

WALKWAY OVER THE HUDSON

Draft Design Report

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Prepared by:



Clients:



Walkway Over the Hudson



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PREFERRED ALTERNATIVE

This project evaluates the feasibility of transforming the existing Poughkeepsie-Highland Railroad Bridge into a trail system for pedestrians and bicyclists. The bridge is located in the City of Poughkeepsie, Dutchess County (east side of the Hudson River) and the Town of Lloyd, Ulster County (west side of the river).

The Poughkeepsie-Highland Railroad Bridge holds tremendous historic significance. When construction was completed in 1888, the bridge was the longest one in the world. It served as a vital link in the transportation of people and goods between Albany and New York City. Train volumes exceeded 3500 cars/day during World War II, at the peak of railroad usage. In the late 1950's, traffic volumes on the bridge began a steady decline. The last train crossed the bridge in 1974 due to a fire on the east side of the bridge that caused damage to rail ties and decking material. The fire, combined with the declining use of the bridge, prompted the termination of rail service. This bridge is currently listed on the New York State Historic Register.

In 1995, a not-for-profit organization, Walkway Over the Hudson, assumed ownership of the bridge with the intent of transforming usage into a facility to accommodate pedestrians and bicyclists. Walkway Over the Hudson has been working closely with the Dyson Foundation to secure the necessary funds for the renovation of the bridge. The project schedule is on the fast-track, with construction planned to begin in the summer of 2008, and the bridge opening to the public by September 2009 as part of the 2009 Henry Hudson Quadricentennial Celebration.

The Rehabilitation Alternative, described in detail in **Section III.C** of this report, has been identified as the preferred alternative, over-and-above the Null Alternative and the Removal (i.e., demolition) Alternative. This Rehabilitation Alternative proposes to transform the existing railroad bridge into a pedestrian and bicyclist trail, linking the expansive trail systems that exist on the east and west sides of the Hudson River. Three design options were considered under the Rehabilitation Alternative, providing incrementally greater levels of trail width, access options, and amenities. The second design option has been chosen based on a comparison of the range of available features against available funds.

Construction work would involve removal of the existing bridge deck including side railings, track rails, and ties. Structural repairs would then be completed prior to installation of a new pre-cast, reinforced concrete deck on the bridge. The deck would be 15' wide on the approach spans and 35' wide on the main span. Key features would include hand rails similar to those on the nearby Franklin D. Roosevelt (Mid-Hudson) Bridge, pedestrian lighting on the deck, elevator access at the east abutment, and parking facilities near both ends of the bridge abutments. It is the intent to implement these new features in such a way that captures the industrial character of the bridge's original function. A photographic rendering of the proposed condition is found in **Appendix F**.

Construction costs are currently estimated at \$25 million. Walkway Over the Hudson currently is seeking state, federal, local government, and private funding to support this project. Funding commitments must be secured in order to initiate the construction phase of the project. Upon completion of construction activities, the New York State Office of Parks, Recreation and Historic Preservation will assume responsibility for administering public use of the Walkway Over the Hudson, including staffing, operating costs, and maintaining the trail features and associated public facilities. Ownership of the bridge structure will be transferred to an appropriate New York State entity (not yet determined) which will be responsible for maintaining the bridge deck, steel superstructure, piers, and substructure.*



This project is classified as a SEQRA Type I Action project. The project is classified as a Class II Action (Categorical Exclusion) based on the NEPA checklist included in **Appendix G**.

* Text revised December 4, 2007.



I. INTRODUCTION

This project proposes to convert the existing, dormant, Poughkeepsie-Highland Railroad Bridge to a pedestrian and bicycle path (“Walkway over the Hudson”) that will serve as a link between extensive trail networks on either side of the Hudson River. The work will involve removing all of the existing material above the structural steel, including railroad ties, rail, pedestrian railing, and abandoned utilities. New deck and railings will be added, and appropriate access and termini will be created. The project construction cost for the Feasible Alternative is estimated to be \$25 million, and will be funded by a mix of federal, state and private funds. The project is being classified as a Class II Action (Categorical Exclusion) under the National Environmental Action Policy Act (NEPA), and as a Type I Action under the State Environmental Quality Review Act (SEQRA). The Lead Agency will grant Design Approval. The project is scheduled to be let in the summer of 2008.

This report has been prepared to describe existing conditions, establish project needs, and identify and evaluate alternative improvements to address the project needs. The evaluations considered the social, economic and environmental impacts associated with the project. For additional information regarding this project, contact:

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II. PROJECT IDENTIFICATION, EVOLUTION, CONDITIONS AND NEEDS, AND OBJECTIVES

A. PROJECT IDENTIFICATION

1. Project Type:

Conversion of a 1.25 mile long, historic railroad bridge into a linear park, whereby a key link is provided for the connection of the bridge to an extensive regional pedestrian and bicycle trail network on the east and west sides of the Hudson River.

2. Project Location:

- a. The Poughkeepsie-Highland Railroad Bridge over the Hudson River is located in the City of Poughkeepsie, Dutchess County, and the Town of Lloyd, Ulster County. The bridge is north of the New York State Bridge Authority's Franklin D. Roosevelt (Mid-Hudson) Bridge. The project work limits include the entire bridge, and extend inland, on both the east and west sides of the bridge, approximately 200 ft from the abutments, within the Walkway Over the Hudson right-of-way. The east and west termini connect to railroad right-of-way that is currently being converted, under separate project initiatives, to pedestrian and bicycle trails that link up to the greater, regional trail network.
- b. Figure II-1 presents a Location and Area Map. Figure II-1 is also provided in a larger format in **Appendix A**.

Figure II-1: Project Location Map





B. PROJECT EVOLUTION

The Poughkeepsie-Highland Railroad Bridge holds tremendous historic significance: constructed in 1888, it was the longest bridge in the world when the first train crossed it. The completion of this bridge established a vital link in the transportation of people and goods between Albany and New York City. Although the need for freight transportation between Albany and New York City continues today, the Poughkeepsie-Highland Railroad Bridge ended rail service in 1974 following a decline in demand for the use of this particular bridge.

The bridge is considered a 19th Century engineering marvel, having set records for the use of structural steel, and the length of its spans. The four river piers are supported on massive concrete filled, timber crib foundations over ten stories tall. Railroad traffic over the bridge increased dramatically in the early 20th century, resulting in the need for immense improvements. Between 1906 and 1907, and later between 1918 and 1919, structural steel was added to accommodate longer and heavier trains. Train volumes exceeded 3500 cars/day during World War II. It wasn't until the late 1950's that traffic volumes on the bridge began a steady decline, a decline that was attributed to the creation of the interstate highway system, as well as the opening of the Castleton-on-Hudson railroad bridge just south of Albany.

The last train crossed the bridge in 1974. A fire erupted on the east side of the bridge damaging rail ties and decking material. This incident, along with the declining demand for use of the bridge, prompted the bridge owner, Penn Central, to terminate service. Following the fire incident, the east approach was stripped of railroad ties, rail, and other surface features to prevent the possibility of un-maintained materials falling onto residents, streets and rail lines beneath the bridge. In this stripped area, only the bridge superstructure remains.

In 1995, a not-for-profit organization, Walkway Over the Hudson, assumed ownership of the bridge with the intent of transforming usage into a facility to accommodate pedestrians and bicyclists. Numerous studies and reports from both sides of the river have supported the conversion of the Poughkeepsie-Highland Railroad Bridge to non-motorized use - most notably, the New York State Department of Transportation's June 2002, "*Maybrook Multi-Modal Corridor Study*."

Walkway Over the Hudson has received wide-spread support for their vision. **Appendix H** contains numerous copies of support letters from a variety of stakeholders. This support has enabled Preliminary Design efforts to get under way, such as, the bridge inspection efforts, and preparation of this Draft Design Report. Walkway Over the Hudson has been working closely with the Dyson Foundation to secure the necessary funds for the renovation of the bridge. The project schedule is on the fast-track, with fabrication and construction contracts planned to begin in the spring and summer of 2008, and the bridge opened to the public by September 2009 as part of the 2009 Henry Hudson Quadricentennial Celebration.



C. CONDITIONS AND NEEDS

1. Transportation Conditions, Deficiencies and Engineering Considerations:

a. Functional Classification

The bridge was constructed for rail traffic only. It is currently abandoned. On the east side, the bridge spans five (5) collector streets, two (2) arterials, and one (1) active rail line. On the west side, the bridge spans two (2) collectors, and one (1) rail line. Additionally, the bridge spans the Hudson River which is a navigable waterway for recreational and commercial vessels.

b. Ownership and Maintenance Jurisdiction

The bridge is currently owned and maintained by Walkway Over the Hudson, a not-for-profit organization. Upon completion of the project, the New York State Office of Parks, Recreation and Historic Preservation will assume responsibility for administering public use of the Walkway Over the Hudson, including staffing, operating costs, and maintaining the trail features and associated public facilities. Ownership of the bridge structure will be transferred to an appropriate New York State entity (not yet determined) which will be responsible for maintaining the bridge deck, steel superstructure, piers, and substructure.*

c. Culture, Terrain and Climatic Conditions

(1) Area Type – The Poughkeepsie-Highland bridge connects the City of Poughkeepsie, Dutchess County, on the east side of the Hudson River with the Town of Lloyd, Ulster County, on the west side of the river. Land use on the east side differs substantially from that of the west side. The surrounding area on the east side is highly urban in context, with a mixture of industrial, commercial and residential space. The west approach, on the other hand is more rural in context, with large areas of open green space, and sparse residential development.

Several parks exist throughout the surrounding area of the Poughkeepsie-Highland Bridge: (1) Johnson-Iorio Memorial Park resides on the west side of the river, near the shore, south of the bridge. The park offers scenic views of Poughkeepsie on the other side of the river, and is linked to Scenic Hudson's Franny Reese Preserve which was recently transferred to NYS Office of Parks, Recreation and Historic Preservation. (2) Victor C. Waryas Park resides on the east side of the river, along the shore, just to the south of the bridge. This park offers beautiful views up and down the Hudson River, including panoramic views of the two nearby bridges spanning the river. (3) Pulaski Park, an urban recreational park, also resides on the east side of the river, a short distance north of the Poughkeepsie-Highland east abutment. (4) Wheaton Park is also an urban recreational park located south of the bridge in Poughkeepsie. Other parks exist within the City of Poughkeepsie, but further inland.

* Text revised December 4, 2007.



Other noteworthy area features include the Poughkeepsie Train Station and the Central Hudson Power Station, both located in the City of Poughkeepsie, along the eastern shore near the subject bridge.

The area, as it exists today, is the product of 180 years of expanded development that coincided with the boom along the Hudson Valley. This boom began in 1825, when the Erie Canal opened up doors to the Great Lakes and western products, and continued strong into the 1900's until alternate transportation means and routes were implemented. Despite the development expanse, "the essential nature and traditions of the Hudson Valley still prevail."¹ Or, to put it in the words of historian Paul Wilstach in 1933, "The units of busy life here seem to punctuate Nature without prevailing over it."²

- (2) Terrain – The Poughkeepsie-Highland Bridge spans the Hudson River valley floor between the urban city of Poughkeepsie in Dutchess County and the more rural township of Lloyd in Ulster County. The City of Poughkeepsie is located on the eastern slope descending toward the river. The terrain within the Town of Lloyd is much more varied (hilly), having steeper slopes along the west river than that of Poughkeepsie.
- (3) Climate Conditions – No unusual climate conditions exist that would affect project design or construction.

d. Control of Access

Access onto the Poughkeepsie-Highland Railroad Bridge within the project limits is strictly controlled by the Walkway Over the Hudson group. Access from the west side of the bridge is controlled by a locked security gate, and an effective security intrusion system linked to local law enforcement. The east end of the bridge is fenced, and contains no deck system to walk on – only the bridge's steel superstructure remains.

The bridge is elevated over several roads and two active rail lines. The bridge does not prohibit the through traffic of vehicles on any of those transportation facilities.

e. Existing Highway Section

- (1) Right-of-Way – The existing right-of-way of the rail corridor between the western project limit and Pier 0 in the Town of Lloyd has a width of 200 feet. The right-of-way between Pier 0 and Talmadge Road in the City of Poughkeepsie is approximately 60 feet in width. **Appendix E** contains record bridge plans that show pier locations. The Poughkeepsie Bridge Company acquired most of the right-of-way circa 1887/1888. At the highway underpasses, the bridge substructure and appurtenances are encompassed with 6-foot high chain link fence. The chain link fencing continues, generally parallel with the rail line; though the fence does not exist everywhere along the rail line.

¹ "Greenway Connections – Greenway Compact Program and Guides for Dutchess County Communities." Dutchess County Department of Planning and Development. March 8, 2000. Page 1.

² "Greenway Connections – Greenway Compact Program and Guides for Dutchess County Communities." Dutchess County Department of Planning and Development. March 8, 2000. Page 1, inset.



Further, the fence location does not always coincide with the approximate right-of-way which varies in alignment throughout. Rather, it remains generally parallel with the rail line. As a result, in many cases, adjacent property owners encroach in the railroad right-of-way. In fact, some of the intermittent fencing was continued erroneously by adjacent property owners. This is most evident in the area between Talmadge Road and Washington Street on the south side of the railroad. The encroaching properties front on Gifford Ave.; nos. 10 through 36. A preliminary assessment also shows encroachments by adjacent owners in the following areas:

- i. Between Albany/Dutchess and Delafield streets on the north and south
- ii. Between Delafield and Talmadge on the north and south

There are also encroachments of rail appurtenances onto adjacent properties in the following areas:

- i. The concrete retaining wall encroaches into the yards of at least two properties at no. 38 and 42 Gifford Avenue
- ii. The fence at the property of Frank Poletto et al at the southeast corner of Talmadge and the Walkway Over the Hudson property.
- iii. The fence at the Talmadge and Delafield right-of-ways.
- iv. The east abutment at Washington Street

Items iii.) and iv.) above may be covered in easements granted by the City of Poughkeepsie. A preliminary review of the Ulster County right-of-way revealed no serious encroachments. A follow-up detailed survey will map all encroachments in the right-of-way.

- (2) Travel Lanes and Shoulders – The Poughkeepsie-Highland Railroad Bridge is an abandoned railroad bridge, not a highway section. There are no vehicular travel lanes or shoulders.
- (3) Curb – There are no curbs on the bridge.
- (4) Medians – There are no medians on the bridge.
- (5) Grades and Curves
 - i. Vertical – The bridge profile varies from 1.25% (descending west to east) on the west approach, transitioning to level grade on most of the main span, and transitioning again to 1.25% (descending west to east) on the east approach.
 - ii. Horizontal – The horizontal alignment of the bridge is tangent from the west approach, through the main span, and to a distance of approximately 2268 feet inland on the east side. From this point eastward, the bridge has an approximate 2200 foot horizontal curve.



- (6) Intersection Geometry and Conditions – There are no intersections on the Poughkeepsie-Highland Railroad Bridge.
- (7) Parking Regulations – The bridge was constructed for railroad use only, and so there is no vehicular parking on the bridge. There are allowances for parking on the local street network surrounding the bridge in the City of Poughkeepsie.
- (8) Roadside Elements – On the bridge, hand rail exists on both sides of the track. In addition, where the tracks touch down on the east side, some fencing exists as a separation between the railroad property and adjacent land owners. More information on the chain link fence can be found in the Right-of-Way subsection (**II.C.1.e.1.**).

f. Abutting Highway Segments and Future Plans for Abutting Highway Segments

The Poughkeepsie-Highland Railroad Bridge crosses over a total of nine (9) roadways: Ransom Road and Oakes Road on the west side of the river, and North Water Street, State Route 9, Albany Street, Dutchess Avenue, Delafield Street, Talmadge Street, Washington Street (State Route 9G) on the east side. These are all grade separated crossings. Therefore, the flow of traffic on these roads is not prohibited by the bridge. The same is true for the active railroad lines that pass beneath the bridge along both shores of the Hudson River, and for water vessels that run up and down the Hudson River.

Hudson Valley Rail-Trail Project will be expanded to include the stretch of railroad from Haviland Road to Commercial Avenue. This rail-trail project will link the Walkway Over the Hudson bridge to the regional pedestrian and bike network on the west side of the Hudson River.

Similarly, the Dutchess Rail-Trail project will link the Walkway Over the Hudson to the regional pedestrian and bike network on the east side of the Hudson River.

Consequently, Walkway Over the Hudson is the final piece of infrastructure that links the east and west side trail networks together.

g. Speeds and Delay

Not applicable.

h. Traffic

Not applicable.

i. Level of Service (LOS)

Not applicable.



j. Deficiencies in Current Facilities Based on Intended Use

This bridge was designed for rail use and is being proposed herein as a trail for pedestrians and bicyclists. As such, several features would need to be addressed in order to properly serve the new type of traffic:

- Railing
- Fall protection
- Trail surface
- Parking accommodations
- Access to/from parking facilities
- Handicapped access, including features for the blind
- Suicide prevention measures
- Lighting
- Security
- Maintenance
- Emergency Access

k. Safety Considerations

The existing bridge was constructed for rail use and not as a pedestrian trail facility. Furthermore, the era in which the bridge was constructed and last maintained predates safety measures that are standard to today's practice. Consequently, the bridge, in its current state, retains many safety problems. The concern is elevated in consideration of its intended use as a pedestrian and bicycle trail system. Safety problems include the following: side railings (poor condition, missing in areas, and non-standard design), lack of a solid travel surface, some structural deficiencies, and lack of lighting.

l. Pavement and Shoulder Conditions

The bridge was designed for train traffic, and is being proposed herein as a trail for pedestrians and bicyclists. As such, the existing surface is inadequate for use as a trail surface.

m. Railings, Median Barriers and Impact Attenuators

There are no guide railings, median barriers, or impact attenuators located on the bridge. The hand railings on the bridge are in very poor condition, or missing.

n. Traffic Control Devices

The bridge was designed for train traffic, and is being proposed herein as a trail for pedestrians and bicyclists. As such, proper traffic control devices do not exist on the bridge and adjoining sections of railroad to guide the proposed users (i.e., pedestrians and bicyclists).



o. Structures:

- (1) Description – The former Poughkeepsie-Highland Railroad Bridge is over 6,700 feet long, and consists of numerous spans in three distinct segments: a west approach, the main spans, and an east approach. All structures consist of three parallel lines of superstructure elements, either steel truss or steel girder. See **Appendix E** for the plans, profiles, and typical sections of the existing structure.

