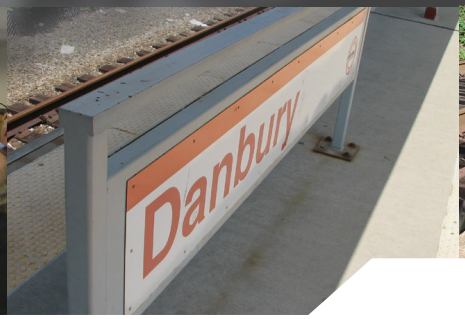
FTA ALTERNATIVES ANALYSIS
DRAFT/FINAL ENVIRONMENTAL IMPACT STATEMENT

DANBURY BRANCH IMPROVEMENT PROGRAM TASK 5

ENVIRONMENTAL TECHNICAL MEMORANDUM IMPACTS ANALYSIS

STATE PROJECT 302-008


SECTION 7: WETLANDS

OCTOBER 2011

SECTION 7. WETLANDS

METHODOLOGY

To determine potential direct impacts from each project alternative on wetlands, improvement concept plans were overlaid with the GIS wetland mapping that was developed for this project and described in *Section 7: Wetlands* (January 2011) of the Environmental Technical Memorandum (Tech Memo 1). Areas of overlap signified direct wetland impact zones, which were subsequently quantified and reported herein in square feet (SF) and acres (ac). For this impact analysis, all linear wetlands adjacent to the track (mapped as "ditch wetlands" in Tech Memo 1) are assumed to be two feet wide as determined from field investigations.

Direct permanent impacts could result from excavation and/or placement of structures and fill material within wetlands. Direct temporary impacts beyond the permanent impact zones could result from vegetation clearing, construction vehicle access, temporary water handling, material laydown areas, and equipment staging areas. Indirect impacts were assessed by considering the potential for off-site or delayed effects such as increases in water temperature and turbidity as a result of construction-related soil erosion and sedimentation of wetlands.

In order to assess the loss or impairment of wetland functions and values associated with the project, the functions and values of potentially affected wetlands were assessed. Lost or reduced wetland functions and values generally translate into loss of many important environmental benefits. The principal functions and values of impacted wetlands were determined based on methods described in the U.S. Army Corps of Engineers (USACE) *Highway Methodology Workbook Supplement* (USACE 1999). The function of endangered species habitat was identified through coordination with the Connecticut Department of Energy and Environmental Protection (DEEP). The relevant species in the vicinity of the wetland are noted in this memorandum for the impacted wetlands. Please refer to the Threatened and Endangered Species Technical Memorandum 2 for the detailed information about potential impacts to, and protective measures for, these species.

IMPACTS

For each alternative, the potential for direct and indirect impacts is attributed to the construction of the following major project elements:

- New or improved (existing) passenger stations
- Rail reconstruction
- Structures and bridges
- Traction power system – electrification
- Track reconfigurations, sidings and connections
- Storage and maintenance yards

The impact analysis results for each project element within the build alternatives are displayed in Tables 1 (Alternative C), 2 (Alternative D), and 3 (Alternative E). Improvements which could

cause impacts are described in more detail below. All potentially impacted wetlands are inland wetlands; there are no anticipated impacts to tidal wetlands or wetlands of any type within the coastal zone boundary. All losses of wetland area and wetland functions/values would be subject to mitigation requirements of both Connecticut and federal wetland regulations. Temporary impact areas would be stabilized and planted to promote reestablishment of former wetland vegetation. Temporary impacts may also be subject to mitigation requirements.

For the impact analyses presented herein, it is assumed that proper Best Management Practices (BMPs) would be designed and implemented for all project improvements. All construction would be subject to CTDOT's *Standard Specifications for Roads, Bridges, and Incidental Construction* (Form 816). Drainage systems at new stations and at existing stations where expanded surface parking and other upgrades are planned would be designed in conformance with CTDOT's Drainage Manual as well as with the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP). This would ensure that site runoff does not cause adverse flooding or indirect scour effects on adjacent or downstream lands, including wetlands.

Stormwater management designs at stations would adhere to the Connecticut DEEP *Connecticut Stormwater Quality Manual* (2004) and would apply to the construction period (temporary) as well as to finished condition (permanent). Low impact development techniques such as the use of pervious pavements would be considered by designers during detailed project design to minimize potential stormwater impacts. The design of all rail infrastructure improvements, such as track reconfigurations, bridge and structural work, electrification, and yard work, would also comply with the FEMA NFIP requirements which would further help to reduce the potential for offsite impacts associated with drainage and stormwater runoff. Furthermore, to prevent and minimize sedimentation, siltation, and/or other pollution of waters and wetlands during the construction period, a stormwater pollution control plan would be developed and implemented in accordance with the *2002 Connecticut Guidelines for Erosion and Sedimentation Control* (DEEP).

All of the above measures, cumulatively referred to as BMPs, would be applied to all construction activities associated with the Danbury Branch Improvement Program and would help to minimize potential impacts to wetlands and other water resources.

Alternative A - No Build

Impacts to wetlands are not expected from the No Build Alternative, as no new construction would take place as part of this alternative.

Alternative B - Transportation System Management (TSM)

The TSM Alternative would not directly or indirectly impact wetlands, as no new construction would take place as part of this alternative.

Alternative C - South Norwalk to Danbury Improvements

Alternative C would provide infrastructure and service improvements between South Norwalk and Danbury on the existing Branch. Improvements would include upgrading track to 60 mile per hour maximum speed; expanding parking and improving access at stations; upgrading 15 bridges from an older open deck structure to modern ballast deck bridges; upgrading the rail yard and providing a new maintenance facility at Danbury Yard; and electrifying the rail line. New rolling stock would be added to allow for expanded service or for the electric trains.

Impacts under this alternative are associated with upgrades to existing passenger stations, installation of the traction power system (electrification), track reconfigurations, and construction of replacement bridges. Potential impacts to wetlands from the Alternative C improvements have been quantified (see Table 1) and are described below.

Permanent impacts from Alternative C include 0.9 ac of state and federal palustrine forested (PFO) and palustrine scrub-shrub (PSS) wetlands, 0.04 ac of state-only forested wetlands, and 0.06 ac of linear trackside wetlands, for a total of approximately 1.0 ac. Additional temporary impacts during the construction period could amount to 0.3 ac within state and federal PFO wetlands, state-only forested wetlands, and linear trackside wetlands. In terms of wetland functions and values, the sediment/toxicant retention and transformation, wildlife habitat, and floodflow alteration functions of the directly impacted wetlands would be most affected by Alternative C. Visual/aesthetic values as well as fish/shellfish habitat, shoreline stabilization, and groundwater recharge/discharge functions would be affected to a lesser degree.

Passenger Stations (Existing Stations)

Under this alternative, improvements are planned at five of the existing stations located along the Danbury Branch rail corridor: Merritt 7 (Norwalk); Cannondale (Wilton); Branchville (Ridgefield); Redding; and Bethel. There are potential impacts to wetlands at three of these stations.

Cannondale (Refer to Figure 1 in Appendix A**):** Improvements to the existing Cannondale passenger station include a northerly extension of the parking lot that would totally replace a linear wetland adjacent to the track. The filled wetland area is approximately 740 SF (0.02 ac). Since the wetland would be totally filled, no additional temporary impacts are anticipated. As for all linear wetlands adjacent to the track, the primary function of this wetland area is sediment/toxicant retention and transformation. This function would be replaced by the stormwater design to be incorporated in the parking lot design, which would perform sediment/toxicant retention and transformation for the small drainage area involved. As such, indirect impacts are not anticipated here.

Redding (Refer to Figure 2 in Appendix A**):** Improvements to the existing Redding passenger station include an expanded parking lot that would result in filling approximately 1,450 SF (0.03 ac) of state and federal PFO wetlands. The impacted wetlands include a small forested pocket associated with Hawley Pond Brook located just southeast of the driveway leading into the existing station site and a linear forested wetland located southwest

of the existing parking lot. All impacts are permanent; there are no additional temporary impacts. The impacts occur around the perimeter of the parking lot footprint, where grading and drainage activities would be required. The primary functions and values associated with these wetlands are floodflow alteration and sediment/toxicant retention and transformation. The sediment/toxicant retention and transformation function would be replaced by the stormwater design for the new parking lot; floodflow alteration would be impaired or lost within the area of impact and may be impaired within the remaining larger wetland. The design of improvements would be developed to avoid and mitigate the potential for adverse downstream flooding impacts.

Bethel (Refer to Figure 3 in Appendix A**):** Improvements to the existing Bethel passenger station would result in impacts to the southeastern tip of a very large and expansive PFO wetland located northwest of the station. An area of approximately 4,970 SF (0.1 ac) of PFO wetlands would be impacted by the northerly expansion of the existing parking lot. Impacts would occur from expansion of the parking lot footprint as well as from associated grading and drainage work. All impacts are permanent; there are no additional temporary impacts. The primary functions and values associated with the PFO wetland at this location are wildlife habitat, floodflow alteration, visual quality/aesthetics, and sediment/toxicant retention and transformation. All of these functions would be lost within the area of impact but would remain intact within the remaining portion of this large and expansive wetland system.

Structures and Bridges

There are improvements involving undergrade and overhead bridges in Alternative C.

Undergrade (UG) bridges (railroad goes over a road or water): There are 18 UG bridges where work is planned in Alternative C. Seven of these are over roadways and 11 are over waterways.

