Table 3.37
Parks and Open Space in the Project Corridor: Washington Township

Facility Name and Location	Function and Use	Size (acres)	Population Served
Public Open Space: Thompson Tract (M.P. 62.5 northbound)	Passive Recreation	136.2	Local Community
Washington Township Community Park (M.P. 62.0 southbound)	Active Recreation	30.6	Local Community
Assunpink Wildlife Management Area (M.P. 62.9 to 63.3 southbound, M.P. 63.75 to 64.75 southbound, and M.P. 63.3 northbound)	Active and Passive Recreation	6,303.8	Local Community, County Residents, and State Residents

Table 3.38
Parks and Open Space in the Project Corridor: East Windsor Township

Facility Name and Location	Function and Use	Size (acres)	Population Served
East Windsor Regional Park (M.P. 66.0 to 66.8 northbound)	Active Recreation	45.42	Local Community
Lenox County Park (M.P. 65.0 southbound)	Active Recreation	21.32	Local Community
Turnpike Municipal Park (M.P. 65.5 southbound)	Active Recreation	74.2	Local Community
Public Open Space: Conover Tract (M.P. 65.5 to 66.4 southbound)	Passive Use	98.0	Local Community

3.8.3.8 Monroe Township

There are no parks, recreation areas or designated open space areas located within the Project Corridor in Monroe Township.

3.8.3.9 South Brunswick Township

There is one park located within the Project Corridor in South Brunswick Township. This park, Pigeon Swamp State Park, is generally located between Ridge and Davidsons Mill Roads (M.P. 76.2 to 76.7 on the southbound side of the Turnpike). The 1,250 acre park is currently undeveloped and contains a

complex of habitats ranging from open ponds to upland hardwood forest. It was purchased by the State in 1974 with Green Acres funding for preservation. This park is depicted on Figure 3-11e.

3.8.3.10 East Brunswick Township

Table 3.39 below lists the existing parks, recreation areas and designated open space areas located within the Project Corridor in East Brunswick Township. These facilities offer a wide array of activities for the community and are depicted on Figure 3-11f.

Table 3.39
Parks and Open Space in the Project Corridor: East Brunswick Township

Facility Name and Location	Function and Use	Size (acres)	Population Served
East Brunswick Baseball Managers Complex (M.P. 78.0 northbound)	Active Recreation	10.0	Local Community and County Residents
Crystal Springs Community Park (M.P. 78.0 to 78.8 northbound)	Active Recreation	102.0	Local Community
Tamarack County Golf Course (M.P. 78.3 to 79.2 southbound)	Active Recreation	371.0	Local Community and County Residents

The East Brunswick Baseball Managers Complex offers four lighted ballfields, parking, and restrooms. Crystal Springs Community Park is one of the larger public spaces in the area and offers the community many opportunities for outdoor activities, including basketball courts, tennis courts, tot lots, and volleyball courts. Additionally, it offers many water-based activities such as boating, fishing, skating, and swimming. There are other areas in the park for outdoor enthusiasts to enjoy themselves with hiking trails, natural areas and picnic areas. The park is open later them most other parks in the area; it closes at 10:30PM in the summer months. As with the Baseball Managers Complex, Crystal Springs offers public parking and restrooms.

Finally, Tamarack County Golf Course features two 18-hole championship golf courses. The East (Gold and Blue) course is a 6,226-yard, par-71 course and the West (Red and White) course is a 7,025-yard, par-72 course. Tamarack includes a full-service restaurant, locker rooms and electric carts. The driving range features 34 stalls, five target greens and top-of-the-line tees and teepads. Rates and greens fees vary and are lower for county residents.

In addition to the facilities located in the Project Corridor, East Brunswick contains Ireland Brook Park, 348 acres; the Ireland Brook Park Extension, 144 acres; Jamesburg Conservation Area, 1.4 acres; and the County Fairgrounds, 541.0 acres.[26]

[26] Interim Planning Report Concerning the Rural Preservation and R-1 Land Use Categories, May 6, 1998.

3.8.3.11 Milltown Borough

There are no parks, recreation areas or designated open space areas located within the Project Corridor in the Borough of Milltown.

3.9 Cultural Resources

3.9.1 Introduction

This section presents a description of the existing environment of the Project Corridor as it relates to cultural resources, including archaeological, and historic architectural resources. Also included in this section is a general description of the methods employed by Berger to identify unrecorded cultural resources. The archaeological and historic architectural investigations are described in greater detail in the separate Cultural Resource Survey Report prepared for the Proposed Project.

The Project Corridor is defined as the area within the existing Turnpike mainline right-of-way between the Proposed Project's southern terminus located south of Interchange 6 and the northern terminus near Interchange 9, including interchanges. For the purposes of identifying previously recorded cultural resources, the Project Corridor includes an area 500 feet beyond the right-of-way on both sides of the Turnpike. At Interchange 8, the Project Corridor also includes an expanded area that covers potential toll plaza relocation alternatives that have been studied.

In addition to the general Project Corridor defined for identifying known cultural resources in the vicinity of the Proposed Project, Areas of Potential Effect (APE) also have been defined to identify unrecorded resources that could potentially be impacted by the Proposed Project. The APE is actually defined differently for subsurface (archaeological) resources than it is for above-ground (historic architectural) properties.

The archaeological APE comprises all non-paved areas within the existing and proposed Turnpike right-of-way that would be directly disturbed due to the Proposed Project. The archaeological APE therefore, represents the locations of all proposed construction within areas that presumably have been undisturbed by previous construction related either to the Turnpike mainline and associated interchanges and service areas, or other nearby developments within the Project Corridor.

The historic architectural APE has been defined in order to identify potential changes in the physical and visual character of historic properties and its effect on the surrounding area and, therefore, extends beyond the area defined as the archaeological APE. The historic architectural APE essentially coincides with the above-defined Project Corridor for cultural resources in that it encompasses the area within the existing Turnpike mainline right-of-way between the southern terminus located south of Interchange 6 and the northern terminus near Interchange 9, including interchanges. Additionally, at all interchanges, service areas, maintenance areas and select locations where local roadway overpasses will be realigned, the historic architectural APE was buffered by 500 feet to include the potential visual impact of the widening. At Interchange 8, the historic architectural APE includes the expanded area that covers potential toll plaza relocation alternatives being studied.

This section discusses both previously-recorded and field-identified archaeological and historic architectural resources located in the Project Corridor.

3.9.2 Data Sources and Methodology

The cultural resource assessment of the Project Corridor consisted of background research of previously recorded archaeological resources and historic properties, followed by a field investigation.

Background research consisted of a review of published and unpublished sources on the archaeology and history of the Project Corridor and vicinity. This review included the following: (1) examination of cultural resource reports, historic architectural resource information, nomination forms for properties listed on the National Register of Historic Places (NRHP) and the New Jersey Register of Historic Places (NJRHP), county historic architectural surveys, and archaeological site information at the New Jersey Historic Preservation Office (NJHPO) in Trenton; (2) local histories, historic maps and other documents held at the New Jersey State Library, also in Trenton; (3) archaeological site files stored at the New Jersey State Museum, in Trenton; and (4) Turnpike right-of-way plans associated with the original construction of the mainline in 1949-1950.

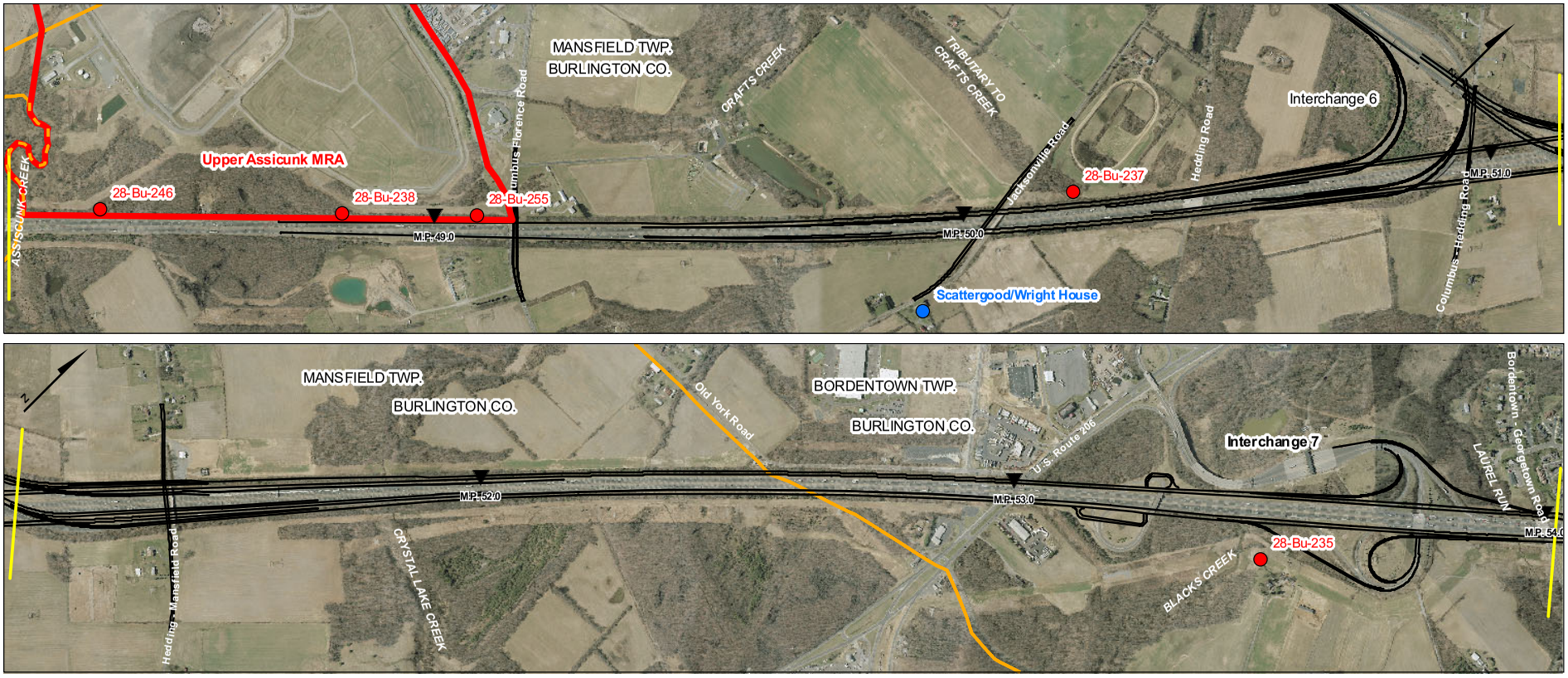
Archaeological and historic architectural field investigations were undertaken in March 2006. The archaeological work effort consisted of reconnaissance surveys and the excavation of systematically located shovel tests within the archaeological APE. The purpose of the reconnaissance surveys, in conjunction with the background research, was to develop a sensitivity assessment that would assist in the creation of a predictive model that would stratify the archaeological potential of the Project Corridor into areas of high, low, and no potential. Subsurface archaeological excavations were conducted in areas assessed as high archaeological potential and in low probability areas located at interchanges and service areas. Portions of the APE with demonstrable disturbance due to previous construction-related activities associated with the Turnpike and various utility and stormwater drainage installations were identified in the field and excluded from field testing.

Subsurface archaeological survey involved the excavation of shovel tests at 50-foot intervals. Each shovel test was given a codified nomenclature referencing the location of the shovel tests and sequential number designation and illustrated on an aerial map of the Project Corridor. The shovel tests measured approximately 1.5 feet in diameter and were excavated into sterile soils, the water table, or impenetrable impasses. During excavation, changes in soil color, composition, and texture were used to determine stratigraphic levels. In every subsurface test, each soil stratum was assigned a Roman numeral in ascending order, reflecting its relative position in the test profile; thus, three strata encountered in a single shovel test would be designated respectively as Stratum I, Stratum II, and Stratum III, with Stratum I located at the top of the profile. All soils were screened through 0.25-inch hardware mesh for systematic artifact recovery. When artifacts were recovered, they were bagged by shovel test according to stratigraphic provenience. Small quantities of modern artifacts, such as bottle glass, amorphous metal objects, wire, and plastic, were deemed not to be significant if derived from surface strata, construction fill, or other disturbed layers. Such artifacts, if recovered, were either sampled to provide a temporal marker or discarded in the field, but in either case, they were noted in the field records**.**

The historic architectural work effort was comprised of a pedestrian reconnaissance survey focused primarily on property anticipated to be impacted by the widening and interchange improvements, buildings and structures immediately adjacent to overpass realignments, and potential impacts to previously recorded historic architectural properties and districts. During this survey, photographs were taken of all buildings and structures that appeared to be fifty years of age or older. Notes were also taken regarding the building materials and other structural characteristics of the buildings in an effort to document and assess the resource's eligibility for inclusion on the NRHP and the NJRHP. A preliminary assessment of potential visual impacts to eligible or listed historic properties and districts also was completed. The details of this survey are presented in a separate cultural resource survey report.

3.9.3 Description of Resources

All of the previously-recorded and field-identified cultural resources within the Project Corridor that are discussed below are graphically depicted in Figures 3-12a through 3-12f.



Legend

- Matchline
- Municipal / County Boundary
- Archaeological Sites
- Historic Property
- Historic District
- Linear Historic District

0 500 1,000 2,000 Feet

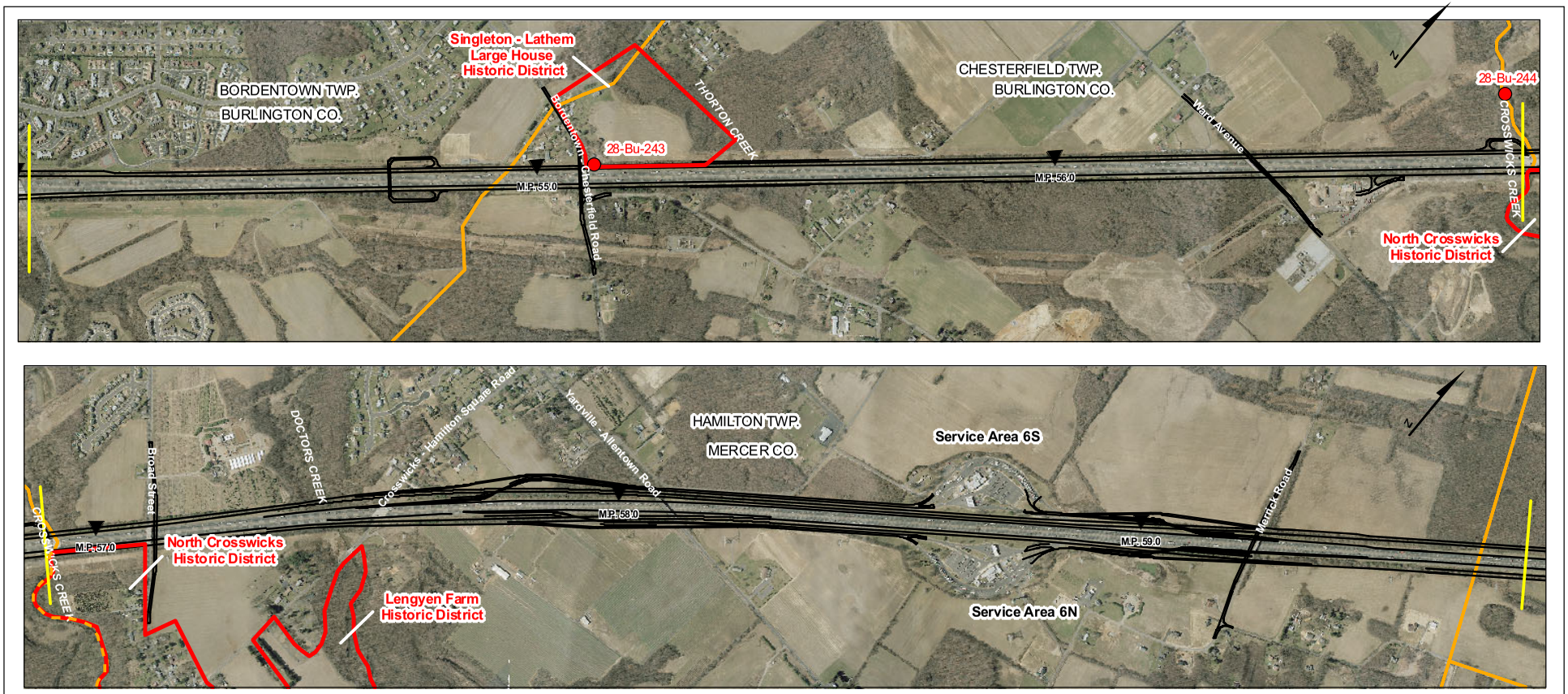
Source: Digital Orthophotos - 2006 Aerial Photography.

