

SECTION 7: WETLANDS

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INTRODUCTION

This section discusses wetlands in the study corridor. For State of Connecticut projects, wetlands are regulated at the state and national levels on account of their importance in protecting water quality, water quantity, habitat, and other environmental values.

In Connecticut, wetlands are defined differently than federal wetlands. Both federal and state wetlands were identified for the Danbury Branch study corridor. **Federal wetlands**, as defined by the U.S. Army Corps of Engineers (USACE), includes those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. **State wetlands**, as defined by the Connecticut General Assembly, include lands with any of the soil types designated as poorly drained, very poorly drained, alluvial, and floodplain by the National Cooperative Soils Survey. In Connecticut, federal wetlands also qualify as state wetlands, so the category called **state and federal wetlands** throughout this DEIS indicates wetlands that meet both definitions.

Regulatory Context

Federal and state laws that will govern the project's effects on wetlands are described below.

At the federal level, the following legislation is relevant:

- Section 404 of the Clean Water Act (CWA), administered by the USACE, establishes a program for regulating the discharge of dredge or fill materials into waters of the United States, including wetlands. The basic premise of Section 404 is that no discharge of dredged or fill material may be permitted (1) if a practicable alternative exists that is less damaging to aquatic resources or (2) if the nation's waters would be significantly degraded. To obtain a Section 404 permit, an applicant must demonstrate that the project:
 - o Has taken steps to avoid wetland impacts
 - o Minimizes potential impacts on wetlands
 - o Provides compensation for any remaining unavoidable impacts.
- Executive Order 11990, *Protection of Wetlands*, requires federal agencies to consider alternatives to using project sites with wetlands and to limit potential damage if an activity affecting a wetland cannot be avoided. The purpose of the order is to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands". The order applies to federal actions and facilities, as well as federally funded actions. Per this order, a specific statement of wetland impact, also referred to as a "finding", is required in the final National Environmental Policy Act (NEPA) document for a federally funded project.

At the state level, the primary legislation relevant to wetland resources in the study corridor are the following:

- The Connecticut Inland Wetland and Watercourses Act (CGS Section 22a-36 through 22a-45a, inclusive) is administered by the Inland Water Resources Division of the DEP Bureau of Water Protection and Land Reuse. The act establishes a program for regulating activities undertaken by state agencies that are located in or affect inland wetlands and watercourses. Regulated activities requiring a permit include, but are not limited to, filling, dredging, clearing, grubbing, grading, piping, channelizing, diverting, damming, dewatering or otherwise temporarily or permanently altering inland wetlands and watercourses. During review of permit applications, DEP considers a variety of effects on the environment, such as on wildlife and fisheries habitats, flooding, and flood hazards, and considers whether there are alternatives to the proposed action that will cause less environmental impact. Public reporting/notification and a possible hearing are important components of the act.
- The Connecticut Coastal Management Act (CCMA) (CGS Sections 22a-90 through 22a-112, inclusive) outlines state policies concerning development, facilities, and uses within the coastal boundary. Projects in the coastal zone must be demonstrated consistent with these policies before DEP will grant permits for those projects. This consistency approval is called a Coastal Zone Management Consistency Determination. Coastal policies include avoiding impacts to wetlands and other coastal resources.

The only portion of the study corridor in the coastal zone is in Norwalk, from the southern project limit to Cross Street (near rail milepost 1.6). Project activities in this segment will need to be shown consistent with the CCMA. If project improvements will involve dredging, erection of structures, or fill in the Norwalk Harbor (a tidal, coastal, navigable water), further approvals or permits from DEP will be required. These would relate to the Connecticut Tidal Wetlands Act (CGS Sections 22a-20 through 22a-35a, inclusive) and the Structures, Dredging and Fill Act (CGS Sections 22a-359 through 22a-363f, inclusive), each of which has an associated permit. Minor activities may require only a Certificate of Permission (COP), which is a simplified application form with a shortened review and response time from DEP. Eligible activities for a COP include substantial maintenance and minor alterations to existing authorized or pre-jurisdiction structures, fill, obstructions and encroachments.

Connecticut has several other statutes that protect inland and tidal wetlands either directly or indirectly, and regulations that establish guidance and standards for construction practices to minimize adverse effects. These include the Soil Erosion and Sediment Control Act (CGS Sections 22a-325 through 22a-329, inclusive), the Water Diversion Policy Act (CGS Sections 22a-269 through 22a-374, inclusive), and the Stormwater Management and Wastewater Management General Permit Programs. Other associated legislation, aimed specifically at water quality protection, is described in the Water Resources section.

Methods, Coordination, and Data Sources

Wetlands within the study corridor were identified using the most recent Natural Resource Conservation Service (NRCS 1995) mapping, obtained from the Connecticut DEP in digital Geographic Information System (GIS) format (2008). The NRCS data were the primary source of information to identify the locations of state and federal wetlands within the study corridor. National Wetland Inventory (NWI) GIS data were obtained from the USFWS (1977) and consulted as a supplemental source to identify federal wetlands in the corridor. NWI data were also consulted for descriptions of wetland vegetative types and hydraulic regimes.

The mapped wetland data were superimposed on the study corridor aerial photo base mapping. Aerial photograph review and limited field reconnaissance in September and October 2008 were conducted to check the general accuracy of the GIS data. Wetland mapping in the corridor was edited in a variety of locations (in the GIS data) to better reflect conditions on the ground. Wetland configurations were reduced, enlarged, or eliminated, depending on the situation. For instance, where development has occurred within the corridor, wetlands shown within the development footprints were eliminated from the data layer. In some cases, wetlands mapped as state wetlands (only) were converted to the state and federal wetland category based on observations of wetland vegetation and hydrology in the field. Wetlands were not field-delineated or surveyed. Future detailed field investigations, including formal wetland delineations, will be required to determine the presence and extent of state and federal jurisdictional wetland boundaries.

Additional features along the railroad tracks were noted in the field, which were not shown on the NRCS or NWI maps. These were narrow linear wet bands along the foot of the rail embankment. They were not field-delineated and may or may not be jurisdictional wetlands. For the purposes of the DEIS, they have been categorized as linear wetlands adjacent to the track. These features are generally one to two feet wide and vary in length. Their locations and end points were recorded using a hand-held GPS unit so that they could be mapped with relatively good accuracy. They tend to be physically restricted or disconnected from large naturally occurring wetland systems. They have been included on the DEIS wetlands mapping so that potential wetland impacts from the project are not underestimated.

EXISTING CONDITIONS

This section provides a broad description of the numerous wetland resources that reside within the study corridor. The wetland definitions and descriptions convey the variety of wetlands in the corridor and their associated functions and values. In addition, wetlands on and abutting specific potential project improvements are described in detail.

Overview and Definitions

The Danbury Branch rail corridor parallels and crosses a series of rivers and streams as it works its way from Norwalk north into Danbury. Being located in these lowland areas in close proximity to streams, it is no surprise that wetlands are common along the corridor.

The level floodplain areas along the Norwalk River represent the greatest proportion of wetlands from Norwalk into Redding. Moving north, wetlands associated with several headwater streams and the Saugatuck River comprise most of the wetlands in Redding. In Bethel, topographic basins and floodplains along the Sympaug Brook are where most of the wetlands occur, which also applies to the south end of the Danbury corridor. From downtown Danbury northward, the project corridor runs along the valley of the Still River or the Housatonic River. Within these broad river valleys, glacial meltwater sediments and alluvial materials were deposited over geologic time. These materials formed broad areas of floodplain soils (alluvial and fluvial) which qualify as state wetlands. Where water regimes have fostered the growth of water-tolerant wetland vegetation, in these and other soil types, state and federal wetlands occur.

Vernal pools are a special type of wetland that is ephemeral, such that they exist at only certain times of the year. They are small bodies of standing fresh water that form in the spring (generally), when snowmelt, rain and high groundwater produce wet surface conditions. They may occur in the middle of upland woods, within existing swamps, or within forested fringes adjacent to streams or rivers. Vernal pools have not been mapped by state or federal sources, and thus their occurrence in the study corridor is unknown at this time. Impacted project areas will be generally assessed for the possibility of vernal pools based on landscape conditions. In the event that vernal pool surveys are required in future for the project, they would be conducted in the appropriate season to observe vernal pool-dependent species (generally in spring.)

The NWI program outlined a series of wetland parameters to help describe wetlands by their environmental setting and vegetation type. The definitions of the NWI parameters used to describe wetlands in the Danbury Branch study corridor are defined in Appendix A. The hydrologic (water) conditions relevant to the study corridor include estuarine, palustrine, and riverine. The wetland types in the study corridor, based on the NWI vegetation parameters, include forested, scrub-shrub, emergent, and open water.

Floodplain wetlands as used in this chapter are vegetated lands occurring in floodplain areas where alluvial and fluvial materials have collected. When these areas have upland vegetation rather than wetland indicator plants, they are state-only wetlands.

Linear wetlands adjacent to the track are narrow linear wetlands parallel to the railroad tracks within the rail right-of-way. They are typically sparsely vegetated or may lack vegetation entirely.

Wetland Vegetation and Functions

Forested Wetlands

The forested wetlands in the study corridor include state and federal wetlands and floodplain forests, which are often associated with state-only wetlands. State and federal forested wetlands, symbolized by the NWI as PFO (palustrine), tend to have multiple tiers (layers) of vegetation, from the low herbaceous ground covers (forbs, grasses, sedges, and rushes) to taller shrubs, yet taller saplings, and above all, an over-story tree canopy. Given the different layers supported, the diversity of vegetation is high. The diversity and the species composition vary from location

to location, depending on the topography, water, sunlight, soil characteristics, history of disturbance, and other factors. Sometimes a palustrine forested wetland has portions of scrubshrub and/or emergent wetlands within it, creating a complex of different wetland types.

The overall similarity of major environmental factors throughout Connecticut has resulted in the red maple wetland forest (or red maple swamp) being the prevalent type of palustrine forest in the state. The potential plant species accompanying the dominant red maple trees (*Acer rubrus*) are also similar across the state, although the specific combination of plants may vary considerably between wetlands. Representative plant species common to the wetlands in the study corridor (and Connecticut), including trees in red maple swamps, are listed in Table 1 in Appendix A.

Floodplain forests are areas that may appear "upland" and even well drained much of the year, but are flooded and thus waterlogged for certain periods each year. Flooding usually occurs in the spring, but may occur at other times of year, depending on climatic conditions. In winter, ice along rivers may build up and gouge the trunks of trees, as well as any ground-level vegetation. The vegetative structure of the floodplain forest is very different from the palustrine forest because the floodplain forest has essentially no woody shrubs. It also typically has festoons of vines over the trees. The tree species best adapted to these conditions prevail in floodplain areas, such as eastern cottonwood and silver maple. These species and the common herbaceous (herbs) and vine species of floodplain forests are listed in Table 2 in Appendix A. Not all forests in floodplain zones exhibit this characteristic vegetative structure. Where rivers flow in deep channels, where hydrology has been modified through filling and/or channelization, and in other situations, forests in floodplain zones may be similar to adjacent upland forests. In Connecticut and the study corridor, the upland forest vegetation, which covers many undeveloped acres and remains between low-density developments, is most commonly a mix of hardwoods dominated by oak and hickory species.