The UG bridges over roadways include a new bridge at MP 0 in Norwalk over Washington and South Main Streets and six replacement bridges at Norwalk MP 0.1, Norwalk MP 0.2, Wilton MP 11.01, Redding MP 14.16, Redding MP 14.8, and Bethel MP 19.64. For this and the other UG bridges over roadways in Alternative C, construction is anticipated to occur from the rail ROW. There are no wetland resources within the footprint of the proposed work areas of these bridges. BMPs would be implemented and E&S controls maintained during construction to prevent disruption of any adjacent wetlands located beyond the existing disturbed and maintained rail bed. As such, UG bridges over roadways are not anticipated to have any direct or indirect impacts on wetland resources.

The 11 UG bridges over water are at the following locations:

- Norwalk (MP 3.2) over Norwalk River
- Norwalk (MP 5.12) over tributary to Norwalk River
- Norwalk (MP 6.43) over Norwalk River
- Norwalk (MP 6.64) over Norwalk River

- Wilton (MP 8.7) over Norwalk River
- Wilton (MP 9.42) over Norwalk River
- Wilton (MP 11.55) over Norwalk River
- Wilton (MP 12.17) at Factory Pond (Norwalk River)
- Redding (MP 16.4) over Umpawaug Pond Brook
- Redding (MP 17.1) over Saugatuck River
- Bethel (MP 21.41) over Sympaug Brook

Nine of these bridges – all but MP 3.2 and MP 6.64 – are replacement bridges on the existing rail alignment. For eight of these nine bridge replacements, Wilton MP 11.55 being the only exception (described below), construction would occur from previously disturbed rail ROW and would use the existing bridges' support structures (e.g., piers and abutments) to the greatest extent possible. Under this scenario, the existing bridge decks would be removed and the new bridge deck would be lifted into place onto the existing abutments. This would minimize impacts to adjacent natural resources.

If bridge piers or abutments require major repairs or replacement as determined by future engineering and hydraulic studies, or if areas beyond the existing disturbed ROW (not currently anticipated) are required for some aspect of construction, direct impacts to wetlands and water resources are possible. In the past, a rail-mounted snooper has been used to access the sides and undersides of bridges along the Danbury Branch for minor repairs, to avoid disturbance of banks and avoid direct impacts to wetlands and water resources. Where possible, this method would be used for repairs to any bridge abutments or piers. However, more substantial repairs or outright replacement of bridge substructures could involve soils/rock excavation and equipment access around the bridge structures which could impact adjacent wetlands.

The Wilton MP 11.55 bridge over the Norwalk River would require a new 161-foot long single-span replacement on the existing alignment. There would be no new piers constructed in the water but two piers supporting the existing bridge would either be removed or cut just below the water line. The work to remove or cut the piers would result in direct impacts in the water at this bridge site. If the existing bridge abutments are determined by future engineering inspections and hydraulic studies to require repair, rehabilitation of replacement, then there could also be additional direct impacts to wetlands and water resources at this crossing. Impact areas cannot be quantified at this conceptual design phase. Potential direct impacts, however, would be minimized to the greatest extent possible through future design efforts and consideration of non-intrusive construction methods, among other means.

For the Wilton MP 11.55 bridge and for all UG bridges requiring work along the rail corridor, every effort would be made to locate temporary material laydown areas and construction access ways outside of wetlands, floodplains, cultural resources, and other regulated areas. Indirect impacts to wetlands would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.

Two of the UG bridges over water are slightly or totally off existing alignments. The bridge at MP 3.2 over the Norwalk River would be a new bridge on a new alignment and the bridge at MP

6.64 over the Norwalk River would occur on a slight alignment shift associated with track curve shift Curve 6B.

- **Bridge at MP 3.2 over the Norwalk River:** This would be a new long-span bridge on a revised track alignment south of the current alignment (and existing bridge) and associated with the proposed track Curves 3A and 3B. To minimize encroachment on the Norwalk River and its floodway, the proposed bridge concept is a 160-foot long single span structure with no piers in the water. Installation of the new bridge abutments and wingwalls would occur on the high terraces above the river channel on both sides of the river. There would be clearing of vegetation and temporary work between the face of the proposed abutment and the river. Available GIS mapping indicates there are no wetlands in these work locations. Detailed field identification and verification of wetlands has not been conducted at this conceptual design phase but would occur later in the project development process during the permitting stage. That effort could potentially lead to identification of wetlands in the area that are presently not mapped in GIS. However, for this assessment, based on the fact that there are no GIS mapped wetlands near proposed work areas, bridge construction is not anticipated to impact wetlands. The construction of the bridge is associated with the new alignment of Curves 3A and 3B, which are part of a four-curve reconfiguration to improve train speeds through this section (Curves 2, 3A, 3B & 3C). The construction of the curves would impact a linear trackside ditch wetland, reported under Curves 2, 3A, 3B, & 3C in the *Track Reconfigurations* section below.

- **Bridge MP 6.64 over the Norwalk River** (Refer to Figure 4 in Appendix A)**:** This bridge is associated with the realignment of Curve 6B, which is offset to the east from the existing alignment by three feet near the southeast corner of the bridge. A new 60-foot single-span structure over the Norwalk River and its associated floodway and riparian wetlands is proposed at this location to accommodate the new alignment. The new bridge would be approximately 5 feet longer than the existing bridge. The proposed replacement would be conducted from the rail (e.g. rail-mounted equipment) to the extent possible and would use the existing abutments if possible.

  Given the slightly shifted alignment on the south side of the bridge, the temporary and permanent impacts on the southeast corner may extend approximately three feet beyond the existing disturbed ROW to accommodate the alignment shift and tie into the Curve 6B. This area would be permanently stabilized as railroad embankment. The very small impact area potentially caused by the bridge replacement is combined with Curve 6B in the *Track Reconfigurations* section below.

Overhead (OH) bridges (railroad goes under a road or in a tunnel): There are no impacts to wetlands expected from the one OH bridge replacement in Alternative C, at Route 7 in Wilton (MP 7.87).

Traction Power System - Electrification

Catenary and support structures: Electrification proposed under Alternative C would require the installation of catenary and support structures at regular intervals along the corridor from Norwalk to Danbury – similar to what was proposed for the Danbury Branch Signalization & Pole Line Project (State Project No. 0302-0007; Federal Project No. CT90-X300): also known as the Centralized Traffic Control (CTC) Project. Design plans were developed and formal wetland delineations were performed along the tracks for that study. Wetland impacts were calculated for a draft wetland permit application (Gannett Fleming 2008) based on the overlap of the signal poles and anchors with delineated and surveyed wetlands. Those impact estimates are very accurate. The placement and dimensions of the catenary structures from Norwalk to Danbury under the Danbury Branch Improvement Program Alternative C are assumed to be identical to the signal structures proposed by the CTC Project. The construction methodology is also presumed to be similar, with pole installation by track-mounted equipment, and minor hand-work required around each pole foundation in order to remove spoils and restore the ground to existing conditions.

The CTC study draft permit application reported that there would be 380 SF (0.009 ac) of permanent wetland impacts from Norwalk to Danbury. These impacts were concentrated in the segment from Redding to Danbury. The wetland types estimated to be impacted by catenary poles and support structures are federal PFO wetlands (approximately 0.005 ac), state PFO wetlands (approximately 0.002 ac), and trackside wetlands (0.002 ac). The primary functions/values associated with the impacted PFO wetlands are wildlife habitat, floodflow alteration, groundwater recharge/discharge, and sediment/toxicant retention and transformation. The primary, and in many cases sole, function of the impacted trackside wetlands is sediment/toxicant retention and transformation. Temporary impacts were estimated in the CTC study permit application to be a total of 4,250 SF (0.09 ac), associated with the work areas around each pole. These areas would be stabilized and planted to promote reestablishment of former wetland vegetation. to

Substations and remote terminal units (RTUs): One of the planned substations and one of the RTUs under Alternative C would impact wetlands.

- **Redding Substation (SUB-RED)** (Refer to Figure 2 in Appendix A**)**: The Redding substation site is the only electrical facility site which is currently partially vegetated. Most of this facility would be located on previously cleared and compacted ground, but the west corner of the site is on forested land adjacent to Hawley Pond Brook. Based on the conceptual layout, this substation would permanently impact approximately 1,030 SF (0.02 ac) of state and federal PFO wetlands adjacent to the brook. The impact is associated with the west side of the substation housing and the surrounding gravel apron. The primary functions and values associated with these impacted wetlands are wildlife habitat, visual quality/aesthetics, and sediment/toxicant retention and transformation. There could also be additional temporary impacts to wetlands around the west side of the substation for construction access and staging, estimated at 0.08 ac. This temporary impact area would be stabilized and planted to promote revegetation to

its former wetland condition. However, there would likely be an impairment of wetland functions for some duration after restoration, due to the many years required to restore forested wetlands to their former complexity and structure. Site drainage would include features that would promote water quality renovation. BMPs would also be incorporated to prevent potential harmful effects to the brook and other downstream waters.

- **Bethel RTU (CP421):** This RTU structure would permanently impact the middle segment of a linear trackside wetland, for a total impact of 160 SF (0.004 ac). The primary function of this trackside wetland is sediment/toxicant retention and transformation. This function would likely not be affected, as there would be long remaining stretches of linear trackside wetland on either side of the RTU and the stormwater design/BMPs for the facility would provide for sediment/toxicant retention. There would be no additional temporary impacts.