CULTURAL RESOURCES IN THE PROJECT CORRIDOR

New Jersey Turnpike Interchange 6 to 9 Widening
Burlington, Mercer and Middlesex Counties
Executive Order No. 215
Environmental Impact Statement

NEW JERSEY TURNPIKE AUTHORITY
NEW JERSEY TURNPIKE

FIGURE 3-12a



Legend

- Matchline
- Municipal / County Boundary
- Archaeological Sites
- Historic Property
- Historic District
- Linear Historic District

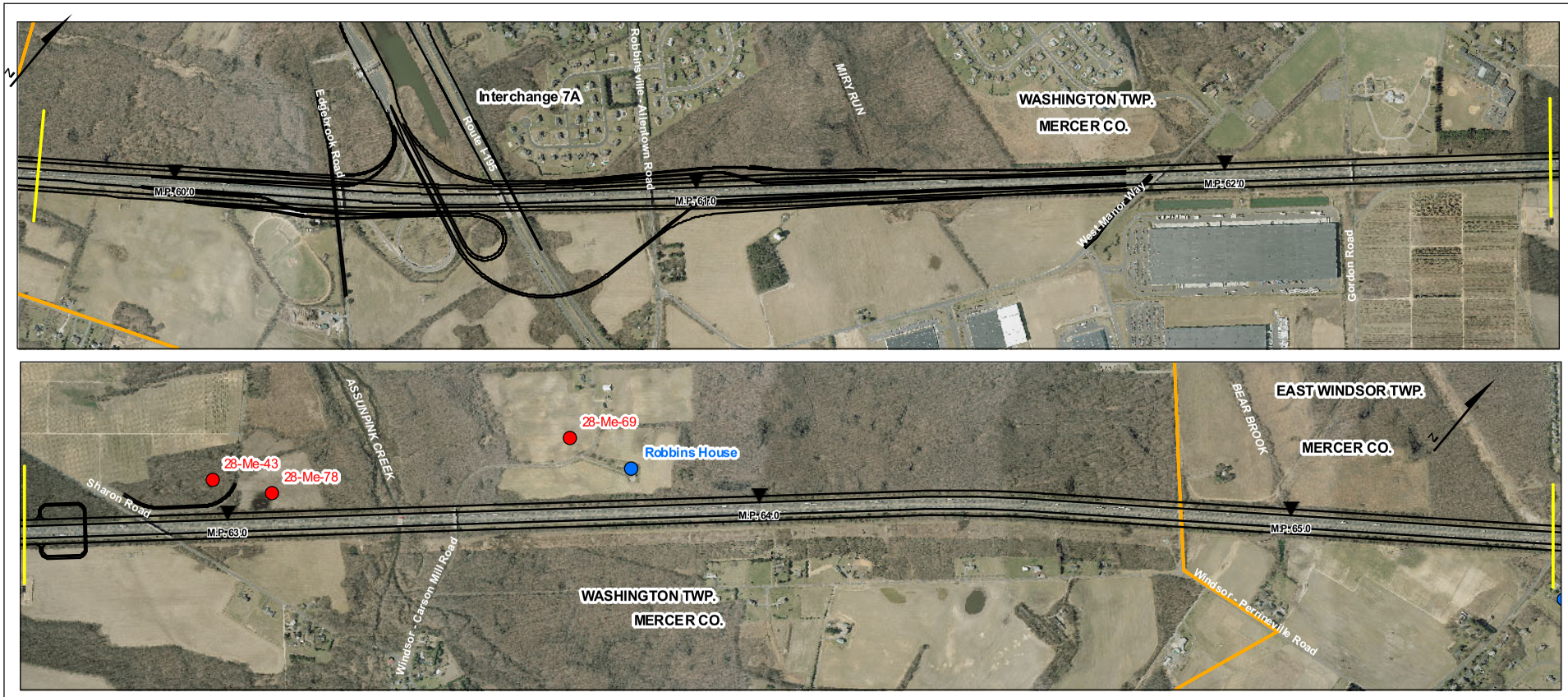
Source: Digital Orthophotos - 2006 Aerial Photography.

CULTURAL RESOURCES IN THE PROJECT CORRIDOR

New Jersey Turnpike Interchange 6 to 9 Widening
Burlington, Mercer and Middlesex Counties
Executive Order No. 215
Environmental Impact Statement

NEW JERSEY TURNPIKE AUTHORITY
NEW JERSEY TURNPIKE

FIGURE
3-12b



Legend

- Matchline
- Municipal / County Boundary
- Archaeological Sites
- Historic Property
- Historic District
- Linear Historic District

0 500 1,000 2,000 Feet

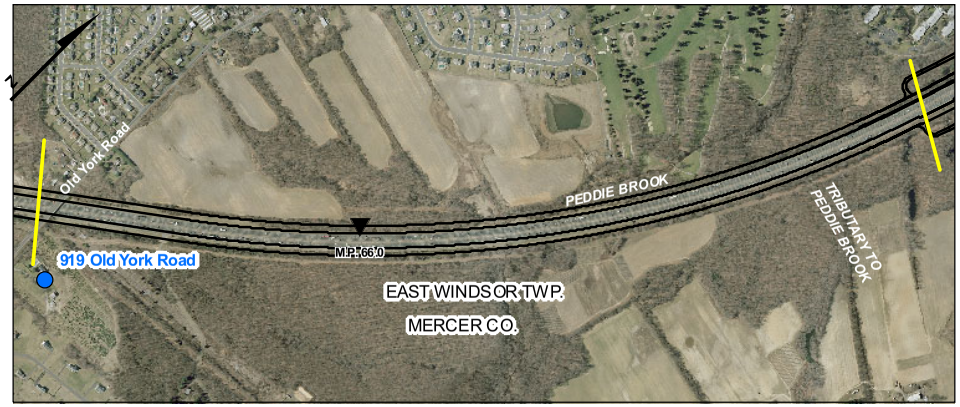
Source: Digital Orthophotos - 2006 Aerial Photography.

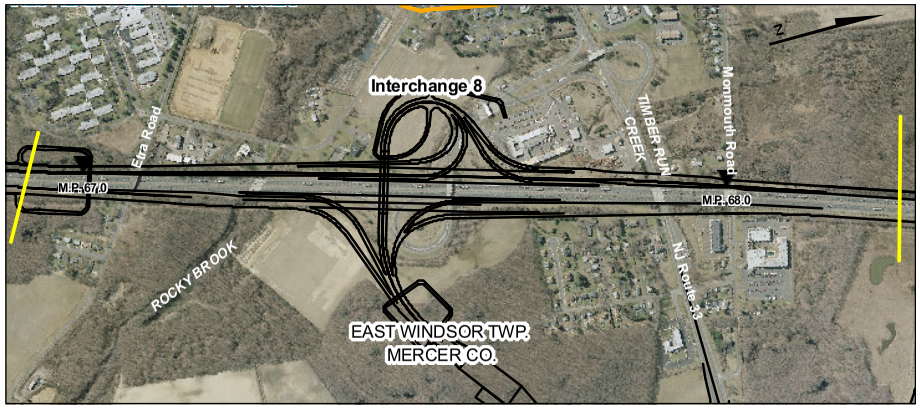
CULTURAL RESOURCES IN THE PROJECT CORRIDOR

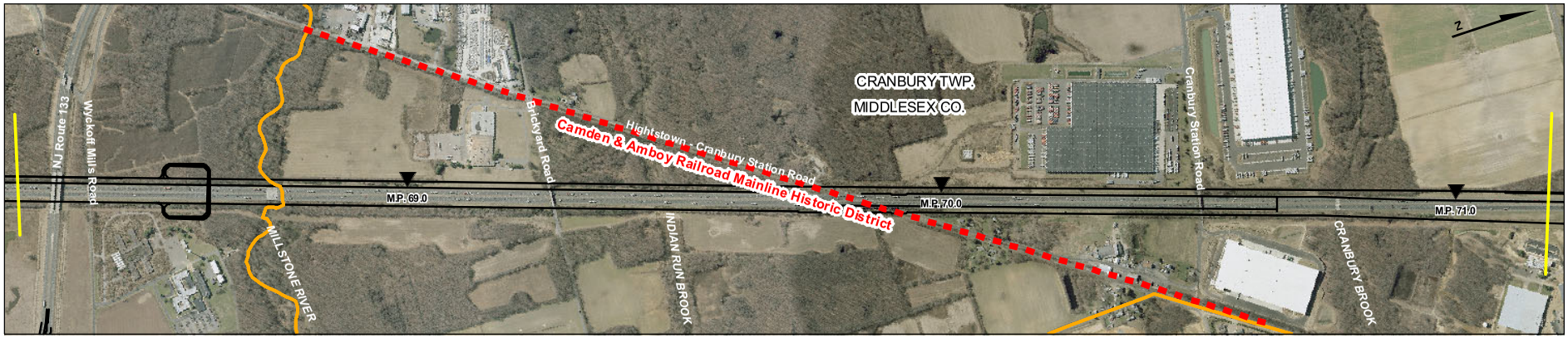
New Jersey Turnpike Interchange 6 to 9 Widening
Burlington, Mercer and Middlesex Counties
Executive Order No. 215
Environmental Impact Statement

NEW JERSEY TURNPIKE AUTHORITY
NEW JERSEY TURNPIKE

FIGURE 3-12c







Legend

- Matchline
- Municipal / County Boundary
- Archaeological Sites
- Historic Property
- Historic District
- Linear Historic District

0 500 1,000 2,000 Feet

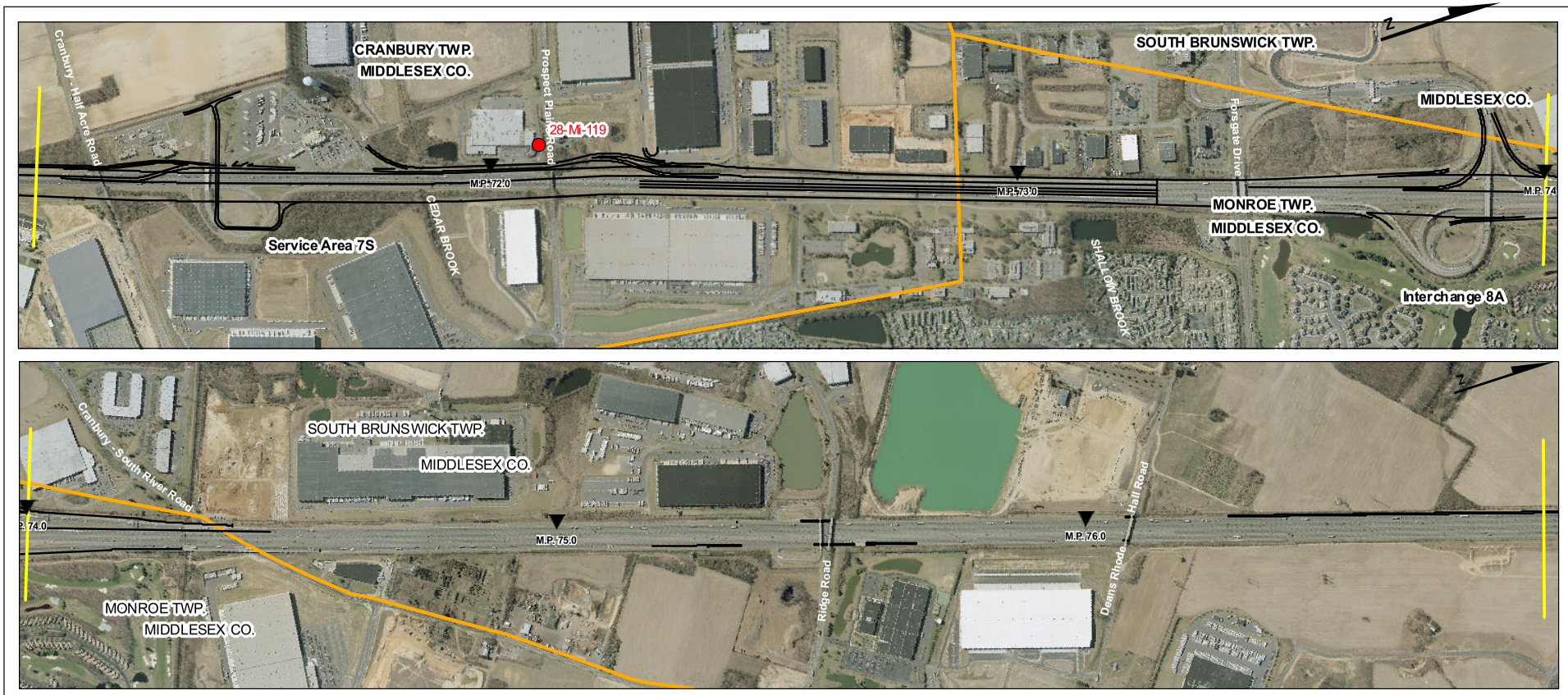
Source: Digital Orthophotos - 2006 Aerial Photography.

CULTURAL RESOURCES IN THE PROJECT CORRIDOR

New Jersey Turnpike Interchange 6 to 9 Widening
Burlington, Mercer and Middlesex Counties
Executive Order No. 215
Environmental Impact Statement

NEW JERSEY TURNPIKE AUTHORITY
NEW JERSEY TURNPIKE

FIGURE 3-12d



Legend

- Matchline
- Municipal / County Boundary
- Archaeological Sites
- Historic Property
- Historic District
- Linear Historic District

0 500 1,000 2,000 Feet

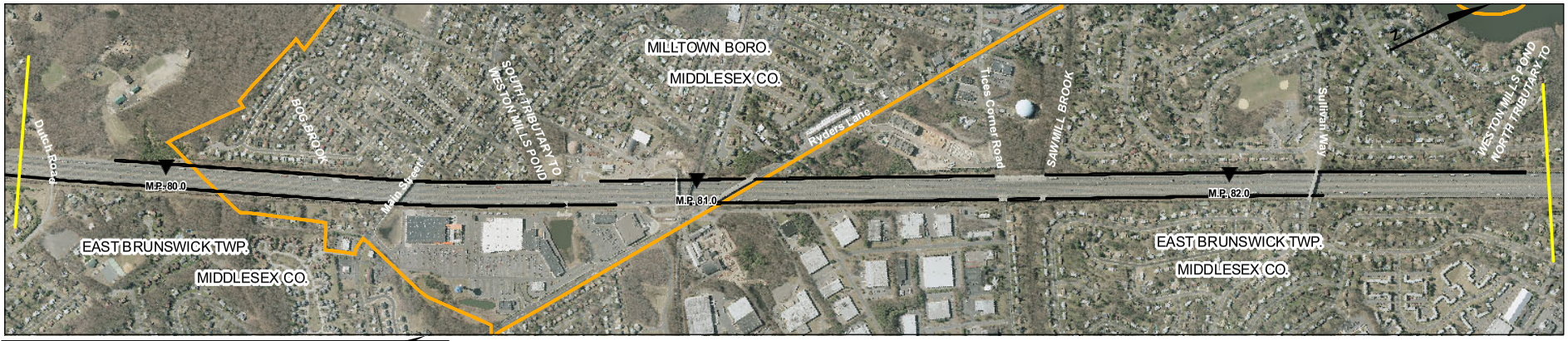
Source: Digital Orthophotos - 2006 Aerial Photography.

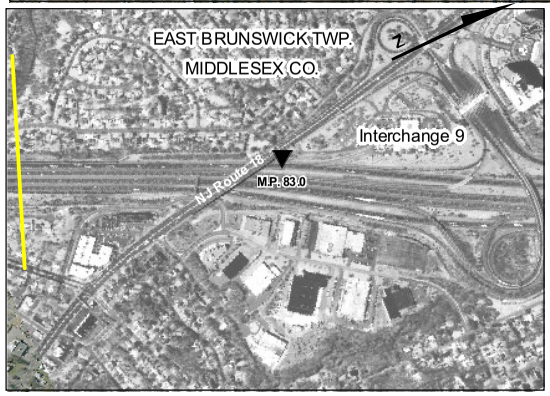
CULTURAL RESOURCES IN THE PROJECT CORRIDOR

New Jersey Turnpike Interchange 6 to 9 Widening
Burlington, Mercer and Middlesex Counties
Executive Order No. 215
Environmental Impact Statement

NEW JERSEY TURNPIKE AUTHORITY
NEW JERSEY TURNPIKE

FIGURE 3-12e





Legend

- Matchline
- Municipal / County Boundary
- Archaeological Sites
- Historic Property
- Historic District
- Linear Historic District

0 500 1,000 2,000 Feet

Source: Digital Orthophotos - 2006 Aerial Photography.

CULTURAL RESOURCES IN THE PROJECT CORRIDOR

New Jersey Turnpike Interchange 6 to 9 Widening
Burlington, Mercer and Middlesex Counties
Executive Order No. 215
Environmental Impact Statement

NEW JERSEY TURNPIKE AUTHORITY
NEW JERSEY TURNPIKE

FIGURE 3-12f

3.9.3.1 Previously Identified Archaeological Resources

According to the archaeological site files at the New Jersey State Museum, and the files of the NJHPO, there are a total of 11 previously recorded archaeological sites located within the Project Corridor. Of these, seven contain prehistoric archaeology while the remaining four date to the historic period (Table 3.40). The prehistoric sites yielded diagnostic artifacts such as projectile points, hammerstones, and pottery, as well as lithic scatters and fire-cracked rock. All of these prehistoric archaeological sites were discovered near streams and tend to cluster around the Assiscunk, Crosswicks, and Assunpink Creeks.

Table 3.40
Previously Documented Archaeological Resources within the Project Corridor

Approximate Location	Site	Cultural Affiliation	Comments
Between Assiscunk Creek and Interchange 6 M.P. 48.4 (Southbound)	28-Bu-246	Prehistoric	Archaic; Within Upper Assiscunk Multiple Resource Area (MRA)
Between Assiscunk Creek and Interchange 6 M.P. 48.9 (Southbound)	28-Bu-238	Prehistoric	Lithic Scatter; Within Upper Assiscunk MRA
Between Assiscunk Creek and Interchange 6 M.P. 49.1 (Southbound)	28-Bu-255	Historic	Late 19th Century Schoolhouse; Within Upper Assiscunk MRA
Between Assiscunk Creek and Interchange 6 M.P. 50.1 (Southbound)	28-Bu-237	Prehistoric	Partially stripped of topsoil for the construction of the Turnpike; Some fire cracked rock and lithics
Interchange 7 M.P. 53.5 (Southbound)	28-Bu-235 (Dunn's Mill)	Historic	Grist Mill
Between Int. 7 and 7A M.P. 55.1 (Southbound)	28-Bu-243	Historic	Early - Mid 19th Century Farmstead with Flemish/Dutch Brick Farmhouse, barn and out buildings; New World Research found it to be potentially eligible for National Register listing
Between Int. 7 and 7A M.P. 56.9 (Southbound)	28-Bu-244	Historic	Bridge Remains 600 feet west of Turnpike
Between Int. 7A and 8 M.P. 62.9 (Southbound)	28-Me-43	Prehistoric	No report
Between Int. 7A and 8 M.P. 63.0 (Southbound)	28-Me-78	Prehistoric	No report
Between Int. 7A and 8 M.P. 63.6 (Southbound)	28-Me-69	Prehistoric	a.k.a. 28-Me-27
Between Int. 8 and 8A M.P. 72.1 (Southbound)	28-Mi-119 (Prospect Plains Site 1)	Prehistoric	Mortar, Stemmed Biface

Source: The Louis Berger Group, Inc., 2005.

