

HUDSON-RARITAN ESTUARY COMPREHENSIVE RESTORATION PLAN
POTENTIAL RESTORATION OPPORTUNITIES
PROJECT SUMMARY SHEETS
Lower Hudson River Planning Region

Restoration Opportunities
CRP Identification #: Site Name

- 556. Hudson/Bergen County Waterfront
*TBD
- 562. Hudson River Park Estuarine
Sanctuary
- 66. Pennsylvania Railroad Harsimus Stem
Embankment
- 191. Spuyten Duyvil
- 159. Riverdale Park
- 189. Inwood Park
- 190. Fort Tryon Park
- 196. Fort Washington Park
- 197. Riverside Park

CRP SITE 556. HUDSON/BERGEN COUNTY WATERFRONT

A. HARBOR ESTUARY PROGRAM SITE INFORMATION

Category: Existing restoration, preservation, and/or mitigation site.

Location: (A) Hudson/Bergen County Waterfront; the Bergen County plan covers the boroughs of Edgewater and Fort Lee; the Hudson County plan covers the City of Bayonne; the Town of Guttenberg; the City of Hoboken; the City of Jersey City; the Township of North Bergen; the Township of Weehawken; the Town of West New York. (B) Bayonne Golf Course; 1 Lefante Way, Bayonne, NJ Hudson County (C) Proposed marine sanctuary in Bayonne, on the north side of Constable Hook, near the confluence of the Upper Bay and the Kill Van Kull.

Watershed: Hudson River

Size: (A) 120 acres (B) 160 acre golf course with a 13.9 acres intertidal habitat (C) 300 acres proposed marine sanctuary.

Ownership: Multiple.

Site Description: Low benthic quality estuarine and wetland habitat. Contains areas of contaminated sediments, over dredged anoxic areas and dead end basins. (A) Hudson/ Bergen County waterfront walkway; this section of the river is the major site of river water mixing with ocean water in the Hudson Estuary, and includes the polyhaline zone of the river. It is a regionally significant nursery and wintering habitat for a number of anadromous, estuarine, and marine fish species and is a migratory and feeding area for birds and fish. The area between Jersey City and Edgewater was found to be an important overwintering habitat for striped bass. (B) The Bayonne golf course project; the site historically consisted of a degraded, debris covered landscape with both a contaminated fill site and a municipal landfill. 11.4 acres of a relatively unproductive shallow water area was filled to create an estuarine complex of subtidal open water and smooth cordgrass (*Spartina alterniflora*) dominated wetland. The determination that the mitigation area was suitable for the creation of an intertidal wetland was based on the results of a year-long aquatic study performed by Princeton Hydro. (C) Bayonne marine sanctuary. Plans for a 300 acre shallow water sanctuary are being developed.

Current Land Use: Much of the New Jersey shoreline of the lower Hudson River is characterized by derelict marine terminals and abandoned pier/pile fields. This area generally has poor water and sediment quality, and impoverished benthic communities. Several state and federal wetlands and fringe wetlands exist in the city of Bayonne and north on the Hudson River up through Hudson and Bergen Counties. (A) Variable landscape includes recently created public access points and a mix of commercial and residential properties along a degraded shoreline. (B) Brownfield re-development which is currently a golf course. A functional intertidal zone was created along a portion of the shoreline. (C) Shallow water marine habitat.

Available Habitat: Some high quality fish and bird habitat; a combination of degraded and restored estuarine and wetland habitat.

Proposed Project: (A) Hudson/ Bergen County Waterfront (C) Bayonne shallow water marine sanctuary.

Projected/Estimated Costs:

Project Status: (A) Implementation plans for the waterfront walkway have been created by both Hudson and Bergen Counties. A significant portion of the walkway has been constructed, all plans are expected to be completed by 2030 (B) Complete. This project created 13.9 acres of intertidal habitat for mitigation of 9.7 acres of wetland impact. The project used 4.5 million cubic yards of amended dredged materials and constructed a breakwater and bulkhead adjacent to the dredged material placement site. (C) Plans for a 300 acre marine sanctuary are in the process of development through coordination with the Bayonne Golf Course, Greenvest (a natural resource management company), City of Bayonne and several local environmental groups and regulatory agencies.

Partners: NOAA, Port Authority, USACE, NJ DOT OMR

Project Contact: (A) Adam L. Strobel, Bergen County (astrobel@co.bergen.nj.us); Hudson County Division of Planning (B) Princeton Hydro, info@princetonhydro.com (C) Bayonne Golf Course; Greenvest LLC.

Phone: (A) 201.336.6458 Bergen County; 201.217.5137 Hudson County (B) Princeton Hydro 908.237.5660, Bayonne Golf Course 201.8234800 (C) Greenvest 201.706.2558; Bayonne Golf Course 201.8234800

Website: (A) www.co.bergen.nj.us/planning/index.htm; www.hudsoncountynj.org/division-of-planning.aspx (B) www.princetonhydro.com/wetlands.php (C) www.greenvestus.com/growth/partners-greenvest.html; www.bayonnegolfclub.com/#/home/

Project Funding Source:

HEP Ratification Date:

B. HUDSON RARITAN ESTUARY ECOSYSTEM RESTORATION STUDY INFORMATION

Restoration Recommendations (Applicable Target Ecosystem Characteristics): TBD

Coastal Wetlands – Creation of fringe marsh habitat in multiple open space sites along the waterfront would require re-grading to wetland elevation, removal of invasives and planting of natives species.

Shorelines and Shallows – Enhancement of shallow water habitat to include re-grading of shoreline and creation of naturally sloping habitat with potential beneficial use of clean dredged material. Potential sites include 300 acre proposed marine sanctuary located near confluence of upper bay and Kill Van Kull, and various undeveloped sites along the waterfront. Additionally, terraced tidal flats could be created in areas where seawall removal is not an option.

Habitat for Fish, Crab and Lobsters – Further enhancement of shallow water habitat to create complex subtidal habitat with potential beneficial use of clean dredged material. Potential sites include 300 acre proposed marine sanctuary located near confluence of upper bay and Kill Van Kull, and various undeveloped sites along the waterfront.

Sediment Contamination – Pending the results of sediment contamination testing. The inter-pier basins in this area and the proposed 300 acre marine sanctuary could be dredged to remove contaminated sediments, or capped with sand to isolate the contaminants from the Harbor ecosystem. Industrial operations have led to the contamination of several sites within the Study Area. A listing of contaminated sites can be found in the Hudson/ Bergen County implementation plans.

Public Access – Hudson and Bergen Counties both encourage the construction of a coordinated waterfront walkway along the County's waterfronts in their county master plans.

Benefits, Cost and Comparative Restoration Ratio:

C. EXISTING SITE SPECIFIC DATA INVENTORY

A. Survey, Maps and GIS: Regional data exists inclusive of this site. USACE and NJDEP state and federal wetlands and land use maps.

