# SECTION V. Environment, Land and Natural Resources

## Introduction

This section of the Plan of Conservation and Development will identify and make recommendations related to a variety of natural features within the town of Windsor Locks. These recommendations are based on community input, land use board and commission review and professional reporting. **Our land and our natural resources satisfy our wants and needs.** They add beauty and character to the landscape and offer opportunities for residents to stay active and experience nature. They also provide some things that we depend on: clean water, fresh air, cooling shade, habitat for animals and land for agriculture. Windsor Locks is a built-up town. Any remaining natural features are irreplaceable and should not be taken for granted.

Environment, Land and Natural Resource Topics:

**a. Drainage Basins and Watercourses**
**b. Aquifer Protection**
**c. Wetlands and Floodplains**
**d. Topography and Slopes**
**e. Natural Diversity Database**
**f. Agriculture and Farming**
**g. Open Space and Greenway Creation**
**h. Environmental Sustainability**
**i. Climate and Resiliency**
**j. Municipal Separate Storm Sewer Systems (MS4)**


Each subsection as identified in the introduction will contain the community's goals and objectives to be used as guiding principles for not only the Planning and Zoning Commission and other land use commissions but for all citizens and governing bodies of the Town.

## Drainage Basins and Watercourses

### Drainage Basins

As stated in the 2007 Plan, it is important to understand the value of the Town's watercourses, and the natural systems that they have carved out of the landscape. To do so, one must understand the drainage basins in which they lie. There are numerous drainage basins in the State of CT, three which lie in the Town of Windsor Locks.

The State of CT is divided into major watershed basins, all flowing toward Long Island Sound. These do so directly or through major river systems that pass through the State. A large swath of the center portion of the State is located within the CT River Major Drainage Basin, as is the case for the Town of Windsor Locks. These Major Drainage Basins are further divided into Regional Drainage Basins and Subregional basins. These are subsets of the major drainage basins. These basins either flow directly into the major river associated with the basin, or more often, through tributaries to the major rivers. There are 337 subregional basins in the CT drainage pattern.

Three such subregional basins are in the Town of Windsor Locks. These are depicted on the map at the end of this subsection.

**Connecticut River Basin**
This map shows that the largest area of Town flows directly east into the CT River and is part of the Connecticut River Basin. This subregional basin extends from the CT River west to approximately Old County Road and Ella Grasso Turnpike. The northern edge of this basin is approximately located along North Street. Areas to the north and west of these boundaries flow into tributaries rather than directly into the CT River.