Track Reconfigurations, Sidings and Connections

There are many track reconfigurations planned under Alternative C to improve rail operations and/or speed. There are approximately 23 curve reconfigurations plus a reconfiguration to improve the branch connection with the New Haven mainline in South Norwalk, designated as CP241. There are no passing or storage sidings planned with Alternative C.

Track curve reconfigurations: The track curve reconfigurations are locations where existing curves would be redesigned to flatten out sharp curves; this would allow greater train speeds. Each reconfiguration involves changes to one or more curves. The amount of the proposed flattening or shift of the track (to the inside of the curve) varies from 1 foot to 40 feet for different curves. Where a proposed shift is only one or two feet from the existing track, no changes to the existing rail bed are anticipated. This is because the rails can simply be moved within the existing track bed. Where a proposed shift is three feet or greater from the existing track, new fill would be placed alongside the existing rail bed on the side of the track shift (east or west of the existing track) to support the track in its new location. In these cases, the toe of slope for the new rail bed embankment would extend beyond its current location by the same distance as the track shift (since the rail and the rail bed are shifting together). Hence, the direct impact zone for each curve with a shift of 3 feet or more would be approximately the same width as the proposed track shift. For example, if a particular curve shift is 16 feet east of the current track (centerline) at its farthest point; the estimated impact zone on lands adjacent to the rail bed is 16 foot wide at its greatest width. The shape of each impact zone is like a crescent, with the broadest impact zone in the middle of the curve; the impact zone narrows down where the ends of curve connect to the existing track. Impacts to wetlands in these curve footprints would be permanent impacts.

Curve reconfiguration work is anticipated to be conducted from the existing rail (e.g. from rail-mounted equipment) and within the existing disturbed rail bed, so few if any temporary wetland impacts would be expected.

Where the proposed track realignment totally diverges from the existing alignment, the new alignment footprint is 30 feet wide centered on the track. Direct impacts to wetlands within the new alignment envelope would be permanent. All efforts would be made to construct the new alignments from areas within the permanent impact footprint, so few if any temporary wetland impacts are anticipated from construction. Sections of former track (not part of the new curves) would be removed. The ground surface within the former track footprint would be stabilized and planted to establish vegetative cover consistent with the right-of-way wherever possible..

Permanent impacts to wetland resources were assessed to occur from the track realignments listed below (see Table 1 for evaluation of all curves and the extent of the track shifts from the existing track center line). Note that a single realignment sometimes consists of several curves. In cases where two or more curves are lumped together as one improvement, it means that the curves are interdependent (i.e., one curve would not be constructed without the others in the group).

- **Curves 2B, 3A, 3B & 3C** would permanently impact 140 SF (0.003) of linear trackside wetlands located on the west side of the existing track. The primary function of this wetland is sediment/toxicant retention and transformation.
- **Curve 6B** (and the southeast corner of Wilton Bridge MP 6.64) would impact state forested wetlands adjacent to the track. A total of 880 SF (0.02 ac) of wetlands located east of the tracks would be impacted. The primary functions/values of the impacted wetlands are wildlife habitat, floodflow alteration, fish and shellfish habitat associated with the Norwalk River, groundwater recharge/discharge, and sediment/shoreline stabilization above the river bank.
- **Curves 7E and 8** would impact 660 SF (0.02 ac) of state forested wetlands and 560 SF (0.01 ac) of linear trackside wetlands. These wetlands are associated with the Norwalk River in Wilton and lie on both sides of the track. The primary functions/values of the forested wetlands are wildlife habitat, floodflow alteration, fish and shellfish habitat, groundwater recharge/discharge, sediment/shoreline stabilization, and endangered species habitat associated with a ground beetle (*Bemidion lacunarium*) and the Whiteriver crayfish (*Procambarus acutus*). The primary function of the linear wetlands is sediment/toxicant retention and transformation. These functions would all be impacted by this curve. While the aquatic crayfish is not anticipated to be affected (since the track work stays out of the river), further coordination with the DEEP and field surveys for the ground beetle may be necessary at this site, as described in the Threatened and Endangered Species Technical Memorandum 2.
- **Curve 9C** would impact 5,220 SF (0.1 ac) of state and federal PFO wetlands and 610 SF (0.01 ac) of linear trackside wetlands. These wetlands are associated with the Norwalk River in Wilton and lie west of the tracks. The primary functions and values associated with the PFO wetlands are wildlife habitat and sediment/toxicant retention and transformation. The primary function of the linear trackside wetlands is sediment/toxicant retention and transformation.

- **Curves 14B, 14C, 14D and 15A** would result in filling approximately 130 SF (0.003 ac) of trackside ditch wetlands whose primary function is sediment/toxicant retention and transformation. The impact is associated with the shift of curve 14C 36 feet to the west and construction of a retaining wall to avoid impacting a parallel private drive. The retaining wall would keep the planned work within the existing ROW.
- **Curves 15B and 15C** would result in the filling of approximately 13,010 SF (0.3 ac) of state and federal PSS wetlands associated with Umpawaug Pond in Redding. A ROW acquisition is required at this location. Functions and values of these impacted wetlands include wildlife habitat, floodflow alteration, fish and shellfish habitat, visual quality/aesthetics, sediment/shoreline stabilization, sediment/toxicant retention and transformation, and endangered species habitat associated with numerous species [water marigold (*Megalodonta beckii*), Appalachian blue butterfly (*Celastina neglectamajor*), sedge skipper (*Euphyes dion*), Bronze copper butterfly (*Lycaena hyllus*), Newman's brocade moth (*Meropleon ambifuscum*), Harris' checkerspot butterfly (*Chlosyne harrisii*), two unnamed ground beetles (*Badister transverse* and *Bembidion pseudocautum*), and a snail (*Fossaria rustica*)]. These functions would all be impacted by this curve. Further coordination with the DEEP and species surveys would be necessary at this site, as described in the Threatened and Endangered Species Technical Memorandum 2.
- **Curves 16A and 16B** would result in filling of state and federal PFO wetlands associated with an unnamed pond in Redding. A ROW acquisition is required. A total of 10,850 SF (0.25 ac) of wetlands located east of the tracks would be impacted. The primary functions and values of these impacted wetlands are wildlife habitat, groundwater recharge/discharge, sediment/toxicant retention and transformation, and endangered species habitat associated with the Northern metalmark butterfly (*Calephelis borealis*) and the Appalachian blue butterfly (*Celastina neglectamajor*). These functions would all be impacted by this curve. Further coordination with the DEEP and species surveys would be necessary at this site, as described in the Threatened and Endangered Species Technical Memorandum 2.
- **Curve 17A** would fill state and federal PFO wetlands associated with an unnamed pond in Redding. A total of 630 SF (0.01 ac) of wetlands located west of the tracks would be impacted. The primary function and value associated with these wetlands is wildlife habitat.
- **Curve 17B** would fill state and federal PFO wetlands associated with an unnamed pond in Redding. A total of 100 SF (0.002 ac) of wetlands located east of the tracks would be impacted. The primary functions and values associated with these wetlands are wildlife habitat and sediment/toxicant retention and transformation.

Connections – additional branch connection at CP 241: The branch connection at CP 241 is not located within wetlands; therefore no impacts to wetlands are expected from connections.

Alternative D - Extension from Danbury to New Milford

Alternative D would extend existing Danbury Branch passenger service 14.7 miles from Danbury to New Milford. This includes replacing the existing freight track by constructing new track along the same alignment to accommodate speeds up to 60 miles per hour, adding new stations and parking facilities at Danbury North, Brookfield and New Milford, and adding new rolling stock. A new maintenance facility and storage yard would also be built in the vicinity of New Milford.

Potential impacts to wetlands from Alternative D improvements have been quantified (see Table 2). Just over 0.05 ac of permanent wetland impacts are associated with Alternative D. These are comprised of 0.03 ac of state and federal wetlands, 0.006 of state-only wetlands, and 0.015 ac of linear trackside wetlands. Additional temporary impacts could amount to 5,640 SF (0.1 ac) of state and federal PFO and state-only forested wetlands. In terms of wetland functions and values, the sediment/toxicant retention and transformation, wildlife habitat, and floodflow alteration functions of directly impacted wetlands would be most affected by Alternative D. There is also potential for endangered species habitat within two impacted wetlands based on overlapping CTDEP Natural Diversity Database (NDDB) GIS records at these locations. Those impacted wetlands with potential endangered species habitat include a forested wetland in New Milford (0.023 ac of impact associated with raising the Erickson Road Bridge), and a trackside ditch at the Brookfield Station that would be impacted by the construction of a rail siding. Wetland impacts are described in more detail below.

Rail Reconstruction

Replacing the existing track from Danbury to New Milford would provide a higher quality of rail on new ties. This work would essentially replace the existing rail in place and therefore would not change track profiles or ground elevations. The track in most locations is centered within level ground stabilized by ballast and gravel. The replacement work would be done in short segments by rail-mounted equipment, take place in level areas of gravel and ballast fill, and would be stabilized as soon as the replacement section is in place. Therefore this work is not anticipated to have direct or indirect effects on wetlands except at the track curve reconfiguration locations noted below.

Passenger Stations (New)

Improvements from Danbury to New Milford under Alternative D would involve the construction of two new passenger stations: Brookfield and New Milford. Both new stations would include the construction of passing sidings, 300-foot long high-level platforms with canopies, new passenger waiting shelters, and new surface parking lots with a capacity of approximately 100 vehicles. No wetland impacts would result from construction of the New Milford Station due to its upland urbanized setting, but construction of the Brookfield Station may cause impacts.