B. Site History and Land Use: No data obtained.

C. Biological Studies/ Fauna: Variety of qualitative and quantitative literature exists (HRF).

D. Biological Studies/ General Environment: Variety of qualitative and quantitative literature exists (HRF, USFWS 1997).

E. Geotechnical: No data obtained

F. Hydraulics and Hydrology: No data obtained

G. Water and Sediment: Variety of qualitative and quantitative literature exists (HRF), Sediment quality study (Adams et al. 1998).

H. Historical and Cultural Resources: No data obtained

I. Restoration Remediation and Design Plans: No data obtained

References:

Bergen County's Hudson River Waterfront Walkway Design and Implementation Strategy Plan:

<http://www.co.bergen.nj.us/planning/os/hrww/index.html>

Hudson County's Draft Implementation Plan for the Hudson River Waterfront Walkway

<http://www.hudsoncountynj.org/hudson-river-walkway-study.aspx>

Heyer, Gruel and Associates PA. 2002. Hudson County New Jersey Master Plan.

Hudson River Foundation. 2004. Health of the Harbor: The First Comprehensive Look at the State of the NY/NJ Harbor Estuary. Hudson River Foundation www.hudsonriver.org

Adams D.A., J.S.O'Connor, S.B.Weisberg. 1998. Final Report: Sediment Quality of the NY/NJ Harbor System; An Investigation under the Regional Environmental Monitoring and Assessment Program.

U.S. Fish and Wildlife Service. 1997. Significant Habitats and Habitat Complexes of the New York Bight Watershed.

*TBD

CRP SITE 562. HUDSON RIVER PARK ESTUARINE SANCTUARY

A. HARBOR ESTUARY PROGRAM SITE INFORMATION

Category: Existing restoration, preservation, and/or mitigation site.

Location: *The Hudson River Park occupies the western waterfront of Manhattan (New York, NY) from the Battery to 59th Street.*

Watershed: Hudson River

Size: 400 acres

Ownership: *NYC owns a substantial portion of Manhattan's west side and most underwater lands to the pierhead limit, beyond this is NYS.*

Site Description: *When completed, Hudson River Park will connect 400 acres of the Hudson River through preservation of the shoreline habitat, construction of 'habitat gardens' and increased public access to the river for recreational activities. The majority of the shoreline within the park is lined with bulkhead. The bottom surfaces of the interpier zones are relatively flat and gently sloped. This section of the river is the major site of river water mixing with ocean water in the Hudson Estuary, and includes the polyhaline zone of the river. It is a regionally significant nursery and wintering habitat for a number of anadromous, estuarine, and marine fish species and is a migratory and feeding area for birds and fish.*

Current Land Use: *Passive and active recreation, research, marine sanctuary and private.*

Available Habitat: *Pile fields, shallow water estuarine environment, mud-flats. Pile fields are a key element of the estuarine sanctuary. The Hudson River Park Trust has committed to retaining the piles to provide habitat for various fish species. Many fish including juvenile Striped Bass and sessile organisms such as Barnacles, Shipworms, and Sea Grapes take shelter in the piles. Other species thriving in the waters of the Hudson are the Oyster Toadfish, Striped Bass, American Eel, Copopod, and the Lion's Mane Jelly. Bottom dwellers include the Mud Snail, Oyster, Sea Robin, Blue Crab, Lined Seahorse, and Flounder species. Air dwelling species include Raptors such as Northern Harriers and Peregrine Falcons, Double Crested Cormorants, and Canada Geese.*

Proposed Project: A series of public access walkways and facilities. *Remaining projects include:*

Clinton- Pier 97: Continuation of the waterfront esplanade paralleled by lawns, gardens, basketball courts and shade trees. Work on this section can begin once the New York City Department of Sanitation relocates its operations, now being transferred under court order and additional funds are committed. Pier 76: plans are unclear for this pier to be shared as both park and a commercial or municipal facility after the City relocates the NYPD tow pound. The esplanade and surrounding areas will link Chelsea to Midtown once the fate of the 30th Street Heliport is determined.

Chelsea- Pier 57: A future revenue generating pier for which development plans are currently being reviewed by the Hudson River Park Trust. A Notice of Completion for the Pier 57 Redevelopment Project Final Environmental Impact Statement was issued on February 22, 2013. Pier 54: to be renovated as open space and area for special events once funds are raised.

Gansevoort Peninsula: Will be transformed into six acres of open space, gardens and other attractions – the only large tract in the Park not built on a pier. Work to begin after 2013 when the Department of Sanitation relocates its operations (also under court order) and the plans for the proposed Marine Transfer Station for recyclables are settled.

Greenwich Village/Tribeca- Pier 40: The current site of major sports fields to be refurbished, further developed and maintained as a revenue source for the Park. Timing is critical to prevent further deterioration of the piers badly in need

of repair. In the vicinity of pier 40, pile fields of the former piers 32, 46 and 49 should be enhanced to create more favorable shallow water marine habitat.

See: www.hudsonriverpark.org/construction/index.asp

Projected/Estimated Costs: *Approximately \$200 million in additional funding is needed to complete the Park*

Project Status: Under construction; *As of January 2011, approximately 80% of the overall park was completed.*

Partners: The Hudson River Park Trust

Project Contact: Hudson River Park Trust

Phone: 212.627.2020

Website: www.hudsonriverpark.org/estuary/index.asp

Project Funding Source:

HEP Ratification Date:

B. HUDSON RARITAN ESTUARY ECOSYSTEM RESTORATION STUDY INFORMATION

Restoration Recommendations (Applicable Target Ecosystem Characteristics):

Habitat for Fish, Crab and Lobsters – Creating and enhancing ~14 acres of inter-pier areas of shallow, vegetated fish habitat could result in sites supporting a variety of currently underrepresented fish species. Creation of shallow structured habitat within the park could potentially enhance species diversity. Rock rip-rap could be placed along the water edge to further add complex surfaces for cover seeking fishes (Bain et al. 2006). Additionally, preservation and enhancement of ghost pier structures provide further high quality habitat.

Shorelines and Shallows – Creation of ~1,940 linear feet of gradually sloping, shallow shoreline waters in inter-pier areas would require re-grading and import of clean substrate to reduce the water depth (Bain et al. 2006). Additionally, terraced tidal flats could be created in areas where seawall removal is not an option.

Public Access – Support creation and/or enhancements to existing public access along ~11,600 linear feet of the river includes parks and areas for pedestrians, kayaking, boating and fishing. Plans for the completed park locations include the creation of an estuary museum and other opportunities to educate the community.

Sediment Contamination – Potential dredging and capping of contaminated sediment based on testing.