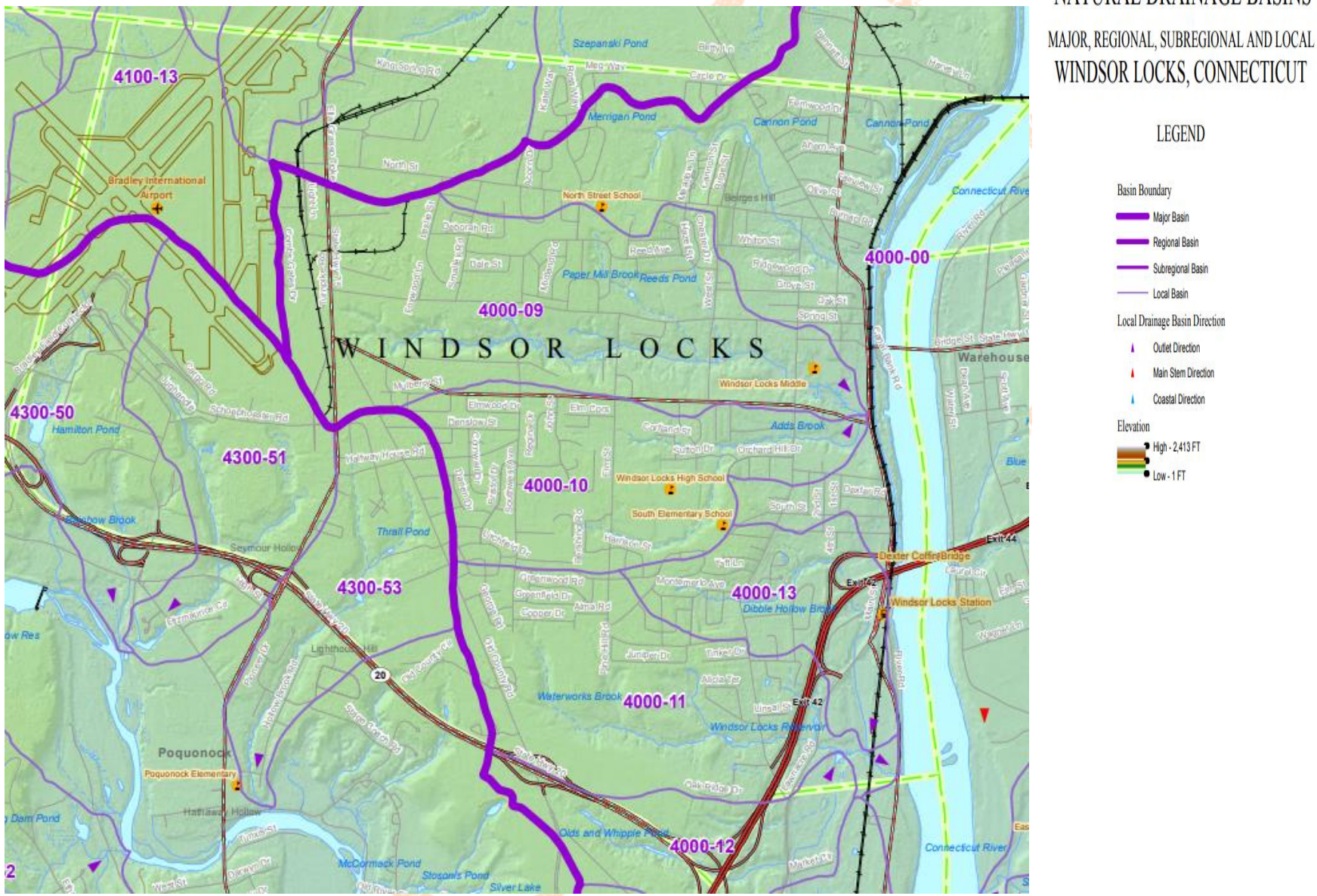
**Stony Brook Basin**
The area of Town located generally north of North Street and the northern half of the airport property flows to the north and northwest into the towns of Suffield and East Granby. This is part of the Stony Brook Subregional Basin, and is the smallest basin in Windsor Locks.

**Farmington River Basin**
The third Subregional basin is located west of Old County Road and includes the south half of the airport property. This is part of the Farmington River Subregional basin that flows south through the Town of Windsor and into the Farmington River.

These two small basins eventually flow to the CT River through each basin's tributary rivers and streams.

The below CT Eco map shows the location and identification number of major, regional, subregional, and local drainage basins. It is intended to serve as a municipal guide for drainage basin delineation and identification. Local basins make up larger subregional, regional, and major drainage basin areas and are differentiated by their drainage basin boundary type and identification numbers. Arrows on the map represent general direction of surface water flow within local drainage basins. Local outlet direction is shown in purple. For full map and description follow the following web link.
http://cteco.uconn.edu/maps/town/basinrelief/basinrelief_WindsorLocks.pdf

**Aquifer Protection Areas**
While protecting the waters of the community and state remains a priority, Windsor Locks no longer has a formally defined Aquifer Protection Area through the State of Connecticut. CT Water Company wellfields, within what is now known as the Waterworks Brook Preservation Area, were abandoned since the 2007 Plan. The Town, through its department staff, land use commissions, CT Water Company and other regional entities, should continue to support natural resource preservation and minimize water pollution.