Brookfield Station (Refer to Figure 5 in Appendix A): Construction of the surface parking lot at this planned station would permanently fill approximately 250 SF (0.006 ac) of linear wetlands adjacent to the track. Additionally, a siding to allow freight train passage at the station would be

constructed east of the tracks and opposite the station development. The siding would be located between an existing powerline corridor and the existing tracks. The adjacent area is lightly wooded and bordered by residential properties. Siding construction would require filling approximately 390 SF (0.009 ac) of linear trackside wetland. There are no additional temporary wetland impacts anticipated with either station or siding construction. The linear trackside wetlands have the main function of sediment/toxicant retention and transformation, with a possible additional function of endangered species habitat if this narrow wetland is within the range of the Eastern box turtle (*Terrapene Carolina*) and/or eastern hognose snake (*Heterodon platirhinos*), which have been identified in the vicinity of the site. [Note: other listed species identified at this site are not associated with the type of habitat provided by the linear trackside wetland and are thus not mentioned here.] A portion of the linear trackside wetland north of the planned station would remain intact and would not be affected by station or siding development. The sediment/toxicant retention and transformation function carried out by the impacted portion of the trackside wetland would be replaced by the stormwater management system design for the station and associated surface parking lot. If the box turtle and hognose snake occur within the project bounds, impact avoidance may be possible through implementation of protective measures outlined by the DEEP (detailed in the Threatened and Endangered Species Technical Memorandum 2), such as cordoning off the project areas during construction. Further coordination with the DEEP would be necessary relative to the listed species at this site.

Structures and Bridges

There are six undergrade (UG) bridge replacements included in Alternative D, four carry the rail over roadways and two carry the rail over water.

The UG bridges over roadways include replacement bridges at MP 29.47, MP 29.9 (a farm pass that would be replaced or filled) and MP 33.07 in Brookfield and MP 38.62 in New Milford. For these replacement UG bridges, construction is anticipated to occur from the rail ROW. There are no wetland resources within the footprint of the proposed work areas of these bridges. BMPs would be implemented and E&S controls maintained during construction to prevent disruption of any adjacent wetlands located beyond the existing disturbed and maintained rail bed. As such, UG bridges over roadways are not anticipated to have any direct or indirect impacts on wetland resources under Alternative D.

Two UG bridges carry the rail over the Still River, one at MP 26.6 in Danbury, and the other at MP 35.1 in New Milford. Impacts associated with these UG bridges are described in more detail below.

- **Bridge MP26.6 over the Still River in Danbury**. The existing bridge would be replaced with a 207-foot long two-span ballast deck on the existing rail alignment. The replacement bridge would require a new pier in the Still River that would have a direct footprint impact of approximately 300 SF. Additionally, the two existing piers located in the water would either be removed or cut-off below the water line. If the existing bridge abutments require repair, rehabilitation or replacement, there could be additional direct impacts to wetlands and water

resources at this crossing. Those impact areas cannot be quantified at this conceptual design phase.

- **Bridge MP35.1 over the Still River in New Milford.** The existing bridge would be replaced with a 102-foot long single span that would be placed upon the existing bridge abutments. Potential direct impacts to water and wetland resources at this location could occur if the existing bridge foundations or abutments require repair, rehabilitation, or replacement. The extent of potential wetland or water resource impacts therefore cannot be quantified at this conceptual design phase.

For these two UG bridge over water, potential direct impacts would be minimized to the greatest extent possible through future design efforts and consideration of non-intrusive construction methods, among other means. Indirect impacts to off-site wetlands would also be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.

In addition to the UG bridges, there are a total of seven overhead bridge replacements associated with Alternative D. All overhead bridge replacements are triggered by the electrification option and are reported as Bridge Raisings under the category of *Traction Power System – Electrification*.

Traction Power System - Electrification

Electrification is an option under Alternative D, extending from approximately MP 23.9 in Danbury to MP 39 in New Milford. Facilities required for electrification include catenary and support structures and electrical substations. In addition, seven overhead bridges would need to be raised to provide enough clearance for the catenary wires to pass under them. This would not be necessary for the diesel (non-electrified) option of Alternative D.

Catenary and support structures: Between Danbury and New Milford, the installation of numerous catenary poles may impact wetland resources. However, unlike Alternative C, where the CTC draft wetland permit application was available and used to report accurate wetland impacts associated with proposed catenary installation from Norwalk to Danbury; information of similar detail and accuracy is not available for Alternative D. Instead, for electrification from Danbury to New Milford under Alternative D, the number of poles located within mapped wetlands was calculated using GIS, based on the following impact assumptions derived from the CTC study:

- Cylindrical holes for catenary poles would be drilled by rail-mounted equipment within 12 feet of the center line of track.
- Catenary pole spacing is similar to that reported in the CTC study.
- Concrete foundations for each pole are approximately five feet in diameter, resulting in a permanent footprint impact of 20 SF per pole.

- Poles and overhead wires are erected from rails or previously disturbed ROW resulting in additional temporary impacts of approximately 110 SF per pole for those poles located within wetlands.

Based on these assumptions, the GIS analysis found that a total of 580 SF (0.01 ac) of wetlands would be permanently impacted by catenary pole and support structure installation under Alternative D. These impacts consist of state and federal PFO wetlands (approximately 0.01 ac) and state-only wetlands (approximately 0.003 ac). The primary functions and values associated with these forested wetlands are wildlife habitat, floodflow alteration (flood storage and desynchronization), and sediment/toxicant retention and transformation. Due to the near-continuous coverage of NDDB records along the rail corridor from northern Brookfield into New Milford, some of these wetland impact areas overlap with potential habitat for endangered species as described below. Temporary wetland impacts of approximately 3,250 SF (0.07 ac) are anticipated to be associated with these permanent impacts. The temporary impact areas would be stabilized and planted to promote reestablishment of their former wetland vegetation.

Substations: There are no impacts to wetlands expected from the Brookfield or New Milford Substations included with Alternative D.

Bridge Raisings: Wetlands could be impacted at one of the bridge-raising locations in Alternative D (New Milford MP 34.74 - Erickson Road). The other bridge raisings are located in areas where there are no GIS mapped wetland resources. Indirect impacts to off-site wetlands at those locations would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.

- **New Milford (MP 34.74) Erickson Road** (Refer to Figure 6 in Appendix A): A total of 860 SF (0.02 ac) of state and federal forested wetlands and 140 SF (0.003 ac) of state-only wetlands on the west side of the tracks (west end of the bridge) could be permanently impacted by this bridge raising. The primary functions/values of these wetlands are wildlife habitat, floodflow alteration (flood storage and desynchronization), sediment/toxicant retention and transformation, and endangered species habitat associated with the sharp-shinned hawk (*Accipiter striatus*), which nests on large evergreens. These functions would all be impacted by this curve. Further coordination with the DEEP would be necessary at this site relative to protective measures for the sharp-shinned hawk. Temporary impacts around the west end of the bridge may also occur from construction access, which could amount to approximately 1,910 SF (0.04 ac) of state and federal wetlands impacts and 480 SF (0.01 ac) of state-only wetlands impacts. The temporary impact areas would be stabilized and planted to promote reestablishment of their former wetland vegetation. . There would likely be an impairment of functions for some duration after restoration, due to the many years required to restore forested wetlands to their former complexity and structure.

Track Reconfigurations, Sidings and Connections

There are five track curve reconfigurations planned under Alternative D to improve rail operations and/or speed. Crossover connections at the Danbury Yard and at MP 26.96, approximately 2.6 miles north of Danbury Yard, are planned for operational improvements. One storage siding, located in Danbury and Brookfield at MP 27.24 - 27.58, is included. These track reconfigurations, crossover connections and sidings are not located close to any GIS mapped wetlands, therefore direct and indirect impacts to wetlands are not anticipated.

Storage and Maintenance Yards

There are no impacts to wetlands anticipated from the New Milford Storage and Maintenance Yard.

Alternative E - Improvements from South Norwalk to Wilton

Alternative E is being considered at the direction of the State of Connecticut's Transportation Strategy Board. It would provide partial electrification of the Danbury Branch, from South Norwalk to Wilton, a distance of 7.5 miles. Parking and access improvements would be made at Merritt 7 station, and there would be minor modifications to track and structures along this section.

Alternative E, extending from South Norwalk to Wilton, would involve improvements to the Merritt 7 Station, track curve reconfigurations, and bridge improvements from MP 0 to MP 7.5, and partial electrification of the Danbury Branch from approximately MP 1.1 to MP 7.5. Impacts from this alternative are therefore a subset of the impacts of Alternative C. The analysis of potential impacts to wetlands from Alternative E is summarized in Table 3 and described by improvement type below.

A total of just over 0.02 ac of permanent wetland impacts, all from track reconfigurations (curves), are associated with Alternative E. Impacts include 0.02 ac of state-only forested wetlands and 0.003 ac of linear trackside wetlands. In terms of wetland functions and values, the sediment/toxicant retention and transformation, wildlife habitat, floodflow alteration, fish and shellfish habitat, groundwater recharge/discharge, and sediment/shoreline stabilization functions of the directly impacted wetlands would be most affected by Alternative E. There are additional potential temporary impacts of approximately 5,000 SF (0.1 ac) within the state wetlands. Impacts are described in more detail below.

Passenger Stations (Existing Stations)

No impacts to wetlands are anticipated from the upgrades to the Merritt 7 Station, which is the only improved station under this alternative.

