policies for development and use of the waterfront and provides the framework for evaluating the consistency of all discretionary actions in the coastal zone with those policies” (Department of City Planning, City of New York; *New Waterfront Revitalization Program*, September, 2002). The policies in the WRP comprehensively incorporate the policies articulated in New York State’s *Waterfront Revitalization and Coastal Resource Act* of 1981. In this way the City ensures that any proposal consistent with the WRP is also consistent with NYSDOS’s policies and serves

in an advisory capacity to the state on waterfront proposals. There are ten general policies outlined in the WRP:

1. Support and facilitate commercial and residential redevelopment in areas well-suited to such development.
2. Support water-dependent and industrial uses in New York City coastal areas that are well-suited to their continuing operation.
3. Promote use of New York City’s waterways for commercial and recreational boating and water-dependent transportation centers.
4. Protect and restore the quality and function of ecological systems within the New York City coastal area.
5. Protect and improve water quality in the New York City coastal area.
6. Minimize loss of life, structures and natural resources caused by flooding and erosion.
7. Minimize environmental degradation from solid waste and hazardous substances.
8. Provide public access to and along New York City’s coastal waters.
9. Protect scenic resources that contribute to the visual quality of the New York City coastal area.
10. Protect, preserve and enhance resources significant to the historical, archaeological, and cultural legacy of the New York City coastal area.

These general policies and their more detailed sub-requirements, which are listed in the WRP, cover NYSDOS’s policies.

Clearly not all of the policies that are listed above apply to greenway implementation. However, greenways certainly accomplish some of the goals of the policies. Specifically they always protect public access to and along New York City’s coastal waters, protect scenic resources that contribute to the visual quality of the New York City coastal area, and support water-dependent uses in New York City coastal areas that are well-suited to their continuing operation.

Consistency with the WRP is determined by the Commission based on the consistency assessment form and any additional documentation (such as an EAS or EIS for the project and photos and plans).

Local discretionary actions are approved by one of the Commission, the heads of other City agencies, the community boards for the region in which the action is taking place, or the Borough President. For federal or state actions the City forwards its comments to the proper agency, in the case of the Manhattan Waterfront Greenway, NYSDOS.

The actual applications and questionnaires for the DEC and ACOE are very short. However, the supplementary materials generally required by these agencies to process the application make the submission process quite demanding. The DEC and the ACOE require five sets each of maps, plans, photographs, as well as an EAS or EIS and, recently, an essential fish habitat assessment.

Until recently DEC only allowed cantilevers or other outboard structures to be implemented for projects deemed water-dependent and, more specifically, boat or fishing related; waterfront esplanades were not determined to be so. Fortunately, this policy has recently changed, thanks to the efforts of DCP and DPR to successfully lobby DEC to include waterfront esplanades on its list of water-dependent uses.