NATURAL DRAINAGE BASINS
MAJOR, REGIONAL, SUBREGIONAL AND LOCAL
WINDSOR LOCKS, CONNECTICUT
LEGEND
Basin Boundary
Major Basin
Regional Basin
Subregional Basin
Local Basin
Local Drainage Basin Direction
Outlet Direction
Main Stem Direction
Coastal Direction
Elevation
High - 2,413 FT
Low - 1 FT
4100-13
4000-00
4000-09
4300-50
4300-51
4000-10
4300-53
4000-13
4000-11
4000-12
WINDSOR LOCKS
Szepanski Pond
Merrigan Pond
Carlton Pond
Paper Mill Brook
Reeds Pond
Hamilton Pond
Adds Brook
Thrall Pond
Waterworks Brook
Dibble Hollow Brook
Windsor Locks Reservoir
Olds and Whipple Pond
McCormack Pond
Stosorni's Pond
Silver Lake
Connecticut River
Bradley International Airport
North Street School
Windsor Locks Middle
Windsor Locks High School
South Elementary School
Windsor Locks Station
Dexter Coffin Bridge
Poquonock
Poquonock Elementary
Exit 44
Exit 42
Exit 42
20

## Watercourses

Most of the Town's named and significant watercourses are in the largest basin, the Connecticut River Basin, and as described above drain generally from west to east into the Connecticut River.

These watercourses are:

Seymour Hollow Brook
Merrigan Brook
Paper Mill Brook
Kettle Brook
Adds Brook
Dibble Hollow Brook
Strawberry Meadow Brook
Rainbow Brook
Waterworks Brook

The health of these watercourses are of substantial interest to the Town as they travel through many of the Town's residential neighborhoods, are located within a number of the Town's parks and recreation areas, and perform many significant natural functions.

One of the longest brooks in Town, **Kettle Brook**, flows generally through the center of the community, west to east, from Ella Grasso Turnpike to the Connecticut River. It is the centerpiece of several Town parks and open spaces flowing extensively through Spring Park and through the Middle School property on Center Street.

Another significant brook is **Merrigan Brook** with headwaters near the Suffield Town line, crossing through North Street. It is characterized by substantial areas of wetlands and steeply sloped banks. From an open natural watercourse, it then travels through some of the denser neighborhoods in Town before entering the Connecticut River. Windsor Locks should continue to protect the natural headwaters of Merrigan Brook

**Watercourses** safely transport stormwater flows; store floodwaters; perform a cleansing function to stormwaters that flow to them; provide for wildlife habitat; and provide aesthetic and recreational opportunities for the Town's residents.

**Kettle Brook** provides a fantastic outdoor classroom for the Middle School students. The community should continue to build on this opportunity by scheduling regular clean-up events, creating better access, installing a walking path, and adding educational signage, as recommended in the Main Street Study of 2008 prepared by Ferrero and Hixon.

by expanding open space connections with other recently established open space areas near Circle Park and Chapman Chase.

**Waterworks Brook** is in the southeast corner of Town. Most its length is located within the bounds of what was previously known as the Connecticut Water Company wellfields located on the west side of South Center Street. This 225-acre parcel of property is essentially undeveloped and provides protection to this waterway and its associated wetlands. The upper reaches of Waterworks Brook are also associated with steep slopes in the terrain surrounding several of its tributaries located within this property. As one of longest, undisturbed and natural waterways left in the Town of Windsor Locks, the preservation of this waterway, its associated wetlands, steep slopes, and surrounding environs was a priority in the 2007 Plan. Since then, the Water Company has abandoned the wellfields and the property is now entirely preserved land.

## Wetlands and Floodplains

The Town's Inland Wetland soils and floodplains are an inter-related system that serves an important natural function, which is protected under State and Town laws and regulations.

### Inland Wetland Soils

State laws protecting inland wetland soils began in 1974 with a substantial strengthening in 1987. As required by State law the Town of Windsor Locks has adopted Inland Wetland Regulations and has established an Inland Wetland Commission.

The Town's primary wetland corridors are formed along the Town's watercourses and streams. The following map shows this system of wetland corridors connected to the system of streams and watercourses.

