

10-1 INTRODUCTION

This chapter identifies cultural resources (including architectural and archaeological resources) in the area of potential effect for the project, probable impacts on such resources, avoidance and minimization of harm to such resources, and coordination with appropriate agencies and stakeholders. The potential effects of both project construction and project operation on cultural resources are considered in this chapter. Construction impacts are also discussed in Chapter 18, "Construction Impacts."

The analysis in this Environmental Impact Statement (EIS) was prepared in accordance with the procedures of Section 106 of the National Historic Preservation Act of 1966 (NHPA), as implemented by federal regulations appearing in 36 CFR Part 800, in consultation with the New York State Historic Preservation Officer (SHPO) of the New York State Office of Parks, Recreation and Historic Preservation (OPRHP), and other consulting parties. It was also prepared in accordance with Section 4(f) of the Department of Transportation Act of 1966 (see Chapter 23, "Draft Section 4(f) Evaluation").

10-2 REGULATORY AND GUIDANCE CONTEXT**10-2-1 NATIONAL HISTORIC PRESERVATION ACT (SECTION 106)**

Section 106 of NHPA mandates that federal agencies consider the effect of their actions on any properties listed on or determined eligible for listing on the National Register of Historic Places (NR) and afford the federal Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings. Section 101(d)(6)(B) of the NHPA requires the lead federal agency to consult with any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to historic properties that may be affected by the undertaking. The lead federal agency shall ensure that consultation in the Section 106 process provides the Indian tribe or Native Hawaiian organization a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of properties, including those of traditional religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects.

The lead federal agency, in consultation with the State Historic Preservation Office (SHPO) and appropriate consulting parties, must determine whether a proposed action would have any adverse effects on the characteristics of a property that qualify it for the NR. Section 106 requires consultation with consulting parties, which in addition to the SHPO and ACHP, include federally recognized Indian tribes/Tribal Historic Preservation

Tappan Zee Hudson River Crossing Project Environmental Impact Statement

Officers (THPOs) or Native Hawaiian organizations, local governments, and other individuals and organizations with a demonstrated interest in the project, whose participation is subject to approval by the responsible federal agency. Revised Section 106 regulations became effective in January 2001, with amendments effective in August 2004. The basic steps of the Section 106 process are as follows:

- All properties that may be affected by the project and that are included in or eligible for the National Register must be identified by the lead federal agency, in consultation with SHPO and any appropriate Indian tribes, Native Hawaiian organizations, or consulting parties. If properties are found that may be eligible for the National Register or sites of religious or cultural significance to tribal nations, but for which no determination has yet been made, the agency consults with the SHPO and any participating Indian tribes, Native Hawaiian organizations, or consulting parties to determine eligibility or ineligibility.
- If historic properties that may be affected are identified, the potential effect of the proposed project on each property must be evaluated, in consultation with the SHPO and any participating Indian tribes, Native Hawaiian organizations, or consulting parties, to determine if the project would have adverse effects on them. In order to determine potential effects on the historic properties, the Advisory Council's Criteria of Adverse Effect (36 CFR § 800.5(a)(1)) must be applied, in consultation with the SHPO and any appropriate Indian tribes, Native Hawaiian organizations, or consulting parties, to determine whether adverse effects would occur. In general, a proposed project is deemed to have an adverse effect if it may cause a change in the quality of the property that qualifies it for inclusion in the National Register. The Advisory Council, as well as the SHPO and any participating Indian tribes, Native Hawaiian organizations, and consulting parties, is notified of any findings of adverse effects.
- If the analysis indicates that the proposed project may have an adverse effect, SHPO and any consulting parties are consulted to seek agreement on ways to avoid, minimize, or mitigate adverse effects. This mitigation is typically implemented through a Memorandum of Agreement (MOA). The Advisory Council may choose to participate in the consultation when there are substantial impacts to historic properties, when a case presents important questions of policy or interpretation, when there is a potential for procedural problems, or when there are issues of concern to Indian tribes or Native Hawaiian organizations. The Advisory Council must be invited to participate when the federal agency sponsoring the project wants the Council's involvement and when the project would have an adverse effect on a National Historic Landmark.
- Execution of the MOA and implementation of the terms therein satisfies the requirement of Section 106 that the Council be given a reasonable opportunity to comment on the undertaking, and demonstrates that the federal agency has taken into account the effects of the action.

FHWA, as the lead agency, issued a notice in the Federal Register on October 12, 2011 advising the public of the preparation of an EIS and initiating the Section 106 process. An Effect Finding will be made under Section 106 in accordance with 36 CFR 800.11 (e). A draft of the Effect Finding Documentation is included in **Appendix C**.

Section 106 consulting parties for the project include NYSDOT and NYSTA (as the project applicants), federally recognized Indian tribes, preservation organizations, local governments, and individuals. The list of Consulting Parties for the project is appended to the Draft MOA included in **Appendix C**. A meeting was held on December 16, 2011 to seek and consider views of the consulting parties regarding the project's effects on historic and cultural resources. The APE, historic properties within the APE, and the project's potential effects on historic properties were presented and discussed. The DEIS takes into consideration the views expressed by the consulting parties at this meeting. A subsequent meeting will be held following publication of the Draft EIS to seek input with respect to the findings of the DEIS, including proposed measures to avoid, minimize, and mitigate adverse effects on historic properties, and to solicit comments on the Draft MOA.

The review under Section 106 can be conducted in coordination with analyses conducted for the National Environmental Policy Act (NEPA). In addition, because the views of the public are essential to informed federal decision-making in the Section 106 process, the public should be informed about the project and its effects on historic properties, and given the opportunity to comment. This public comment element can be combined with the public participation component required by NEPA. The public participation efforts being conducted for the proposed project are described in Chapter 3, "Process, Agency Coordination, and Public Participation."

10-2-2 SECTION 4(f) OF THE U.S. DEPARTMENT OF TRANSPORTATION ACT

In addition to the NHPA, historic properties are also protected by Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966.¹ The Section 4(f) analysis is included in Chapter 23, "Section 4(f) Evaluation."

10-2-3 NEW YORK STATE HISTORIC PRESERVATION ACT

The New York State Historic Preservation Act of 1980 (NYSHPA) closely resembles NHPA, and requires that state agencies consider the effect of their actions on properties listed on or determined eligible for listing on the State Register of Historic Places. When a project is being reviewed pursuant to Section 106 of the NHPA (and 36 CFR Part 800), the procedures of Section 14.09 of the New York State Historic Preservation Act do not apply, and any review and comment by SHPO must be within the framework of Section 106 procedures (NYSHPA § 14.09(2)). The project is not reviewed separately under Section 14.09 of the NYSHPA.

10-3 METHODOLOGY

10-3-1 DEFINITION OF THE AREA OF POTENTIAL EFFECT

A required step in the Section 106 process is determining the Area of Potential Effect (APE), which is defined as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties,

¹ Section 4(f) has been now codified as 49 U.S.C. § 303 and 23 U.S.C. 138, although the preservation provision is still known as Section 4(f).

Tappan Zee Hudson River Crossing Project Environmental Impact Statement

if such properties exist” (36 CFR § 800.16[d]). The APE is influenced by the scale and nature of an undertaking.

The APE has been developed in consultation with the lead federal agency, SHPO, and consulting parties based on proposed work activities and their potential to affect historic properties, including potential direct and indirect effects caused by the construction and operation of the proposed project, based on information available at this time.

In general, potential adverse effects on architectural resources can include both direct physical effects—demolition, alteration, or damage from construction—and indirect effects, such as the introduction of visual, audible, or atmospheric elements that may alter the characteristics of the historic property that qualify it for inclusion in the National Register in a manner that would diminish the integrity of the property’s significant historic features. Archaeological resources are potentially affected by direct impacts from construction activity resulting in disturbance to the ground surface (including submerged ground surfaces) such as excavation, grading, pile-driving, cutting and filling, dredging, and staging. The criteria for adverse effects, as defined by ACHP, are described in greater detail below in Section 10-3-3, “Evaluation of Potential Effects on Historic Properties.”

The project has one APE; however, to facilitate the analysis of effects, the APE has been subdivided to indicate the area in which the proposed project could cause potential direct effects and the area in which the proposed project could cause indirect effects. The APE is discussed in greater detail below and depicted in **Figure 10-1**. SHPO has concurred with the definition of the APE in a letter dated October 27, 2011 (see Attachment F of the Draft Section 106 Effect Finding Documentation included in **Appendix C**)

Direct effects may include physical damage or destruction of a resource or its setting. The portion of the project APE in which there is the potential for the proposed project to cause direct effects includes all locations that could potentially be subject to direct ground-disturbing activities. Project activities are anticipated to include demolition, excavation, pile-driving, cutting and filling, and staging. **Figure 10-1** illustrates the portion of the APE in which direct effects are possible.

The direct effects portion of the APE encompasses areas directly affected by the construction and operation of the roadway, as follows:

- Rockland County: includes the existing right-of-way of Interstate 87/287 and areas where property would be acquired outside of the right-of-way between the Tappan Zee Bridge and Interchange 10 (Route 9W), including to construct the proposed shared use path, in South Nyack.
- Hudson River: includes the Tappan Zee Bridge and its existing right-of-way, the footprint of the proposed replacement bridge, and the staging/dredging areas at both the Westchester and Rockland landings.
- Westchester County: includes the existing right-of-way of Interstate 87/287 and an area where property would be acquired outside of the right-of-way between the Tappan Zee Bridge to Interchange 9 (Route 9) in Tarrytown.

The APE in which direct effects could occur consists of horizontal and vertical components. The horizontal extent is defined as the footprint of construction activity that would result in ground disturbance or other physical impacts to properties. The vertical extent varies along the 4-mile-long project area, depending on the type of construction activity, for both above-ground and below-ground components.

As discussed above, indirect effects may include the introduction of visual, audible, or atmospheric elements that alter the characteristics of the historic property that qualify it for inclusion in the National Register. The portion of the project APE in which indirect effects could occur is illustrated in **Figure 10-1**.

For work to Interstate 87/287, the APE extends 500 feet from either side of the existing centerline of Interstate 87/287 in order to account for both potential direct and indirect effects resulting from project construction and operation along Interstate 87/287. As described in greater detail in Chapter 9, "Visual and Aesthetic Resources," the visibility of Interstate 87/287 in the land portions of Rockland and Westchester Counties is limited, primarily due to vegetative screening and obstructing structures.

The APE is more expansive in the area that is within visual range of the Tappan Zee Bridge to encompass potential indirect effects associated with the replacement bridge. The APE for indirect effects extends approximately 1.5 miles south of the existing bridge and approximately 1.2 miles north of the existing bridge in both Rockland and Westchester Counties. The APE for indirect effects considers the topography and the surrounding built environment. It was defined based on extensive surveys undertaken on both sides of the Hudson River, stretching from Rockland Lake State Park south to Sneden's Landing in Rockland County and from Ossining south to Dobbs Ferry in Westchester County, and visual simulations. The survey and simulations were used to determine the visibility of the existing bridge and to identify an appropriate area in which effects of a magnitude that could adversely affect the National Register eligibility of a historic property may occur. The existing Tappan Zee Bridge can be seen up to approximately five miles to the north and south along the shorelines depending on weather conditions, but as distance and obstructions increase, the potential for adverse visual, audible, or atmospheric effects decrease.