Benefits, Cost and Comparative Restoration Ratio:

C. EXISTING SITE SPECIFIC DATA INVENTORY

A. Survey, Maps and GIS: Regional data exists inclusive of this site.

B. Site History and Land Use: No data obtained

C. Biological Studies/ Fauna: NYS DEC Striped Bass monitoring program, Invertebrate data (Ernst A.G. and J. Dietrich. 2006), Biological and fish studies (Bain et al. 2006). Basic species guide are available on the Hudson River Foundation Website.

D. Biological Studies/ General Environment: Qualitative habitat descriptions (USFWS, 1997).

E. Geotechnical: No data obtained

F. Hydraulics and Hydrology: No data obtained

G. Water and Sediment: Sediment quality study (Adams et al. 1998)

H. Historical and Cultural Resources: No data obtained

I. Restoration Remediation and Design Plans: No data obtained

References:

The City of New York Department of City Planning. 2011. Vision 2020 New York City Comprehensive Waterfront Plan.

PlaNYC. 2008. Draft Master Plans for Riverside Park North of 135th Street, Fort Washington Park, and Inwood Hills Park West of the Amtrak Lines.

http://www.nycgovparks.org/sub_your_park/vt_north_manhattan_parks/vt_north_manhattan_parks.php

Bain M.B., M.S. Meixler, G.E. Eckerlin. 2006. Biological Status of Sanctuary Waters of the Hudson River Park in New York: Final Project Report for the Hudson River Park Trust. <http://mbbain.environment.cornell.edu/HRPark/>

Ernst A.G. and J. Dietrich. 2006. Guide to Benthic Invertebrates of the Hudson River Park.

Adams D.A., J.S.O'Connor, S.B.Weisberg. 1998. Final Report: Sediment Quality of the NY/NJ Harbor System; An Investigation under the Regional Environmental Monitoring and Assessment Program.

U.S. Fish and Wildlife Service. 1997. Significant Habitats and Habitat Complexes of the New York Bight Watershed.

Hudson River Foundation www.hudsonriver.org

Hudson River Park Estuarine Sanctuary www.hudsonriverpark.org/estuary/index.asp,
http://www.hudsonriverpark.org/assets/content/general/11HRP001M_FEIS_Notice_of_Completion.pdf

Friends of Hudson River Park www.fohrp.org/default.aspx





CRP SITE 66. PENNSYLVANIA RAILROAD HARSIMUS STEM EMBANKMENT

A. HARBOR ESTUARY PROGRAM SITE INFORMATION

Category: Existing restoration, preservation, and/or mitigation site.

Location: Sixth Street from Brunswick Street (west) to Marin Blvd (east), Jersey City, NJ- Block 212 Lot M; Block 247 Lot 50A; Block 280 Lot 50A; Block 317.5 Lot 50A; Block 345.1 Lot 50A; Block 389.1 Lot 50

Watershed: Lower Hudson River

Size: 5.3 acres

Ownership: Private. *If ample funds can be raised, the City is expected to acquire the land through negotiation or eminent domain when Conrail goes through the required federal abandonment process.*

Site Description: The Embankment is an abandoned railway on an elevated stone structure *that once carried seven tracks of the Pennsylvania Railroad to the Hudson River Waterfront. It runs for a half mile along 6th street in downtown Jersey City, and joins the National Historic districts of Hamilton Park and Harsimus Cove. The Embankment is itself listed on the State Register of Historic Places, is eligible for the National Register and is a Municipal Landmark. Site is an old field-meadow that contains a mix of native grasses and herbs as well as invasive species and serves as a habitat for migratory birds.*

Current Land Use: *A half-mile-long historic railroad embankment, now abandoned and largely overgrown with foliage.*

Available Habitat: Approximately 5.3 acres of elevated, open space habitat in close proximity to the Hudson River that supports resident and migratory birds, insects, and other animals.

Proposed Project: *Embankment Preservation Coalition has created a park concept design. The Embankment preservation will serve as a midpoint in a series of parks, including Hamilton Park, Van Vorst Park, and Liberty State Park. From east to west, the Embankment will join the Hudson Waterfront Walkway with the Hackensack Meadowlands, via the Bergen Arches. The route has been endorsed by all six counties and 26 municipalities along it.*

Projected/Estimated Costs: \$1.3- 3.3 million to fund acquisition and open space trail development.

Project Status: *If ample funds can be raised, the City is expected to acquire the land through negotiation or eminent domain when Conrail goes through the required federal abandonment process.*

Partners: *Embankment Preservation Coalition*

Project Contact: Maureen Crowley, Embankment Preservation Coalition

Phone: 201.659.4204

Website: www.embankment.org

Project Funding Source:

HEP Ratification Date:

B. HUDSON RARITAN ESTUARY ECOSYSTEM RESTORATION STUDY INFORMATION

Restoration Recommendations (Applicable Target Ecosystem Characteristics):

Public Access – The Embankment contributes ~6.3 acres to a network of walking and biking greenways within the City of Jersey City, and beyond.

Sediment Contamination – Potential dredging and capping of contaminated sediment based on testing.

Benefits, Cost and Comparative Restoration Ratio:

C. EXISTING SITE SPECIFIC DATA INVENTORY

A. Survey, Maps and GIS: Regional data exists inclusive of this site.

B. Site History and Land Use: No data obtained

C. Biological Studies/ Fauna: Nature Survey of Flora and Fauna Harsimus Stem Embankment (2002)

D. Biological Studies/ General Environment: Nature Survey of Flora and Fauna Harsimus Stem Embankment (2002)

E. Geotechnical: No data obtained

F. Hydraulics and Hydrology: No data obtained

G. Water and Sediment:

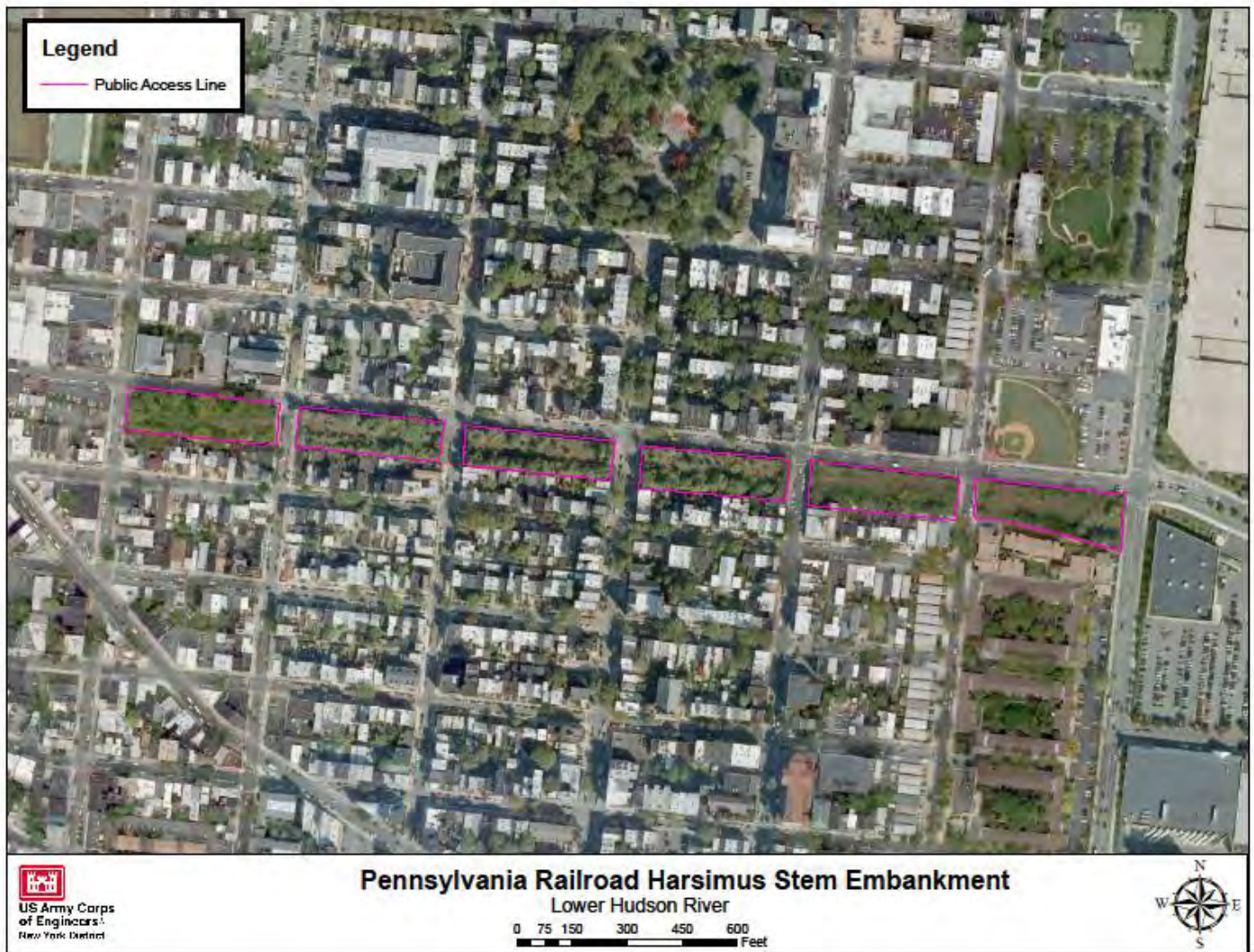
H. Historical and Cultural Resources: No data obtained

I. Restoration Remediation and Design Plans: No data obtained

References:

Embankment Preservation Coalition, 501(c) 3 organization: <http://www.embankment.org/>

Nancy Slowik. 2002. Nature Survey of Flora and Fauna Harsimus Stem Embankment. <http://www.embankment.org/whitesite/studiesmain.html>



CRP SITE 191. SPUYTEN DUYVIL

A. HARBOR ESTUARY PROGRAM SITE INFORMATION

Category: Existing restoration, preservation, and/or mitigation site.

Location: 0.1 miles southwest from the corner of Palisade Avenue and Independence Avenue, *adjacent to the Spuyten Duyvil Shorefront Park and the Metro North railroad running along the Harlem River.*

Watershed: Lower Hudson River

Size:

Ownership: NYC, MN-LTL/MTA.

Site Description: *In the early 1900s, the original Spuyten Duyvil Creek was filled in, and a railroad yard and some factories were built on top of it. These structures have since disappeared and much of the land now is flat, derelict, and choked with weeds. The creek was restored, straightened and widened into today's Harlem River Ship Canal. The site is currently over run by invasive exotic plants such as Porcelain Berry, Asiatic Bittersweet, Sycamore and Norway Maple. The presence of these species has led to a denuded understory and loose soil. Topography is diverse and includes slopes, depressions and flats.*

Current Land Use: *Public Park*

Available Habitat: *Woodland, scrublands, vine and herbaceous communities.*

Proposed Project:

Projected/Estimated Costs: *\$5-7 million*

Project Status:

Partners: NYCDPR

Project Contact: Michael Feller, NYC Parks/NRG

Phone: (212) 360-1424

Website: www.nycgovparks.org/sub_about/parks_divisions/nrg/

Project Funding Source:

HEP Ratification Date: 12/11/1997

B. HUDSON RARITAN ESTUARY ECOSYSTEM RESTORATION STUDY INFORMATION

Restoration Recommendations (Applicable Target Ecosystem Characteristics):

Coastal Wetlands – Restoration to the ~0.15 acre fringe wetland triangle northwest of Spuyten Duyvil Shorefront Park. Invasive removal, re-grading to proper elevations, potential addition of a tidal creek.

Shorelines and Shallows – Removal of debris (tires and concrete) and re-grading to ~544 linear feet to create gradually sloping shoreline.

Coastal and Maritime Forests – Forest, scrub shrub restoration to ~2.2 acres will support wetland creation.

Sediment Contamination – Potential dredging and capping of contaminated sediment based on testing.

Benefits, Cost and Comparative Restoration Ratio:

C. EXISTING SITE SPECIFIC DATA INVENTORY

A. Survey, Maps and GIS: Regional data exists inclusive of this site.

B. Site History and Land Use: No data obtained

C. Biological Studies/ Fauna: Inventory of Spuyten Duyvil Shorefront Park (NRG).

D. Biological Studies/ General Environment: Inventory of Spuyten Duyvil Shorefront Park (NRG).

E. Geotechnical: No data obtained

F. Hydraulics and Hydrology: No data obtained

G. Water and Sediment:

H. Historical and Cultural Resources: No data obtained

I. Restoration Remediation and Design Plans: No data obtained

References:

NYC DPR NRG. 2007. Ecological Assessment: Natural Area Mapping and Inventory of Spuyten Duyvil Shorefront Park 2007 Survey

www.nycgovparks.org/sub_about/parks_divisions/nrg/nrg_stats.html

The Conservation Exchange, NJ:

www.njconservationexchange.org/tag/harsimus



CRP SITE 159. RIVERDALE PARK

A. HARBOR ESTUARY PROGRAM SITE INFORMATION

Category: Existing restoration, preservation, and/or mitigation site.

Location: 0.1 miles west of the corner of Palisade Avenue and Spaulding Lane. *The park lies along Palisade Avenue between 232nd and 248th Street on the Hudson River side.*

Watershed: *Lower Hudson*

Size: *Entire Park is 112 acres.*

Ownership: *NYC Department of Parks and Recreation*

Site Description: *Located along the Hudson River, this park contains steep-sloped deciduous forest with a creek and wetland. Although every area of Riverdale Park has been cleared at one time, the southern part is covered by the same type of forest that existed in pre-colonial times, where tulip trees as tall as 110-feet rise from the slopes of the ravine. Red oaks, black birch, black cherry, and hickory are scattered throughout the canopy. In the spring, woodland wildflowers like jack-in-the-pulpit, bloodroot, and blue violet bloom along the shaded path. Later in summer, spikenard, blue-stemmed goldenrod, and joe-pye weed flower are present as well.*

Riverdale Park is designated Forever Wild by the NYC DPR. Riverdale Park is adjoined with the Alderbrook wetland and is across the street from the Raoul Wallenberg Forest.