Wetland soils are defined by State law as poorly drained, very poorly drained, alluvial and floodplain soils. These soils are an important part of the natural system of slowing down, storing and filtering stormwater. Wetland soils, left in their natural state, are the most cost effective

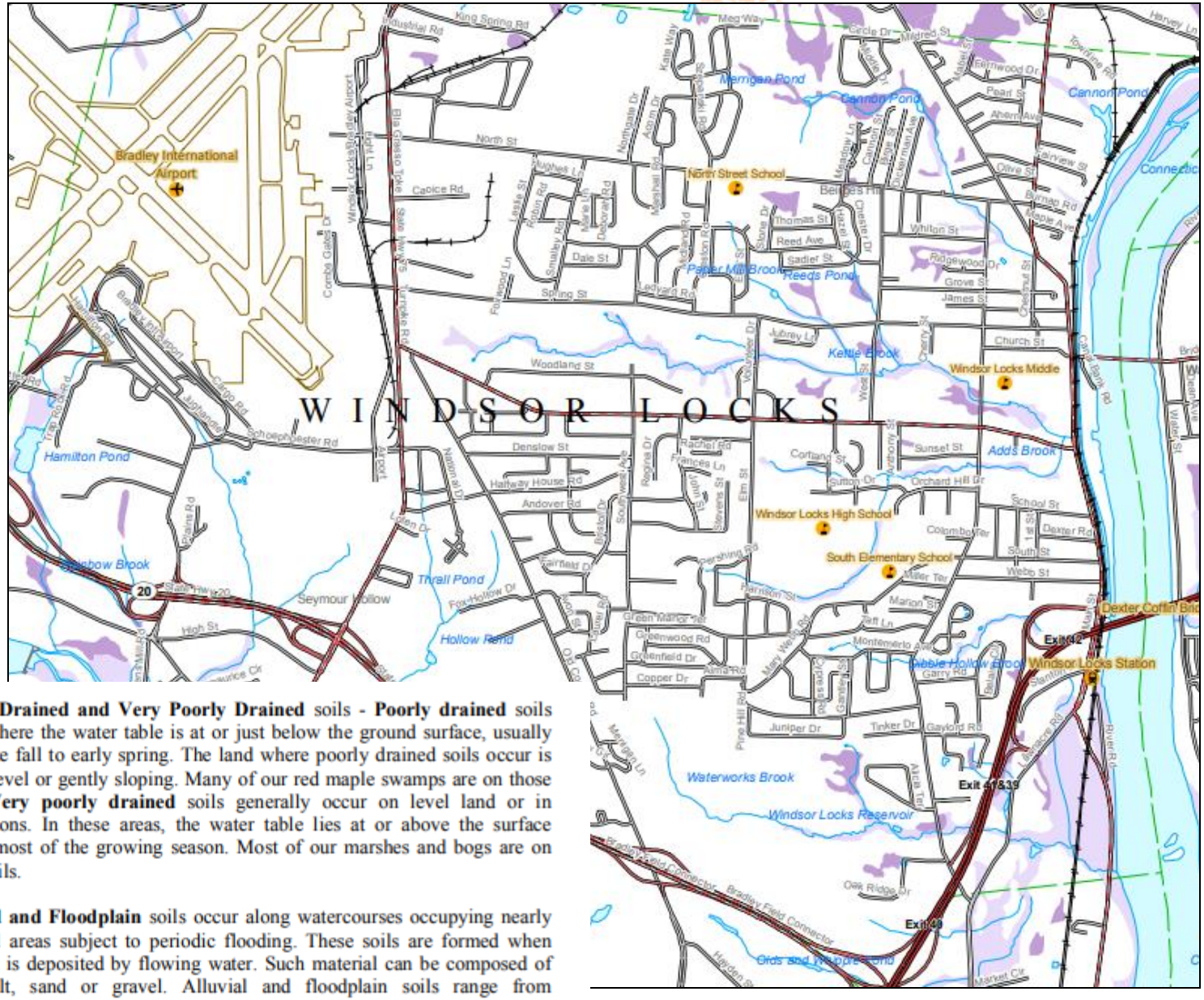
Fun fact: Wetlands may **not** always appear wet.

