Chapter 6
Environmental Inventory

As noted in Chapter 5, while the environmental effects of implementing commuter rail would generally be expected to be fairly minimal, a cursory review of existing socio-economic and environmental conditions is being performed to ensure that there are no environmental "fatal flaws", or "red flags" that would hinder implementation of commuter rail service. For the purposes of this inventory, secondary sources of information were reviewed and field work was generally not conducted. This chapter considers resources in the natural environment.

6.1 Surface Water Resources

Numerous watercourses intersect the rail study corridor from New Haven, Connecticut to Springfield, Massachusetts. Any impacts on surface waters in Connecticut are regulated by the Connecticut Department of Environmental Protection's (CT DEP) Inland Waters Resources Division (for non-navigable inland wetlands) and Office of Long Island Sound Programs (for tidal and navigable wetlands), and by the US Army Corps of Engineers Section 404 process. If this study moves forward past the feasibility stage, all necessary permits will be obtained through the agencies cited above..

Major watercourses are listed below by town and are briefly described in terms of their location. (There may be other crossings of unnamed streams that would need to be assessed if the study moves forward). This information was obtained from the United States Geological Service (USGS) Quadrangle Maps that comprise the project study area. Locations of water crossings were not field verified for this planning level study, thus specific characteristics of each crossing are not available. Surface water resources obtained as hydrography data layers from CT and MA GIS are pictured in Figures 6.1-1 through 6.1-3.

With respect to water quality, designated uses and descriptions of surface water quality classifications developed by the Connecticut Department of Environmental Protection (CTDEP) are presented in Table 6.1-1 for freshwater resources and Table 6.1-2 for marine and/or brackish water resources. Freshwater streams that are not classified by the CTDEP for water quality are presumed Class A, which is the default classification assigned by CTDEP to all freshwater surface waters where water quality data is unavailable. No water quality information is readily available in electronic form for the watercourses located in the Massachusetts portion of the corridor. There are no public surface supply watersheds in proximity to the study area.

Surface Water Features
Southern Section

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

0 0.5 1 Miles

Legend

Hydrological Features

- WATER
- MARSH

Figure 6.1-1

Connecticut Department of Transportation

Wilbur Smith Associates — Engineers, Planners, Economists

Surface Water Features
Northern Section

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Figure 6.1-2

0 0.5 1 Miles

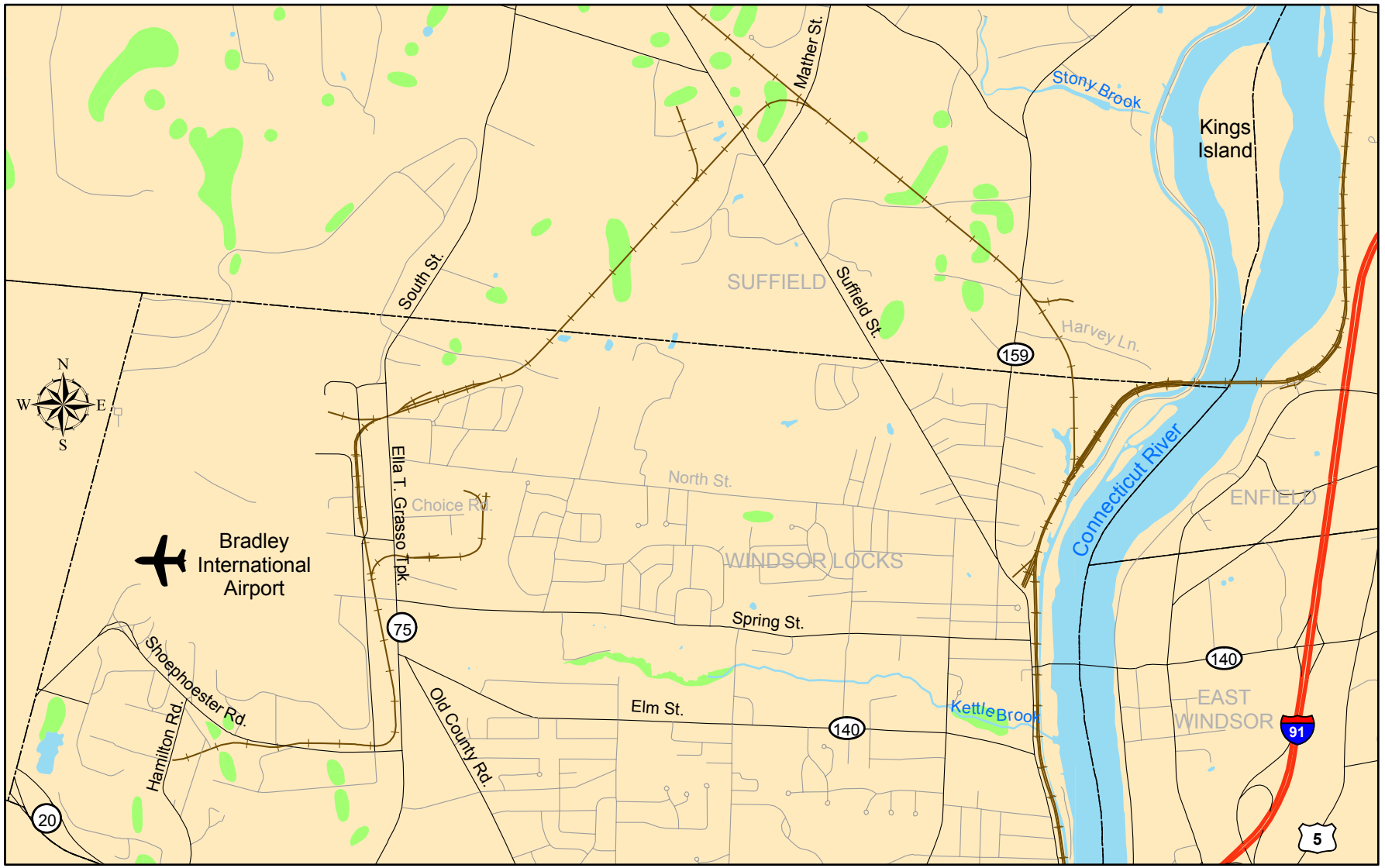
Legend

Hydrographical Features

- MARSH
- WATER

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS



0 0.5 1 Miles

Surface Water Features
Bradley Airport Spur

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Legend

Hydrological Features

- MARSH
- WATER

Figure 6.1-3

Table 6.1-1
CTDEP Surface Water Quality Classifications - Freshwater

Class	Designated Uses	Classification	
		Type	Description
A	Potential drinking water supply; fish and wildlife habitat; recreational use; agricultural, industrial supply and other legitimate uses including navigation.	A	Known or presumed to meet water quality criteria which support designated uses.
		B/A or C/A	May not be meeting water quality criteria or one or more designated uses. The goal is Class A.
B	Recreational use; fish and wildlife habitat; agricultural and industrial supply and other legitimate uses including navigation.	B	Known or presumed to meet water quality criteria which support designated uses.
		C/B or D/B	Presently does not meet the water quality criteria or one or more designated uses. The goal is Class B.
C	Certain fish and wildlife habitat, certain recreational activities, agricultural, industrial or other legitimate uses, including navigation; swimming may be precluded; one or more Class B criteria or designated uses may be impaired; goal is Class B unless CTDEP and EPA approved use attainability analysis determines certain uses are non-attainable.	C/B, C/A or C/AA	Presently not meeting water quality criteria or one or more designated uses due to pollution. The goal for such waters may be Class AA, A or Class B depending upon the specific uses designated for a watercourse. In those cases where an approved use attainability analysis has been conducted, certain designated uses may not be sought.
D	Present conditions severely inhibit or preclude one or more designated uses for extended time periods or totally preclude attainment of one or more designated uses. May be suitable for bathing or other recreational purposes, certain fish and wildlife habitat, industrial or other legitimate uses, including navigation, may have good aesthetic value.	D/B, D/A	Presently not meeting water quality criteria or one or more designated uses due to severe pollution. The goal for such waters may be Class A or Class B depending upon specific uses designated for the watercourse. In those cases where an approved attainability analysis has been conducted, certain designated uses may not be sought.

Source: CTDEP Water Quality Standards (1997)

New Haven, CT

Mill River: The rail study corridor crosses the Mill River at a location just south of Interstate 91 (I-91) near Exit 6. (Figure 6.1-1). The river is tidally-influenced at this location and industrial land use dominates the shoreline. With respect to water quality, the Mill River is presently designated by the CTDEP as Class C/B.

Table 6.1-2
CTDEP Surface Water Quality Classifications – Marine and/or Brackish

Class	Designated Uses	Classification	
		Type	Description
SA	Marine fish, shellfish and wildlife habitat, shellfish harvesting for direct human consumption, recreation and all other legitimate uses including navigation.	SA	Known or presumed to meet water quality criteria, which support designated uses.
		SB/SA or SC/SA	May not be meeting water quality criteria of one or more designated uses. The goal is Class SA.
SB	Marine fish, shellfish and wildlife habitat, shellfish harvesting for transfer to approved areas for purification prior to human consumption, recreation, industrial and other legitimate uses including navigation.	SB	Known or presumed to meet water quality criteria which support designated uses.
		SC/SB or SD/SB	Presently does not meet the water quality criteria or one or more designated uses. The goal is Class SB.
SC or SD	Certain marine fish and wildlife habitat, certain recreational activities, industrial or other legitimate uses including navigation; swimming may be precluded; one or more Class SB criteria or designated uses may be impaired; goal is Class SB or Class SA.	SC/SB, SC/SA or SD/SB, SD/SA	Presently not meeting water quality criteria or one or more designated uses due to pollution. The goal for such waters is Class SA or Class SB depending upon the specific uses designated for a watercourse.

Source: CTDEP Water Quality Standards (1997)

Hamden, CT

Unnamed Pond: Just north of the New Haven town line, the rail study corridor lies adjacent to a pond associated with the expansive Quinnipiac River salt marsh. (Figure 6.1-1). From the USGS map, it appears that the rail corridor is elevated on a fill embankment in the vicinity of the pond. With respect to water quality, the pond is not designated, however, the Quinnipiac River, to which it is hydraulically connected, is designated by the CTDEP as Class SC/SB.

North Haven, CT

Quinnipiac River: The rail study corridor crosses the Quinnipiac River at a location approximately half way between I-91 Exits 10 and 11. (Figure 6.1-1). The crossing is just north of the northern-most limit of the extensive Quinnipiac River tidal marsh system and CTDEP coastal boundary. (Refer to Section 6.4 for more description of coastal area designations.) With respect to water quality, the Quinnipiac River at this location is presently designated by the CTDEP as Class C/B.

Wallingford, CT

Wharton Brook: The rail study corridor crosses Wharton Brook just west of Route 5 and the western limit of Wharton Brook State Park. (Figure 6.1-1). Wharton Brook serves as the town boundary between North Haven and Wallingford. Wharton Brook is presumed Class A.

Unnamed Stream: The rail study corridor crosses an unnamed stream located east of the Quinnipiac River and northeast of Community Lake, approximately half way between Route 15 Exits 65 and 66. (Figure 6.1-1). The unnamed stream is presumed Class A.

Meetinghouse Brook: The rail study corridor crosses Meetinghouse Brook just north of where it passes under Route 15 at Exit 66. (Figure 6.1-1). Meetinghouse Brook flows from the north and drains into the Quinnipiac River. The brook is presumed Class A.

Meriden, CT

Harbor Brook: Harbor Brook flows towards the study area from the west and parallels the rail corridor briefly before flowing underground in the vicinity of West Main Street where it is crossed by the rail corridor. (Figure 6.1-1). The brook flows underground for a short distance and then daylights east of the rail corridor and west of the Pratt Street/Center Street intersection. The brook is presumed Class A.

Beaver Pond: North of Hicks Avenue in northern Meriden, the rail study corridor parallels the eastern shore of Beaver Pond. The rail corridor is elevated on an earthen fill embankment at this location (as opposed to a structure). Beaver Pond is presumed Class A.

Berlin, CT

Silver Lake: As the rail study corridor exits New Haven County and enters into Hartford County and the Town of Berlin, it parallels the western shoreline of Silver Lake. The Lake is located just west of Lamentation Mountain. From the USGS map, it appears that the rail corridor crosses the southwestern portion of the lake and is elevated on a fill embankment. Silver Lake is designated by the CTDEP as Class B/A.

Belcher Brook: The rail study corridor crosses Belcher Brook twice, once immediately north of Silver Lake and a second time just south of Orchard Road. The brook parallels the western side of the rail corridor between the two crossings. Belcher Brook is designated by the CTDEP as Class B/A.

Crooked Brook: The rail study corridor crosses Crooked Brook south of the Norton Road overpass at a point just north of Swede Pond. Crooked Brook originates near the New Haven County/Hartford County boundary and flows to the northeast and ultimately into the Mattabesset River. Crooked Brook is presumed Class A.

Hatchery Brook: The rail study corridor crosses Hatchery Brook north of the Norton Road overpass. Like Crooked Brook, Hatchery Brook originates to the southwest and flows in a northeasterly direction into the Mattabesset River. Hatchery Brook is presumed Class A.

Mattabesset River: The Mattabesset River originates west of the study corridor in the vicinity of the Wassel Reservoir and Hart Pond and flows in an easterly direction through the study area and ultimately into the Connecticut River just north of the Arrigoni Bridge in Middletown. The rail study corridor crosses the Mattabesset River to the south of Berlin Station and Route 372. With respect to water quality, the river is designated by the CTDEP as Class B/A.

Willow Brook: The rail study corridor crosses Willow Brook just southwest of Route 9. The brook originates to the northwest, passes through a heavily urbanized section of New Britain, and eventually flows into the Mattabesset River to the east of the study corridor. With respect to water quality, Willow Brook is designated by the CTDEP as Class C/B.

New Britain, CT

Webster Brook: Within the City of New Britain, the rail study corridor is located east of Downey Drive and parallels the Newington Town Line. From the USGS map, it appears the brook is crossed twice within a 1000-foot segment of the rail corridor. With respect to water quality, Webster Brook is designated by the CTDEP as Class B/A.

Newington, CT

Piper Brook: The rail study corridor parallels Piper Brook along much of its length from Route 175 in Newington to the West Hartford Town Line. The corridor crosses the brook once along this stretch at a location just northwest of the VA Hospital. With respect to water quality, Piper Brook is designated by the CTDEP as Class B.

Unnamed Stream: The rail study corridor crosses an unnamed tributary to Piper Brook at a location just southwest of the Willard Avenue (Route 173) overpass. The unnamed stream is presumed Class A.

West Hartford, CT

Trout Brook: The rail corridor crosses Trout Brook just north of New Britain Avenue in the Elmwood section of West Hartford. Trout Brook flows in an easterly direction through the study area and empties into the South Branch of the Park River. With respect to water quality, Trout Brook is designated by the CTDEP as Class B/A.

Hartford, CT

Unnamed Stream: Beneath the Interstate 84 Flatbush curve, the rail study corridor crosses a small, unnamed stream that flows east and into the South Branch of the Park River. The unnamed stream is presumed Class A.

Park River: The rail study corridor crosses the Park River in the vicinity of the Interstate 84 Sisson Avenue interchange. At this location, the river is located

underground in a man-made channel. With respect to water quality, the Park River is designated by the CTDEP as Class C/B.

Meadow Brook: The rail study corridor crosses Meadow Brook at a location just south of the Windsor Town Line. The crossing is immediately west of the Connecticut River. With respect to water quality, Meadow Brook is designated by the CTDEP as Class SC/SB.

Windsor, CT

Decker's Brook: The rail study corridor crosses Decker's Brook just south of the Bissell Bridge, which carries Interstate 291 over the Connecticut River. The brook flows into the study area from the northwest and discharges into the Connecticut River. Decker's Brook is presumed Class A.

Unnamed Stream: The rail study corridor crosses an unnamed stream that flows in an easterly direction through the southernmost portion of Windsor's town center and eventually into the Connecticut River. The crossing is located to the south of the Loomis Chaffee School. The stream is presumed Class A.

Unnamed Stream: The rail study corridor crosses a second unnamed stream that flows from Washington Park eastward through Windsor's town center and into the Farmington River. The crossing is just south of the access road to the Loomis Chaffee School. The stream is presumed Class A.

Mill Brook: Just north of the intersection of Poquonock Avenue (Route 75) and Palisado Avenue (Route 159), the rail study corridor crosses the Mill Brook. Mill Brook originates in the Town of Bloomfield and flows in an easterly direction until it discharges into the Farmington River just east of the rail crossing. With respect to water quality, Mill Brook is designated by the CTDEP as Class B/A.