The APE includes areas that would have the most proximate and unobstructed views to the project and areas in which the replacement bridge could potentially adversely affect the character or setting of historic properties. In Rockland County, the APE includes almost the entire village of Grand View-on-Hudson south of the bridge and areas east of Piermont Avenue in South Nyack north to Memorial Park. Memorial Park projects into the Hudson River and serves as a natural topographic boundary. In Westchester County, the APE encompasses much of the area west of South Broadway in Tarrytown, including the Lyndhurst and Sunnyside National Historic Landmarks, to the Irvington village line. North of the bridge, the landscape is more densely built. Therefore, the APE has been delineated to encompass areas west of River Street/Division Street/Railroad Way up to and including the National Register-listed Tarrytown Lighthouse in Sleepy Hollow, located at the tip of Kingsland Point Park. Kingsland Point Park extends out into the water beyond the vacant General Motors Plant and also serves as a natural topographic boundary. Farther east, topography and development obstruct views.

Tappan Zee Hudson River Crossing Project Environmental Impact Statement

The expanded APE in the area surrounding the Hudson River provides sufficient coverage to the north, south, east, and west to account for areas from which the replacement structure may be visible and in which potential adverse effects could occur. Beyond the APE, views of the bridge are generally diminished by distance, topography, vegetation and development, and the Replacement Bridge Alternative would not alter the character or setting of historic properties in these areas.

Views from historic properties located at greater distances were considered in the visual resources analysis conducted for the project consistent with federal guidance governing the preparation of such studies. These analyses are presented in Chapter 9, “Visual and Aesthetic Resources.”

10-3-2 IDENTIFICATION OF HISTORIC PROPERTIES WITHIN THE APE

The methodology used for identifying historic properties in the project APE is described below. Historic properties identified in the project APE are described in Section 10-4, “Affected Environment.”

10-3-2-1 ARCHITECTURAL RESOURCES

Once the APE was determined, a list of officially recognized architectural resources within the APE was compiled. This includes National Historic Landmarks (NHL) and properties listed on the State and National Registers (S/NR) or determined eligible for such listing. Among the previously recognized historic properties in the APE are Tappan Zee Bridge, which was determined eligible for the National Register (NR) in 2003, and three NHLs, Lyndhurst, Sunnyside, and the Old Croton Aqueduct which are located in Westchester County. A list of potential historic resources within the APE was also compiled. These were identified based on field surveys of the APE conducted by architectural historians who meet NPS Professional Qualification Standards for Architectural History, codified under 36 CFR Part 61, and additional research, including the following:

- Consultation with municipal governments within the historic resources APE to determine the extent of their municipal historic preservation regulations, if any. Only the Village of Tarrytown had a local preservation ordinance. A list of locally-designated properties in the APE was compiled. Of these, three properties had not yet been reviewed for their NR eligibility and were identified as potential resources.
- Consultation with local historical societies, local libraries, municipal historians, and historic preservation organizations to gather data on historic resources in the APE.
- Research at multiple repositories in Albany, New York City, and in Rockland and Westchester Counties. Information on resources previously determined eligible for the S/NR were collected from SHPO’s inventory of historic properties, housed in Waterford, New York.

Potential historic resources comprise properties that may be eligible for listing on the S/NR. Criteria for listing on the NR are found in 36 C.F.R Part 60. Districts, sites, buildings, structures, and objects are eligible for the State and National Registers if they possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet the following Criteria:

- Criteria A: Are associated with historic events;
- Criteria B: Are associated with significant people;
- Criteria C: Embody distinctive characteristics of a type, period, or method of construction, represent the work of a master, possess high artistic value, or are otherwise distinguished; or
- Criteria D: May yield information important in prehistory or history.

Properties less than 50 years old are not ordinarily eligible.

Determinations of eligibility are made by the lead federal agency in consultation with SHPO and appropriate THPOs and consulting parties. As described in 36 C.F.R § 800.4(c)(2), "If the agency official determines any of the National Register criteria are met and the SHPO/THPO agrees, the property shall be considered eligible for the National Register for Section 106 purposes."

Properties in APE that were over 50 years old and appeared to meet one or more of the Register criteria were identified as potential historic resources. For each of these properties, New York State Building-Structure Inventory forms were completed. Consistent with Section 106 and procedures agreed upon by SHPO, FHWA, and NYSDOT, the NYSDOT Office of Environment submitted documentation for properties recommended S/NR eligible and requested SHPO concurrence. Following SHPO concurrence, NYSDOT requested and received FHWA concurrence. Copies of correspondence relating to the determinations of eligibility are included in Attachment F of the Draft Section 106 Effect Finding Documentation in **Appendix C**.

A full list of the identified historic properties is contained in Section 10-4, "Affected Environment."

10-3-2-2 ARCHAEOLOGICAL RESOURCES

Archaeological Investigations typically proceed in a multi-phase process generally consisting of Phase I (determining the presence of archaeological resources through documentary research and field testing), Phase II (determining their integrity, significance, and S/NR eligibility), and Phase III (avoiding or minimize effects or mitigating unavoidable impacts through data recovery or other form of mitigation). The need for the next phase is dependent upon the results of the preceding phase.

As part of the Phase I study for this project, research was conducted at the New York State Museum (NYSM) and SHPO to identify previously identified archaeological sites located within one mile of the APE for potential direct effects and previously completed cultural resource surveys for areas in or adjacent to the APE for potential direct effects (see Attachment C of the Section 106 Effect Finding Documentation included in Appendix C, which contains copies of relevant archaeological reports and studies). In addition, cartographic research and a site walkover survey were conducted to evaluate historic and modern land use factors that may have resulted in ground disturbance and affected potential archaeological resource preservation. In compliance with applicable standards and guidelines for archaeological surveys, including those promulgated by the SHPO, New York Archaeological Council, and the Secretary of the Interior, Phase I-level field testing was subsequently undertaken in parts of the terrestrial portion of the APE determined to possess archaeological potential.

Tappan Zee Hudson River Crossing Project Environmental Impact Statement

The research team obtained information on submerged historic resources, potential shipwrecks, and submerged landforms sensitive for archaeological resources that may be present within the underwater portions of the APE for potential direct effects. The potential for shipwrecks and historic resources was assessed through review of previously conducted surveys, including remote sensing data, such as sidescan sonar, and consultation with staff of the New York State Department of Environmental Conservation (NYSDEC), Columbia University's Lamont-Doherty Earth Observatory (LDEO), and SHPO. The potential for submerged landforms was assessed through background research and the examination of soil borings performed in the APE for potential direct effects. The identification and evaluation of submerged historic resources, potential shipwrecks, and submerged landforms sensitive for archaeological resources that could be affected by the project is ongoing.

10-3-3 EVALUATION OF POTENTIAL EFFECTS ON HISTORIC PROPERTIES

Once the historic properties in the APE were identified, the effects of the project on those resources were assessed. As described above, project effects on historic properties identified in this chapter may include both direct effects and indirect effects resulting from project construction or project operation. Assessments of effects are based on the Advisory Council's Criteria of Adverse Effect codified in 36 CFR § 800.5(a)(1) and (2). The assessment may result in three possible effects findings: no effect; no adverse effect; or adverse effect. According to the Advisory Council's criteria, an adverse effect is found "when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association." Examples of adverse effects include, but are not limited to "physical destruction or damage of all or part of the property;" "removal of the property from its historic location; change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;" and "introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features." Adverse effects may include "reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative."¹ Project-related effects are described below in Section 10-5, "Environmental Impacts."

10-4 AFFECTED ENVIRONMENT

10-4-1 ARCHITECTURAL RESOURCES

Table 10-1 below identifies the historic resources located within the APE. These resources are also described below and mapped on **Figures 10-2** through **10-6**. It should be noted that in cases where a portion of a historic property in the APE extends outside of the APE, the project's potential to affect the entire resource is assessed. There are two architectural resources within the portion of the APE in which direct effects could occur, both of which have been determined S/NR-eligible: the Tappan Zee

¹ Adverse criteria as set forth in 36 CFR 800.5(a)(2)i, iii, v.

Chapter 10: Historic and Cultural Resources

**Table 10-1
Architectural Resources within the APE**

Ref No. ¹	Name	Location	NHL	NR Listed	NR Eligible
1	Tappan Zee Bridge (BIN 5516340)	Interstate I-87/287 over the Hudson River			X
<i>Rockland County</i>					
2	South Nyack Historic District*	South Nyack			X
3	129 Piermont Avenue*	South Nyack			X
4	135 Piermont Avenue*	South Nyack			X
5	147 Piermont Avenue*	South Nyack			X
6	2 Shadyside Avenue*	South Nyack			X
7	10 Ferris Lane*	Orangetown			X
8	Wayside Chapel**	24 River Road, Grand-View-on-Hudson		X	
9	River Road Historic District*	River Road, Grand-View-on-Hudson			X
<i>Westchester County</i>					
10	Tarrytown Lighthouse	Kingsland Point Park, Route 9, Sleepy Hollow		X	
11	Tarrytown Sewage Treatment Plant*	Pierson Park, Tarrytown			X
12	Tarrytown Railroad Station	1 Depot Plaza, Tarrytown			X
13	Tappan Landing Historic District*	Tappan Landing Road & North Tappan Road Tarrytown			X
14	Washington Irving Gardens*	300 South Broadway, Tarrytown			X
15	Old Croton Aqueduct	Route 9, Tarrytown	X	X	
16	99 White Plains Road*	Tarrytown			X
17	100 White Plains Road*	Tarrytown			X
18	Irving Historic District*	Van Wart & Paulding Avenues, Tarrytown			X
19	Hope United Presbyterian Church*	500 South Broadway, Tarrytown			X
20	Glenwolde Park Historic District*	Glenwolde Park, Water Street, and Willowbrook Avenue, Tarrytown			X
21	Lyndhurst	635 South Broadway, Tarrytown	X	X	
22	New County Park	Route 9, Tarrytown			X
23	Sunnyside	1 West Sunnyside Lane, Tarrytown	X	X	
24	South End Historic District*	West side of Route 9, Tarrytown			X
Notes: ¹ Corresponds to Figures 10-2 through 10-6 . *Determines National Register of Historic Places-Eligible as part of this project **Also a contributing resource within S/NR-eligible River Road Historic District, Grand View-on-Hudson, Rockland County NHL: National Historic Landmark. NR: National Registers of Historic Places.					

Bridge and the South Nyack Historic District. There are eight architectural resources within the APE for indirect effects in Rockland County (including the South Nyack Historic District and 15 architectural resources within the APE for indirect effects in Westchester County. These resources are described below.

Tappan Zee Hudson River Crossing Project Environmental Impact Statement

The **Tappan Zee Bridge** (NR-eligible) was determined eligible for the NR in 2003 under Criteria A and C. The bridge carries the New York State Thruway over the Hudson River from Rockland County to Westchester County. Rockland County officials began to advocate for the construction of a bridge across the river to Westchester County near the present-day location of the Tappan Zee Bridge during the early 20th century. Studies were undertaken at that time which indicated the depth of bedrock under the river bed was too great to permit bridge construction. However, the concept for a Hudson River crossing between the counties was explored again roughly 15 years later due to the creation of the New York State Thruway Authority (NYSTA) in 1950 and the Federal Interstate Highway System in 1954, which illustrated a pressing need for a Hudson River crossing between the two counties. In response to this need, the Tappan Zee Bridge was constructed between 1952 and 1955.