Forested wetlands, whether palustrine or floodplain, have high infiltration rates compared to other types of wetlands and are therefore very valuable for slowing down the movement of water. When located along streams and rivers, as some palustrine and all floodplain forests are, they are particularly valuable for reducing the risk of flooding to adjacent lands and to downstream areas. By slowing down water, they also reduce soil erosion. Other important functions associated with forested wetlands are the following:

- The root, stem, and soil interface is very effective at filtering nutrients and sediments out of water, thereby serving a water purification function
- The thick canopy of leaves and branches provide shades to streams and rivers, helping to keep the water at healthier cooler temperatures for fish and other aquatic life
- The leaves and branches, and the insect life on them, fall into the water, "feeding" the fish and wildlife along the watercourses
- The multiple layers of vegetation, from the low herbaceous ground covers, taller shrubs, yet taller saplings, and the over-story tree canopy, offer diverse habitat niches and special habitat needs for wildlife.

Scrub-Shrub Wetlands

Scrub-shrub wetlands consist of shrubs and saplings, with no over-story of trees. Symbolized by the NWI as PSS, scrub-shrub wetlands often have fluctuating moisture conditions throughout the year, often subject to some periods of standing water. Sometimes a scrub-shrub wetland occurs in association with a forested wetland and/or emergent wetland, in which case the wetland area is a complex of different wetland types. The plant species common to scrub-shrub wetlands in the study corridor are listed in Table 1 in Appendix A.

Shrub wetlands are particularly valuable habitats for songbirds, since they offer dense foliage for shelter and produce rich food sources such as seeds, berries, and insects. Other important special values of these wetlands include:

- The dense and numerous woody plant stems are good at filtering sediments and nutrients out of flowing water
- The stem-root-soil network is very effective at stabilizing banks
- When flooded in spring, these wetlands may be used as breeding ponds by amphibians and reptiles

Emergent Wetlands

These low-growing wetlands, commonly called marshes, are dominated by herbaceous (non-woody) vegetation. Symbolized by the NWI as PEM, emergent wetlands generally have surface water or saturated soils year-round. An emergent wetland may occur within a wetland complex also containing scrub-shrub and/or forested wetlands. The plant species common to emergent wetlands in the study corridor are listed in Table 1 in Appendix A.

The special functions of emergent wetlands are the following:

- Emergent wetlands tend to collect and retain water, making them good at absorbing nutrients and sediments from runoff, thereby improving water quality
- These wetlands are particularly beneficial feeding habitats for wading birds and, when interspersed with open water, for waterfowl

Open Water Wetlands

Open water (OW) wetlands have broad expanses of water and often support aquatic plants. Common native aquatic plant species in Connecticut are listed in Table 1 in Appendix A. There is a growing list of invasive aquatic plant species which threaten the health of Connecticut's aquatic environments. The open waters in the study corridor appear to be relatively intact, but comprehensive surveys were not undertaken.

The special functions of open water wetlands are the following:

• Submerged aquatic plants release oxygen as they grow, improving its quality as habitat for fish and wildlife, and enabling better chemical and biological breakdown of organic matter and nutrients

- Submerged plant parts provide habitats for many micro and macro-invertebrates
- The collecting (bowl-like) shape of open water areas allows sediments to fall out of suspension, thereby improving water quality within the stream/wetland system
- These wetlands allow for the infiltration of water into the ground (groundwater recharge) and a place for excess groundwater to flow into (groundwater discharge)
- Open water is especially beneficial feeding habitat for a variety of wildlife, including waterfowl, herons and egrets

Linear Wetlands Adjacent to the Track¹

There were approximately 150 linear features observed along the 38-mile rail study corridor categorized as linear wetlands adjacent to the track. All of these are similar to each other in appearance. They have very little or no vegetation. When present, vegetation consists of broad-leaf herbaceous species and/or grasses. These ditch-like areas convey runoff along the tracks and some may hold water for a period of time after a rainfall, indicating that their primary function is sediment/toxicant retention.

Wetlands in the Study Corridor

The general patterns and occurrence of wetlands in the study corridor are described below, by municipality from south to north, and shown on Figure Nos. X1-X14.

Norwalk: From Milepost (MP) 0.0 to MP 1.6, the Danbury Branch line lies west of, and parallel to, the Norwalk Harbor. This is the only corridor section within Connecticut's designated coastal boundary. The western harbor shorefront is heavily developed. No tidal wetlands are indicated by the mapped data. The Norwalk Harbor is designated by NWI as a regularly flooded, estuarine, intertidal system with an unconsolidated shoreline.

The rail corridor crosses the Norwalk River, an extensive riverine system, for the first time just north of MP 1.6 and the Burnell Street Bridge. Along the northern bank of the river in this location is a narrow band of palustrine wetland that extends approximately one-tenth of a mile. This is the only state and federal wetland identified by NRCS soils mapping within the study corridor in Norwalk.

From MP 1.6 north to MP 2.9, the Norwalk River lies west of the study corridor. Between MP 2.9 and 3.1, the river parallels the tracks on their west side within the study corridor. North of the rail bridge over the river at MP 3.1, the river lies parallel to the tracks on their east side. In this vicinity, state and federal wetlands occur on both sides of the Route 15 eastbound off-ramp to Route 7 northbound. A small state and federal wetland with a pond lies between two of the buildings in the Merritt 7 office complex near MP 3.6. North to the Norwalk-Wilton town line, the Norwalk River lies east of the rail line, within the study corridor. Along this stretch, the river banks are heavily developed and devoid of wetlands.

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¹ On the wetlands mapping, linear wetlands adjacent to the track are referred to as "ditch wetlands."

Linear wetlands adjacent to the track occur relatively regularly between MP 0.7 and MP 1.6 and again between MP 2.4 and the Norwalk-Wilton line.

Wilton: Wetlands in the Wilton study corridor are primarily state and federal wetlands along the floodplain of the Norwalk River, varying in width and location as the river weaves in and out of the corridor. Unless noted, these are forested wetlands. Prevalent tree species on steep slopes are red maple trees. More level, less rocky areas include cottonwoods, and some areas have abundant hanging vines, such as grape and bittersweet.

State and federal wetlands fringe the river on the east side of the tracks from MP 5.0 to approximately MP 5.2, again near MP 5.8, and just north of MP 6.0. Just north of the Wolf Pit Road bridge over the tracks (MP 6.3), the rail line crosses a state-only wetland with very homogeneous forest cover.

Near MP 6.6, the Norwalk River curves to the west and is crossed by the rail line. At this location there is a relatively broad state-only wetland. There are trees directly along the river and a lightly wooded meadow on the north side of the river, west of the tracks. The wetland narrows down farther north, as the river is squeezed between the tracks and Wilton Center (to the west) near MP 7.0, just south of the Wilton Station. Forested state wetlands along the river broaden out from MP 7.3 to MP 7.5, still west of the rail line, then becoming narrower and encroaching on the tracks near MP 7.6, and broadening out again from MP 8.0 to MP 8.2. Within this stretch, two small patches of state and federal wetlands are mapped at the eastern edge of the study corridor near MP 7.1 in association with a pond, and a state and federal wetland area occurs east of the tracks near MP 7.6. From MP 8.2 to 8.4, a state and federal wetland along the Norwalk River lies west of the tracks. Near MP 8.6, a small oblong state and federal forested wetland lies near the western edge of the study corridor, west of the tracks and west of the Norwalk River.

A very consistent linear band of state and federal wetlands lies along both sides of the Norwalk River from just south of the Cannondale Station, near MP 8.7, to MP 11.2. From MP 11.2 to the Wilton-Redding line, no wetlands are mapped along the river. Near Cannondale Station, the river crosses from the west side of the tracks to the east side, then back to the west again near MP 9.4. From that point northward in Wilton, the river remains west of and adjacent to the tracks, staying within the study corridor. A small state and federal wetland is mapped adjacent to state wetlands near MP 9.3, along the eastern edge of the corridor. The federal and state wetlands support consistent dense forest.

In the northernmost portion of Wilton, north of the Georgetown settlement, there is a narrow and sinuous state and federal wetland along the Norwalk River west of the rail line, from approximately MP 12.3 to 12.4. This forested wetland is separated from the tracks by U.S. Route 7.

Linear wetlands adjacent to the track occur periodically throughout the length of the study corridor in Wilton, on both sides of the line.

Redding: The rail corridor first enters the Town of Redding near MP 11.6 in the vicinity of Georgetown and then temporarily exits Redding and re-enters the Town of Wilton near MP 12.2. Along the heavily developed 0.6 mile stretch in this portion of the Redding study corridor, there

is one state and federal wetland. It is a very narrow band along a formerly channelized portion of the Norwalk River, located east of the rail line and generally parallel to Old Mill Road and Redding Road. This wetland is characterized as palustrine forested wetland and consists of a light line of trees along the channel.

The rail corridor re-enters the Town of Redding from the Town of Ridgefield near MP 13.3. It is near this location that the Norwalk River and Danbury Branch Line diverge from each other, with the rail line heading off in a more northerly direction. Between MP 13.5 and 13.6, the rail line passes immediately west of a state and federal palustrine forested wetland associated with a tributary to the Norwalk River. In this same range of mileposts and extending to MP 13.8, but at the western edge of the corridor, a state and federal palustrine forested wetland occurs in association with the Norwalk River.

Between MP 14.1 and 14.4 the rail corridor passes to the west of two state and federal palustrine forested wetlands; one is located along Mountain Road and the other is further to the north between the railroad tracks and Old Redding Road. There is also a small pond with an adjacent snippet of state and federal wetland located on the west side of the railroad tracks, northwest of the Mountain Road-Old Redding Road intersection.

Near MP 15.2, the rail corridor passes just west of one of the largest wetland systems located directly within the study corridor. This is a state and federal palustrine wetland complex associated with Umpawaug Pond and Umpawaug Pond Brook, which are both Class AA surface water resources. Along the south and north ends of pond are broad scrub-shrub and emergent wetlands flanked by forested wetlands and uplands. North of the pond, the wetland narrows and continues for almost a mile along the brook, remaining within the study corridor as the brook meanders west of the tracks near MP 15.8, back to the east near MP 15.9, and west again near MP 16.4. The forested wetland system along the brook extends to approximately MP 16.7. There is low density residential development in the vicinity.

Between MP 16.7 and 16.9 the rail crosses an elongated state and federal forested wetland that transects the corridor and continues north on both sides of the tracks.

Just north of MP 17.0 the Saugatuck River and the West Redding Brook converge east of the rail corridor. The Saugatuck River flows under the rail line near MP 17.1 and the West Redding Brook flows under the rail line near MP 17.2. The existing Redding Station is located west of the rail line between these two watercourses. Each watercourse is flanked by state and federal forested wetlands; the Saugatuck River also has areas of scrub-shrub vegetation. State and federal palustrine forested wetlands occur on both sides of the tracks near MP 17.3.

The Bogus Mountain Brook bisects the rail study corridor at MP 17.6. A state and federal wetland is associated with this brook, which transects the corridor from north to south. On the north (west) side of the tracks, the wetland has a large basin shape abutting the west side of the tracks. This scrub-shrub and emergent basin, surrounded by wetland forest, collects open water at certain periods during the year. North of the brook and its immediately adjacent wetland, a finger of forested state and federal wetland extends to the north along the west side of the

corridor to approximately MP 18.0, with a branch extending to the other side of the tracks (to the east) near MP 17.8.

Just south of the Redding-Bethel town line near MP 18.0 is a state and federal forested wetland located east of the tracks, curving to connect to a pond and watercourse outside (southeast) of the study corridor.

Linear wetlands adjacent to the track occur periodically throughout the length of the study corridor in Redding, on both sides of the line.