The west approach is approximately 1,030 feet long, consisting of two (2) truss spans and numerous girder spans supported on steel towers. The bridge spans over one (1) local roadway and through rolling terrain, in the Town of Lloyd.

The main span is approximately 3,090 feet long, spanning over a local roadway and CSX railroad on the west shore, the Hudson River, and Central Hudson on the east shore. The main span is supported on two (2) land-based steel towers on concrete piers, and four (4) steel towers on concrete and masonry piers on concrete-filled timber cribbing. The average deck level above the Hudson River is 212 feet.

The east approach is 2,640 feet long, consisting of five (5) truss spans and numerous girder spans supported on steel towers, spanning several local roadways, one state highway, a CSX railroad, and an established urban residential neighborhood.

- (2) Clearances – The Poughkeepsie-Highland Railroad Bridge has 160 feet +/- clearance for navigational clearance. This clearance exceeds minimum requirements for such traffic. Additionally, the clearance for vehicular traffic at the multiple roadway underpasses exceeds minimum requirements.

- (3) History & Deficiencies

- i. History: The Poughkeepsie-Highland Railroad Bridge is a 19th Century engineering marvel on the National Historic Register. The cornerstone was laid in 1873, and when it was completed in 1888, five years after the Brooklyn Bridge, it was the longest bridge in the world (6,767 feet). It had the largest cantilever spans ever built, and the four river piers were supported on massive concrete-filled timber crib foundations over ten stories tall. As the first bridge spanning the Hudson River between Albany and New York City, it had an enormous impact on the transportation of freight throughout in the Northeast, and today's transportation network.

Rise to the interstate highway system in the 1950's and construction of the newer Castleton-on-Hudson Railroad Bridge just south of Albany, was cause to a steady decline in the use of the Poughkeepsie-Highland Railroad Bridge. The last train crossed the bridge in 1974, shortly before a fire erupted on the east side of the bridge damaging rail ties and decking material. This incident, along with the declining use of the bridge, prompted the bridge owner, Penn Central, to terminate service permanently. The bridge has been dormant for the past 33 years.

- ii. Inspection and Deficiencies: In September 2007, engineers began a series of inspections to assess the condition of the bridge structure for future use as a trail



system. The effort included the inspections of the abutments, superstructure, substructure, deck and approaches, as well as inspection of the stream channel and banks. In addition, diving inspections to assess the pier and foundation conditions below water were conducted in November of 2006, and a follow-up inspection is scheduled for November 2007. Inspection reports are provided in **Appendix B** (Diving Inspection) and **Appendix C** (Bridge Inspection).

- (4) Restrictions – The bridge is currently owned by a private, not-for-profit, organization, and closed to public access. The bridge deck and the right-of-way at grade is fenced and locked. An electronic security system monitors activity on and near the bridge, and is managed by local authorities and the Walkway Over the Hudson organization. Persons are allowed walking access onto the bridge or right-of-way by appointment, as guests of the Walkway Over the Hudson. All guests are required to sign a liability waiver form.
- (5) Future Conditions – The bridge has not been maintained for over 30 years and is showing signs of its age. Continued lack of maintenance will result in continued degradation of the structure, eventually requiring it to be dismantled for safety reasons. The bridge currently spans the Hudson River, a navigable waterway with commercial and recreational vessels; it also extends inland, spanning roadways, railways, and residential neighborhoods, thereby heightening the safety concern. Thus a dilapidated structure would pose safety concerns for peoples traveling beneath the bridge.
- (6) Waterway - A Coast Guard Jurisdiction Checklist has been completed (see **Appendix G**). A Coast Guard Permit is not required for this project, but coordination with the Coast Guard will continue throughout the design process.

p. Hydraulics of Bridges and Large Culverts

The Hudson River is a drowned estuary, meaning that the river's flow is influenced by tidal effects. The tidal influence along the Hudson River extends from the Battery in New York City (River Mile 0.0) upstream to the Green Island Dam in Troy, New York, or approximately 154 miles. The Poughkeepsie-Highland Railroad Bridge is located at approximately River Mile 77, or about half-way up the tidal reach, with an upstream drainage area of 11,860 square miles. Being in this tidal zone, the direction of flow alternates between upstream and downstream on a diurnal basis, changing approximately every 6½ hours.

The most recent diving inspection performed in November 2006 (see **Appendix B**) at the four piers located in the Hudson River reported no signs of scour within the vicinity of the piers. This finding is consistent with previous diving inspections conducted in 2002 and 1979. The proposed underwater repairs to the river piers will not affect the hydraulic opening, therefore the existing hydraulic conditions of the Hudson River at this location will not be affected. A detailed hydraulic evaluation will not be conducted.



q. Drainage Systems

There is no drainage system on the bridge; precipitation merely falls onto the structural components and runs through gaps to the land and water below. The rail bed surface contains many gaps between the rail ties and structural components which allow for runoff to filter through without the need for a dedicated drainage system. Beneath and adjacent to the bridge on the west side, runoff is handled via open drainage system. On the east side in urban Poughkeepsie, runoff beneath and adjacent to the bridge is handled via closed drainage system which convey stormwater in the street sewers, ultimately leading westward to the Hudson River.

r. Geotechnical Conditions

The soil strata beneath the Hudson River consist of approximately 70 ft of river bottom sediments (clay, silt, sand) over a 15 ft thick layer of gravel on bedrock. The river piers are founded upon the gravel layer.

Previous studies³ have reported that the east and west approach structures are founded on sedimentary shale and limestone. It is assumed that this sedimentary rock extends under the entire bridge structure.

Soil borings will be taken at each potential elevator location to determine site specific geotechnical parameters necessary for foundation design.

s. Utilities

Central Hudson utilized the bridge to support its electric transmission lines until 1984 when it decided to relocate the transmission lines under the Hudson River. However, the steel support frames cantilevered from every fourth floorbeam (approximately 110 to 120 feet apart), and the de-energized cables which they had supported, still remain on the main span.

An abandoned 6 inch pipe that had been utilized for fire suppression is located at deck level on the north side of the bridge.

An abandoned telephone line is located underneath the bridge.

The Walkway Over the Hudson has a temporary electrical line running from the west abutment to Pier 2 to provide electricity for maintenance activities.

t. Railroads

The Poughkeepsie-Highland Railroad Bridge spans over two CSX owned lines. In the Town of Lloyd, the bridge spans over CSX's heavily used West Shore River Line, which accommodates 30-35 long freight trains each day. The line is used for freight trains only. In the City of Poughkeepsie, the bridge spans over Metro-North owned tracks just north of the Poughkeepsie RR Station. The line carries a handful of CSX freight trains and 26

³ DeLeuw, Cather & Company (1980). *Inspection and Rating of the Poughkeepsie Railroad Bridge Phase II Final Report, Volume 1*. Washington, DC: US Department of Transportation Federal Railroad Administration.



Amtrak trains each day. Equally busy, south of the train station, Metro North trains operate between Poughkeepsie and New York City. Many of those trains reconfigure under the Poughkeepsie- Highland Bridge. .

u. Visual Environment

The proposed Walkway Over the Hudson (Walkway) and associated project area lies within the Esopus/Lloyd Scenic Area of Statewide Significance (SASS) EL-5 Highland Bluffs Subunit. This subunit is generally located along the western shore of the Hudson River and extends to the eastern shore. The physical character of this scenic subunit consists of steep wooded bluffs that rise 150 feet above the Hudson River. Rock cliffs and rock cuts for the railroad tracks and the access road to the Mid-Hudson Bridge accentuate the steepness.

On the western side, the narrow shoreline of the Hudson River is accentuated by the strong linear form of the existing CSX railroad. Above the bluffs, where the bridge meets grade, is a small section of rolling upland. Vegetation on the western shore consists of dense woodland, occasionally disturbed by clearing for residential structures. This section of the river is straight north and south of the Walkway. The Walkway structure, once it reaches the western side of the river, disappears into the wooded steep slope and is not visible to the traveling public, except for nearby residents.

The eastern shore of the Hudson River slopes upward more gradually than the western side, and is developed within the City and Town of Poughkeepsie. The eastern end of the Walkway is elevated for a significant length throughout the City of Poughkeepsie until it finally touches grade at Washington Street. Although the bridge extends for quite a distance through the city, it is well screened by existing mature vegetation and built structures, and is only fully visible where it crosses roadways and at the eastern shoreline.

Full views of the Walkway Over the Hudson bridge are available from both shorelines of the river, from the Mid Hudson Bridge, and from limited areas on land at the higher elevations, in addition to from the river channel itself. The massive bridge structure of the Walkway, in conjunction with the Franklin D. Roosevelt Bridge, dominates the immediate landscape of the project area. Generally, due to the viewing distance, the bridge occupies the midground or background of views and detail is lost. The massive pier towers and the steel lattice work of the truss superstructure are the main visual elements of the bridge. The natural tones of the weathered (rusted) color of the bridge blend with and compliment the local rugged landscape.

From the bridge, there are spectacular unobstructed views of the Hudson River Valley to the north, panoramic views of the City and Town of Poughkeepsie to the east, the Mid Hudson Bridge and the river valley to the south, and the wooded Highland Bluffs to the west.

v. Provisions for Pedestrians and Bicyclists

The bridge was designed for train traffic, and is being proposed herein as a trail for pedestrians and bicyclists. Currently, there are no provisions for bicyclists on the bridge. There is however, restricted access for pedestrians – albeit not for general public use.



Current pedestrian access is limited to the west side and part of the main span via temporary, steel-grated walkway. There is no access to the east side due to the 1974 fire which prompted the removal of the bridge deck for safety reasons.

The existing railing system is in poor condition and does not meet current AASHTO or ADA design criteria. The wrought iron railing is corroded and cracked, with numerous posts and rails missing. The wood curbing to which the railing posts are mounted is also deteriorated and can not be relied upon to adequately support the posts.

The Walkway is not open to the general public, but limited tours are available by request to the Walkway Over the Hudson organization. A signed liability waiver is required. The bridge is protected by a locked gate and security system.

w. Planned Development for Area

The Poughkeepsie-Dutchess County Transportation Council (PDCTC) published their “*Major Projects Report - June 2006.*” This document was reviewed to identify other planned projects occurring within a one (1) mile radius of the subject project site. There are three projects in the City of Poughkeepsie currently in the planning stages:

- Shadows on the Hudson – this project includes the construction of a multi-use building with hotel and retail space to be constructed on Rinaldi Boulevard near Pine Street.
- Luckey Platt Redevelopment – this project involves the construction of a multi-use building with retail and apartment space to be constructed on Main Street near Academy Street.
- Adriance Memorial Library – this project involves the construction of a new building to serve as the Poughkeepsie Public Library to be constructed on Market Street near NYS Route 44/55.

The Dutchess County Rail-Trail will be located along the existing rail bed, stretching from East Fishkill to Morgan Lake, in the City of Poughkeepsie. This federally-funded project is scheduled to begin construction in the Fall of 2007, with the final phase of construction beginning in the Fall of 2008. The trail terminates in the City of Poughkeepsie at the Morgan Lake Park, near Creek Road. This project is located approximately 1.3 miles east of the eastern terminus of the Poughkeepsie-Highland Railroad Bridge, and is a key component in the regional pedestrian/bicycle network.

Dutchess County is in negotiations to purchase the 1.3 mile stretch of CSX owned rail bed between the Walkway Over the Hudson project and Morgan Lake. The County would use this rail bed to connect the Walkway and Ulster County Trails to the Dutchess County rail-trail network.

On the west side, the Ulster County Transportation Council (UCTC) Final FFY 2008-2012 Transportation Improvement Program cites the Hudson Valley Rail-Trail Project, the development of which extends from Haviland Road to Commercial Avenue. This rail-trail project is located adjacent to the west end of the Poughkeepsie-Highland Railroad Bridge. This \$730,000 project is scheduled to be completed in 2011, and is a key component in the regional pedestrian/bicycle network.



The NYS Office of Parks Recreation and Historic Preservation recently acquired ownership of the Scenic Hudson wooded hillside trail system (Franny Reese Preserve) on the west side of the bridge. Walkway Over the Hudson users will be able to access this wooded parkland using Haviland Road. Upon completion of the Hudson Valley Rail-Trail section between Haviland Road and Commercial Avenue (see above), trail users will have direct access between the Scenic Hudson trail system and the Walkway Over the Hudson bridge.

All of these area projects will serve as attractions to the area, and increase pedestrian activity. Furthermore, these projects will both benefit from, and serve, the interests of the subject project: the development of the Walkway Over the Hudson.

x. System Elements and Conditions

The proposed development of the Walkway Over the Hudson project accommodates pedestrians and bicyclists only. Therefore, its direct effect on traffic is limited to that of pedestrians and bicyclists. The Walkway Over the Hudson project would be a key component of the regional bicycle/pedestrian network, linking trail systems on the east and west sides of the Hudson River. This link would significantly enhance the mobility and experience of pedestrians and bicyclists. In order to establish this link, however, the Poughkeepsie-Highland Railroad Bridge must be restored to safely accommodate the traffic. It currently lacks the proper infrastructure to accommodate the intended traffic. However, the scope of this project includes improvements to the bridge structure and features to transform the bridge into a corridor for pedestrians and bicyclists.

The Hudson Valley Rail-Trail to the west of the Hudson River would make use of the railroad bed west of the Poughkeepsie-Highland Railroad Bridge, while the proposed Dutchess Rail-Trail would make use of the railroad bed east of the bridge. Development of the Walkway Over the Hudson project would be coordinated with the two trail systems to provide the seamless connection between the east and west sides of the river.

The bridge crosses over nine (9) roadways as it traverses from east to west, and the bridge geometry does not inhibit the flow of vehicular traffic below. Furthermore, the proposed project would retain its current configuration and thus not change vehicular traffic patterns. The only impact to vehicular traffic would be indirect, in that, the expected attraction to the bridge site may impact vehicular traffic on the local road network.

y. Environmental Integration

The proposed project will offer great environmental enhancement. It will allow for integration of the Ulster and Dutchess components of the Maybrook Corridor. It will augment existing State Park land, and help to enhance outdoor awareness and appreciation among residents and visitors for the Hudson River, and the Esopus/Lloyd Scenic Area of Statewide Significance (**Section II.C.u.**). It will also preserve a structure on the National Register of Historic Places and afford access to view this resource first hand.



2. Needs

a. Project Level Needs

Based on the aforementioned conditions, the following transportation needs have been identified within the project limits:

- (1) Surface Needs – A bridge deck able to accommodate pedestrian and bicycle traffic is needed.
- (2) Safety Needs – In order for the Walkway Over the Hudson Bridge to be opened for general public use, several safety needs will be addressed. These needs will be addressed as part of the purchase and/or construction contracts being developed for this project.
 - Site access – secure and handicap accessible access from parking areas; the same is needed for egress situations.
 - Walking surface – decking with high friction surface is needed
 - Railing – solid railing installed to proper geometrics and anticipated loads.
 - Lighting – wherever nighttime presence is allowed, proper pedestrian lighting is needed to illuminate the path
 - Security – gates are needed to prevent unwarranted access to the bridge; vandal fencing is needed where the Walkway passes over roadways and railroads
 - Emergency Services – facilitation of emergency services is needed for a variety of scenarios, including: rescue operations; medical emergencies; enforcement conditions. In addition, suicide prevention measures need to be implemented on site
- (3) Bridge Structural Needs – This project has performed a complete inspection and load rating to ensure the structure is safe for its current and intended use and does not pose a hazard to persons or facilities on, adjacent, or beneath the structure. Specific structural needs are described in **Section II.C.o.(3).ii**. These needs will be addressed as part of the Final Design efforts, and subsequent material purchasing and construction contract(s) that will be developed for this project.
- (4) Drainage Needs – Given the proposed use of a solid surface for pedestrian travel, there is a need to convey and discharge runoff from the bridge surface to the ground surface below. The drainage design must address erosion and ensure protection of the bridge structure.
- (5) Environmental Needs – Progression of this project needs to address the following environmental factors: a) preserve a bridge on the National Historic Register spanning an American Heritage River; b) provide an essential link in a 30 plus mile Mid-Hudson Valley trail network; c) provide for environmental education opportunities; d) provide for railroad and engineering education opportunities; e) preserve and enhance scenic vistas in a SASS; f) provide residents and visitors with a unique recreation opportunity; g) not impair the Poughkeepsie Deepwater Habitat or impact threatened and endangered species; and h) protect the public from hazardous waste or contaminated materials.



b. Corridor and Area Level Needs

- (1) Capacity Needs – The project is necessary to provide a key multi-modal link between adjacent non-vehicular (pedestrian and bicycle) trails being developed in Dutchess and Ulster counties to accommodate the increasing bicycle and pedestrian demands from county residents, and visitors arriving via car and train via the Poughkeepsie RR Station within a short walk of the Poughkeepsie-Highland RR Bridge.
- (2) Modal Interrelationship – The project is necessary to provide an essential link in the regional non-vehicular transportation network, and provide local residents, particularly those of the City of Poughkeepsie and the several colleges with a very unique, dedicated and safe facility to enjoy the Hudson River and the State parkland on the west shore. The unique opportunities provided by an historic bridge with spectacular views will encourage multi-modal transportation in the Mid-Hudson Valley.
- (3) System Needs – The proposed project is necessary to provide the key link in the multi-modal 23-mile Maybrook Corridor. The project provides convenient access across the Hudson River, and links the existing and proposed trail networks on both sides of the river in the mid Hudson Valley. The project provides 1.25 miles of shared use trail as recommended in the Maybrook Multi-Modal Corridor Study (PIN#8805.89.101). The west end of the bridge will connect to the Hudson Valley Rail Trail network in the Town of Lloyd, and the east end of the bridge will connect with the CSX right-of-ways (currently being acquired by Dutchess County), the Dutchess Rail-Trail, and the local Poughkeepsie street network.
- (4) Mobility Needs – The proposed project is necessary to provide a key link in the growing Mid-Hudson Valley multi-modal trail network, and associated increasing demand for such facilities. Due to its close proximity to the Poughkeepsie Railroad Station, visitors from NYC to Albany will be able to go from trains to the trail network and other recreational destinations without the need for a motor vehicle.
- (5) Social Demands and Economic Development – The proposed project is necessary to provide a safe, convenient, and unique open space link between Dutchess and Ulster counties which will stimulate social interaction and economic development. Situated in the center of the City of Poughkeepsie, within walking or short bicycle ride for residents of all backgrounds, including students in nearby colleges, the uniqueness of the Walkway will encourage residents to increase their daily physical activity, and will provide a unique gathering place for all residents, enhancing community cohesion. The bridge will encourage regular exercise, which will improve the overall health of local residents. These same benefits will exist for residents in the less densely populated Town of Lloyd. With the dedicated pedestrian and bike link between the separate trail networks on both sides of the river, users on one side will be able to take advantage of services on the other, providing a sense of unity and cohesion.