Farmington River: The rail study corridor crosses the Farmington River just north of the Mill Brook crossing. The river originates well beyond the study area, to the northwest in the Berkshire Mountains, and flows primarily south and east until it ultimately discharges into the Connecticut River. With respect to water quality, the river is presently designated by the CTDEP as Class B.

Unnamed Streams: The rail study corridor crosses two unnamed tributaries to the Farmington River just north of the Farmington River crossing. Neither stream is classified by the CTDEP for water quality, so both are presumed Class A.

Unnamed Stream: Another unnamed stream is crossed by the rail corridor in Windsor at a location just north of Hayden Station Road. This stream is presumed Class A.

Windsor Locks, CT

Dibble Hollow Brook/Waterworks Brook: The rail study corridor crosses just to the east of the confluence of Dibble Hollow Brook and Waterworks Brook, immediately north of the Windsor Town Line. With respect to water quality, both Dibble Hollow Brook and Waterworks Brook are designated by the CTDEP as Class B/A.

Kettle Brook: The rail study corridor crosses Kettle Brook at a location just east of Millpond in the center of Windsor Locks. Kettle Brook flows due east from Bradley International Airport and empties into the Connecticut River. The brook is presumed Class A.

Outlet of Cannon Pond: The rail study corridor crosses where Cannon Pond connects with the man-made canal located along the western shore of the Connecticut River. Cannon Pond is presumed Class A.

Connecticut River: The rail study corridor crosses the Connecticut River, a National Heritage River, on an existing rail bridge located south of Kings Island. The commuter rail corridor essentially parallels the Connecticut River on the west from the Windsor Town Line north to this rail bridge. North of this location, the rail corridor parallels the Connecticut River on the east to the project terminus in Springfield. Where the rail corridor crosses the river south of Kings Island, the CTDEP water quality designation is Class C/B. Additional information on designations for the Connecticut River is provided in Section 6.5, Wild and Scenic Rivers.

Suffield, CT

Unnamed Stream: The Bradley International Airport rail spur of the rail study corridor crosses a tributary to Stony Brook just southeast of Mather Road. The tributary originates northeast of the National Guard Supply Depot at Bradley International Airport and flows northeast and drains into Stony Brook. The unnamed stream is presumed Class A.

Enfield, CT

Beemans Brook: The rail study corridor crosses Beemans Brook to the north of Parsons Road. Beemans Brook parallels the rail line on the east for approximately 1000 feet before curving to the west and discharging into the Connecticut River just northeast of Kings Island. The brook is presumed Class A.

Freshwater Brook: The rail study corridor crosses Freshwater Brook in the Thompsonville section of Enfield, north of the Hazard Avenue (Route 190) Bridge over the Connecticut River. Freshwater Brook originates well to the east of the study area at Crescent Lake and flows in a westerly direction to the Connecticut River. With respect to water quality, the brook is designated by the CTDEP as Class B/A.

Waterworks Brook: The rail study corridor crosses Waterworks Brook in the North Thompsonville section of Enfield. The brook originates to the east of I-91 near the Massachusetts State Line and flows due west into the Connecticut River. Waterworks Brook is presumed Class A.

Longmeadow, MA

Raspberry Brook: Just over the Connecticut State Line, the rail study corridor crosses Raspberry Brook. The brook originates in the North Thompsonville section of Enfield and flows in a westerly direction to the Connecticut River.

Longmeadow Brook: The rail study corridor crosses Longmeadow Brook just north of Bark Haul Road. Longmeadow Brook originates to the east near the East Longmeadow Town Line and flows due west to the Connecticut River.

Wheel Meadow Brook: The rail study corridor crosses Wheel Meadow Brook just west of I-91 and Bay Path Junior College. The brook originates to the east of Bay Path Junior College and flows due west into the Connecticut River.

Cooley Brook: The rail study corridor crosses Cooley Brook just south of the Springfield City Line. The brook originates to the east near the center of Longmeadow and flows due west into the Connecticut River.

Springfield, MA

Outlet Stream of Porter Lake: Just north of the Longmeadow Town Line and west of Forest Park, the rail study corridor crosses an outlet stream that drains nearby Porter Lake to the east.

Mill River: The rail study corridor crosses the Mill River where it empties into the Connecticut River. The Mill River flows in a westerly direction from Watershops Pond through the Forest Park section of Springfield.

6.2 Wetlands

Wetlands are regulated by the US Army Corps of Engineers and by the CT and MA DEP. Wetlands along the rail study corridor were identified using the most recent hydric soils information mapped by the National Resource Conservation Service (NRCS) (1996), which is used by DEP for wetland definitions, and National Wetland Inventory (NWI) maps. NWI maps were used to obtain a general description of the types of wetlands located adjacent to the existing rail corridor because hydric soils data for Massachusetts is not readily available in electronic form . These two data sources in Connecticut matched up closely in the project study area, and are general representations of the distribution of wetlands throughout the 62-mile corridor. The information provided in this section is considered a preliminary identification of wetland resources, consistent with the level of planning and documentation typical of a feasibility study. A more detailed wetland study,

including function and value assessments and field delineations according to the currently-used "Federal Manual for Delineating Jurisdictional Wetlands," (1987) will be completed if and when the project moves forward into further stages of development. Figures 6.2-1 through 6.2-3 show wetlands mapping obtained for this study.

New Haven, CT

Based on the review of GIS data layers, there are no mapped wetlands located within 250 feet of the rail study corridor within the City of New Haven.

Hamden, CT

An expansive tidal marsh system associated with the Quinnipiac River is located east of the existing rail corridor in the Town of Hamden. The portion of the tidal system that is closest to the existing rail corridor is located between the intersections of Main Street/Foote Street and Main Street/Sebec Street.

North Haven, CT

Just north of the Hamden Town Line, the rail corridor crosses a portion of the Quinnipiac River tidal marsh system.

Further to the north, after passing under Route 40, the rail study corridor passes immediately west of a large floodplain wetland associated with the Quinnipiac River. The wetland is underlain by Rippowam fine sandy loam alluvial soils and it extends northward to a point where the existing rail corridor crosses the Quinnipiac River.

Just north of I-91 Exit 11, the existing rail corridor passes to the east of a wetland underlain by Bash silt loam alluvial soils. This wetland is part of the expansive Quinnipiac River floodplain.

In the vicinity of I-91 Exit 12 and northwest of the fairgrounds, the rail corridor passes east of a wetland underlain by Scarboro mucky loamy sand, an "upland wetland" soil, as defined in the DEP soils GIS layer. The wetland is not classified by NWI.

In the vicinity of Wharton Brook at the Wallingford Town Line, the existing rail corridor crosses a wetland underlain by Rippowam fine sandy loam alluvial soils. The wetland is located within both North Haven and Wallingford and is associated with the Quinnipiac River/Wharton Brook floodplain. The wetland is not classified by NWI.

Wallingford, CT

Where the existing rail corridor crosses an unnamed stream northeast of Community Lake, it also crosses a wetland that is underlain by Rippowam fine sandy loam alluvial soils. The wetland is part of the extensive Quinnipiac River floodplain.

National Wetland Inventory Data
Southern Section

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

0 0.5 1 Miles

Legend

Wetlands

- Palustrine Scrub-Shrub
- Paulstrine Emergent
- Palustrine Forested
- Unclassified Wetland

Figure 6.2-1

National Wetland Inventory Data
Northern Section

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Figure 6.2-2

0 0.5 1 Miles

Legend

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Unclassified Wetland

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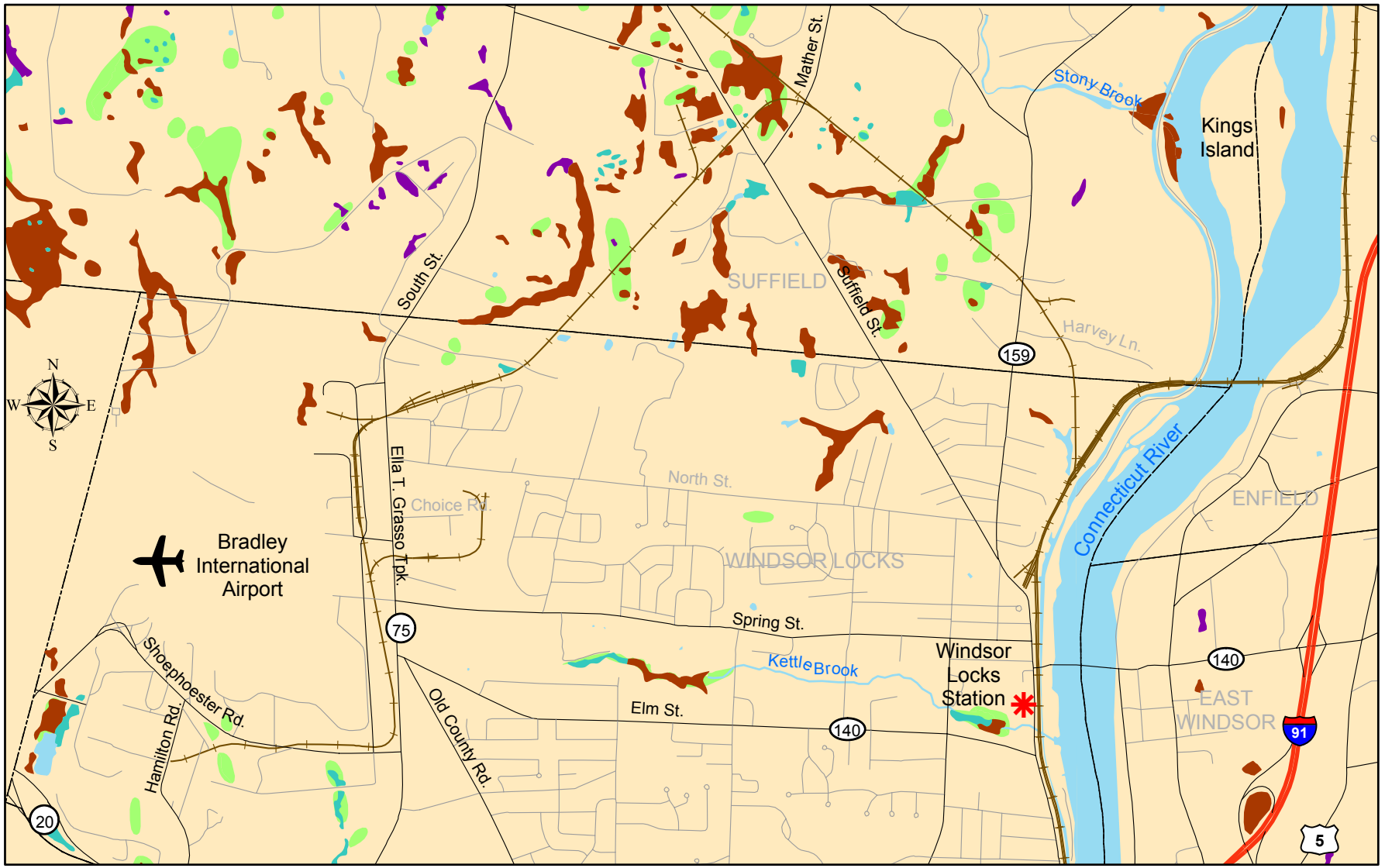


0 0.5 1 Miles

National Wetland Inventory Data
Bradley Airport Spur

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Legend

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Unclassified Wetland

Figure 6.2-3

The rail study corridor crosses another wetland underlain by Rippowam fine sandy loam alluvial soils just north of Meetinghouse Brook and east of Route 150. This wetland is associated with the extensive Quinnipiac River floodplain.

Meriden, CT

The rail study corridor passes just west of a small wetland located within Sacred Heart Cemetery, north of Gypsy Lane.

In northern Meriden near Hicks Avenue, the rail corridor passes immediately east of a wetland underlain by Adrian and Palm very poorly drained soils. According to NWI mapping, the wetland consists of both temporarily flooded, palustrine forested broad-leaved deciduous and seasonally flooded, palustrine scrub-shrub broad-leaved deciduous wetland types. The existing rail corridor is elevated above this wetland on a fill embankment.

Berlin, CT

As the existing rail corridor crosses the southwestern portion of Silver Lake on an elevated fill embankment, it first passes a wetland to the west that is classified by NWI as a seasonally flooded, palustrine scrub-shrub broad-leaved deciduous wetland, and then further north it passes a wetland to the east with the same NWI classification.

North of Orchard Road and west of Gills Pond, the rail study corridor passes immediately west of a wetland.

Wetlands are located both east and west of the corridor further to the north where the rail corridor crosses Crooked Brook.

Just north of Norton Road, the elevated rail corridor passes to the east of one wetland and to the west of another wetland.

Further to the north where the rail corridor crosses Hatchery Brook, it passes to the west of a seasonally flooded wetland that occupies the area between Four Rod Road and the elevated rail corridor.

Where the rail corridor crosses the Mattabesset River, it passes to the west of a wetland that is associated with the river's floodplain.

Just prior to crossing the New Britain City Line, the rail corridor passes to the west of a wetland located north of Route 9.

New Britain, CT

Along the New Britain/Newington Town Line, the rail study corridor passes to the west of a wetland associated with Webster Brook that is underlain by Scitico, Shaker and Maybid poorly drained and very poorly drained soils.

Newington, CT

A large wetland associated with Piper Brook is located along the rail corridor from a point approximately 1000 feet south of New Britain Avenue (Route 174) northward to Route 175. This wetland is underlain by Scitico, Shaker and Maybid poorly drained and very poorly drained soils. According to NWI mapping, seasonally flooded palustrine forested broad-leaved deciduous, semi-permanently flooded palustrine emergent persistent, and seasonally flooded palustrine scrub-shrub broad-leaved deciduous wetland types are all present within this extensive wetland system.

The Piper Brook wetland system continues along the existing rail corridor north of Route 175 to Willard Avenue. In the vicinity of Route 175, the wetland is primarily located west of the rail corridor and near Willard Avenue the wetland is located primarily east of the corridor. The wetland is underlain by Limerick and Saco silt loam alluvial soils, and "upland wetland" soils as defined in the DEP soils GIS layer, namely Wilbraham silt loam. Similar to the wetland south of Route 175, seasonally flooded palustrine forested broad-leaved deciduous, semi-permanently flooded palustrine emergent persistent, and seasonally flooded palustrine scrub-shrub broad-leaved deciduous NWI wetland types are represented.

West Hartford, CT

Based on the review of GIS data layers, there are no mapped wetlands located within 250 feet of the rail study corridor within the Town of West Hartford.

Hartford, CT

The only mapped wetland proximate to the rail study corridor within the City of Hartford is located west of the rail corridor and just east of I-91 Exit 34. The wetland is associated with Meadow Brook and is classified by NWI as a temporarily flooded palustrine forested broad-leaved deciduous wetland.

Windsor, CT

Wetlands are located on both sides of the existing rail corridor where it crosses Decker's Brook just south of the I-291 Bissell Bridge. The wetlands, which are associated with the Connecticut River floodplain, are underlain by Limerick alluvial soils.

To the north of the Bissell Bridge, the rail corridor passes to the west of wetlands associated with the Connecticut River floodplain.

Where the elevated rail corridor passes to the west of Windsor Meadows State Park, the rail bed serves as the western boundary of a wetland associated with the Connecticut River floodplain that is underlain by Limerick and Bash silt loam alluvial soils. Further to the north, near the entrance road to Loomis Chaffee School, it crosses a larger wetland underlain by the same type of alluvial soils.

Where the existing elevated rail corridor crosses the Farmington River, it crosses a wetland underlain by Limerick alluvial soils.

There are many wetlands located along the existing rail corridor to the north and south of where it the existing rail corridor crosses Kennedy Road. These wetlands are primarily underlain by Scitico, Shaker and Maybid soils and by Raypol silt loam.

West of Palisado Avenue (Route 159) where the rail corridor crosses Basswood Road, there is a large wetland underlain by Wilbraham silt loam poorly drained soil. It appears from the USGS mapping that the rail bed was placed at-grade through this large wetland, which is classified by NWI as a seasonally flooded palustrine forested broad-leaved deciduous wetland.

Between Hayden Station Road and the Windsor Locks Town Line there are five wetland pockets located along the existing rail corridor. Poorly drained soils underlying these wetlands include Raypol silt loam, Wilbraham silt loam, and Saco silt loam.