Ridgefield: The rail corridor crosses the Wilton-Ridgefield town line near MP 12.5 and lies within the Town of Ridgefield for approximately eight-tenths of a mile before crossing into the Town of Redding near MP 13.3. The Norwalk River is located to the west of the rail line, positioned between the tracks and Route 7 near Branchville, and then west of Route 7 a bit farther north. The one mapped wetland in Ridgefield is a state and federal palustrine forested wetland on the west side of the river near MP 13.0, on the other side of Route 7 from the tracks.

There are several linear wetlands adjacent to the track along the western side of the rail bed within the Ridgefield portion of the study corridor.

Bethel: At the very south end of Bethel, there is a small oval state and federal wetland at the eastern limits of the study corridor near MP 18.2. Near MP 18.5 is a linear forested state and federal wetland located west of and perpendicular to the rail line. This wetland may be connected hydraulically under the railroad tracks to Sympaug Pond, a large pond abutting the east side of the tracks and spanning the width of the eastern side of the study corridor from MP 18.6 north to MP 19.2. The pond is fringed by trees in places, while being relatively open and with some cleared/disturbed lands on the south and north ends. Sympaug Brook flows in a northerly direction from the pond, meandering just outside the corridor boundary for a short while. Where the brook touches into the corridor at MP 19.4, there is a finger of state and federal forested wetland within the corridor. As the brook transects the corridor, crossing from east to west near MP 19.7 just north of Grassy Plain Street, there is an associated narrow state and federal wetland along the brook.

North of MP 19.7 to approximately MP 20.1 is a large state and federal forested wetland surrounding Sympaug Brook. The wetland takes up the entire western side of the study corridor, consisting of forested, scrub-shrub and emergent components. This wetland is surrounded by industrial, commercial, and residential development on three sides. Across from it, east of the tracks, is a smaller state and federal wetland complex of several ponds with variable state and federal wetland fringes. The rail corridor crosses a portion of downtown Bethel between MP 20.1 and 21.0 where no large wetlands are located. However, there are quite a few linear wetlands adjacent to the track located east and west of the railroad tracks.

Just north of the Bethel train station, from MP 21.0 and north into Danbury, there is a large state and federal wetland spanning both sides of the tracks and dominating the study corridor. This wetland occupies the vicinity where Sympaug Brook from the west and Chestnut Brook from the east enter into the study corridor, converging on the tracks. This is a predominantly forested

wetland with smaller areas of interspersed emergent and scrub-shrub vegetation. Near MP 21.3, the wetland continues northerly only on the east side of the corridor, while a finger of state and federal wetland associated with Bethel Reservoir Brook comes into the corridor from the west, approaching the tracks amidst industrial lands.

Much of Bethel has linear wetlands adjacent to the track on one or both sides of the tracks. Where there are no linear wetlands adjacent to the track, there are often ponds or large wetlands along the tracks.

Danbury: From the Bethel-Danbury town line (near MP 21.4) to MP 21.6, the continuation of a large forested state and federal wetland dominates the east side of the study corridor, with Sympaug Brook running through it. After an interruption of an industrial parcel, state and federal wetlands occur again on the east side of the corridor, from approximately MP 21.9 to MP 22.0. A small area within this wetland is mapped as a state (only) wetland. Wetland vegetation is a mix of forest, emergent and scrub-shrub.

Just north of MP 22.0 the Sympaug Brook drains into the Still River. The Still River is crossed by the rail line at three locations near downtown Danbury: near MP 22.4, MP 22.9 and MP 23.4. There are no wetlands located at any of these river crossings, as this part of Danbury is heavily developed. The river is channelized in the section near Danbury Station.

At MP 25.3 and 25.8 there are forested state and federal wetlands located east of the tracks associated with the Still River, which meanders just at the edge of the corridor in this location. Further to the north, the railroad tracks cross the Still River for a fourth time near MP 26.6. The river at this crossing is bordered by a state and federal floodplain forest. A small state and federal wetland is mapped on the north bank of the river, on the east side of the corridor. Near MP 26.9, two very small state and federal wetlands lie east of the tracks.

The farthest north wetland in Danbury is a very small state and federal emergent wetland dominated by common reed (*Phragmites australis*), west of the curve of White Turkey Road as it passes into Brookfield.

There are several relatively short linear wetlands adjacent to the track from the Bethel-Danbury line to MP 22.6 and more linear wetlands adjacent to the track of greater lengths in the section from MP 26.5 to the Danbury-Brookfield town line.

Brookfield: In southern Brookfield, the Still River parallels the western side of the study corridor but does not enter it. However, several wetlands associated with former river oxbows are located within this portion of the corridor, as well as some wetlands associated with other water features.

Wetlands associated with former river oxbow features include an elongated state and federal wetland on the west side of the tracks, between MP 27.4 and MP 27.8 and again from MP 28.3 to 28.5. These wetlands are primarily scrub-shrub systems. East of the rail line at MP 28.0 is a small area of state and federal forested wetland associated with a stream that flows toward and

under the tracks, and ultimately into the Still River. East of the tracks near MP 28.4 is a small state and federal forested wetland straddling the study corridor boundary.

Just north of Junction Road near MP 29.5, in the west side of the corridor, is a small pocket of state and federal wetland that is a mix of forested and scrub-shrub types. Between MP 29.6 and 30.1 there is a forested state and federal wetland that spans both sides of the rail line. On the west side of the tracks, the wetland has been impacted by the installation of a gas pipeline, but small pockets appear to remain.

North of Silvermine Road near MP 30.2 is a handful of small state and federal forested wetland pockets along the east side of Oak Grove Road, which parallels the east side of the tracks. Also within the corridor are a small state and federal pocket along the west side of the tracks near MP 30.4 and a small oval on the east side of the tracks near MP 30.5.

From MP 30.8 to MP 31.2 there is a state and federal forested wetland abutting the east side of the tracks and spanning most of the width of the east flank of the corridor. The surrounding development is residential.

Where the Still River enters the Brookfield study corridor near Whisconier Road, it meanders in a tight deep channel. Just north of Whisconier Road, between MP 31.4 to approximately MP 31.7, several state and federal wetland pockets are mapped adjacent to the tracks, one small pocket to the west and two larger pockets on the east. Further to the north is a much larger area of lightly forested and scrub-shrub state and federal wetland that extends from MP 31.8 northward to MP 32.2, on both sides of the tracks, at which point a state forested wetland extends from MP 32.2 to MP 32.3 on the west side of the tracks only. The Still River runs through these wetlands within the study corridor and the wetlands span the entire width of the western side of the study corridor.

From MP 32.5 to the Brookfield-New Milford town line (and beyond), there is a mosaic of state and federal and state-only wetlands dominating the west side of the corridor, associated with the Still River floodplain. This extensive wetland system, which extends far outside the study corridor, includes a mix of forested, scrub-shrub and emergent vegetation. On the east side of the corridor, the farthest north mapped wetland occurs near MP 33.0. This is a small state and federal forested wetland pocket located to the east of some residential areas, toward the outer edge of the corridor.

Brookfield has a combination of very short linear wetlands adjacent to the track and very long ones, as well as some long stretches with no ditches. One particularly long linear wetland adjacent to the track is about ¾ mile long, extending along the west side of the tracks from approximately MP 28.4 to 29.1. In other areas, the linear wetlands adjacent to the track occur equally on both sides of the tracks.

New Milford: The rich mosaic of state and federal and state-only wetlands along the Still River, noted in northern Brookfield, continues into the southern part of New Milford. These wetlands dominate the western flank of the study corridor between the Brookfield-New Milford town line (near MP 33.0) and MP 35.3. This wetland complex contains forested, scrub-shrub and emergent

wetland types, with occasional dead-end oxbow features with open water. In addition forested floodplains on state wetland soils, there are areas of open meadow which are rare in the corridor.

A patchwork of state and federal wetland pockets and fingers occurs on the east side of the corridor, interwoven with open farm fields, pastures, hedgerows, and low density residential properties. These wetlands are primarily forested with some scrub-shrub pockets. The wetland-upland mosaic on the east side of the tracks stops short of (south of) MP 34.8, approximately demarked by the Erickson Road crossing of the tracks. North of this, wetland density on the east side of the tracks drops substantially. A narrow strip of state and federal wetlands lies along the east side of the tracks from approximately MP 35.0 to 35.1, before a long distance to the north with no wetlands.

Development encroaches on the Still River where the river enters the western side of the study corridor near MP 35.4. The river runs through a forested corridor along the west side of the tracks, swings away briefly and then pools up along the west side of the tracks before passing under a rail bridge just south of MP 36.0. There are two state-only wetland areas mapped along the Still River on the west side of the bridge. After the crossing, the Still River drains into the Housatonic River, which flows northerly along the east side of the railroad tracks within the study corridor. Between approximately MP 36.1 and 36.3, there is a state wetland mapped along the near (west) side of the river, between the tracks and the river. A very small state and federal wetland abuts the tracks on the same side at MP 36.4. On the far eastern edge of the corridor east of the river are two parallel adjoining fingers of state-only and state and federal wetlands from approximately MP 36.4 to 36.7.

Near MP 36.9 to 37.0 is a small state and federal wetland along the east side of the tracks. Just north of this location at MP 37.1 the rail line crosses the Housatonic River. There is a state-only forested wetland located west of the rail line and south of the river at this crossing and a strip of state-only forested wetland east of the rail line on the north shore of the river. State-only wetlands along the Housatonic River also encroach into the western side of the study corridor from MP 37.4 to 37.9, generally separated from the tracks by commercial and town facility lands.

North of downtown New Milford, there are two small state and federal wetlands mapped along the shore of the Housatonic River at the western edge of the corridor from MP 38.4 to 38.5. From there north, there are continuous state wetlands along the western periphery of the corridor associated with the eastern shore of the Housatonic River. Near MP 38.6, the rail line crosses the West Aspetuck River, a tributary of the Housatonic River. There are state floodplain forests on both sides of the river as it crosses the study corridor in this vicinity.

Linear wetlands adjacent to the track in New Milford are relatively short and sporadic, occurring between approximately MP 35.0 and 37.1 and located on both sides of the railroad tracks.

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APPENDIX A

WETLAND TERMS, DEFINITIONS, AND PLANT LISTS

WETLAND TERMS AND DEFINITIONS

National Wetland Inventory (NWI) Definitions

Water (Hydrologic) Regimes

Estuarine – An estuarine wetland system includes deepwater tidal habitats and adjacent tidal wetlands with low energy and variable salinity, influenced and often semi-enclosed by land. The Norwalk Harbor is the only estuarine system in the study corridor.

Palustrine – A palustrine system includes all non-tidal wetlands dominated by trees, shrubs, emergents, mosses, or lichens. These are the most common wetlands in the study corridor. They may be located adjacent to or separate from streams and rivers, and may also occur within a river channel. [Note: while not applicable to wetlands in the study corridor, palustrine also includes wetlands vegetated such as the above that occur in tidal areas where salinity is below 0.5 parts per thousand.]

Riverine - A riverine system includes all wetlands and deepwater habitats contained in natural or artificial channels, periodically or continuously containing flowing water, or which form a connecting link between two bodies of standing water. Upland islands or palustrine wetlands may occur in the channel, but they are not part of the riverine system.

Wetland Vegetation Types

Forested – A wetland characterized by woody vegetation that is six meters (20 feet) tall or taller. Most of the palustrine wetlands in the study corridor are forested.

Scrub-shrub – A wetland dominated by woody vegetation less than six meters (20 feet) tall. Vegetation includes shrub species, young trees (saplings), and trees or shrubs that are small or stunted because of environmental conditions.