Conversion of the historic bridge to a public park and regional trail link will enhance the regional economy. The uniqueness of the project (vistas, world's longest pedestrian bridge, etc), coupled with existing regional attractions such as the Home of Franklin Delano Roosevelt national historic site, will result in an increase in visitors to the region. The project's inherent recreational and tourism merits will draw additional



people to existing establishments, and stimulate new businesses and economic activity. The close proximity of the Metro North station to the bridge will encourage visitors by train to visit local establishments by foot or bicycle, making downtown Poughkeepsie more dynamic.

c. Transportation Plans

This project is included on the New York State Transportation Improvement Program as PIN 8759.97 (HPP 2717): “Poughkeepsie-Highland Railroad Bridge – Walkway Over The Hudson.”

D. OBJECTIVES

The following objectives have been identified for this project:

1. Save and restore a bridge on the National Historic Register. The Poughkeepsie-Highland Railroad Bridge, opened in 1888, holds tremendous historic significance. As the first bridge constructed across the Hudson River between New York City and Albany, it had enormous impact on transportation throughout the Northeast United States.
2. Enhance the Regional Economy. The completed project will be an attraction for tourists, and tying the trail networks on both sides of the river will stimulate pedestrian and bicycle activity, benefiting local businesses and increasing property values.
3. Be a centerpiece for the State of New York’s 2009 Henry Hudson Quadricentennial Celebration.
4. Expand State Park Land. The New York State Office of Parks, Recreation and Historic Preservation has interest in operating the completed bridge walkway as a State Park, connecting it with State Parkland recently acquired from Scenic Hudson property on the west shore of the river.*
5. Provide a connector, dedicated solely for pedestrians and bicyclists, to link the greater regional trail networks that exist on both sides of the Hudson River. Having a dedicated trail link encourages greater usage by improving safety, providing scenic opportunities, and enhancing the availability of the extended trail system to more users.
6. Stimulate the Quality of Life for Hudson Valley residents. Provide a unique and convenient opportunity to recreate, relax and enjoy the Hudson Valley vista, and provide a gathering place to meet and socialize with others.
7. Increase local and regional recreational system by providing a unique elevated linear park and contiguous regional trail system.
8. Provide an Educational Resource. The completed project provides a unique opportunity to educate the public on: Hudson River ecosystems, bridge engineering and railroad history.
9. Create the world’s longest pedestrian/bicycle bridge.

* Text revised December 4, 2007.



III. ALTERNATIVES CONSIDERED AND EVALUATIONS

A. DESIGN CRITERIA

1. Standards

The following publications set forth the design criteria for the conversion of the Poughkeepsie Highland Railroad Bridge into a multi-use trail and public park.

- A Policy on Geometric Design of Highways and Streets 2004, American Association of State Highway and Transportation Officials (AASHTO), (Green Book))
- Guide for the Development of Bicycle Facilities (AASHTO), 1999
- Designing Sidewalks and Trails for Access, Best Practices Design Guide (United States Department of Transportation Federal Highway Administration (FHWA)), 2001
- Pedestrian Facilities Users Guide – Providing Safety and Mobility (FHWA), 2002
- NYSDOT Highway Design Manual (HDM)
- National Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) and the New York State Supplement.
- Standard Specifications for Highway Bridges, American Association of State Highway and Transportation Officials (AASHTO)
- NYSDOT Bridge Manual (BM)
- ADA Accessibility Guidelines for Buildings and Facilities
- AASHTO Guide Specification for Design of Pedestrian Bridges, American Association of State Highway and Transportation Officials (AASHTO)
- USDOT Designing Sidewalks and Trails for Access, Part I of II, July 1999
- USDOT Designing Sidewalks and Trails for Access, Part II of II, Sept. 2001

2. Critical Design Elements

Refer to the Table III-1.



Table III-1: Design Criteria

Component:	Off-Road Multi Use Path Alignment		
PIN:	8759.97	NHS (Y/N):	No
Route No. & Name:	Walkway over the Hudson	Functional Class:	Multi Use Path
Project Type:	Miscellaneous/Special Work	Design Class:	Multi Use Path
% Trucks:	Not Applicable	Terrain:	Rolling
ADT:	Not Applicable	Truck Access Rte.:	Not Applicable

DESIGN ELEMENT	CRITERIA	EXISTING	PROPOSED	SOURCE
Design Speed (Bicycles)	20 mph	N/A	20 mph	AASHTO Design of Bicycle Facilities
Trail Clear Width				
Approaches on Grade	12 ft Min	N/A	12 ft Min	HDM 18.8
Bridge	8 ft Min 12 ft Min Preferred	N/A	12 ft Min 32 ft Max	BM Table 2-1
Bike Lane	5 ft Min (one-way)	N/A	5 ft Min (one-way)	HDM 18.7
Sidewalks	5 ft Min 6 ft 6 in adjacent to Parking	N/A	5 ft Min 6 ft 6 in adjacent to Parking	HDM 18.6.6.1
Cross Slope				
Normal Crown	2.0% Max	0	2.0%	HDM 18.6.6.1
Superelevation Rate	2% Max	0	0.0%	HDM 18.6.2
Shoulders				
Graded Shoulder	2 ft	0	2 ft	HDM 18.6.2
Slope of Graded Area	1:6 (minimum)	0	1:6	HDM 18.6.2
Alignment & Profile				
Maximum Grade	5% (over 800 ft)	1.25%	5% (over xxx ft)	HDM 18.6.6.4
Minimum Horizontal Curvature	100 ft	2200 ft	2200 ft	
Stopping Sight Distance	210 ft min (ascending) 260 ft min (descending)	>1000 ft	210 ft (ascending) 260 ft (descending)	AASHTO Design of Bicycle Facilities???
Horizontal Clearance				
From edge of path	3 ft (minimum)	N/A	4 ft (minimum)	HDM 18.6.6
From edge of path to top of slope	5 ft (minimum without barrier)	N/A	> 5 ft	
From centerline of railroad to bridge substructures	33 ft	N/A	Match Existing	BM 2.5.3, Table 2-2
Navigational clearance between bridge piers	500 ft	N/A	Match Existing	USCG: 33 CFR Chapter 1, Subchapter J – Bridges
Vertical Clearance:				
Above Trail	8 ft (minimum) 10 ft (desirable)	No obstruction	No Obstructions	HDM 18.6.7



DESIGN ELEMENT	CRITERIA	EXISTING	PROPOSED	SOURCE
Over Roadway	14 ft Min 14 ft 6 in Preferred	> 14 ft 6 in	Match Existing	BM 2.4.1 Table 2-2
Over Railroad	22 ft	> 22 ft	Match Existing, >22 ft	BM 2.4.2
Freeboard	2 ft	> 2 ft	> 2 ft	BM 2.4.3
Over Navigable Waterway	135 ft from MHW	> 135 ft from MHW	Match Existing	USCG: 33 CFR Chapter 1, Subchapter J – Bridges
Railing Height:				
On Bridge	4 ft 6 in	3 ft 11 in	4 ft 6 inches	HDM 18.7.9.6
Off Bridge	3 ft (grade separation of 18" to 48") 3 ft 6 in (grade separation > 48")	N/A	4 ft 6 inches	HDM 18.6.6.8
Off Bridge (bicycle)	4 ft 6 in	N/A	4 ft 6 inches	HDM 18.7.9.6
Railing Openings:				
Up to 27" above grade	4 in Max	N/A	4 inches	HDM 18.6.6.8
> 27" above grade	6 in Max	N/A	4 inches	HDM 18.6.6.8
Railing Capacity	Rails: 50 plf horizontal and vertical Posts: 50 plf horizontal at 54 inches	N/A	Rails: 50 plf horizontal and vertical Posts: 50 plf horizontal at 54 in	AASHTO 2.7.2.2
Structural Capacity:				
Pedestrian	85 psf	Unknown	85 psf	BM
Emergency Vehicle	Single H-10	Unknown	Single HS-20 Desirable	BM
Inspection Vehicle	UB-75	Unknown	UB-75	
Pedestrian Accommodations	ADA	Limited	Meet all	HDM Chapter 18
Level of Service	A	N/A	A	HDM 18.6.5.2

3. Other Controlling Parameters

The Following Design Storm recurrence intervals will be used:

- (1) Storm Drainage Systems: 10-year storm recurrence interval
- (2) Ditches: 10-year storm recurrence interval



B. ALTERNATIVES CONSIDERED

Three alternatives were considered as a solution to the identified problems. They are: 1) Null Alternative; 2) Removal Alternative; 3) Rehabilitation Alternative.

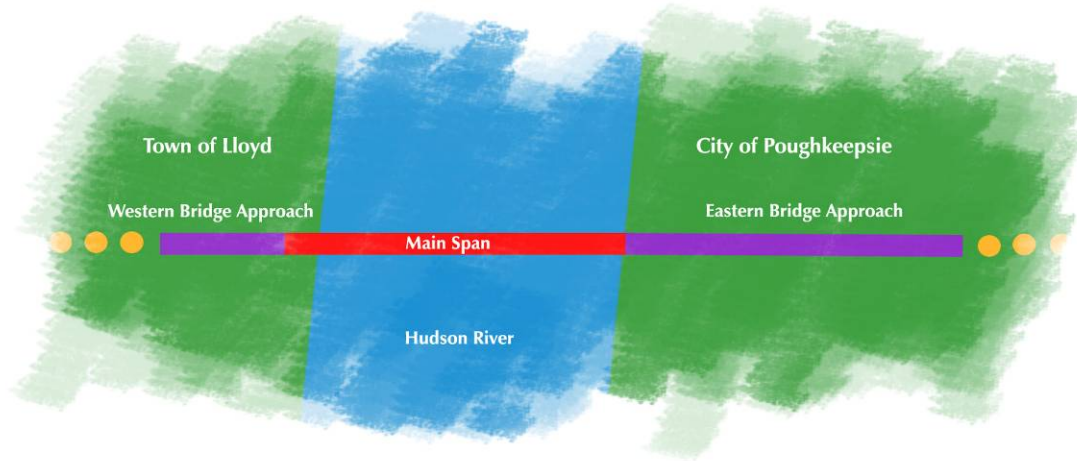
- a. The **Null Alternative** would provide for continuing the current program of minimal maintenance: preserving the integrity of existing constraints that limit public access to the bridge and adjacent Walkway Over the Hudson property; continuing efforts to meet the requirements of USCG for navigation lighting; and protecting the public from potential hazards from the antiquated structure. This alternative would allow for continued deterioration of the structure, resulting in increased maintenance demands with the eventuality of a much costlier project in the future – whether demolition or rehabilitation. The Null Alternative does not address the project needs or meet its objectives, and is thus dismissed from further consideration.
- b. The **Removal Alternative** provides for removing the existing structure in its entirety as a means to permanently eliminate any hazard the bridge may pose to the public now or in the future. However, removing the existing structure would cause significant impacts to environmental resources, including :
 - The Poughkeepsie-Highland Railroad Bridge is listed in the National Register of Historic Places and is a significant icon in the history and development that occurred in the Hudson Valley Region.
 - Removing the structure would remove an element of the Esopus/Lloyd Scenic Area of Statewide Significance.
 - Removing the structure would cause damage to the Poughkeepsie Deepwater Habitat, a Significant Coastal Fish and Wildlife habitat under New York State's Coastal Management Program.
 - Removing the structure would disturb sediments in the river known to contain Polychlorinated biphenyls (PCB's).

Finally, the Removal Alternative is estimated to cost over \$54 million, more than twice the cost of the Functional Option of the Rehabilitation Alternative. Because of the excessive cost, the potential for significant environmental impact, and because the Removal Alternative does not address the project needs or meet its objectives, it is dismissed from further consideration.

- c. The **Rehabilitation Alternative** would create a multi-use trail over the Hudson River as well as a public park and recreational destination. In addition, it would connect the existing and proposed trail networks on either side of the Hudson River. The rehabilitation alternative includes: removing the remaining ties and rails, railings, and abandoned utilities from the structure, performing necessary structural repairs, and installing a new deck system with railing, fencing, and lighting. Three design options are considered, each providing incrementally greater levels of trail width, access options, and trail amenities, as described below. Refer to Figure III-1 which identifies the various segments of the bridge as referenced in the following discussions.



Figure III-1: Bridge Layout Nomenclature



- (1) Design Option 1: Minimal Construction to Provide Trail – This alternative provides for a nominal width trail surface (approximately 15 ft out-to-out with a 12 ft clear trail width) that extends the full length of the bridge with a few wider sections on the main span to create a resting/gathering point for visitors. Provisions to widen the walkway in the future could be integrated into the design. There would be no lighting provided under this alternative, thereby limiting the functional operation of the facilities to a period from dawn to dusk. Minimal ADA-compliant access to the trail, consisting of ramps on grade or on structure, would be provided at both ends of the bridge. Limited amenities would be provided. The aesthetic quality of the various features would be also be limited to basic, standard stock items having little to no connection to the early industrial character that this bridge retains. The improvements included in this design option are estimated to cost approximately \$18 million.
- (2) Design Option 2: Functional Long Term Trail – This alternative provides for a nominal width (approximately 15 ft out-to-out with a 12 ft clear trail width) trail surface on the approach spans and a wider (approximately 35 ft out-to-out with a 32 ft clear trail width) trail surface on the main span where users will tend to congregate. Pedestrian railing would be installed for safety concerns. Park benches and other accessories are included in this design option to enhance the comfort and experience of the walkway, and minimal illumination of the walkway would be provided with simple poles and fixtures. The lighting and railing would retain some connection to an early industrial character without exactly replicating the features of the Poughkeepsie-Highland Railroad Bridge. ADA-compliant access to the trail would be provided at both ends of the bridge via ramps on grade at the east and west ends of the bridge. In addition, an elevator/stair tower at Washington Street would be provided, and potentially another elevator/stair tower at North Water Street, should funds allow. The improvements included in this design option are estimated to cost approximately \$25 million.
- (3) Design Option 3: Icon Trail – This alternative provides for a trail surface the full width (24 ft out-to-out, 21 ft clear on the approach spans; 35 ft out-to-out, 32 ft clear on the



main span) of the bridge. Upgrades from the previous, simpler design options would include custom pedestrian railings that mimic the industrial character of the original railing, pedestrian lighting of a more historic character, and additional trail amenities. The precast concrete panels that make up the walkway surface would be cast with colored and textured surface treatment for aesthetic appeal. There would be more walkway lighting than that proposed by the Functional Long Term Trail alternative, improving illumination of the walkway surface. In addition to the access provided by the Functional Design Option, two more elevator/tower access points would be provided, for a total of four: Washington Street, Delafield Street, North Water Street, and Pier #6 on the east shore of the Hudson River. The improvements included in this design option are estimated to cost approximately \$35 million.

Design Option 2 of the Rehabilitation Alternative - Functional Long Term Trail is the Preferred Alternative for the following reasons:

- it satisfies more of the project objectives, and addresses all project needs to a greater extent than Design Option 1 – Minimum Construction to Provide Trail
- like Design Option 3 – Icon Trail, the Functional Long Term Trail design option satisfies the project needs and objectives. However the Functional Long Term Trail design option minimizes costs

Although Design Option 3 - Icon Trail provides greater amenities, those amenities come at a significantly greater cost. The Functional Long Term Trail design option strikes a balance of meeting the essential needs and minimum design criteria, creating an attractive and inviting destination, and responsible financial accountability. Therefore, the Functional Long Term Trail is progressed as the Feasible Alternative, being detailed further in this report beginning in **Section III.C**, below.

C. FEASIBLE ALTERNATIVE

1. Description of Feasible Alternative

The Rehabilitation Alternative best meets the objectives of this project, and is the only feasible alternative. While the Rehabilitation Alternative is identified as the feasible alternative, the final selection of the preferred alternative will not be made until the impacts of all other alternatives, comments on the draft design approval document, and comments from the public hearing, have been fully evaluated.

See Appendix E for proposed plan, profile and section.

2. Engineering Considerations of Feasible Alternative

a. Special Geometric Features

The feasible alternative complies with the geometric features and cross section elements in the Design Criteria Table III-1 with the exception of the following:



(1) Non-Standard Features – none.

(2) Non-Conforming Features – none.

b. Safety Considerations

Having been originally constructed for rail traffic, several features would need to be addressed in order to transform the bridge into a safe travel facility for pedestrians and bicyclists. Structural repairs would be made in order for the bridge to handle the new design loads. The existing train rail surface would be removed and a solid surface provided to safely support people on the bridge. The antiquated hand railing would be replaced with a structurally sound rail system, designed to current standards, and pedestrian lighting supplied for nighttime use. Access onto and over the bridge would be provided for emergency vehicles to tend to various emergency situations that may arise. Also, rigid, unobstructed paths would be provided from the parking areas onto the bridge, and provisions for handicapped accessibility would be made.

c. Trail Surface Treatment

The trail within the project limits will include a variety of walking surface types. Prefabricated, reinforced concrete deck panels will be installed on the bridge. The portions of the trail connecting the bridge to key access points, parking, and adjacent trails will consist of a combination of asphalt pavement, block pavers, concrete sidewalks, and natural surfaces such as gravel, and/or stone dust. The bridge and all access points from accessible parking areas will be fully ADA compliant.

d. Structures

The existing Poughkeepsie-Highland Railroad Bridge will be retained, rehabilitated, and converted to a pedestrian and bicycle facility that will serve as a destination point as well as a link between extensive regional trail networks on either side of the Hudson River. Constructed in 1888, the 6,767-foot long bridge carried rail traffic until being damaged by fire in 1974, at which time it was taken out of service. The fire incident in conjunction with the declining demand for its use prompted termination of service on the bridge. The bridge, which is listed on the National Historic Register, has been dormant since.

The bridge spans several local roads, a state highway, two active railroads, and the Hudson River. Minimum vertical and horizontal clearances are met by the current configuration, and the proposed rehabilitation and conversion will not reduce any existing clearances.