Current Land Use: *Riverdale Park is undeveloped (no facilities) and designated by Parks for passive use. Residents currently use unpaved footpaths for passive recreation. The land is zoned as a transportation/utilities and open/recreational site with parks/public lands. The surrounding land is zoned as a vacant, 1 & 2 and multi-family residential, institutional, transportation/utilities, and open/recreational site.*

Available Habitat: *Wetland and forested upland. The park is a haven for birds. Twenty-seven species, including the screech owl (*Otus asio*), have been confirmed as breeding in the park.*

Proposed Project: *A bicycle and mixed use trail is proposed for construction along the west side of Riverdale Park. This trail would be a continuation of an existing trail that would connect to Inwood Park. Greenway expansion is also proposed to link Dyckman Street in Manhattan to the Old Croton Aqueduct trail in Dobbs Ferry, N.Y.*

Projected/Estimated Costs:

Project Status: *Flood plain wetland rehabilitation (non-point source reduction/restoration, stream re-configuration, slope stabilization, invasive control, native plantings) completed in 2003-4. NYC DPR NRG conducted forest restoration projects which included invasive species removals and native species plantings in 2001, 2006 and 2007. Bike trail construction is anticipated to begin summer of 2011. The Greenway expansion project is currently in design. Erosion control, trail maintenance, invasive control and native species plantings are ongoing through NYC DPR NRG.*

Partners: NYSDEC

Project Contact: Tim Wenskus, NYC DPR NRG

Phone: (212) 360-1427

Website: www.nycgovparks.org/sub_about/parks_divisions/nrg/

Project Funding Source: *CW/CA Bond Act \$600,000 used for Alderbrook wetland and surrounding forest restoration. Air quality mitigation funding is being used to construct the nature trail. Greenway expansion is funded through federal funds under Senator Charles Schumer.*
HEP Ratification Date: 12/11/1997

B. HUDSON RARITAN ESTUARY ECOSYSTEM RESTORATION STUDY INFORMATION

Restoration Recommendations (Applicable Target Ecosystem Characteristics):

Coastal Wetlands- Support restoration of the ~0.7 acres freshwater wetlands at the outlet of Alderbrook in Riverdale Park. Alderbrook is located at 248th and Palisades.

Tributary Connections – Clean and re-assess capacity of culverts connecting ~160 linear feet from Alderbrook Stream to the Hudson River.

Sediment Contamination – Potential dredging and capping of contaminated sediment based on testing.

Coastal and Maritime Forests- Continued support to NYC DPR NRG specific forest restoration and maintenance projects.

Public Access – Continued support to NYC DPR specific public access, greenway and bike trail projects. Plans include a connection to the Hudson River Valley Greenway. Access to the river itself can be from the stairs at the Riverdale Station or at 254th Street.

Benefits, Cost and Comparative Restoration Ratio:

C. EXISTING SITE SPECIFIC DATA INVENTORY

A. Survey, Maps and GIS: Regional data exists inclusive of this site, Alderson and Bower 2012.

B. Site History and Land Use: No data obtained

C. Biological Studies/ Fauna: Bird Guide (1988), ecological assessment (2005).

D. Biological Studies/ General Environment: Ecological Assessment (2005).

E. Geotechnical: No data obtained

F. Hydraulics and Hydrology: No data obtained

G. Water and Sediment:

H. Historical and Cultural Resources: No data obtained

I. Restoration Remediation and Design Plans: No data obtained, Alderson and Bowers 2012.

References:

NYC DPR NRG- www.nycgovparks.org/sub_about/parks_divisions/nrg/forever_wild/site.php?FWID=46

NYC DPR- www.nycgovparks.org/sub_things_to_do/facilities/bicycling_greenways/html/af_bike_green_exp.html

NYC DPR NRG. 1988. Birds of Riverdale Park and Wave Hill, Bronx NY.

NYC DPR NRG. 2005. Ecological Assessment: Natural Area Mapping and Inventory of Raoul Wallenberg Forest 2005 Survey. www.nycgovparks.org/sub_about/parks_divisions/nrg/nrg_stats.html

Alderson, Carl and Justin Bowers. 2012. Reaching for the Past in Pursuit of the future: how can our present and past efforts inform the Hudson-Raritan Estuary Comprehensive Restoration Plan and the direction of habitat restoration going forward. A project for the New York-New Jersey Harbor & Estuary Program and New England Interstate Water Pollution Control Commission.



CRP SITE 189. INWOOD HILL PARK

A. HARBOR ESTUARY PROGRAM SITE INFORMATION

Category: Existing restoration, preservation, and/or mitigation site.

Location: North of Dyckman Street and west of Payson Avenue, 0.3 miles west of Wien Stadium. *Remnant salt marsh is located on the bank of the lagoon opposite to the Inwood Hill Park Nature Center.*

Watershed: Lower Hudson

Size: 4 acres. *Entire park 196 acres.*

Ownership: NYC DPR

Site Description: *Inwood Hill Park contains the last natural Oak Hickory forest and salt marsh in Manhattan. However, both of these ecosystems are much diminished from their former extent and productivity. The landscape includes caves, valleys, forest, salt marsh and ridges left as the result of shifting glacier activity shaping the landscape. Currently there is a nature center existing on the property to encourage environmental education. The wetlands of the former Spuyten Duyvil Creek were dredged in the 1940's to form the lagoon, located near the Inwood Nature Center. A remnant wetland remains. In the summer of 2007, the park's Dyckman Marina was added to New York State's Hudson River Greenway Water Trail. Similarly, the park contains a hiking trail and the Hudson River Bike Trail.*

The NYC DPR NRG is currently implementing ecosystem restoration projects at Inwood Hill Park forest.

Current Land Use: *The land is zoned as an open/recreational, transportation/utilities site with parks/public lands. The surrounding land is zoned as an industrial, multi-family residential, mixed use, open/recreational site.*

Available Habitat: *Oak Hickory forest, salt marsh.*

Proposed Project: (A) *NYC DPR NRG Northern Manhattan parks forest restoration goals are to reduce non-point source pollution into the Hudson River; restore forest by removing non-natives, invasive vines, shrub and tree species; provide increased habitat and food sources for wildlife; and involve community groups in restoration and protection of their forests.*

(B) *Salt marsh restoration.*

(C) *PlaNYC scheduled greenway improvements.*

(D) *NYC DCP proposes increased public access and shoreline softening at Baker Field, just outside of Inwood Hills Park.*

Projected/Estimated Costs: (A) \$1,080,000 estimated; \$380,000 actual cost.