3.9.3.2 Previously Identified Historic Architectural Resources

Research conducted at the office of the NJHPO indicated that there are six historic properties and/or districts located in the Project Corridor that have been listed in or determined eligible for listing in the NRHP or the NJRHP by the NJHPO (Table 3.41).

The criteria for listing in the NRHP and the NJRHP are the same and are as follows:

- **Criterion A:** Associated with events that have made a significant contribution to the broad patterns of our history.
- **Criterion B:** Associated with the lives of persons significant in our past.
- **Criterion C:** Embody the distinctive characteristics of type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.
- **Criterion D:** Have yielded or may be likely to yield, information important in prehistory or history.

Table 3.41
Previously Documented Historic Properties and Districts in the Project Corridor

Location	Property Name	Eligibility Status	Eligibility Criteria[1]	Present in 2005
Between Assiscunk Creek and Interchange 6 M.P. 48.4 to M.P. 49.2 (Southbound)	Upper Assiscunk Multiple Resource Area	NJHPO Opinion (7/16/1991)	A, B, D	Yes
Between Assiscunk Creek and Interchange 6 M.P. 49.9 (Northbound)	Scattergood/Wright House	SR Listed 8/2/78	B, C	Yes
Between Int. 7 and 7A M.P. 55.1 – 55.4 (Southbound)	Singleton-Lathem-Large House	NR/SR 03/07/1979	A, C	Yes
Between Int. 7 and 7A M.P. 57.0 (Northbound)	North Crosswicks Historic District	NJHPO opinion 10/24/2000	A, C, D	Yes
Between Int. 7 and 7A M.P. 57.5 (Northbound)	Lengyen Farm Complex	NJHPO opinion 4/23/2001	C	Yes
Between Int. 8 and 8A M.P. 69.8 (Northbound & Southbound)	Camden and Amboy Railroad Main Line Historic District	NJHPO opinion 6/26/1975; 7/12/1991; 10/04/1991	A, C	Yes

Note: Eligibility criteria are defined in Section 3.9.2.2.
Source: The Louis Berger Group, Inc., 2005.

3.9.3.3 Field-Identified Resources

One archaeological resource, a late-nineteenth through mid-twentieth century historic dump was identified within the archaeological APE. The resource, located at the southbound on-ramp of Interchange 7A is recommended not eligible for inclusion in the NJRHP or NRHP.

Two historic architectural resources were identified that were not previously inventoried for inclusion in the NJRHP or NRHP (Table 3.42). The Robbins House, located at 245 Windsor Road in Washington Township on the southbound side of the Turnpike, stands as an excellent example of an early nineteenth century Federal-style farmhouse, and is recommended as potentially eligible for inclusion in the NJRHP/NRHP under Criterion C, as a noteworthy example of an architectural style or method of construction. The property at 919 Old York Road in East Windsor contains a large nineteenth century dwelling, a circa 1920 barn, and a circa 1920 equipment storage building. Despite some modifications, the house possesses good integrity and may have originally functioned as a tavern or inn along Old York Road. The property is recommended eligible for the NJRHP/NRHP under Criterion A for its association with transportation trends in early nineteenth century New Jersey.

Table 3.42
Field-Identified Resources
in the Project Corridor

Location	Archaeological Site or Historic Property Name	Address	Cultural Affiliation	Comments
Interchange 7A, Southbound On-ramp	To be Assigned		Historic	Late 19th – Mid-20th Century Dump, Not Eligible
Between Int. 7A and 8 M.P. 65.55 (Northbound)	Dwelling	919 Old York Road	Historic	Criterion A
Between Int. 7A and 8 M.P. 63.6 (Southbound)	Robbins House	245 Windsor Road, Washington Twp.	Historic	Criterion C

3.10 Visual Quality and Aesthetics

3.10.1 Introduction

Executive Order 215 recognizes the visual, scenic, and aesthetic qualities of a landscape as an environmental component that is to be taken into account in a project's environmental documentation. In addition to this regulatory requirement to consider aesthetic quality, the general public is increasingly demanding aesthetic enhancements to existing and proposed transportation facilities.

Aesthetics is most often associated with a sense of beauty. By definition it "relates to the enjoyment or study of beauty."[27] With respect to the practice of transportation design, aesthetics deals with the visual

[27] Cambridge Advanced Learners Dictionary, Cambridge University Press 2003.

integration of highways and other transportation modes into the fabric of a landscape in a way that blends with or complements that setting. This is important since the view to and from highways and other transportation facilities contributes to the perception of communities and the quality of a place.

Visual quality refers to the aesthetics of a view. Although assessing visual quality is subjective, a standard approach for such assessment has been developed by the Federal Highway Administration (FHWA) for use on documenting its own actions; this approach employs the criteria of vividness, intactness, and unity.[28] *Vividness* is the visual power or memorability of landscape components as they combine in a visual pattern. *Intactness* is the visual integrity of the natural and artificial landscape and its freedom from encroaching elements. *Unity* is the visual coherence and compositional harmony of the landscape considered as a whole.

Visual resources may include unique views and views identified as important in local plans, as well as those from properties on or eligible for inclusion on the National or State Register of Historic Places, state parks, and county parks.

3.10.2 Data Sources and Methodology

Because the Turnpike is already part of the existing landscape, for the purposes of the visual quality assessment of the Proposed Project, the Project Corridor is defined as the area located within 2,000 feet of either side of the existing mainline right-of-way, including interchanges. At Interchange 8, the Project Corridor also includes an expanded area that covers potential toll plaza relocation alternatives that have been studied.

Aerial photography, USGS topographic mapping and field reconnaissance of the Project Corridor were used to characterize the existing landscape and to inventory any unique visual features or viewsheds. Local master plans were reviewed and interviews with municipal planners and other officials were conducted to characterize the type of visual environment that local residents have envisioned for their respective communities.

For this EIS, the visual quality of the Project Corridor is ranked as low, medium, or high. Views of high quality have topographic relief, a variety of vegetation, rich colors, impressive scenery, and unique natural and/or built features. Views of medium quality have interesting but minor landforms, some variety in vegetation and color, and/or moderate scenery. Views of low quality have uninteresting features, little variety in vegetation and color, uninteresting scenery, and/or common elements. The FHWA guidelines explain that all three criteria – vividness, intactness, and unity – must be high to indicate high quality.

3.10.3 Existing Visual Quality and Aesthetics

A mix of developed and natural landscapes characterizes the Project Corridor. The southern and central portions of the corridor are primarily rural in nature, while the northern portion is dominated by warehouses and moderate to dense suburban residential development. The landscape pattern in the corridor has been influenced by development radiating south from the greater New York Metropolitan Area over time. The views from the road and of the road along both sides of the Turnpike are presented below by individual segment, from south to north.

[28] *Visual Impact Assessment for Highway Projects*, FHWA Publication No. HI-88-054, 1983.

3.10.3.1 Assiscunk Creek to Interchange 6

Northbound Side of the Turnpike

General Visual Setting

On the northbound side of the Turnpike in this segment, the Project Corridor has a rural visual character with a mix of natural features and artificial elements. Natural features include Assiscunk Creek, Crafts Creek, agricultural fields (corn, soy, and other grain crops), mowed turf and small upland deciduous forests. Artificial elements include isolated residences along Hedding Road, farm buildings, a single-family residential subdivision located near the outer limits of the corridor east of Hedding Road and the steel towers and overhead electric lines associated with PSE&G's New Freedom – Deans Line.

The visual quality of this segment of the Project Corridor can be described as having moderate vividness resulting from the scenic nature of the agricultural lands, farm buildings, and rural residences. Views from most points within this segment of the corridor are only moderately intact and unified because of the presence of PSE&G's New Freedom – Deans Line and its associated steel towers and overhead electric lines, all of which serve as encroaching elements onto the landscape.

View from the Road

The Turnpike in this segment of the Project Corridor is screened by a thin, mixed upland deciduous forest located between the Turnpike's outside drainage ditches/swales and the existing right-of-way line. These narrow forested areas are contiguous with larger forested tracts in several areas and end at the right-of-way line in other areas. Dominant vegetation within these areas includes black cherry, oak species, maple species, sweet gum and tulip poplar in the canopy. Scrub pine is occasionally present. The understory contains young canopy species as well as barberry, grape vines, forbs and grasses. These areas effectively screen the view of the surrounding landscape from motorists using the Turnpike, resulting in a view of low visual quality.

View of the Road

Because of the above-mentioned narrow forested areas located between the Turnpike's outside drainage ditches/swales and the existing right-of-way line, much of the Turnpike is not visible from the surrounding landscape, resulting in a view of low visual quality. In addition, given the limited number of population centers in the vicinity, the opportunity for views of the roadway are limited as well. The only visually-sensitive resource in this segment of the Project Corridor is the Scattergood/Wright House, a late-18th Century homestead located on Hedding Road, approximately 700 feet from the existing right-of-way. The Turnpike is barely visible from this property due to the intervening trees and brush.

Southbound Side of the Turnpike

General Visual Setting

On the southbound side of the Turnpike in this segment, the Project Corridor also has a rural visual character with a mix of natural features and artificial elements. South of Columbus-Florence Road, the landscape is dominated by the Burlington County Resource Recovery Facility and its landfill. Other artificial elements include isolated residences and farm buildings. Natural features include Assiscunk Creek, Crafts Creek, agricultural fields (corn, soy, and other grain crops), mowed turf and small upland deciduous forests.

The visual quality of the portion of the Project Corridor south of Columbus-Florence Road can be described as having moderate vividness. Although the landfill is a dominating presence in its immediate vicinity, views from various points are interrupted by trees, which have a visually muting effect. Views within this segment of the corridor are not intact nor are they unified, again because of the presence of the landfill. North of Columbus-Florence Road, the visual quality can be described as having moderate vividness resulting from the scenic nature of the agricultural lands and rural residences. Views within this segment of the corridor are highly intact and unified because of the landscape's freedom from encroaching elements and little to moderate topographic relief.

View from the Road

For much of its length within this segment of the Project Corridor, the view of the surrounding landscape is screened from motorists using the Turnpike by the above-mentioned narrow forested areas, as well as by forested areas beyond the right-of-way line, resulting in a view of low visual quality.

View of the Road

Much of the Turnpike in this segment of the Project Corridor is not visible from the surrounding landscape, due to the thin, mixed upland deciduous forest located between the Turnpike's outside drainage ditches/swales and the existing right-of-way line. This has resulted in a view of low visual quality. There are no visually-sensitive resources that could be affected by altered views of the roadway located in this segment of the corridor.

3.10.3.2 Interchange 6 to Interchange 7

Northbound Side of the Turnpike

General Visual Setting

On the northbound side of the Turnpike in this segment, the Project Corridor has a predominantly rural visual character with a mix of natural features and artificial elements. Natural features include agricultural fields (corn, soy, and other grain crops), mowed turf, Crystal Lake Creek, Blacks Creek, and two moderate to large upland deciduous forests. Artificial elements include a small number of isolated residences, three commercial properties (one vacant) located on U.S. Route 206, and the steel towers and overhead electric lines associated with PSE&G's New Freedom – Deans Line. In addition, a large commercial property, the NADE Auto Auction, is located at the intersection of U.S. Route 206 and N.J. Route 68. This parcel is situated at the very edge of the Project Corridor and lies mainly outside of it.

The visual quality of this segment of the Project Corridor can be described as having moderate vividness resulting from the scenic nature of the agricultural lands and forests. Views within this segment of the corridor are moderately intact and unified because of the presence of PSE&G's New Freedom – Deans Line and its associated steel towers and overhead electric lines, as well as the commercial properties located near U.S. Route 206, all of which serve as encroaching elements onto the landscape.

View from the Road

For much of its length within this segment of the Project Corridor, the view of the surrounding landscape is screened from motorists using the Turnpike by the above-mentioned narrow forested areas, resulting in a view of low visual quality. The Turnpike rises over this vegetation to cross over U.S. Route 206, affording motorists a moderately vivid view of the surrounding landscape. Because of

the commercial structures and overhead electric transmission lines present, this view is only moderately intact and unified.

View of the Road

Much of the Turnpike in this segment of the Project Corridor is not visible, being effectively screened from the surrounding landscape by the thin, mixed upland deciduous forest located between the Turnpike's outside drainage ditches/swales and the existing right-of-way line. This has resulted in a view of low visual quality. In addition, two moderate to large upland deciduous forests also serve to screen the view of the roadway from portions of the surrounding area. There are no visual resources that could be affected by altered views of the roadway located in this segment of the corridor.

Southbound Side of the Turnpike

General Visual Setting

On the southbound side of the Turnpike in this segment, the Project Corridor has a primarily rural visual character up to Old York Road. In this portion of the Project Corridor, natural features are represented by Crystal Lake Creek, Blacks Creek, agricultural fields (corn, soy, and other grain crops), mowed turf and two small to moderate tracts of upland deciduous forests. Artificial elements include isolated rural residences, farm buildings, and PSE&G's Trenton – Burlington Line and its associated steel towers and overhead electric lines. There are no visually-sensitive resources located in this portion of the corridor.

The visual quality of the area between Interchange 6 and Old York Road can be described as having moderate vividness resulting from the scenic nature of the agricultural lands and forests. Views within this portion of the corridor are moderately intact and unified because of the presence of PSE&G's Trenton – Burlington Line and its associated steel towers and overhead electric lines, which serve as encroaching elements onto the landscape.

North of Old York Road to Interchange 7, the visual character is decidedly more suburbanized, with the presence of a small office park, a truck stop, an abandoned paved parking lot, and several warehouses. In this portion of the corridor, natural features are represented by agricultural fields, mowed turf, and two small to moderate tracts of upland deciduous forests. Artificial elements include the aforementioned commercial structures.

The visual quality of the area between Old York Road and Interchange 7 can be described as having moderate vividness resulting from the presence of commercial uses with ordinary architecture. Views within this portion of the corridor are not intact or unified because of the incompatibility between the area's natural features and artificial elements, as well as the presence of PSE&G's Trenton – Burlington Line and its associated steel towers and overhead electric lines, all of which serve as encroaching elements onto the landscape.

View from the Road

For much of its length within this segment of the Project Corridor, the view of the surrounding landscape is screened from motorists using the Turnpike by the above-mentioned narrow forested areas, as well as forested areas beyond the right-of-way line. This has resulted in a view of low visual quality.

View of the Road

Much of the Turnpike in this segment of the Project Corridor is not visible, being screened from the surrounding landscape by the previously mentioned thin, mixed upland deciduous forest, as well as by forested areas beyond the right-of-way line. This has resulted in a view of low visual quality. There are no visually-sensitive resources that could be affected by altered views of the roadway located in this segment of the corridor.

3.10.3.3 Interchange 7 to Interchange 7A

Northbound Side of the Turnpike

General Visual Setting

On the northbound side of the Turnpike in this segment, the Project Corridor has a predominantly rural visual character with a mix of natural features and artificial elements. Natural features include agricultural fields (corn, soy and other grain crops), mowed turf, several streams, and several moderate to large upland deciduous forested tracts. Artificial elements include: Clifton Mill, a large residential subdivision located north of Bordentown-Georgetown Road (situated at the very edge of the Project Corridor, lying mainly outside of it.); isolated rural residences and farm buildings; PSE&G's New Freedom – Deans Line and its associated steel towers and overhead electric lines; the steel towers and overhead electric lines of PSE&G's Trenton – Burlington Line (which crosses over to the northbound side of the Turnpike at Interchange 7); PSE&G's Crosswicks Substation, located on the south side of Bordentown-Crosswicks Road; the Colonial Pipeline Company's Allentown Pressure Station, located on the south side of Ward Avenue; the Authority's Maintenance District No. 3 facilities, located on the north side of Ward Avenue; and Service Area 6N.

The visual quality of this segment of the Project Corridor can be described as having moderate vividness resulting from the scenic nature of the agricultural lands, farm buildings, and rural residences. Views within this segment of the corridor are moderately intact and unified because of the presence of PSE&G's New Freedom – Deans Line and its associated steel towers and overhead electric lines, as well as the electric substation and the natural gas pressure station, all of which serve as encroaching elements onto the landscape.

View from the Road

For much of its length within this segment of the Project Corridor, the view of the surrounding landscape is screened from motorists using the Turnpike by the above-mentioned narrow forested areas, as well as forested areas beyond the right-of-way line. This has resulted in a view of low visual quality.