Having been essentially unattended for over 30 years, the structure is undergoing a full inspection to determine its condition. A diving inspection of the main span piers in the Hudson River was conducted in November, 2006. A detailed inspection of the superstructure was initiated in September 2007 and is on-going. Completion of the inspection is expected in November 2007, and a report on the findings will follow shortly thereafter.

The diving inspection identified that the stone masonry portion of the piers is generally in fair condition with intermittent areas of missing mortar from between the joints and



occasional instances of moderately spalled and loose coping stones. Below water, significant horizontal voids were observed at Piers 2 and 3. Repair of these conditions would entail repointing the stone masonry and grouting the voids. These repairs are not considered critical and may be postponed to a future project. However, interim inspections of the substructures should be conducted annually to monitor the progression of these voids and assess the timing for needed repairs.

Based on the results of the detailed superstructure inspection, an analysis and load rating of the structure will be conducted to assess the capability of the structure to support the proposed loads. Although structural inspections and the load rating analysis were not complete at the time of this Draft Design Report, enough data was gathered to enable a conservative estimation of a construction cost estimate. Upon completion of the structural inspection and subsequent report, the load rating analysis will be completed along with recommendations for needed repairs.

The proposed pedestrian walkway and repairs to the structure will be designed to accommodate pedestrian live load of 85 psf, a vehicular live load of HS-20, and an under-bridge inspection vehicle.

The structural rehabilitation and conversion to pedestrian use will address all repairs to the existing structure that are necessary to safely carry the proposed loads and which were identified by the inspection, analysis, and load rating. Localized cleaning and painting will be performed at those locations that will become inaccessible after installation of the new deck system. However, cleaning the entire structure and applying a new protective coating system is not required at this time. A cost for cleaning and painting is estimated for planning purposes should this work be considered in the future. The existing deck, consisting of timber ties and steel rails, the existing wrought iron railing, and all abandoned utilities will be removed from the structure. A new deck system, consisting of precast, reinforced concrete panels supported on elements of the existing steel deck framing system, will be installed. Pedestrian railing, meeting the minimum height requirements for pedestrian and bicycle safety, will be installed along the entire length of the bridge, and projectile barrier fence will be installed over all roadways and railroads. Figures III-2 and III-3 illustrate the conceptual deck, railing, and lighting system proposed for the approach spans and the main span, respectively.

In addition to the bridge, other structures that are being considered include new stair and elevator towers at one or more of the locations described below. A rendering of an elevator concept being considered is shown in Figure III-4. The elevator locations described below have been previously illustrated in Figure II-1 and Appendix A.

- Washington Street – an elevator and staircase at this location would provide ADA-compliant access near the eastern terminus of the project. (Elevator Location 4)
- Delafield Street – an existing City of Poughkeepsie public parking lot at this location could provide an access point to the bridge. (Elevator Location 3)
- North Water Street – this location would provide convenient access to the Poughkeepsie Rail Station. (Elevator Location 2)
- Pier 6 at the Eastern Shore of the Hudson River – this location would take advantage of existing and planned parks and public spaces along the shore of the Hudson River, and



would offer a dramatic view as passengers ascended approximately 200 ft to reach the trail. (Elevator Location 1)

The Feasible Alternative allows for a maximum of two elevator towers, with the Washington Street location considered a first priority. If sufficient funds are available, the North Water Street location is a second priority.



Figure III-2: Typical Bridge Section at Approach Spans

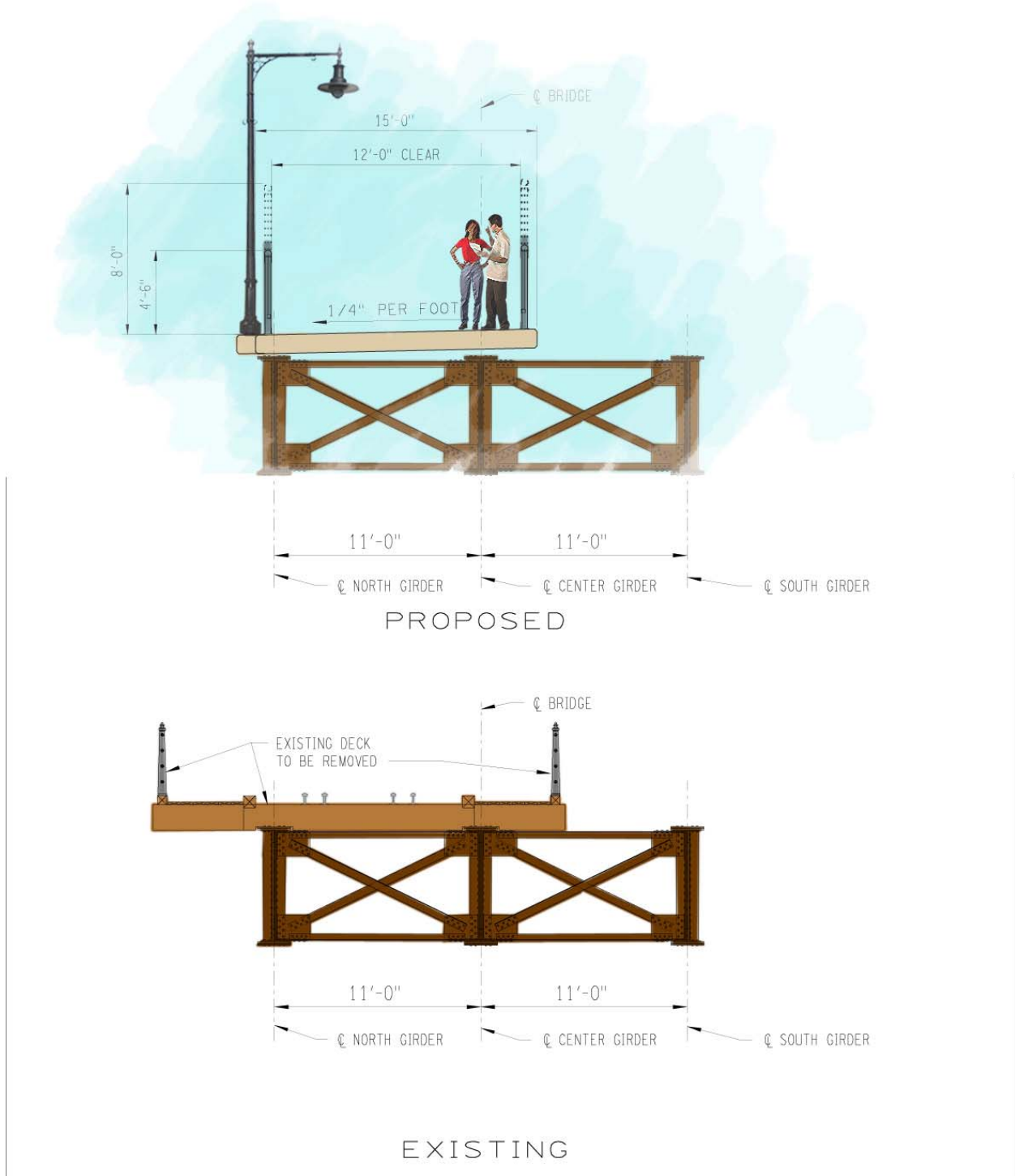




Figure III-3: Typical Bridge Section at Main Span

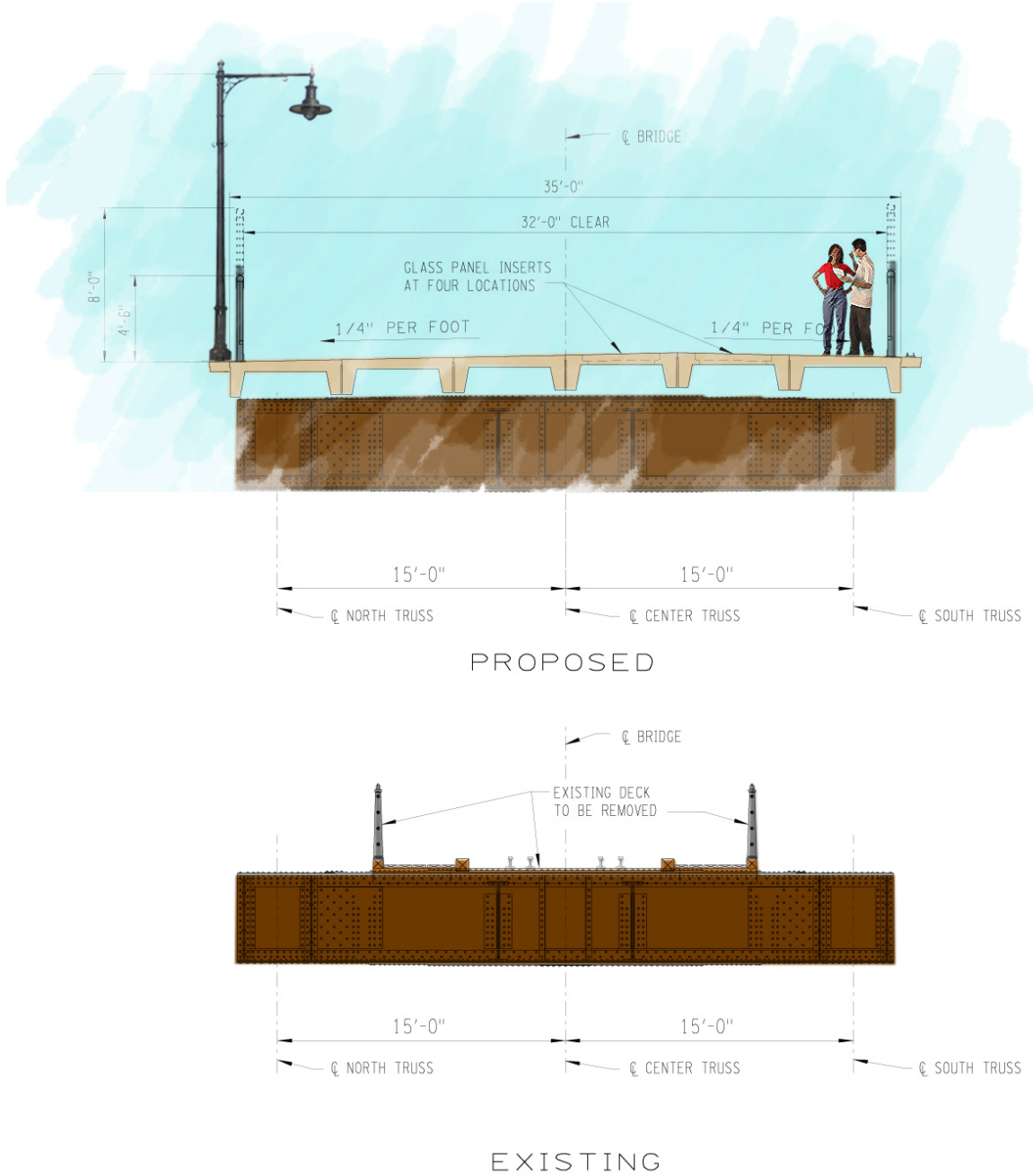




Figure III-4: Conceptual Elevator & Stair Tower (Delafield Street Shown)



e. Hydraulics

The need for a detailed hydraulic evaluation is dependent on the hydraulic information from peak discharge conditions in the river at the bridge site – information which was still being gathered at the time of submission of this Draft Design Report. The Final Design Report will report on the findings and contain a detailed hydraulic evaluation, if one becomes necessary. Because the proposed underwater repairs to the river piers will not change the hydraulic opening between piers, scour assessment of the proposed conditions would match that of the existing conditions. In other words, proposed modifications to the bridge will not change the hydraulic effects at the bridge.

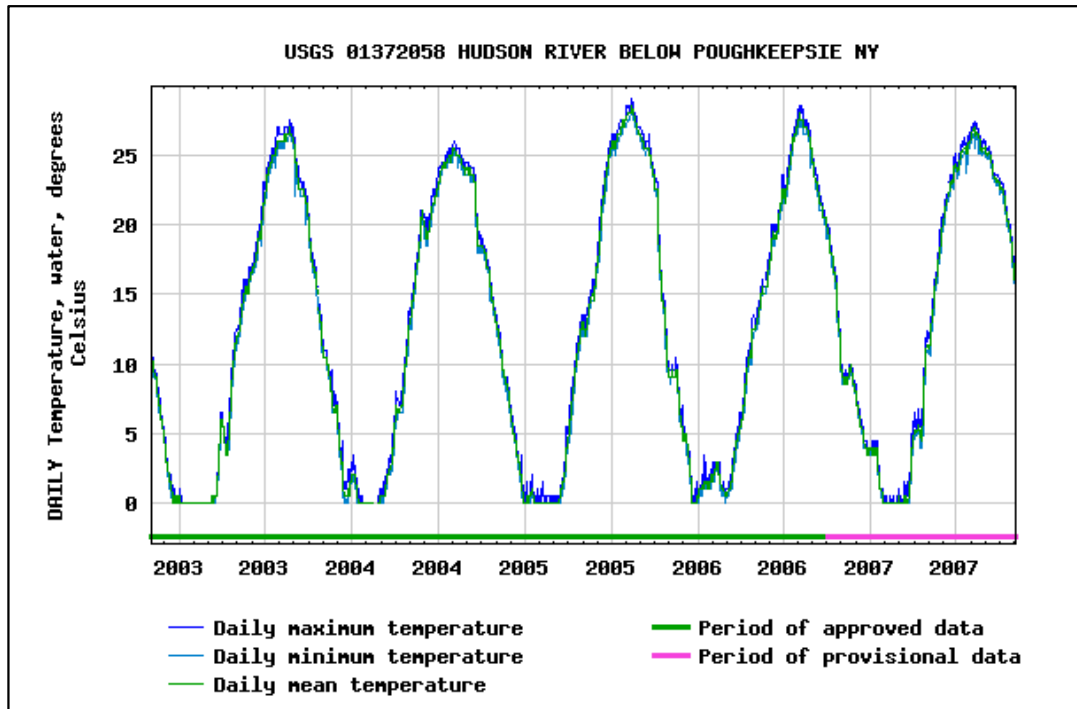
f. Ice Conditions

The river generally freezes in this area with water temperatures below freezing for approximately three months of each year typically. Figure III-5 below indicates average temperature for the past five years. The ice and the subsequent breakup each spring creates a particularly harsh condition for abrasion of the pier foundations at the water line. This is



exacerbated by the vertical rise and fall of the ice created by the diurnal tides. However, the granite walls that were provided in the original 1880's construction have proven to be appropriate for this condition.

Figure III-5: Average Temperature of Hudson River



g. Drainage

An open drainage system in the form of sheet flow would be maintained over most of the structure. Where the bridge is over roadways, a closed drainage system will be implemented.

h. Maintenance Responsibility

Table III-2: Maintenance Responsibility

Feature	Maintenance Responsibility
Approach Trail and Facilities	West – Town of Lloyd/Hudson Valley Rail Trail East – Dutchess County
Trail Features on Bridge	NYS Parks/ Walkway Over the Hudson
Bridge Structure, including deck, superstructure, substructures	A New York State entity (not yet determined)
Lighting & utilities	NYS Parks
Trailheads and parking	NYS Parks
Adjacent trail systems (indicate limits)	West – Town of Lloyd/ Hudson Valley Rail Trail East – Dutchess County



i. Maintenance and Protection of Traffic

The majority of construction will take place in areas outside existing roadways. It is anticipated that two-way traffic would be maintained on Ransom Road, Oakes Road, North Water Street, Route 9, Albany Street, Dutchess Avenue, Delafield Street, Talmadge Street, and Washington Street during most of the construction phase. These roadways will be closed for very short durations while panels are being placed. A minimum of one-way alternating traffic would be maintained on Haviland Road and Washington Street while access points to bridge are being constructed and panels and work equipment are being delivered. All work zone traffic control would comply with current NYSDOT specifications, the MUTCD, and New York State Supplement.

Any work performed over the right-of-way of CSX or Metro North will, at a minimum, require a permit from the involved railroad, and could possibly also require railroad flag persons on site during periods of active construction.

j. Geotechnical

No bridge foundation work is anticipated that will disturb existing soils.

Upon final selection of elevator/stair tower locations, soil borings will be extracted for the purpose of designing the foundations.

Over one (1) acre of soil may be disturbed for creation of parking and maintenance areas.

k. Utilities

The abandoned Central Hudson lines that are currently attached to the bridge will be removed during construction. The abandoned water line on the bridge will also be removed during construction. The Contractor would be required to call for stake-out of all existing utilities within the project limits prior to beginning any work. Protection of the existing utilities beneath the bridge will be required of the Contractor.

l. Railroads

The Poughkeepsie-Highland Railroad Bridge spans over two CSX owned lines. In the Town of Lloyd, the bridge spans over CSX's heavily used West Shore River Line, which accommodates 30-35 long freight trains each day. The line is used for freight trains only. In the City of Poughkeepsie, the bridge spans over CSX owned Hudson Line tracks just north of the Poughkeepsie RR Station. The line carries a handful of freight trains, as well as 26 Amtrak trains each day. South of the train station, Metro North owns the tracks. Any work performed over the right-of-way of CSX or Metro North will, at a minimum, require a permit from the involved railroad, and could possibly also require railroad flag persons on site during periods of active construction.



m. Right-of-Way (ROW)

Limited right-of-way easements are anticipated. Approximately 1.2 acres of right-of-way will be acquired via an easement between Central Hudson and the Town of Lloyd on the west side of the bridge for parking and maintenance purposes. If access is to be provided on the east shore, at Pier 7, easements will be needed from Central Hudson and the City of Poughkeepsie for a trail leading north from the Junior Museum. At this time, no right-of-way acquisition is expected

n. Landscape Development

All disturbed areas will be re-established with vegetation to permanently stabilize the soil. Any trees and vegetation in conflict with the construction will be removed.

o. Provisions for Pedestrians, including Persons with Disabilities

The proposed Walkway Over the Hudson would create a system of facilities, separate from vehicular streets, for pedestrians to cross the Hudson River. Grades and cross-slopes would be consistent with the guidelines of the Americans with Disability Act (ADA). Curb ramps and detectable warning surfaces would be installed at all needed locations. Benches would be installed at periodic locations. The path would be of sufficient width for shared use by bicyclists and pedestrians. The Walkway will serve as a link between the trails established on both the east and west ends of the bridge. Pedestrians can benefit from the Poughkeepsie Bridge in their ability to enjoy the beautiful vistas offered by the Hudson River through convenient and direct access.

p. Provisions for Bicycling

The proposed Walkway Over the Hudson would create a new facility, separate from vehicular streets, for bicyclists across the Hudson River. The path would be of sufficient width for shared use by bicyclists and pedestrians. The alternative connection between the trails on the east and west ends of the bridge requires bicyclists to make a significant detour to the Franklin Delano Roosevelt Bridge (Mid-Hudson Bridge). Bicyclists are required to walk their bikes across the bridge. Travel across this busy vehicular bridge can be daunting for an inexperienced bicyclist and a clear link between the existing railroad trail and the bridge is non-existent. The Walkway would provide a safe and obvious connection, encouraging use of trails on both east and west sides.

q. Usage & Access

- (1) Trail Usage - The *Maybrook Multi-Modal Corridor Study*, *Mohawk Hudson Bike Hike Trail Analysis of Trail Use Regional Benefits and Economic Impact Report*, and the *Dutchess County Rail Trail Report* were reviewed to estimate future use of the Walkway.