Captain Emil H. Praeger, U.S. Navy Retired (1882-1973), served as chief engineer for Madigan-Hyland, designers of the bridge. To solve the depth to bedrock problem identified in the 1930s, Praeger—who also designed Shea and Dodger Stadiums, the Nebraska State Capitol, and the world’s largest telescope in Arecibo, Puerto Rico—developed an innovative system in which eight buoyant caissons were constructed north of the crossing site in a natural clay pit in Grassy Point, the world’s largest natural dry dock. Upon their completion, the clay pit was flooded and the caissons were floated downriver into place. The completed bridge is a 3.2-mile-long structure supported by a substructure consisting of abutments and 197 piers. The piers are erected upon four types of foundations, including river-based timber piles and the eight buoyant caissons. Piers in the river are protected by upstream and downstream ice breakers, and the caissons are also protected by a fender system. In the mid-1980s, notable deterioration of the Tappan Zee Bridge was recorded, after which an extensive repair program was commenced. Targeted repairs were undertaken through the mid-1990s, including repairs to the concrete deck, steelwork, bearings, columns, and piles. Due to the high rate of deterioration, major rehabilitation of the deck bearings, barriers, steelwork, and concrete were again initiated in September 2007.

The Tappan Zee Bridge is the longest bridge in the state and one of the longest in the country. It also has the world’s ninth longest cantilever span, at 1,212 feet. It has been determined eligible for NR listing under Criterion A for its significance in the area of transportation and Criterion C for its significance in the area of engineering. Character-defining features identified in the 2003 SHPO resource evaluation include the bridge’s unique caisson support system, the length of its cantilever span, and the total bridge length.

The **South Nyack Historic District** (determined NR-eligible as part of this project) is located within the Village of South Nyack in Rockland County. The historic district is characterized by large, Second Empire estates, Queen Anne-style residences, and modest residences built in the Tudor, Colonial Revival, and Craftsman styles. The district encompasses residences on Piermont, Clinton, Cornelison, Gesner, Glen Byron, Mansfield, Smith, and Washington Avenues; Gurnee and Prall Places; South Broadway; Tappan Zee Terrace; and Voorhis Point. The district includes 130 contributing resources and 34 noncontributing resources. It is NR-eligible under Criterion A because of the important role that the community, located along the Hudson River, played in the residential and industrial development of Rockland County and the

Nyacks from the early-19th century to the mid-20th century. It is also eligible under Criterion C because it is a cohesive assembly of predominantly residential structures built between 1830 and 1935.

129 Piermont Avenue (determined NR-eligible as part of this project) is located in the Village of South Nyack in Rockland County. The property is located over 4,000 feet north of the Tappan Zee Bridge, which is visible from the property. The structure, constructed in the early 19th century, is a vernacular worker's residence with a small lawn, brick driveway, flagstone path, and mature trees. The 1½-story, rectangular-plan frame building is three bays long and two bays wide with vinyl siding and wood clapboards. A side-gable roof with asphalt shingles caps the residence with an interior rebuilt brick chimney. A single story, flat-roof addition has been added to the rear façade. The windows are six-over-six double-hung sash; a glass-and-panel door provides access to the interior. The door is protected from the elements by a front-gabled portico with exposed rafters and supported by wooden posts. The top half of the main façade has three three-pane frieze-band windows. This structure is determined eligible for listing on the NR under Criterion C as an example of a 19th-century vernacular worker's house.

135 Piermont Avenue (determined NR-eligible as part of this project) is located in the Village of South Nyack in Rockland County. This resource is located over 4,000 feet north of the Tappan Zee Bridge, which is visible from the rear of the property. 135 Piermont Avenue includes a Second Empire-style, 2½-story residence constructed in the 1870s and a 20th-century multi-purpose frame garage/boathouse. The residence is a rectangular plan building sheathed with wooden clapboards atop a stone foundation. A mansard roof tops the structure with an interior brick chimney that has a corbelled cap. A tower with mansard-shaped cupola, dormer windows, and bracketed cornices is located at the northwest corner. The modern garage/boathouse is situated north of the residence. A masonry wall that begins at a masonry post is located along the northern edge of the property, separating 135 and 129 Piermont Avenue. Mature trees and shrubs and a wide lawn with a view of the river accentuate the rear of the property. The residence at 135 Piermont Avenue is eligible for listing on the NR under Criterion C, as it is an example of a 19th-century Second Empire residence.

147 Piermont Avenue (determined NR-eligible as part of this project) is located in the Village of South Nyack in Rockland County. This resource is located over 4,000 feet north of the Tappan Zee Bridge, which is visible from the rear of the property. 147 Piermont Avenue includes a 2½-story, T-plan, Queen Anne-style residence constructed between the 1880s and 1890s. The building is sheathed in vinyl siding with continuous lintels and sills that emphasize its horizontality. There are two sections to the residence. The east-west oriented section has an ogee-shaped roof covered with rolled asphalt and cornice returns. The north-south oriented section has a pentagonal-shaped roof topped with a cupola and a wrap-around porch. The residence at 147 Piermont Avenue is determined eligible for listing on the NR under Criterion A because of its association with William Voorhis, a prominent resident of South Nyack during the 19th century who developed lots along Piermont Avenue and had a role in the local shipbuilding industry. The structure also is eligible under Criterion C as an example of a 19th-century eclectic Queen Anne-style residence.

Tappan Zee Hudson River Crossing Project Environmental Impact Statement

2 Shadyside Avenue (determined NR-eligible as part of this project) is located south of the intersection of Hillside Avenue (US Route 9 West) and Shadyside Avenue in the Village of South Nyack in Rockland County. The majority of the property is situated within the APE for indirect effects and is approximately 450 feet west of Interstate 87/287. In this area, Interstate 87/287 is located in a cut and screened from the resource by topography, mature vegetation, and residential development. The residence is a 2½-story, T-plan, frame building that rests atop a stone-and-concrete foundation built in the Gothic Revival style. The exterior is sheathed with wood clapboards and the intersecting gable roof is covered with asphalt shingles. The structure exhibits pointed windows, oriel windows, and steeply pitched roofs. Contextually sensitive modern additions have been constructed on the north and south facades. 2 Shadyside Avenue is determined eligible for listing on the NR under Criterion C for its architectural significance, as a good example of a mid-to-late 19th-century residence with Gothic Revival features.

10 Ferris Lane (determined NR-eligible as part of this project) is located on the east side of Ferris Lane in the Town of Orangetown, immediately south of the Village of South Nyack border and west of the Village of Grand View-on-Hudson in Rockland County. The property is located on a rise approximately 50 feet from the edge of Interstate 87/287 and is screened from Interstate 87/287 by vegetation. The residence on this property was constructed ca. 1870 on a residential section of Broadway, and moved to its current location in the early 20th century. The house has an L-shaped plan with intersecting front gable and side gable sections and is covered in clapboard siding. The east façade has a full-length wooden porch with a central gable-front dormer with multi-pane windows above the porch on the second floor. The north façade has a bay window and decorative embellishment of the gable. A detached frame garage, sheathed in weatherboard, is located north of the residence. The residence at 10 Ferris Lane is determined eligible for listing on the NR under Criteria Consideration B as a moved property, and under Criterion C because it is an example of a turn-of-the-century Queen Anne-style residence.

The former **Wayside Chapel** (SR- and NR-listed) is located at 24 River Road (Piermont Avenue) in Grand View-on-Hudson in Rockland County. It is bounded to the north by the Tappan Zee Bridge, to the south and west by residential properties, and to the east by the Hudson River. Built from 1867 to 1869, the single-story structure has a stone foundation, an exterior of local quarried brownstone and a steep-pitched, slate-tiled roof. The church was designed by Daniel Topping Atwood, author of *Atwood's Modern American Homestead* (1876), and is an unusual expression of Picturesque ecclesiastical architecture with Flemish and Gothic Revival elements. A focal point of the west elevation is the off-center entry porch which terminates in a stepped gable. Below the gable is the main entrance composed of a round-arched aperture containing a pair of wood plank doors. On both side walls of the main elevation are single gothic-arched windows with clear stained-glass. Originally, there was a large rose window centered on the north elevation. This area has since been filled to match the brownstone. The church was converted into a residence in 1939. As well as being individually listed on the S/NR under Criterion C as a rare example of mid-19th century Picturesque inspired ecclesiastic architecture in the Village of Grand View-on-Hudson, it is a contributing resource in the NR-eligible River Road Historic District.

The **River Road Historic District** (determined NR-eligible as part of this project) is located in the Village of Grand View-on-Hudson in the Town of Orangetown in Rockland County. The northern portion of the district is adjacent to Interstate 87/287 and the approach to the Tappan Zee Bridge; the southern portion of the historic district is approximately 1½ miles south of the bridge.

River Road is a coastal route that overlooks the Hudson River. The west side of the road consists of steep and heavily vegetated slopes, while the east side slopes to the Hudson River. The road is dotted with mature trees, shrubs, and stone walls associated with the residences. The district consists of a variety of historical resources, including residences, piers, boathouses, bottling plants, and stone quarries. Overall, the district includes 75 contributing resources and 48 non-contributing resources. One of the contributing resources—Wayside Chapel at 24 River Road—has been listed on the NR (see description above), and 18 others were previously determined eligible for listing on the NR. The contributing property at 3 River Road on Bight Lane, an early vernacular house with a gambrel roof, is located immediately adjacent to the APE for direct effects. This house has been moved twice from its original location at the foot of Salisbury Hill (the current location of the NYSTA parking lot near the Tappan Zee Bridge), including at the turn of the century and again in 1953 to its present location in conjunction with the construction of the Tappan Zee Bridge. Several neighboring properties in the northern portion of the historic district are also in close proximity to the APE for direct effects, including 13 and 22 River Road. The residences that flank the east and west sides of River Road date from as early as the 18th century to as late as the 20th century and include a wide range of styles, from Queen Anne, Italianate, Spanish, to the Revival styles of Dutch Colonial and Colonial. The district is determined eligible under Criterion A because of the role the community played in the development of the area, and under Criterion C because it is a cohesive assembly of predominantly residential structures that overlooks the Hudson River.

The **Tarrytown Lighthouse** (S/NR-listed) is located in the Hudson River, south of Kingsland Point Park in the Town of Sleepy Hollow in Westchester County. The lighthouse is approximately 5,000 feet north of the Tappan Zee Bridge and visible from the bridge. The bridge is also visible behind the lighthouse in views south from Kingsland Point Park. The lighthouse was constructed from 1882 to 1883. As the only lighthouse in Westchester County, the structure marked a dangerous area when commerce on the Hudson River was at its peak. The lighthouse is a five-story, steel conical tower with a cellar and lantern deck. Painted white with a black lantern room and a red pier, the tower has eight portholes and eight additional windows. The interior of the lighthouse is divided between a living room, dining room, and kitchen on the first floor and one bedroom on the second and third floors. Today, the Tarrytown Lighthouse is the only conical steel lighthouse to be constructed with living quarters and a family station in the lower Hudson region.