Appendix C

Route Segment	Length (miles)	Type of Improvement	Est. Project Duration	Milestone by 2005	Preliminary Est. Cost (millions)	Funding Source	
						Existing	Needed
Battery Place	0.25	Greenway through park		Ground breaking	\$2.0	SDOT	
State Street	0.25	Greenway through park		Ground breaking	\$6.5	\$1.4m ISTE A & BP	
Montgomery St. to E. 12th St.	1.5	New waterfront promenade and greenway along park drive		Ground breaking	\$52.0	Mayoral	
E 41st St. to E 51st St.	0.5	Pile supported pier structure		Ribbon cutting	\$27.0	UNDC	
E 120th St. to E 125th St.	0.25	Reconstruction of bulkhead and path	2 yr		\$2.3		\$2.3
E 125th St. to E 135th St.	1	New park and bulkhead		Pending TBTA & MTA	\$8.8		\$8.8
135th St. to 139th St.	0.5	New park and bulkhead		Complete 9/02	---		
139nd St. to 142th St.	0.25	New park and bulkhead		Ground breaking	\$4.8	\$2 million in ISTE A, \$1.3 from EFP/DOS	\$1.5
142nd St. to 163rd St.	1.3	New park, pier structure & bulkhead	3 yr	142nd-145th complete, but \$3.5 million bulkhead stabilization required	\$8.5		\$8.5
Highbridge Access					\$3.7	\$2 m in TEP funds	\$1.7
Broadway Bridge to Dyckman St.					\$8.4		\$8.4
Dyckman St. to 181st St	1.5	Repaving & shoreline improvement	up to 3 yrs	Phase I - on street complete	\$4.7	\$2.35 in TEA21 Funds	\$2.4
181st St. to 155th St.	1.5	Repaving & shoreline improvement	2 yrs		\$1.2		\$1.2
W 145th St. to W 135th St. (Riverbank)	0.75	New path along railroad ROW		Ground breaking & ribbon cutting	\$1.6	FHWA, ITSEA, CMAQ	
W 135th St. to W 125th St.	0.5	Park development & path on pier	2 yrs	Ground breaking	\$11.0	EDC Lead, \$13 million City, Empowerment Zone + ISTE A grant	
W 91st St. to W 83rd St.	0.5	Cantilever pier & path		Ground breaking	\$7.4 plus mitigation costs	\$2 million City funds utilized for design & engineering. Full funding as of 2006.	
W 72nd St. to W 59th St.	0.75	Greenway through park		Phase III ground breaking & ribbon cutting	---	Hudson Waterfront Associates	
Total funded segment miles	11.3			Total cost estimate	\$142.5		\$34.8

Table of Funded Manhattan Waterfront Greenway Projects

Appendix D

Location	Length	Issue	Waterfront Land Use	Ownership	Planned	Recommended Actions	Cost (millions)
The Battery Area: The Battery, Whitehall Ferry, Battery Maritime	0.76	The Battery's bike path runs through a pedestrian heavy portion of the park. The path will be relocated after the park is reconstructed. The Whitehall Ferry and the Battery Maritime building are under construction overseen by EDC. Cyclists currently ride on a marked path and then on the sidewalk along South Street.	Park, ferry terminal, highway	DPR, DOT	The Battery Conservency has a plan for the Battery, including a designated bike path. EDC East River Bikeway and Esplanade has a plan from the Battery to Old Slip.	The Battery Conservency's plan for the park calls for a designated bike path. EDC has completed a plan calling for the continuation of the greenway along this stretch.	\$13.86
East River Park: Montgomery Street to E 12	1.50	Crumbling bulkhead makes waterfront travel impossible.	Path, but it is unavailable	NYCDPR	EDC East River Bikeway and Esplanade	Con Ed is currently removing its infrastructure from the bulkhead. As it completes each phase NYCDPR will fix the bulkhead to create a waterfront path.	\$52
East River Heliport: E 32 to E 34	0.10	The city's busiest heliport sits on the water here.	Heliport	City (leased)	EDC East River Bikeway and Esplanade	EDC will shortly be improving the heliport site, allowing for the possibility of an improved bike path.	
E 38 to E 41	0.12	A Con Ed parking lot directly on the waterfront forces cyclists to ride on First or Second avenues via an underpass at East 37th Street.	Parking facility (ConEd lot)	City (leased)	EDC East River Bikeway and Esplanade	The Con Ed plant at this location will be decommissioned and operations will cease as of 2012. This means that the parking lot will no longer be necessary and a greenway can be put in place.	\$1.3 (from E34 to E41)
E 41 to E 51	0.35	Cyclists must ride on street due to security issues at the UN, which occupies the land west of the FDR Drive. There is no land between the FDR and the waterfront.	United Nations	United Nations	EDC East River Bikeway and Esplanade	Because the United Nations is taking over parkland as part of its plant renovations, it is compensating by building an esplanade that will become part of the Manhattan Waterfront Greenway.	\$27
E 51 to E 60th	0.45	Cyclists must ride on street because the FDR lies on the water's edge	FDR	DOT	EDC East River Bikeway and Esplanade	This portion of the greenway has no current recommended action	