The Maybrook Multi-Use Corridor Study identified a usage ratio, visitors to population, of .5 to 1.5. The study used the lower spectrum, .5 to .85 for its estimation of the trail use; however, due to the expected increased influence area and attraction of the bridge, a usage ratio of 1.5 was used to estimate the number of annual visitors



expected. The municipalities immediately surrounding the bridge, the Town of Lloyd, the Town of Poughkeepsie, and the City of Poughkeepsie, is estimated to be 85,500 people. Assuming the visitor to population ratio of 1.5, approximately 130,000 visitors per year would be expected.

Based on field counts, the Mohawk Hudson Bike Hike Trail Analysis of Trail Use Regional Benefits and Economic Impact Report estimated that peak hour trail usage is .12% of the annual usage. Using this estimate and an annual visitor total of 130,000 people, it is conjectured that the Walkway can expect 150 visitors during a typical weekend peak hour during the summer season.

- (2) **Parking** - Parking lots will be available on both the east and west approaches. A trailhead parking area will be provided for the east approach on the west side of Washington Street underneath the bridge with a drive aisle located just south of the bridge running east-west. This parking area will accommodate 10 vehicles, including 3 handicap parking spaces. Additional parking can be found on surrounding city streets as needed. An additional parking area will be provided at the west approach, southwest of the abutment on Haviland Road. This parking area will be located on the north side of Haviland Road and will accommodate a minimum of 30 vehicles. Additional parking areas can be accommodated on the corner of Washington Street and Parker Avenue, southeast of the east bridge abutment, and south of Haviland Road, southwest of the west bridge abutment.
- (3) **Access** - Access on the west approach will be provided at the west abutment. Visitors can access the west side from Haviland Road. An elevator is proposed to be located at bent 45, just west of Washington Street on the east approach. The enclosed elevator will be ADA accessible. An access ramp may also be provided at the east abutment. An elevator located at Pier 7 can be provided in the future for convenient access from the Metro North/Amtrak train station. A north-south trail leading to and from the junior museum will allow visitors to access the elevator. An access ramp may also be provided at the east abutment.

r. Lighting

Lighting is proposed for the Walkway over the Hudson. Industrial style light poles and fixtures will be provided along the length of the bridge. The light fixtures will be design with cutoffs to minimize light spill.

s. Project Enhancements

Enhancements for the Walkway over the Hudson will include trail lighting on the bridge, as well as low-level architectural lighting of the bridge trusses and pier towers. On the bridge deck, portals will be provided at specific intervals to afford views of the bridge truss substructure as well as down to the river. In addition, seating will be provided at strategic locations along the length of the Walkway for pause, rest and sightseeing opportunities. Periodic overlooks will be provided for significant views and vistas. Interpretive signage will be provided along with way finding signage and kiosks identifying trail routes, trailheads, parking locations, and other significant regional points of interest.



D. PROJECT COST AND SCHEDULE

1. Estimate of Probable Costs

Table III-3: Estimate of Probable Costs

Alternative		Rehab: Icon	Rehab: Functional	Rehab: Minimal	Removal	Null
Demolition		\$ 750,000	\$ 750,000	\$ 750,000	\$ 35,500,000	\$ 250,000
Structural Repairs		\$ 3,150,000	\$ 3,150,000	\$ 3,150,000	\$	\$
Substructure Repair (Land Piers)		\$ 65,000	\$	\$	\$	\$
Deck		\$ 13,856,294	\$ 9,629,645	\$ 5,997,267	\$	\$
Railing		\$ 2,037,158	\$ 2,037,158	\$ 1,563,450	\$	\$
Lighting		\$ 633,866	\$ 536,869	\$	\$	\$
Elevator		\$ 2,540,000	\$ 560,000	\$ 560,000	\$	\$
Approaches		\$ 253,000	\$ 115,000	\$ 115,000	\$	\$
Trail Features		\$ 285,639	\$ 285,639	\$ 190,754	\$	\$
Subtotal		\$ 23,570,956	\$ 17,064,311	\$ 12,326,471	\$ 35,500,000	\$ 250,000
MPoT	1%	\$ 235,710	\$ 170,643	\$ 123,265	\$ 2,130,000	\$
RR Force Account		\$	\$	\$	\$	\$
Survey & Stakeout	2%	\$ 471,419	\$ 341,286	\$ 246,529	\$ 355,000	\$
Mobilization	4%	\$ 942,838	\$ 682,572	\$ 493,059	\$ 1,420,000	\$
Contingency	20%	\$ 5,044,185	\$ 3,651,763	\$ 2,637,865	\$ 7,881,000	\$ 50,000
Total, incl. Contingency		\$ 30,265,108	\$ 21,910,575	\$ 15,827,189	\$ 47,286,000	\$ 300,000
Construction Insp. & Eng. Support	15%	\$ 4,539,766	\$ 3,286,586	\$ 2,374,078	\$ 7,092,900	\$ 45,000
Total w/contingency & inspection & engineering support		\$ 34,804,874	\$ 25,197,161	\$ 18,201,268	\$ 54,378,900	\$ 345,000

NOTE: Completion of this project on the schedule identified above is contingent upon Walkway Over the Hudson securing state, federal, local government, and private funding commitments necessary to initiate construction in March, 2008.*

* Text revised December 4, 2007.



2. Schedule -

Table III-4: Project Schedule

Task Description	Start Date	End Date	Duration (Weeks)
	July 18, 2007	September 30, 2009	
DESIGN	July 18, 2007	June 2, 2008	45.8
Draft Design Approval Document (includes NEPA Process)	September 4, 2007	November 12, 2007	9.9
Structural Field Inspection	September 10, 2007	November 16, 2007	9.6
Management Agreements with State/Municipalities	November 13, 2007	May 5, 2008	24.9
Agency Comment on DAD	November 13, 2007	December 12, 2007	4.2
Preliminary Plans for Selected Alternative	December 13, 2007	January 14, 2008	4.6
Final DAD (Includes NEPA Process) (1/21/08 submittal)	December 31, 2007	January 21, 2008	3.0
DAD Review and Approval	February 8, 2008	March 28, 2008	7.0
Advanced (90%) Plans	February 4, 2008	April 25, 2008	11.6
Final Plans for Bidding	May 12, 2008	June 2, 2008	3.0
SEQRA Process/Permits/Agreements	August 13, 2007	November 12, 2007	13.0
SEQRA Review (Part I)	September 10, 2007	November 13, 2007	9.2
Prepare Permit Application	September 10, 2007	January 21, 2008	19.0
SEQRA Lead Agency Determination (Letter / EAF Part I)	November 13, 2007	December 12, 2007	4.2
Railroad/Utility Agreements	November 13, 2007	May 5, 2008	24.9
SEQRA Review (Part II)	December 12, 2007	January 21, 2008	5.8
DEC/Corp Permits	January 21, 2008	April 14, 2008	12.0
CONSTRUCTION	March 17, 2008	September 2, 2009	76.3
Pre-purchase Deck Panel Contract (Ad/Award)	March 17, 2008	May 14, 2008	8.3
Pre-Ad General Contract	May 14, 2008	June 11, 2008	4.0
Pre-purchase Deck Panel, Fabrication and Delivery	May 14, 2008	April 23, 2009	49.2
Demolition Contract (Ad/Award)	March 17, 2008	May 7, 2008	7.3
Demolition Contract (Award to Completion)	May 7, 2008	August 1, 2008	12.3
Advertise/Open Bids for General Contract	June 11, 2008	July 9, 2008	4.0
Award General Contract	July 10, 2008	August 21, 2008	6.0
General Construction	August 22, 2008	August 26, 2009	52.8
Opening	September 2, 2009	September 2, 2009	



IV. SOCIAL, ECONOMIC AND ENVIRONMENTAL CONSIDERATIONS

A. INTRODUCTION

- 1. National Environmental Action Policy Act Classification** – This project qualifies as a Class II Categorical Exclusion under the provisions of the National Environmental Policy Act (NEPA) as implemented by the Federal Highway Administration (FHWA) regulations, 23 CFR 771.117(d)(3). The NEPA checklist is included in **Appendix D**. The Federal Highway Administration is the lead agency for NEPA coordination.
- 2. State Environmental Quality Review Act and Lead Agency** – The New York State Office of Parks, Recreation and Historic Preservation is the lead agency for the project. The project is classified as a SEQRA Type I Action per 6 NYCRR 617.4. A SEQRA Full Environmental Assessment Form is provided in **Appendix D**.

B. SOCIAL, ECONOMIC AND ENVIRONMENTAL CONSEQUENCES

- 1. Social Consequences** – This section discusses how implementation for the proposed action may impact certain socially sensitive features within the study area.

a. Affected Population

The property west of the bridge is primarily residential, while the properties on the east side of the bridge are a combination of commercial and residential. This project is not anticipated to have any impact on the population of the area.

b. Local Planning

- (1) **Comprehensive Plans** - The Town of Lloyd 2005 Comprehensive Plan notes that the Hudson River shoreline is one of the Town's most significant natural resources and considers the views to and from the Hudson River to be some of Town's most critical visual resources. The Comprehensive Plan states that, "Creating connections between existing and proposed trails throughout the Town will expand recreational opportunities and encourage alternative modes of transportation and tourism." The Walkway Over the Hudson will showcase these views of the Hudson River, and attract people to the area to admire such views.

The City of Poughkeepsie most recently updated the Comprehensive Plan in November 1998. One of the goals of the Plan is the revitalization of the Hudson River Shoreline. This goal calls for the shoreline and waterfront to be accessible to the public for recreational and commercial uses wherever possible. The Walkway Over the Hudson project would attract pedestrian users to the Poughkeepsie shoreline, and encourage commercial growth along the waterfront. This project is consistent with the goals of the Poughkeepsie Comprehensive Plan.



- (2) Local Waterfront Revitalization Programs - A Local Waterfront Revitalization Program (LWRP) was approved for the Town of Lloyd in March 1995. The LWRP stresses the importance of providing bicycle and pedestrian access to the waterfront from US Route 9W, the main north-south corridor in the Town. The Walkway Over the Hudson would extend the reach of the Hudson Valley Rail trail project from its current terminus to the Hudson River. The LWRP points out that the most scenic views of the Town of Lloyd waterfront are visible from the Hudson River or the City of Poughkeepsie shoreline. The Walkway project would provide a pedestrian friendly environment from which to view the Lloyd waterfront and its scenic wooded bluffs. Benches on the Walkway would encourage users to sit and take in the scenic views of both the Hudson River and the Lloyd shoreline. This project is consistent with all of the policies listed in the LWRP.

The LWRP for the City of Poughkeepsie was drafted by the Waterfront Advisory Committee and adopted in 1998. The LWRP provides the City and its residents with guidelines for existing and future land use decisions along the Hudson River waterfront. The goal of the LWRP is to achieve a balance, permitting the beneficial use of coastal resources while preventing loss of natural resources. The LWRP calls for the restoration, revitalization, and redevelopment of deteriorated and underutilized waterfront areas for commercial, cultural, recreational, and other compatible uses. The Walkway Over The Hudson would revitalize the City of Poughkeepsie by infusing the waterfront with recreational activities such as bike riding, walking, and jogging, and restoring the Highland-Poughkeepsie Bridge to a functioning, usable resource. The presence of the trailway users will encourage the development of the underutilized properties along the trail corridor.

- (3) Transportation Plans - The Ulster County Transportation Council (UCTC) serves as the Metropolitan Planning Organization (MPO) for the Town of Lloyd. The UCTC has a Year 2030 Long Range Transportation Plan and a 2008-2012 five year Transportation Improvement Plan (TIP) in place.

The Poughkeepsie-Dutchess County Transportation Council (PDCTC) serves as the MPO for the City of Poughkeepsie. The PDCTC has a Year 2030 Long Range Transportation Plan. The Walkway Over the Hudson project is listed as a SAFETEA-LU high priority project in the Draft 2008-2012 TIP.

The PDCTC adopted a Bicycle and Pedestrian Plan in March 1996 to identify projects and actions to increase the number and improve the condition of bicycle and pedestrian routes. The Walkway Over the Hudson project is consistent with this plan providing connections to activity centers in the region.

- (4) Planned Development – Details on planned developments for the project area can be found in **Section II.C.w.**

c. Community Character

Community character can be defined as the distinctive traits or qualities of a small social unit, such as a neighborhood, village or town, which is located within a larger social unit. The character of a community is closely related to a number of factors including population



density and distribution, land use types and patterns, the physical environment (e.g., climate, air quality, sound levels, etc.), and aesthetic qualities. The combination of these and other factors, such as infrastructure, contributes to the quality of life and character of a given community.

Significant positive benefits would be expected as a result of the Rehabilitation Alternative. Although population density would not be expected to noticeably change, a shift in population distribution would be expected as a result of tourism draw to the area. And so, services to support this tourism industry would fill in and/or replace existing establishments surrounding the bridge site. This activity would, in turn, improve the aesthetic quality of the general area because several unattended areas (abandoned and vacant lots) would likely be acquired and improved. But not only would aesthetic value be restored as a result of rehabilitating this icon, a sense of the original community character that developed as a result of the bridge construction would also be restored.

Conversion of the area to profitable space; connection of pedestrian/bicycle transportation facilities to a wider regional network; and improved vistas for visitors and local pedestrians, would all contribute to a significant, positive impact, making the community a safer and friendlier home and destination for all to enjoy.

d. Changes in Travel Patterns or Accessibility

There is a 40-mile corridor, commonly referred to as the Maybrook Corridor, which has been the subject of many studies of recent. The most notable study was the Maybrook Multi-Modal Corridor Study (June 2002) administered by the New York State Department of Transportation. The Maybrook Corridor transverses three counties (Orange and Ulster Counties on the west side of the Hudson River and continues into Dutchess County on the east side of the river) and several municipal governments. The Poughkeepsie Bridge is centrally located along the Maybrook Corridor and is the very means by which the east and west sections of the corridor are connected. The study does make mention of an alternate connection point for pedestrians and bicyclists over the river: that is, the Mid-Hudson Bridge which is the sole crossing for vehicular traffic between Poughkeepsie and the west side. The outcome of the study was a recommendation for reuse of the Poughkeepsie Bridge as a pedestrian/bicycle crossing, recognizing its significance as a key link in the regional bicycle/pedestrian network.

The proposed Rehabilitation Alternative, contrary to the No-Build Alternative, provides a logical connection between the east side and west side pedestrian/bicycle networks, and significantly enhances the experience for travelers. The Poughkeepsie Bridge, if opened for use by pedestrians and bicyclists, sits strategically within the intended alignment of the pedestrian/bicycle networks. Without use of the Poughkeepsie Bridge to cross the Hudson River, pedestrians must share use of the Franklin D. Roosevelt (Mid-Hudson) Bridge. While the Mid-Hudson Bridge has a designated bike/pedestrian lane, trail users must leave the pedestrian only trails and interact with vehicular traffic on city streets to get to the Mid-Hudson Bridge. Less experienced bicyclists may be uncomfortable with this interaction and avoid using the Mid-Hudson Bridge. In addition, to assure safety of pedestrians, bicyclists are required to walk their bikes across the Mid-Hudson Bridge. Therefore, the Poughkeepsie Bridge becomes a vital connector, providing a seamless connection between the pedestrian trails on the east and west side of the Hudson River. Pedestrians also benefit



from the Poughkeepsie Bridge in their ability to enjoy the beautiful vistas offered by the Hudson River through convenient and direct access. The result is an overall enhanced experience for pedestrians and bicyclists alike.

Over time, as more and more tourists are attracted to the area, local motorists may choose alternate routes to avoid the increased traffic volumes on their normal routes. However, this change in travel pattern is expected to be minor because traffic generated from tourists does not typically coincide with peak travel times on the roadway. The hours during the day and in the evening would experience greater traffic volumes, but local motorists who know the road network will have numerous alternate routes to minimize travel on the more congested main routes.

e. Impacts on School Districts, Recreation Areas, Churches or Businesses

Several positive changes would be expected as a result of implementation of the Rehabilitation Alternative:

- Although no changes to school district boundaries would result from the proposed action, local schools –and colleges- would have convenient access to a great historic resource to benefit from.
- Recreation areas would benefit significantly from the proposed action through the enhancement of riverside parks, seamless connection of the Maybrook Corridor between the east and west sides of the river, provision for water craft access, and of course, the 1.25 mile vista platform (i.e., rehabilitated bridge) overlooking the Hudson river and city of Poughkeepsie.
- The proposed action would result in increased business from the tourism draw – businesses such as novelty shops, restaurants and educational centers would be natural by-products of such a proposed action.

f. Impacts on Police, Fire Protection, and Ambulance

The proposed action may result in increased demand for emergency services due to the growth expected in the immediate vicinity of the project. Consequently, access on the Walkway itself to respond to an ill or injured patron would be provided. The project does not preclude emergency access via existing routes, but rather expands the flexibility of mobility of emergency services: a significant gain in benefit is achieved in opening access to emergency vehicles, in that, an alternative route between Poughkeepsie and the Town of Lloyd is provided for emergency assistance. For example, in the event that the Mid-Hudson Bridge is congested, for whatever reason, the Walkway bridge would serve as an alternative crossing for emergency vehicles.

g. Impacts on Highway Safety, Traffic Safety, and Overall Public Safety

The proposed action would increase traffic on local roadways gradually over time. The increased traffic is not expected to affect accident rates, thus the proposed action would not be a cause of highway or traffic safety events. The anticipated traffic generation does not exceed the capacity of the local road system, therefore not causing an increase in congestion and delays. Traffic volume increases are expected to be gradual (exception:



traffic generation as a direct result of a publicly advertised special event that could occur). In addition, it is expected that many Walkway visitors will arrive via the Metro North and Amtrak trains, reducing any impact on local streets. Vehicular conflicts, identified in the future that may arise would be addressed upon identification of the problem.