Windsor Locks, CT

Two wetlands exist just north of the Windsor Town Line where the rail corridor crosses east of the confluence of Dibble Hollow Brook and Waterworks Brook. Both wetlands are located west of the elevated rail bed.

Through much of Windsor Locks the existing rail corridor directly parallels the Connecticut River and/or a man-made canal connected to the river. Hydric soils and NWI mapping indicates no wetlands along this segment of the corridor. However, field reconnaissance conducted during later stages of project development may reveal several areas where Connecticut River riparian wetlands actually abut the eastern side of the elevated rail bed.

Suffield, CT

Wetlands are located along much of the railroad spur servicing Bradley International Airport, especially between Suffield Street and North Main Street. The wetlands are primarily underlain by Scitico, Shaker and Maybid soils with a few small pockets of Saco silt loam and Brancroft silt loam also present.

Southwest of Suffield Street to Bradley International Airport the rail spur passes to the southeast of several wetlands. These wetlands are underlain by several different soils

including the Scitico, Shaker and Maybid soil complex, Walpole sandy loam, Rippowam fine sandy loam, and Scarboro mucky loamy sand.

Enfield, CT

Just after crossing the Connecticut River, the existing rail corridor curves the north and parallels I-91. Where the rail corridor makes the curve to the north it passes just west of a wetland underlain by Scitico, Shaker and Maybid poorly drained soils.

In the vicinity of I-91 Exit 46, the existing rail corridor passes to the east of a wetland associated with the Connecticut River floodplain that is underlain by Limerick alluvial soils. Just south of this wetland and west of Exit 46, the rail corridor is within 150 feet of the Connecticut River.

North of where the rail corridor crosses Parsons Road, it passes west of a wetland associated with Beemans Brook. The southern portion of the wetland is underlain by Wilbraham silt loam upland wetland soils and the northern portion is underlain by Limerick alluvial soils.

In the Thompsonville section of Enfield all the way to the Massachusetts State Line, the existing rail corridor serves as the eastern border of an extensive wetland associated with the Connecticut River floodplain.

Longmeadow, MA

From the Connecticut State Line north to Meadow Road, the existing rail corridor crosses a large wetland associated with the Connecticut River floodplain and Raspberry Brook.

In the vicinity of Bark Haul Road, the existing rail corridor passes west of a small, seasonally flooded forested wetland that contains an area of persistent emergent vegetation and further to the north, near Birnie Road the rail corridor passes west of another seasonally flooded forested wetland with interspersed scrub-shrub vegetation.

South of where the rail corridor crosses Wheel Meadow Brook, it passes through a wetland, elevated above the wetland on a fill embankment.

North of where the rail corridor crosses Emerson Road, it passes west of a seasonally flooded wetland with interspersed scrub-shrub vegetation.

Springfield, MA

From the Longmeadow Town Line to the northern terminus of the rail study corridor in Springfield, the rail corridor lies directly adjacent to the Connecticut River on the west with I-91 and/or urban development directly to the east.

6.3 Groundwater

For the purposes of this planning level study, several secondary information sources provide an overview of the quantity and quality of groundwater in the study area. Aquifer and wellhead protection areas are regulated by the CT and MA DEP and state and local health departments. Aquifer and wellhead protection areas generally indicate high quality potential for drinking water use of groundwater. If the study moves forward, impacts to groundwater resources would be assessed under the NEPA process and if mitigation is necessary, it would be coordinated with health departments and water companies. Surface supply watersheds are discussed in the surface water section (Section 6.1).

Aquifer and wellhead protection areas and groundwater quality information for Connecticut towns located along the study corridor were obtained in GIS format from the CTDEP and are described below by town. CTDEP designated uses and descriptions of groundwater quality classifications are presented in Table 6.3-1. (Much of Connecticut is assumed to be classified as GA). Mapping of these groundwater classes is shown in Figures 6.3-1 through 6.3-3. Because there is no GIS representation of GAA and GA areas not meeting water quality standards (only text records), they are not pictured in the figures. There are no such known areas within 250 feet of the rail corridor.

Table 6.3-1
Connecticut DEP Groundwater Quality Classifications

Class	Designated Uses	Discharge Restricted to:
GAA	Existing or public water supply or water suitable for drinking without treatment; baseflow for hydraulically connected surface water bodies	Treated domestic sewage, certain agricultural wastes, certain water treatment discharges
GA	Existing private and potential public or private supplies of water suitable for drinking without treatment; baseflow for hydraulically connected surface water bodies.	As for GAA and discharge from septage treatment facilities subject to stringent treatment and discharge requirements, and other wastes of natural origin that easily biodegrade and present no threat to groundwater.
GB	Industrial process water and cooling waters; baseflow for hydraulically connected surface water bodies; presumed not suitable for human consumption without treatment.	Same as for GA. Note: same stringent treatment standards apply; certain other biodegradable wastewaters subject to soil attenuation.
GC	Assimilation of discharge authorized by the Commissioner pursuant to Section 22a-430 of the General Statutes. As an example, a lined landfill for disposal of ash residue from a resource recovery facility. The GC hydrogeology and setting provides the safest back up in case of technological failure.	Potential discharges from certain waste facilities subject to extraordinary permitting requirements.

Source: CTDEP Water Quality Standards (1997)

Groundwater Resources
Southern Section

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

0 0.5 1 Miles

Legend

Groundwater Class

- GAA
- GA
- GB
- GC

Figure 6.3-1

Wilbur Smith Associates

Groundwater Resources
Northern Section

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Figure 6.3-2

0 0.5 1 Miles

Legend

Groundwater Class (CT) Output (MA)

- GAA
- GA
- GB
- GC
- High
- Medium

Wilbur Smith Associates

0 0.5 1 Miles

Legend

Groundwater Class

- GAA
- GA
- GB
- GC

Groundwater Resources
Bradley Airport Spur

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Figure 6.3-3

It should also be noted that community and non-community wells are ubiquitous throughout the project area, as well as throughout the state. They have not been pictured in any figures because of their heavy distribution throughout the state.

Groundwater information for Massachusetts towns located along the study corridor was obtained from the USGS Hydrologic Atlas produced by the USGS Water Resource Discipline (WRD) via MassGIS (1960s to the present). Groundwater resources in Massachusetts are not assigned a water quality classification but instead are designated as either "high" or "medium" output water supply aquifers.

New Haven, CT

There are no aquifer or wellhead protection areas proximate to the rail study corridor in the City of New Haven. Groundwater quality underlying the entire study corridor in New Haven is designated by CTDEP as Class GB.

Hamden, CT

There are no aquifer or wellhead protection areas proximate to the rail study corridor in the Town of Hamden. Groundwater quality underlying the entire study corridor in Hamden is designated by CTDEP as Class GB.

North Haven, CT

There are no aquifer or wellhead protection areas proximate to the rail study corridor in the Town of North Haven. Groundwater quality from the Hamden Town Line north to a location just north of Route 40 is Class GB. The rail corridor then traverses a small area of Class GA groundwater located west of the Quinnipiac River and east of Old Hartford Road. As the corridor curves to the northeast, it enters an area of Class GA/GAA groundwater located between the Quinnipiac River and I-91 at Exit 12. In the northern section of North Haven and continuing into southern sections of Wallingford, the rail corridor forms a boundary between a large area of Class GB groundwater located to the west along the Quinnipiac River and an area of Class GA groundwater to the east.

Wallingford, CT

The rail study corridor crosses an approved aquifer protection area (APA) just north of the Meetinghouse Brook crossing. The APA is identified as the Oak Street Wellfield and is owned and operated by the Wallingford Water Department. Groundwater quality in this area, which extends northward approximately to the Meriden Town Line, is designated by the CTDEP as Class GA/GAA. In the vicinity of downtown Wallingford, the corridor traverses a large area of Class GB groundwater that extends northward along the eastern side of the Quinnipiac River to Route 68 near Route 15 Interchange 66.

Meriden, CT

There are no aquifer or wellhead protection areas proximate to the rail study corridor in the City of Meriden. Along the rail corridor from the Wallingford Town Line north to a location just south of the Old Colony Road/Hall Avenue intersection, the underlying groundwater is designated by CTDEP as Class GA/GAA. North of this intersection, the rail corridor enters an increasingly urbanized section of Meriden that is underlain by Class GB groundwater. North of downtown Meriden, the corridor traverses a large area underlain by Class GA groundwater, which extends northward to the Berlin Town Line.

Berlin, CT

The rail study corridor crosses the easternmost portion of an APA located near Swede Pond along Crooked Brook. The APA is identified as the Elton Road Wellfield and is owned and operated by the Berlin Water Control Commission. Much of the southern portion of Berlin along the rail corridor from the Meriden Town Line north to Route 372 is underlain by Class GA groundwater. North of Route 372 to the New Britain City Line, the rail corridor is underlain by Class GB groundwater.

New Britain, CT

There are no aquifer or wellhead protection areas proximate to the rail study corridor in the City of New Britain. Groundwater located to the west of the existing rail corridor is designated by CTDEP as Class GB and groundwater to the east is Class GA.

Newington, CT

There are no aquifer or wellhead protection areas proximate to the rail study corridor in the Town of Newington. From the New Britain City Line north to Route 175, the rail corridor forms a boundary between Class GA groundwater to the east and Class GB groundwater to the west. From Route 175 north to the West Hartford Town Line, the rail corridor traverses a large area underlain by Class GB groundwater.

West Hartford, CT

There are no aquifer or wellhead protection areas proximate to the rail study corridor in the Town of West Hartford. The entire rail corridor through West Hartford is underlain by Class GB groundwater.

Hartford, CT

There are no aquifer or wellhead protection areas proximate to the rail study corridor in the City of Hartford. The entire rail corridor through Hartford is underlain by Class GB groundwater.

Windsor, CT

There are no aquifer or wellhead protection areas proximate to the rail study corridor in the Town of Windsor. From the Hartford City Line north to a location approximately 2 miles north of the Bissell Bridge, the rail corridor is underlain by Class GB groundwater. It then traverses a smaller area of Class GA groundwater that extends north to the Farmington River crossing. At this location, the rail corridor crosses a small area underlain by Class GB groundwater. The rail corridor crosses alternating areas of Class GA and Class GA/GAA groundwater through much of northern Windsor to the Windsor Locks Town Line.

Windsor Locks, CT

There are no aquifer or wellhead protection areas proximate to the rail study corridor in the Town of Windsor Locks. The rail study corridor crosses an area underlain by Class GB groundwater from the Dibble Hollow Brook crossing north to the Dexter Coffin Bridge. North of the Dexter Coffin Bridge, the rail corridor traverses an area underlain by Class GA groundwater that extends north to the point where the existing rail corridor crosses the Connecticut River south of Kings Island.

Suffield, CT

There are no aquifer or wellhead protection areas proximate to the rail spur servicing Bradley International Airport. The entire length of the Bradley spur in Suffield crosses an area underlain by Class GA groundwater.

Enfield, CT

The rail study corridor crosses the westernmost portion of an APA located just north of Waterworks Brook. The APA is identified as the Spring Lots Wellfield and is owned and operated by the Connecticut Water Company. Through much of Enfield, the existing rail corridor traverses land underlain by Class GA groundwater. Only two areas are traversed by the rail corridor in Enfield that are underlain by Class GB groundwater; one in the vicinity of Beemans Brook and the other near an industrialized area west of Thompsonville center.

Longmeadow and Springfield, MA

Groundwater resources in Massachusetts that are traversed by the rail study corridor are designated as Medium Output water supply aquifers.

6.4 Coastal Boundaries and Floodplains

If this project moves forward beyond the feasibility stage, and construction was necessary, there are different types of water resource areas associated with marine or freshwater inundation that could require permitting and mitigation efforts as part of the NEPA

process. In all cases, any necessary permits would be obtained from the regulating agencies, and efforts would be made first to avoid impacts entirely, minimize impacts, and then mitigate any impacts that could not be avoided.

"Coastal waters" are defined by the state as those waters of Long Island Sound and other associated waters that contain a salinity of at least five hundred parts per million under low flow stream conditions. According to Section 22a-94 of the Connecticut General Statutes, (the Connecticut Coastal Management Act) the Connecticut "coastal area" constitutes towns that are under the state's jurisdiction in Long Island Sound. For the commuter rail study area, this includes the City of New Haven and Towns of Hamden and North Haven. The "coastal boundary" includes areas within those towns that are farthest inland of the three designations that follow:

- Located within the 100-year frequency coastal flood zone, or
- a 1,000 foot setback from the mean high water mark in coastal waters, or
- a 1,000 foot setback from the inland boundary of tidal wetlands.

Any impacts within the designated coastal boundary would be subject to the requirements of Connecticut's Coastal Management Act, and would be overseen by the CTDEP Office of Long Island Sound Programs.

Much of the southern portion of the rail study corridor resides within the CTDEP designated coastal boundary. From Union Station in New Haven northeast to Chapel Street the corridor lies within the coastal boundary. The rail corridor then exits the coastal boundary briefly from Chapel Street north to a location just west of I-91 Exit 4. From this location, the rail corridor re-enters the coastal boundary and remains within it on its journey north along the western edge of the expansive Quinnipiac River tidal marsh. Continuing northward, the rail corridor finally exits the coastal boundary just south of where it crosses the Quinnipiac River in North Haven.

The Federal Emergency Management Agency (FEMA) has produced Flood Insurance Rate Maps that define floodplains. A "100-year floodplain" is the area that has a one-percent chance of being inundated in a given year. Similarly, a "500-year floodplain" is an area that has a one-five-hundredth chance (0.02%) of being inundated in a given year. These floodplain hazard areas apply both to inland (freshwater) bodies as well as coastal areas.

Available GIS data obtained from the University of Connecticut's MAGIC website and MassGIS data were reviewed to identify 100-year floodplains along the rail study corridor. The locations of 100-year floodplains are briefly described below for each town along the corridor. By overlaying 100-year floodplain GIS data on USGS topographic quadrangle maps, the elevation of the existing rail corridor in relation to the 100-year flood elevation can be generally surmised. This overlay analysis, should be viewed as an extremely preliminary assessment of locations where the rail corridor appears elevated or not elevated above the 100-year flood elevation, strictly for planning-level purposes. Locations of 100-year floodplains were not field verified for this planning level study,

thus details specific to each identified floodplain are not available, and additional evaluation and refinement of floodplain elevations would likely be necessary during future NEPA and construction phases. Given that the existing rail corridor predates any FEMA mapping, it is assumed that the existing grades associated with the rail embankments have been factored into current flood studies. Any proposed excavation or fill associated with the proposed project would be subject to CT and MA DEP review and certification. Floodplain mapping is shown in Figures 6.4-1 through 6.4-3.

Stream channel encroachments are regulated by the CT DEP Inland Water Resources Division, and constitute a different regulated resource (independent of floodplains and coastal areas). Stream Channel Encroachment Lines (SCELs) have been established for about 270 linear miles of riverine floodplain statewide. Different streams have different defined SCEL setbacks from ordinary high water levels. GIS mapping obtained for this study did not show SCELs. Any construction within SCELs will need to be coordinated through the permitting process with the Inland Water Resources Division.

New Haven and Hamden, CT

The rail study corridor resides within the 100-year coastal flood hazard area from its southernmost terminus at the existing Union Station north and under Route 34 to Chapel Street.

At the Mill River crossing, 100-year floodplain exists both north and south of the rail corridor and extends slightly to the east. From the USGS map and GIS data, it appears that the rail corridor is elevated above the 100-year floodplain on fill embankments in this area.