The **Tarrytown Sewage Treatment Plant** (determined NR-eligible as part of this project) is located in Pierson Park, on the south side of West Main Street, in the Village of Tarrytown in Westchester County. Constructed in 1940, it currently functions as office space for the Tarrytown Recreation Department. The plant is located approximately 2,500 feet north of Tappan Zee Bridge, and the bridge and is fully visible from the plant. There are two remaining buildings on the plant property. The Administration building is

Tappan Zee Hudson River Crossing Project Environmental Impact Statement

a 1½-story brick building with Colonial Revival-style influences. The structure is capped by a slate-clad hipped roof with a projecting cross gable. A central corbelled chimney projects from the roof and an eyebrow vent pierces the western roof slope. The brick Digester building comprises north and south cylindrical digester tanks, connected by a hyphen. The Tarrytown Sewage Treatment Plant is determined eligible for listing on the NR under Criterion A for its associations with development of sewage treatment in Westchester County, and an increasing awareness of the impact of pollution on the Hudson River. It is also significant as a sewer treatment plant partially funded by the PWA during the Great Depression. It is also eligible under Criterion C because it retains integrity as an example of a small-scale, Depression-era, Colonial Revival-style sewage treatment plant constructed in 1940.

The **Tarrytown Railroad Station** (NR-eligible) is located at 1 Depot Plaza in the Village of Tarrytown in Westchester County. In addition to its S/NR eligibility, the train station is designated a local landmark by the Village of Tarrytown. This single-story stone structure was built in 1890 for the Hudson Rail Line and currently is in use by Metro-North Railroad (MNR) as a commuter rail line to New York City. The building was designed in the Richardsonian Romanesque style by Shepley, Rutan, & Coolidge, the firm who succeeded H. H. Richardson after his death in 1886. Richardson had begun a design commission in 1881 for the Boston & Albany Railroad that included the design of over 30 stations. Richardson completed nine stations by the time of his death; Shepley, Rutan, & Coolidge subsequently built the remaining stations. The Tarrytown Station is unique in that it is one of three stations designed for the Hudson Railroad in the 1890s for which the architects are known. It is also one of three stations that were designed by Shepley, Rutan, & Coolidge that were not built for the Boston & Albany Railroad. Finally, the Tarrytown Station appears to be one of two extant Shepley, Rutan, & Coolidge stations featuring a rectangular plan with a rounded end. The Tarrytown Railroad Station is located approximately ½ mile north of the bridge. The Tappan Zee Bridge is visible from the train platforms and commuter parking lots. The Building-Structure Inventory form prepared for the station and SHPO's correspondence regarding eligibility does not identify under which National Register criteria the station is eligible.

The **Tappan Landing Historic District** (determined NR-eligible as part of this project) is located in the Tappan Landing neighborhood in the Village of Tarrytown in Westchester County. The portion of the historic district along the west side of Tappan Landing Road and North Tappan Road is within the APE and is located approximately 450 feet north of Interstate 87/287 and the Tappan Zee Bridge toll plaza. Both roads are curvilinear cul-de-sacs set atop sloping land with clear views of the MNR Hudson Line, the Hudson River, and the Tappan Zee Bridge. The district consists of single family residences constructed during the early 1940s, and includes 20 contributing and 11 non-contributing resources within the APE. These structures represent a wide variety of mid-20th century domestic architectural styles including Colonial Revival, Dutch Colonial Revival, and vernacular saltbox-type cottages. The Tappan Landing Historic District is determined eligible for listing on the National Register under Criterion A because it clearly represents a mid-20th century residential enclave in Tarrytown, and under Criterion C because it constitutes an architecturally cohesive community of small Colonial Revival-style residences designed to shelter both families and automobiles. The layout of Tappan Landing accentuates the natural beauty of the hillside into which it

was constructed while the curvilinear dead-end roads provide glimpses of the Hudson River.

Washington Irving Gardens (determined NR-eligible as part of this project) is an apartment complex located at 300 South Broadway (Route 9) in the Village of Tarrytown in Westchester County. Erected in 1929, Washington Irving Gardens was one of the first garden apartments to be constructed in Tarrytown. It exemplified the hallmarks of garden apartment construction including ample landscaping, design that emphasized sunlight and ventilation and close proximity to transit. The apartment building is a brick, six-story, U-plan building in the Colonial style on a four acre lot landscaped with mature trees and shrubs. The building is determined eligible for listing on the NR under Criterion A as a representation of the evolution of garden apartment architecture in Tarrytown in the 1920s and under Criterion C as an example of the Colonial Revival style applied to garden apartment buildings.

The **Old Croton Aqueduct** (State/National Register-listed, NHL) extends north-south through the APE, near Route 9 in Tarrytown in Westchester County. The Croton Aqueduct was constructed in 1837-1842 as an enclosed conduit to carry water from the Croton River (at the New Croton Dam) to New York City. The Aqueduct originally extended 41 miles and includes a number of above grade contributing features including the High Bridge in Manhattan; the Overseer's House and Barn in Dobbs Ferry; and culverts, ventilator shafts, and waste weirs along the length of it. The Aqueduct was taken out of service in the 1960s, and almost the entire southern portion of the Aqueduct in Manhattan south of the High Bridge has been removed. A 26-mile section of the Aqueduct in Westchester County is in use as Old Croton Aqueduct State Park, a linear recreational trail. Two ventilator shafts, numbered Ventilators 16 and 17 on the NR form, are located within the APE. The ventilators are hollow stone cylinders, 10 to 14 feet high, used to regulate air pressure and allow for access into the conduit. Ventilator 16 is located just north of Route 9. Ventilator 17 is located near the estates of Sunnyside and Lyndhurst, on the west side of Route 9 in the southernmost portion of the APE. The Old Croton Aqueduct is considered significant in the areas of Engineering and Urban Planning.

99 White Plains Road (determined NR-eligible as part of this project) is located in the Village of Tarrytown in Westchester County. This resource was formerly known as both 105 White Plains Road and the Goebel Collectors Club. The property abuts the APE for indirect effects and is located approximately 550 feet north of Interstate 87/287. The property is screened by development from Interstate 87/287, which is in a cut. 99 White Plains Road is a brick, two-story, rectangular-plan, Colonial Revival-style building atop a stone foundation. Once a residence, the structure was converted to commercial use in the 1970s. A hipped roof sheathed in slate and metal tops the structure and the roofline is emphasized by a denticulated cornice. The façade has many embellishments including copper collector boxes with decorative designs, stone belt course, full-height, hipped-roof projecting bays accented by brick quoins, lintels, and a full-height, recessed entry bay set within a stone surround and capped by a denticulated pediment. The former Goebel Collectors Club is a designated a local landmark in the Village of Tarrytown. The structure at 99 White Plains Road is determined eligible for listing on the NR under Criterion C for its architectural significance as an excellent example of a Colonial Revival-style building in Tarrytown.

Tappan Zee Hudson River Crossing Project Environmental Impact Statement

100 White Plains Road (determined NR-eligible as part of this project) is located on a large lot dominated by a modern office building in the Village of Tarrytown in Westchester County. This structure is located 400 feet north of Interstate 87/287, and is screened by development and a noise barrier from Interstate 87/287, which is located in a cut. 100 White Plains Road is a two-story, rectangular-plan, Neoclassical-style building constructed circa 1910. Formerly a residence, it has since been converted into an office building. The west, or principal, façade is embellished with Classical detailing. A portico with a denticulated cornice is centered above the principal entry, which consists of wood double doors set within a broken-scroll pediment with supporting pilasters, multi-light transom, and side-lights with circular glass panes. A random-course ashlar masonry stone wall flanks a portion of the northern edge of the property along White Plains Road. The structure at 100 White Plains Road is determined eligible for listing on the NR under Criterion C for its architectural significance as an example of a well-preserved, Neoclassical-style building in Tarrytown. The historic setting of this resource has been compromised by the construction of a modern office building adjacent to the structure; therefore, the NR boundary includes only the building footprint of 100 White Plains Road and the stone wall.

The **Irving Historic District** (determined NR-eligible as part of this project) is located in the Village of Tarrytown in Westchester County. The historic district consists of Van Wart and Paulding Avenues and is bound on the south by the Kraft and General Motor properties, on the east by South Broadway Route 9), and on the west by the MNR Hudson Line and the Hudson River. The district is located approximately 200 feet south of the Tappan Zee Bridge toll plaza and Interstate 87/287, and is screened from the toll plaza by a noise barrier. Resources in the western end of the district have views toward the railroad right-of-way and the Tappan Zee Bridge. The district consists of a mixed-class community of single- and multi-family residences predominantly constructed during the early 19th and the mid-20th centuries and one intact estate (88 Paulding Avenue). A variety of domestic architectural styles are represented including Greek Revival, Gothic Revival, Colonial Revival, and Italianate. The district includes 19 contributing resources and 5 non-contributing resources. The historic district is determined eligible for listing on the NR under Criterion A as a representation of a mixed-class community from the early 19th to mid-20th century, and under Criterion C because it includes a variety of intact 19th to mid-20th-century residences constructed in a variety of architectural styles. Overall, the historic district visually communicates the history of Irving as a working-class community, surrounded by estate development.

The **Hope United Presbyterian Church** (First Korean Methodist Church of New York) (determined NR-eligible as part of this project) is located at 500 South Broadway in the Village of Tarrytown in Westchester County. It is located approximately 500 feet south of Interstate 87/287, but is screened from Interstate 87/287 by residential development and noise barriers. The property consists of the church, attached social hall, and a modern frame shed. The church is an L-shaped, 1½-story, Tudor Revival-style structure, built in 1931 and constructed of brick in common bond. A two-story brick bell tower is located at the juncture of the L, and an intersecting-gable roof sheathed in slate with copper gutters and downspouts top the building. Lancet windows are located throughout the building and set in brick surrounds. Situated southeast of the church is a one-and-a-half story L-plan, Tudor Revival social hall. It is attached to the church by a one-story brick hyphen with a front-gabled slate-covered roof. The social hall is

constructed of brick, and, like the hyphen, laid in common bond. The social hall has a concrete foundation and a front-gabled slate-covered roof. The roof has two interior brick chimneys. The windows are modern multi-pane sash windows with aluminum surrounds with brick sills and lintels. The main entry way is located on the west façade and features a central wood timber door within a recessed brick arch surround. The church is determined eligible under Criterion C as an example of a Tudor Revival-style ecclesiastical building and social hall in Tarrytown.

The **Glenwolde Park Historic District** (determined NR-eligible as part of this project) is located in the Village of Tarrytown in Westchester County. The district is located on the east side of South Broadway (Route 9) south of Sheldon Avenue, approximately 500 feet south of Interstate 87/287. It is screened from Interstate 87/287, which is situated in a shallow cut, by residential development and noise barriers. Similar to many middle class suburbs in the area, Glenwolde Park was developed on the grounds of a mid-19th century estate which was subdivided in response to the expansion of the local economy and increase in housing demand that occurred in the early-20th century. The district consists of detached, early-20th century, single-family residences representing both Tudor Revival and Colonial Revival styles along Glenwolde Park and two units of Tudor Revival-style townhouses located on the west side of Walter Street. The residences are mostly frame buildings with wood clapboard, brick, or stucco cladding. The district contains 10 contributing resources, a contributing road network, and 2 non-contributing resources. The Glenwolde Park Historic District is determined eligible for the NR under Criterion A, as a representation of an early phase in the suburbanization of Westchester County, and under Criterion C because it includes highly intact examples of Tudor Revival and Colonial Revival-style residences.