Due to the increased density of people, public safety has been identified as a concern. However, the nature of this project, and what it seeks to accomplish, does not attract high-risk criminal activity.

Future events involving the completed Rehabilitation Alternative have the potential to cause disruption to local traffic and to safety in the surrounding communities at access points to the bridge. Planning for such events will include consideration for this potential. This may include such considerations as the use of shuttles to access locations, timing activities to coincide with off-peak traffic, and the active management of existing parking areas (such as a “church parking lot” or “ferry approach”) to increase the capacity of these areas.

h. General Social Groups Benefited or Harmed

A general benefit would be realized by the surrounding social groups in the area as a result of the Rehabilitation Alternative. Impacts, both positive and negative, would not be limited to any particular social group.

The eastern bridge terminus touches down in a generally lower income community within Poughkeepsie, NY. Design of this project would be done in a manner as to minimize negative impacts to the population and environment. The positive benefits to this project far outweigh the negative, and the identified social groups would benefit from the project through: increased property value; enhanced vistas; enhanced land use features for local community to take advantage of (parks, walkways, etc.); and clean up of unattended properties. Therefore, no disproportionately high and adverse human health and environmental effects on minority or low-income populations are expected to result from implementation of this project. The Rehabilitation Alternative, as described above, would minimize negative impacts, and bring significant benefits to, low-income and minority populations.

2. Economic Consequences –

a. Impacts on Regional and Local Economies

Public expenditures on construction projects have direct impacts on regional and local economies. Further, there is a multiplier effect that occurs within the general economy for dollars invested in a project. Due to the nature of this project – a heavy tourism motive – a substantial amount of positive, direct and general economic consequences can be expected.

Given the historic significance, and world-renowned status (to be the World’s longest pedestrian bridge) that this structure would retain, great potential for significant economic impact, both regionally and generally, is expected. From a regional standpoint, this structure is anticipated to draw the attention of tourists from around the state, and even the globe. With this vast reservoir for an audience, service industries will be needed to support



the tourist industry. Further, with the restored awareness of this significant structure to local residents, the ensuing beautification of the surrounding area, and the linking up of the regional pedestrian/bike networks, the bridge site will be an attractive destination for local residents as well. It is anticipated that parks, recreation, overnight accommodations and food services will be among the primary business providers for this anticipated demand in the economic region.

The 2006 population of the Town of Lloyd, City of Poughkeepsie, and Town of Poughkeepsie was estimated by the US Census Bureau to total 85,500 people. This number is used to conservatively estimate the market capture area of the Walkway project, and is the basis for trail usage and economic impact to the area. Initially, the market capture area for this project is likely to include only local residents. Assuming a visitor population ratio of 1.5 based on the Maybrook Multi-Modal Corridor Study, it is anticipated that the trail could attract 128,250 visitors annually.

If it is assumed that each visitor spends between \$5 and \$10 per day (\$7.50), the total trail expenditures by trail users are expected to total \$961,875 annually. The initially low level of spending is based on an assumption of primarily day trips on the trail, and a relative absence of trail-related businesses, attractions, and activities in the Walkway area. As opportunities for trail visitors to spend money increase, and the number of overnight visitors increases, visitor expenditures would also be expected to increase.

The Walkway location and scenic attributes provide the opportunity to capture a substantial tourist market. The location, within a short drive of New York City, Hartford, and the Capital District provides a large population from which to draw additional trail users. Trail usage has the potential to for great increase.

In terms of the general economy, great benefits are also anticipated. First, construction related to the bridge rehabilitation spurs the need for more jobs, in addition to the need for equipment and supply purchases. The construction value for this project is estimated at \$25 million (2009 dollars).

Although the increased demand for service-sector businesses will expand, drawing in outside interests to supply those services, the current residing service-sector businesses would not be precluded. Rather the opportunities for growth would be greatly enhanced.

A spin-off benefit to the increased economy is the revenues that would be generated through state and local sales and income taxes.

3. Environmental Consequences – There are no significant environmental impacts. Following the relevant environmental issues:

a. General Ecology & Endangered Species

The project area consists of three basic ecotypes. The majority of the project corridor consists of the former railway bridge span over the open waters of the Hudson River. On the eastern shore (Dutchess County), the project corridor is located within the City of Poughkeepsie and is entirely urbanized. The USDA Natural Resources Conservation Service (NRCS) reports that the soils in this location consist predominantly of DxB soils (Dutchess-Cardigan-Urban, undulating rocky) with small portions of DxC (Dutchess-



Cardigan-Urban, rolling rock) and Ud (Udorphant, smoothed) (See Figure IV-1).⁴ On the western shore (Ulster County), the landscape is more rural. Most of the corridor here is occupied by the former railway structure; however, wooded, shrubby, and open disturbed areas do exist along the perimeter. Soils in this location consist predominantly of NBF soils (Nassau-Bath-Rocky outcrop complex, very steep) and a small portion of BOD (Bath-Nassau-Rocky outcrop complex, hilly) inclusion (see Figure IV-2). The NRCS also reports that trees common to both the Ulster soil types are black cherry, northern red oak, sugar maple, and eastern white pine. These species would be most consistent with Rich Mesophytic Forests as described by Edinger, Gregory J. et al (2002) *Ecological Communities of New York State*, NYS NHP Department of Environmental Conservation, 625 Broadway, 5th Floor, Albany, NY).

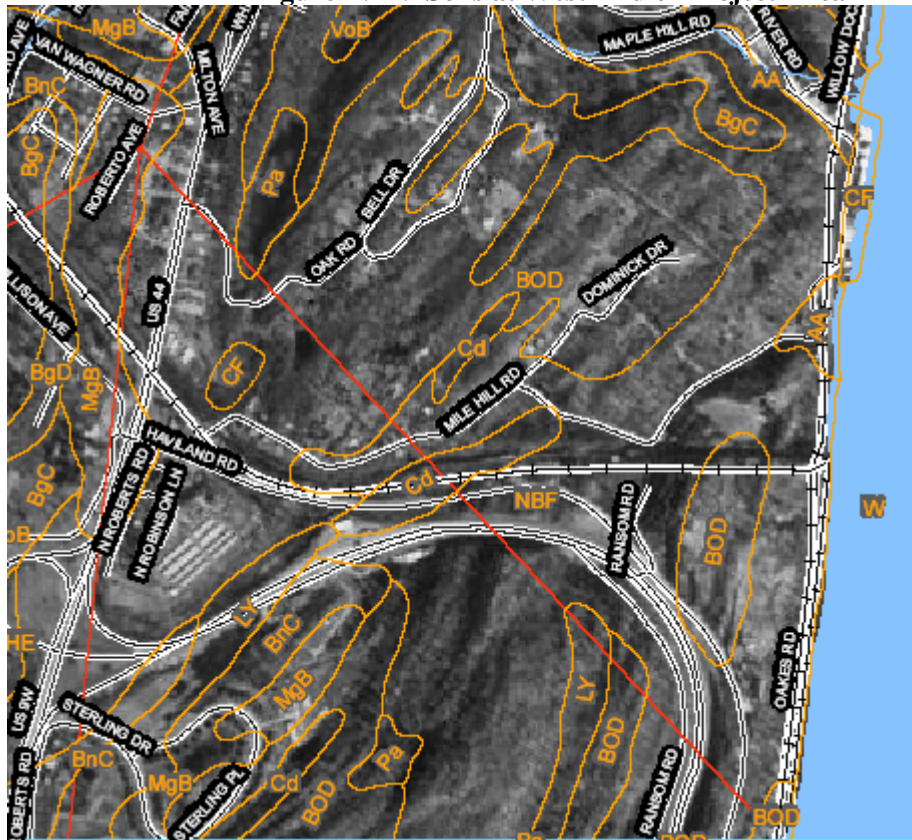
Figure IV-1: Soils at East End of Project Area



⁴ See <http://websoilsurvey.nrcs.usda.gov/app>



Figure IV-2: Soils at West End of Project Area



(1) Threatened and Endangered Species

Consultation under Section 7 of the Endangered Species Act was performed through the U.S. Fish and Wildlife Service (USFWS) website.⁵ Documentation from this website is provided in **Appendix G**. The listed species for the two counties have been combined in Table IV-1. No critical habitat was identified by the USFWS Critical Habitat Portal at or near the project site in either county.

A letter dated September 7, 2007 was sent to the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS). To date, no reply has been received.

⁵ See <http://www.fws.gov/northeast/nyfo/es/section7.htm>



Table IV-1: Federally Listed Endangered and Threatened Species and Candidate Species

Common Name	Scientific Name	Status	Dutchess County	Ulster County
Atlantic Sturgeon	<i>Acipenser oxyrinchus oxyrinchus</i>	Candidate	X	
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	Endangered	X	X
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Delisted	X	X
Bog Turtle	<i>Clemmys muhlenbergii</i>	Threatened	X	X
Indiana Bat (Summer)	<i>Myotis sodalist</i>	Endangered	X	X
Indiana Bat (Winter)	<i>Myotis sodalist</i>	Endangered		X
New England Cottontail	<i>Sylvilagus transitionalis</i>	Candidate	X	
Northern Wild Monkshood	<i>Aconitum noveboracense</i>	Threatened		X
Small Whorled Pogonia (Historic)	<i>Isotria medeoloides</i>	Threatened		X

Correspondence from the New York State Department of Environmental Conservation (NYSDEC) Natural Heritage Program (NHP) was received on September 24, 2007. The letter stated that ten (10) state-listed species were potentially present within or near the project area (**Appendix G**). The listed species for Dutchess and Ulster counties have been combined in Table IV-2.

Table IV-2: State Listed Endangered and Threatened Species and Candidate Species

Common Name	Scientific Name	Status	Dutchess County	Ulster County
Shortnose Sturgeon	<i>Acipenser brevirostrum</i>	Endangered	X	X
Peregrine Falcon	<i>Falco peregrinus</i>	Endangered	X	
Virginia Snakeroot	<i>Aristolochia serpentaria</i>	Endangered		X
Straw Sedge	<i>Carex straminea</i>	Endangered		X
Golden Corydalis	<i>Corydalis aurea</i>	Threatened		X
Velvety Bush-clover	<i>Lespedeza stuevei</i>	Threatened		X
Golden Club	<i>Orontium aquaticum</i>	Threatened	X	
Heartleaf Plantain	<i>Plantago cordata</i>	Threatened		X
Erect Knotweed	<i>Polygonum erectum</i>	Endangered		X
Small-flowered Crowfoot	<i>Ranunculus micranthus</i>	Threatened		X

The requirements of the listed species and the probability of them existing at or near the project corridor are described below.

- i. **Atlantic Sturgeon** inhabits the shallow waters of the United States continental shelf. They ascend coastal rivers to spawn. The USFWS lists this sturgeon as a candidate species, which means that while it is not currently protected, it is being considered for listing. **Shortnose Sturgeon** inhabits the Hudson River estuary. They prefer deep pools with soft substrates and vegetated bottoms, but individuals may vary in preference for various water depths and substrate types. This species is state-listed and federally-list as Endangered. The USFWS notes that both these sturgeons occur in the Hudson River and the principal responsibility for these species is vested with the NMFS. The Rehabilitation Alternative is not expected to



disturb these species or their habitat as discussed under the “Poughkeepsie Deepwater Habitat” later in this section.

- ii. **Dwarf Wedgemussel** is listed by the USFWS as occurring in the Housatonic River drainage basin. The portion of Housatonic basin that is present within Dutchess County is not within the project area, but rather is located much further east, adjacent to Connecticut. This species is listed as Endangered in New York as well as Endangered federally, yet the species was not listed by the NHP response letter. The NHP data is specific to the project area, whereas the federal data is county wide; therefore, this species would not be expected to be present in the project area.
- iii. The **Bald Eagle** was delisted on August 8, 2007. There are no longer Endangered Species Act requirements for the protection of this species; however, the eagle continues to receive protection under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Eagles nest near coastlines, rivers, or lakes. They may nest in trees, on cliffs, on rock promontories, and or on manmade structures. The Hudson River has increasingly popular with bald eagles, especially as wintering habitat. The NYSDEC Breeding Bird Atlas (www.dec.ny.gov/animals/7312.html) records the sighting of Bald Eagles in 2004 in possible nesting habitat in Atlas Block 5861A, which includes the project area. However, though the bald eagle is listed as Threatened in New York, but the species was not listed in the NHP response letter. The NHP data is specific to the project area, whereas the federal data is county wide; therefore the bald eagle would not be expected to found in the project area. Furthermore, the Rehabilitation Alternative would not include the taking of any tall trees, and the Rehabilitation Alternative will not impair the ability for bald eagles to access the open waters of the Hudson River in hunting for food.
- iv. **Peregrine Falcons** nest on ledges, rocky cliffs, or on manmade structures such as bridges and tall buildings, especially near urban areas. Ideal locations include undisturbed areas with a wide view, near water, and close to plentiful prey. These conditions are found on the Mid-Hudson Bridge, just downstream of the project corridor, where Peregrine falcons have nested every year since 1996, except 2001. The NYSDEC, in cooperation with the NYS Bridge Authority, maintains a webcam of the nesting area (<http://www.dec.ny.gov/animals/34268.html>). Peregrine falcons defend the area around a nest from other Peregrine falcons, and it would not be expected to find another nest on the Poughkeepsie Highland Railroad Bridge.⁶ This was confirmed by bridge inspection crews, who observed a lot of Peregrine falcon hunting activity in the project area, but no evidence of nesting. It is therefore concluded that the Rehabilitation Alternative will not disturb or preclude Peregrine falcon nests, and may provide increased opportunities for observation to the public.
- v. **Bog Turtle** is found in habitats with cool, shallow, slow-moving water, deep-soft muck soils, and tussock-forming herbaceous vegetation. This type of wetland and soil are not present within the project area. In addition, though Bog Turtle is listed as Endangered in New York as well as Threatened federally, but the species was not listed in the NHP response letter. The NHP data is specific to the project area,

⁶ Telephone conversation with NYSDEC Region 3 personnel on October 16, 2007.



whereas the federal data is county wide; therefore the Bog Turtle would not be expected to found in the project area.

- vi. **Indiana Bat** winters in caves and summers in forests along river courses. In New York, eight overwintering caves are known, one of which is located in Ulster County. However, this species is listed as Endangered in New York as well as Endangered federally, yet the species was not listed in the NHP response letter. The NHP data is specific to the project area, whereas the federal data is county wide; therefore, neither summer nor winter habitat for the Indiana Bat would be expected to be present in the project area.
- vii. The USFWS lists **New England Cottontail** as a candidate species, which means that while it is not currently protected, it is being considered for listing. Few details are available about its preferred habitat, but the cottontail is generally reported to be found in young woodlands with thick cover. Areas of young woodlands with thick cover are present in the Ulster County portion of the project area. Since the project corridor is narrow and consists mainly of the old railway structures, the project corridor is not expected to represent a significant source of habitat for this species. Since the project Rehabilitation Alternative consists of the reconstruction of an existing structure, no impacts to this species would be expected.
- viii. **Northern Wild Monkshood** is found in habitats that include algific (cold air) talus (loose rock) slopes, partially shaded cliffs, and streamsides. The most necessary components are high humidity and cool soil conditions. It grows on either sandstone or limestone. The project area in Ulster County consists predominantly of NBF soils which are not limestone or sandstone. The small portion of BOD soils are derived from parent materials that include sandstone (as well as siltstone or shale), but the present state of BOD soils consists of loamy till. The Iowa Natural Heritage Foundation (www.inhf.org/ecosysm.htm) states that algific talus slopes are a rare and almost unknown ecosystem; and, that the entire world's supply of this ecosystem consists of a few hundred tiny patches in Iowa, Wisconsin, Minnesota, and Illinois. Therefore, this species is not expected to be present in the project area.
- ix. **Small Whorled Pogonia** is found in semi-open, mixed deciduous mesic forests in second- or third-growth successional stages. Soils are highly acidic, and many are fragipans (naturally occurring dense, impermeable layers) on shallow-to-bedrock or shallow-to-clay slopes, where lateral water drainage from upslope sources occurs. Occasionally, the orchid can be found in more calcium-rich sites, including limestone areas in New York. Mesic forests, acid soils, and fragipans do occur at the site. Limestone soils are not present at the project site. The USFWS lists the occurrence of this species as historic. In addition, Small Whorled Pogonia is listed as Endangered in New York as well as Threatened federally, but the species was not listed in the NHP response letter. The NHP data is specific to the project area, whereas the federal data is county wide; therefore this species would not be expected to found in the project area.
- x. **Virginia Snakeroot** is found in moist or dry, sloping upland woods. The species favors southwest to southeast facing slopes and is found in association with Oak-Hickory or Chestnut Oak forests. The NRCS list the trees common to the soil types



found in the Ulster portion of the project area as black cherry, northern red oak, sugar maple, and eastern white pine, which is more consistent with Rich Mesophytic forests than with Oak-Hickory or Chestnut Oak forests as described by Edinger, Gregory J. et al (2002). In addition, this species was last observed in the Town of Lloyd in 1895. Due to the historic nature of the species, the lack of Oak-Hickory or Chestnut Oak forests, and the fact that the narrow project corridor (approximately 100 feet) was likely completely cleared and manipulated during the construction of the old railway, this species is not expected to be currently present within the project area.