Emergent – A wetland characterized by plants that are erect, rooted, herbaceous hydrophytes (water-loving), excluding mosses and lichens. This vegetation is present for most of the growing season in most years and usually dominated by perennial plants.

Open Water – open water wetlands are wetland areas that become pond-like during wet times, or stay ponded throughout the year. Where there is open water within wetlands, aquatic plants may grow.

Other NWI Terms

Unconsolidated – this NWI term is used to describe substrate conditions (slopes or bottoms) in wetlands and deepwater habitats, which can help predict habitat conditions. Unconsolidated means at least 25 percent of the wetland/water area is covered by particles smaller than stones (less than 6-7 cm) and vegetation covers less than 30 percent.

PLANT LISTS

Table 1: Representative Wetland Plant Species in the Study Corridor

COMMON TREES OF RED MAPLE SWAMPS

Common Name Scientific Name

Red mapleAcer rubrumAmerican elmUlmus americanaSlippery elmUlmus rubraEastern cottonwoodPopulus deltoidesBigtooth aspenPopulus grandidentata

COMMON PLANTS OF SCRUB-SHRUB WETLANDS

Common Name Scientific Name

Ironwood Carpinus caroliniana
Spicebush Lindera benzoin
Multiflora rose Rosa multiflora
Speckled alder Alnus rugosa
Arrow, wood viburnum

Arrow-wood viburnum Viburnum recognitum
Witchhazel Hamamelis virginiana
Winterberry Ilex verticillata
Sweet pepperbush Clethra alnifolia
Red-osier dogwood Cornus stolonifera
Silky dogwood Cornus amomum

Buttonbush Cephalanthus occidentalis

COMMON HERBACEOUS PLANTS

Common Name Scientific Name

Blue cohosh Caulophyllum thalictroides

Broad-leaf cattail Typha latifolia

Skunk cabbageSymplocarpus foetidusJewelweedImpatiens capensisJack-in-the-pulpitArisaema atrorubens

Tussock sedge Carex stricta

Marsh fernThelypteris palustrisSensitive fernOnoclea sensibilis

COMMON HERBACEOUS PLANTS

Common Name Scientific Name
Cinnamon fern Osmunda cinnamomea

Rush species Juncus spp.

Common reed *Phragmites australis*Goldenrod species *Solidago spp.*

COMMON AQUATIC PLANTS

Common Name Scientific Name

Variable watermilfoil Myriophyllum hetorophyllum

Curly-leaved pondweed Potamogeton crispus

Brazilian waterweed
Yellow pond lily
Pickerelweed
Arrowhead
Duck weed

Egeria densa
Nuphar luteum
Pontederia cordata
Sagittaria latifolia
Lemna minor

Table 2: Plant Species Characteristic of Floodplain Forests in the Study Area

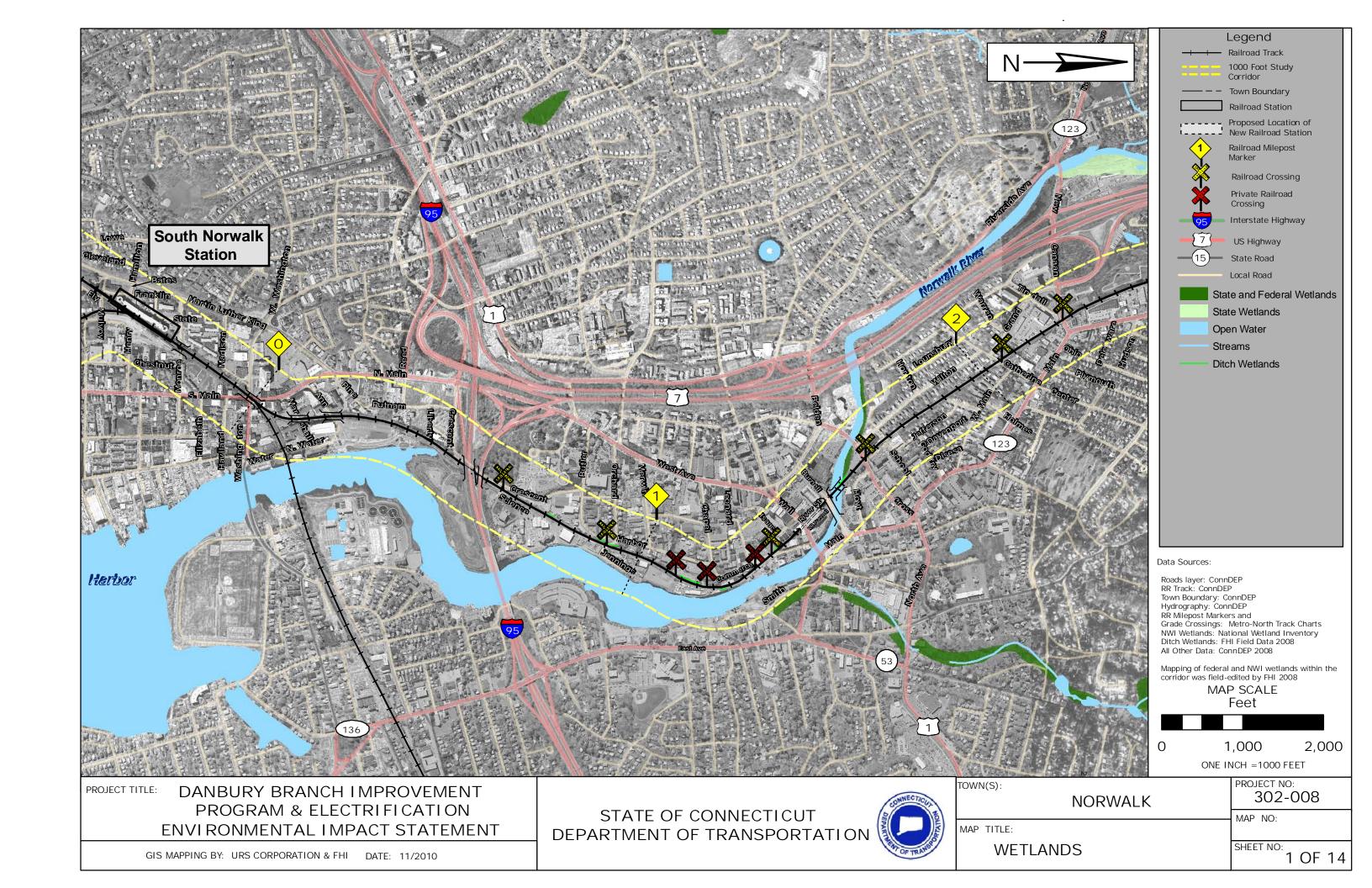
| Tubic 2: I tulit opened characteristic of Floodplain Forests in the Study fired | | | | | |
|---|------------------------|--|--|--|--|
| TREES | | | | | |
| Common Name | Scientific Name | | | | |
| Silver maple | Acer saccharinum | | | | |
| American elm | Ulmus americana | | | | |
| Slippery elm | Ulmus rubra | | | | |
| Bigtooth aspen | Populus grandidentata | | | | |
| Eastern cottonwood | Populus deltoides | | | | |
| Sycamore | Platanus occidentalis | | | | |
| Black willow | Salix nigra | | | | |
| Green ash | Fraxinus pennsylvanica | | | | |
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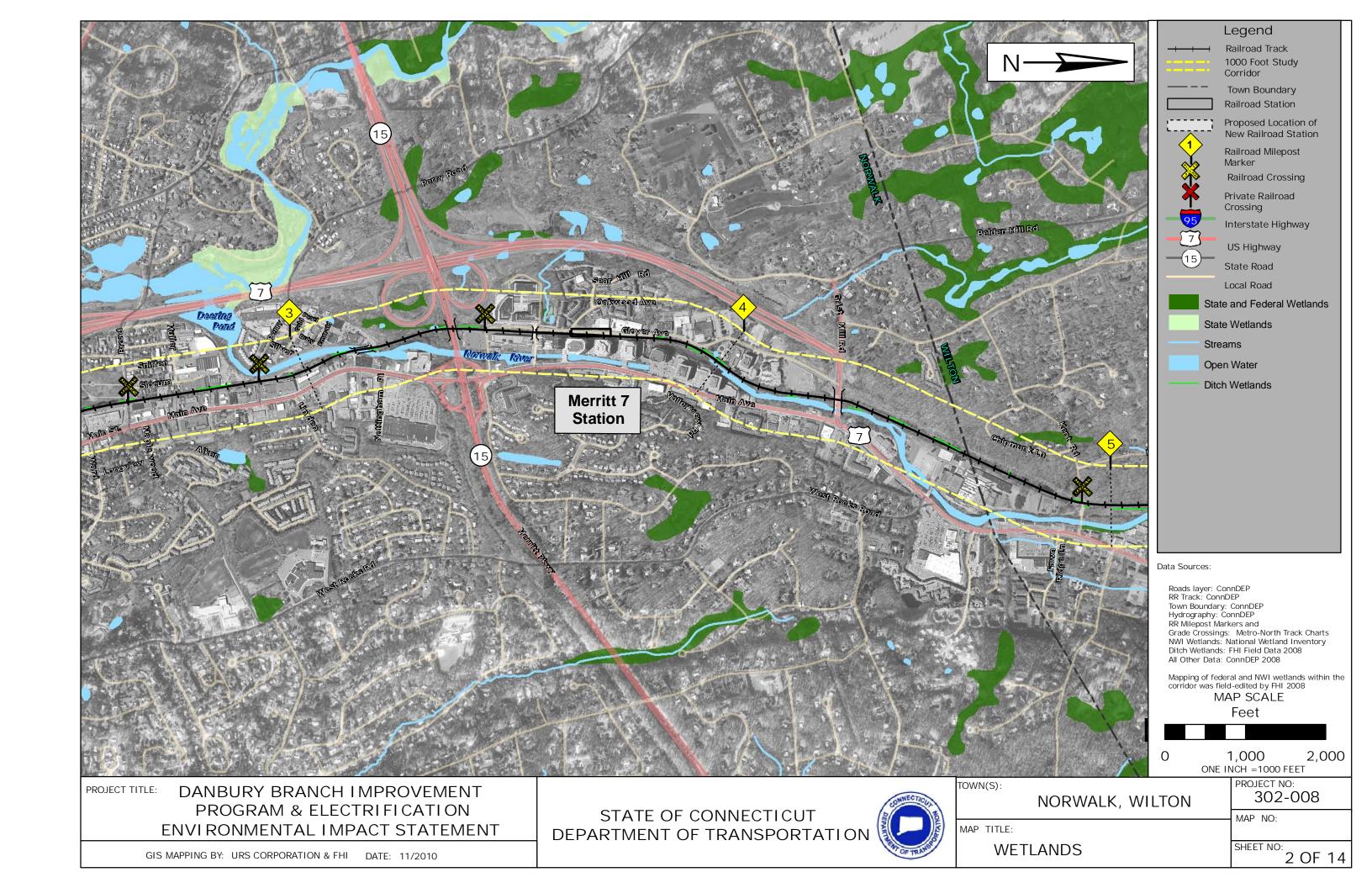
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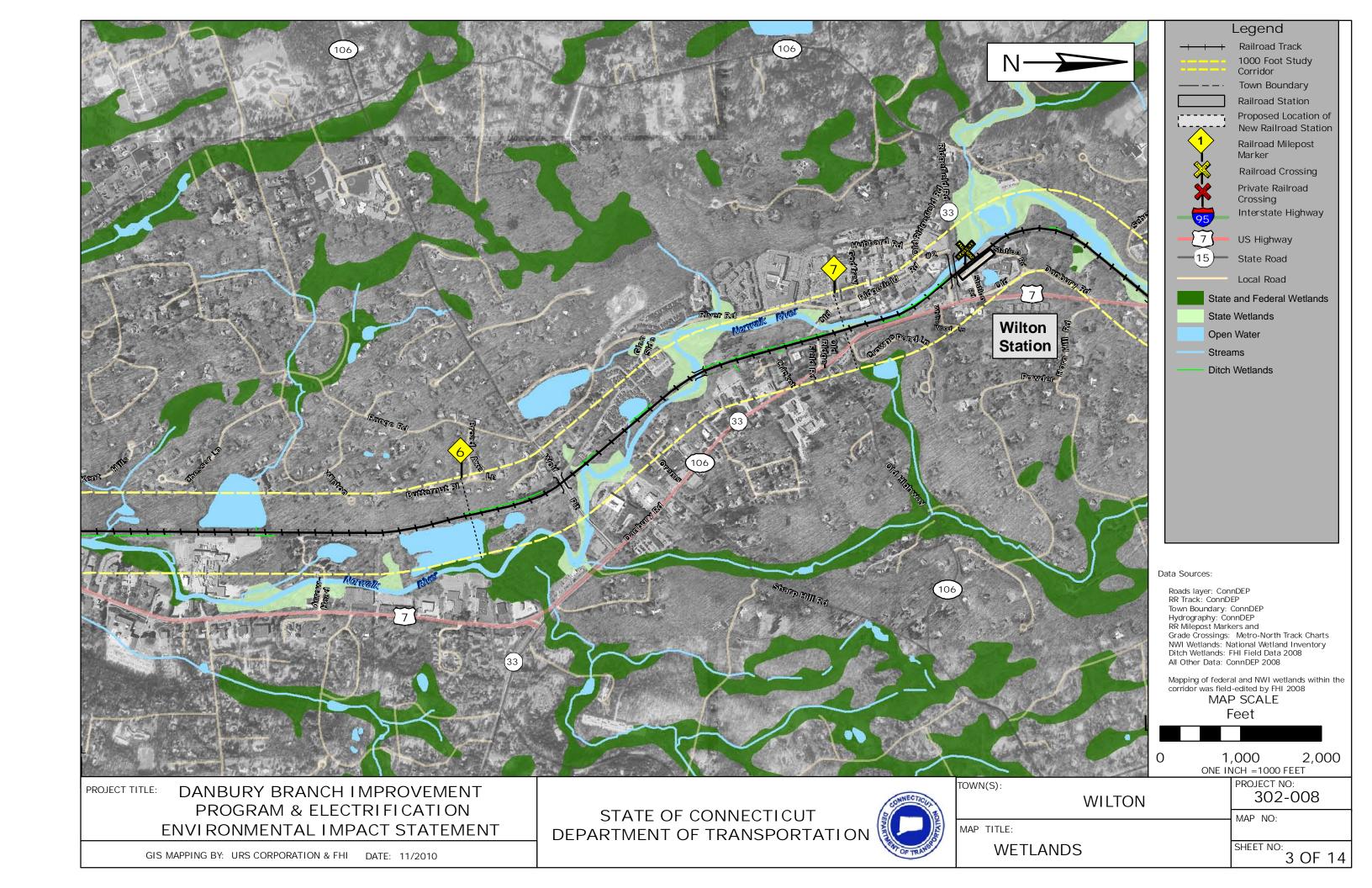
Common Name Scientific Name