Our minds want to identify wetlands and watercourses with such terms as marsh, swamp, river, brook, pond or lake. **However,** the CT Inland Wetlands and Watercourse Act (Act) defines wetlands by **soil type.** The soil types of wetlands are poorly drained, very poorly drained, alluvial, and floodplain.

Identifying wetlands by soils allows us to recognize those areas during times of drought when there is no surface water present, or during winter when characteristic wetland indicator plants may not be obvious.

Source: DEEP Website

stormwater management system that a municipality can employ. Failure to preserve these natural systems, or overly taxing these natural systems, can lead to the need to employ expansive and expensive stormwater control and flood control projects. Wetlands are also a natural habitat for wildlife and form important wildlife corridors for a wide variety of plants and animals. The full map and description can be found by going to the following web link at CT Eco.
http://cteco.uconn.edu/maps/town/SoilWet/SoilWet_WindsorLocks.pdf




**Poorly Drained and Very Poorly Drained** soils - **Poorly drained** soils occur where the water table is at or just below the ground surface, usually from late fall to early spring. The land where poorly drained soils occur is nearly level or gently sloping. Many of our red maple swamps are on those soils. **Very poorly drained** soils generally occur on level land or in depressions. In these areas, the water table lies at or above the surface during most of the growing season. Most of our marshes and bogs are on these soils.

**Alluvial and Floodplain** soils occur along watercourses occupying nearly all level areas subject to periodic flooding. These soils are formed when material is deposited by flowing water. Such material can be composed of clay, silt, sand or gravel. Alluvial and floodplain soils range from excessively drained to very poorly drained.

**Wetland Soil Map**

**Floodplains**

Windsor Locks has a limited amount of land area defined as floodplain. Regulatory floodplains are defined as areas having a one percent chance of flooding in any one year; also know as the 100-year floodplain. These floodplain areas in Town are primarily associated with the immediate banks of the Connecticut River. Also, in the extreme southeast corner of Town between I-91 and the Connecticut River, is probably the largest area designated as floodplain. There are also mapped floodplains associated with portions of Kettle Brook and Merrigan Brook. Although limited in area, these floodplain areas are the third natural system that have been identified in this Plan as a stormwater and floodwater storage system that needs to be recognized and protected so that their functions can continue.

Inland Wetland Soils and the Town's Floodplains are a large interrelated system that deserves protection and monitoring so that it can be enjoyed by future generations. The following goal and objectives are established to provide guidance for Town officials and residents to continue to improve on past preservation efforts.

**Goal:**
**Continue to identify and protect, for future generations, the Inland Wetland soils and floodplain areas of the Town of Windsor Locks.**

**Objectives**

1. **Explore the establishment of increased regulated areas in the Town wetland regulations particularly associated with the Town's major watercourses and their associated wetlands. Specifically, consider increasing the activity review area to one hundred feet (100') from the top of the bank of a watercourse.**
2. **In all new development proposals, establish and enforce a. a no net loss policy of inland wetland soils, and/or b. alternative enhancement opportunities policy to create higher value wetland areas where streams have been urbanized or where wetland soils have historically been disturbed.**
3. **Seek opportunities with the Conservation Commission, Department of Public Works, Parks Department and possibly with the Board of Education to provide educational markers, kiosks and signs along not only watercourses, but significant wetland areas, natural features, conservation easements, open space areas and within the Town Parks. Consider requiring natural resource**

**identification markers or signs as part of future land use approvals, via amended zoning, subdivision and wetland regulations, by the Inland Wetland and Watercourses Commission and the Planning and Zoning Commission.**

4. **Continue to require the dedication of open space as part of new development projects to preserve and protect the town's wetland systems.**

## Topography and Slopes

As discussed in the 2007 Plan, Windsor Locks is a Connecticut River Valley Town and does not generally have dramatic topographic changes or large areas of steep slopes. As noted earlier in the drainage basin section, the majority of the Town slopes from west to east toward the Connecticut River.