Structures and Bridges

There are undergrade bridge replacements but no overhead bridge replacements included in Alternative E.

Undergrade (UG) bridges (railroad goes over a road or stream): There are seven UG bridges where work is planned in Alternative E. Three are over roadways and would not occur within wetlands; these are the new bridge at MP 0 in Norwalk over Washington and South Main Streets and two replacement bridges at Norwalk MP 0.1 and Norwalk MP 0.2. Refer to Alternative C for a discussion of these UG bridges over roadways.

There are four UG bridges over water. Bridges in Norwalk at MP 5.12 and at MP 6.43 are replacements on existing alignment and, as described under Alternative C, are not anticipated to have direct or indirect, permanent or temporary impacts to wetlands. Two bridges are along the revised track alignments (realigned to increase train speeds). These include the Norwalk bridges at MP 3.2 and MP6.64. The potential for impacts to wetlands and water resources associated with the construction of these two bridges is described under Alternative C.

Traction Power System - Electrification

For Alternative E, electrification facilities would extend from approximately MP 1.1 in Norwalk to MP 7.5 in Wilton. Facilities include two electrical substations, one RTU, and catenary and support structures. A review of the CTC project's draft permit application revealed that none of these improvements are located within mapped wetlands and there are no direct or indirect impacts to wetlands anticipated from their construction.

Track Reconfigurations, Sidings and Connections

For Alternative E, there are seven curve reconfigurations plus a reconfiguration to improve the branch connection with the New Haven mainline in South Norwalk. This branch connection improvement appears as CP241 under the Track Reconfigurations in Table 3. There are no passing or storage sidings planned with Alternative E.

Track curve reconfigurations: There are two track reconfigurations that would impact wetland resources. All impacts at curves are permanent; there would be no additional temporary impacts.

- **Curves 2B, 3A, 3B & 3C** would permanently impact 280 SF (0.01) of linear wetlands adjacent to the track on the west side of the existing track. The primary function of this wetland is sediment/toxicant retention and transformation.
- **Curve 6B** (and the southeast corner of Wilton Bridge MP 6.64) would impact state forested wetlands adjacent to the track. A total of 880 SF (0.02 ac) of state-only forested wetlands located east of the tracks (in the direction of the track realignment) would be impacted. The primary functions/values of the impacted wetlands are wildlife habitat, groundwater recharge/discharge, floodflow

alteration, fish and shellfish habitat, and sediment/shoreline stabilization. The latter two are due to the wetland's association with the Norwalk River.

Connections – additional branch connection at CP 241: The branch connection at CP 241 is not located within wetlands; therefore no impacts to wetlands are expected from this improvement.

EXECUTIVE ORDER ON WETLANDS

Improvements planned as part of this project have been thoroughly evaluated to determine if practicable alternatives exist that would not impact wetland resources. There are several applicable regulations and executive orders (EO) that require the investigation of practicable alternatives, including EO 11990 "Protection of Wetlands", Department of Transportation (DOT) Order 5660.1A "Preservation of the Nation's Wetlands," and Code of Federal Regulations (CFR) 777. These regulations were established to protect the benefits of natural wetland resources.

Every effort has been made to avoid impacts to wetlands from the planned Danbury Branch improvements. Alignment and design modifications to all improvements near wetlands were evaluated. Work at stations has been configured to occur on previously disturbed uplands where possible. With the exception of locations identified in the graphics, all bridge work would be performed within the footprint of the existing bridges to avoid excavation and fill activities. Most of the rail and bridge improvement work would be accomplished from the tracks and from the maintained (already disturbed) right-of-way of tracks or roadways. The traction power system elements required for electrification, as well as the communication and signal system, are within previously disturbed and maintained rail ROW where wetlands are minimal. Rail storage and maintenance yard improvements have been located outside of mapped wetland resources.

During early stages of alternatives development and alternatives analysis, avoiding wetlands was a primary consideration. The following measures to avoid wetland impacts have been taken:

- **Merritt 7 Station (upgrade):** Four Merritt 7 Station sites in Norwalk were considered as potential locations for the expanded parking lot and other station upgrades. One site had wetlands and it was eliminated from further consideration.
- **Brookfield Station (new):** Two sites were considered for this new station. The site that was eliminated from further consideration had three wetland areas within the conceptual boundary of the station development, with greater wetland acreage and functions than the linear trackside wetland at the planned station site.
- **New Milford Station (new):** Five station sites were considered. Three sites had wetlands within their conceptual station development area; all of those were eliminated from further consideration.

The impacts to wetlands result from improvements being planned in order to maintain and enhance the viability of commuter rail service along the study corridor. Impacts would accrue from several station improvements (primarily at existing stations), catenary structures and electrification facilities, a bridge raising, and various track reconfigurations (curves). The purpose and need of these improvements includes serving more commuters, which is not deemed

possible without the range of improvements being considered. Relocating passenger stations and avoiding all work along the existing rail bed due to the presence of surrounding wetlands are not practical or feasible, and would not meet the purpose and need of this project. As such, these improvements have no practical alternative but to encroach upon wetlands. Impact avoidance, minimization, and mitigation measures would continue to be implemented if the improvements go forward into design and permitting, to protect the natural and human environments.

Impact minimization techniques such as the following would be applied during design of any improvements which are selected to go forward:

- Evaluating geometry at track curve shifts at wetlands to see if geometric revisions could meet the purpose of the improvement and reduce wetland impacts.
- Shifting alignments slightly to reduce impacts to portions of a wetland with higher functions/values even if total wetland impact area remains the same.
- Increasing the steepness of slopes along the edge of the rail bed through wetland sections, where appropriate, to decrease the impacted area.

MITIGATION

Mitigation Requirements

Alternatives A and B would have no wetland impacts and would therefore not require mitigation. The build alternatives would each impact wetlands and would require mitigation. The conceptual layouts of the planned rail improvements are expected to result in unavoidable wetland impacts. The following are potential wetland impacts for the build alternatives:

- **Alternative C:** permanent impacts of approximately 0.9 ac and temporary impacts of 0.3 ac. In addition, 0.08 ac of open water and 450 linear feet (LF) of shoreline of Umpawaug Pond in Redding (described in the *Water Resources Technical Memorandum 2*) would be permanently impacted; this impact would require mitigation along with the wetland impacts. [Total: 1.2 ac plus 0.08 ac open water plus 450 LF shoreline].
- **Alternative D:** permanent impacts of approximately 0.05 ac and temporary impacts of 0.1 ac [Total: 0.15 ac].
- **Alternative E:** permanent impacts just over approximately 0.02 ac and temporary impacts of 0.1 ac [Total: 0.12 ac].

A comprehensive mitigation program would be necessary to mitigate for loss and impairment of wetlands. The program would take into account the permanent and temporary impacts, as well as direct acreage and functional impacts. The mitigation program would be tailored to compensate for the specific types of wetlands affected and the specific functions and values affected and would adhere to the U.S Army Corps of Engineers (USACE) mitigation guidelines. Acceptable forms of mitigation include wetland creation (new wetlands), restoration (returning non-wetland areas to their previous wetland condition), enhancement (improving existing wetlands), and preservation (ensuring no future development on valuable habitats/ wetlands).

Mitigation ratios required by the USACE range from 1:1 to 10:1 or more, depending on the quality of the impacted wetlands and the proposed form of mitigation. Using a mitigation ratio of 3:1 (meaning the mitigation area should be 3 times the size of the impacts), the mitigation size requirements for Alternatives C, D, and E would be approximately 3.6 ac (plus 0.08 ac open water plus 450 LF of shoreline), 0.45 ac, and 0.36 ac, respectively. The most appropriate mitigation areas are close to the impacted wetlands, preferably within the same watersheds, are undeveloped but not forested, have a source of water (hydrology), and have low existing ecological values.

REFERENCES

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Government Printing Office, Washington D.C. GPO 024-010-00524-6. 103 pp.

Gannett Fleming. 2008. *Application for U.S. Army Corps of Engineers – Programmatic General Permit, Danbury Branch Signalization & Pole Line Project (CTC Project)*. Gannett Fleming/ CTDOT, 02/19/08

U.S. Army Corps of Engineers (USACE). 1993. *The Highway Methodology Workbook: Integrating Corps Section 404 Permit Requirements with Highway Planning and Engineering and the NEPA EIS Process*. New England Division. Publication no. NEDEP-360-1-30. October 1993. 28 pp.

USACE. 1999. *Highway Methodology Workbook Supplement: Wetland Functions and Values - A Descriptive Approach*. New England Division. Publication no. NAEEP-360-1-30a. September 1999. 32 pp.