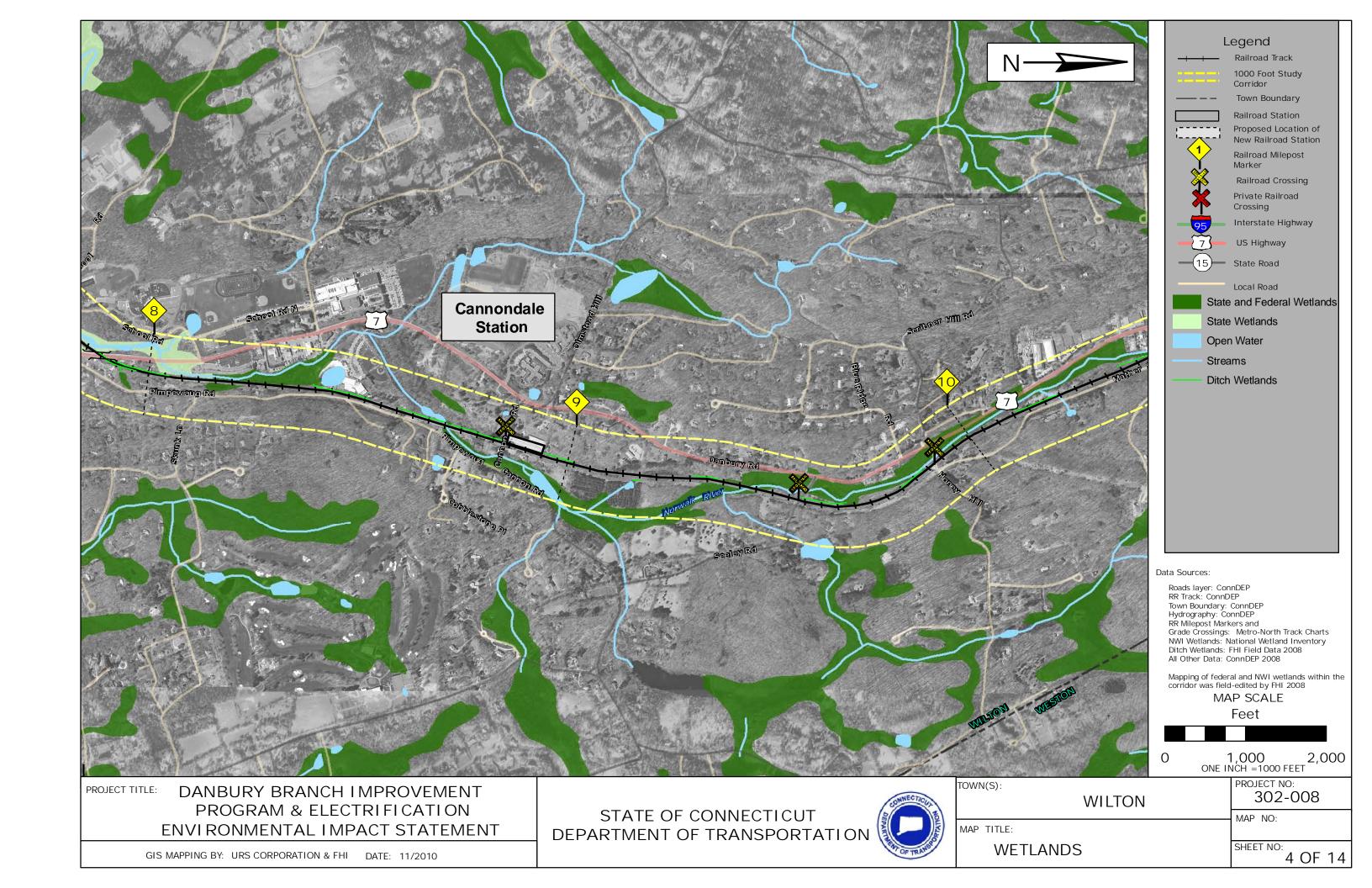
Sensitive fern Onoclea sensibilis
Stinging nettle Urtica gracilis
Grape species Vitis spp.

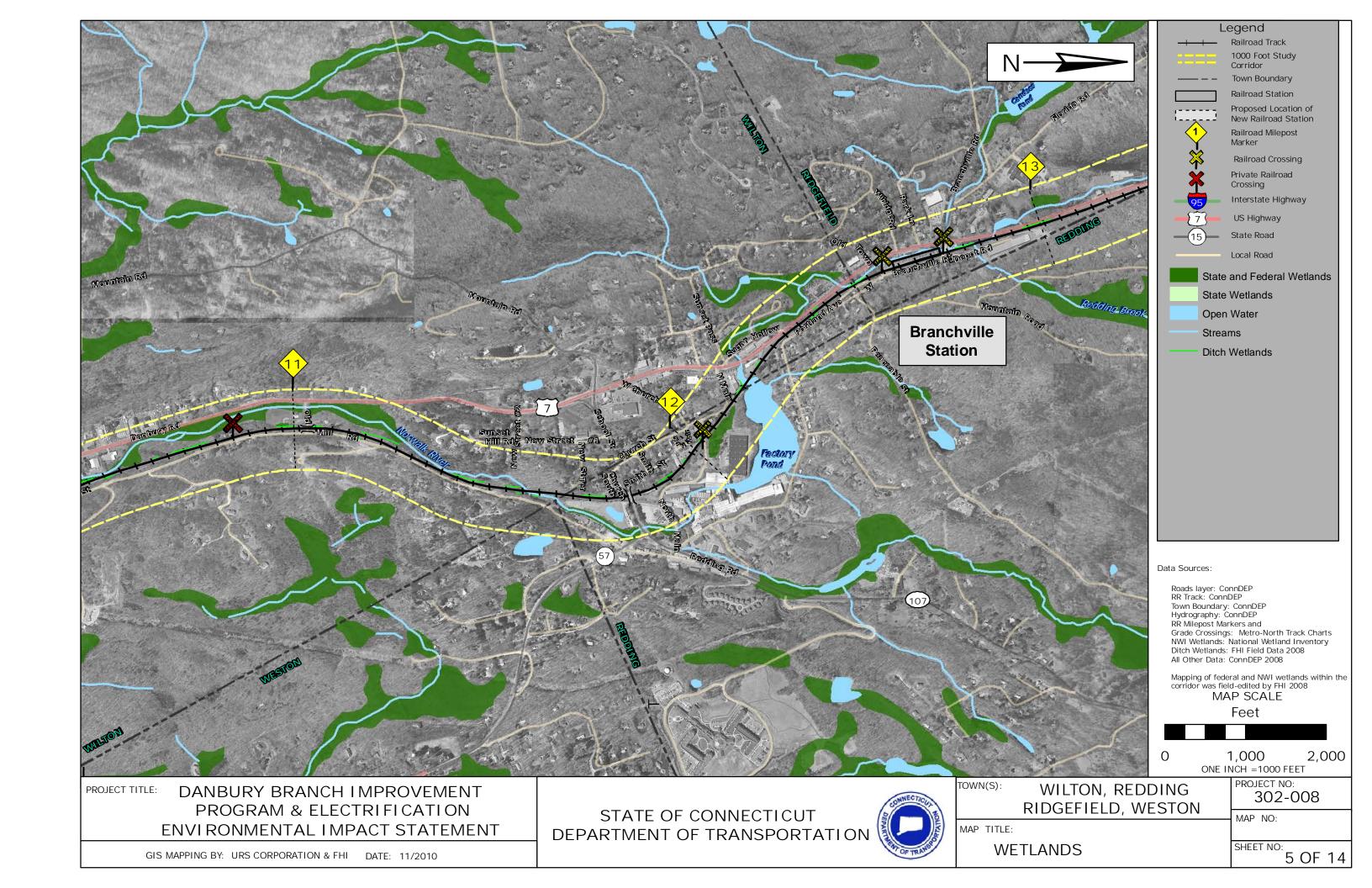
Virginia creeper Parthenocissus quinquefolia
Poison ivy Toxicodendron radicans
Asiatic bittersweet Celastrus orbiculatus