Project Status: (A) *NYC DPR NRG restoration efforts have been undertaken to curtail erosion, remove invasive plant species, and restore native vegetation throughout much of the wooded portion of Inwood Hill. Specifically, over 2.5 acres of invasive non-native shrubs and vines were cleared. 5,130 2-3' native trees and shrubs were planted throughout the park. 3,000 square feet of erosion fabric was installed, and 4,686 native herbaceous plants were planted. An additional 0.75 acre was cleared and planted.*

(C) *PlaNYC is scheduled to renovate the Dyckman Street Ramp, which will create a direct, car-free connection between Fort Washington Park and Inwood Hill Park.*

Partners: NYCDPR

Project Contact: Tim Wenskus, NYC Parks/NRG
Phone: (212) 360-1427
Website: www.nycgovparks.org/sub_about/parks_divisions/nrg/

Project Funding Source: NFWF Royal Caribbean; 319 NPS Grant; NYS CW/CA: \$700,000 for Fort Tryon, Fort Washington, Inwood, & Riverside, Partial ABEG
HEP Ratification Date: 12/11/1997

B. HUDSON RARITAN ESTUARY ECOSYSTEM RESTORATION STUDY INFORMATION

Restoration Recommendations (Applicable Target Ecosystem Characteristics):

Coastal Wetlands – Extend the existing marsh into the lagoon by depositing sand on the south bank, grading it to proper marsh elevations to create ~1.5 acres; potential beneficial use of dredged material.

Habitat for Fish, Crab and Lobsters – Assess flats for composition, level of degradation and potential enhancements to increase habitat connectivity- such as addition of complex structures along ~1.4 acres of mudflats; potential beneficial use of dredged material.

Sediment Contamination – Potential dredging and capping of contaminated sediment based on testing.

Coastal and Maritime Forests – Support ongoing restoration and maintenance efforts of NYC DPR NRG to combat fragmentation, erosion, and invasive species.

Shorelines and Shallows – Preservation of soft edges and tidal mud flats along ~680 linear feet in Baker Field.

Public Access – Dyckman Street ramp. *See CRP Site 196. Increased public access to ~515 linear feet at Baker Field.*

Benefits, Cost and Comparative Restoration Ratio:

C. EXISTING SITE SPECIFIC DATA INVENTORY

A. Survey, Maps and GIS: Regional data exists inclusive of this site.

B. Site History and Land Use: No data obtained

C. Biological Studies/ Fauna:

D. Biological Studies/ General Environment: NYC Parks Natural Area Mapping and Inventory, 1989.

I. Restoration Remediation and Design Plans: No data obtained

E. Geotechnical: No data obtained

F. Hydraulics and Hydrology: No data obtained

G. Water and Sediment:

H. Historical and Cultural Resources: No data obtained

References:

NYC DPR - <http://www.nycgovparks.org/parks/inwoodhillpark>

NYC DPR NRG- <http://www.nycgovparks.org/greening/natural-resources-group/publication>

PlaNYC. 2008. Draft Master Plans for Riverside Park North of 135th Street, Fort Washington Park, and Inwood Hills Park West of the Amtrak Lines.

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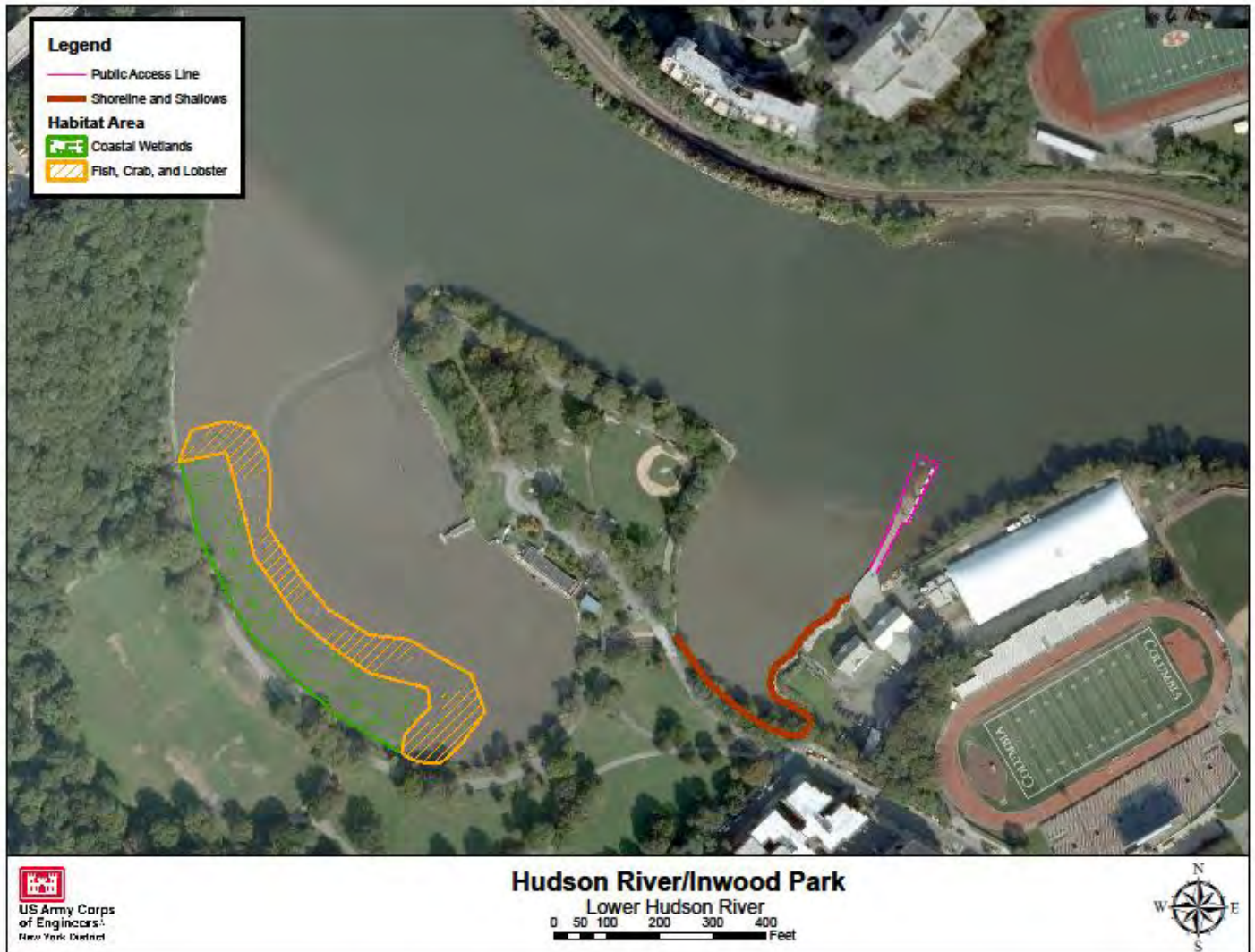
Columbia University Graduate Seminar in Restoration and Urban Ecology of New York City- Class project proposals for New York City

http://www.columbia.edu/itc/cerc/danoff-burg/RestoringNYC/RestoringNYC_Intro.html

Fitzgerald, Judith M. and Robert E. Loeb. 2008. Historical ecology of Inwood Hill Park, Manhattan, New York. The Journal of the Torrey Botanical Society, 135(2):281-293. 2008
<http://www.bioone.org/doi/full/10.3159/07-RA-046.1>

http://www.nycgovparks.org/sub_about/parks_divisions/nrg/nrg_report.html

The City of New York Department of City Planning. 2011. Vision 2020 New York City Comprehensive Waterfront Plan.