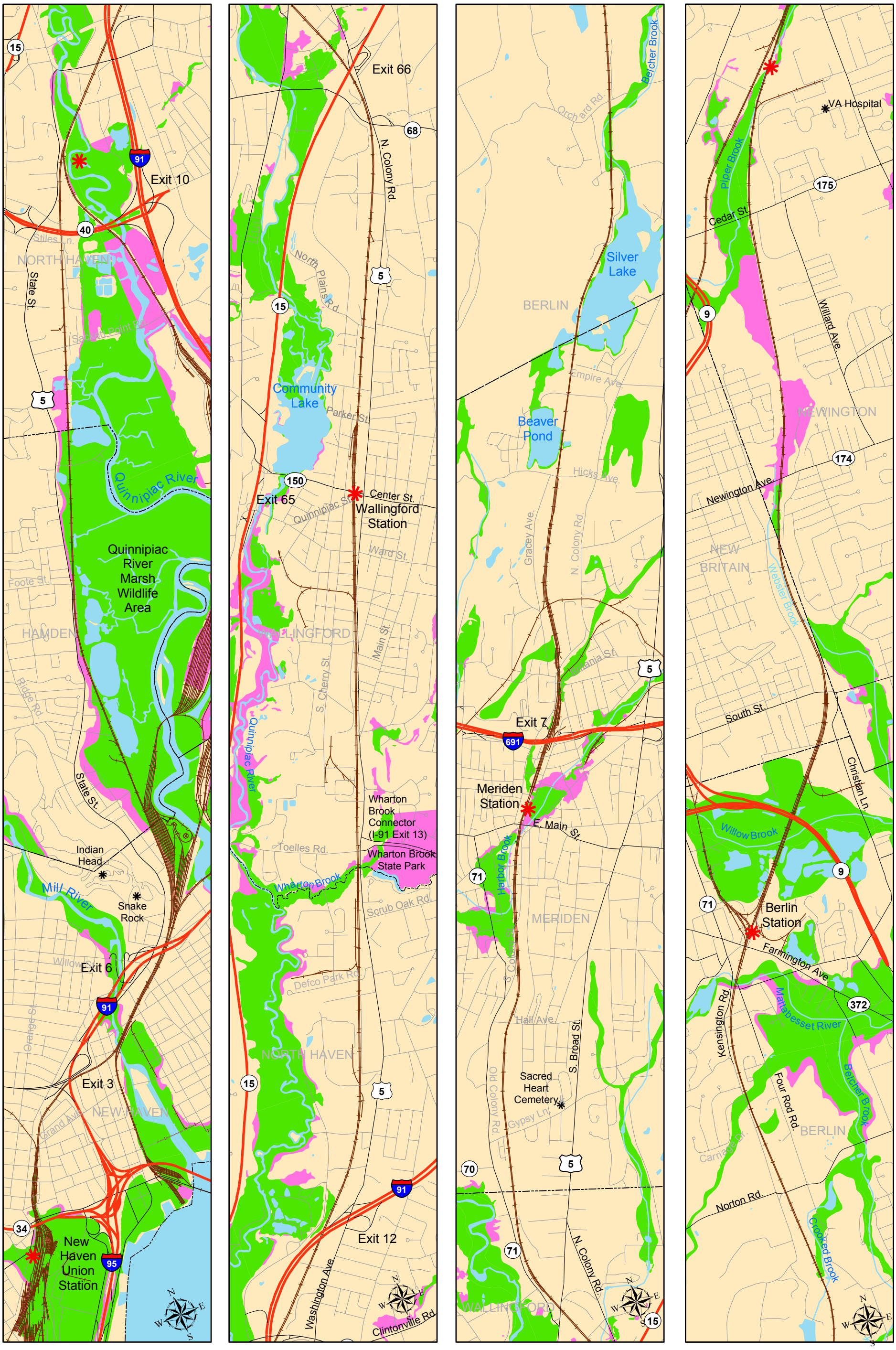
The rail study corridor crosses a 100-year floodplain located in the vicinity of the rail yard to the east of Indian Head and Snake Rock.

North Haven, CT

The rail corridor runs west of and parallel to the expansive Quinnipiac River salt marsh system. Where the rail corridor crosses the river, 100-year floodplain is located both north and south of the rail corridor. From the USGS map and GIS data, it appears that the rail corridor is elevated above the 100-year floodplain on fill embankments leading up to the crossing from both the north and south.

Approximately one-half mile north of the Quinnipiac River crossing in the vicinity of I-91 Exit 12, the rail corridor abuts an area of 100-year floodplain that is located to the west of the rail line. From the USGS map and GIS data, it appears that the rail corridor is elevated above the 100-year floodplain on fill embankments.

At the Wharton Brook crossing just prior to entering the Town of Wallingford, the rail corridor intersects a narrow section of the 100-year floodplain associated with the brook.



0 0.5 1 Miles

Floodplains
Southern Section

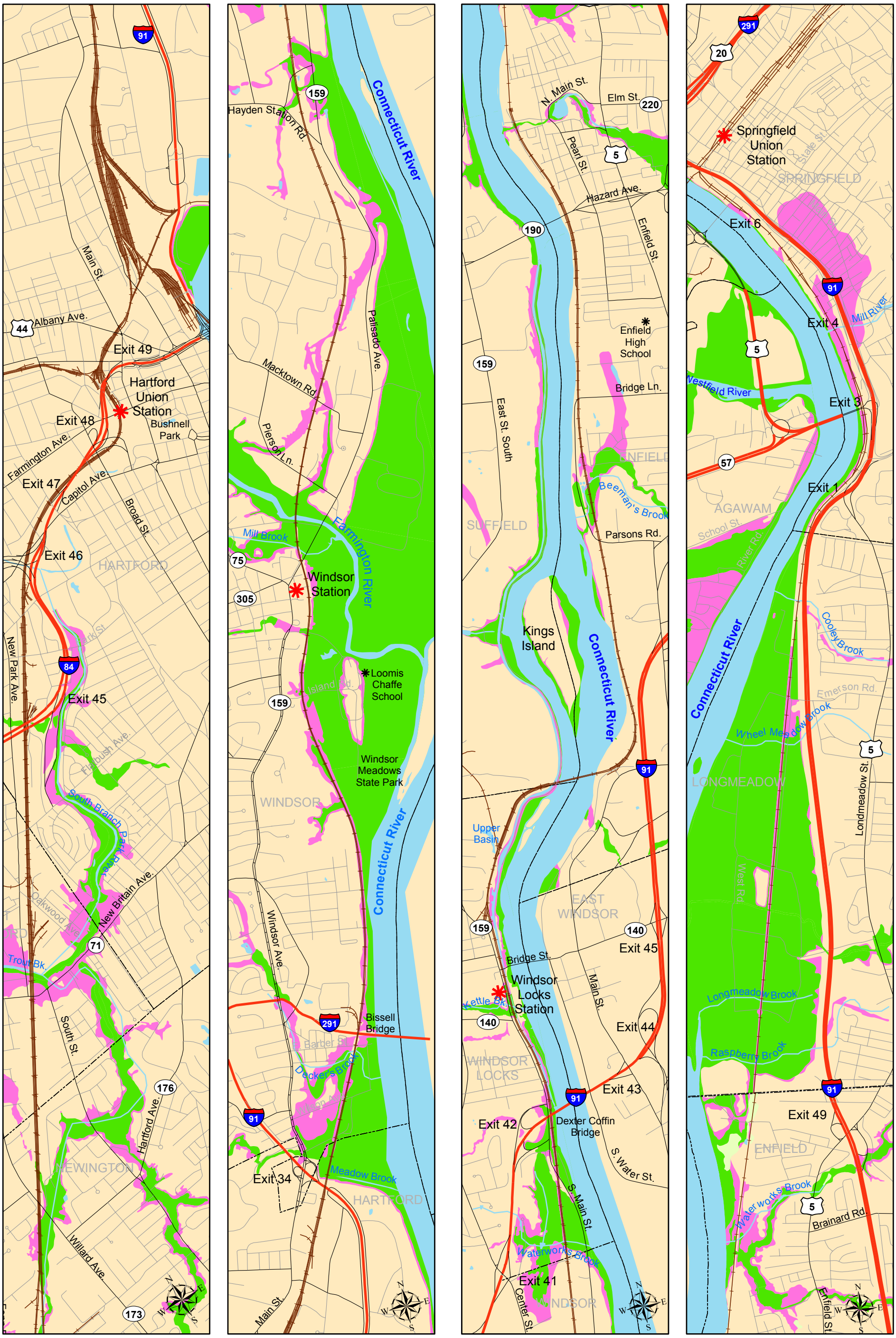
New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Legend

Floodplains

- 100 year flood
- 500 year flood

Figure 6.4-1



0 0.5 1 Miles

Floodplains
Northern Section

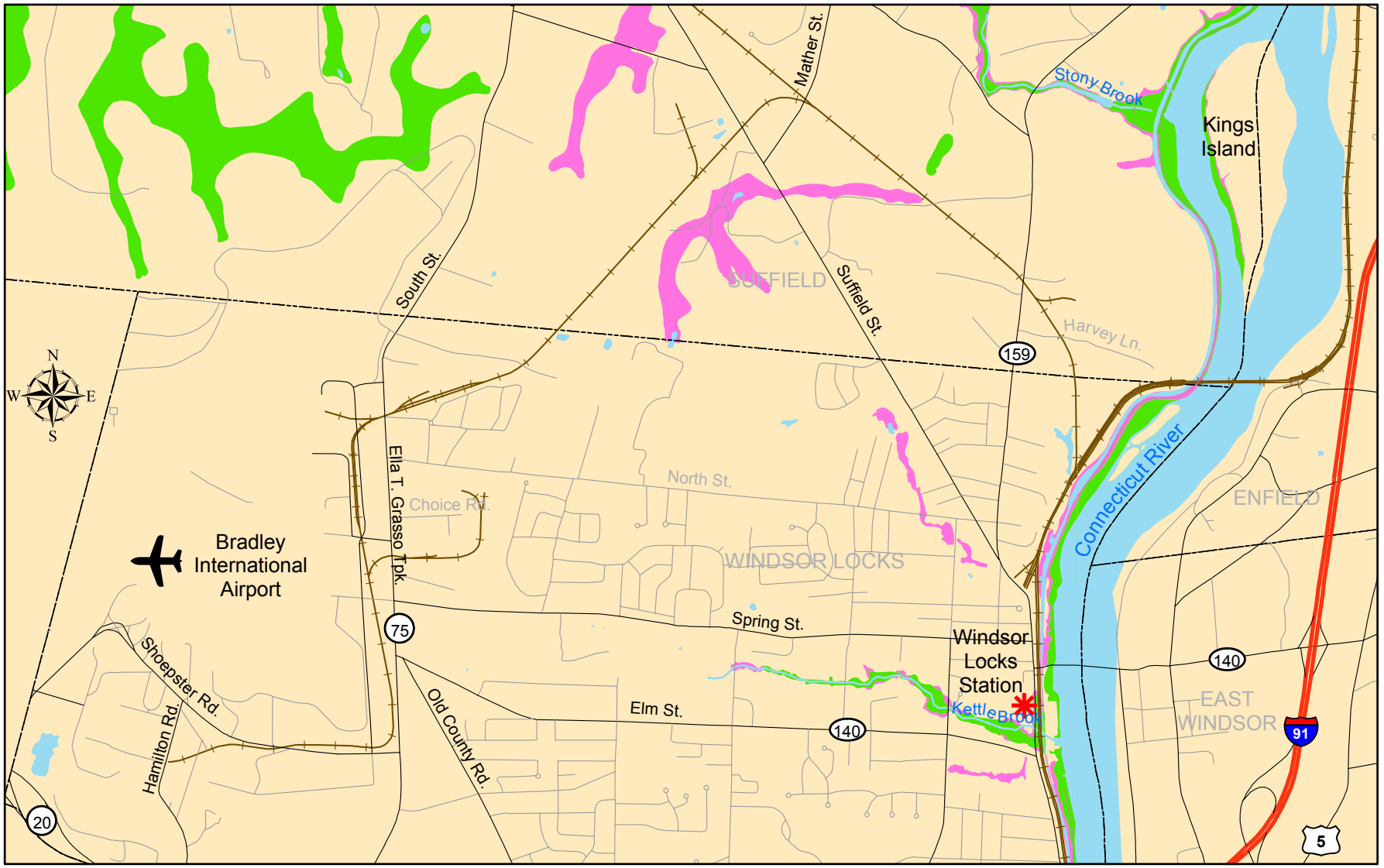
New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Legend

Floodplains

- 100 year flood
- 500 year flood

Figure 6.4-2



0 0.5 1 Miles

Legend

Floodplains

- 100 year flood
- 500 year flood

Floodplains
Bradley Airport Spur

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Wilbur Smith Associates

Figure 6.4-3

Wallingford, CT

On the Wallingford side of the Wharton Brook crossing, the rail corridor also appears to intersect a narrow section of 100-year floodplain associated with the brook.

The rail study corridor appears to cross the 100-year floodplain associated with Meetinghouse Brook. From the USGS map and GIS data, it appears that the rail corridor is elevated above the 100-year floodplain on fill embankments leading up to the crossing from both the northwest and southeast.

Meriden, CT

A small area of 100-year floodplain appears to be is located along the corridor between Center and Colony Streets associated with Harbor Brook.

An area of 100-year floodplain appears to exist west of and adjacent to the rail corridor where it passes along the eastern edge of Beaver Pond between Hicks Road and Beaver Lake Road.

The rail study corridor passes to the east of a 100-year floodplain located just south of the Berlin Town Line located between Beaver Pond and Silver Lake.

Berlin, CT

The rail study corridor passes west of and is adjacent to a large 100-year floodplain associated with Silver Lake. From the USGS map and GIS data, it appears that the rail corridor is elevated above the 100-year floodplain in this area.

North of Silver Lake, between Norton Lane and Orchard Road, the rail study corridor appears to cross a 100-year floodplain associated with Belcher Brook.

At the Crooked Brook crossing located north of Swede Pond, the rail study corridor appears to intersect the 100-year floodplain associated with the brook.

The rail study corridor appears to pass just west of the 100-year floodplain located south of Hatchery Brook and appears to intersect the 100-year floodplain at the Hatchery Brook crossing.

At the Mattabesset River crossing, the rail study corridor appears to intersect a narrow section of the 100-year floodplain associated with the river.

In northern Berlin, the rail corridor appears to cross an extensive floodplain area associated with Willow Brook that extends both north and south of Route 9.

New Britain, CT

There are no designated 100-year floodplains within the study corridor in New Britain.

Newington, CT

The westernmost portion of the 100-year floodplain associated with Webster Brook appears to abut the rail study corridor in the vicinity of the New Britain City Line. From the USGS maps and GIS data, it appears that the rail corridor is elevated above the floodplain in this area.

Just south of New Britain Avenue (Route 174) the rail study corridor appears to cross the 100-year floodplain associated with Webster Brook.

From a point approximately 1,000 feet south of Route 175 north to a point approximately 2,000 feet south of the West Hartford town line, the rail study corridor either parallels or appears to cross the 100-year floodplain associated with Piper Brook. This is one of the largest 100-year floodplain areas along the corridor south of Hartford. From the USGS maps and GIS data, it appears that the rail corridor is elevated above the 100-year floodplain in some locations, and also lies within the designated 100-year floodplain in other locations in the Piper Brook system.

West Hartford, CT

The only 100-year floodplain crossed by the rail corridor within the Town of West Hartford is the narrow floodplain associated with Trout Brook. The rail corridor is elevated over this floodplain on a fill section and railroad bridge.

Hartford, CT

Where the rail study corridor passes under the Interstate 84 Flatbush curve, it appears to pass adjacent to a small 100-year floodplain associated with an unnamed stream that flows to the east and empties into the South Branch of the Park River. From the USGS maps and GIS data, it appears that the rail corridor is elevated above the floodplain in this area.

As the rail study corridor passes through Downtown Hartford and curves to the north and heads toward the Windsor Town Line, it enters into the expansive 100-year floodplain associated with the Connecticut River. From the USGS maps and GIS data, it appears that the rail corridor is located above the 100-year floodplain on fill embankments.

Windsor, CT

From the Hartford City Line north to the Bissell Bridge (Interstate 291), the rail study corridor appears to be elevated above the Connecticut River 100-year floodplain on a fill

embankment. The 100-year floodplain is located on both sides of the rail corridor in this area.

North of the Bissell Bridge to the Loomis Chaffee School, the elevated rail corridor appears to form the western boundary of the Connecticut River 100-year floodplain. The rail corridor itself is located within the 500-year flood elevation. Near the Loomis Chaffee School, a small area of 100-year floodplain is located west of the rail corridor.

From the access road to Loomis Chaffee School (Island Road) north to Palisado Avenue (Route 159), the rail corridor is elevated above the Connecticut River 100-year floodplain.

North of Palisado Avenue, the rail study corridor appears to cross a large area of 100-year floodplain associated with the Farmington River. South of the Farmington River crossing the rail corridor appears to be elevated above the 100-year flood elevation. However, to the north of the crossing, it appears from the USGS map and GIS data that the rail corridor is located within the 100-year floodplain.

North of Hayden Station Road, the rail study corridor passes adjacent to a small area of 100-year floodplain that is located primarily west of the existing rail bed. From the USGS maps and GIS data, it appears that the rail corridor is elevated above the floodplain in this area.