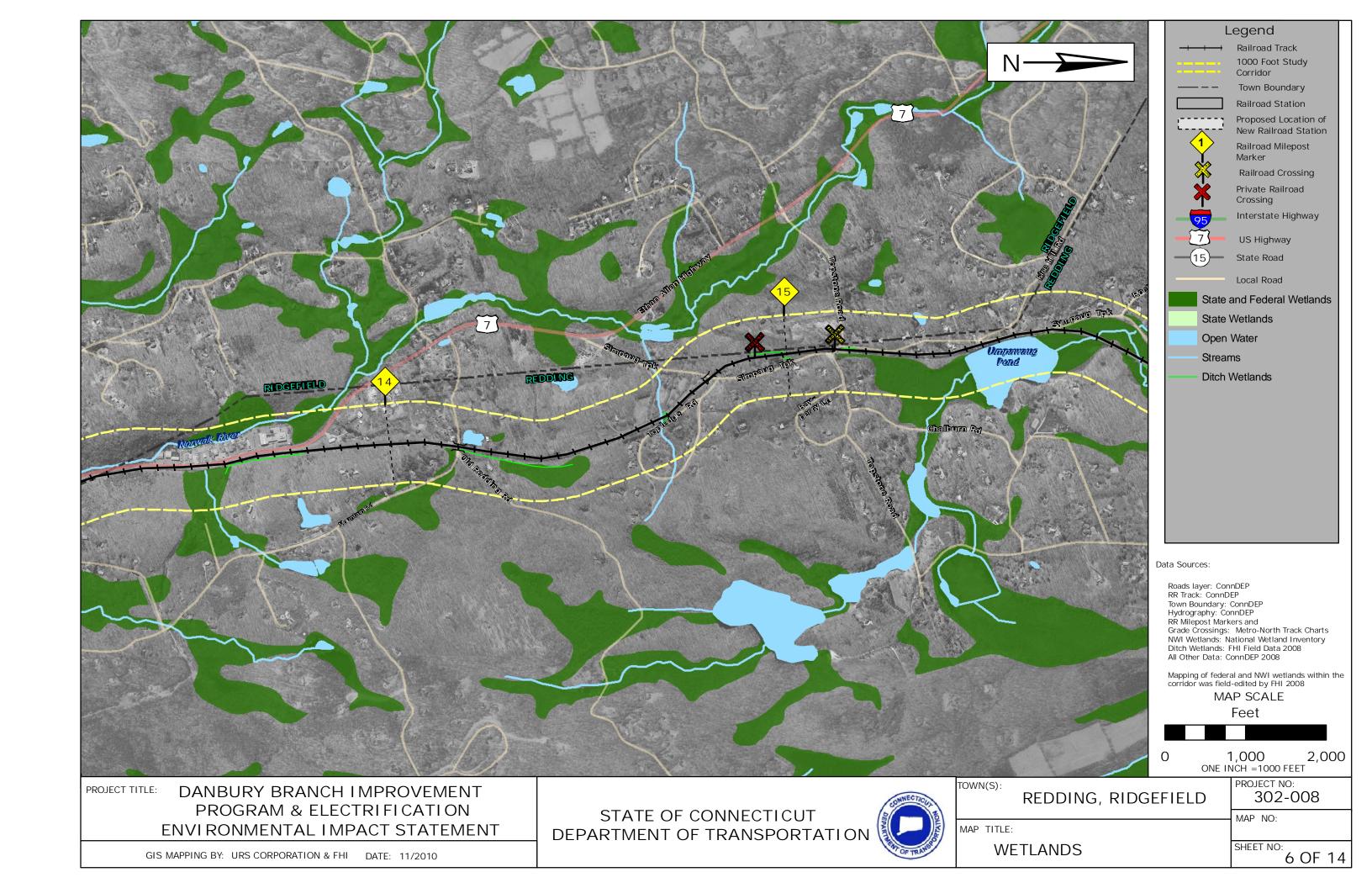


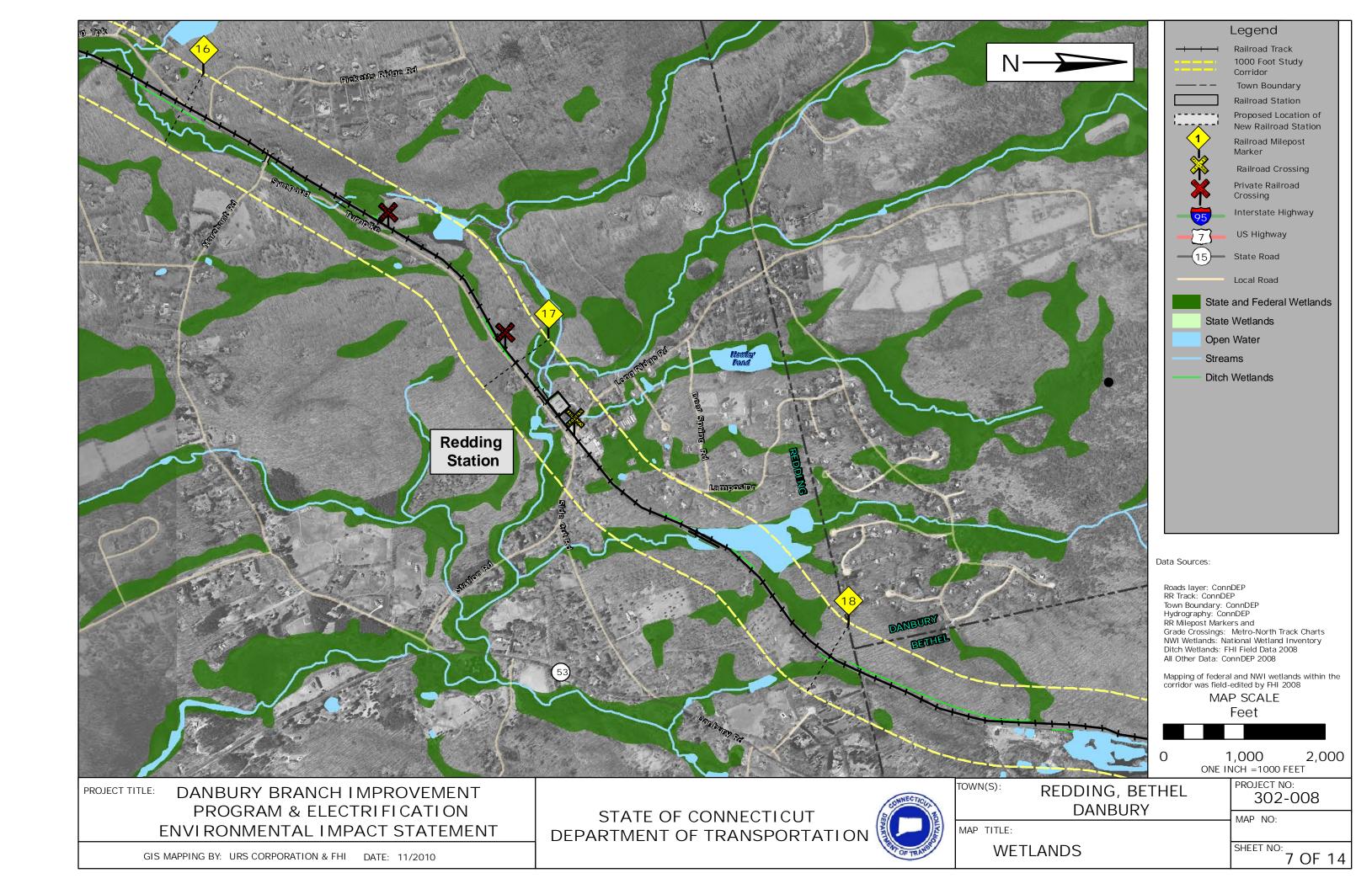


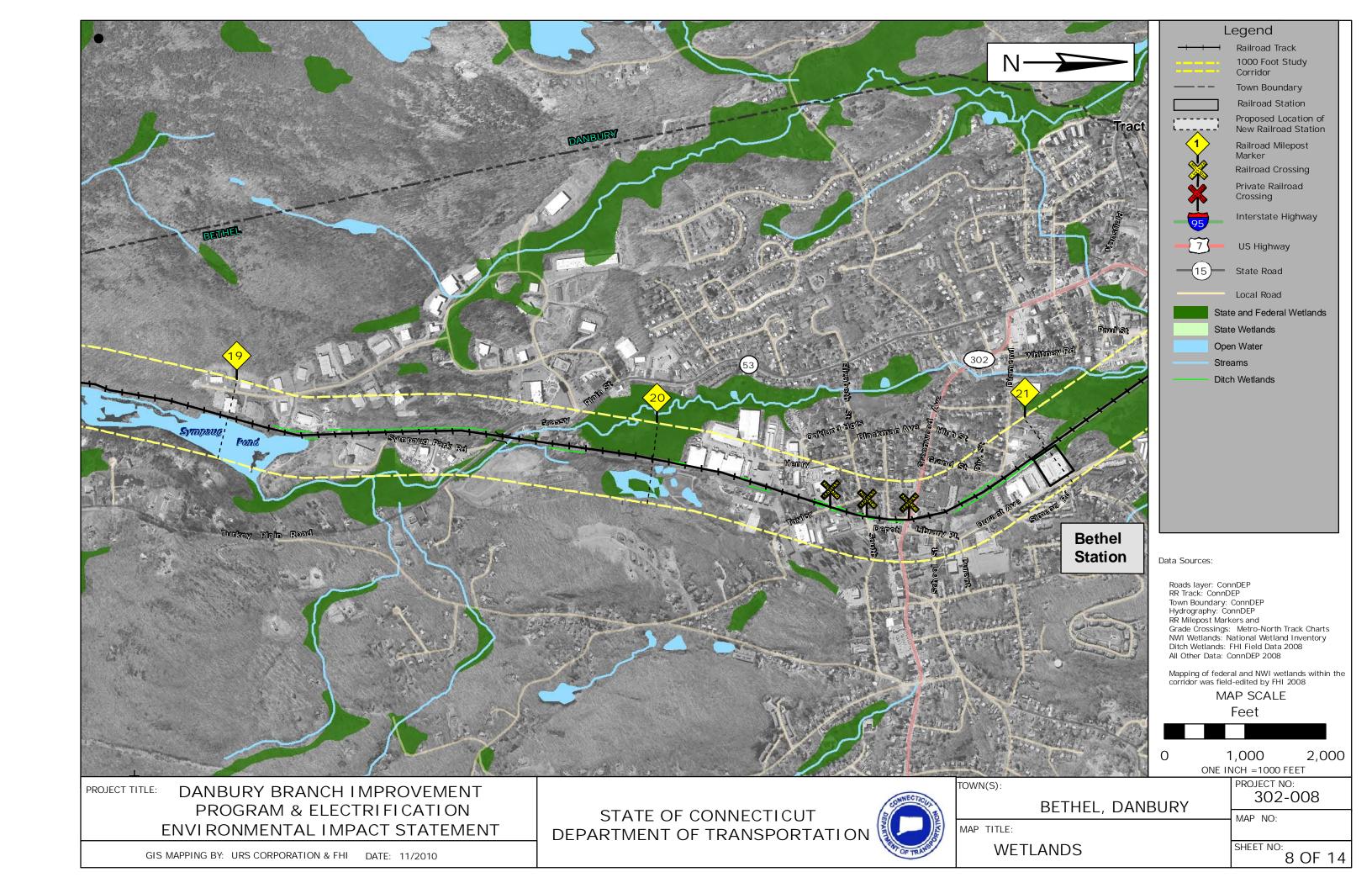


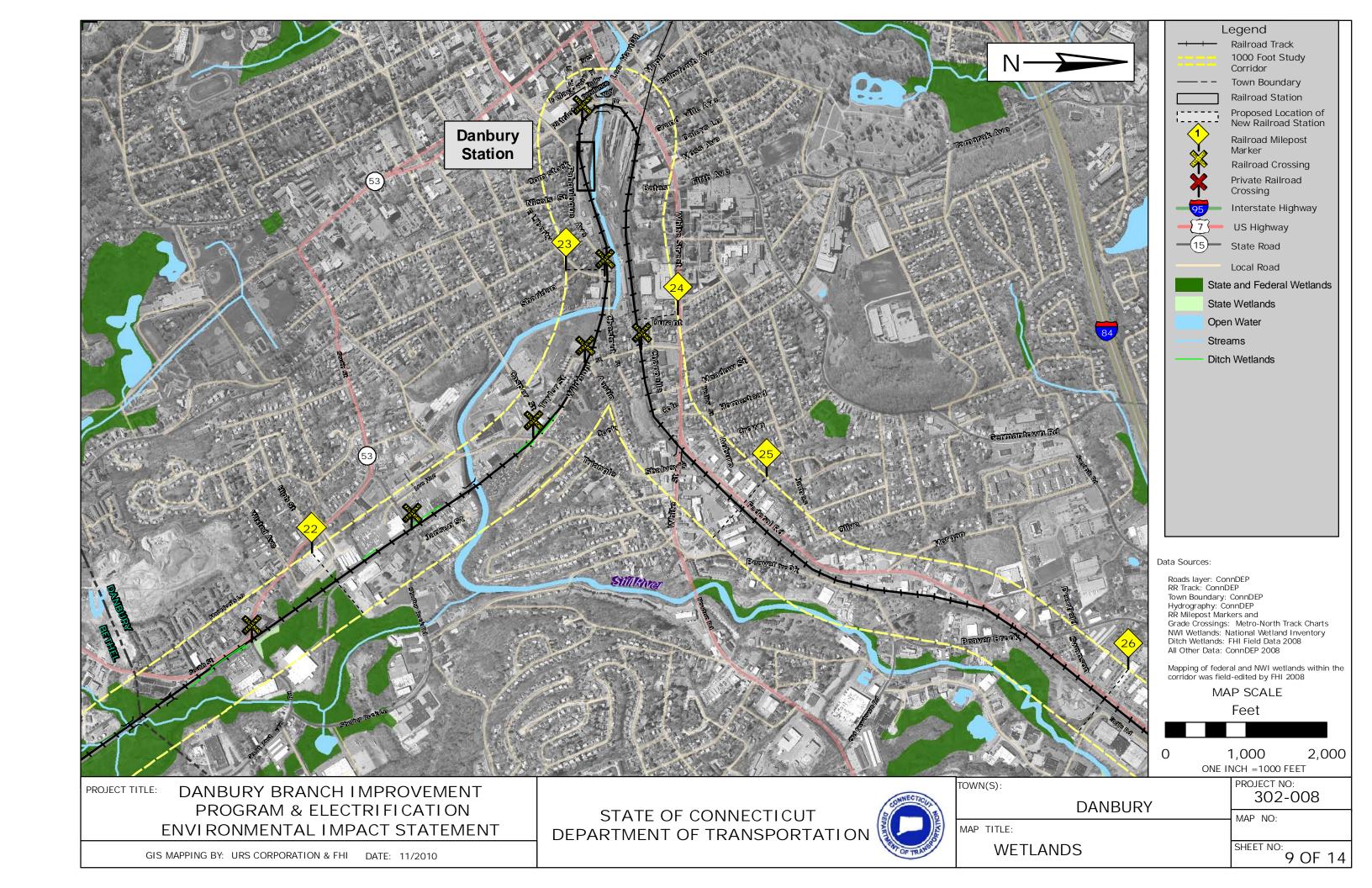