The airport property occupies the Town's highest elevation at an approximate elevation of 180 feet above sea level. The central portion of Town, between Ella Grasso Turnpike east to South Elm Street, is relatively level and is located at elevations of approximately 140 to 160 feet above sea level. This area contains the majority of the Town's single-family homes.

Some steep slopes and more dramatic elevation changes occur in the eastern portions of Town, and near the Town's watercourses. From approximately South Elm Street to South Center Street, the general topography descends from about 140 feet above sea level to about 90 feet above sea level. The topography then descends to approximately 25 feet above sea level along Main Street and the Rt. 159 corridor.

Although the areas of steep slopes in Town are limited, these areas are most sensitive to grading and significant modifications. Erosion impacts on streams and water bodies generally result. Therefore these areas of moderate to steep slopes should be protected as land around these areas becomes developed. These are natural, generally wooded, buffers around wetlands and watercourses and are best left in their natural state.

**Goal:**
**Protect areas of steep slopes and leave them to the extent possible in their natural condition to minimize adverse impacts to surrounding natural systems.**

**Objective:**

1. **Develop specific regulations in the Zoning and Subdivision regulation to protect slopes over 15%.**
2. **Monitor new development plans to avoid impacts on the town's steep slopes and seek to preserve them in their natural state.**

## Natural Diversity Data Base

The State of CT has identified specific areas that contain endangered or threatened species and species of special concern. This information is contained in the Natural Diversity Data Base

The Natural Diversity Data Base (NDDB) is the central repository for information on the biology, population status and threats to the elements of natural diversity in the state of Connecticut. Information on rare plant and animal species and significant natural communities is compiled, stored and made available through the Data Base.

The Connecticut DEEP, Natural Diversity Data Base initiated an Endangered Species Mapping for Municipalities project in 1996 to help Connecticut towns protect their share of the state's biodiversity. This project has provided each town with a map, now updated as of December 2016, of the generalized locations of listed species and significant natural communities, based on NDDB records. A copy of the map for the area around Windsor Locks is available at the following DEEP online link.

http://www.depdata.ct.gov/naturalresources/endangeredspecies/nddbpdfs.asp

The general locations of species and communities are depicted as gray-shaded areas on the maps. These shaded areas represent a buffered zone around the known species or community location. Because these sites have been buffered, listed species and significant natural communities will generally occupy only a portion of the land represented as a shaded area on the map. The exact location of the species or community is located somewhere within the shaded area, not necessarily in the center. Representing the information this way maintains the confidentiality of the precise species and community locations. Confidentiality provides protection from collection and disturbance for sensitive species and protects landowner's rights wherever species occur on private property.

Eagles, a symbol of our nation's strength and freedom, can often be seen soaring through the skies of Windsor Locks. They routinely nest in the tall trees at the bank of the Connecticut River, particularly near the Suffield and Enfield town lines.