Windsor Locks, CT

The rail study corridor is elevated on a fill embankment that appears to be above the Connecticut River 100-year floodplain from the Windsor Town Line north to the Dexter Coffin Bridge, which carries I-91 over the Connecticut River. The floodplain is located both east and west of the existing rail bed.

Just east of Millpond, the rail corridor appears to cross a small 100-year floodplain associated with Kettle Brook.

In the northern section of Windsor Locks just prior to crossing the Connecticut River, the rail corridor appears to form the western boundary of the Connecticut River 100-year floodplain. From the USGS maps and GIS data, it appears that the rail corridor is elevated above the Connecticut River floodplain in this area.

Suffield, CT

The rail spur servicing Bradley International Airport appears to cross 100-year floodplain associated with a tributary to Stony Brook.

Enfield, CT

As the rail study corridor approaches Beemans Brook, it appears to cross the 100-year floodplain associated with the brook.

Another area of 100-year floodplain appears to be crossed just north of where the rail corridor crosses Freshwater Brook in the Thompsonville section of Enfield.

Where the rail study corridor crosses Waterworks Brook in the North Thompsonville section of Enfield it appears to intersect the100-year floodplain associated with the brook. From the USGS maps and GIS data, it appears that the rail corridor is elevated above the 100-year floodplain in this area.

Just prior to crossing over the Massachusetts state line, the rail corridor appears to pass immediately east of the 100-year floodplain associated with the Connecticut River. From the USGS maps and GIS data, it appears that the rail corridor is elevated above the Connecticut River 100-year floodplain in this area.

Longmeadow, MA

From the Connecticut state line north to the Cooley Brook crossing, the rail study corridor appears to be elevated on a fill embankment above the expansive Connecticut River 100-year floodplain, which is located both east and west of the elevated rail bed. The rail bed itself appears to be within the 500-year flood elevation along this segment of the corridor.

Springfield, MA

From the Longmeadow Town Line north to the northern project terminus at Union Station in Springfield, the existing rail corridor appears to be elevated above the 100-year flood elevation and appears to form the eastern boundary of the Connecticut River floodplain.

6.5 Specially Designated Rivers

There are several special federal and state designations of important rivers, which recognize their value to Connecticut and the nation.

Along the eastern edge of the study corridor in Windsor and Windsor Locks, the National Park Service (NPS) Nationwide Rivers Inventory (NRI) for 1982 to the present, has identified a five-mile segment of the Connecticut River north of the Bissell Bridge (I-291) to the Dexter Coffin Bridge (I-91) as having three Outstandingly Remarkable Values (ORVs) for Recreation, Fish, and Other Values.

The U.S. Environmental Protection Agency (EPA) has designated the Connecticut River as an American Heritage River, one of 10 rivers nationally to receive such designation for its historic, economic, and cultural importance.

The administration of the Silvio O. Conte National Wildlife Refuge is overseen by the US Fish and Wildlife Service. The refuge covers a loosely-defined patchwork of assorted public and private land parcels adjacent to the Connecticut River from its mouth all the way up to the Canadian border with New Hampshire. GIS mapping was not available to determine if any parcels were located within the portion of the study area that runs along the Connecticut River. Several parcels in the vicinity of the study area include:

- Windsor Meadows/Farmington River Mouth (1550 acres)
- Farmington River and its West Branch (490 acres)
- Scantic River (610 acres)
- Enfield Rapids/Kings Island (40 acres)

There are no Wild and Scenic Rivers within the study area. A portion of the West Branch of the Farmington River, well upstream of the study area, is designated by NPS as a Wild and Scenic River. That 14-mile segment runs from the base of the Goodwin Dam in Hartland to the downstream border of Canton and New Hartford.

The Connecticut River Estuary and Tidal River Wetlands Complex has been designated by the Ramsar Convention, an intergovernmental treaty administered out of Switzerland, as a Wetland of International Importance from the Connecticut River's mouth to Glastonbury. This area is downstream of the study area.

If the study moves forward from the feasibility phase, and there are impacts on the Connecticut River that would necessitate further investigation, the implications of these designations will be determined. ConnDOT will coordinate with the respective federal agencies during the NEPA and design phases to avoid, minimize, and mitigate impacts, in that order.

6.6 Fish and Wildlife Habitat

This section provides a general description of existing fish and wildlife habitat in the study area based on published information from CT and MA DEP. Potential threatened and endangered species and significant natural communities are discussed in Section 6.7.

Much of the Connecticut River is designated as Essential Fish Habitat by the National Marine Fisheries Service (NMFS). This designation would require additional coordination with NMFS if impacts to aquatic areas of the river are anticipated during future project phases if this study was to move forward.

The CTDEP Fisheries Division has documented the following species in the Connecticut River and its tributaries: alewife (*Alosa pseudoharengus*), American eel (*Anguilla rostrata*), American shad (*Alosa sapidissima*), black crappie (*Pomoxis nigromaculatus*),

blueback herring (*Alosa aestivalis*), bluegill (*Lepomis macrochirus*), chain pickerel (*Esox niger*), common carp (*Cyprinus carpio*), grass carp (*Ctenopharyngodon idella*), sunfish (*Lepomis spp*.), pumpkinseed (*Lepomis gibbosus*), northern pike (*Esox lucius*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), white catfish (*Ameiurus catus*), white perch (*Morone americana*), and yellow perch (*Perca flavescens*). The Fisheries Division reportedly stocks brook trout and brown trout (*Salmo trutta*) in the Mill River in New Haven, Stony Brook in Suffield, and Freshwater Brook in Enfield. The following species have been reported in Silver Lake in Berlin: black crappie (*Pomoxis nigromaculatus*), brown bullhead (*Ameiurus nebulosus*), chain pickerel (*Esox niger*), sunfish (*Lepomis spp*.), pumpkinseed (*Lepomis gibbosus*), largemouth bass (*Micropterus salmoides*), and yellow perch (*Perca flavescens*). (2002 Connecticut Angler's Guide, CT DEP).

The Farmington River is an important fisheries resource for the State of Connecticut. The CTDEP Fisheries Division has several programs in place to help maintain and manage trout and shad populations in the river, since both species are important from a commercial and recreational standpoint. Under the American Shad Assessment and Restoration Program, the CTDEP's goal is to maintain and enhance the increasingly popular recreational shad fishery through the restoration of historic runs. With respect to the trout fishery, CTDEP management programs are focused on sections of the Farmington River located well to the west and upstream of the study area.

Fisheries information has been requested from Massachusetts officials and a response is pending. It is expected that fisheries information will be similar to that reported in Connecticut.

Vegetation

The study corridor traverses sections of upland woodland, floodplain, open field, and wetland. These natural habitat components are interspersed with lightly to heavily developed residential and urban areas that have altered and reduced the available habitat for fish and wildlife. The mix of land uses includes residential, industrial, commercial, institutional, and agricultural, as well as open and undeveloped spaces. Other uses noted adjacent to the existing right-of-way based on limited field observation include flood control and power line rights-of-way.

In general, the vegetative growth adjacent to the existing railroad tracks consists primarily of young trees, shrubs, and herbaceous species. Tree species found in the immediate project area include red oak (*Quercus rubra*), white oak (*Quercus alba*), pin oak (*Quercus palustris)*, white pine (*Pinus strobus*), American beech (*Fagus grandifolia*), eastern cottonwood (*Populus deltoides*), red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), common chokeberry (*Prunus virginiana*), tulip poplar (*Liriodendrin tulipifera*), quaking aspen (*Populus tremuloides*), weeping willow (*Salix babylonica*), and sycamore (*Acer psuedoplatanus*). Shrubs along the corridor consist predominantly of staghorn sumac (*Rhus typhina*), smooth sumac (*Rhus glabra*), and alders (*Alnus spp*.). Herbaceous species observed along the corridor include purple

loosestrife (*Lythrum salicaria*), common reed grass (*Phragmites australis*), cattails (*Typha spp.*), blue vervain (*Verbena hastata L.*), goldenrod (*Solidago spp.*), common milkweed (*Asclepias syriaca*), Queen Anne's lace (*Daucus carota*), wild rose (*Rosa setigera*) and skunk cabbage (*Symplocarpus foetidus*), among others. Vines include poison ivy (*Rhus radicans*), virginia creeper (*Parthenocissus quinquefolia*), and wild grape (*Vitis spp*.).

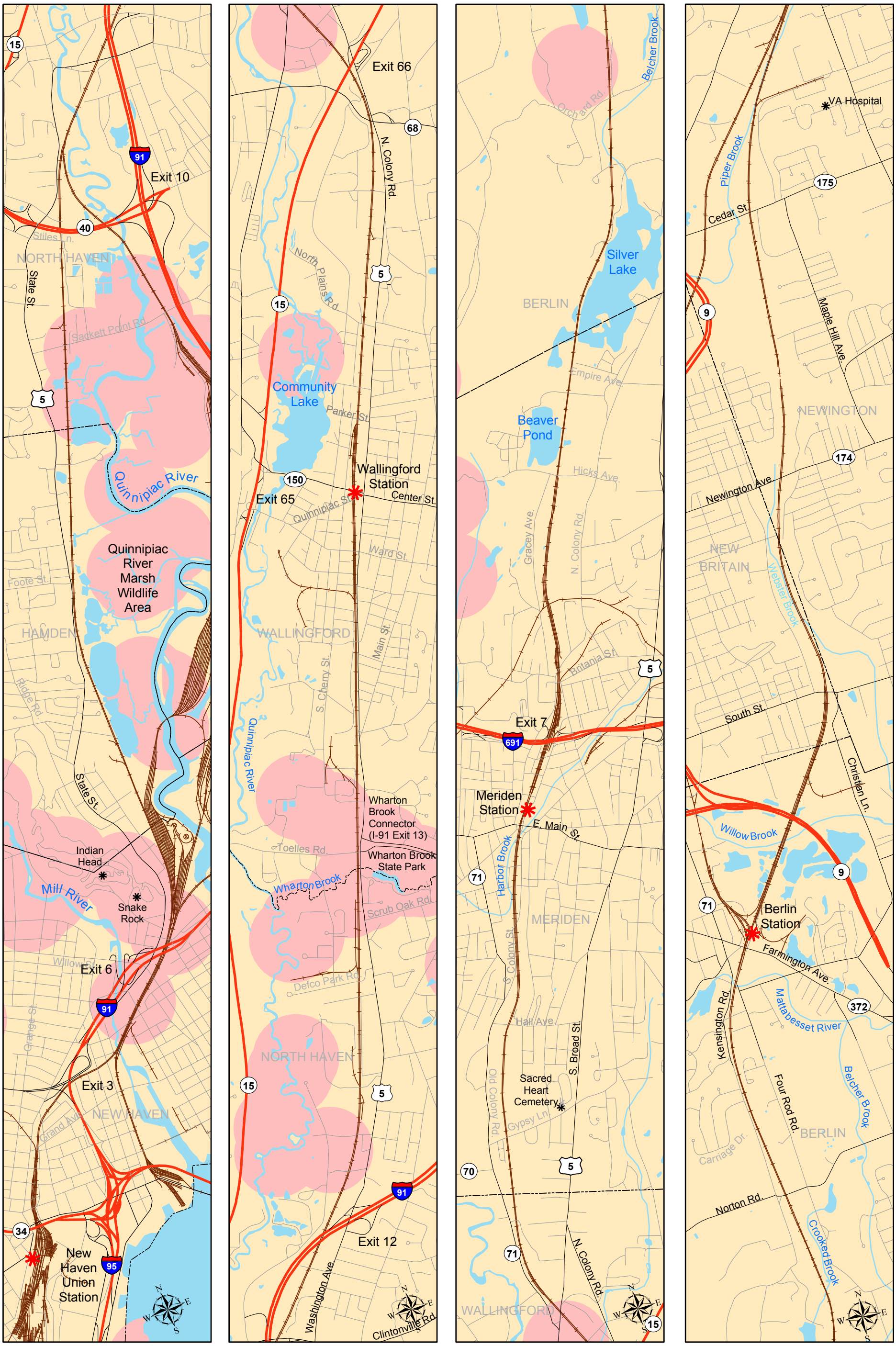
Wildlife

Wildlife expected to use the patches of natural vegetated habitat along the corridor include Eastern Cottontail (*Sylvilagus floridanus*), Eastern Chipmunk (*Tamias striatus*), Eastern Gray Squirrel (*Sciurus niger),* Red Squirrel (*Tamiasciurus hudsonicus*), Masked Shrew (*Sorex cinereus*), Northern Water Shrew (*Sorex palustris*), Shorttail Shrew (*Blarina brevicauda*), Smoky Shrew (*Sorex fumeus*), Starnose Mole (*Condylura cristata*), Eastern Mole (*Scalopus aquaticus*), Hairytail Mole (*Parascalops breweri*), Raccoon (*Procyon lotor*), Striped Skunk (*Memphitis memphitis*), Red Fox (*Vulpes fulva*), Gray Fox (*Urocyon cinereoargenteus*), Eastern Coyote (*Canis latrans*), and Whitetail Deer (*Odocoileus virginianus*), as well as various common songbirds, amphibians, and reptiles. Highly urbanized segments of the corridor are not likely to provide significant habitat for wildlife but may provide cover and some food sources for urban-tolerant species.

6.7 Threatened and Endangered Species

A review of the July 2002 CTDEP GIS database of State and Federal Listed Species and Significant Natural Communities (Natural Diversity Database, NDDB) identified thirteen areas located along the rail study corridor within Connecticut where threatened and endangered species and/or significant natural communities potentially exist. The NDDB includes inventory information on state and federal threatened and endangered species and species of special concern. One of these thirteen areas is a contiguous linear zone along the entire length of the Connecticut River. A similar review of the MassGIS Natural Heritage and Endangered Species Program (NHESP) mapping (1999) identified one site along the study corridor within the study-area towns in Massachusetts. This site is a contiguous linear zone located along the Connecticut River.

In both states, the mapped data indicates general areas where threatened and endangered species and significant habitats could occur, but does not accurately reflect the size and shape of potential or confirmed habitats or populations. Therefore, the maps in Figures 6.7-1 through 6.7-3 show recorded locations of threatened or endangered species only within a quarter-mile radius (to protect these populations.) Furthermore, this information is based upon historic records from a variety of sources and ages, and only reflects areas where studies were performed in the past. Therefore, NDDB data is not a replacement for field studies, as there could be rare species in other locations, nor does a NDDB listing does not guarantee that the target species is present at the current time in the location recorded. If the study moves forward from the feasibility phase, it may be necessary to evaluate areas where construction would occur for the presence of rare species.