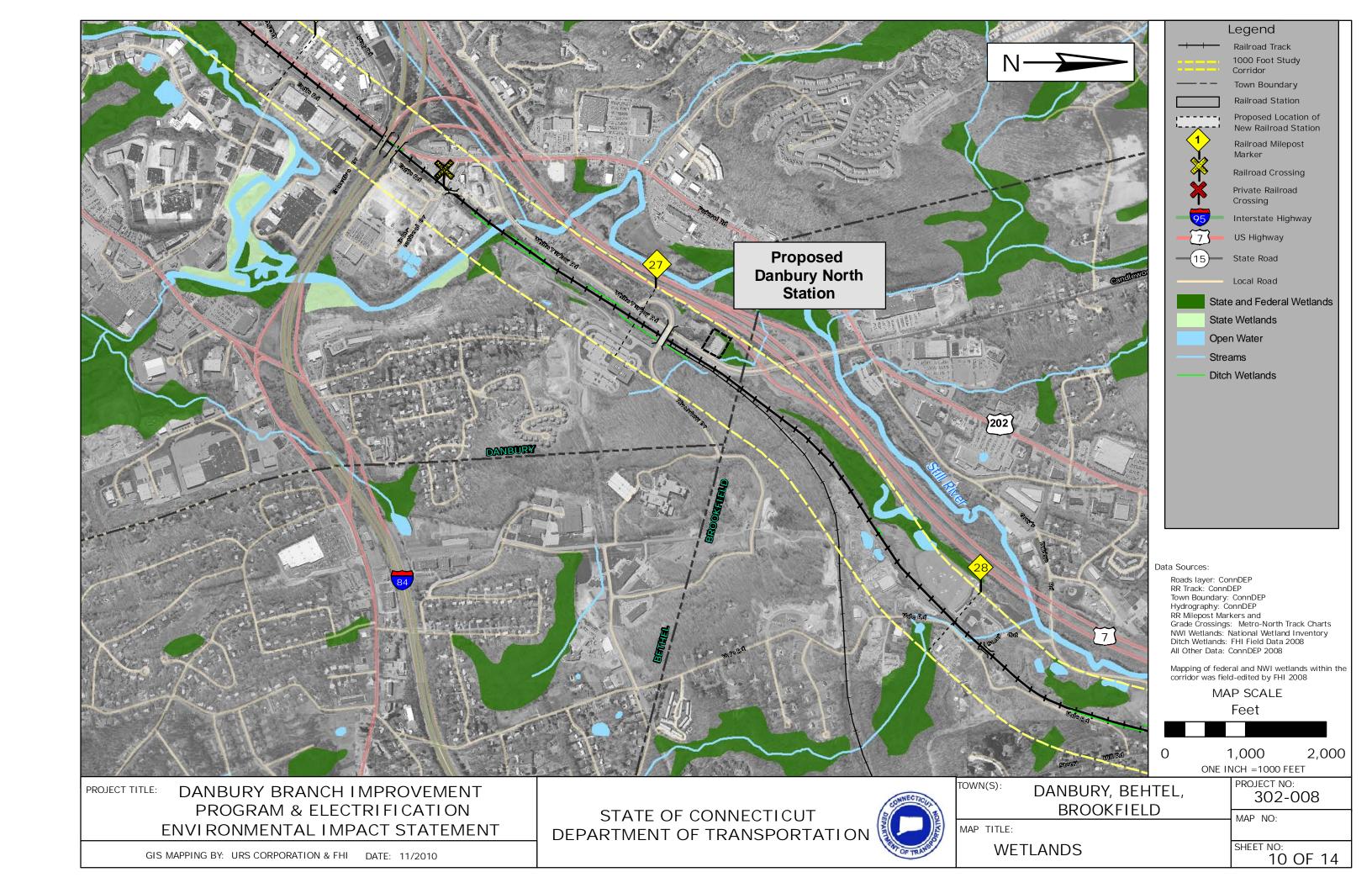


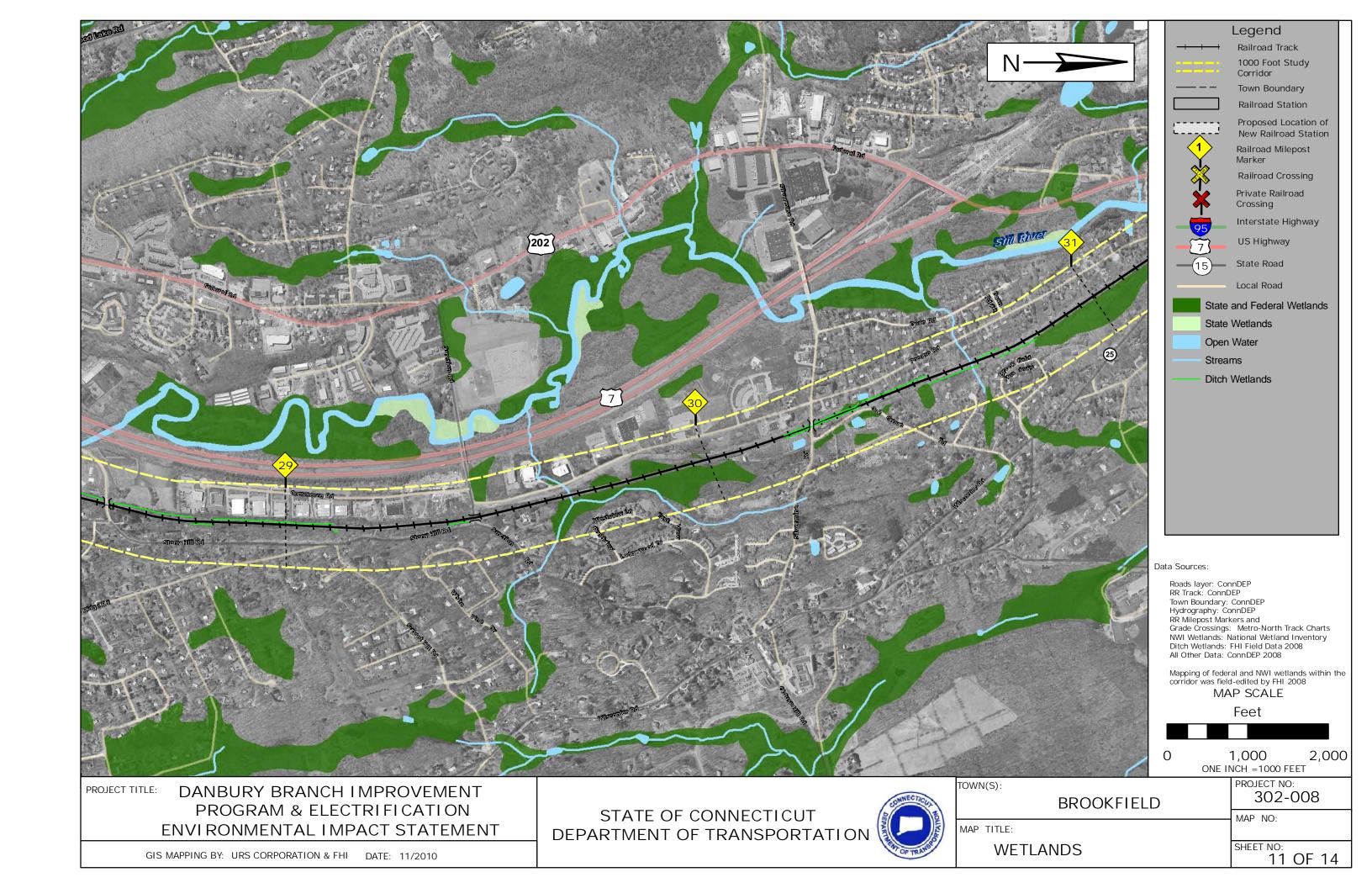


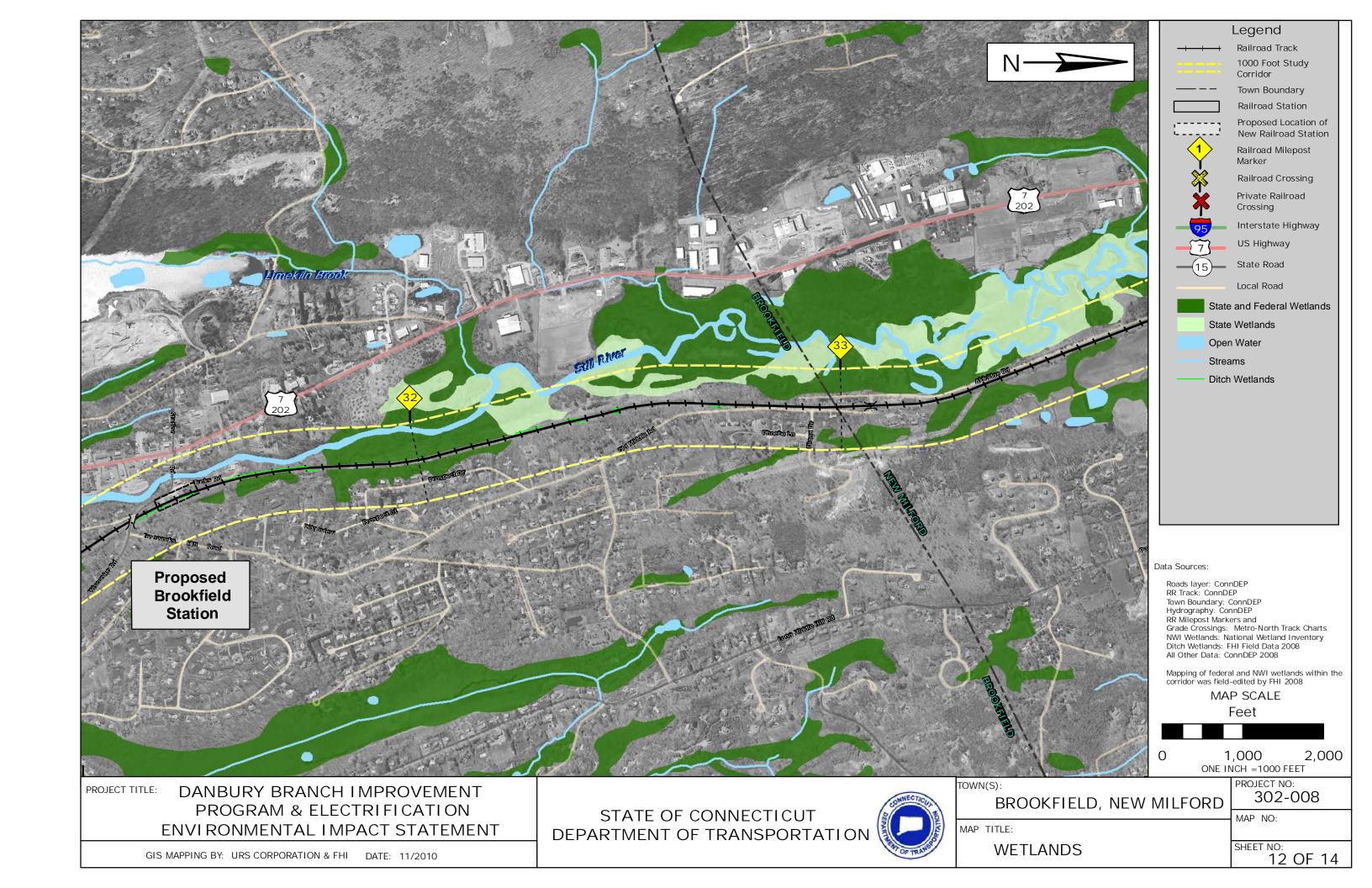