View of the Road

Much of the Turnpike in this segment of the Project Corridor is either not visible or barely visible, being screened from the surrounding landscape by the thin, mixed upland deciduous forest located between the Turnpike's outside drainage ditches/swales and the existing right-of-way line. In addition, seven moderate to large upland deciduous forested areas also serve to screen the view of the roadway from much of the surrounding area. This has resulted in a view of low visual quality. There are two visually-sensitive resources that could be potentially affected by altered views of the roadway located in this portion of the Project Corridor. The North Crosswicks Historic District is located on the south side of Broad Street adjacent to the existing right-of-way line, and the Lengyen Farm Complex Historic District is located on the north side of Crosswicks-Hamilton Square Road, approximately 300 feet from the existing right-of-way line. The Turnpike is not visible from the last building in the North

Crosswicks Historic District, due to heavy vegetation and the fact that the roadway is depressed in this area, passing underneath Broad Street. The Turnpike is slightly visible from the Lengyen Farm Complex Historic District; however the view is not intact or unified due to the thin, mixed upland deciduous forest located between the Turnpike's outside drainage ditches/swales and the existing right-of-way line.

Southbound Side of the Turnpike

General Visual Setting

On the southbound side of the Turnpike in this segment, the visual character of the Project Corridor is primarily rural with a mix of natural features and artificial elements. Natural features include agricultural fields (corn, soy and other grain crops), mowed turf, several streams, and eight moderate to large upland deciduous forested tracts. Artificial elements include: two large residential subdivisions located between Bordentown-Georgetown and Bordentown-Chesterfield Roads; a third residential subdivision located between Crosswicks-Hamilton Square and Yardville-Allentown Roads; several distinct residential neighborhoods; rural residences and farm buildings; the steel towers and overhead electric lines of PSE&G's Trenton – Burlington Line (which crosses back over to the southbound side of the Turnpike at M.P. 56.5); and Service Area 6S. In addition, the grounds of the Albert Wagner Youth Correctional Facility are situated on the north side of Ward Avenue at the very edge of the Project Corridor, lying mainly outside of it.

Overall, the visual quality of this segment of the Project Corridor can be described as having moderate vividness resulting from the scenic nature of the agricultural lands, farm buildings, and rural residences. Views within this segment of the corridor are moderately intact and unified because of the presence of the three residential subdivisions, the steel towers and overhead electric lines of PSE&G's Trenton – Burlington Line, and the buildings of the Albert Wagner Youth Correctional Facility, all of which serve as encroaching elements onto the landscape.

View from the Road

Much of the surrounding landscape in this segment of the Project Corridor is either not visible or barely visible from motorists using the Turnpike, as a result of screening provided by the thin, mixed upland deciduous forest located between the Turnpike's outside drainage ditches/swales and the existing right-of-way line, as well as forested areas beyond the right-of-way line. This has resulted in a view of low visual quality.

Located between M.P. 54.0 and M.P. 54.5 and between M.P. 54.9 and M.P. 55.1 are two noise barriers. These barriers, approximately 20 feet and 15 feet in height, respectively, effectively block the view from the road at these locations.

View of the Road

Much of the Turnpike in this segment of the Project Corridor is either barely visible or not visible from the surrounding landscape, being screened by the thin, mixed upland deciduous forest located between the Turnpike's outside drainage ditches/swales and the existing right-of-way line. Eight moderate to large upland deciduous forests also serve to screen the view of the roadway from portions of the surrounding area, as do the two noise barriers. This has resulted in a view of low visual quality. There is one visually-sensitive resource that could potentially be affected by an altered view of the roadway located in this portion of the Project Corridor. The Singleton-Lathem Large House Historic District is located between Bordentown-Chesterfield Road and Thorton Creek, adjacent to the existing right-of-way line. The Singleton House is located on the north side of Bordentown-Chesterfield Road,

approximately 400 feet from the existing right-of-way line. The Turnpike is not visible from this location, due to heavy vegetation and the fact that the roadway is depressed in this area, passing underneath Bordentown-Chesterfield Road.

3.10.3.4 Interchange 7A to Interchange 8

Northbound Side of the Turnpike

General Visual Setting

On the northbound side of the Turnpike in this segment, the Project Corridor still has a predominantly rural visual character with a mix of natural features and artificial elements. Natural features include agricultural fields (corn, soy and other grain crops), mowed turf, several streams, and six moderate to large upland deciduous forested tracts. Artificial elements include: several distinct residential neighborhoods, rural residences and farm buildings; several large warehouses and offices located along West Manor Way; the steel towers and overhead electric lines of PSE&G's New Freedom – Deans Line; and the steel towers and overhead electric lines associated with JCP&L's 34.5 kV line and 230Kv line.

The visual quality of this segment of the Project Corridor can be described as having moderate vividness resulting from the scenic nature of the agricultural lands, farm buildings and rural residences. Views within this segment of the corridor are moderately intact and unified because of the presence of the warehouses and offices on West Manor Way, as well as the steel towers and overhead electric lines of the PSE&G and JCP&L lines, all of which serve as encroaching elements onto the landscape.

View from the Road

Much of the surrounding landscape in this segment of the Project Corridor is either not visible or barely visible from motorists using the Turnpike, as a result of screening provided by the previously mentioned thin deciduous forest, as well as forested areas beyond the right-of-way line. A noise barrier is located between M.P. 67.6 and M.P. 67.9. This barrier, approximately 20 feet in height, effectively blocks the view from the road at this location.

View of the Road

Much of the Turnpike in this segment of the Project Corridor is screened from the surrounding landscape by the thin deciduous forest. In addition, six moderate to large upland deciduous forested tracts serve to screen the view of the roadway from portions of the surrounding area. This has resulted in a view of low visual quality. There are two visual resources located in this portion of the Project Corridor: the Assunpink Wildlife Management Area, located near M.P. 63.3; and East Windsor Regional Park, located between M.P. 66.0 and M.P. 66.8. Both are adjacent to the Turnpike, undeveloped and heavily vegetated/forested. The further one walks into their respective interiors, the less visible the Turnpike becomes. In addition, these parcels serve to further screen the view of the Turnpike from the surrounding landscape.

Southbound Side of the Turnpike

General Visual Setting

On the southbound side of the Turnpike in this segment, the visual character of the Project Corridor is primarily rural with a mix of natural features and artificial elements. Natural features include agricultural fields (corn, soy and other grain crops), mowed turf, several streams, and nine moderate to

large upland deciduous forests. Artificial elements include: several distinct residential neighborhoods, rural residences and farm buildings; two large residential subdivisions located north of Route I-195 and north of Robbinsville-Allentown Road; a cemetery and an elementary school located on Sharon Road; the steel towers and overhead electric lines associated with JCP&L's 34.5 kV line and 230Kv line; another residential subdivision located along Old York Road; a golf course and a senior citizen's housing development.

The visual quality of this segment of the Project Corridor can also be described as having moderate vividness resulting from the scenic nature of the agricultural lands, farm buildings and rural residences. Views within this segment of the corridor are moderately intact and unified because of the presence of the residential subdivisions, as well as the steel towers and overhead electric lines of the two JCP&L lines, all of which serve as encroaching elements onto the landscape.

View from the Road

Much of the surrounding landscape in this segment of the Project Corridor is either not visible or barely visible from motorists using the Turnpike, as a result of screening provided by the thin deciduous forest, as well as forested areas beyond the right-of-way line. This has resulted in a view of low visual quality. Near M.P. 67.5, the motorist is afforded an unobstructed view of the I.B.E.W. building and several residences located on Ward Street, due to the lack of intervening vegetation in this area.

View of the Road

As is the case with other locations along the Project Corridor, much of the Turnpike in this segment is also screened from the surrounding landscape by the thin deciduous forest located between the Turnpike's outside drainage ditches/swales and the existing right-of-way line. Nine moderate to large upland deciduous forested tracts also serve to screen the view of the roadway from portions of the surrounding area. This has resulted in a view of low visual quality. There are five visually-sensitive resources that could be affected by an altered view of the roadway located in this portion of the Project Corridor: 1) Washington Community Park, located adjacent to the existing right-of-way near M.P. 62.0; 2) the Assunpink Wildlife Management Area, located adjacent to the existing right-of-way between M.P. 62.9 and 64.8; 3) the Robbins House, a late 18th century homestead located on Windsor-Carson Mill Road, approximately 300 feet from the existing right-of-way (near M.P. 63.8); 4) Lenox County Park, located adjacent to the existing right-of-way near M.P. 65.0; and 5) Turnpike Park, located adjacent to the existing right-of-way near M.P. 65.5.

The Turnpike is visible from Community Park, although the view is not intact due to the intervening vegetation located along the right-of-way line. The Turnpike is not visible from the Robbins House, due to dense vegetation. The Assunpink Wildlife Management Area and Turnpike Park are both undeveloped and heavily vegetated/forested. The further one walks into their respective interiors, the less visible the Turnpike becomes. In addition, these parcels serve to further screen the view of the Turnpike from the surrounding landscape. The Turnpike is not visible from Lenox County Park due to screening provided by the thin deciduous forest located between the Turnpike's outside drainage ditches/swales and the existing right-of-way line.

3.10.3.5 Interchange 8 to Interchange 8A

Northbound Side of the Turnpike

General Visual Setting

On the northbound side of the Turnpike in this segment, the Project Corridor between Interchange 8 and Cranbury Brook still has a predominantly rural visual character. North of Cranbury Brook, the landscape changes markedly, becoming dominated by warehouses and light industrial facilities. Natural features include agricultural fields (corn, soy and other grain crops), mowed turf, several streams, and six moderate to large upland deciduous forested tracts. Artificial elements include: several distinct residential neighborhoods, rural residences and farm buildings; several light industrial and commercial facilities; and a large residential development (Rossmoor).

South of Cranbury Brook, the visual quality of this segment of the Project Corridor can be described as having moderate vividness resulting from the scenic nature of the agricultural lands, farm buildings and rural residences. North of Cranbury Brook, the visual quality possesses a moderate vividness resulting from the mix of commercial and light industrial facilities being present.

One fairly large portion of the corridor, located between the Millstone River and Hightstown-Cranbury Station Road, can be considered to be moderately to highly intact and unified because of the lack of visual intrusion onto its agricultural character. Views within the portion of the corridor north of Hightstown-Cranbury Station Road are not intact or unified because of the light industrial and commercial facilities scattered throughout, which serve as encroaching elements onto the landscape.

View from the Road

Much of the surrounding landscape in this segment of the Project Corridor is either not visible or barely visible from motorists using the Turnpike, as a result of screening provided by the thin deciduous forest located between the Turnpike's outside drainage ditches/swales and the existing right-of-way line, as well as forested areas beyond the right-of-way line. This has resulted in a view of low visual quality. As the Turnpike rises in elevation to cross over N.J. Route 33, motorists are afforded a moderately vivid view of the surrounding landscape, which includes two hotels and a restaurant. Because of the sharply varying architectural styles of these structures, as well as the presence of other visual "clutter" along Route 33, this view is only moderately intact and unified. At approximately M.P. 71.0, the surrounding landscape becomes more consistently visible from the roadway, although these views are not intact due to the vegetation that remains along the right-of-way. As the Turnpike rises in elevation to cross over the former Camden and Amboy Railroad (near M.P. 70.0), motorists are afforded a moderately vivid view of the surrounding landscape, which is only moderately intact and unified, due to the intrusion of several warehouses and industrial buildings into the otherwise largely undeveloped landscape. A noise barrier is located between M.P. 73.0 and M.P. 73.4. This barrier, approximately 20 feet in height, effectively blocks the view from the road at this location.

View of the Road

Much of the Turnpike in this segment of the Project Corridor is also screened from the surrounding landscape by the thin deciduous forest. In addition, six moderate to large upland deciduous forested tracts also serve to screen the view of the roadway from portions of the surrounding area. This has resulted in a view of low visual quality. There is one visually-sensitive resource that could potentially be affected by an altered view of the roadway located in this portion of the Project Corridor. This resource, the Camden and Amboy Railroad Historic District, crosses beneath the Turnpike near M.P.

70.0. The Turnpike overpass intrudes vividly into the otherwise primarily undeveloped setting at this location.

Southbound Side of the Turnpike

General Visual Setting

The visual character of the Project Corridor in this segment is primarily rural south of Cranbury Half Acre Road and commercial to the north, with both areas having a mix of natural features and artificial elements. Natural features include agricultural fields (corn, soy and other grain crops), mowed turf, several streams, and six moderate to large upland deciduous forested tracts. Artificial elements include the headquarters of Troop D (New Jersey State Police), Service Area 7S and the large concentration of warehouses and offices at the segment's northern end.

The visual quality of this segment of the Project Corridor can be described as having moderate vividness resulting from the scenic nature of the agricultural lands in the southern end and the warehouses and offices at the northern end. Views within the southern portion of this segment of the corridor are moderately to highly intact and unified because of the lack of visual intrusion into the natural landscape. Views within the northern portion are not intact or unified because of the large concentration of commercial development, characterized by numerous buildings with no unifying architectural theme.

View from the Road

With two exceptions, much of the surrounding landscape in the segment from Interchange 8 to Cranbury Half Acre Road (near M.P. 71.3) is either not visible or barely visible from motorists using the Turnpike, as a result of screening provided by the thin deciduous forest, as well as forested areas beyond the right-of-way line. This has resulted in a view of low visual quality. At M.P. 69.0 and 71.2, there are breaks in the vegetation, affording motorists views of an industrial facility and a large warehouse, respectively. North of Cranbury Half Acre Road to Interchange 8A, the deciduous forest alongside the right-of-way line becomes less dense, allowing views of the adjacent warehouses and offices.

View of the Road

Much of the Turnpike in the southern portion of this segment of the Project Corridor is also screened from the surrounding landscape by a thin, mixed upland deciduous forest located between the Turnpike's outside drainage ditches/swales and the existing right-of-way line. Farther north, the forest is replaced by what can be characterized as heavy brush, which serves a screening effect, but to a lesser extent. In addition, in some areas of this segment, the Turnpike is located in a small cut, below the line of sight of many areas of the surrounding landscape. This has resulted in a view of low visual quality. There is one visually-sensitive resource located in this portion of the Project Corridor. This resource, the Camden and Amboy Railroad Historic District, is located near M.P. 70.0. The Turnpike overpass intrudes vividly into the otherwise undeveloped setting at this location.

3.10.3.6 Interchange 8A to Interchange 9

Northbound Side of the Turnpike

General Visual Setting

On the northbound side of the Turnpike in this segment, the visual character of the Project Corridor is generally rural up to Davidsons Mill Road, and primarily commercial and residential north of

Davidsons Mill Road, with both portions having a mix of natural features and artificial elements. Natural features include agricultural fields (corn, soy and other grain crops), mowed turf, Ireland Brook and five small to moderately sized upland deciduous forests. Artificial elements include: several distinct residential neighborhoods; rural residences and farm buildings; several light industrial facilities and large commercial facilities.

The visual quality of this segment of the Project Corridor can be described as having moderate vividness resulting from the scenic nature of the agricultural lands in the southern end and the light industrial, commercial, and residential uses at the northern end. The vividness of the several noise barriers is high, due to their being located alongside the roadway. Views within the southern portion of this segment of the corridor are moderately intact and unified as a result of the presence of various residences and farm buildings, as well as the steel towers and overhead electric lines of PSE&G's New Freedom – Deans Line, all of which serve as encroaching elements onto the landscape. Views within the northern portion of this segment of the corridor are not intact or unified because of the intense level of development present.

View from the Road

From Interchange 8A to approximately M.P. 77.5, the vegetation along the right-of-way is not very dense, affording the motorist nearly unobstructed, but not intact, views of the surrounding landscape. From approximately M.P. 77.5 to Interchange 9, the view from the road is effectively blocked by dense vegetation, an earthen berm, noise barriers, or all three, resulting in a view of low visual quality.

View of the Road

Much of the Turnpike in this segment of the Project Corridor south of M.P. 77.5 is visible from the surrounding landscape, due to the little vegetative screening present. North of M.P. 77.5, the roadway is screened from the surrounding landscape by dense vegetation, an earthen berm, or noise barriers. This has resulted in a view of low visual quality. No visual resources are located within this segment of the Project Corridor.

Southbound Side of the Turnpike

General Visual Setting

The visual character in this segment of the Project Corridor is decidedly mixed. From Interchange 8A to Deans Rhode Hall Road, the landscape is heavily developed with large commercial facilities and light industrial facilities, giving this portion of the segment a suburbanized character. North of Deans Rhode Hall Road to Church Lane, the visual character is primarily rural/agricultural. North of Church Lane to Interchange 9, the visual character returns to suburban, with the exception of a large undeveloped area located between M.P. 79.0 and 80.0.

The visual quality of this segment of the Project Corridor can be described as having moderate vividness resulting from the scenic nature of the landscape between Deans Rhode Hall Road and Church Lane, as well as from the light industrial, commercial and residential uses in the remaining portions of the segment. Views within the corridor between Interchange 8A and Church Lane are moderately intact and unified as a result of the presence of various residences and farm buildings, warehouses and other commercial buildings, all of which serve as encroaching elements onto the landscape. Views north of Church Lane are not intact or unified because of the intense level of development, with numerous buildings present with no unifying architectural theme.

View from the Road

From Interchange 8A to approximately M.P. 77.5, the vegetation along the right-of-way is not very dense, affording the motorist unobstructed, but not intact, views of the surrounding landscape. From approximately M.P. 77.5 to Interchange 9, the view from the road is effectively blocked by dense vegetation, an earthen berm, noise barriers, or all three, resulting in a view of low visual quality.

View of the Road

Much of the Turnpike in this segment of the Project Corridor south of M.P. 77.5 is visible from the surrounding landscape due to the minimal amount of vegetative screening present. North of M.P. 77.5, the roadway is screened from the surrounding landscape by dense vegetation, an earthen berm, noise barriers, or all three This has resulted in a view of low visual quality. Pigeon Swamp State Park, located between M.P. 76.2 and M.P. 76.7, is the only visually-sensitive resource in this segment of the Project Corridor. The park is undeveloped and heavily vegetated/forested. The further one walks into the interior, the less visible the Turnpike becomes. In addition, the park serves to further screen the view of the Turnpike from the surrounding landscape.