0 0.5 1 Miles

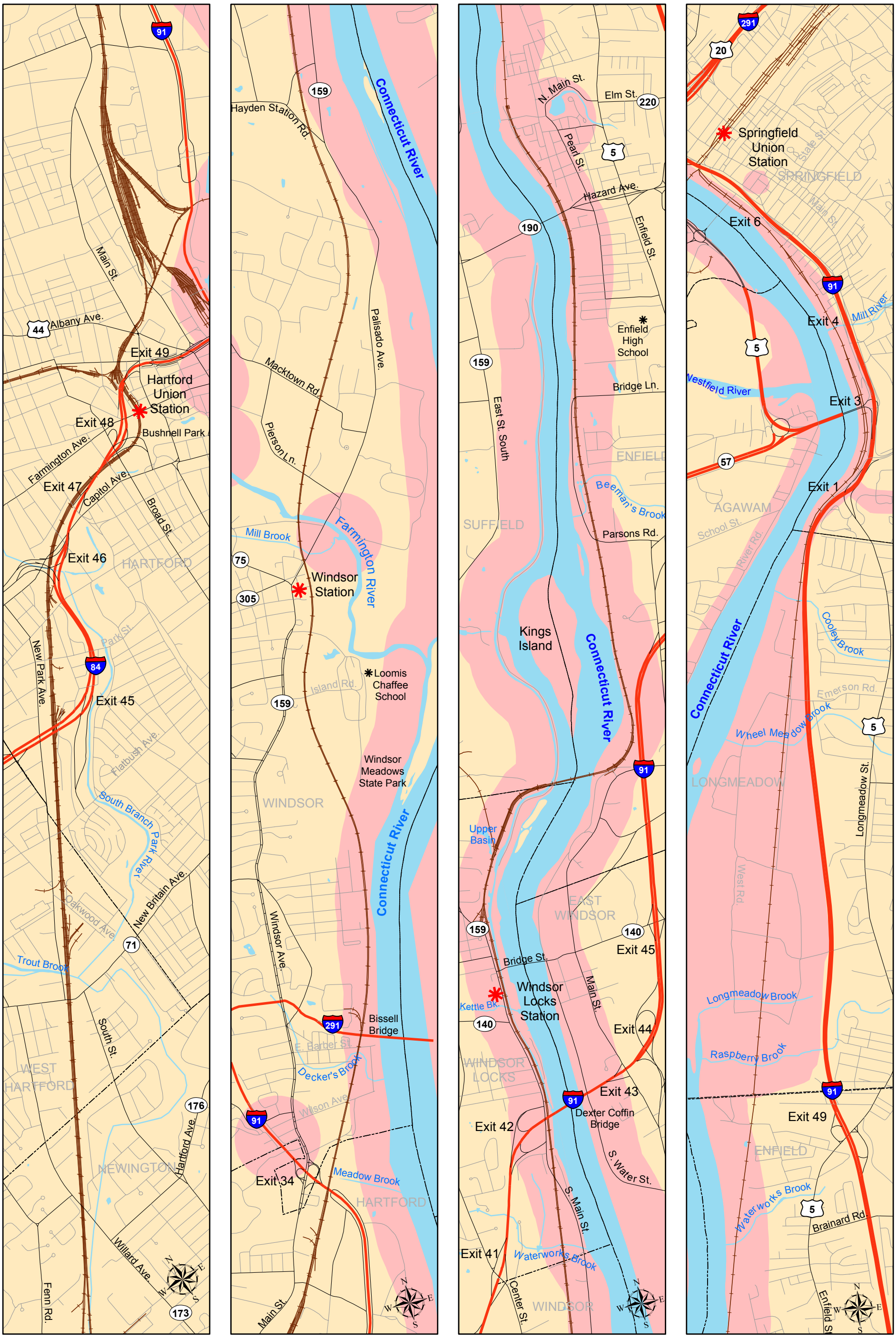
Threatened or Endangered Species
Southern Section

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Legend

Natural Diversity Database

Figure 6.7-1



0 0.5 1 Miles

Threatened and Endangered Species
Northern Section

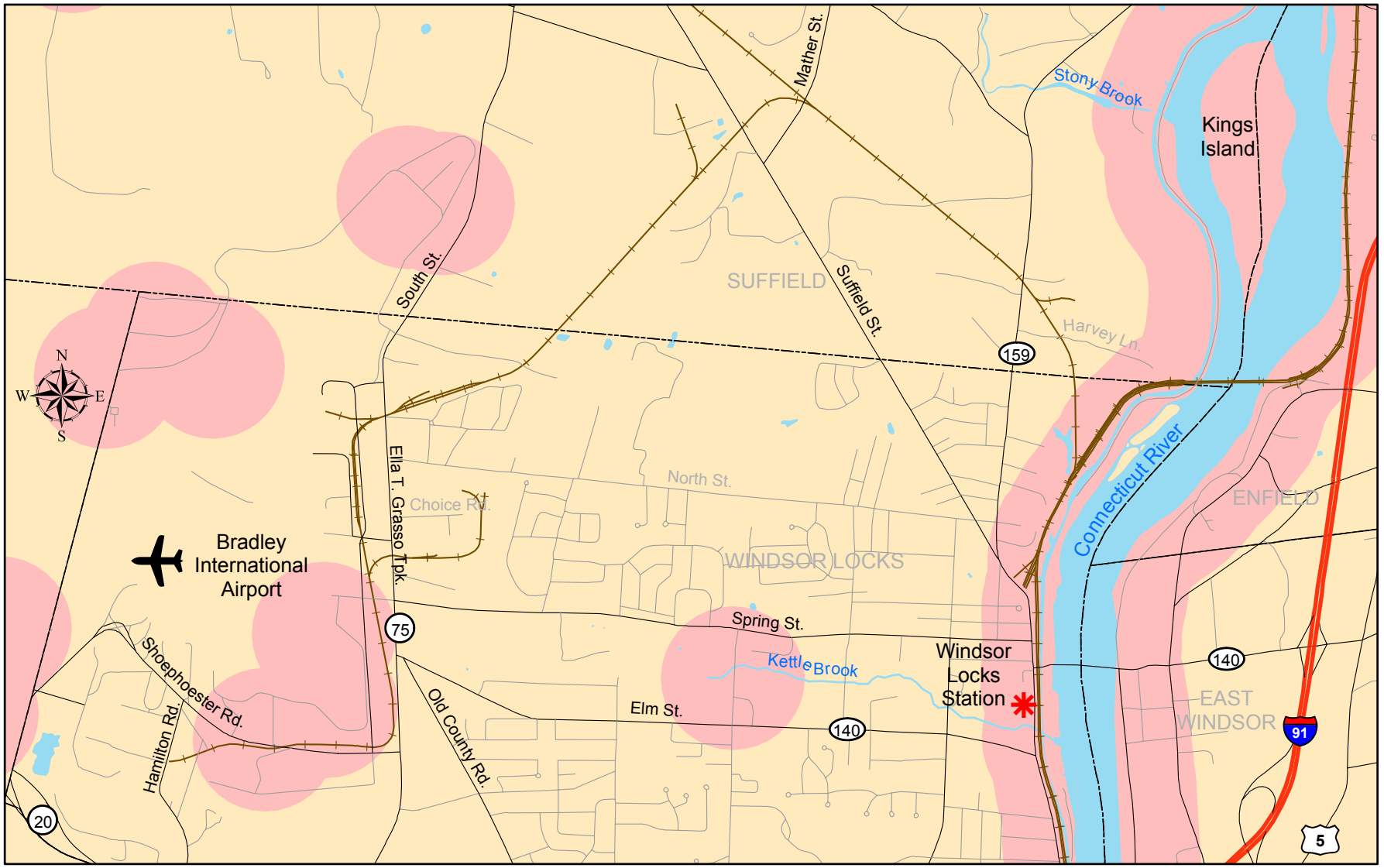
New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Legend
- Natural Diversity Database (CT)
- Natural Heritage and Endangered Species (MA)

Figure 6.7-2

Connecticut Department of Transportation

Engineers Planners Economists
Wilbur Smith Associates



0 0.5 1 Miles

Threatened and Endangered Species
Bradley Airport Spur

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Legend

Natural Diversity Database

Figure 6.7-3

Since this information is of a sensitive nature, if the study were to move forward, any NDDB or NHESP sites identified along the rail study corridor or in close proximity to the corridor or possible station sites will require coordination with the CTDEP and the Massachusetts Department of Environmental Management (DEM) for further assessment of possible project effects. Coordination with the U. S. Fish and Wildlife Service (FWS) will also be required.

The general location of NDDB and NHESP sites potentially crossed by the rail study corridor is described below for each of the corridor municipalities.

New Haven, CT

There are two NDDB sites located along the rail study corridor within the City of New Haven. One site is located in the vicinity of the Mill River crossing and the other is located just south of Indian Head/Snake Rock.

Hamden, CT

There is one NDDB site located along the rail study corridor within the Town of Hamden. It is located just north of the New Haven City Line in the vicinity of the rail yard located to the west of the expansive tidal marsh associated with the Quinnipiac River.

North Haven, CT

There are five NDDB sites located along the rail study corridor within the Town of North Haven. Two sites are located along the eastern shore of the Quinnipiac River just north of I-91 Exit 12. Three additional sites are clustered within Wharton Brook State Park at the Wallingford Town Line.

Wallingford, CT

There are two NDDB sites located along the rail study corridor within the Town of Wallingford. The rail corridor crosses the easternmost section of one site located just north and west of Wharton Brook State Park. The second site is located east of the Quinnipiac River where Meetinghouse Brook is crossed by the rail corridor.

Meriden, CT

There are no NDDB sites located along the rail study corridor within the Town of Meriden.

Berlin, CT

There is one NDDB site located along the rail study corridor within the Town of Berlin. The site is located north of Silver Lake where the existing rail corridor crosses Crooked Brook.

New Britain, CT

There are no NDDB sites located along the rail study corridor within the City of New Britain.

Newington, CT

There are no NDDB sites located along the rail study corridor within the Town of Newington.

West Hartford, CT

There are no NDDB sites located along the rail study corridor within the Town of West Hartford.

Hartford, CT

There are no NDDB sites located along the rail study corridor within the City of Hartford.

Windsor, CT

Just north of the Hartford City Line, the rail study corridor enters into the contiguous linear NDDB zone associated with the Connecticut River and remains within this zone to a point just south of the Loomis Chaffee School, a distance of approximately 2.5 miles. The corridor then crosses a NDDB site associated with the Farmington River near Palisado Avenue (Route 159). In northern Windsor near Hayden Station Road, the existing rail corridor re-enters the contiguous linear NDDB zone associated with the Connecticut River.

Windsor Locks, CT

In the Town of Windsor Locks, the rail study corridor remains entirely within the contiguous linear NDDB zone associated with the Connecticut River.

Suffield, CT

There are no NDDB sites within the Town of Suffield located along the rail spur servicing Bradley International Airport.

Enfield, CT

In the Town of Enfield, the rail study corridor remains entirely within the contiguous linear NDDB zone associated with the Connecticut River.

Longmeadow, MA

In the Town of Longmeadow, the rail study corridor remains entirely within the contiguous linear NHESP zone associated with the Connecticut River.

Springfield, MA

In the City of Springfield, the rail study corridor remains entirely within the contiguous linear NHESP zone associated with the Connecticut River.

6.8 Hazardous Materials Risk Sites

Hazardous waste sites in the study corridor were identified using United States Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) 2002, for the towns in Connecticut and Massachusetts. In addition, the Connecticut Department of Environmental Protection GIS coverage, Landfill Leachate and Wastewater Discharges, was used to augment the characterization of the study area. No field verification or visual inspection of these locations has been conducted at this planning stage. CT and MA DEP regulatory requirements will be followed by ConnDOT through its environmental compliance process as the project is developed.

Along the existing railroad right-of-way, there is a high risk for encountering significant contamination during project construction. Contaminants potentially associated with railroad corridors include railroad ties (wood treating chemicals), spilled or leaked fluids (oil, cleaning solvents), herbicides, transformer fluids (PCBs), fossil fuel combustion products (PAHs), asbestos, and metals such as arsenic and mercury. Also, existing steel bridge overpasses along the corridor were probably painted with lead-based paint prior to 1970, which may or may not have been removed or sealed. Any construction near these structures would likely encounter lead-containing soils and dust from the previous use of lead-based paint. Older building structures along the corridor requiring demolition would necessitate lead and asbestos testing.

Based on GIS analysis, the study corridor contains four hazardous waste sites as denoted by the CERCLIS data, one each in New Haven, Wallingford, West Hartford, and Enfield. In addition, 23 potential hazardous waste sites are shown in the CTDEP Landfill Leachate and Wastewater Discharges data. The hazardous waste sites in the study corridor are pictured in Figures 6.8-1 through 6.8-3 and itemized in Table 6.8-1. The text that follows describes sites from south to north, town by town, listing the CERCLIS sites first, followed by the Leachate and Wastewater Discharge sites.