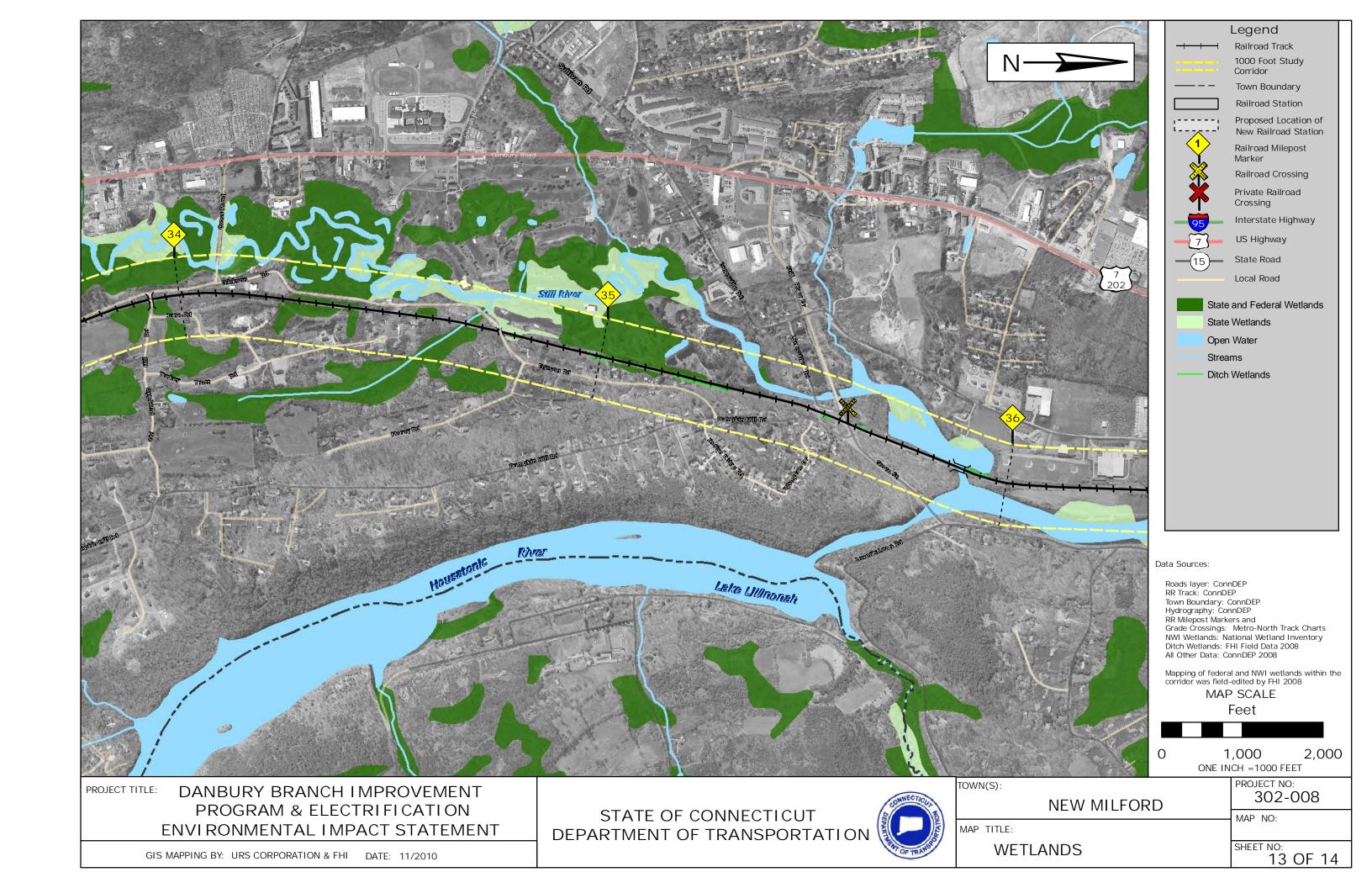


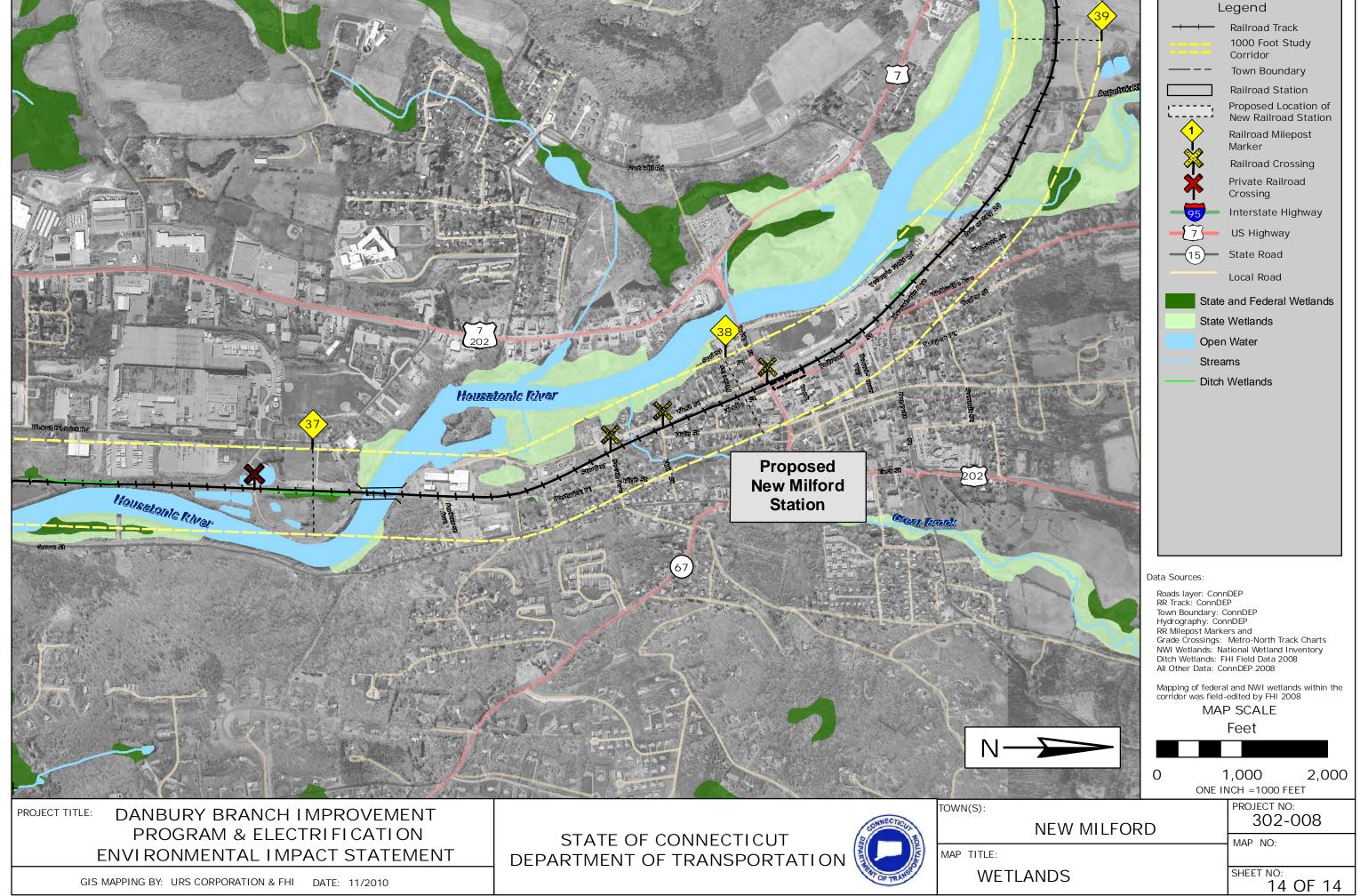












WETLANDS

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