- xi. **Straw Sedge** is found along swamp margins and in marshes. No state or federal wetlands have been mapped to the project area, nor have any hydric soils been mapped to this area. The species was last observed in the Town of Lloyd in 1896. Due to the historic nature of species, the previously disturbed nature of the railway corridor, the lack of swamps or marshes, and the lack of hydric soils in the area, this species would not be expected to be present in the project area.
- xii. **Golden Corydalis** is found on rocky banks or sandy soils. The species was last observed in the Town of Lloyd in 1887. The bank of the Hudson in the Town of Lloyd within the project area currently consists of riprap. Therefore, this species would not be expected to be found within the project area.
- xiii. **Heartleaf Plantain**, in the Hudson Valley, is restricted to the edges of the freshwater tidal portions of the Hudson River. It is especially found on calcareous soils. No calcareous soils are located within the project area. In addition, the species was last observed in the Town of Lloyd in 1887. Due to the historical nature of this species, the previously disturbed character of the railway corridor, and the lack of calcareous soils, this species would not be expected to be found within the project area.
- xiv. **Erect Knotweed** was last observed in the Town of Lloyd in 1887. It is found in dry disturbed areas, particularly empty lots and fields. This type of habitat is present in the project area. Due to the historic nature of the record, this species would not be expected to be found in the project area. In order to confirm this, a qualified botanist visited project area on November 2, 2007. All locations in the project area that meet the criteria for habitat, that may be used for construction or construction access were surveyed. No specimens of erect knotweed were found. It is therefore concluded that this species is not in the project area.
- xv. **Small-flowered Crowfoot** was last observed in the Town of Lloyd in 1893. It is found growing on slopes in dry or moist rich rocky woods, open rocky woods, or disturbed sites. This type of habitat is present in the project area. Due to the historic nature of the record, this species would not be expected to be found in the project area; however, the rocky woods sections will need to be canvassed in the field to confirm the absence of this species. This species may be identified in the month of May, at which time a qualified botanist will survey areas that meet the criteria for habitat and that may be used for construction or construction access. If found, coordination with the NHP will be necessary to ensure that impacts to this species do not occur under the Rehabilitation Alternative.



- xvi. **Golden club** is found in swamps, pond margins, bogs, and slow-moving streams. The species was last observed in the City of Poughkeepsie in 1896. The Poughkeepsie portion of the project area is now entirely urban, and the described wetland habitats are not found. Due to the historic nature of this species, the current urban condition of the City of Poughkeepsie, and the lack of wetlands in this area, this species would not be expected to be found within the project area.

(2) Poughkeepsie Deepwater Habitat

This stretch of the Hudson River is part of the “Poughkeepsie Deepwater Habitat,” which has been recommended by NYSDEC and designated by the NYS Department of State (NYSDOS) as a Significant Coastal Fish and Wildlife Habitat under New York State's Coastal Management Program. The Poughkeepsie Deepwater Habitat encompasses a 14-mile stretch of the Hudson River extending from the Villages of West Park in Ulster County and Hyde Park in Dutchess County south to the hamlet of Marlboro in Ulster County. It is a nearly continuous river bottom trench, from 30 feet deep to the bottom. Most of this area has water depths of 50 feet or greater. This habitat provides wintering habitat for the shortnose sturgeon (discussed above) and it supports an unusual diversity of marine species. Shortnose sturgeon also use this area as a spawning grounds. A unique feature of this habitat is that denser brackish water is overlain by fresh water near the salt wedge, providing an environment that supports a variety of estuarine and marine species, including Atlantic silverside (*Menidia menidia*), bay anchovies (*Anchoa mitchilli*), bluefish (*Pomatomus saltatrix*), weakfish (*Cynoscion regalis*) and hogchokers (*Trinectes maculatus*).⁷ In addition, large numbers of striped bass (*Morone saxatilis*) spawn in this area along with Atlantic tomcod (*Microgadus tomcod*) and white perch (*Morone americana*).⁸

A habitat impairment test must be met for any activity that is subject to consistency review under federal and state laws, or under applicable local laws contained in the Town of Lloyd and the City of Poughkeepsie approved Local Waterfront Revitalization Programs (see Section IV.B.3.h). The specific habitat impairment test that must be met is as follows: In order to protect and preserve a significant habitat, land and water uses or development shall not be undertaken if such actions would:

- destroy the habitat; or,
- significantly impair the viability of a habitat.

The only work to be accomplished in the waters of the Hudson River will be the repairs to Piers 2 and 3 under the Rehabilitation Alternative as discussed in Section IV.B.3.c. This work will not cause direct physical alteration, disturbance, or pollution of the deepwater habitat below. Any construction work performed on the land surface and construction access areas will be protected with appropriate erosion and sediment control as discussed in **Section IV.B.3.c**. None of the construction in the Rehabilitation Alternative will alter the temperature, substrate or salinity of the river.

⁷ See: http://www.nyswaterfronts.com/waterfront_natural_narratives.asp
http://training.fws.gov/library/pubs5/web_link/text/upp_hud.htm

⁸ Letter dated April 1, 1998 from NYSDEC to NYSDOS regarding the City of Poughkeepsie LWRP.



To ensure that the Rehabilitation Alternative will meet the habitat impairment test, project specifications will include the means to prevent any construction debris from falling into the water.

b. Ground Water

Federal participation is not allowed for any project that the U.S. Environmental Protection Agency (USEPA) Administrator determines may contaminate a Sole Source Aquifer Area as designated under the authority of Section 1424(e) of the Safe Drinking Water Act of 1974. A review of USEPA mapping concludes that the project area is not located near any Sole Source Aquifers. This project does not require further review pursuant to Section 1424(e) of the Safe Drinking Water Act.

The NYSDEC Technical and Operational Guidance Series (TOGS) 2.1.3 discusses the identification of certain groundwater sources as “Primary Water Supply Aquifer Areas” or “Principal Aquifer Areas” as part of “geographic targeting.” This “geographic targeting” does not directly regulate such areas, but serves as a method for enhancing existing regulatory protection (such as SPDES, Section 401 Water Quality Certification, and the SEQRA process) in critical locations where the groundwater resource is most productive and most vulnerable. Technical and Operational Guidance Series 2.1.3. defines “Primary Water Supply Aquifers” as “highly productive aquifers presently utilized as sources of water supply by major municipal water supply systems.” It defines “Principal Aquifers” as “aquifers known to be highly productive or whose geology suggests an abundant and high quality potential water supply, but which are not intensively used as sources of water supply by major municipal systems at the present time.” Information sent by the NYSDEC dated October 18, 2007 state that according to their records, there are no primary aquifers within the project area.

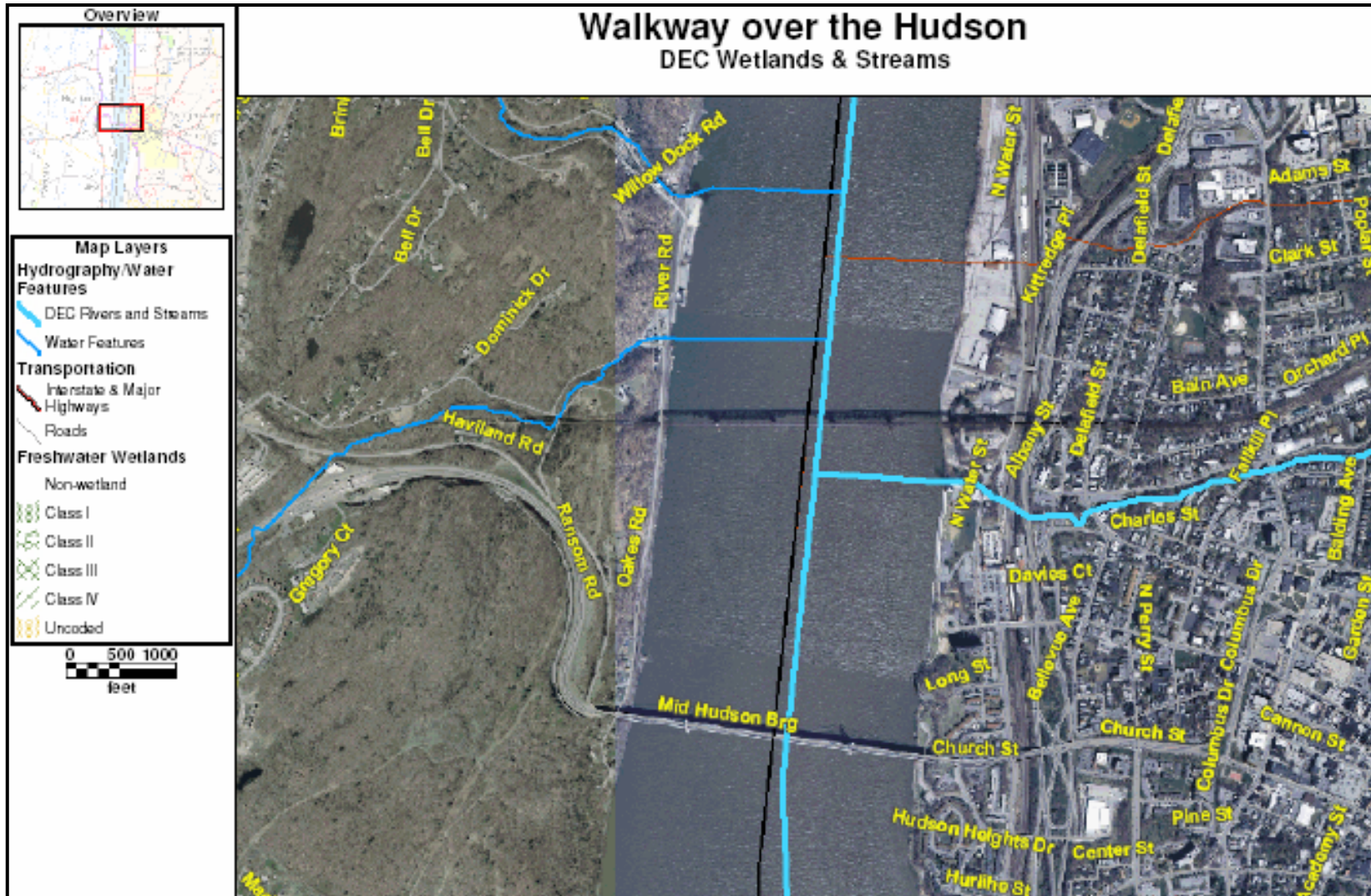
c. Surface Water

The main surface water in the project area is the Hudson River. The river is a Class A water. The best usages of a Class A stream, as defined in 6 NYCRR Part 701.6, are as a water supply source for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall also be suitable for fish propagation and survival. Both the City of Poughkeepsie and the Highland Water District are served by water from the Hudson River. Class A waters are protected under 6 NYCRR Part 608, Protection of Waters.

On the east side of the Hudson River, the bridge is elevated through the City of Poughkeepsie. There are no named streams in the immediate area of the bridge. Surface water in the vicinity of the bridge primarily runs off into closed drainage systems. On the west side of the river, the bridge is elevated through a steep forested area in the Town of Lloyd. There is one unnamed tributary to the Hudson River flowing under the bridge just north of Ransom Road. This stream is classified as a Class C water. The best usage of Class C waters is fishing. Class C waters are not protected under 6 NYCRR Part 608, Protection of Waters (see Figure IV-3).



Figure IV-3: Surface Waters in the Project Area*



*(Source: <http://www.nysgis.state.ny.us/gateway/mg/index.html>)



None of the water bodies located within the project area is designated as wild, scenic, or recreational rivers in the State or Federal programs. Therefore, permits or variances under the Federal Wild, Scenic, and Recreational Rivers Act and State regulations (6 NYCRR Part 666) are not required as part of this project.

Most of the construction for the Rehabilitation Alternative will occur on the bridge deck over the surface waters. During construction, containment techniques will be utilized to assure that contaminants and debris does not fall from the bridge deck into any of the surface waters described above.

The Rehabilitation Alternative does include recommended repairs to fill void areas found in Piers 2 and 3 (see **Appendix B**) at a later date. This work would involve sealing the outer surface of the work area by installing formwork or grout bags. The void areas would then be pumped full with concrete. The formwork or grout bags would prevent direct contact of the concrete with the waters of the Hudson River.

No work construction work is anticipated near the unnamed stream under the west side of the bridge. Removal of existing debris, including old utility tower structures may be accomplished without impacting that stream. Erosion and Sediment control will be provided in areas where access is required for equipment to prevent sediment and potential contaminants from entering the unnamed tributary or the Hudson River.

Under the Rehabilitation Alternative, construction under the east side of the bridge would be limited to an elevator and stairs just west of Washington Street, a second elevator at North Water Street (if funds are available), and a parking area just west of Washington Street (see **Section III.C.2.d.**). Appropriate erosion and sediment control will be provided at these sites to prevent sediment and contaminants from entering the Hudson River.

A NYSDEC Article 15 Protection of Waters permit will be required for work conducted in the Hudson River or along its banks. This includes the pier repair discussed above. Coverage under the NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities (GP-02-01) is required for any construction project that disturbs more than 1 acre of land. Construction of the Rehabilitation Alternative is anticipated to disturb more than 1 acre for parking and maintenance areas, so coverage under this permit is anticipated. As such, a Stormwater Pollution Prevention Plan would be prepared that would include appropriate erosion and sediment control techniques will be provided for any construction conducted on land areas, and permanent stormwater quality measures implemented as appropriate for the given site.

d. State Wetlands

There are no NYSDEC freshwater wetlands mapped within 100 feet of the project area. There are no NYSDEC tidal wetlands mapped within 300 feet of the project area. Therefore no permits would be required under Articles 24 or 25 of the Environmental Conservation Law.

e. Federal Jurisdictional Wetlands

Soils in the project area are discussed in Section IV.B.3.a, General Ecology and Endangered Species. None of the mapped soils in the project area are classified as hydric



soils. National Wetland Inventory maps for the project area were reviewed. There were no mapped wetlands shown on these maps. In a site visit on September 26, 2007 the unnamed tributary on the west side of the bridge was observed where it crosses under the bridge just west of Ransom Road. The grade of the stream flattens in the vicinity of a bridge pier at this location. This area, covering approximately 2,000 to 3,000 square feet, includes wetland vegetation, and is likely a federal wetland area. The area was not delineated but it may be assumed that this area is a small federal wetland. Under the Rehabilitation Alternative, there are no improvements planned for this pier. During final design, plans will include fencing around this area to ensure that it is avoided by construction equipment.

f. Flood Plains

It is necessary to consider and evaluate any significant flood plain encroachments in accordance with the provisions of Executive Order 11988, Flood Plain Management, as implemented in 23 CFR 650 Subpart A, *Location and Hydraulic Design of Encroachments on Flood Plains* and 6 NYCRR 502, *Flood Plain Management Criteria for State Projects*. The 100-year flood plains for the Hudson River within the project area have been identified using the following Flood Insurance Rate Maps:

- City of Poughkeepsie Community Panel Number 360222 000 1 B effective January 5, 1984
- Town of Lloyd, Community Panel Number 361012 0012 D effective July 5, 2000.

On both sides of the Hudson River, the flood plain area is shown as a small strip along the edge of the river. The railroad bridge spans the flood plain of the Hudson River. None of the work in the Rehabilitation Alternative would place any fill within the flood plain areas and there would therefore be no encroachments to evaluate.

g. Navigable Waterways

The Hudson River is considered a navigable waterway by the U. S. Army Corps of Engineers (USACE) and by U.S. Coast Guard (USCG). Since the Hudson River is navigable, Sections 9 and 10 of the Rivers and Harbors Act of 1899 apply to work performed above and in the river respectively. A “U. S. Coast Guard Jurisdiction Checklist” has been completed and is included in **Appendix G**. The Rehabilitation Alternative is considered a Bridge Rehabilitation Project. It will not include any change in horizontal or vertical clearance. As noted in the form, no Section 9 permit is required from the USCG, but coordination will be required in the performance of work on the project. Section 10 (33 U.S.C. 403) covers construction, excavation, or deposition of materials in, over, or under such waters, or any work which would affect the course, location, condition, or capacity of those waters. As with Section 404 of the Clean Water Act for the discharge of fill into waters of the United States, a number of Nationwide Permits have been issued by the USACE for Section 10 permits. Nationwide Permit 3 – Maintenance covers Section 10 permits for the “repair, rehabilitation, or replacement of previously authorized, currently serviceable structures or fills,” which would apply to the repair work needed for Piers 2 and 3 as discussed in **Section IV.B.3.c**.

h. Coastal Zone Management

The NYSDOS has authority from State and Federal legislation to insure that State and Federal government activities along the coasts and waterways of New York State are



consistent with NYS Coastal Policies and any approved Local Waterfront Revitalization Program (LWRP). The project area is located in the Hudson River Region in mapping published by the NYSDOS website.⁹ The Poughkeepsie (North) map shows that the Landward Coastal Boundary line on the east side of the river follows along NYS Route 9 (Washington Street), which is the eastern terminus of the bridge. The Landward Coastal Boundary on the west side of the river follows along NYS Route 9W, which is to the west of the project western terminus. The entire project area is therefore in the coastal zone (see Figure IV-4). On the east side of the river, the area from Washington Street to the river is included in the City of Poughkeepsie Local Waterfront Revitalization Program, which was adopted in 1999. On the west side of the river, the area from Route 9W to the river is included in the Town of Lloyd Local Waterfront Revitalization Program which was adopted by the Town, approved by the NYSDOS and concurred with by the U.S. Office of Ocean and Coastal Resource Management in 1995.

Because of the involvement of the FHWA in this project, it must be determined that the project is consistent with the City of Poughkeepsie and Town of Lloyd Local Waterfront Revitalization Programs and the New York State Coastal Policies. A consistency review is also required where state or federal permits area required for the project.