Hazardous Waste Sites
Southern Section

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Figure 6.8-1

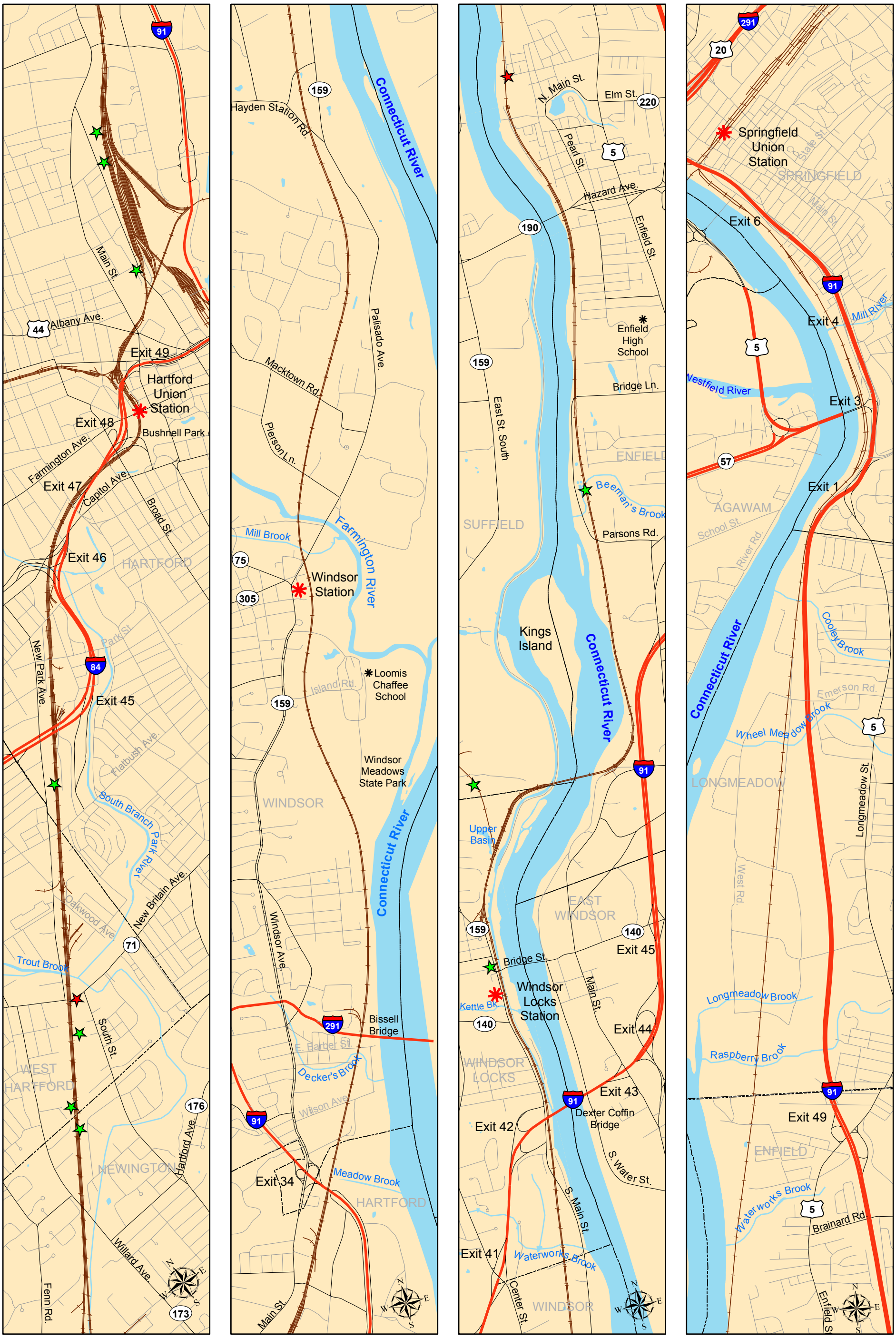
0 0.5 1 Miles

Legend

- CERCLIS Sites
- Landfill Leachate/Wastewater Discharge Sites

Connecticut Department of Transportation

Wilbur Smith Associates — Engineers Planners Economists



Hazardous Waste Sites
Northern Section

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

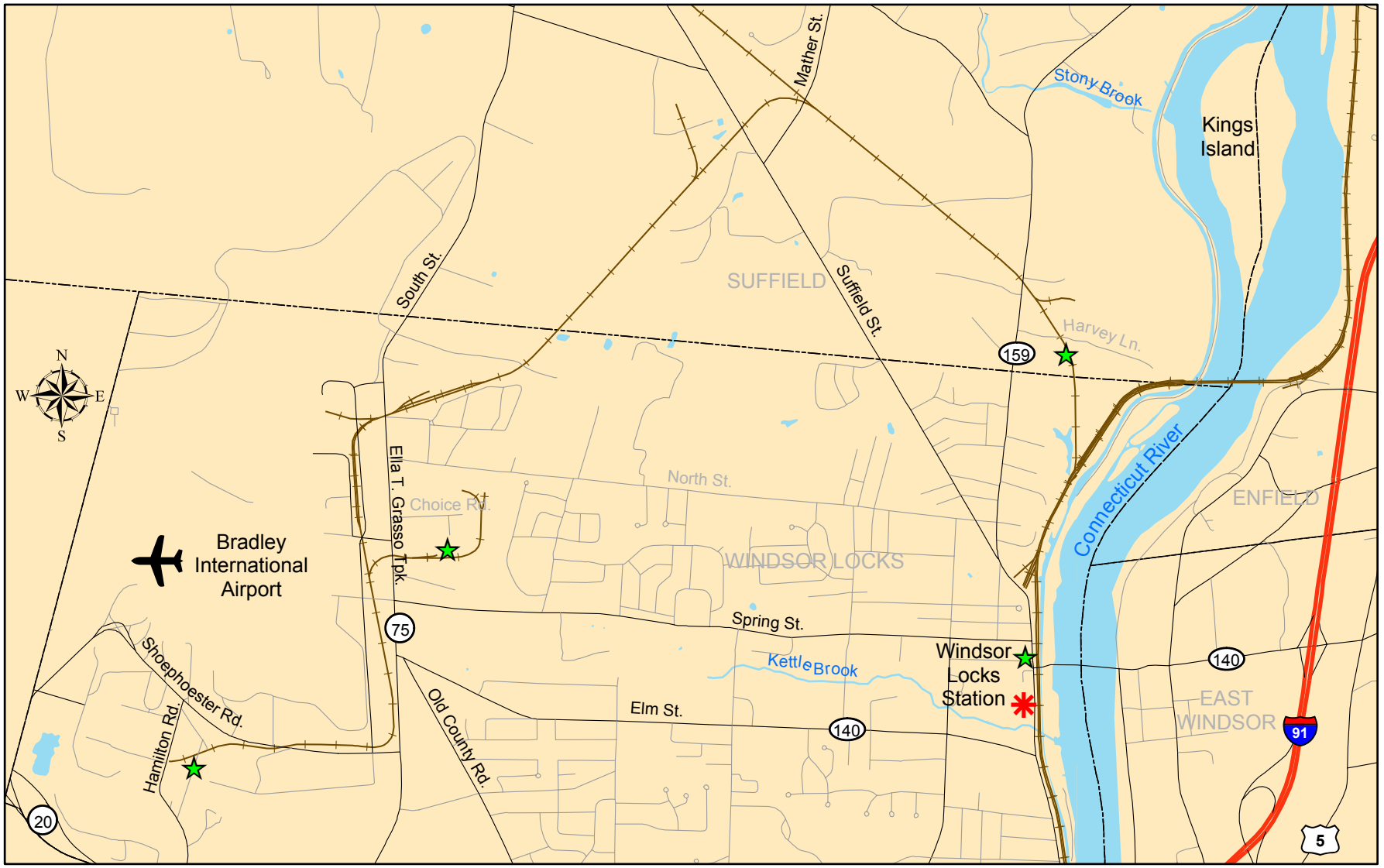
Legend

- CERCLIS Sites
- Landfill Leachate/Wastewater Discharge Sites

Connecticut Department of Transportation

Engineers Planners Economists
Wilbur Smith Associates

Figure 6.8-2



0 0.5 1 Miles

Hazardous Waste Sites
Bradley Airport Spur

Legend

- CERCLIS Sites
- Landfill Leachate/Wastewater Discharge Sites

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Wilbur Smith Associates

Figure 6.8-3

Table 6.8-1
Hazardous Materials Risk Sites within 250 feet of the Corridor

Study Area Town	Number of Sites	Site Type
New Haven, CT	1	CERCLIS
	1	Wastewater Discharge
Hamden, CT	1	Oil Spill
	1	Sludge Lagoon
North Haven, CT	1	Lagoon
	1	Bulky Waste Landfill
	1	Salt Storage
Wallingford, CT	1	CERCLIS
	1	Wastewater
Meriden, CT	1	Lagoon
Berlin, CT	0	
New Britain, CT	1	Solid Waste Transfer Station
Newington, CT	4	Wastewater
West Hartford, CT	1	CERCLIS
	2	Wastewater
Hartford, CT	2	Wastewater
	1	Junkyard
	1	Oil Spill
Windsor, CT	0	
Windsor Locks, CT	2	Lagoon
Suffield, CT	1	Wastewater
Enfield, CT	1	CERCLIS
	1	Wastewater
Longmeadow. MA	0	
Springfield, MA	0	

New Haven, CT

There is one CERCLIS site located next to the existing rail corridor on State Street.

A potential hazardous waste source in the study area is an inactive combined sewer overflow, located next to the rail corridor at Humphrey Street.

Hamden, CT

There are no designated CERCLIS sites located within the study corridor in the Town of Hamden.

There are two potential hazardous waste sites located within the study corridor in the Town of Hamden. The first is a documented 1980 oil/chemical spill of 250,000 gallons of #2 fuel oil, at a fuel oil company. The second site is characterized as an inactive industrial pit, consisting of two seepage lagoons for iron sludge.

North Haven, CT

There are no designated CERCLIS sites located within the study corridor in the Town of North Haven.

There are three potential hazardous waste sites located within the study corridor in the Town of North Haven. One site is at a chemical company, located on the western edge of the corridor near the intersection of State Street and Mount Caramel Connector Road, and consists of treated industrial discharge to a lagoon. Another site is a landfill "closed bulky waste" site between the rail corridor and Interstate 91, and the third is a former salt storage site located just west of the rail corridor and east of Valley Service Road.

Wallingford, CT

There is one CERCLIS site located on the eastern edge of the study corridor on North Colony Road.

There is one potential hazardous waste site located on the eastern edge of the study corridor just south of Hosford Street. The site was reportedly used prior to 1978 for deposit of manufactured wastewater discharge containing cyanide directly to the ground.

Meriden, CT

There are no designated CERCLIS sites located within the study corridor in the Town of Meriden.

There is one potential hazardous waste site located on the eastern edge of the study corridor just north of Empire Avenue. The site is an industrial pit owned by a paper company that was used as a lagoon for oils and glue.

Berlin, CT

There are no designated CERCLIS sites or potential hazardous waste sites identified within the study corridor in the Town of Berlin.

New Britain, CT

There are no designated CERCLIS sites located within the study corridor in the City of New Britain.

There is one potential hazardous waste site, a Solid Waste Transfer Station, located just north of the Berlin Town Line on the east side of the rail corridor.

Newington, CT

There are no designated CERCLIS sites located within the study corridor in the Town of Newington.

The study corridor contains four potential hazardous waste sites in the Town of Newington. The first is located east of the rail corridor and south of New Britain Avenue, and was reportedly used for deposit of manufactured tumbling wastewater discharge to the ground. The second site is also east of the rail corridor and west of Stamm Road, and was used for discharge of cooling waters. The third site is located on the rail corridor just south of Cedar Street, and is for discharge of solvent contaminated groundwater with a recovery system. The fourth site is located on the rail corridor just south of the West Hartford Town Line, and was an industrial wastewater discharge site.

West Hartford, CT

There is one CERCLIS site located on the eastern edge of the study corridor at the intersection of New Britain Avenue and Carney Road.

There are two potential hazardous waste sites located within the study corridor in the Town of West Hartford. The first site is located west of the rail corridor just north of the Newington Town Line, and was an industrial cooling wastewater discharge site. The second site is located east of the rail corridor at the south end of Carney Road, and was an industrial wastewater discharge site for acid rinse discharge.

Hartford, CT

There are no designated CERCLIS sites located within the study corridor in the City of Hartford.

There are four potential hazardous waste sites located within the study corridor in the City of Hartford. The first site, located west of the rail corridor between the rail bed and New Park Avenue, was a cooling water discharge site. The second site is an auto junkyard, located west of the rail corridor near the intersection of Canton and New Donald Streets. Another site is located at the end of Sanford Street on the western edge of the corridor, which is a spill site resulting from oil leaks from a drum storage site. The fourth site is just north of the first and consists of a former cooling water discharge site.

Windsor, CT

There are no designated CERCLIS sites or potential hazardous waste sites identified within the study corridor in the Town of Windsor.

Windsor Locks, CT

There are no designated CERCLIS sites located along the main rail corridor or within the rail spur servicing Bradley International Airport in the Town of Windsor Locks.

There are no potential hazardous waste sites located along the main rail corridor in the Town of Windsor Locks; however, there are two potential hazardous waste sites located along the rail spur servicing Bradley International Airport in the Town of Windsor Locks. One site is located north of the spur and south of Choice Road, and consists of an inactive site formerly used for ground discharge of paint waste products. The second site is located near the end of the rail spur and east of Hamilton Road, and consists of an industrial pit formerly used for metal hydroxide sludge disposal. This site reportedly has been closed under RCRA for in-place containment.

Suffield, CT

There are no designated CERCLIS sites or potential hazardous waste sites identified along the main rail corridor in the Town of Suffield.

There is one potential hazardous waste site located along the rail spur servicing Bradley International Airport in the Town of Suffield. The site is located along the rail spur just south of Harvey Lane, and is a cooling water discharge site.

Enfield, CT

There is one CERCLIS site located east of the rail corridor at West Street.

There is one potential hazardous waste site located between Parsons Road and the rail corridor at a Sewage Treatment Plant.

Longmeadow and Springfield, MA

There are no hazardous waste sites along the existing rail corridor according to mapping in the State of Massachusetts.

If this study moves forward beyond the feasibility phase, standard ConnDOT procedures for addressing hazardous materials would be followed in accordance with all applicable laws and regulations.

6.9 Prime Farmland Soils

Prime and statewide important farmland soils in the study corridor were identified using USDA Natural Resource Conservation Service (NRCS) data, as mapped by CTDEP (1996) for the towns in Connecticut and by the USDA-NRCS Soil Survey for Hampden County, Massachusetts, Central Part (1994) for the towns in Massachusetts. These farmland soils have not been field checked to verify that they are actively farmed, nor to

determine if they have been developed and/or otherwise altered in use. The locations of farmland soils along the rail study corridor are pictured in Figures 6.9-1 through 6.9-3 and generally described below from south to north by town. It should be noted that any soils within existing transportation rights of way (in this case, Amtrak and CSXT property) are not considered to be prime or statewide important farmland soils for determining impact. Therefore, any areas of concern would primarily be limited to locations where new facilities would be constructed outside of the rail right of way.

New Haven, CT

No prime or statewide important farmland soils are located within 250 feet of the existing rail corridor in the City of New Haven.

Hamden, CT

An area of prime farmland soils (non-wetland) is located just south of the North Haven town line along the western boundary of the expansive tidal marsh system associated with the Quinnipiac River.

North Haven, CT

There are no prime farmland soils within 250 feet of the existing rail corridor in the Town of North Haven. There are, however, several areas of statewide important farmland soils along the corridor. Generally, these areas exist east and west of where the existing rail corridor crosses the Quinnipiac River, north of I-91 Exits 11 and 12, near Defco Park Road east of the rail corridor, and just south of the Wallingford Town Line.

Wallingford, CT

There is only one area of prime farmland soil within 250 feet of the existing rail corridor in the Town of Wallingford. This area is located just south of the Meriden Town Line to the east of the rail bed and west of South Broad Street. There are several areas of statewide important farmland soils along the corridor. Generally, these areas exist just north of the North Haven Town Line, to the northeast of Community Lake where the rail corridor crosses an unnamed stream, and west of the rail corridor from Route 15 north to the Meriden Town Line.

Meriden, CT

There are two areas of prime farmland soil within 250 feet of the existing rail corridor in the Town of Meriden. One area is located south of Hicks Avenue and west of North Colony Street and the other is located just northeast of Beaver Pond. There are also several areas of statewide important farmland soils along the rail corridor. These soils exist in the same general area as the prime farmland soils as well as to the south of Gypsy Lane, in the vicinity of the Sacred Heart Cemetery, and just south of the Berlin Town Line.

Farmland Soils
Southern Section

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Legend

FARMLAND

- PRIME FARMLAND SOILS
- ADDITIONAL IMPORTANT FARMLAND SOILS

Connecticut Department of Transportation

Wilbur Smith Associates — Engineers, Planners, Economists

Figure 6.9-1

0 0.5 1 Miles

Farmland Soils
Northern Section

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Legend

Farmland Soils

- PRIME FARMLAND SOILS
- ADDITIONAL IMPORTANT FARMLAND SOILS

* Note: MA GIS farmland data not available. Potential impacts within 250' corridor digitized from USDA-NRCS soil survey

Figure 6.9-2

CONNECTICUT DEPARTMENT OF TRANSPORTATION

ENGINEERS PLANNERS ECONOMISTS
Wilbur Smith Associates

0 0.5 1 Miles

Legend

Farmland

- Prime Farmland Soils
- Additional important farmland soils

Farmland Soils
Bradley Airport Spur

New Haven - Hartford - Springfield
Commuter Rail Feasibility Study

Figure 6.9-3

Berlin, CT

There are several areas of prime and statewide important farmland soils within 250 feet of the existing rail corridor in the Town of Berlin. These areas are located primarily to the north Silver Lake and in the Willow Brook and Mattabesset River valleys that surround Berlin Station. The largest farmland soil areas exist north of O'Connell Drive and east of the rail corridor, just south of Carriage Drive, between Ridgewood Lane and Brook Street, and to the south of Route 9.

New Britain, CT

Both prime and statewide important farmland soils exist along the eastern side of the rail corridor to the north of Kelsey Street and west of Webster Brook. This is the only area of farmland soils along the existing rail corridor within the City of New Britain.

Newington, CT

There are several areas of prime farmland soils within 250 feet of the existing rail corridor in the Town of Newington. These areas are scattered along the rail corridor from a point just northwest of the VA Hospital north to Willard Avenue. Statewide important farmland soils are much more prevalent as they are found along the entire length of the rail corridor from a point south of New Britain Avenue north to an area just west of the VA Hospital.

West Hartford, CT

No prime or statewide important farmland soils are located within 250 feet of the existing rail corridor in the Town of West Hartford.

Hartford, CT

There is only one area of prime farmland soil within 250 feet of the existing rail corridor in the City of Hartford. It is found just south of the Windsor Town Line and is connected to a larger farmland soils area that extends northward into the Town of Windsor.

Windsor, CT

Virtually the entire rail corridor traverses either prime or statewide important farmland soils in the Town of Windsor. The only exceptions are small areas north and south of the Bissell Bridge, an urbanized area near the intersection of Poquonock Avenue and Palisado Avenue, and an area west of the rail corridor just south of the Windsor Locks town line.

Windsor Locks, CT

Just north of the Windsor Town Line, the existing rail corridor crosses an extensive area of prime farmland soils that extends northward to a point slightly beyond the Dexter Coffin Bridge. Additional pockets of prime and statewide important farmland soils are located between Maple Avenue and the Suffield town line.

Suffield, CT

Virtually the entire rail spur servicing Bradley International Airport traverses either prime or statewide important farmland soils in the Town of Suffield. The only exceptions are where the rail spur passes through a developed area east of North Main Street, and where the rail spur crosses an unnamed tributary to Stony Brook. It appears from the GIS data that statewide important farmland soils are more prevalent along the rail spur than prime farmland soils, by a ratio of approximately three to one. Along the main rail corridor, a small area of both prime and statewide important farmland soils is located to the north of the rail bed just prior to where it crosses the Connecticut River.

Enfield, CT

Similar to other towns where the rail corridor resides within or proximate to the Connecticut River floodplain, prime and statewide important farmland soils are well represented along the rail corridor in the Town of Enfield. These farmland soils are primarily located in the undeveloped areas along the corridor. From the GIS data it appears that prime farmland soils are more prevalent along the rail corridor than statewide important farmland soils.

Longmeadow, MA

In Longmeadow, the existing rail corridor passes five areas of prime farmland soils, four of which are located near ponds and tributaries east of the Connecticut River and one that is located directly along the east bank of the Connecticut River.

Springfield, MA

The existing rail corridor passes through one long continuous prime farmland soils area that stretches along the eastern shoreline of the Connecticut River from the Longmeadow Town Line northward for just over one mile.

6.10 Air Quality

Under the Clean Air Act, the EPA has established National Ambient Air Quality Standards (NAAQS) for these pollutants to protect the environment and public health. Table 6.10-1 shows the NAAQS, the Connecticut State Standards under Regulation Section 22a-174-24, and the Massachusetts Ambient Air Quality Standards under 310 CMR 6.00, all which are similar.