Lyndhurst (NHL, State/National Register-listed), also known as the Jay Gould Estate, is located at 635 South Broadway between Route 9 and the Hudson River in Tarrytown in Westchester County. In addition to being designated a NHL and listed on the State/National Register, Lyndhurst is also designated by the Village of Tarrytown as a local landmark. Lyndhurst is an 80-acre estate located approximately 4,000 feet south of the Tappan Zee Bridge. Designed in 1838 by Alexander Jackson Davis, Lyndhurst became one of Davis' first designs in the Hudson River Gothic style. The original brick and Ossining marble house, now the southern end of the structure, was built for William Paulding, a former Mayor of New York. Davis returned from 1864 to 1865 to enlarge the house for George Merritt, a New York City merchant. After the house was enlarged, Merritt drained 20 acres of the property and constructed a 400-foot-long, U-shaped iron-and-glass greenhouse. This structure burned down in 1880. In 1881, a new greenhouse was constructed by Lord and Burnham for the new owner Jay Gould (1836–1893). The property also consists of a gardener's cottage and gatehouse at the entrances to the two driveways, a stable and children's playhouse to the southeast of the house, the Laundry/Guest Cottage to the north, the Northwest Cottage, and the Bowling Alley building.

New County Park (NR-eligible) is a 37-acre parcel of land situated along the west side of Route 9 between the estates of Sunnyside and Lyndhurst in the Village of Tarrytown, Town of Greenburgh in Westchester County. New County Park appears to have once been three separate estates. Each estate had main houses, outbuildings, and significant landscapes with views of the Hudson River. Although research is currently

Tappan Zee Hudson River Crossing Project Environmental Impact Statement

incomplete, one of the estates was owned by relatives of Washington Irving. Another of the estates, Willowbrook, was reportedly owned by Ambrose C. Kingsland, who served as mayor of New York City and initiated the legislation that led to the creation of Central Park. George Merritt of Lyndhurst also owned some of the property, and all of it once belonged to Anna Gould, who also occupied Lyndhurst. None of the buildings remain on the property. The landscape of these estates—designed by George Merritt—does remain, however, and includes curvilinear roads, specimen trees, rolling lawns, ponds, and retaining walls. The New County Park was determined NR-eligible under Criterion C as it embodies the distinctive characteristics of 19th and 20th century estate development in Tarrytown. New County Park was also determined NR-eligible as part of the South End Historic District (see description below).

Sunnyside (NHL, State/National Register-listed), the home of Washington Irving (1783–1859), is located at 1 West Sunnyside Lane along Route 9 in Tarrytown in Westchester County. In addition to being designated a NHL and listed on the State/National Register, Sunnyside is also designated by the Village of Tarrytown as a local landmark. Sunnyside is a 40-acre estate located approximately 1.5 miles south of the Tappan Zee Bridge. Sunnyside (formerly Van Tassel cottage) was originally constructed during the second half of the 17th century. Washington Irving acquired the property in 1835. Irving hired George Harvey, a Boston architect, to modify the Dutch cottage. The gable roof was heightened and covered with red tile. A projected porch was added and all of the gables were crowstepped to imitate the Dutch style. In 1847, Irving made a final addition to his house when he constructed a three-story stone and stuccoed tower at the northeast corner. Irving also created a picturesque landscape with wandering paths, groves and vistas to the Hudson River. After Irving's death, the house remained in his family and retained few changes except for the addition onto the north of the house in 1896. The house was purchased in 1945 by John D. Rockefeller, who helped fund Sleepy Hollow Restorations, the current property owner. Restorations that have occurred include the removal of the 1896 addition and the reconstruction of the kitchen yard.

The **South End Historic District** (determined NR-eligible as part of this project) is located in the Village of Tarrytown in Westchester County. The historic district is located on the west side of South Broadway (Route 9) and ranges from approximately 3,000 feet to 1½ miles south of the Tappan Zee Bridge and Interstate 87/287. It is situated east of the MNR Hudson Line right-of-way. This area was originally designated a local historic district by the Village of Tarrytown Historic Review Board in 1980. The district includes multiple estates, including Lyndhurst, Sunnyside, and the estates known as Belvedere and Shadowbrook. The Old Croton Aqueduct tunnel extends north-south through the historic district but was not identified as a contributing resource to the district established in 1980. The South End Historic District includes the stone walls along Route 9/South Broadway which are designated as local landmarks by the Village of Tarrytown.

In 2001, Westchester County acquired an L-shaped 37-acre parcel that was originally developed into multiple estates in the 19th century and contains foundation remains and historic landscape designs (now New County Park). The South End Historic District comprises the local historic district created in 1980, the Old Croton Aqueduct, and the 37-acre parcel, as well as a portion of a defunct water supply system, foundation

remains of former estates, designed landscapes, specimen trees, residential buildings and outbuildings. Extant structures represent a variety of architectural styles ranging from Dutch Colonial to French Eclectic. Fieldstone walls flanking South Broadway are also included within the district. The district is eligible under Criterion A for its direct association with Hudson River Valley estates from the 1656-1928 and with the New York City's first drinking water supply system constructed in the 1840s, the Old Croton Aqueduct. It is also eligible under Criterion C because it includes a variety of 17th and 20th-century buildings, including Dutch Colonial, Gothic Revival, French Eclectic, and Tudor Revival-style buildings set within landscaped grounds.

10-4-2 ARCHAEOLOGICAL RESOURCES

A Phase I Archaeological survey was conducted for the entire terrestrial portion of the APE for direct effects and no archaeological resources were identified.

Two classes of potential archaeological resources have been identified within the river portion of the APE: a submerged paleo landform that may have been occupied during the prehistoric period and possible historic resources, including shipwrecks, lying on the river bottom. Each class of resource is described below.

10-4-2-1 SUBMERGED PALEO LANDFORM

Geoarcheology Research Associates (GRA) conducted vibracore sediment sampling of the Hudson River bottom sediments in November 2008. The purpose of the geoarchaeological investigation was to determine the potential for submerged prehistoric archaeological sites to be present in the APE for direct effects.

A total of four vibracore sediment samples extending up to 10 feet below the sediment-water interface were collected for this geoarchaeological survey. These sediments were analyzed to determine past environmental conditions that may have supported occupation of the area by prehistoric people. Samples recovered were analyzed for sediment type (e.g., sand, silt, clay, etc.) and presence of faunal material. Radiocarbon dating of samples provided dates within the stratigraphic column.

Geotechnical data collected by other recent surveys in the vicinity of the Tappan Zee Bridge was also reviewed by GRA (LDEO 2006a and b; Mueser Rutledge Consulting Engineers 2007). This information was combined with data collected from GRA's survey, as well as information from previously identified archaeological sites in the area, to help identify environmental conditions during prehistoric times. The presence of oysters within the sediment columns was interpreted as an indication of a time period capable of supporting oyster harvesting by prehistoric peoples.

Based on these data, there is a possibility for the presence of deeply buried *in situ* marsh deposits and underlying river terraces (a submerged paleo landform) approximately 45 to 50 feet below sea level to the north of the bridge. These deposits may contain evidence of prehistoric activity dating to the beginning of the Early Archaic Period or the Paleo-Indian Period. The deposits and terraces occur in the vicinity of the causeway, in an area extending approximately 1,500 feet from the Nyack shore (Larsen, Smith and Schuldenrein 2010:33-34; Mueser Rutledge 2007).

Additional tighter interval borings to be monitored by a geoarchaeologist are currently planned for early 2012 to delineate the extent of the landform within the APE and to

Tappan Zee Hudson River Crossing Project Environmental Impact Statement

determine if resources are present that are considered S/NR eligible. The boring program is currently planned to consist of ten pairs of borings performed in the area of sensitivity, with each pair positioned at an interval of approximately 250 feet and with the borings in each pair positioned approximately 50 feet apart. The portion of each of these borings located between approximately 30 and 50 feet below sea level will be examined, documented, and sampled for microscopic observation, flotation and radiocarbon dating, if appropriate samples are recovered.

10-4-2-2 SUBMERGED HISTORIC RESOURCES AND POTENTIAL SHIPWRECKS

SHPO maintains a database of previously identified shipwrecks located within New York State waters. A review of this database noted that there were no previously identified shipwrecks currently on file with the SHPO within or immediately adjacent to the APE for direct effects (Peckham 2010). However, it was also noted that surveys conducted in the 1990s and 2000s may have identified shipwrecks that have not yet been entered into the SHPO database (IBID).

A review of the surveys conducted in the 1990s and 2000s noted that ten shipwrecks/potential shipwrecks were identified in an area extending 2 miles north and approximately ½ mile south of the Tappan Zee Bridge. These shipwrecks were all identified in the vicinity of the Hudson River shipping channel. Only one of the potential shipwrecks was identified within or directly adjacent to the APE for direct effects; the rest of the potential shipwrecks are outside the APE. These survey reports, which focused on identifying the presence of remotely sensed anomalies (including shipwrecks) on the river bottom, did not provide information on the possible identity of these potential shipwrecks (e.g., ship name, type, period of use, time of loss, etc.).

A survey conducted by LDEO (2006a) identified a total of eight anomalies that may represent shipwreck sites. This survey utilized high resolution acoustic mapping and sediment deposition sampling of the Hudson River Crossing, along with previously collected data from the NYSDEC funded Hudson River Benthic Mapping Project (HRBMP) to identify these potential shipwrecks. The eight shipwrecks identified in the LDEO report are situated largely within the shipping channel, across an area extending one mile north and ½ mile south of the existing Tappan Zee Bridge. One of these potential shipwrecks is located within the APE for direct effects.

A side-scan sonar survey conducted by Alpine Ocean Seismic Survey, Inc. (AOSS) in 2009 recorded three anomalies identified as shipwrecks in the vicinity of the Tappan Zee Bridge. These shipwrecks were also located within the shipping channel, at approximately 0.5, 1.3 and 1.5 miles north of the bridge. The location of one of these shipwrecks corresponds to a potential shipwreck identified in the LDEO 2006a survey report; another corresponds to the location of a wreck depicted on a NOAA chart. None of these potential shipwrecks are located within the APE for direct effects.

Further information regarding the location of previously identified shipwrecks in the vicinity of the Tappan Zee Bridge was gathered through a review of historic and modern nautical charts prepared by the National Oceanic and Atmospheric Administration (NOAA). Nautical charts reviewed dated from the 1850s through the 2000s. None of the shipwrecks recorded on the NOAA charts were located within the APE for direct effects.

The most recent nautical chart reviewed (NOAA 2006) depicts one shipwreck in the shipping channel approximately 1.4 miles north of the existing Tappan Zee Bridge, at 31 feet below Mean Low Water (MLW). This shipwreck appears to correspond with one of the wrecks noted in the AOSS 2009 survey. This wreck was not depicted on earlier NOAA charts reviewed for this survey (pre-dating 1996); it is possible that it is the result of more recent wreck or it may have only been identified during more recent, intensive surveys of the river bottom, post-dating 1996. None of these potential shipwrecks are located within the APE for direct effects.

Additional shipwrecks further upriver were identified in the shipping channel approximately 2.3 miles north of the bridge and on the western shore approximately 5.2 miles north of the bridge in the vicinity of former Rockland Lake Landing (NOAA 1996, 1969). South of the Tappan Zee Bridge, the closest shipwrecks depicted on the NOAA charts were approximately 1.4 miles downriver on the eastern shore of the Hudson. A small number of shipwrecks and ruins were also depicted in the vicinity of Piermont Pier, along the western shore of the river and around the pier itself, approximately 1.7 miles south of the bridge (NOAA 2006, 1996, 1969). As noted above, none of these archaeological resources are within the APE for direct effects.