Appendix D Table of Missing Waterfront Links: Harlem River

Location	Length	Issue	Waterfront Land Use	Ownership	Planned	Recommended Actions	Cost (millions)
E 51 to E 60	0.46	Due to the placement of the FDR and a residential development, there is little room for a waterfront bikeway. Cyclists ride on street.	Transportation (FDR Drive)	SDOT	EDC East River Bikeway and Esplanade; NYCDOP Comprehensive Manhattan Waterfront Plan	The EDC says that the most likely connection here is an upland route on Sutton Place as building a bikeway/esplanade on the river would be very difficult. <i>The Comprehensive Manhattan Waterfront Plan</i> recommends that in the long-term the City should consider a cantilevered esplanade outboard of the FDR Drive.	\$15.9 (EDC estimate for building a bikeway and esplanade outboard of FDR)
E125th to E128	0.28	A salt yard is an obstacle to a formalized path.	DOS Salt yard	City	Department of Parks and Recreation (DPR) Harlem River Park Master Plan (E125 to E 145); NYCDOP Plan for the Manhattan Waterfront	The Harlem River Park Master Plan calls for the development of a continuous walkway and bikeway along the waterfront. Completion of the reconstruction on the Third Avenue Bridge is scheduled for fiscal year 2007; completion for Willis and Madison Avenue bridges is scheduled for 2012.	\$17.1 (DPR estimate for area from E 125 to E 145)
E128 to E135	0.53	CDOT staging area for reconstruction of the Harlem River Bridges.	Construction	City			
E 135 to E 145	0.5	Disconnected park and former greenway that has fallen into disrepair.	Open Space Harlem River Park	NYCDPR			
E 145 to E 150	0.33	The Harlem River Drive is elevated. Property below is occupied by a parking lot in one section, and fenced off to the public in another, making this entire stretch inaccessible.	Parking facility (Esplanade Gardens lot), subway tracks, concrete bulkhead.	City (partly leased)	DPR Harlem River Greenway Master Plan; Comprehensive Manhattan Waterfront Plan	The Harlem River Greenway Master Plan suggests obtaining an easement through Esplanade Gardens to construct a 12 foot path adjacent to the existing bulkhead. After Esplanade Gardens, the path would connect to an esplanade constructed outboard of the waterfront.	\$5 (DPR estimate)
E150 to E 163	0.76	Cyclists can access the waterfront here, but only through a series of dangerous on and off ramps for the Harlem River Drive.	Transportation (Harlem River Drive)	DOT	Department of City Planning (DCP) Harlem River Greenway Master Plan	Harlem River Greenway Master Plan recommends an outboard esplanade, along with improved access from Highbridge Park by an improved ramp.	
Academy to 201	0.30		On street - Sherman Creek	DPR	DCP/Deputy Mayor (nascent stages)		\$8.40
E 201 to 207	0.95	There are a number of individual, fenced-off uses here, preventing access to the waterfront. Cyclists must currently ride along Ninth or Tenth Avenues.	Empty lot	(E201 to E203) Con Ed	DCP Harlem River Greenway Master Plan	Harlem River Greenway Master Plan recommends formal use of Tenth Avenue for bicycle connections. There are no current plans for waterfront access.	
E 207 to E 215			Commercial buildings and parking	(E204) Department of Business Services			
			Vacant lot	(E208) Bannock, Burn Realty			
E 215 to Broadway Bridge			Rail yard (E208 to E 214)	NYCTA			
			Paved lot (E 215)	DBS			
			Garage/parking facility (E 216)	DOS			
			Kingsbridge Bus Depot: salt and dirt storage (E 216 to 218)	NYCTA			
			Fenced, landscaped picnic area (E 217)	NYCTA/ DCAS			
	Parking lots (E 218 to E 221)	Paragon Cable/ NYCTA					
Broadway Bridge to Dyckman	1.49	No waterfront connection in Inwood Hill Park due to protected open spaces and Columbia University's Wien Stadium	Athletic facilities and parkland	CDOT		Inland bike route on Seaman Avenue and Dyckman Street	