Table 1: Alternative C Impacts to Wetlands

Improvement Type	Location	Study		Work Description	Permanent State &		Permanent State		Permanent Linear		Impacted Wetland Type
		From	To		Square Feet (sf)	Acres (ac)	Square Feet (sf)	Acres (ac)	Square Feet (sf)	Acres (ac)	
Existing Stations (Upgrades)											
Merritt 7	Norwalk	3.6	3.6	New 200-space parking lot on new property w. of Glover Ave; pedestrian bridge over tracks from new parking to platform; replace low-level platform with high-level platform; new canopy, ramps, bike lockers.	0	0	0	0	0	0	
Cannondale	Wilton	8.85	8.85	Extend high-level platform; expand parking lot by 50 spaces to a total of 190; provide bike lockers.	0	0	0	0	740	0.02	trackside
Branchville	Ridgefield	12.65	12.65	Revise access to parking by relocating Portland Ave to south on new bridge over Norwalk River; reconstruct Depot Rd with new bridge over river (eliminates at-grade xing); expand parking to south and acquire property for additional parking across river along Rt 7. Pedestrian bridge over river from new parking to station. Provide bike lockers.	0	0	0	0	0	0	
Redding	Redding	17.1	17.1	Concept plan shows expanded parking lot by 100 spaces for total 180 spaces; reconfigure drop-off area; provide bike lockers. If parking is scaled back by removing one row on south side, 75 added spaces provided rather than 100 (adequate for demand) - Impacts are based on 75 added spaces. No platform work.	1,450	0.03	0	0	0	0	PFO
Bethel	Bethel	21	21	Expand parking lot by 160 for total 350 spaces; provide bike lockers. No platform work.	4,970	0.11	0	0	0	0	PFO
Undergrade Bridges											
Undergrade Bridge - Rail Goes Over Roadway											
Washington & South Main St.	Norwalk	0.0	0.0	New (additional) single track truss bridge 240' span on added parallel track alignment. Includes concrete retaining walls on spread footings. Form liners used to simulate stone blocks on face of concrete walls.	Bridges over roadways in urban setting - no wetland resources in vicinity. Indirect impacts to off-site wetlands would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.						
Marshall St.	Norwalk	0.1	0.1	Replace historic bridge with 120' span ballast deck structure on existing alignment and raise to provide clearance.							
Ann St.	Norwalk	0.2	0.2	Replace with 57' long span ballast deck structure on existing alignment.							
Old Mill Rd.	Wilton	11.01	11.01	Replace with ballast deck type, 32' span structure on existing realignment.	Bridges over roadways - no wetland resources anticipated to be directly impacted in footprint of construction. Indirect impacts to off-site wetlands would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.						
Old Redding Rd.	Redding	14.16	14.16	Replace with ballast deck type, 28' span structure on existing alignment.							
Simpaug Tpke.	Redding	14.8	14.8	Replace with ballast deck type, 60' span structure on Curve 14D (realignment). Curve 14D located up to 14' west of existing centerline.							
Grassy Plains Rd. (Rt. 53)	Bethel	19.64	19.64	Replace with ballast deck type, 29' span structure on existing alignment.							
Undergrade Bridge - Rail Goes Over Water											
Norwalk River	Norwalk	3.2	3.2	New 160' long ballast deck span bridge on totally new alignment of Curves 3A and 3B. Concept shows bridge ends skewed and alignment nearly parallel to the river to minimize impacts.	This bridge is constructed in association with Track Configuration Curves 2, 3A, 3B, & 3C - Impacts are reported under that curve. Additional direct impacts to water and wetland resources could occur at this water crossing if the existing bridge foundations or abutments require repair, rehabilitation, or replacement. Impact areas cannot be quantified at this conceptual design phase. Direct impacts would be minimized to the greatest extent possible through future design efforts and consideration of non-intrusive construction methods. Indirect impacts to off-site wetlands would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.						

Improvement Type	Location	Study		Work Description	Permanent State &		Permanent State		Permanent Linear		Impacted Wetland Type
		From	To		Square Feet (sf)	Acres (ac)	Square Feet (sf)	Acres (ac)	Square Feet (sf)	Acres (ac)	
Small stream	Norwalk	5.12	5.12	Replace 15' span ballast deck on existing alignment.	Potential direct impacts to water and wetland resources could occur at this water crossing if the existing bridge foundations or abutments require repair, rehabilitation, or replacement. Impact areas cannot be quantified at this conceptual design phase. Direct impacts would be minimized to the greatest extent possible through future design efforts and consideration of non-intrusive construction methods, among other means. Indirect impacts to off-site wetlands would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.						
Small stream	Norwalk	6.43	6.43	Replace 40' long span ballast deck on existing alignment.							
Norwalk River	Wilton	6.64	6.64	Replace with ballast deck type, 65' span structure on revised alignment of Curve 6B. North side of span on existing alignment; south side offset 3' easterly from existing alignment.	This bridge is constructed in association with Track Configuration Curve 6B - Impacts are reported under that curve						
Norwalk River	Wilton	8.7	8.7	Replace with ballast deck type, 86' span structure on existing alignment.	Potential direct impacts to water and wetland resources could occur at this water crossing if the existing bridge foundations or abutments require repair, rehabilitation, or replacement. Impact areas cannot be quantified at this conceptual design phase. Direct impacts will be minimized to the greatest extent possible through future design efforts and consideration of non-intrusive construction methods, among other means. Indirect impacts to off-site wetlands will be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.						
Norwalk River	Wilton	9.42	9.42	Replace with ballast deck type, 86' span structure on existing alignment.							
Norwalk River	Wilton	11.55	11.55	Replace with ballast deck type, 161' single-span structure on existing alignment. No new structures (no piers) in water but two existing piers at this crossing would be removed or cut below water line.	Construction work to remove existing bridge piers would result in direct impacts in the water at this bridge site. If the existing bridge abutments require repair, rehabilitation, or replacement, there could be additional direct impacts to wetlands and water resources at this crossing. Impact areas cannot be quantified at this conceptual design phase. Potential direct impacts would be minimized to the greatest extent possible through future design efforts and consideration of non-intrusive construction methods, among other means. Indirect impacts to off-site wetlands would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.						
Factory Pond	Wilton	12.17	12.17	Replace with ballast deck type, 49' span structure on existing alignment.	Potential direct impacts to water and wetland resources could occur at this water crossing if the existing bridge foundations or abutments require repair, rehabilitation, or replacement. Impact areas cannot be quantified at this conceptual design phase. Direct impacts would be minimized to the greatest extent possible through future design efforts and consideration of non-intrusive construction methods, among other means. Indirect impacts to off-site wetlands would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.						
Umpawaug Pond Brook	Redding	16.4	16.4	Replace with ballast deck type, 49' span structure on existing alignment.							
Saugatuck River	Redding	17.1	17.1	Replace with ballast deck type, 41' span structure on existing alignment.							
Sympaug Brook	Bethel	21.4	21.4	Replace with ballast deck type, 22' span structure on existing alignment.							
Overhead Bridges (Rail goes under Road)											
Route 7	Wilton	7.87	7.87	Replace with longer span 50' structure to accommodate track realignment Curve 7E.	Roadway bridge over rail line, constructed in association with Curves 7E & 8. Potential wetland impact reported under Curve 7E. Indirect impacts to off-site wetlands would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.						
Traction Power System - Electrification											
Catenary and support structures	Norwalk to Danbury	1.1	23.9	New catenary poles located within 12 feet of track centerline; existing poles removed along corridor. Wetland impacts derived from CTC Study.	200	0.005	80	0.002	100	0.002	PFO & trackside
RTU (CP401)	Norwalk	0.63	0.63	New facility (metal enclosure on concrete walls or columns) surrounded by crushed stone.	0	0	0	0	0	0	
Substation (SUB-41D)	Norwalk	1.62	1.62	New facility (metal enclosure on concrete walls or columns) surrounded by crushed stone.	0	0	0	0	0	0	
Substation (SUB-170D)	Wilton	7.25	7.25	New facility (metal enclosure on concrete walls or columns) surrounded by crushed stone.	0	0	0	0	0	0	
Substation (SUB-305D)	Ridgefield	13	13	New facility (metal enclosure on concrete walls or columns) surrounded by crushed stone.	0	0	0	0	0	0	
Substation (SUB-RED)	Redding	17.2	17.2	New facility (metal enclosure on concrete walls or columns) surrounded by crushed stone.	1,030	0.02	0	0	0	0	PFO
RTU (CP421)	Bethel	20.22	20.22	New facility (metal enclosure on concrete walls or columns) surrounded by crushed stone.	0	0	0	0	160	0.004	trackside
Substation (SUB-560D)	Danbury	23.3	23.3	New facility (metal enclosure on concrete walls or columns) surrounded by crushed stone.	0	0	0	0	0	0	