In addition to shipwrecks, a small number of other potential archaeological resources were identified on the NOAA charts in the general vicinity of the Tappan Zee Bridge, including docks and ruins, which likely refer to the remains of former docks and/or piers. Features identified as ruins were typically located at the site of former landings, and none of them were identified within or adjacent to the APE for direct effects.

Two docks/piers were visible on the western shore of the river in the footprint of or potentially just north of the existing Tappan Zee Bridge on the 1855, 1865, 1902, and 1911 NOAA nautical charts. These two piers appear to have been demolished for construction of the bridge in the 1950s, as they do not appear on maps post-dating its construction. The LDEO (2006a) survey identified pier remains along the Hudson River shoreline, particularly along the western shore, which appeared to be associated with waterfront house lots (Nitsche May 4, 2010). These dock/pier features are not recorded in the archaeological site files of the NYSHPO.

The following is a summary of additional, ongoing efforts to determine the presence or absence of additional submerged historic resources and potential shipwrecks beyond those discussed above in the APE for direct effects. The University of Massachusetts (UMASS) is currently reviewing all available remote sensing data (summarized above) for the APE for direct effects. This data consists of high resolution single and multibeam sonar data. Criteria for the identification of anomalies in the data that are potential shipwrecks will be developed and applied in the analysis of this data. UMASS will prepare a report in compliance with applicable standards and guidelines detailing the methods and results of this review for submission to the SHPO. In addition, if appropriate, UMASS underwater archaeologists may undertake diving to visually examine any identified submerged historic resources and potential shipwrecks that may be affected by the project to determine their significance and S/NR eligibility.

10-5 ENVIRONMENTAL EFFECTS

Section 106 consultation regarding the project's potential effects on historic properties is ongoing and this section of the EIS presents the effects as identified through this process and based on available information to date. Consultation will proceed among SHPO, ACHP, THPOs, and other consulting parties to finalize and document the effect finding under Section 106 in accordance with 36 CFR 800.11(e). Following SHPO review and concurrence with the Section 106 Effect Finding Documentation, NYSDOT will request that FHWA issue an effect determination for the project. A draft of the Section 106 Effect Finding Documentation is included in **Appendix C**.

10-5-1 NO BUILD ALTERNATIVE

The No Build Alternative would involve the continued operation of the existing seven-lane Tappan Zee Bridge. As the replacement of the Tappan Zee Bridge and other project related work in the Direct APE would not occur under this Alternative, there would be no direct effects on the Tappan Zee Bridge or other architectural resources in the APE. Any archaeological resources located in the Direct APE would most likely remain in place, though disturbance could occur from activities not related to the project.

Changes to the architectural resources identified above or to their settings may occur irrespective of the project. It is possible that some architectural resources in the APEs may be removed or deteriorate, while others may be restored. As described in Chapter 5, "Community Character," other projects are planned within jurisdictions located in the study area. The planned JCC expansion at 425 South Broadway and the proposed Jardim Estates subdivision at the former General Motors site, located in or partially within the APE in Tarrytown, would not remove or alter historic properties.

10-5-2 REPLACEMENT BRIDGE ALTERNATIVE

10-5-2-1 ARCHITECTURAL RESOURCES

The Replacement Bridge Alternative would replace the existing Tappan Zee Bridge with two new structures to the north of its existing location. This section assesses the project's potential to affect Historic Properties, including the replacement of the bridge itself and other associated project improvements and alterations, including relocation of the South Broadway Bridge in Rockland County and construction of a shared-use path on the northern bridge structure. The project's potential to cause direct and indirect effects on architectural resources in the APE is **Table 10-2**.

Potential Direct Effects

There are two historic properties within the Direct APE: the Tappan Zee Bridge and the South Nyack Historic District in Rockland County. No architectural resources are located in the Westchester County portion of the Direct APE.

Tappan Zee Bridge

Though not an alternative being considered in the EIS, as described in Chapter 2, "Project Alternatives," and Chapter 23, "Section 4(f) Evaluation," the feasibility of

Chapter 10: Historic and Cultural Resources

**Table 10-2
Architectural Resources within the APE**

Ref No. ¹	Name	Location	NHL	NR Listed	NR Eligible	Potential Adverse Effect
1	Tappan Zee Bridge	Interstate I-87/287 over the Hudson River			X	Direct
<i>Rockland County</i>						
2	South Nyack Historic District*	South Nyack			X	Direct
3	129 Piermont Avenue*	South Nyack			X	No
4	135 Piermont Avenue*	South Nyack			X	No
5	147 Piermont Avenue*	South Nyack			X	No
6	2 Shadyside Avenue*	South Nyack			X	No
7	10 Ferris Lane*	Orangetown			X	No
8	Wayside Chapel**	24 River Road, Grand-View-on-Hudson		X		No
9	River Road Historic District*	River Road, Grand-View-on-Hudson			X	No
<i>Westchester County</i>						
10	Tarrytown Lighthouse	Kingsland Point Park, Route 9, Sleepy Hollow		X		No
11	Tarrytown Sewage Treatment Plant*	Pierson Park, Tarrytown			X	No
12	Tarrytown Railroad Station	1 Depot Plaza, Tarrytown			X	No
13	Tappan Landing Historic District*	Tappan Landing Road & North Tappan Road Tarrytown			X	No
14	Washington Irving Gardens*	300 South Broadway, Tarrytown			X	No
15	Old Croton Aqueduct	Route 9, Tarrytown	X	X		No
16	99 White Plains Road*	Tarrytown			X	No
17	100 White Plains Road*	Tarrytown			X	No
18	Irving Historic District*	Van Wart & Paulding Avenues, Tarrytown			X	No
19	Hope United Presbyterian Church*	500 South Broadway, Tarrytown			X	No
20	Glenwolde Park Historic District*	Glenwolde Park, Water Street, and Willowbrook Avenue, Tarrytown			X	No
21	Lyndhurst	635 South Broadway, Tarrytown	X	X		No
22	New County Park	Route 9, Tarrytown			X	No
23	Sunnyside	1 West Sunnyside Lane, Tarrytown	X	X		No
24	South End Historic District*	West side of Route 9, Tarrytown			X	No
Notes: ¹ Corresponds to Figures 10-2 through 10-6 . *Determined National Register of Historic Places-Eligible as part of this project **Also a contributing resource within S/NR-eligible River Road Historic District, Grand View-on-Hudson, Rockland County NHL: National Historic Landmark. NR: National Registers of Historic Places.						

rehabilitating the Tappan Zee Bridge was analyzed in the *Alternatives Analysis for Rehabilitation and Replacement of the Tappan Zee Bridge Report* (March 2009), prepared for the Tappan Zee Bridge/I-287 Corridor Project. Four rehabilitation

Tappan Zee Hudson River Crossing Project Environmental Impact Statement

alternatives were evaluated, ranging from an option that would simply upgrade the structural elements of the existing bridge with no increase in the number of lanes to options that included upgrades to the superstructure of the bridge and construction of a new, parallel bridge that, in combination with the existing bridge, would address traffic operations on this river crossing.

The findings of this report were reviewed in the context of the goals and objectives for the current project. This review concluded that the Rehabilitation Alternative would not be prudent for a number of reasons. All rehabilitation alternatives would involve replacement of the existing buoyant foundations, a contributing feature of the NR-eligible bridge, to meet requirements of seismic criteria. The Rehabilitation Alternative would replace much of the existing structure—up to 80 percent of it in certain cases. This would result in a cost nearly the same as an entirely new bridge. While the Rehabilitation Alternative would meet most current design standards, it would not achieve the same engineering performance as a replacement bridge nor would it meet all the project goals outlined in Chapter 1, “Purpose and Need.” The replacement of most of the existing structure would also have an adverse effect on the character of the characteristics that qualify the bridge for the National Register. FHWA and SHPO have concurred with the dismissal of rehabilitation options for the Tappan Zee Bridge (see Attachment F of the Draft Section 106 Effect Finding Documentation included in **Appendix C**).

The reuse of the existing Tappan Zee Bridge in tandem with the Replacement Bridge Alternative was also considered. Under the Reuse Alternative, FHWA, New York State Department of Transportation (NYSDOT), and NYSTA would seek a new owner for the existing Tappan Zee Bridge once the Replacement Bridge Alternative is operational. The new owner would be responsible for the future use of the bridge in accordance with federal, state, and local laws, permits, and approvals and would be responsible for the maintenance of the structure. As discussed in greater detail in Chapter 23, “Section 4 (f) Evaluation, reuse of the Tappan Zee is not prudent or feasible as upland access would be precluded without an alternative upland right-of-way, retention of the bridge would be considered an obstruction to navigation, and the cost to rehabilitate the existing structure for an alternative use and its continued maintenance would be very high.

Moving the bridge to an alternative location was also considered but would be very difficult. The Tappan Zee Bridge is more than 3 miles long with 198 piers, and the removal and relocation of the bridge intact would be infeasible. Disassembly and reassembly of the structure would also be extremely difficult given the location, length, and age of the Tappan Zee Bridge. Furthermore, the removal of the bridge would likely alter or demolish its causeway foundations, buoyant foundations, and cofferdams, which are contributing elements to the historic integrity of the bridge.

Under the Replacement Bridge Alternative, the removal and demolition of the Tappan Zee Bridge (S/NR-eligible) cannot be avoided. This would constitute an adverse effect on a historic property under Section 106 of NHPA. Measures to minimize and mitigate the adverse effect of the project on the Tappan Zee Bridge are described in Section 10-6 below and are outlined in the Draft Memorandum of Agreement (MOA) for this project, included in **Appendix C**.

South Nyack Historic District

Two contributing properties in the South Nyack Historic District are located within the APE for direct effects: 21 Cornelison Avenue and 78 Smith Avenue. The residence at 21 Cornelison is a four-square, hip-roofed structure built in the early 20th century. The residence at 78 Smith Avenue is a Colonial Revival-style building constructed ca. 1910.

Under the Replacement Bridge Alternative, the South Broadway Bridge over Interstate 87/287 must be lengthened to allow for a northward shift in the highway alignment to meet the new abutments of the Replacement Bridge Alternative as well as to provide for the new shared-use path immediately north of the highway lanes (see **Figures 10-7 and 10-8**). NYSDOT and NYSTA would acquire property east of South Broadway to stage the bridge's construction. The structure would be erected at that location and lifted in place when complete. In this manner, NYSDOT and NYSTA could avoid an 18- to 24-month closure of South Broadway. The 21 Cornelison Avenue and 78 Smith Avenue properties would be acquired for this purpose. The structures would be removed, and the properties would be permanently incorporated into the Interstate 87/287 and future South Broadway right-of-way. The property at 21 Cornelison Avenue would be the future location of the shared-use path, the realigned South Broadway Bridge, and landscaped buffer space. The property at 78 Smith Avenue would be the future location of the Replacement Bridge Alternative's shared-use path, a retaining wall, and landscaped buffer space.