Appendix D

Table of Missing Waterfront Links: Hudson River

Location	Length	Issue	Waterfront Land Use	Ownership	Planned	Recommended Actions	Cost (millions)
Dyckman to W187	1.02	Cyclists currently ride on a newly redone path along the Henry Hudson Parkway. The path extends to West 181st Street where it meets the George Washington Bridge and the existing waterfront greenway. The waterfront does not have a suitable path for cyclists or timid pedestrians from W 187 to W 181.	Amtrak Empire Line, open space (Fort Tryon Park)	NYCDPR (land) and Amtrak (rail)	DPR Hudson River Valley Greenway Lighthouse Link (2001)	A paved path between the Amtrak Empire Line and the waterfront is planned.	\$4.70
W 187 to W 181 (lighthouse link)	0.32		Fort Tryon Park, Little Red Lighthouse, riprap			A platform-type structure on pilings skirting the western edge of the Amtrak corridor between W 181 and W 183 Streets.	
W145 to W135	0.46	Cyclists must ride on the service road with vehicular traffic east of the Riverbank State Park Pollution Control Plant.	Utility (Riverbank State Park Pollution Control Plant)	NYCDPR owns waterfront land; DEP owns service road	DPR Hudson River Greenway Master Plan	NYCDPR has funding to create a separated-use path for non-motorized users and to enhance the site through landscaping.	\$1.60
W 135 to W125	0.24	Pedestrians can walk through the Fairway parking lot here, but cyclists are directed to a striped (sb) or signed (nb) route on Twelfth Avenue.	Parking facility (Fairway lot)	City	EDC master plan	EDC will shortly begin construction of Harlem Piers, a park and recreation site with several recreational piers and a dual carriageway bike and pedestrian path.	\$11 (including creation of park)
W 91 to W 83	0.41	The existing path is too narrow to accommodate cyclists, at one point it is just four feet wide and directly adjacent to the FDR.	Greenway	NYCDPR	DPR Riverside Park Walk	NYCDPR has completed the design and has some of the funding to cantilever a 12-14 foot path.	\$7.40

Table Missing Waterfront Links: East River

Appendix E

Greenway Signage Plan

Standard greenway signs will be used on the Manhattan Waterfront Greenway as on other greenways throughout the City. These signs were developed by DCP to create a recognizable icon for non-motorized travelers all over the City; they help to make any greenway seem more a part of a larger network. Notice that

Instructional Signs and Design Specifics

GREENWAY SPECS

Typeface is **Poppl Laudatio Condensed, Reg and Bold**

12 inch width signs

21 or 26 inches in height

54 pt CAPS

PMS 3282 CV

36 pt CAPS

BLACK

Messages are

white U & lc

204 pt or

2 inch-high cap height



"Two Way Bikeway" sign in Stuyvesant Cove

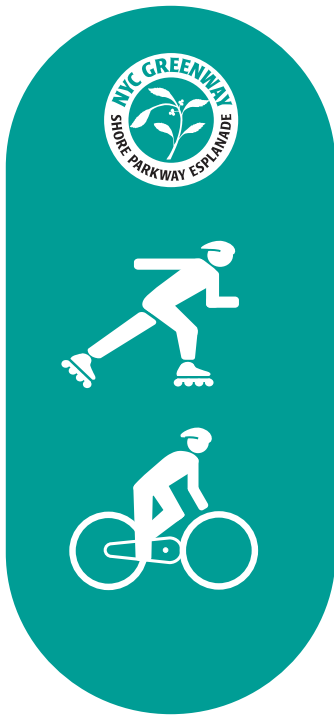


"Caution" sign in Stuyvesant Cove



"Bikeway Ends" sign in Stuyvesant Cove

Trailblazing and Directional Signs



Directional sign near Waterside Plaza



Trail blazing sign near the UN International School



Bike and pedestrian signs at St. Nicholas Place and West 155th Street



signs can be affixed to pre-existing structures or can be freestanding. In some locations standard MUTCD signs are used, but New York City greenway signs are preferred and used wherever possible.

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