3.11 Soils and Geology

3.11.1 Introduction

For the purposes of the analysis of geology and soils, the Project Corridor is defined as the area within the existing Turnpike mainline right-of-way between the southern terminus located south of Interchange 6 and the northern terminus near Interchange 9, including interchanges, as well as an area 150 feet beyond the right-of-way on both sides of the Turnpike. At Interchange 8, the Project Corridor also includes an expanded area that covers potential toll plaza relocation alternatives that are being studied.

The entire Project Corridor is located within the Coastal Plain Physiographic Province of New Jersey, an area underlain by unconsolidated sands, gravels, clays and silts of the Cretaceous and younger age. The soils within the Project Corridor are closely related, weathered products of the Coastal Plain sediments.

3.11.2 Data Sources and Methodology

The New Jersey GIS database and New Jersey Geologic Survey (USGS) references and web site information were reviewed to identify geology features within the Project Corridor. The *NJ Turnpike 1985-90 Widening Final EIS: Interchange 8A to Interchange 9 (January 1987)* and its associated *Technical Study Volume I: Natural Resources (February 1986)* were also reviewed for relevant information.

The geologic features were overlain on the Turnpike alignment to identify the location of geologic anomalies of concern for highway construction. These geologic features include outcroppings, faults, dikes and folds.

The soils surveys of Burlington, Mercer and Middlesex Counties, as well as the New Jersey GIS database, were reviewed to identify soils within the Project Corridor. Previous environmental studies conducted for the Turnpike Authority (e.g., *NJ Turnpike 1985-90 Widening Final EIS: Interchange 8A to Interchange 9* and associated documents) were also reviewed for relevant information. The emphasis of research was placed on the location of acid-producing soils within the entire 35-mile Project Corridor that could be of concern when exposed during construction.

The Turnpike alignment was placed over maps identifying the locations of underlying Category I strata having high potential for containing sulfide compounds and pyretic nodules that generate acid soils. The Turnpike alignment was also placed over soil classification maps to idenify the locations of hydric soils for use in the wetland delineation field work. The information collected in this manner was used to supplement that found in the aforementioned environmental studies conducted for the previous Interchange 8A to Interchange 9 Widening.

3.11.3 Geology

The Project Corridor is located entirely within the Coastal Plain physiographic province. The Coastal Plain is underlain by a southeasterly dipping and thickening sequence of unconsolidated sediments which lie unconformably upon a floor of predominantly crystalline rock. These unconsolidated deposits are thick wedges of sands, gravels, clays and silts of the Cretaceous and younger age that were laid down in a deltaic environment and subsequently eroded to the present land form. More recent deposits of Pleistocene sands and gravels and alluvium blanket the Cretaceous rocks, except where outcrops occur, and have little visible effect on the topography between the Coastal Plain Province and the northerly Piedmont Province. Erosion and redeposition have created a nearly level to gently rolling topography, with little relief except near stream channels. The stratigraphic sequence of the various rock units is presented by Turnpike milepost in Table 3.43. Refer to Figure 3-13 for the Project Corridor's geologic features.

From approximately M.P. 48.2 to M.P. 49.0, the Turnpike is underlain by the Woodbury Formation. This formation, which is as much as 40 feet thick, is comprised of clay with minor thin beds of very fine quartz sand, dark gray and black where unweathered, and yellowish brown to brown where weathered. Clay is micaceous with some pyrite and carbonaceous material and traces of glauconite Late Cretaceous (early Campanian). The formation grades downward into the Merchantville Formation.

The Englishtown Formation, approximately located between M.P. 49.0 and M.P. 49.3, is documented to contain sulfide compounds and pyretic nodules that generate acidic soils. The strata comprising the Englishtown Formation becomes acidic upon exposure to air when excavated, and oxidation results in the production of sulfuric acid. This is an issue along several lengths of the Project Corridor, where the Englishtown Formation underlies the Turnpike. This formation, which is as much as 70 feet thick, is comprised of quartz sand, fine to coarse grained, with thin beds of clay and silt. The sand is white, yellow, and light gray where weathered, and gray where unweathered, whereas silt and clay are light gray to brown where weathered, and dark gray to black where unweathered. The sand contains some lignite and mica and minor amounts glauconite; mica, carbonaceous matter and pyrite are common in the clays. This formation is Late Cretaceous (early Campanian) in age, and grades downward into the Woodbury Formation.

From approximately M.P. 49.3 to M.P. 56.9, the Turnpike is underlain again by the Woodbury Formation (see discussion above).From approximately M.P. 56.9 to M.P. 57.7, the Turnpike is underlain by the Merchantville Formation. This formation, which is as much as 40 feet thick, is comprised of glauconite sand clay, olive, dark gray, black where unweathered, and olive-brown to yellowish-brown where weathered. Glauconite occurs primarily in soft grains of fine-to medium sand size. Sand fraction is chiefly quartz; feldspar, mica, and pyrite are minor constituents. Iron cementation is common. This formation is Late Cretaceous (early Campanian) in age based on ammonite fossils and unconformably overlies the Magothy Formation.

From approximately M.P. 57.7 to M.P. 63.8, the Turnpike is underlain again by the Woodbury Formation (see discussion above).

Table 3.43
Geologic Units Within the Project Corridor

Approximate Milepost	System	Unit	Lithologic Description	Thickness (feet)
48.2 – 49.0	Cretaceous	Woodbury Formation	Clay-silt	40
49.0 – 49.3	Cretaceous	Englishtown Formation	Quartz sand, fine to coarse-grained, locally interbedded with thin to thick beds of clay	70
49.3 – 56.9	Cretaceous	Woodbury Formation	Clay-silt	40
56.9 – 57.7	Cretaceous	Merchantville Formation	Glauconite sand to quartz-glauconite sand, clayey & silty	40
57.7 – 63.8	Cretaceous	Woodbury Formation	Clay-silt	40
63.8 – 66.0	Cretaceous	Englishtown Formation	Quartz sand, fine to coarse-grained, locally interbedded with thin to thick beds of clay	70
66.0 – 68.8	Cretaceous	Woodbury Formation	Clay-silt	40
68.8 – 72.3	Cretaceous	Merchantville Formation	Glauconite sand to quartz-glauconite sand, clayey & silty	40
72.3 – 83.0	Cretaceous	Englishtown Formation	Quartz sand, fine to coarse-grained, locally interbedded with thin to thick beds of clay	70

Source: http://www.state.nj.us/dep/njgs/geodata/

From approximately M.P. 63.8 to M.P. 66.0, the Turnpike is underlain again by the Englishtown Formation (see discussion above).

From approximately M.P. 66.0 to M.P. 68.8, the Turnpike is underlain again by the Woodbury Formation (see discussion above).

From approximately M.P. 68.8 to M.P. 72.3, the Turnpike is underlain again by the Merchantville Formation (see discussion above).

From approximately M.P. 72.3 to M.P. 83.0, the Turnpike is underlain again by the Englishtown Formation (see discussion above).

3.11.4 Soils in the Project Corridor

3.11.4.1 General Soil Characteristics

General soil properties are discussed below. These properties include: seasonal high water table, hydrologic group and hydric soil (all of which relate to drainage); and slope gradient.

Drainage characteristics refer to the frequency and duration of periods of saturation or partial saturation during soil formation. There are seven classes of natural drainage which are used in soil surveys. These are: excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained and very poorly drained.

The *seasonal high water table* (SHWT) is the highest average depth of ground water during the wettest season. The ground water level, or water table, may be high year round or just during heavy rains. Soils that are saturated with water or that have a water table near the surface are significantly limited for most construction purposes. The seasonal high water table will affect what can be done on that soil.

Possibly the most important characteristic of a given soil in terms of drainage is a term which reflects a number of physical properties as well as locational conditions, which is called the *Hydrologic Soil Grouping*. This classification scheme was developed by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) to assess the runoff potential for each soil series in the county and takes into account many features such as soil texture, percentage of slope, and permeability. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms. The hydrologic soil groups are as follows:

Group A - Soils having a high infiltration rate and low runoff potential when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

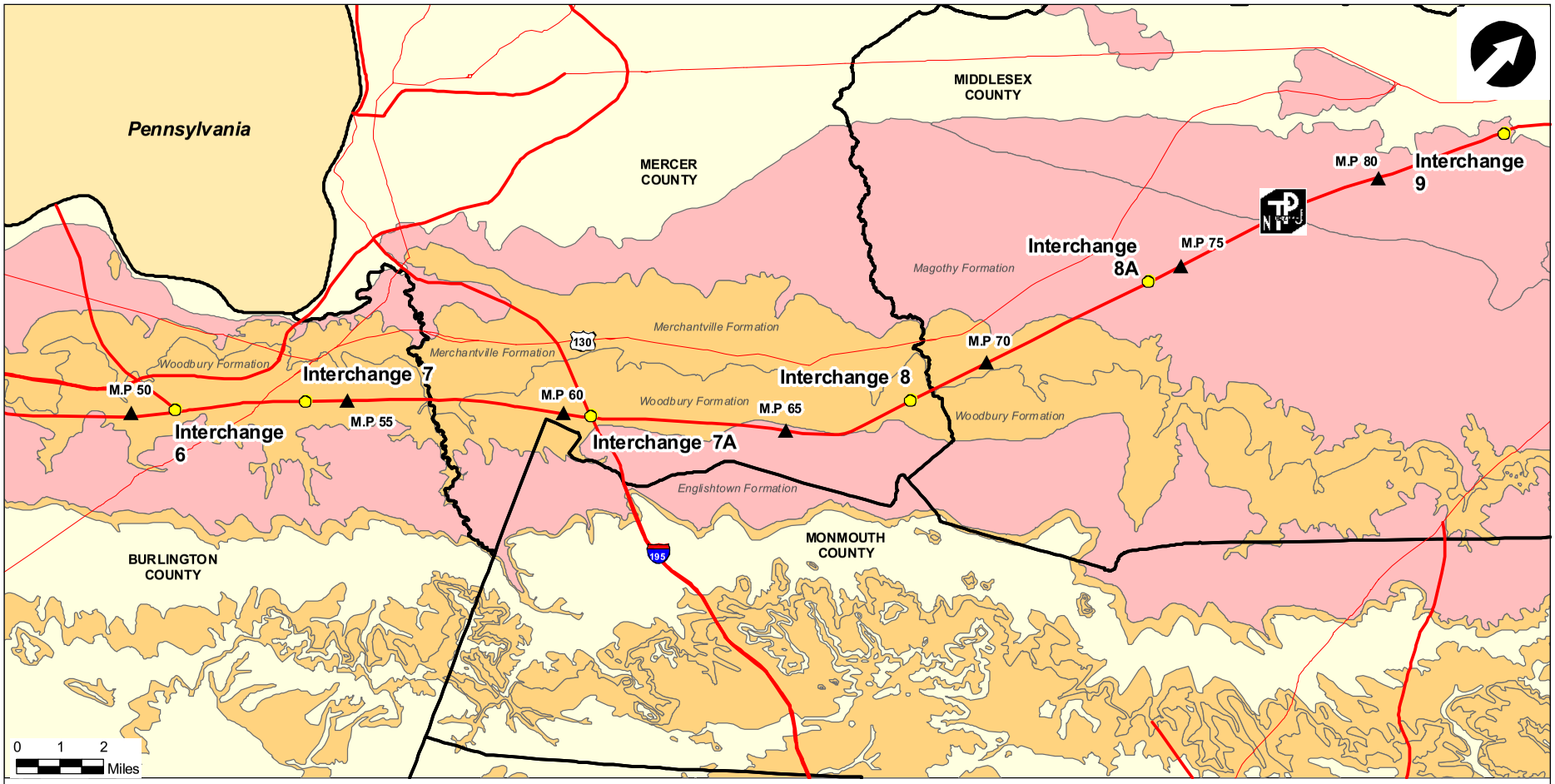
Group B - Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C - Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D - Soils having a very slow infiltration rate and high runoff potential when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

When a soil type is assigned to a dual hydrologic group (e.g., A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Naturally wet areas have special value as catchments and as wetland habitat. *Hydric soils* are wet soils defined as a group for the purpose of implementation of legislation for preserving wetlands and for assessing the potential habitat for wildlife. The soils considered to be hydric were selected on the basis



Legend

Acidic Geologic Formations

- Category I - High potential of encountering a sulfide-bearing unit beneath the soil where these units outcrop
- Category II - Low potential of encountering a sulfide-bearing unit beneath the soil where these units outcrop

GEOLOGIC FEATURES

New Jersey Turnpike Interchange 6 to 9 Widening
Burlington, Mercer and Middlesex Counties
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Environmental Impact Statement

NEW JERSEY TURNPIKE AUTHORITY
NEW JERSEY TURNPIKE

FIGURE 3-13

of flooding, water table, and drainage class criteria. Hydric soils are developed under wet conditions (anaerobic within 12 inches) and can support the growth and regeneration of hydrophytic vegetation. This anaerobiosis promotes biogeochemical processes, such as the accumulation of organic matter and the reduction, translocation, and/or accumulation of iron and other reducible elements. These processes result in characteristic morphologies that persist in the soils during both wet and dry periods.

Slope is the gradient or the change in elevation over a specified distance. For instance, a 10-foot rise over a 100-foot distance is a slope of 10 percent. Ranges of slope assigned to map units represent practical breaks on the landscape that are important for the use and management of the Project Corridor.

A description of the soil characteristics associated with each soil type found within each of the three counties comprising the Project Corridor (i.e., Burlington, Mercer and Middlesex) is provided in Appendix A. The locations of all soil types within and adjacent to the Project Corridor are depicted in Figures 3-14a through 3-14f.

3.11.4.2 Soil Erodibility Factors

To aid in the design of the Soil Erosion Soil Conservation Plans, it is helpful to know how erodible the soils within the Project Corridor are. Highly erodible soils require additional design when laying out potential Best Management Practices (BMPs) to control erosion within the project. The criteria used to group highly erodible soils and potentially highly erodible soils were formulated using the Universal Soil Loss Equation (USLE) and the wind erosion equation. These criteria are contained in the *National Food Security Act Manual.*[29] The soil erodibility factor (Kf and Kw)[30] is a relative index of the susceptibility of bare cultivated soil to particle detachment and removal and transport by rainfall. It may be computed from soil composition, saturated hydraulic conductivity, and structure. K values range from 0.02 to 0.64 or more. The higher values indicate greater vulnerability. Soils with more silt and very fine sands are generally more erosive because of weaker bonding. The K and Kw values are adjusted downward for the percent of rock fragments contained in each layer. Kf values are calculated values that indicate a rock fragment free for use in the Revised Universal Soil Loss Equation (RUSLE).

The T factor (T) is the soil loss tolerance used in the RUSLE. It is defined as an estimated maximum rate of annual soil erosion that will allow crop productivity to be sustained economically and indefinitely. The five classes of T factors range from one ton per acre per year for very shallow soil to five tons per acre per year for very deep soil that can more easily sustain productivity.

A soil's wind erodibility group (WEG) and wind erodibility index (I) is a general grouping of soils with similar properties affecting their resistance to soil blowing. Soil texture, size of soil aggregates, presence of carbonates, and the degree of decomposition in organic soils are the major soil blowing criteria. The groups are numbered 1 through 8 with 1 representing sandy soils that are the most susceptible to wind erosion and 8 for gravelly or wet soils that do not have a wind erosion problem. The wind erodibility index (I) is an estimate of soil loss in tons per acre per year.

Tables that inventory the soil erodibility factors of the soils in the Project Corridor are contained in Appendix A. Based on that inventory, the Burlington County portion of the Project Corridor contains four soils classified as "highly erodible land", while the Mercer County and Middlesex County

[29] *National Food Security Act Manual, Fourth Edition*, Natural Resources Conservation Service.

[30] *Erosion factors* are the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. *Erosion factor Kw* indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. *Erosion factor Kf* indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

portions contain three and five, respectively. The primary soils of concern in this regard are: the *FrmD* Freehold series; the *KeoC*, *KeoD* and *KeoE* Keyport series; the *Saad* and *SaaE* Gullied Land series; and the *SagC3* Sassafras series. The remaining soils within the Project Corridor are fairly evenly distributed between "potentially highly erodible land" and "not highly erodible land."

3.12 Water Resources

3.12.1 Introduction

Water resource elements presented within this section include surface waters and ground waters. Related discussions on floodplains and stream habitat assessments are provided in Sections 3.13 and 3.14, respectively. For purposes of identification and assessment of existing water resource conditions, the Project Corridor is defined as the area within the existing Turnpike mainline right-of-way between the southern terminus located south of Interchange 6 and the northern terminus near Interchange 9, as well as an area 150 feet beyond the right-of-way on both sides of the Turnpike. The Project Corridor also generally includes an equivalent distance around the Turnpike interchanges, except the area around Interchange 8, where an expanded area was considered to incorporate potential toll plaza relocation alternatives that have been studied.

3.12.2 Data Sources and Methodology

As part of the NJDEP permitting process, a key review component will be compliance with applicable stormwater and water quality regulations. Examination of the existing conditions is an important element to understanding the impacts of the Proposed Project. The existing conditions assessment helps to ensure that impacts to the surface water hydrology, water quality, sediment quality, and groundwater recharge caused by the Proposed Project meet or exceed the minimum requirements set forth by the New Jersey Stormwater Management Rule (N.J.A.C. 7:8) to the maximum extent practicable.