CRP SITE 190. FORT TRYON PARK

A. HARBOR ESTUARY PROGRAM SITE INFORMATION

Category: Existing restoration, preservation, and/or mitigation site.

Location: South of Riverside Drive, Margaret Corbin Drive leads into the park. *Fort Tryon is located in the Washington Heights section of Manhattan.*

Watershed: Lower Hudson River

Size: 67.21 acres

Ownership: NYC DPR

Site Description: Situated on top of a rocky ridge landscaped with trees, lawns, terraces, rock gardens, paved walks and benches. *It is classified as a densely forested high ground, existing on one of the highest geographical points in Manhattan. The park is 270,000 square miles situated on Manhattan schist. The lower lying regions in the east and north are situated on Inwood marble. The slopes leading up to the park are largely naturally occurring secondary forest communities and slope forests surround the entire park.*

Current Land Use: *There is a dog run on the property as well as two playgrounds. There is also a gazebo, meandering paths (8 miles), lawns and a restaurant. The Cloisters museum, a branch of the Metropolitan Museum of Art, resides in this park. The land is zoned as an open/recreational and institutional site with parks/public lands. The surrounding land is zoned as a vacant, transportation/utilities, multi-family residential, mixed use, commercial, institutional, and open/recreational site.*

Available Habitat: Northeast deciduous forest with invasive species; *Acer plantanoides*, a common invasive tree, has historically been present but is currently causing a problem.

Proposed Project: *NYC DPR NRG, Northern Manhattan parks forest restoration goals are to reduce non-point source pollution into the Hudson River; restore forest by removing non-native, invasive vines, shrub and tree species; provide increased habitat and food sources for wildlife; and involve community groups in restoration and protection of their forests.*

Projected/Estimated Costs: Estimated \$832,000; actual cost: \$132,000.

Project Status: *In the 1990s, Mayor Giuliani committed \$2.3 million to Phase II of the reconstruction of the park. The Friends of Fort Tryon Park along with NYRP, began clean up and partnership efforts to ensure that the site will continue to be enjoyed for years to come. NYC DPR NRG restoration and maintenance is ongoing.*

Partners: NYSDEC, NYRP

Project Contact: Tim Wenskus, NYC Parks/NRG

Phone: (212) 360-1427

Website: www.nycgovparks.org/sub_about/parks_divisions/nrg/

Project Funding Source: NFWF Royal Caribbean. NYS CW/CA: \$700,000 for Fort Tryon, Fort Washington, Inwood, & Riverside.

HEP Ratification Date: 12/11/1997

B. HUDSON RARITAN ESTUARY ECOSYSTEM RESTORATION STUDY INFORMATION

Restoration Recommendations (Applicable Target Ecosystem Characteristics):

Coastal and Maritime Forests- Support ongoing restoration and maintenance efforts of NYC DPR NRG to combat fragmentation, erosion, and invasive species.

Public Access – Support ongoing efforts of NYC DPR NRG to extend and maintain the greenway trail system.

Benefits, Cost and Comparative Restoration Ratio:

C. EXISTING SITE SPECIFIC DATA INVENTORY

A. Survey, Maps and GIS: Regional data exists inclusive of this site, Alderson and Bowers 2012.

B. Site History and Land Use: No data obtained

C. Biological Studies/ Fauna:

D. Biological Studies/ General Environment:

E. Geotechnical: No data obtained

F. Hydraulics and Hydrology: No data obtained

G. Water and Sediment:

H. Historical and Cultural Resources: No data obtained

I. Restoration Remediation and Design Plans: No data obtained, Alderson and Bowers 2012.

References:

NYC DPR

<http://www.nycgovparks.org/parks/forttryonpark>

Fort Tryon Park Trust

<http://forttryonparktrust.org/>

<http://www.fort-tryon.com/manhattan-neighborhoodguide-forttryonpark/>

Columbia University Graduate Seminar in Restoration and Urban Ecology of New York City- Class Project proposals for New York City-

http://www.columbia.edu/itc/cerc/danoff-burg/RestoringNYC/RestoringNYC_Intro.html

Alderson, Carl and Justin Bowers. 2012. Reaching for the Past in Pursuit of the future: how can our present and past efforts inform the Hudson-Raritan Estuary Comprehensive Restoration Plan and the direction of habitat restoration going forward. A project for the New York-New Jersey Harbor & Estuary Program and New England Interstate Water Pollution Control Commission.



CRP SITE 196. FORT WASHINGTON PARK

A. HARBOR ESTUARY PROGRAM SITE INFORMATION

Category: Existing restoration, preservation, and/or mitigation site.

Location: *Stretches from 155th Street to Dyckman Street (200th) and from Riverside Drive to the Hudson River.*

Watershed: Lower Hudson

Size: *160 acres total*

Ownership: NYC DPR

Site Description: Currently, the park is a narrow corridor of cliffs, meadows and wooded areas located along the Hudson River. The existing configuration was laid out by Robert Moses during the construction of the Henry Hudson Parkway, which travels through the park's eastern edge. The current intertidal zone is very narrow. The steep slope descends quickly to the shallow water zone. Fort Washington is the site of Manhattan's only lighthouse, the Little Red Lighthouse. Baseball fields, basketball courts, tennis courts, and a playground are recreational aspects of this property.

Current Land Use: *The land is zoned as a vacant, open/recreational, transportation/utilities, and institutional site with parks/public lands. The surrounding land is zoned as a multi-family residential, vacant, open/recreational, transportation/utilities, and institutional site.*

Available Habitat: Shallow water marine habitat, open deep water habitat, estuarine and freshwater marshes, northeast deciduous forest with invasive species. *The park consists of cliffs and grassy meadows.*

Proposed Project: (A) Non-point source reduction/restoration, invasive species removal, erosion control and tree planting.