Table 6.10-1
National Ambient Air Quality Standards (NAAQS), Connecticut Standards, and Massachusetts Standards[1]

Pollutant	Standard	Averaging Period	NAAQS	Connecticut	Massachusetts
Carbon Monoxide (CO)	Primary (NAAQS) Primary and Secondary (CT)	8-Hour Average 1-Hour Average	9 ppm (10 mg/m^3) 35 ppm (40 mg/m^3)	9 ppm (10 mg/m^3) 35 ppm (40 mg/m^3)	9 ppm (10 mg/m^3) 35 ppm (40 mg/m^3)
Ozone (O_3)	Primary and Secondary	1-Hour Average[2] 8-Hour Average[2]	0.12 ppm (235 µg/m^3) 0.08 ppm (157 µg/m^3)	0.12 ppm (235 µg/m^3) N/A[2]	0.12 ppm (235 µg/m^3) N/A[2]
Nitrogen Dixide (NO_2)	Primary and Secondary	Annual Arithmetic Mean	0.05 ppm (100 µg/m^3)	0.05 ppm (100 µg/m^3)	0.05 ppm (100 µg/m^3)
Sulfur Dioxide (SO_2)	Primary Primary Secondary	Annual Arithmetic Mean 24-Hour Average 3-Hour Average	0.03 ppm (80 µg/m^3) 0.14 ppm (365 µg/m^3) 0.50 ppm (1300 µg/m^3)	0.03 ppm (80 µg/m^3) 0.14 ppm (365 µg/m^3)[3] 0.50 ppm (1300 µg/m^3)	0.03 ppm (80 µg/m^3) 0.14 ppm (365 µg/m^3)[3] 0.50 ppm (1300 µg/m^3)
Particulate Matter <10 micrometers (PM_{10})	Primary and Secondary Primary and Secondary	Annual Arithmetic Mean 24-Hour Average	50 µg/m^3 150 µg/m^3	50 µg/m^3 150 µg/m^3	50 µg/m^3 150 µg/m^3
Particulate Matter <2.5 micrometers ($PM_{2.5}$)	Primary and Secondary Primary and Secondary	Annual Arithmetic Mean 24-Hour Average	15 µg/m^3 65 µg/m^3	15 µg/m^3 65 µg/m^3	N/A
Lead (Pb)	Primary and Secondary	Quarterly Average	1.5 µg/m^3	1.5 µg/m^3	1.5 µg/m^3

Sources: 40 CFR 50, Connecticut State Standards under Regulation Section 22a-174-24, and the Massachusetts Ambient Air Quality Standards under 310 CMR 6.00.

[1]Units are in parts per million (ppm), milligrams per cubic meter (mg/m^3) and micrograms per cubic meter (µg/m^3).

[2]The federal ozone 1-hour standard has been temporarily revoked by the US EPA, and the 8-hour standard is under reevaluation. Areas such as Connecticut and Western Massachusetts that were out of attainment at the time of the revocation of the standard are still currently regulated by the 1-hour standard until the 8-hour standard is reintroduced. Neither Connecticut nor Massachusetts has an 8-hour standard for ozone.

[3]Block Averages, rather than moving averages.

EPA currently classifies the entire study area, including all of Connecticut and Western Massachusetts (four counties in the Springfield region) as "serious" non-attainment areas (do not meet the NAAQS) for ozone. In addition, part of New Haven County is classified as a "moderate" non-attainment area for particulates. The study area is in attainment for all other criteria pollutants.

In 1996, the EPA redesignated the Hartford area as being in "attainment maintenance" for carbon monoxide (CO), because it was shown that the area was meeting the NAAQS for CO over a number of years; conformity regulations still apply. Similarly, in April of 2002, the EPA redesignated Hampden County in Massachusetts as being in attainment for CO, though it had been out of attainment for that pollutant for over 10 years leading up to that date.

Lead, particulates, and sulfur dioxide are not of critical concern in the study area; transportation sources have little impact on these pollutants in this region of the country.

At a microscale level (localized intersection), the air pollutant that is of most concern in this study is CO. An odorless, invisible gas produced by incomplete combustion of fossil fuels, it is dangerous to humans in high concentrations because it binds to red blood cells more effectively than oxygen, limiting the oxygen available for respiration.

At a regional level, ozone is of greatest concern. Ozone is a molecule of oxygen with three oxygen atoms and is an important constituent of the upper levels of the atmosphere, protecting living things from damaging ultraviolet radiation (the "ozone layer"). However, near the earth's surface, ozone is a respiratory irritant and a major contributor to photochemical smog. Motor vehicles emit nitrogen oxides and hydrocarbons, which are ozone precursors.

As required by the Clean Air Act, the Connecticut and Massachusetts DEPs both have prepared a State Implementation Plan (SIP) that explains how the state plans to attain the NAAQS for ozone. The SIP includes analysis of ozone levels in the region, commitments to the required emission control programs, and implementation schedules to reach attainment. Under Section 176(c) of the Clean Air Act, Federal agencies are prohibited from engaging in, supporting in any way, providing financial assistance for, licensing or permitting, or approving any activity that does not conform to an approved SIP. A "conforming" project is defined as one that conforms to the SIP's objectives of reducing or eliminating the severity or number of NAAQS violations in the state, and achieving expeditious attainment of the NAAQS; that does not cause or contribute to new NAAQS violations; does not increase the frequency or severity of any existing NAAQS violation; and does not delay the state's timely attainment of the NAAQS or impede required emission reductions or any other air quality milestones.

Projects that are funded by FHWA, FTA, or U.S.C. Title 23 are subject to the EPA transportation conformity rules (40 CFR Part 51 Subpart T). If commuter rail was pursued in the corridor, it would be expected to receive FTA funding, and, therefore, the it would be subject to the EPA transportation conformity rules. FHWA and FTA are

responsible for making a conformity determination after EPA is consulted and provides a recommendation.

Metropolitan Planning Organizations (MPOs) are responsible for demonstrating an area's conformity with the SIP. The study area is located within the geographical boundaries of three MPOs: SCRCOG in the New Haven area, CRCOG in the Hartford area, and the PVPC in the Springfield area. Each MPO prepares a Transportation Plan (TP) and Transportation Improvement Program (TIP) for its geographical area. Under the EPA transportation conformity rules, conformity of a specific project is achieved if the project is included in the emission inventory of a conforming TP or TIP. A project not included in a conforming TIP must prepare a project-level emission analysis.

Because the feasibility of the New Haven – Hartford – Springfield Commuter Rail project is still to be determined, it has not yet been included in the emission calculations in the respective TIPs for each MPO. EPA and FTA will have to approve all three TIPs as conforming to each state's SIP. Therefore, a separate project-level emission inventory analysis and conformity determination would eventually be required for if commuter rail moves forward beyond the feasibility stage.

In addition, based on the EPA conformity requirements at 40 CFR 93.116, ambient pollutant concentrations due to the project must not create or contribute to a new violation of the NAAQS, nor worsen any existing violation of the NAAQS. Air quality modeling analysis would be necessary for commuter rail during the NEPA process at a microscale level to demonstrate compliance with the NAAQS for CO in accordance with this conformity requirement.

The US EPA maintains data on state-operated and private air monitors in its Air Quality System (AQS) database. The following monitoring data are available from the US EPA's monitoring data web site (http://www.epa.gov/air/data/index.html) for the Year 2002. Data was accessed on January 2, 2003, and all of the data covered the year 2002 through December 2, 2002. Data for monitoring sites within New Haven and Hartford Counties, CT and Hampden County, MA were consulted. The pollutants that are shown in Tables 6.10-2 through 6.10-4 that follow are those of most concern with regards to mobile-source pollution.

The tables indicate that the study area counties did not exceed the NAAQS or Connecticut/Massachusetts standards in 2002 for CO or NO_2. However, there were exceedances of the one-hour standard for ozone.

Table 6.10-2
2002 Monitored CO Concentrations in New Haven, Hartford, and Hampden Counties, Parts Per Million (ppm)

County	CO Monitoring Location	1-Hour Average (ppm)			8-Hour Average (ppm)		
		Highest	2nd Highest	1-Hour NAAQS[1]	Highest	2nd Highest	8-Hour NAAQS[1]
New Haven	121 Elm St., New Haven	3.0	2.8	35.0	2.3	2.2	9.0
Hart-ford	401 Flatbush Avenue, Hartford	4.1	3.3	35.0	2.1	2.1	9.0
	Courthouse, 155 Morgan St., Hartford	9.4	4.3	35.0	5.6	5.4	9.0
Hamp-den	Liberty Street Parking Lot, Springfield	4.2	4.0	35.0	3.3	3.0	9.0
	East Columbus Avenue, Springfield	6.5	4.4	35.0	3.6	3.4	9.0

Source: US EPA AirDATA web site, http://www.epa.gov/air/data/index.html. Accessed January 2, 2003. Data covers Year 2002 through December, 2, 2002.
[1]The state of Connecticut and Massachusetts standards are identical to the NAAQS.

Table 6.10-3
2002 Monitored One-Hour[1] Ozone Concentrations in New Haven, Hartford, and Hampden Counties, Parts Per Million (ppm)

County	Ozone Monitoring Location	Highest	2nd Highest	NAAQS	Number of Days in 2002 w/ 1-Hour Concentrations Exceeding NAAQS
New Haven	Hammonasset State Park, Madison	0.155	0.146	0.120	5
	Mill Rock Basin, Hamden	0.162	0.161	0.120	5[2]
Hart-ford	McAuliffee Park, East Hartford	0.153	0.132	0.120	4
Hamp-den	152 S. Westfield Street, Feeding Hill, Agawam	0.115	0.105	0.120	--
	Anderson Road, Air Force Base, Chicopee	0.132	0.110	0.120	1

Source: US EPA AirDATA web site, http://www.epa.gov/air/data/index.html. Accessed January 2, 2003. Data covers Year 2002 through December, 2, 2002.
[1]See Footnote 2 of Table 6.10-1 for more detail on the status of One-Hour and Eight-Hour NAAQS.
[2]This site recorded fewer monitoring readings than other locations, so actual number of days in 2002 may be higher.

Table 6.10-4
2002 Monitored NO_2 Concentrations in New Haven, Hartford, and Hampden Counties, Parts Per Million (ppm)

County	NO_z Monitoring Locations	Annual Arithmetic Mean (ppm)	NAAQS[1]
New Haven	715 State Street, New Haven	0.026	0.050
	Mill Rock Basin, Hamden	0.014	0.050
Hartford	McAuliffee Park, East Hartford	0.017	0.050
Hampden	152 S. Westfield Street, Feeding Hill, Agawam	0.011	0.050
	Anderson Road, Air Force Base, Chicopee	0.016	0.050
	Liberty Street Parking Lot, Springfield	0.022	0.050

Source: US EPA AirDATA web site, http://www.epa.gov/air/data/index.html. Accessed January 2, 2003. Data covers Year 2002 through December, 2, 2002.
[1]The state of Connecticut and Massachusetts standards are identical to the NAAQS.

There are two considerations to be kept in mind if commuter rail is found to be feasible and future phases of study of air impacts are necessary:

- At a mesoscale (regional) level, commuter rail would be expected to have a beneficial effect on regional ozone levels. While increased train operations would create emissions of ozone precursors (particularly NO_2) associated with diesel engines, these emissions would very likely be greatly offset by the cumulative emissions reductions from reductions in on-road vehicle miles traveled. (This would be one contributor to helping the study area achieve conformity for ozone). The cumulative net change in ozone precursor emissions would need to be determined.

- At a microscale (intersection) level, the operation of commuter rail could potentially cause localized CO impacts if at-grade rail crossings experience a substantial increase in automobile idling and delay. Therefore, it may be necessary in future project phases to evaluate these impacts at problem at-grade crossings. Flatbush Avenue in Hartford is one example of a high-volume at-grade rail crossing that could have localized CO impacts. A ranking of such intersections and microscale modeling of CO concentrations at the worst-case intersections could be warranted.

6.11 Noise

The Federal Transit Administration (FTA) has established noise level criteria to identify the magnitude of impact on noise sensitive sites. As described in FTA's *Transit Noise and Vibration Impact Assessment* (1995), a transit project will either create "no impact," "impact," or "severe impact" on a nearby noise receptor (site affected by noise). The determination of level of impact is based upon existing (pre-construction) noise levels, the type of land use that is affected, and the increase in noise levels associated with the project. According to FTA, a project would be considered to create:

- **No impact** if the introduction of the project would result in an insignificant increase in the number of people highly annoyed by the new noise

- **Impact** (but not a severe impact) if the change is the cumulative noise level is noticeable to most people, but may not be sufficient to cause strong, adverse reactions from the community. In the "impact" range, other project-specific factors must be considered to determine the magnitude of the impact and the need for mitigation, such as the predicted level of increase over existing noise levels and the numbers of noise-sensitive land uses affected.

- **Severe Impact** would occur where a significant percentage of people would be highly annoyed by the new noise. Areas with noise impacts in the "severe" range would be the most likely candidates for mitigation.

If the New Haven – Hartford – Springfield Commuter Rail service is determined to be feasible, monitoring and modeling will be performed during the environmental impact assessment phase of the project to determine whether adverse project impacts or severe impacts are anticipated. However, at this stage of the process, it is appropriate to consider where noise impacts could be most extreme, based upon rail operations. While the entire corridor is already impacted by existing noise created by existing Amtrak and freight operations, there still is potential for increased rail operations to create impacts or severe impacts based upon FTA guidelines.

Noise levels are highly variable, and when computer models are used to predict noise levels, the models take into consideration the number of trains per hour, the topography of the area, any shielding that occurs between the noise source and the receptor, and many other factors. However, at this stage, the following considerations would be of importance to help determine where noise impacts could be most severe on the project:

Train Volumes: The higher the number of trains per hour (or per day), the higher noise levels would be at receptors. This is assumed to be essentially the same throughout the corridor.

Train Speeds: The faster trains travel, the higher wheel-rail noise and engine noise would be at receptors.

Train Whistles and Crossing Bells: Where at-grade intersections are found, train whistles would be a concern. Additionally, busy at-grade crossings would have warning bells that would be a source of noise. If a number of at-grade crossings are found in close succession to each other, this could be a substantial impact above and beyond the noise levels from the trains themselves.

Concentration of Receptors: Locations where there is a concentration of nearby sensitive receptors would potentially experience more severe impacts (in terms of numbers of people affected) than locations where there is a lower density of sensitive receptors.

Land Use Types: FTA's guidelines cover the following types of land uses as shown in Table 6.11-1. Depending upon the Land Use Category, different "metrics" (ways of measuring noise over time) are used. For example, for Category 2 (including residences), the FTA guidelines measure noise levels in a fashion that takes into consideration nighttime disturbance.

Table 6.11-1
FTA Categories of Land Use for Determining Level of Impact

Land-Use Category	Description
1	Tracts of land set aside for serenity and quiet, such as outdoor amphitheaters, concert pavilions, and historic landmarks.
2	Buildings used for sleeping include residences, hospitals, hotels and other areas where nighttime sensitivity to noise is of utmost importance.
3	Institutional land-uses with primarily daytime and evening uses include schools, libraries, churches, museums, cemeteries, historical sites and parks, and certain recreational facilities used for study or meditation.

Distance From Receptors: Noise levels increase as receptors get progressively closer to the source of noise (trains and warning bells). Therefore, locations where receptors are very close to the tracks would have more severe impacts than locations where receptors are further away.

With all these considerations taken into account, Table 6.11-2 lists an initial assessment of where the potential for severe noise impacts would likely warrant additional monitoring and modeling during the environmental phase.

Table 6.11-2
Initial Assessment of Areas with High Potential for Noise Impacts

Town/City	General Description of Area	Rationale(s) for High Potential Noise Imapct
New Haven	Residential Area near Mill River	High Concentration of Sensitive Receptors Residential Land Uses Distance From Receptors
Wallingford	Downtown Wallingford, and areas immediately north and south of Downtown	High Concentration of Sensitive Receptors Numerous At-Grade Crossings with Bells/Whistles Residential Land Uses Distance From Receptors
Meriden	Downtown Meriden and areas immediately north and south of Downtown	High Concentration of Sensitive Receptors Numerous At-Grade Crossings with Bells/Whistles Residential Land Uses Distance From Receptors
Berlin	Berlin Center	Residential Land Uses Distance From Receptors
Hartford	Parkville Neighborhood	Bells/Whistles from Hamilton At-Grade Crossing High Concentration of Sensitive Receptors Residential Land Uses Distance From Receptors
Windsor	Meadow Road – Wilson Avenue – East Barber Street.	High Concentration of Sensitive Receptors Numerous At-Grade Crossings with Bells/Whistles Residential Land Uses
	Downtown Windsor	High Concentration of Sensitive Receptors At-Grade Crossing with Bells/Whistles Distance From Receptors
Enfield	Thompsonville	High Concentration of Sensitive Receptors Residential Land Uses Distance From Receptors