An assessment of the existing water resources along the Project Corridor has been prepared as part of this Executive Order 215 EIS based on field reconnaissance and on information compiled and developed through research, map and survey review, as well as "As-Built" plans.[31] Additional information regarding the water quality of streams in the corridor have been obtained from NJDEP's Bureau of Water Quality Standards and Assessment, which is responsible for classifying the state's surface waters in order to protect aquatic life and human health. The assignment of stream classifications reflects existing and designated uses, as well as the state's anti-degradation policies. The surface water classification for streams in the corridor is based on the *New Jersey Surface Water Quality Standards* (N. J. A. C. 7:9B, June 2005). In addition, NJDEP's *New Jersey 2004 Integrated Water Quality Monitoring and Assessment Report* was utilized. This report presents the extent to which the state's waters are attaining water quality standards and identifies waters that are impaired, as required under sections 305(b) and 303(d) of the federal Clean Water Act; it also lists specific impairments to streams in the corridor.

Stream classifications and associated water quality standards for the streams crossed by the project were identified and described from information obtained from the NJDEP. The USEPA STORET Data System and NJDEP were also contacted to obtain any information about available water quality measurements in the Project Corridor streams.

[31] "As-Built" plans include structural plans and highway plans for the New Jersey Turnpike from Interchange 6 to Interchange 8A. In addition, construction boring logs were used to determine groundwater levels in the Project Corridor.

Legend

- Matchline
- Municipal / County Boundary
- Soil Unit Boundary

0 500 1,000 2,000 Feet

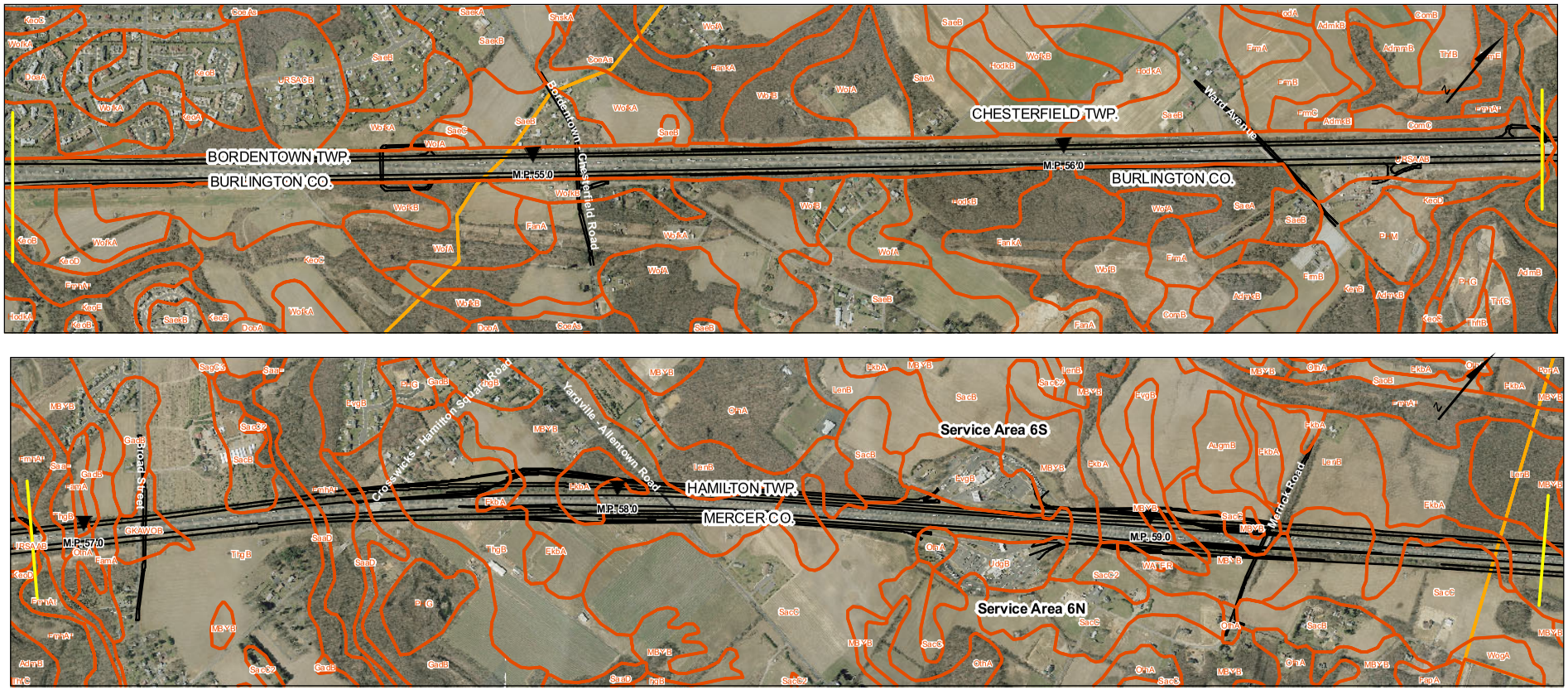
SOILS IN THE PROJECT CORRIDOR

New Jersey Turnpike Interchange 6 to 9 Widening
Burlington, Mercer and Middlesex Counties
Executive Order No. 215
Environmental Impact Statement

NEW JERSEY TURNPIKE AUTHORITY
NEW JERSEY TURNPIKE

FIGURE 3-14a

Source: Digital Orthophotos - 2006 Aerial Photography.
USDA, NRCS Soils for Burlington, Mercer and Middlesex Counties, 2005.



Source: Digital Orthophotos - 2006 Aerial Photography.
USDA, NRCS Soils for Burlington, Mercer and Middlesex Counties, 2005.

SOILS IN THE PROJECT CORRIDOR

New Jersey Turnpike Interchange 6 to 9 Widening
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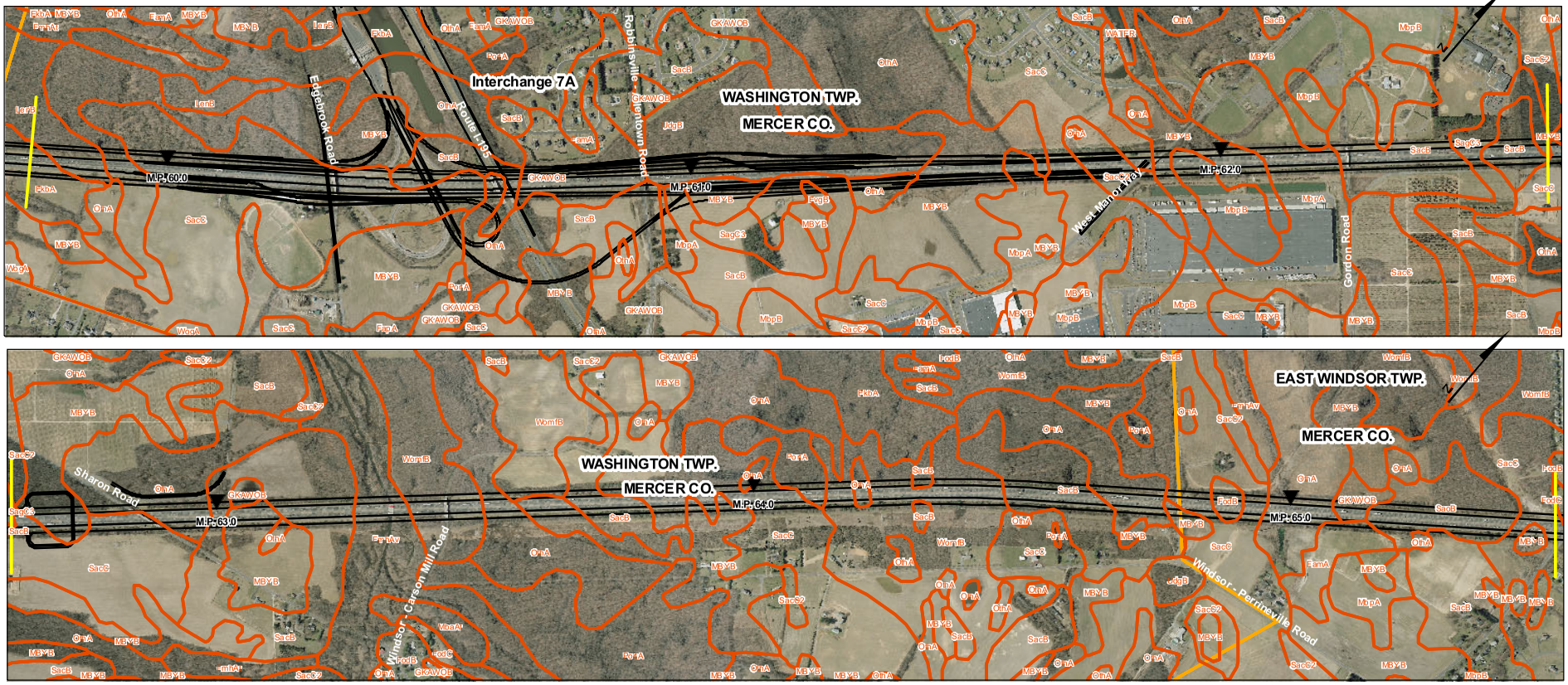
NEW JERSEY TURNPIKE AUTHORITY
NEW JERSEY TURNPIKE

FIGURE
3-14b



Legend

- Matchline
- Municipal / County Boundary
- Soil Unit Boundary

0 500 1,000 2,000 Feet

Source: Digital Orthophotos - 2006 Aerial Photography.
USDA, NRCS Soils for Burlington, Mercer and Middlesex Counties, 2005.

SOILS IN THE PROJECT CORRIDOR

New Jersey Turnpike Interchange 6 to 9 Widening
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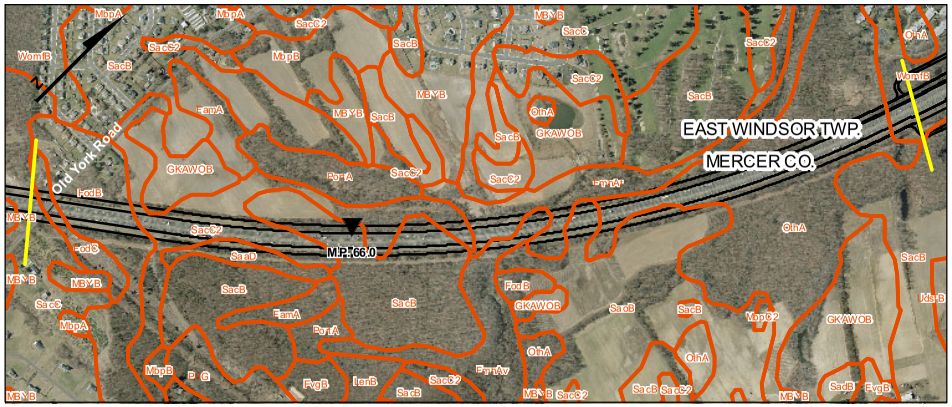
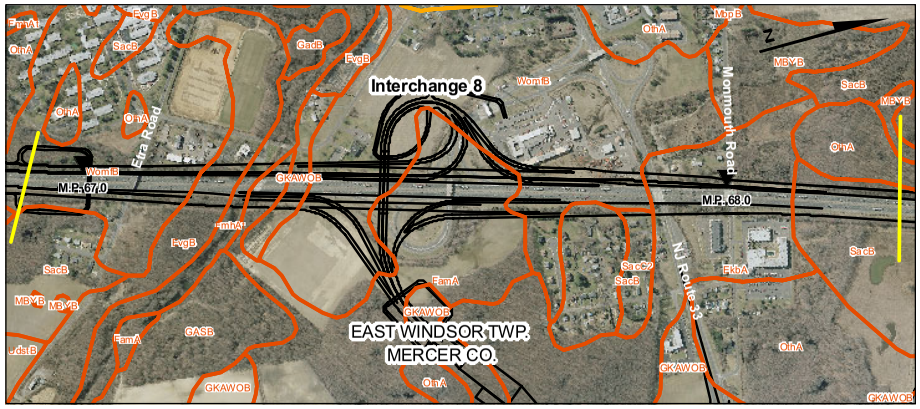
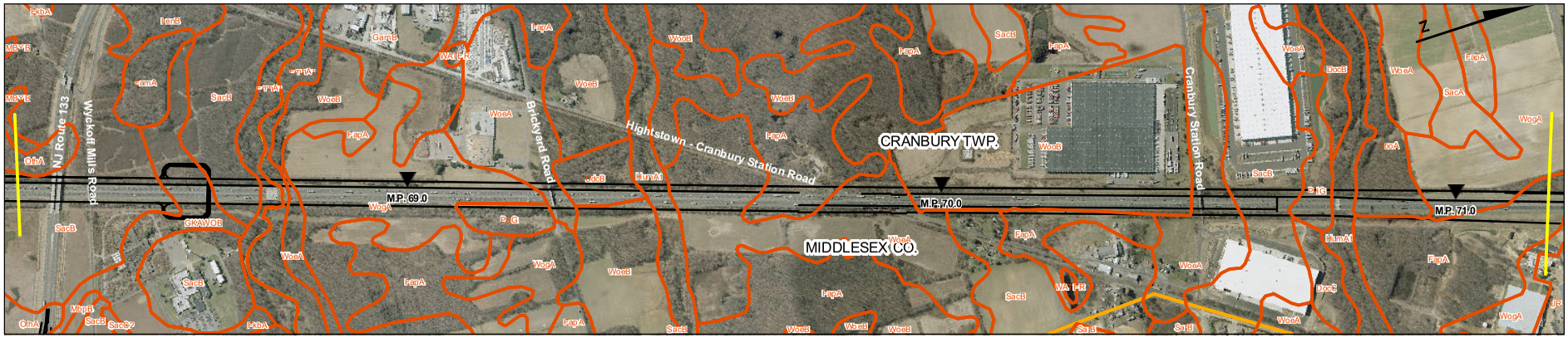
NEW JERSEY TURNPIKE AUTHORITY
NEW JERSEY TURNPIKE

FIGURE 3-14c







Legend

- Matchline
- Municipal / County Boundary
- Soil Unit Boundary

0 500 1,000 2,000 Feet

Source: Digital Orthophotos - 2006 Aerial Photography.
USDA, NRCS Soils for Burlington, Mercer and Middlesex Counties, 2005.

SOILS IN THE PROJECT CORRIDOR

New Jersey Turnpike Interchange 6 to 9 Widening
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FIGURE 3-14d

Legend

- Matchline
- Municipal / County Boundary
- Soil Unit Boundary

Acidic Geologic Formations

- Category I - High potential of encountering a sulfide-bearing unit beneath the soil where these units outcrop
- Category II - Low potential of encountering a sulfide-bearing unit beneath the soil where these units outcrop

0 500 1,000 2,000 Feet

Source: Digital Orthophotos - 2006 Aerial Photography.
USDA, NRCS Soils for Burlington, Mercer and Middlesex Counties, 2005.

SOILS IN THE PROJECT CORRIDOR

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NEW JERSEY TURNPIKE

FIGURE 3-14e

Legend

- Matchline
- Municipal / County Boundary
- Soil Unit Boundary

0 500 1,000 2,000 Feet

Source: Digital Orthophotos - 2006 Aerial Photography.
USDA, NRCS Soils for Burlington, Mercer and Middlesex Counties, 2005.

SOILS IN THE PROJECT CORRIDOR

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FIGURE 3-14f

3.12.3 Surface Water

3.12.3.1 Watershed Management Areas

The health of the state's water resources is essential to the quality of life in New Jersey. To manage the state's valuable water resources, NJDEP's Division of Watershed Management (NJDEP-DWM) administers a variety of programs aimed at protecting and restoring water quality, controlling water pollution and ensuring adequate water supplies. By managing watersheds, NJDEP-DWM can holistically address water pollution and supply issues so that more comprehensive strategies can be implemented. New Jersey has been divided into 20 Watershed Management Areas (WMAs). The Project Corridor is located within four of the WMAs. These four WMAs are described below, from south to north, and are graphically depicted in Figure 3-15.

Watershed Management Area 20

The area between the southern terminus of the Proposed Project located south of Interchange 6 and a point north of Interchange 7A is located within Watershed Management Area 20 - Assiscunk, Crosswicks, Doctors (WMA20). This management area includes the Assiscunk, Crosswicks and Doctors creeks, as well as other smaller Inner Coastal Plain watersheds that drain to the Delaware River south of Trenton. The Hamilton-Trenton Marsh, at the mouth of Crosswicks Creek, is one of the largest freshwater tidal marshes in the Delaware Estuary north of Philadelphia, although it is not in the immediate vicinity of the Project Corridor. This management area includes 26 municipalities spanning four counties (Burlington, Mercer, Monmouth and Ocean) and encompasses a total of 253 square miles.

The WMA20 central farm region is characterized by equine, grain, nursery, sod and fruit production with scattered village centers and newer residential and commercial subdivisions. Most urban development is located between the Delaware River and the New Jersey Turnpike corridor. Low density, single-use development is spreading south of Interstate 195, west from Burlington, and north from Mount Holly and Mount Laurel. As development and impervious area increases, water quality can become compromised, requiring innovative solutions to address regional water issues.

Watershed Management Area 11

Although a portion of the Project Corridor runs through Watershed Management Area 11 – Central Delaware Tributaries (WMA11), no interchanges or service areas are located within this management area. WMA11 is dominated by the Assunpink Creek and its tributaries to the south, and much smaller creeks in the northern portions of the management area. All runoff ultimately discharges to the Delaware River. This management area includes 24 municipalities within the counties of Hunterdon, Mercer, and Monmouth, and covers approximately 272 square miles.

Land uses in WMA11 range from agricultural to urban. The area has also been heavily impacted by suburban development. Population within this watershed has increased greatly over the past 10 years.

This development has stressed water resources and impacted water quality. According to the New Jersey Statewide Water Supply Plan, the public community wells located in the southern portion of the watershed are projected to reach water supply capacity (for drinking and other uses) on or before 2040.