As described in greater detail in Chapter 23, "Section 4(f) Evaluation," alternatives have been considered to avoid the adverse effects on these structures: the Southerly Alignment in Rockland County Alternative (Replace Tappan Zee Bridge but No South Broadway Bridge Replacement), the Replacement of the South Broadway Bridge at the Same Location Alternative, and the Reconstruction of the South Broadway Bridge to the West Alternative. Under the Southerly Alignment Alternative, Interstate 87/287 would maintain its existing alignment west of and beneath the South Broadway Bridge and would then shift northward to meet the replacement bridge abutments. The Alternative would avoid an adverse effect on the South Nyack Historic District. However, the Alternative would result in substandard roadway features, permanent speed restrictions on Interstate 87/287, and poor connectivity to the shared-use path, and therefore, it is not considered a prudent alternative.

The Replacement of the South Broadway Bridge at the Same Location Alternative would avoid demolition of the 21 Cornelison Avenue property. However, the northward shift of the Interstate 87/287 right-of-way, including the shared-use path and a noise wall, would move the transportation infrastructure much closer to the house on this property and would violate legal light and air requirements for residential structures. NYSDOT and NYSTA could acquire the property and maintain the structure, but it may not be legally inhabitable due to light and air considerations. The removal of the building at 78 Smith Avenue could not be avoided under this alternative; therefore, the Alternative would have an adverse effect on the South Nyack Historic District.

Furthermore, the Replacement of the South Broadway Bridge at the Same Location Alternative would lengthen the South Broadway Bridge at its current location within its existing right-of-way. During the 12-month or longer reconstruction of South Broadway, the bridge would be closed to traffic over Interstate 87/287, and vehicles would be

Tappan Zee Hudson River Crossing Project Environmental Impact Statement

diverted to either Route 9W or Piermont and River Roads (potentially impacting the River Road Historic District). This diversion would inconvenience motorists and increase travel times, vehicle emissions, and noise. It would also substantially impair emergency response for the Village of South Nyack. The modified grade of the new on-line bridge would also require a new 10-foot-tall retaining wall in front of the South Nyack Village Hall, causing an adverse effect on this structure which is also a contributing resource in the South Nyack Historic District. Therefore, the Replacement of the South Broadway Bridge at the Same Location Alternative is not prudent, as it would result in severe social, economic, and environmental impacts, and would not avoid an adverse effect to the South Nyack Historic District.

A third alternative was considered, which is to reconstruct the South Broadway Bridge west of its current alignment. This would avoid the adverse effect on 21 Cornelison Avenue but the property at 78 Smith Avenue would still need to be incorporated into the NYSTA right-of-way and therefore the adverse effect to this property would not be avoided. This alternative would impact the eastbound ramp located at the foot of South Broadway on the north side of Interstate 87/287, requiring its reconfiguration and taking of additional properties within the South Nyack Historic District, or its permanent closure, which would substantially inhibit traffic flow and access in eastern Rockland County. It would also require the closure of South Broadway for a year during construction, thereby diverting traffic to Route 9W or River Road (potentially impacting the River Road Historic District and impairing emergency response for the Village of South Nyack), and require additional property taking at Elizabeth Place Park. Therefore, this alternative would not avoid all adverse effects on the South Nyack Historic District and could result in the need to acquire additional historic properties to avoid the adverse effect on 78 Smith Avenue.

The removal of the two residences at 21 Cornelison Avenue and 78 Smith Avenue under both the Short Span and Long Span Options would constitute an adverse effect on the South Nyack Historic District. Proposed measures to mitigate this direct adverse effect on the South Nyack Historic District are described in Section 10-6 below and are outlined in the Draft MOA (see **Appendix C**).

Measures to Avoid and Minimize Effects

In addition to the properties located in the APE for direct effects that could be directly affected by the project, other historic resources are located outside of the APE for direct effects but in close proximity to possible project construction. As stipulated in the Draft MOA, in order to avoid accidental damage to adjacent resources as a result of construction activities associated with both the Short Span and Long Span Options, all appropriate resources would be included in a Construction Protection Plan (CPP). The CPP would be prepared in consultation with SHPO, ACHP, consulting parties, and the property owners. The CPP would identify the architectural resources to be included in the plan. It would also set forth the specific measures to be used and specifications that would be applied to protect these architectural resources during the construction period. Architectural resources to be included are expected to include properties in the South Nyack Historic District, the River Road Historic District, and 10 Ferris Lane in Rockland County and properties in the Irving Historic District in Westchester County. Potential construction-period effects are discussed further in Chapter 18, "Construction Impacts."

Potential Indirect Effects

Twenty-three architectural resources are located within the APE for indirect effects. No adverse indirect effects have been identified on architectural resources, as described in greater detail below.

10 Ferris Lane

In the vicinity of Ferris Lane, the proposed Interstate 87/287 roadway under the Long Span Option would be approximately 30 feet higher than existing, with the new roadway located about 10 feet higher than Ferris Lane, rather than in a cut (see **Figure 10-8**). As described above, 10 Ferris Lane was moved to its existing location in the early 20th century. Since the 1950s, the property's setting has included Interstate 87/287, which has extended in front of the property in a cut and with a substantial vegetative buffer to the south. Though separated by the tree buffer located both in the right-of-way and on the historic property itself, the higher roadway (and removal of the vegetation in the highway's right-of-way) would alter the setting of the property. The change would be one in which the historic property is located at a higher elevation and with the highway beneath it to one in which the highway would extend above the elevation of the roadway on which the house is situated.

Under the Short Span Option, the height of the Interstate 87/287 roadway would increase by approximately 5 feet at the eastern end of the property (see **Figure 10-7**). Proposed mitigation for noise impacts may result in the construction of an approximately 20-foot-tall noise wall proposed along the south side of the Interstate 87/287 right-of-way. Under this design option, the noise wall would be introduced as a new element in the setting of the property.

Determined National Register eligible under Criteria Consideration B as a moved property, and Criterion C as an example of a turn-of-the-century Queen Anne-style residence, the setting of 10 Ferris Lane has been compromised by relocation of the structure and by I-87/287, introduced as an intrusion in the property's setting in the 1950s. While the proposed elevation of the highway and removal of vegetation under the Long Span Option, or introduction of a possible noise wall under the Short Span Option, represent a change in existing conditions, these changes would not alter contributing elements that qualify the property for inclusion in the National Register, and would not adversely affect the property.

River Road Historic District

The River Road Historic District in the Village of Grand View-on-Hudson extends approximately 1.5 miles from the Tappan Zee Bridge to the south along both sides of River Road. Overlooking the Hudson River, the district is comprised of 75 contributing, and 48 non-contributing, resources that attained historic and architectural significance between 1732 and 1945. The west side of the road is characterized by steep and heavily vegetated slopes of Clausland Mountain; the east side is characterized by land that slopes down toward the Hudson River. As suggested by the village name, the topographical setting provides a panoramic view of the Hudson River to the east.

The north end of the district lies adjacent to I-87/287 and the approach to the existing Tappan Zee Bridge. Under the Replacement Bridge Alternative, the proposed

Tappan Zee Hudson River Crossing Project Environmental Impact Statement

alignment would continue in proximity to the northern terminus but avoid direct impacts to the district. Under the Short Span Option, the road deck height would increase in elevation by 4-7 feet compared to the existing approach, and under the Long Span Option, the height would increase by approximately 30 feet (see **Figure 10-7** and **Figure 10-8**).

On the west side of River Road, the parcel closest to the proposed change contains two residential properties, accessed by Bight Lane. The property at 1 River Road, a non-contributing residence within the district boundary, and 3 River Road, a contributing resource set back at the rear of this parcel of land. The structure at 3 River Road, an 18th century Dutch Colonial-style residence, originally stood along the Hudson River, and has been moved twice in its history, most recently in 1953 in association with construction of the existing bridge. Though still near the Hudson River, relocation of the property has resulted in changes in elevation and spatial relationships relative to the Hudson River and other historic properties.

Resources on the east side of River Road are situated in close proximity to the river, and the project would not change this relationship. The **Wayside Chapel** at 24 River Road and the neighboring residence at 22 River Road are located in a cove south of the western bridge approach. Both the Short Span and Long Span Options would introduce a larger bridge structure into the immediate context of these two contributing resources (see visual simulation provided in **Figure 9-8**). However, the setting of these resources and the resources on the west side of River Road already includes the existing bridge approach structure. Under both replacement options the new approach structure, though a taller and thicker structure under the both design options, would be located at a greater distance from these resources.

The project would not alter the characteristics that qualify the River Road Historic District for inclusion in the National Register, and would have no adverse effects on the district. The Replacement Bridge Alternative does not require the acquisition, removal or demolition of land or contributing resources within the district boundaries. Adjacent to the north end of the district, a proposed change in elevation of up to 30 feet under the Long Span Option and also increased elevation, thought to a lesser degree, under the Short Span Option, would represent a change from existing conditions (see visual simulation provided in **Figure 9-6**), but would not diminish the integrity of setting for the district as a whole. Post-dating the district's period of significance, the existing Tappan Zee Bridge and its western approach have been visual elements of the Hudson River viewshed since 1955. When viewed as a single entity, and within the scale of its total expanse, the district would not incur adverse effects to its setting due to the prominence of the existing Tappan Zee Bridge as an element within the viewshed.

South Nyack Historic District

As described above under "Potential Direct Effects," the removal of two contributing properties within the South Nyack Historic District would constitute a direct effect on the South Nyack Historic District. The Tappan Zee Bridge, though visible from the eastern end of the Historic District, does not relate to or contribute to the characteristics that qualify the South Nyack Historic District for inclusion in the National Register. Therefore, the Replacement Bridge Alternative would not diminish the integrity of location, setting, or association of these resources.

Other Architectural Resources

The Replacement Bridge Alternative would not adversely alter the context or setting of other architectural resources in the APE. The Tappan Zee Bridge does not relate or contribute to the characteristics that qualify any of the architectural resources for inclusion in the National Register. These resources have co-existed since the 1950s with Interstate 87/287 and the Tappan Zee Bridge, which at the time introduced new visual and audible elements into the built context of the APE. As such, the project, to be constructed in an alignment close to the existing, would not constitute an adverse visual, atmospheric, or audible effect for these properties. The project's potential to affect these other architectural resources in the APE for indirect effects is analyzed below.

In Rockland County, the S/NR-eligible residences at **129 Piermont Avenue** (built in the early 19th century), **135 Piermont Avenue** (constructed in 1870) and **147 Piermont Avenue** (constructed ca. 1890) are all located in the Village of South Nyack and are situated over 4,000 feet north of the Tappan Zee Bridge. The bridge is visible from the rear of each of these properties. However, the replacement of the bridge would not substantially change the setting of the structure nor would it diminish the integrity of its historic features. The project would have no adverse indirect effects on these historic resources.

Also in Rockland County, the residence at **2 Shadyside Avenue**, built during the second half of the 19th century, is also located in the Village of South Nyack, approximately 450 feet west of the New York State Thruway. Interstate 87/287 is situated in a cut, and is screened from 2 Shadyside Avenue by topography, mature vegetation, and residential development. No indirect adverse effects on 2 Shadyside Avenue are anticipated to result from the project.