(B) NYC DPR, PlaNYC is scheduled to renovate the Dyckman Street Ramp, which will create a direct, car-free connection between Fort Washington Park and Inwood Hill Park. Scheduled greenway improvements will include a 1 mile primary path (North-park starting at Dyckman Street) with side paths and river view points; improvements to sports fields, greenway, pedestrian paths and comfort stations (mid-park 155th St-168th St.); and rehabilitation of the bridge at 180th St. over the Amtrak line near the lighthouse.

Projected/Estimated Costs: (A) Estimated: \$832,000; actual: \$132,000.

Project Status: (A) Complete.

(B) Construction is scheduled to begin Summer 2011 on the Mid-Park South and Fort Washington Park North phases of the project.

Partners: NYSDEC, NYCDPR, NYRP

Project Contact: Tim Wenskus, NYC Parks/NRG

Phone: (212) 360-1427

Website: www.nycgovparks.org/sub_about/parks_divisions/nrg/

Project Funding Source: NYS CW/CA: \$700,000 for Fort Tryon, Fort Washington, Inwood, & Riverside, Partial ABEG

HEP Ratification Date: 12/11/1997

B. HUDSON RARITAN ESTUARY ECOSYSTEM RESTORATION STUDY INFORMATION

Restoration Recommendations (Applicable Target Ecosystem Characteristics):

Public Access – Support restoration to the Dyckman Street ramp and greenway improvements to ~1.06 acres.

Coastal and Maritime Forests – Support to ongoing NYC DPR restoration and maintenance.

Benefits, Cost and Comparative Restoration Ratio:

C. EXISTING SITE SPECIFIC DATA INVENTORY

A. Survey, Maps and GIS: Regional data exists inclusive of this site.

B. Site History and Land Use: No data obtained

C. Biological Studies/ Fauna:

D. Biological Studies/ General Environment:

E. Geotechnical: No data obtained

F. Hydraulics and Hydrology: No data obtained

G. Water and Sediment:

H. Historical and Cultural Resources: No data obtained

I. Restoration Remediation and Design Plans: No data obtained

References:

NYC DPR - www.nycgovparks.org/parks/fortwashingtonpark/highlights/8258

www.nycgovparks.org/sub_about/parks_divisions/capital/parks/fort_washington_park.html

PlaNYC. 2008. Draft Master Plans for Riverside Park North of 135th Street, Fort Washington Park, and Inwood Hills Park West of the Amtrak Lines.

www.nycgovparks.org/sub_your_park/vt_north_manhattan_parks/vt_north_manhattan_parks.php

The City of New York Department of City Planning. 2011. Vision 2020 New York City Comprehensive Waterfront Plan.



CRP SITE 197. HUDSON RIVER/RIVERSIDE PARK

A. HARBOR ESTUARY PROGRAM SITE INFORMATION

Category: Existing restoration, preservation, and/or mitigation site.

Location: *Stretching four miles from 72nd to 158th Streets along the Hudson River.*

Watershed: Lower Hudson

Size: 266.79 acres.

Ownership: NYC DPR

Site Description: *Riverside Park is a linear strip of park that runs along the manmade shoreline of the Hudson River. Recreational facilities include a range of sports courts and fields, a skate park, a large portion of the Manhattan Waterfront Greenway, and the 110-slip public marina at 79th street, an important part of New York State's Water Trail. There is a bird sanctuary located between 116th and 129th streets.*

Current Land Use: *The land is zoned as a degraded vacant, open/recreational, and transportation/utilities site with parks/public lands. The surrounding land is zoned as a vacant, multi-family residential, mixed use, commercial, institutional, open/recreational site.*

Available Habitat: *Narrow rip rap and concrete armored shoreline and forested strips along the Hudson River.*

Proposed Project: (A) \$144,000 maritime heathland restoration. Invasive species removal, erosion control and tree planting.

NYC DPR NRG, Northern Manhattan parks forest restoration goals are to reduce non-point source pollution into the Hudson River; restore forest by removing non-native, invasive vine, shrub and tree species; provide increased habitat and food sources for wildlife; and involve community groups in restoration and protection of their forests.

(B) West Harlem Master Plan encourages recreational use of the waterfront and will stimulate the economy through economic and institutional development. The plan creates a waterfront park between W125th and W135th Streets with several public access resources. Future plans call for improvements to transportation and streetscape development.

Projected/Estimated Costs: (A) \$700,000.

Project Status: (A) Complete (B) A derelict and under-utilized section of the Hudson River waterfront was transformed into the 2-acre West Harlem Piers Park (WHPP) and opened in 2009.

Partners: NYC DPR, NYC EDC.

Project Contact: Tim Wenskus, NYC Parks/NRG

Phone: (212) 360-1427

Website: www.nycgovparks.org/sub_about/parks_divisions/nrg/

Project Funding Source: NYS CW/CA: \$700,000 for Fort Tryon, Fort Washington, Inwood, & Riverside, Partial AB
HEP Ratification Date: 12/11/1997

B. HUDSON RARITAN ESTUARY ECOSYSTEM RESTORATION STUDY INFORMATION

Restoration Recommendations (Applicable Target Ecosystem Characteristics):

Habitat for Fish, Crab and Lobsters – Creating inter-pier areas of shallow, vegetated fish habitat (West Harlem Piers and Waterfront Park area) in ~3.8 acres could result in the site supporting a variety of currently underrepresented fish species. Complex habitat could be placed along the water edge for cover seeking fishes.

Shorelines and Shallows – Creation of gradually sloping, shallow shoreline waters along ~740 linear feet of inter-pier areas (along the West Harlem Piers and Waterfront Park area) would require re-grading and import of clean substrate to reduce the water depth. Additionally, terraced tidal flats could be created in areas where seawall removal is not an option.

Sediment Contamination – Potential dredging and capping of contaminated sediment based on testing.

Public Access – Support current efforts of NYC EDC and NYC DPR to increase public interaction along ~1878 linear feet of waterfront.

Coastal and Maritime Forests – Support ongoing NYC DPR maintenance.

Benefits, Cost and Comparative Restoration Ratio:

C. EXISTING SITE SPECIFIC DATA INVENTORY

A. Survey, Maps and GIS: Regional data exists inclusive of this site.

B. Site History and Land Use: No data obtained

C. Biological Studies/ Fauna:

D. Biological Studies/ General Environment:

E. Geotechnical: No data obtained

F. Hydraulics and Hydrology: No data obtained

G. Water and Sediment:

H. Historical and Cultural Resources: No data obtained

I. Restoration Remediation and Design Plans: No data obtained

References:

NYC DPR

www.nycgovparks.org/parks/riversidepark

PlaNYC. 2008. Draft Master Plans for Riverside Park North of 135th Street, Fort Washington Park, and Inwood Hills Park West of the Amtrak Lines.

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NYC EDC. 2002. West Harlem Master Plan.