Watershed Management Area 10

The portion of the Project Corridor containing Interchanges 8 and 8A is located within Watershed Management Area 10 – Millstone (WMA10). This WMA includes the Millstone River and its

tributaries. The Millstone River itself is a tributary to the Raritan River, which ultimately discharges to Raritan Bay. The major waterway within the watershed, the Millstone River, is 38 miles long and originates in Millstone Township in Monmouth County and discharges to the Raritan River near Manville and Bound Brook in Somerset County. Major tributaries include Stony Brook, Cranbury Brook, Bear Brook, Ten Mile River, Six Mile River, and Bedens Brook. Additionally, a major portion of the 58-mile long Delaware & Raritan Canal traverses the watershed from south to north. This management area includes 26 municipalities within parts of Hunterdon, Somerset, Middlesex, Mercer, and Monmouth Counties, and covers 288 square miles.

The general topography of WMA10 ranges from steep along the northwestern portion (Sourland Mountains) and in the southeastern portion, to relatively gently rolling in the mid-portion. According to the New Jersey State Water Quality Inventory Report, land use in the Millstone Watershed is primarily suburban development with scattered agricultural areas. Land use within the watershed continues to undergo significant changes. Agricultural land and forested land are being rapidly converted to residential, commercial, industrial, and transportation uses, causing significant water resource concerns as hydrologic patterns are significantly altered.

Watershed Management Area 9

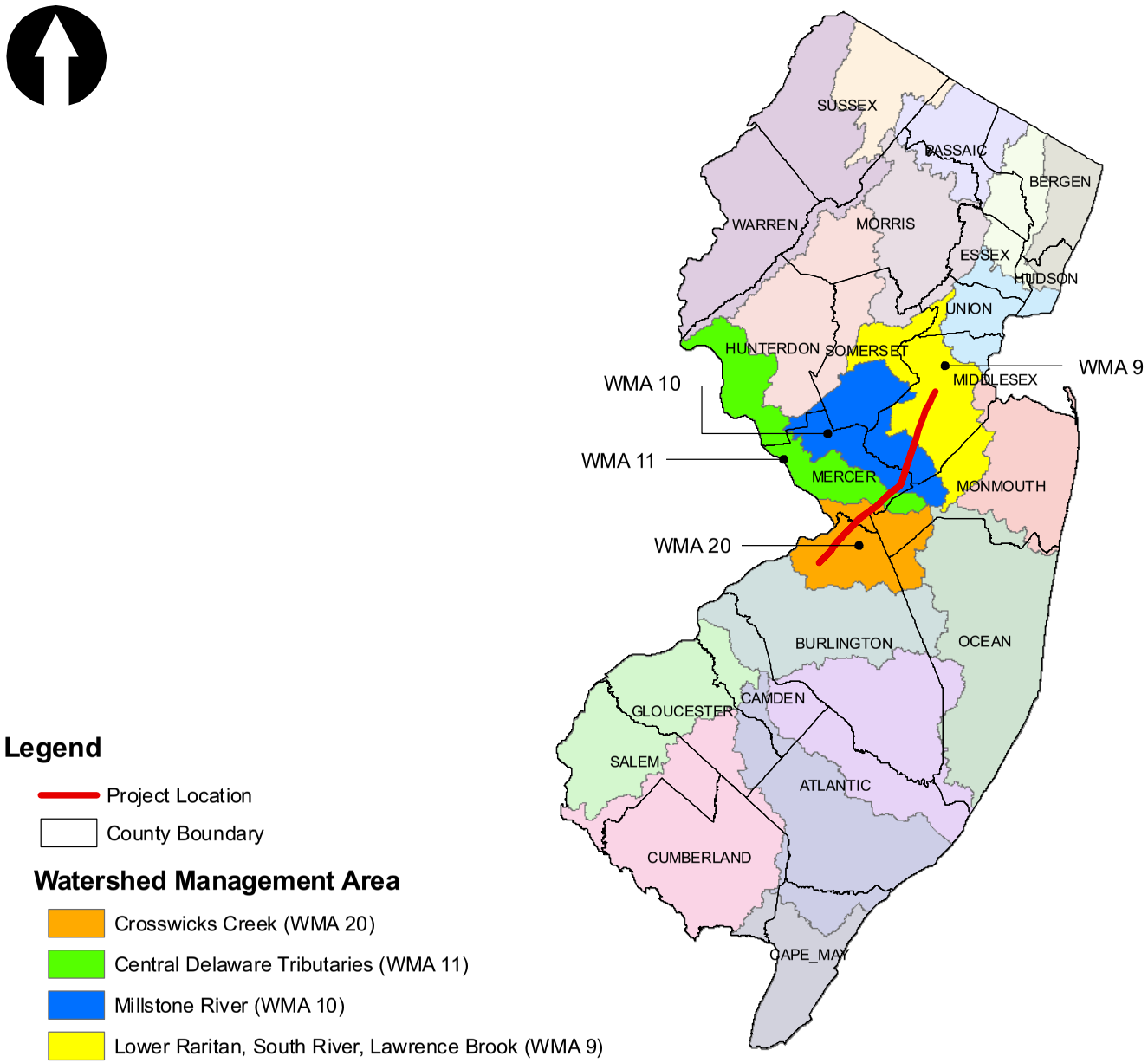
Watershed Management Area 9 – Lower Raritan, South River, Lawrence (WMA9) is the northern-most WMA in the Project Corridor, and includes the northern portion of the Interchange 8A to Interchange 9 segment, as well as Interchange 9 itself. The main waterway in WMA9 is the main reach of the Raritan River, which flows from the confluence of the North and South Branches to the Raritan Bay. South River and Lawrence Brook are tributaries to this reach of the Raritan River, discharging to the river at Sayreville and New Brunswick, respectively. This watershed is densely populated with a majority of land use characterized as urban. WMA9 encompasses an area of 352 square miles spanning portions of 49 municipalities in the counties of Middlesex, Monmouth, Somerset and Union.

Land use within the watershed of the main reach of the Raritan River is primarily urban/suburban, with a number of sizable commercial and industrial centers located throughout. Areas within the upper reaches of the South River watershed are primarily agriculture and forest areas which are becoming increasingly impacted by new residential and commercial development and the hydrologic impacts resulting from increased impervious coverage. The lower reach of the South River watershed is characterized by existing, older development. The Lawrence Brook watershed encompasses 48 square miles of land in 5 Middlesex County municipalities.

3.12.3.2 Stream Crossings and Their Characteristics

Between the southern terminus of the Proposed Project located south of Interchange 6 and the northern terminus near Interchange 9, a total of 28 streams cross the Turnpike, all of which are non-tidal freshwater streams. The streams range from intermittent runs flowing through concrete culverts, to creeks and rivers up to 40 feet wide. A summary of each of these streams and waterways, including location, active channel width, type of Turnpike crossing structure, NJDEP surface water classification and total drainage area, is provided in Table 3.44. In that table, streams and waterways are listed in south to north order. The locations of all streams within the Project Corridor, as well as the associated flood zones for FEMA-mapped streams, are graphically depicted in Figures 3-16a through 3-16f.

Of these, 17 are regulated by the State of New Jersey. Flooding problems are minor because most of the streams are small and well channelized. Some streams have large floodplains adjacent to the Turnpike; these include Blacks Creek, Doctors Creek, Assunpink Creek, Millstone River, Cranbury Brook, and Cedar Brook, among others. At some locations, flood levels are high but the inundated area



Legend

Project Location

County Boundary

Watershed Management Area

- Crosswicks Creek (WMA 20)
- Central Delaware Tributaries (WMA 11)
- Millstone River (WMA 10)
- Lower Raritan, South River, Lawrence Brook (WMA 9)

0 25 50 Miles

WATERSHED MANAGEMENT AREAS

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NEW JERSEY TURNPIKE AUTHORITY
NEW JERSEY TURNPIKE

FIGURE 3-15

Table 3.44
Stream Surface Water Classification and Hydrological Characteristics

Stream Name	Mile Post	Active Channel Width	Type of Crossing Structure	NJDEP Surface Water Classification [1]	Drainage Area[2]
Assiscunk Creek	48.2	25’	60-foot bridge span	FW2-NT	45.9
Crafts Creek	49.7	20’	30-foot bridge span	FW2-NT	13.8
Tributary to Crafts Creek	50.3	7’	4-foot culvert	FW2-NT	0.6[3]
Crystal Lake Creek	51.8	20’	14’ box culvert	FW2-NT	1.4[3]
Blacks Creek	53.4	20-25’	Two 20-foot arches	FW2-NT	23.4
Laurel Run	53.9	15’	Three 4-foot round culverts	FW2-NT	1.4[3]
Thorton Creek	55.3	4’	Culvert	FW2-NT	1.3
Crosswicks Creek	56.9	40’	Pier-supported bridge span	FW2-NT	144.3
Doctors Creek	57.5	20’	Three 15-foot arches	FW2-NT	25.9
Miry Run	61.9	3’	Culvert	FW2-NT	12.4
Assunpink Creek	63.3	30’	30 foot box culvert	FW2-NT(C1)	38.2
Bear Brook	64.9	4’	Culvert	FW2-NT	12.4
Peddie Brook	66.2	5-18’	20-foot winged box culvert	FW2-NT	2.2[3]
Tributary to Peddie Brook	66.9	4’	Culvert	FW2-NT	0.2[3]
Rocky Brook	67.3	20’	Pier-supported bridge span	FW2-NT	15.0
Timber Run Creek	67.9	10-12’	4 foot culvert	FW2-NT	0.2[3]
Millstone River	68.8	25’	30 foot wide tunnel	FW2-NT	98.8
Indian Run Brook	69.5	5-15’	10-foot box culvert	FW2-NT	0.9[3]
Cranbury Brook	70.7	25’	25 foot tunnel	FW2-NT	22.3
Cedar Brook	71.9	15-20’	16 foot box culvert	FW2-NT	5.2
Shallow Brook	72.9	4’	Culvert	FW2-NT	5.8
Ireland Brook	77.8	10-18’	16 foot box culvert	FW2-NT	6.5
South Branch of Beaverdam Brook	79.2	5’	Bridged-over culvert	FW2-NT	0.2[3]
North Branch of Beaverdam Brook	79.4	8’	Bridged-over culvert	FW2-NT	0.9[3]
Bog Brook	80.3	4’	Bridged-over culvert	FW2-NT	0.3[3]
South Tributary to Weston Mills Pond	80.7	4’	Bridged-over culvert	FW2-NT	0.2[3]
Sawmill Brook	81.6	12’	Bridged-over 10’ box culvert	FW2-NT	3.5[3]
North Tributary to Weston Mills Pond	82.5	4’	Culvert	FW2-NT	0.3

[1] NJDEP Surface Water Classifications: FW2 - Freshwater Stream; NT - Non Trout Water; C1- Category One Waters

[2] Drainage Area is in square miles and considers the entire drainage area of the waterbody to its mouth, unless otherwise noted. The drainage area to the Turnpike may be considerably smaller.

[3] Denotes Drainage Area to the Turnpike only.

is generally small. In general, the Turnpike structure spans are wider than the stream's active channel width and are able to convey the 100-year flood without overtopping the Turnpike.

NJDEP's Division of Water Quality Standards and Assessment establishes water quality standards for the State. These standards classify streams according to their water quality and provide the basis for determining what uses are appropriate for those waters. In this classification system, waters are first classified as either fresh (FW), saline/estuarine (SE), or saline/coastal (SC). These designations are followed by a number from 1 to 3 indicating the relative quality of the water, with 1 being the highest quality and 3 being the poorest. Other classification modifiers designate specific attributes such as trout production, shellfish waters of exceptional resource value, etc. The surface water classification for streams in the Project Corridor is contained in the New Jersey Surface Water Quality Standards (N.J.A.C. 7:9B, June 2005).

All streams in the Project Corridor are classified by NJDEP as "FW2", which means the general surface water classification applied to those fresh waters that are not designated as FW1, or Pinelands Waters, as identified in N.J.A.C. 7:9B. For FW2 waters, the designated uses are: maintenance, migration, and propagation of the natural and established biota; primary and secondary contact recreation; industrial and agricultural water supply; public potable water after such treatment as required by law or regulation; and any other reasonable uses.

All streams in the Project Corridor are also classified by NJDEP as "NT". This classification means "non-trout waters", which are fresh waters that have not been designated as trout production or trout maintenance in N.J.A.C. 7:9B-1.15(b) through (h). These waters are generally not suitable for trout because of their physical, chemical, or biological characteristics, but are suitable for a wide variety of other fish species.

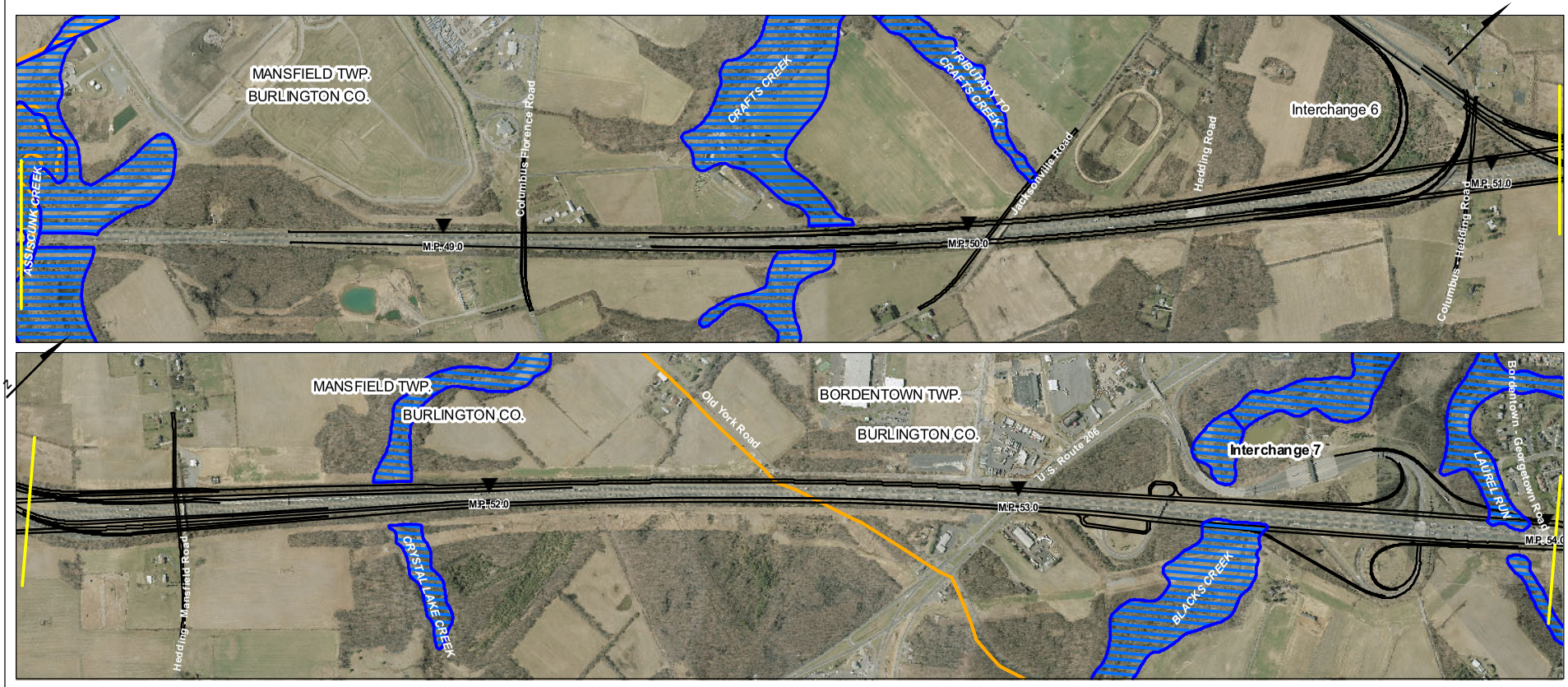
The portion of Assunpink Creek in the Project Corridor, which is within the Assunpink Wildlife Management Area, is further classified as FW2-NT(C1). The "C1" classification indicates "Category One waters." This classification means that those waters designated in N.J.A.C. 7:9B-1.15(c) through (h), for purposes of implementing the antidegradation policies set forth at N.J.A.C. 7:9B-1.5(d), are protected from measurable changes in water quality characteristics because of their clarity, color, scenic setting, other characteristics of aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resource(s). Assunpink Creek is the only waterway within the Project Corridor that is classified as a "Category One water."

General characteristics of each stream crossing the Project Corridor are discussed below. These characteristics are based on field observations made during a series of stream assessments conducted in order to assess aquatic communities. The stream assessments and their results, as they specifically relate to aquatic communities, are presented in the discussion of *Ecology* in Section 3.14.

Assiscunk Creek to Interchange 6

Assiscunk Creek (M.P. 48.2)

Assiscunk Creek is a stable, perennial stream flowing under the Turnpike under a 60-foot bridge span. Runoff from the Turnpike enters the creek through scuppers on the bridge and from a culvert and a ditch. The active channel width is approximately 25 feet, and the substrate consists of gravel, sand, and silt. At the time of the fieldwork, the water was fairly cloudy, and depths could not be determined. The stream contains some shallow pools, overhanging vegetation, and woody debris, providing good cover for fish and aquatic invertebrates. Forested land borders Assiscunk Creek, except for nearby maintained utility rights-of-way.



Legend

- Matchline
- Municipal / County Boundary

FEMA Flood Zones

- A - An area inundated by 100 year flooding for which no Base Flood Elevations have been established.
- AE- An area inundated by 100 year flooding for which Base Flood Elevations have been determined.
- X500 - An area inundated by 500 year flooding.