The portion of the Hudson River in the project area includes the “Poughkeepsie Deepwater Habitat, which is Significant Coastal Fish and Wildlife Habitat. A “habitat impairment test” must be met for any activity that is subject to consistency review under federal and state laws. A discussion of how the Rehabilitation Alternative meets this test is included in **Section IV.B.3.a**. The project area also includes the Esopus-Lloyd Scenic Area of Statewide Significance (see **Section II.C.1.u**). The Rehabilitation Alternative would not affect or impair the scenic quality of the SASS as discussed in **Section IV.B.3.p**.

i. Historic Resources

The bridge is listed on the National Register of Historic Places. The National Park Service listing date is February 23, 1979. Coordination is ongoing with the NYS Office of Parks, Recreation and Historic Preservation (NYS OPRHP), which serves as the State Historic Preservation Officer (SHPO).

j. Parks

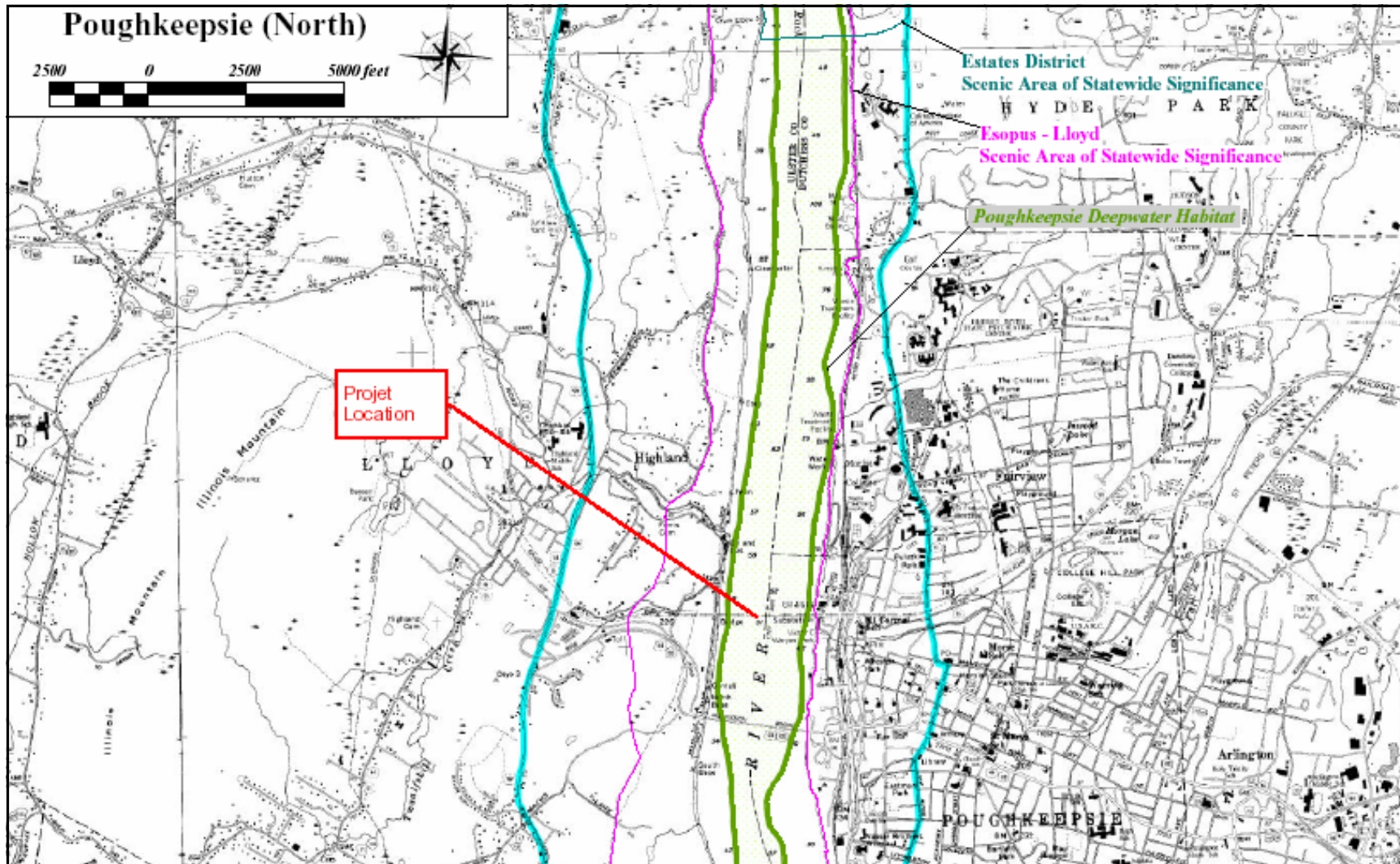
There are no parks or recreational areas located at the project site. The nearest park on the west side of the river includes the Town of Lloyd Johnson-Iorio Memorial Park. Nearby parks on the east side of the river include the Victor C. Waryas Park, Dongan Place and Pulaski Park. Under the Rehabilitation Alternative, the NYS OPRHP will assume responsibility for administering public use of the Walkway Over the Hudson, including staffing, operating costs, and maintaining the trail features and associated public facilities. Ownership of the bridge structure will be transferred to an appropriate New York State entity (not yet determined) which will be responsible for maintaining the bridge deck, steel superstructure, piers, and substructure.* A Section 4(f) Evaluation (49 USC 303 of the U. S. Department of Transportation Act) is therefore not required with regard to parkland and there will be no involvement with Section 6(f) of the U. S. Land and Water Conservation Fund Act.

⁹ http://nyswaterfronts.com/maps_lakes_central1.asp

* Text revised December 4, 2007.



Figure IV-4: NYS Coastal Zone Mapping for Project Area*



*(Source: <http://www.nyswaterfronts.com/maps.asp>)



k. Hazardous Waste/Contaminated Material

A hazardous waste-contaminated materials screening was conducted of the project corridor. The screening was conducted in general accordance with NYSDOT environmental procedures. The screening included review of available environmental databases, review of Sanborn® Fire Insurance Maps, site reconnaissance/walk-over and sampling/analysis for lead and asbestos. Details regarding the screening are included in a Technical Report, located in **Appendix G**.

Regulatory database searches were conducted of the project area and included ASTM E 1527-05 listed environmental databases, limited to a 0.25-mile radius around the project alignment. This review was supplemented where applicable with a search using the Federal U.S. EPA Evirofacts web-based databases and the October 2007 NYSDEC Spills Event and Waste web-based databases. A site reconnaissance and walk-over was conducted on October 8, 2007 through October 10, 2007. During the site walkover apparent evidence of dumping and debris was observed. Visible evidence of stained, discolored or distressed vegetation; stained soils; seepage; or recently disturbed soils were observed at the time of the site walk over.

Accessible portions of the bridge were inspected for the presence of hazardous materials. Substances included the presence of lead and anti-decay products in the railroad ties (creosol and semi volatile compounds). The following materials were confirmed as lead based paint (>0.5% by weight) through analytical testing.

- Bridge Paint West – 10.2% lead
- Bridge Paint Middle – 9.8% lead
- Bridge Paint , L36 Bottom Cord – 8.51% lead
- Bridge Paint East – 8.96% lead

Two wire/cables located under the west side of the bridge, between Ransom Road and the river, in the area of Pier 9, was observed hanging from the structure. The larger wire appeared to be oil-soaked and was sampled for the possible presence of Polychlorinated biphenyls (PCBs). No PCB's were detected. Miscellaneous debris was observed below the bridge structure on both sides of the river. During the site walkover there was no visible evidence of petroleum or chemical storage tanks, fill ports or vent pipes observed on the walkway property. Utilities within the area of the project included typical pole mounted utilities. Also found were signs indicating buried utilities within close proximity to the walkway property.

The screening resulted in the identification of three sites of concern in the study corridor. The first is the Washington Street Sunoco Station located at 128 Washington Street, which abuts the project site at the eastern limit of the project area. The station is listed in the database report indicating the presence of underground storage tanks at the site and includes NYSDEC Spill #9800975. The database listing indicates the cleanup of soils at the site in 1998. No closure date for the spill was listed in the database report and the spill is assumed to still be open. Further investigation/testing is recommended for any construction that may take place below the bridge in the vicinity of this site.

The second site of concern is a filling station identified on the Sanborn® maps located



south of the railroad bridge and west of Washington Street. It is the current Foreign Car Specialists repair shop. Further investigation/testing is recommended for any construction that may take place below the bridge in the vicinity of this site.

The third site of concern is a listing for the Poughkeepsie Gas Works (Central Hudson)–North Water Street Manufactured Gas Plant (MGP) coal tar site. The database report indicated that the location is included in the listing as a former MGP. It is not unusual for coal tar and other MGP wastes to migrate in the subsurface. Further investigation/testing is recommended for any construction that may take place below the bridge near this site.

The potential for bridge material to have fallen to the ground below the bridge exists. This debris has the potential to elevate the levels of lead and other contaminants in the soils below the bridge. The evaluation of these soils should be taken into account prior to the development of the area below.

Sediments in the Hudson River bed are known to contain PCB's. Remedial activities are proposed and ongoing at various sections of the river under the jurisdiction of the NYSDEC and the EPA. Rehabilitation and construction of the walkway trail on the bridge surface do not anticipate the disturbance of river sediments.

I. Asbestos

The potential for encountering Asbestos Containing Materials (ACM) was assessed during the October 2007 site visit. Accessible materials were evaluated. The following materials were collected from the bridge and submitted for analysis:

- Tars on Surfaces
- Rail Plate Insulator Pads
- Deck and Structure Paints
- Sealants/Caulk
- Wire/Cable Jackets

The following materials tested positive for asbestos (>1% by weight).

- Sealant – steel bridge foot to concrete or stone pier.
- West end of Bridge - 7% Chrysotile
- East end of the Bridge – 26% Chrysotile
- Bridge Paint Top Deck – 3% Actinolite/Tremolite
- Tar on Railroad Ties, Middle of Bridge – 19% Chrysotile
- Tar on Railroad Ties, West end of Bridge – 26% Chrysotile
- Tar on Wood Railing Base – 18% Chrysotile

Asbestos abatement procedures will need to be coordinated in removing these materials from the bridge.

The potential for bridge material to have fallen to the ground below the bridge exists. This debris has the potential to elevate the levels of ACM's and other contaminants in the soils below the bridge. The evaluation of these soils should be taken into account prior to the development of the area below.



m. Air Quality

An air quality analysis is not necessary since this project will not increase traffic volumes, reduce source-receptor distances or change other existing conditions to such a degree as to jeopardize attainment of the National Ambient Air Quality Standards.

n. Noise

The project does not qualify as a Type I project under 23 CFR 772 and a noise study was therefore not performed.

o. Energy

The proposed project will not significantly affect: energy consumption in the project area during and after construction; there will be no increase in vehicle miles of travel (VMT); no additional vehicle trips; and no change in land use development patterns, travel patterns or vehicle operating speeds. Therefore an energy analysis is not required. At such a time as lights may be added in the future, lighting design will include investigation into energy-saving technologies.

p. Farmlands

The Rehabilitation Alternative would not involve the acquisition of any undeveloped property. There is therefore no further review required under the Federal Farmland Protection Act. The east side of the Rehabilitation Alternative is located in an urban area, and there are no Agricultural Districts in the vicinity of the project. On the west side, there are no Agricultural Districts in the vicinity of the project. Furthermore, there is no property acquisition anticipated from private landowners for the Rehabilitation Alternative. Therefore there is no further review required under Article 25-AA of the New York State Agricultural and Markets Law Section 305(4).

q. Visual Impact

No significant visual impacts are expected from this project. Due to the expansive viewing distances to the bridge from either the river or the shorelines, and from the limited and/or restricted views of the bridge from land, there will be no perceptible change to the bridge structure. The change in railing type and the addition of light poles will be a very minor, if perceptible, change to the current bridge. In addition, close views of the bridge are generally from the base of the bridge which affords views largely of the underside. If visible at all, new elements on the surface of the bridge will have varying degrees of visibility and will not be significant. The historic visual character of the bridge will be unchanged as a result of this project.

r. Permits and Approvals

The following permits will be obtained prior to contract advertisement:

- (1) USACE Section 10 Permit, Nationwide #3
- (2) NYSDEC Section 401 Water Quality Certification
- (3) NYSDEC Article 15, Protection of Waters Permit



- (4) NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities (GP-02-01)
- (5) Permits from CSX Transportation, Amtrak and Metro-North Railroads
- (6) Easement from Central Hudson Electric and Gas
- (7) Possible City of Poughkeepsie permits
- (8) Possible Town of Lloyd permits
- (9) NYSDOT Highway Work Permit



V. PROJECT COORDINATION

The following is a listing of pertinent project correspondence with federal, state and local agencies and the public. This correspondence summarizes the early coordination process and the key issues and pertinent information received from the public and government agencies. A copy of each of the project correspondence listed below can be found in **Appendix E**.

Table V-1: Project Coordination

Date	From	To	Subject
June 18, 2007	Town of Wappinger Supervisor	NYSOPRHP	Letter of Support
June 21, 2007	Assemblyman Joel M. Miller	NYSOPRHP	Letter of Support
June 21, 2007	Hudson River Valley Greenway	David Rocco	Letter of Support
June 21, 2007	Town of Poughkeepsie Supervisor	NYSOPRHP	Letter of Support
June 22, 2007	National Park Service Rivers & Trails Program	NYSOPRHP	Letter of Support
June 22, 2007	Senator Vincent L. Leibell	NYSOPRHP	Letter of Support
June 22, 2007	Ulster County Tourism	NYSOPRHP	Letter of Support
June 25, 2007	Assemblyman Tom Kirwan	NYSOPRHP	Letter of Support
June 25, 2007	Dyson Foundation	NYSOPRHP	Letter of Support
June 25, 2007	Parks & Trails New York	NYSOPRHP	Letter of Support
June 25, 2007	Senator Charles Schumer	NYSOPRHP	Letter of Support
June 25, 2007	Toshi and Peter Seeger	NYSOPRHP	Letter of Support
June 26, 2007	The Beacon Institute	NYSOPRHP	Letter of Support
June 26, 2007	Congresswoman Kirsten Gillibrand	NYSOPRHP	Letter of Support
June 26, 2007	Poughkeepsie Area Chamber of Commerce	NYSOPRHP	Letter of Support
June 26, 2007	Town of Lloyd Supervisor	NYSOPRHP	Letter of Support
June 27, 2007	Dutchess County Economic Development Corporation	NYSOPRHP	Letter of Support
June 27, 2007	Dutchess County Tourism	NYSOPRHP	Letter of Support
June 27, 2007	Scenic Hudson	NYSOPRHP	Letter of Support
June 27, 2007	The Trust For Public Land	NYSOPRHP	Letter of Support
June 27, 2007	Ulster County Legislature	NYSOPRHP	Letter of Support
June 28, 2007	Congressman John Hall	NYSOPRHP	Letter of Support
June 28, 2007	Hudson River Navigator	NYSOPRHP	Letter of Support
June 28, 2007	Hudson Valley Rail Trail	NYSOPRHP	Letter of Support
June 28, 2007	Rails-To-Trails Conservancy	David Rocco	Letter of Support
June 28, 2007	Senator Stephen M. Saland	NYSOPRHP	Letter of Support
July 2, 2007	Senator Hillary Rodham Clinton	NYSOPRHP	Letter of Support
September 26, 2007			Brainstorming Session
October 18, 2007	NYS Department of Environmental Conservation	Bergmann Associates	NYS Natural Heritage Information



VI. LIST OF PREPARERS AND LIST OF ACKNOWLEDGEMENTS

The team of consultants contracted to prepare this Design Report included:

- Bergmann Associates
- McLaren Engineering Group

Bergmann Associates

1 Computer Drive South
Albany, New York 12205

Bergmann Associates was responsible for technical preparation of the design report.

Table VI-1: Bergmann Associates Team Members

Name	Responsibilities	Education	Experience
Peter M. Melewski, PE	Project Manager	MS Urban & Environmental Studies, BS Civil Engineering	25 yrs
Michael Cooper, PE	Structural Engineer	MS Structural Engineering	10 yrs
David A. Thurnherr, PE	Structural Engineer	MS Structural Engineering	22 yrs
Mark R. Johns, ASLA	Landscape Architect	BS Landscape Architecture	23 yrs
James F. Boggs	Environmental Scientist	MS Natural Resources Management	30 yrs
Dean R. Goodison, PE	Report Coordinator	BS Civil Engineering	13 yrs
Lindsay A. Zefting	Design Engineer	BS Civil Engineering	1 yr

McLaren Engineering Group

100 Snakehill Road
West Nyack, NY 10994

The McLaren Engineering Group assisted Bergmann Associates in the preparation of the design report and inspections.

Table VI-2: McLaren Engineering Group Team Members

Name	Responsibilities	Education	Experience
Mal McLaren	Manager	MS Structural Engineering	32 yrs
George Assis	Structural Engineer	PhD Structural Engineering	32 yrs
James Green	Diving Engineer	BS Civil Engineering	21 yrs



Project Support:

During the course of this project, the following individuals have made substantial contributions:

Table VI-3: Organizations Offering Project Support

Organization	Name	Title
The Beacon Institute	John Cronin	CEO
Dutchess County Economic Development Corporation	Theresa Kelly	Empire Zone Coordinator
Dutchess County Tourism	Mary Kay Vrba	Director of Tourism
Dyson Foundation	Diana M. Gurieva	Executive Vice President
The Hudson River Navigator	Vincent Taraagna	
Hudson River Valley Greenway	Mary Mangione	Acting Executive Director
Hudson Valley Rail Trail Association, Inc.	Raymond J. Costantino	President
National Parks Service	Karl Beard	NY Projects Director
Poughkeepsie Area Chamber of Commerce	Charles S. North	President and CEO
Rails-To-Trails Conservancy	Jeff Ciabotti	VP of Trail Development
Parks & Trails New York	Robin Dropkin	Executive Director
Scenic Hudson	Ned Sullivan	President
	Toshi & Peter Seeger	Concerned Resident
Town of Lloyd	Nancy E. Hammond	Deputy Supervisor
Town of Lloyd	Robert Shepard	Supervisor
Town of Poughkeepsie	Patricia Myers	Supervisor
Town of Wappinger	Joseph Ruggiero	Supervisor
The Trust For Public Land	Rose H. Harvey	Regional Director
Ulster County Legislature	David B. Donaldson	Chairman
Ulster County Tourism	Richard J. Remsnyder	Director

Table VI-4: Public Officials Offering Project Support

Name	District
Assemblyman Tom Kirwan	100th Assembly District
Assemblyman Joel M. Miller	102nd Assembly District
Congresswoman Kirsten Gillibrand	20th District, New York
Congressman John Hall	19th District, New York
Senator Hillary Rodham Clinton	US Senate, New York
Senator Vincent L. Leibell	40th District
Senator Stephen M. Saland	41st District
Senator Charles E. Schumer	US Senate, New York



Other Acknowledgements:

During the course of this project, the following individuals have made substantial contributions (see “Brainstorming Session” notes in **Appendix H**):

Table VI-5: Acknowledgements

Name	Organization
Bill Moreau	NYS Bridge Authority
Garrett Jobson	NYS Office of Parks, Recreation, and Historic Places
Chuck Benfer	Walkway Over The Hudson
Dick Coller	Walkway Over The Hudson
Mike Duffy	Dyson Foundation
Butch Marcelle	Fort Miller Group
Scott Harrigan	Fort Miller Group
John Gonyea	Fort Miller Group
Charles Slutzky	I. & O.A. Slutzky, Inc.
Rob Bettigole	Past President, Exodermic Bridge Institute
Jeff DiStefano	Harrison and Burrowes