The **Tarrytown Lighthouse**, constructed in the 1880s, is located in the Hudson River, south of Kingsland Point Park in the Town of Sleepy Hollow in Westchester County. The lighthouse is approximately 5,000 feet north of the Tappan Zee Bridge. The Lighthouse has clear views to the Tappan Zee Bridge and the Hudson River. The Lighthouse is also clearly visible from the Tappan Zee Bridge and from points north of the bridge. As shown in a visual simulation provided as **Figure 9-17**, the setting of the Lighthouse would change somewhat under both bridge replacement options. The replacement bridge would differ in design from the existing Tappan Zee Bridge. However, because the existing bridge does not relate or contribute to the character-defining features of the Lighthouse the change in bridge design would not adversely affect the context of the Tarrytown Lighthouse. Therefore, no adverse indirect effects on the Tarrytown Lighthouse would result from the project.

Constructed in 1940, the **Tarrytown Sewage Treatment Plant** is located in Pierson Park on the Hudson River shore in the Village of Tarrytown and currently functions as office space for the Tarrytown Recreation Department. The replacement bridge under either option would not constitute an adverse effect on the property, as it would not diminish the integrity of the character-defining features of the resource. The **Tarrytown Railroad Station** is located at 1 Depot Plaza in the Village Tarrytown. This single-story stone structure was built in 1890 for the Hudson Rail Line and currently is in use by MNR as a commuter rail line to New York City. The building is located approximately ½

Tappan Zee Hudson River Crossing Project Environmental Impact Statement

mile north of the Tappan Zee Bridge, which is visible from the train platforms and commuter parking lots. The project would not block or compromise views that are important to the historic context of the railroad station. The replacement of the river crossing would not affect the character-defining features of the structure. Therefore, the project would have no adverse indirect effect on the Tarrytown Railroad Station.

The **Tappan Landing Historic District** is located in the Tappan Landing neighborhood in the Village of Tarrytown, approximately 450 feet north of the New York State Thruway and the Tappan Zee Bridge toll plaza. Both roads within the Historic District are curvilinear cul-de-sacs set atop sloping land that overlooks the Hudson River and the Tappan Zee Bridge. The replacement bridge would be located in greater proximity; however, the setting of the historic district would not be substantially altered. Therefore, the project would have no adverse effect on the Tappan Landing Historic District.

Washington Irving Gardens is an early 20th-century apartment building at 300 South Broadway in the Village of Tarrytown, situated northeast of the Tappan Zee Bridge toll plaza and the NYSTA facility on Route 9. It is fully visible from Route 9, but screened from the bridge toll plaza and Interstate 87/287 by residential and commercial development. The proposed project would not diminish the integrity of the resource's setting or otherwise adversely affect the historic character of the property. Therefore, the replacement of the bridge and other infrastructure improvements would have no adverse effect on Washington Irving Gardens.

The **Old Croton Aqueduct** extends north-south through portions of the Indirect APE, near Route 9 in Tarrytown. The Old Croton Aqueduct is largely below ground though above ground elements are present in the APE including two ventilator shafts. The project would not result in any indirect adverse effects on the below grade aqueduct, nor affect the historic character or context of the above ground elements. Therefore, the project would not have any adverse effect to the Old Croton Aqueduct.

The structure at **99 White Plains Road**, formerly known as both 105 White Plains Road and the Goebel Collectors Club, is in the Village of Tarrytown. In 1979, the Village of Tarrytown designated the south, or front, facade a local landmark. The property is approximately 550 feet north of Interstate 87/287. It is fully visible from grade-level White Plains Road, but is screened by development from Interstate 87/287 which is in a cut. The ca. 1900 residence at **100 White Plains Road** is located approximately 400 feet north of Interstate 87/287. The property is fully visible from grade-level White Plains Road, but screened by development and a noise barrier from Interstate 87/287 which is in a cut. The project would not result in adverse effects to 99 or 100 White Plains Road.

The **Irving Historic District** is located in the Village of Tarrytown on the south side of Interstate 87/287, immediately south of Tappan Zee Bridge toll plaza. The Historic District is screened from the toll plaza by an existing noise barrier and vegetation. Therefore, the proposed reconfiguration of the toll plaza is not expected to visually or contextually affect the Historic District. Although some properties within the Irving Historic District have views of the existing Tappan Zee Bridge, the proposed replacement of the bridge would not adversely affect these resources. The Tappan Zee Bridge does not relate or contribute to the characteristics that qualify the historic district for inclusion in the National Register. The project would be constructed within the existing right-of-way, and as such would not alter the setting of this resource, which

overlooks the Hudson River, abutting the Interstate 87/287 right-of-way to the north with intervening vegetation and a noise barrier. Therefore, the project would not have an adverse effect on this resource.

The **Hope United Presbyterian Church** (now the First Korean Methodist Church of New York), built in 1931, is located at 500 South Broadway approximately 500 feet south of Interstate 87/287, which is situated in a shallow cut in this area. The church is screened from Interstate 87/287 by residential development and intermittent noise barriers that flank Interstate 87/287 to the south. Similarly, the neighboring **Glenwolde Park Historic District**, which consists of early-20th-century residences, is located approximately 500 feet south of the highway and is also screened from it by residential development and noise barriers. Therefore, the project would not result in an adverse effect to the Hope United Presbyterian Church or the Glenwolde Park Historic District.

Lyndhurst, also known as the Jay Gould Estate, is listed on the S/NR, designated as an NHL, and is a Village of Tarrytown landmark. The 80-acre estate is approximately 4,000 feet south of the Tappan Zee Bridge and has views of the Hudson River and the Tappan Zee Bridge. The replacement of the bridge would introduce a Hudson River crossing of a different design into the views from this resource (see **Figure 9-18**). However, the replacement bridge would not change aspects of Lyndhurst's setting that contribute to its historic significance nor would it diminish the integrity of the property's significant historic features. Therefore, the project would have no adverse indirect effect on Lyndhurst.

The S/NR-eligible **New County Park** is a 37-acre parcel along the west side of Route 9 between the estates of Sunnyside and Lyndhurst in the Village of Tarrytown. The park was the former location of three estates; while the estate buildings are no longer extant, significant landscape features remain. The proposed replacement bridge would not alter the setting or historic characteristics of this resource. Views from this location would continue to include the Hudson River and more distant views of the Hudson River crossing, though of a different design. The project would have no adverse indirect effect on the park.

Sunnyside, a 40-acre estate formerly the home of Washington Irving (1783–1859), is located at 1 West Sunnyside Lane along Route 9 in Tarrytown. Sunnyside is located approximately 1.5 miles south of the Tappan Zee Bridge. As described in reference to Lyndhurst, above, the proposed replacement of the bridge crossing would introduce a new element into the view from Sunnyside. However, the replacement bridge would not change aspects of Sunnyside's setting that contribute to its historic significance nor would it diminish the integrity of the property's significant historic features. Therefore, no adverse indirect effects to Sunnyside would result from the project.

The **South End Historic District** is located in the Village of Tarrytown on the west side of South Broadway; it ranges from approximately 3,000 feet to 1½ miles south of the Tappan Zee Bridge and Interstate 87/287 and includes several of the resources described above. The replacement of the river crossing would not meaningfully change the historic features of the historic district or its setting. Therefore, the project would have no adverse effect on the South End Historic District.

Tappan Zee Hudson River Crossing Project Environmental Impact Statement

Summary

In summary, though alternatives have been considered to avoid and minimize adverse effects to architectural resources, the project would result in adverse effects to the Tappan Zee Bridge and the South Nyack Historic District. Proposed measures to minimize or mitigate these adverse effects are discussed further in Section 10-6, below.

As described in Section 10-5-1, “No Build Alternative,” other projects projected in the APE would not remove or alter any historic properties. Therefore, there would not be a measurable cumulative impact beyond the adverse effects that have been identified and are described above.

10-5-2-2 ARCHAEOLOGICAL RESOURCES

As discussed in the methodology section of this chapter, effects to archaeological resources are only anticipated in the direct effects portion of the APE. Due to the nature of this bridge replacement project, it was determined that no potential for Indirect or Cumulative Effects exists. As no archaeological resources have been identified on the terrestrial portions of the APE for direct effects, no archaeological resources will be affected in that portion of the APE.

As described above, there is a possibility for the presence of deeply buried in situ marsh deposits and underlying river terraces approximately 45 to 50 feet below sea level to the north of the bridge. These deposits may contain evidence of prehistoric activity dating to the beginning of the Early Archaic Period or the Paleo-Indian Period. Subsurface disturbance of this landform could result in adverse effects on potential archaeological resources.

Further analysis will be undertaken to determine whether submerged S/NR eligible resources are present in the river portion of the APE for direct effects. If submerged resources are identified and determined to be S/NR eligible, the project may have an adverse effect on those resources as a result of dredging and construction of the replacement bridge. The FEIS will provide the results of this further analysis. Consultation with SHPO and any appropriate THPOs and consulting parties would be undertaken to identify measures to avoid, minimize or mitigate effects to any potential S/NR-eligible resources that may be adversely affected by the proposed project.

10-6 MITIGATION

10-6-1 ARCHITECTURAL RESOURCES

An adverse effect finding requires consultation to resolve adverse effects. Alternatives considered to avoid and minimize adverse effects to the Tappan Zee Bridge and the South Nyack Historic District are described above in Section 10-5, “Environmental Effects.” For properties that would be adversely affected by the Project, mitigation measures would be developed through consultation among FHWA, NYSDOT, NYSTA, SHPO, ACHP, THPOs, and other consulting parties and set forth in the MOA. The Draft MOA in **Appendix C** includes stipulations for proposed mitigation measures for consideration during the consultation process.

The Replacement Bridge Alternative would adversely affect the NR-eligible Tappan Zee Bridge by replacing it with a new crossing. Proposed measures to mitigate this direct

adverse effect on the Tappan Zee Bridge are described in the Draft MOA. They include documentation of the Tappan Zee Bridge following Historic American Engineering Record (HAER) standards; production of educational materials interpreting the history and significance of the Tappan Zee Bridge for use by local libraries, historical societies, and educational institutions; and interpretive signage along the proposed shared-use path. An adverse direct effect has also been identified under both Replacement Bridge options on the NR-eligible South Nyack Historic District in Rockland County. This effect would result from the proposed removal of two contributing resources within that district, 21 Cornelison Avenue and 78 Smith Avenue. Proposed measures to mitigate this direct adverse effect on the South Nyack Historic District are described in the Draft MOA included in **Appendix C**. They may include: planting vegetation along existing and proposed noise barriers along the western edge of the district; completing Historic American Building Survey (HABS) recordation to document the two contributing resources that would be removed; installation of signage interpreting the history and architecture of the South Nyack Historic District within the South Nyack Historic District or along the shared-use path that would be constructed along the western edge of the Historic District as part of the project

10-6-2 ARCHAEOLOGICAL RESOURCES

If submerged archaeological resources associated with the Paleo landform are identified and determined eligible for inclusion in the National Register of Historic Places, FHWA in coordination with NYSTA and NYSDOT, and in consultation with the SHPO, ACHP, THPOs, and other consulting parties as appropriate, will consider measures to avoid, minimize or mitigate adverse effects on identified resources. Geoarchaeological survey work to collect data is proposed in the Draft MOA.

If S/NR eligible historic resources, such as shipwrecks, are identified on the river bottom, consultation will be conducted to consider measures to avoid, minimize, or mitigate adverse effects. An appropriate archaeological treatment plan will be developed and implemented in coordination with SHPO and consulting parties, as appropriate, to mitigate unavoidable adverse effects associated with the project.