0 500 1,000 2,000 Feet

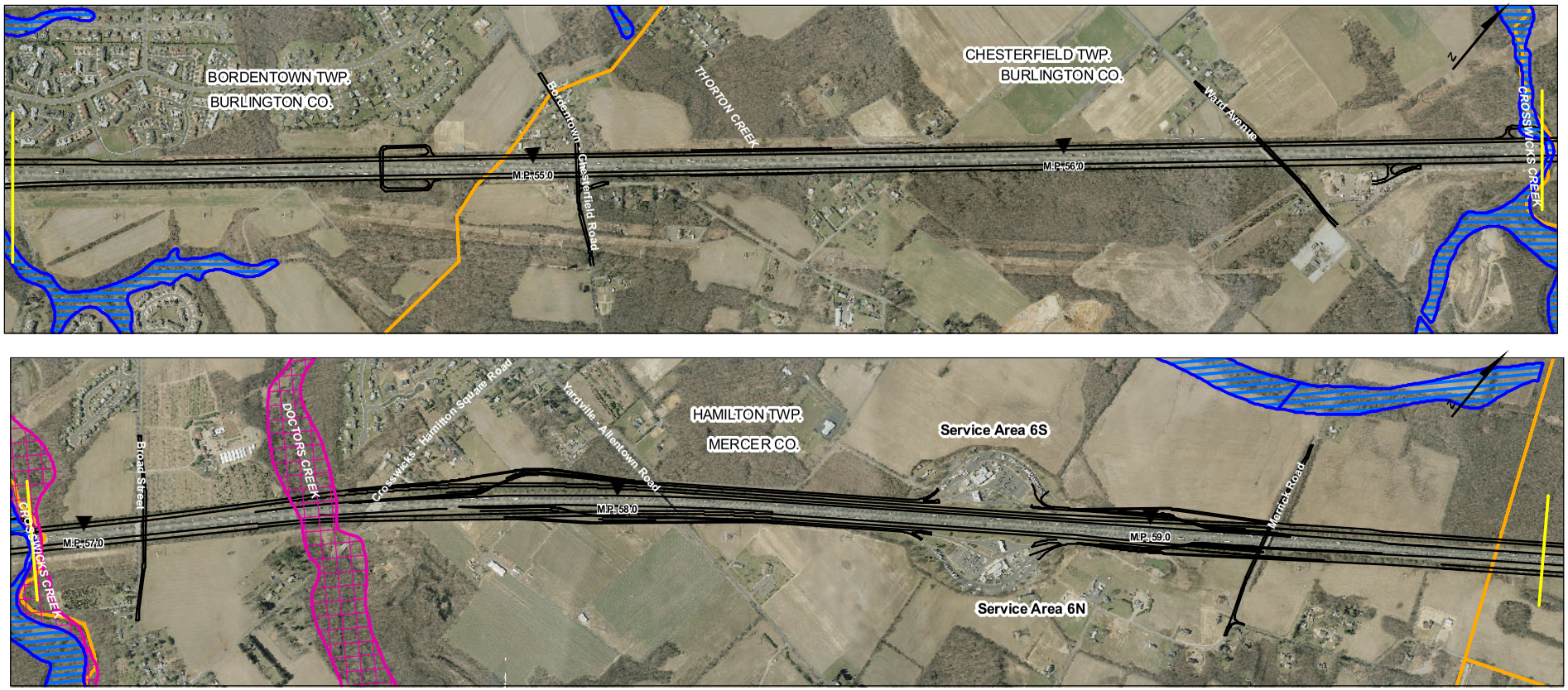
STREAM CROSSINGS AND FLOODPLAINS

New Jersey Turnpike Interchange 6 to 9 Widening
Burlington, Mercer and Middlesex Counties
Executive Order No. 215
Environmental Impact Statement

NEW JERSEY TURNPIKE AUTHORITY
NEW JERSEY TURNPIKE

FIGURE 3-16a

Note: In some instance floodplain data may predate digital orthophotos. Stream crossings shown without FEMA flood zones have not been mapped by FEMA.
Source: Q3 Digital Flood Data for Burlington, Mercer and Middlesex County, N.J., 1996. Digital Orthophotos - 2006 Aerial Photography.



Legend

- Matchline
- Municipal / County Boundary

FEMA Flood Zones

- A - An area inundated by 100 year flooding for which no Base Flood Elevations have been established.
- AE - An area inundated by 100 year flooding for which Base Flood Elevations have been determined.
- X500 - An area inundated by 500 year flooding.

0 500 1,000 2,000 Feet

STREAM CROSSINGS AND FLOODPLAINS

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FIGURE 3-16b

Note: In some instance floodplain data may predate digital orthophotos. Stream crossings shown without FEMA flood zones have not been mapped by FEMA.
Source: Q3 Digital Flood Data for Burlington, Mercer and Middlesex County, N.J., 1996. Digital Orthophotos - 2006 Aerial Photography.

Legend

- Matchline
- Municipal / County Boundary

FEMA Flood Zones

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- X500 - An area inundated by 500 year flooding.

0 500 1,000 2,000 Feet

STREAM CROSSINGS AND FLOODPLAINS

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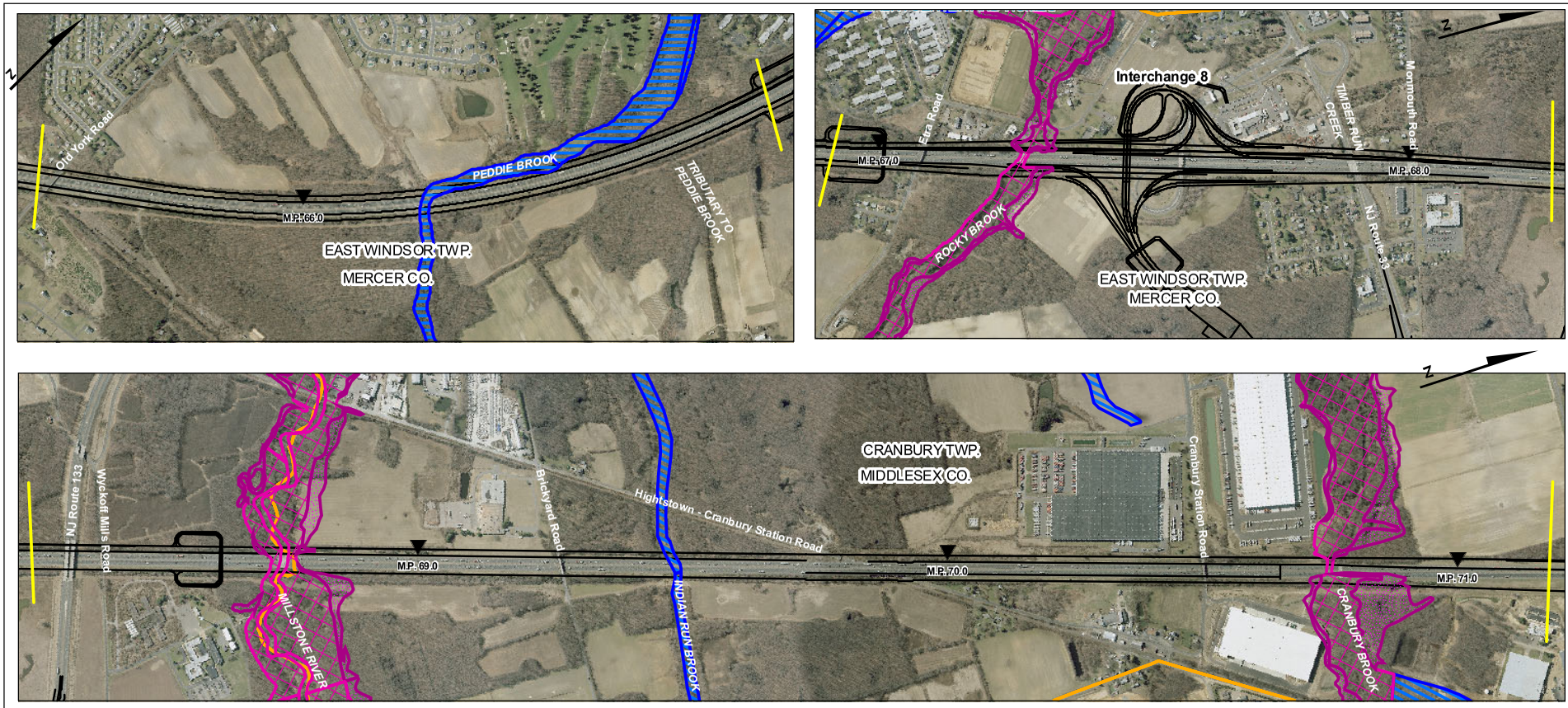
FIGURE 3-16c

Note: In some instance floodplain data may predate digital orthophotos. Stream crossings shown without FEMA flood zones have not been mapped by FEMA.
Source: Q3 Digital Flood Data for Burlington, Mercer and Middlesex County, N.J., 1996. Digital Orthophotos - 2006 Aerial Photography.



Legend

- Matchline
- Municipal / County Boundary

FEMA Flood Zones

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- AE - An area inundated by 100 year flooding for which Base Flood Elevations have been determined.
- X500 - An area inundated by 500 year flooding.

0 500 1,000 2,000 Feet

Note: In some instance floodplain data may predate digital orthophotos. Stream crossings shown without FEMA flood zones have not been mapped by FEMA.
Source: Q3 Digital Flood Data for Burlington, Mercer and Middlesex County, N.J., 1996. Digital Orthophotos - 2006 Aerial Photography.

STREAM CROSSINGS AND FLOODPLAINS

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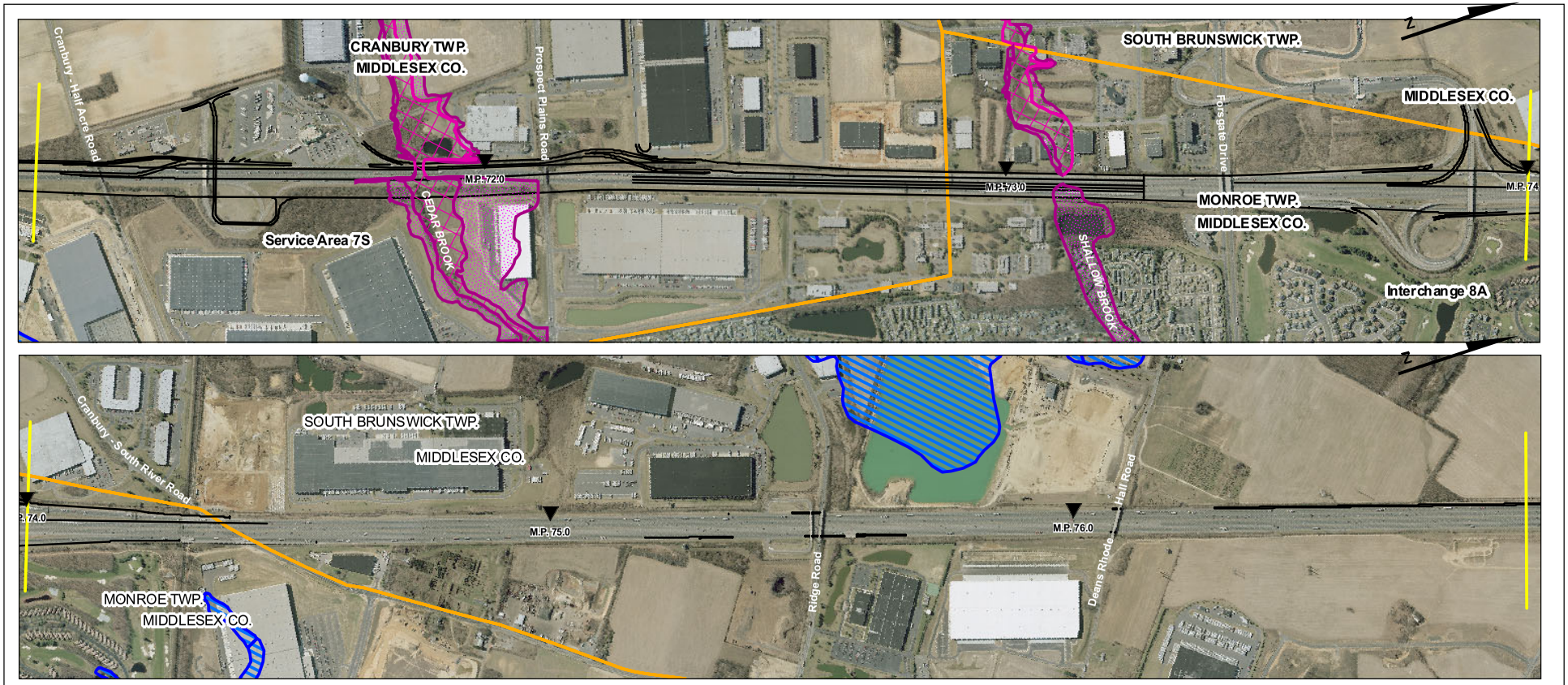
NEW JERSEY TURNPIKE

FIGURE 3-16d



Legend

- Matchline
- Municipal / County Boundary

FEMA Flood Zones

- A - An area inundated by 100 year flooding for which no Base Flood Elevations have been established.
- AE- An area inundated by 100 year flooding for which Base Flood Elevations have been determined.
- X500 - An area inundated by 500 year flooding.

0 500 1,000 2,000 Feet

Note: In some instance floodplain data may predate digital orthophotos. Stream crossings shown without FEMA flood zones have not been mapped by FEMA.
Source: Q3 Digital Flood Data for Burlington, Mercer and Middlesex County, N.J., 1996. Digital Orthophotos - 2006 Aerial Photography.

STREAM CROSSINGS AND FLOODPLAINS

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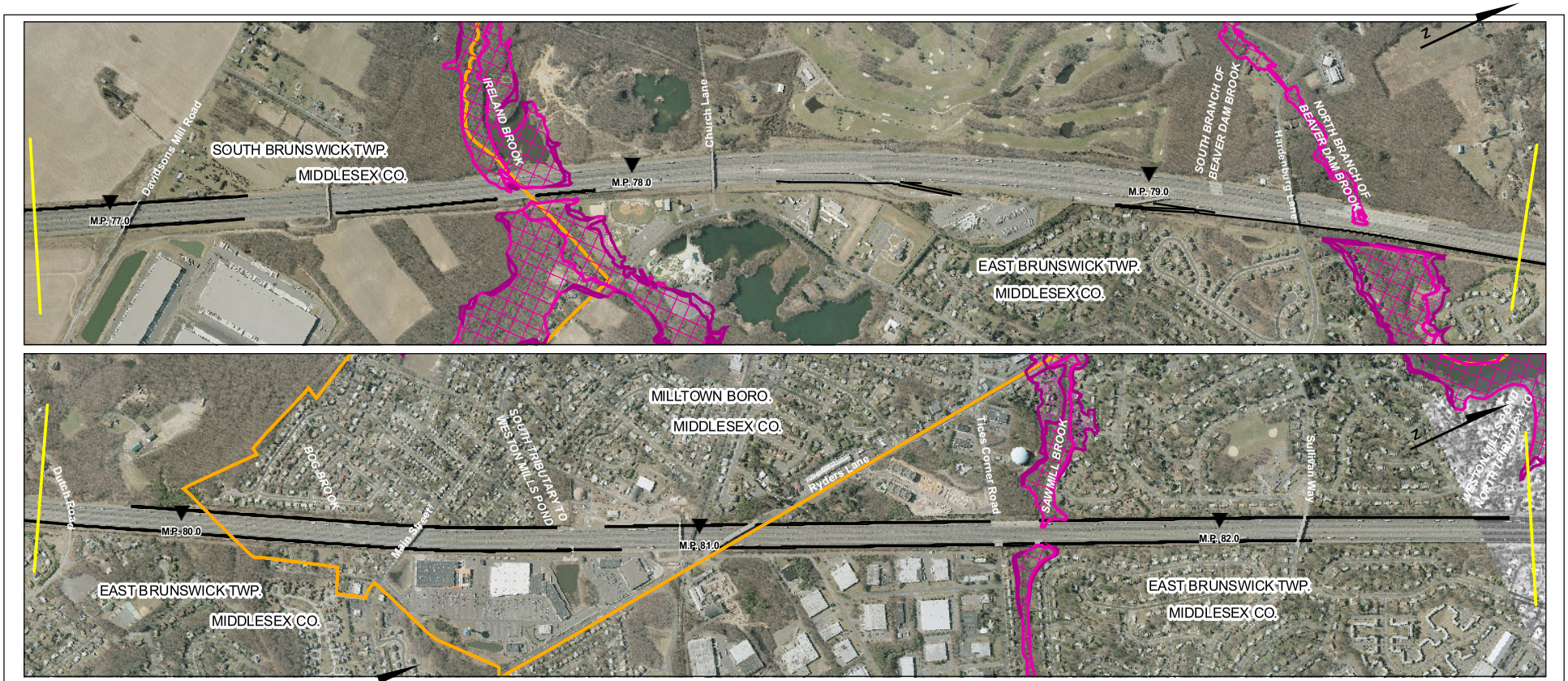
FIGURE 3-16e



Legend

- Matchline
- Municipal / County Boundary

FEMA Flood Zones

- A - An area inundated by 100 year flooding for which no Base Flood Elevations have been established.
- AE - An area inundated by 100 year flooding for which Base Flood Elevations have been determined.
- X500 - An area inundated by 500 year flooding.

0 500 1,000 2,000 Feet

Note: In some instance floodplain data may predate digital orthophotos. Stream crossings shown without FEMA flood zones have not been mapped by FEMA. Source: Q3 Digital Flood Data for Burlington, Mercer and Middlesex County, N.J., 1996. Digital Orthophotos - 2006 Aerial Photography.

STREAM CROSSINGS AND FLOODPLAINS

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FIGURE 3-16f