Improvement Type	Location	Study		Work Description	Permanent State &		Permanent State		Permanent Linear		Impacted Wetland Type
		From	To		Square Feet (sf)	Acres (ac)	Square Feet (sf)	Acres (ac)	Square Feet (sf)	Acres (ac)	
Track Reconfigurations											
CP 241	Norwalk	0	0.3	New parallel 2nd track and extension of existing Norwalk passing siding in urban developed setting. Requires property acquisitions on North Main Street.	0	0	0	0	0	0	
Curves 0E, 1A & 1B	Norwalk	1	1.7	Major realignment of track to west away from Norwalk River. Property acquisitions.	0	0	0	0	0	0	
Curves 2B, 3A, 3B & 3C (incl. Bridge MP 3.2)	Norwalk	2.7	4	Curve 2B is offset only 2'. 3A & 3B have large off-sets (new alignments assoc with Bridge 3.2).	0	0	0	0	140	0.003	trackside
Curve 3D	Norwalk	3.82	3.96	Curve 3D is offset by 4' from existing centerline.	0	0	0	0	0	0	
Curve 4C	Wilton	4.8	4.97	Curve 4C is offset by 6' from existing centerline.	0	0	0	0	0	0	
Curve 5	Wilton	5.75	5.83	Curve shift is only 1' - no work outside disturbed ROW	0	0	0	0	0	0	
Curve 6A	Wilton	6.07	6.24	Curve shift is only 2' - no work outside disturbed ROW	0	0	0	0	0	0	
Curve 6B (incl. Bridge MP 6.64)	Wilton	6.53	6.68	Curve shift for Curve 6B is 3' - includes replacement Bridge 6.64 on this curve.	0	0	880	0.02	0	0	PFO
Curves 7E & 8	Wilton	7.71	8.47	7E curve shift is 8' off centerline. Curve 8 is only 1' shift.	0	0	660	0.02	560	0.01	PFO & trackside
Curve 9C	Wilton	9.53	9.84	Curve 9C has shift up to 42' west of existing track (ROW acquisition).	5,220	0.12	0	0	610	0.01	PFO & trackside
Curves 10B & 11A	Wilton	11	11.47	Shifts up to 25' off existing - ROW required. Curve 11A includes retaining wall to minimize encroachment on forested floodplain of Norwalk River.	0	0	0	0	0	0	
Curve 12A	Wilton	12.21	12.33	Curve 12 A shift is 12' to the east.	0	0	0	0	0	0	
Curve 12B	Wilton/ Ridgefield	12.42	12.57	12B max curve shift is 8' off centerline to East.	0	0	0	0	0	0	
Curve 13B	Redding	13.25	13.4	12B max curve shift is 12' off centerline to East. Includes retaining wall to minimize excavation of abutting slope and keep work within existing ROW.	0	0	0	0	0	0	
Curve 13C	Redding	13.46	13.59	12B max curve shift is 8' off centerline to West.	0	0	0	0	0	0	
Curve 13D	Redding	13.63	13.7	Curve shift is only 1' - no work outside disturbed ROW	0	0	0	0	0	0	
Curve 14A	Redding	13.97	14.1	Curve 14 A shift is 13' to the east.Includes retaining wall to minimize excavation of abutting slope and keep work within existing ROW.	0	0	0	0	0	0	
Curves 14B, 14C, 14D & 15A	Redding	14.24	15.14	14B shifts 13' to the west; 14C is 36' west and includes retaining wall to avoid parallel private drive and keep work within existing ROW. 14D is 14' to East with new bridge over Simpaug Tpk. Curve 15A shift is 2'.	0	0	0	0	130	0.003	
Curves 15B & 15C	Redding	15.26	15.77	15B shifts 14' to West; 15C shifts 23' to East.	13,010	0.30	0	0	0	0	PSS
Curves 16A & 16B	Redding	16.58	16.89	16A shifts 22' to East. 16B is less than 1'.	10,850	0.25	0	0	0	0	PFO
Curve 17A	Redding	17.25	17.45	17A shifts 6' to West.	630	0.01	0	0	0	0	PFO
Curve 17B	Redding	17.57	17.72	17B shifts 11' to East.	100	0.002	0	0	0	0	PFO
Curve 17C	Redding	17.83	18.01	17C shifts 15' to West	0	0	0	0	0	0	
Curve 19A	Bethel	19.07	19.18	19A shifts 4' to West	0	0	0	0	0	0	
Rail Storage and Maintenance Yards											
Danbury Yard	Danbury	23	24	Realign existing and add tracks to provide 8 storage tracks with paved service aisles between every other track; 3,000 SF single-story building; 3,000 SF outdoor storage. Property acquisition required within existing urban setting.	0	0	0	0	0	0	
TOTAL					37,460	0.9	1,620	0.04	2,440	0.06	

Table 2: Alternative D Impacts to Wetlands

Improvement Type	Location	Study Milepost (MP)		Work Description	Permanent State & Federal Wetland Impact		Permanent State (only) Wetland Impact		Permanent Linear Trackside Wetland Impact		Impacted Wetland Type
		From	To		Square Feet (sf)	Acres (ac)	Square Feet (sf)	Acres (ac)	Square Feet (sf)	Acres (ac)	
Rail Reconstruction											
Reconstruct Track	Danbury to New Milford	23.9	39.16	Replace existing tracks with higher quality of rail on new ties. Work accomplished by rail-mounted equipment within existing gravel/ballast ROW.	0	0	0	0	0	0	
Proposed Stations											
Brookfield Station	Brookfield	31.5	31.5	New 300' long high level platform with canopy, shelter, ramps, bike lockers; 100-space parking lot and drop-off area; sidewalk from staton to Rt 202 on north side of Rt 25. Property acquisition required.	0	0	0	0	250	0.006	trackside
Brookfield Passing Siding at Station	Brookfield	31.46	31.96	Parallel siding for overwidth freight to be located east of the commuter rail track at the new station.	0	0	0	0	390	0.01	
New Milford Station	New Milford	38.35	38.35	New 300' long high level platform with canopy, shelter, ramps, bike lockers; 110-space parking lot and drop-off area. Property acquisition required.	0	0	0	0	0	0	
New Milford Passing Siding at Station	New Milford	38.0	38.46	Parallel siding for overwidth freight to be located west of the commuter rail track at the new station.	0	0	0	0	0	0	
Undergrade Bridges											
Undergrade Bridge - Rail Goes Over Roadway											
Junction Rd. (Rt. 133)	Brookfield	29.47	29.47	Replace with 45' single span ballast deck on existing alignment.	Bridges over roadways (or farm pass) - no wetland resources anticipated to be directly impacted in footprint of construction. Indirect impacts to off-site wetlands would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.						
Farm Pass	Brookfield	29.9	29.9	Replace or fill (close bridge).							
Old Middle Rd.	Brookfield	33.07	33.07	Replace with 33' single span ballast deck on existing alignment.							
Housatonic Ave.	New Milford	38.62	38.62	Replace with 39' single span ballast deck on existing alignment.							
Undergrade Bridge - Rai ater											
Still River	Danbury	26.6	26.6	Replace with 207' two-span ballast deck on existing alignment. One new pier of approximately 30' x10' in Still River. Existing two piers to be removed or cut below water line.	Work to erect a new pier and to remove and/or cut off two existing bridge piers below the water line would result in direct impacts to the Stiill River. Construction of a new pier in the Still River would have a direct footprint impact of approximately 300 SF. If the existing bridge abutments require repair, rehabilitation, or replacement, there could be additional direct impacts to wetlands and water rsources at the crossing. Those impact areas cannot be quantified at this conceptual design phase. Potential direct impacts would be minimized to the greatest extent possible through future design efforts and consideration of non-intrusive construction methods, among other means. Indirect impacts to off-site wetlands would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.						
Still River	New Milford	35.1	35.1	Replace with 102' single span ballast deck on existing alignment.	Potential direct impacts to water and wetland resources could occur at this water crossing if the existing bridge foundations or abutments require repair, rehabilitation or replacement. Impact areas cannot be quantified at this conceptual design phase. Direct impacts would be minimized to the greatest extent possible through future design efforts and consideration of non-intrusive construction methods, among other means. Indirect impacts to off-site wetlands would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.						

Improvement Type	Location	Study Milepost (MP)		Work Description	Permanent State & Federal Wetland Impact		Permanent State (only) Wetland Impact		Permanent Linear Trackside Wetland Impact		Impacted Wetland Type
		From	To		Square Feet (sf)	Acres (ac)	Square Feet (sf)	Acres (ac)	Square Feet (sf)	Acres (ac)	
Traction Power System - Electrification											
Catenary and support structures	Danbury to New Milford	23.9	39.0 +/-	New catenary poles located within 12 feet of track centerline.	440	0.01	140	0.003	0	0	PFO
Raise Bridge - White St.	Danbury	24.33	24.33	Replace with 49' single-span multi-girder bridge on existing alignment to allow greater vertical clearance.	Roadway bridges - no wetland resources anticipated to be directly impacted in footprint of construction. Indirect impacts to off-site wetlands would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.						
Raise Bridge - I-84	Danbury	26.2	26.2	Replace existing I-84 Eastbound bridge to provide clearance for catenary; 292' five-span steel multigirder bridge.							
Raise Bridge - I-84	Danbury	26.2	26.2	Replace existing I-84 Westbound bridge to provide clearance for catenary; 292' five-span steel multigirder bridge.							
Substation (SUB-BRK)	Brookfield	29.5	29.5	New facility (metal enclosure on concrete walls or columns) surrounded by crushed stone.	0	0	0	0	0	0	
Raise Bridge - Silvermine Rd.	Brookfield	30.2	30.2	Raise to provide vertical clearance for catenary.	Roadway bridges - no wetland resources anticipated to be directly impacted in footprint of construction. Indirect impacts to off-site wetlands will be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.						
Raise Bridge - Whisconier Rd. (Rt. 25)	Brookfield	31.26	31.26	Raise to provide vertical clearance for catenary.							
Raise Bridge - Old Pumpkin Hill Rd.	New Milford	33.9	33.9	Raise to provide vertical clearance for catenary.							
Raise Bridge - Erickson Rd.	New Milford	34.74	34.74	Raise to provide vertical clearance for catenary.	860	0.02	140	0.003	0	0	PFO
Substation	New Milford	39.0 +/-	39.0 +/-	New facility (metal enclosure on concrete walls or columns) surrounded by crushed stone.	0	0	0	0	0	0	
Track Reconfigurations											
Curve 1A	Brookfield	28.22	28.43	Curve 1A shifts track 16' to West	0	0	0	0	0	0	
Curve 1B	Brookfield	28.72	28.82	Curve shift is only 2' to the West	0	0	0	0	0	0	
Curve 6A	New Milford	33.2	33.35	Curve 6A shifts track 3' to the West	0	0	0	0	0	0	
Curve 8A	New Milford	33.53	35.6	Curve shift is only 1' to the East	0	0	0	0	0	0	
Curve 9A	New Milford	35.96	36.12	Curve shift is less than 1'	0	0	0	0	0	0	
Storage Sidings											
Storage Siding	Danbury/ Brookfield	27.24	27.58	Parallel storage siding east of existing track, within large railroad ROW.	0	0	0	0	0	0	
Rail Storage and Maintenance Yards											
New Milford Yard	New Milford	39.0 +/-	39.0 +/-	8 storage tracks with paved service aisles between every other track; 3,000 SF single-story building; 3,000 SF outdoor storage. Property acquisition required of prior industrial property.	0	0	0	0	0	0	
TOTAL					1,300	0.03	280	0.006	640	0.015	

Table 3: Alternative E Impacts to Wetlands

Improvement Type	Location	Study Milepost (MP)		Work Description	Permanent State & Federal Wetland Impact		Permanent State (only) Wetland Impact		Permanent Linear Trackside Wetland Impact		Impacted Wetland Type
		From	To		Square Feet (sf)	Acres (ac)	Square Feet (sf)	Acres (ac)	Square Feet (sf)	Acres (ac)	
Existing Stations (Upgrades)											
Merritt 7	Norwalk	3.6	3.6	New 200-space parking lot on new property w. of Glover Ave; pedestrian bridge over tracks from new parking to platform; replace low-level platform with high-level platform; new canopy, ramps, bike lockers.	0	0	0	0	0	0	
Undergrade Bridges											
Undergrade Bridge - Rail Goes Over Roadway											
Washington & South Main St.	Norwalk	0.0	0.0	New (additional) single track truss bridge 240' span on added parallel track alignment. Includes concrete retaining walls on spread footings. Form liners used to simulate stone blocks on face of concrete walls.	Bridges over roadways in urban setting - no wetland resources in vicinity. Indirect impacts to off-site wetlands would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures						
Marshall St.	Norwalk	0.1	0.1	Replace historic bridge with 120' span ballast deck structure on existing alignment and raise to provide clearance.							
Ann St.	Norwalk	0.2	0.2	Replace with 57' long span ballast deck structure on existing alignment.							
Undergrade Bridge - Rail Goes Over Water											
Norwalk River	Norwalk	3.2	3.2	New 160' long ballast deck span bridge on totally new alignment of Curves 3A and 3B. Bridge ends skewed and alignment nearly parallel to the river to minimize impacts.	This bridge is constructed in association with Track Configuration Curves 2B, 3A, 3B, & 3C - Impacts are reported under that curve. Additional direct impacts to water and wetland resources could occur at this water crossing if the existing bridge foundations or abutments require repair, rehabilitation, or replacement. Impact areas cannot be quantified at this conceptual design phase. Direct impacts would be minimized to the greatest extent possible through future design efforts and consideration of non-intrusive construction methods. Indirect impacts to off-site wetlands would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.						
Small stream	Norwalk	5.12	5.12	Replace 15' span ballast deck on existing alignment.	Potential direct impacts to water and wetland resources could occur at this water crossing if the existing bridge foundations or abutments require repair, rehabilitation, or replacement. Impact areas cannot be quantified at this conceptual design phase. Direct impacts would be minimized to the greatest extent possible through future design efforts and consideration of non-intrusive construction methods, among other means. Indirect impacts to off-site wetlands would be minimized to the greatest extent possible through proper implementation of construction BMPs and stormwater management measures.						
Small stream	Norwalk	6.43	6.43	Replace 40' long span ballast deck on existing alignment.							
Norwalk River	Wilton	6.64	6.64	Replace with ballast deck type, 65' span structure on revised alignment of Curve 6B. North side of span on existing alignment; south side offset 3' easterly from existing alignment.	Impacts included with Track Configuration Curve 6B						

Improvement Type	Location	Study Milepost (MP)		Work Description	Permanent State & Federal Wetland Impact		Permanent State (only) Wetland Impact		Permanent Linear Trackside Wetland Impact		Impacted Wetland Type
		From	To		Square Feet (sf)	Acres (ac)	Square Feet (sf)	Acres (ac)	Square Feet (sf)	Acres (ac)	
Traction Power System - Electrification											
Catenary and support structures	Norwalk to Wilton	1.1	7.5	New catenary poles located within 12 feet of track centerline; existing poles removed along corridor. Wetland impacts derived from CTC Study.	0	0	0	0	0	0	
RTU (CP401)	Norwalk	0.63	0.63	New facility (metal enclosure on concrete walls or columns) surrounded by crushed stone.	0	0	0	0	0	0	
Substation (SUB-170D)	Wilton	7.25	7.25	New facility (metal enclosure on concrete walls or columns) surrounded by crushed stone.	0	0	0	0	0	0	
Track Reconfigurations											
CP 241	Norwalk	0	0.3	New parallel 2nd track and extension of existing Norwalk passing siding in urban developed setting. Requires property acquisitions on North Main Street.	0	0	0	0	0	0	
Curves 0E, 1A & 1B	Norwalk	1	1.7	Major realignment of track to west away from Norwalk River. Property acquisitions.	0	0	0	0	0	0	
Curves 2B, 3A, 3B & 3C	Norwalk	2.7	4	Curve 2B is offset only 2'. 3A & 3B have large off-sets (new alignments assoc with Bridge 3.2).	0	0	0	0	140	0.003	trackside
Curve 3D	Norwalk	3.82	3.96	Curve 3D is offset by 4' from existing centerline.	0	0	0	0	0	0	
Curve 4C	Wilton	4.8	4.97	Curve 4C is offset by 6' from existing centerline.	0	0	0	0	0	0	
Curve 5	Wilton	5.75	5.83	Curve shift is only 1' - no work outside disturbed ROW	0	0	0	0	0	0	
Curve 6A	Wilton	6.07	6.24	Curve shift is only 2' - no work outside disturbed ROW	0	0	0	0	0	0	
Curve 6B (incl. Bridge MP 6.64)	Wilton	6.53	6.68	Curve shift for Curve 6B is 3' - includes replacement Bridge 6.64 on this curve.	0	0	880	0.02	0	0	PFO
TOTAL					0	0	880	0.02	140	0.003	

APPENDIX A

FIGURES: WETLAND IMPACTS AT FACILITY SITES

Danbury Commuter Rail Electrification Study

Wetland Impacts

Legend

- Water Channel
- Ditch Wetlands
- State Wetlands
- State and Federal Wetlands
- Open Water
- Existing Track Centerline
- Existing Disturbed Rail Bed
- Permanent Impact - Structure or Parking
- Permanent Impact - Grading & Fill
- Potential Temporary Impact Areas

0 125

Feet

1 inch = 125 feet

Figure 1
Cannondale Station

Original in Color - FHI - 10/21/2011

Danbury Commuter Rail Electrification Study

Wetland Impacts

Legend

- Water Channel
- Ditch Wetlands
- State Wetlands
- State and Federal Wetlands
- Open Water
- Existing Track Centerline
- Existing Disturbed Rail Bed
- Permanent Impact - Structure or Parking
- Permanent Impact - Grading & Fill
- Potential Temporary Impact Areas

0 125

Feet

1 inch = 125 feet

Figure 2
Redding Station
&
Redding Substation MP 17.2

Original in Color - FHI - 10/21/2011

Danbury Commuter Rail Electrification Study

Wetland Impacts

Legend

- Water Channel
- Ditch Wetlands
- State Wetlands
- State and Federal Wetlands
- Open Water
- Existing Track Centerline
- Existing Disturbed Rail Bed
- Permanent Impact - Structure or Parking
- Permanent Impact - Grading & Fill
- Potential Temporary Impact Areas

0 125

Feet

1 inch = 125 feet

Figure 3
Bethel Station

Original in Color - FHI - 10/21/2011

Danbury Commuter Rail Electrification Study

Wetland Impacts

Legend

- Water Channel
- Ditch Wetlands
- State Wetlands
- State and Federal Wetlands
- Open Water
- Existing Track Centerline
- Existing Disturbed Rail Bed
- Proposed Track Centerline
- Bridge Span (above ground or water)
- Permanent Impact - Structure or Parking
- Permanent Impact - Grading & Fill
- Potential Temporary Impact Areas

0 50

Feet

1 inch = 50 feet

Figure 4
Wilton Bridge
MP 6.64
on Curve 6B

Original in Color - FHI - 10/21/2011

Danbury Commuter Rail Electrification Study

Wetland Impacts

Legend

- Water Channel
- Ditch Wetlands
- State Wetlands
- State and Federal Wetlands
- Open Water
- Existing Track Centerline
- Existing Disturbed Rail Bed
- Proposed Track Centerline
- Permanent Impact - Structure or Parking
- Permanent Impact - Grading & Fill
- Potential Temporary Impact Areas

0 125

Feet

1 inch = 125 feet

Figure 5
Brookfield Station
&
Passing Siding

Original in Color - FHI - 10/21/2011

Danbury Commuter Rail Electrification Study

Wetland Impacts

Legend

- Water Channel
- Ditch Wetlands
- State Wetlands
- State and Federal Wetlands
- Open Water
- Existing Track Centerline
- Existing Disturbed Rail Bed
- Bridge Span (above ground or water)
- Permanent Impact - Structure or Parking
- Permanent Impact - Grading & Fill
- Potential Temporary Impact Areas

0 50

Feet

1 inch = 50 feet

Figure 6
Erickson Road Bridge
MP 34.74
New Milford

Original in Color - FHI - 10/21/2011