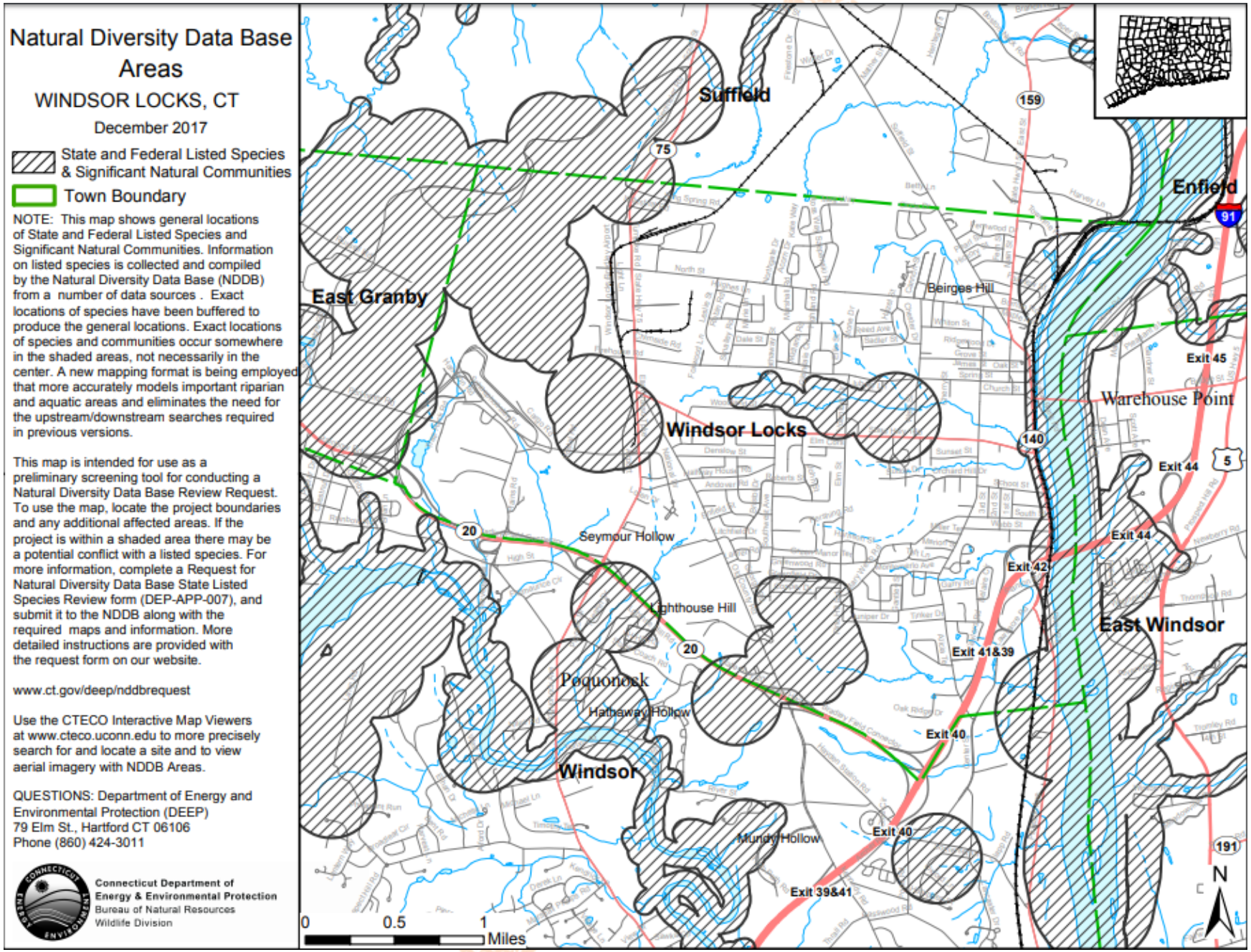
In order to foster a supportive environment for the eagles and their chicks, the Canal Trail State Park is closed annually, often from November through late June. Preservation of habitat is crucial to slowing or reversing the decline of the eagle population. The community will need to work closely with the CT DEEP to balance preservation, public enjoyment and redevelopment in this area.

Although the relevant laws generally prohibit the destruction of endangered or threatened species from projects using State or Federal monies, Towns have used this mapping resource to ask DEEP staff for input when a private project is proposed in these areas. Generally, most land use changes can co-exist with these natural communities with little or no significant changes. The use of this technique by the Town of Windsor Locks could enhance the preservation of these important natural resources.

**Goal:**
**Support the protection of the Town's Natural Diversity areas as identified by the State of Connecticut.**

**Objective:**

1. **Continue to review the Natural Diversity Data Base maps with all new development proposals and seek State DEEP assistance if development impacts such areas.**
2. **Continue to share the Natural Diversity Data Base map with prospective developers and property owners within Windsor Locks.**
3. **Adopt amendments to the Zoning Regulations under Section 1102 A.4. Site Features and Subdivision Regulations Section 8.2 that places such a review into the required review process.**


Natural Diversity Data Base Areas
WINDSOR LOCKS, CT
December 2017
State and Federal Listed Species & Significant Natural Communities
Town Boundary
NOTE: This map shows general locations of State and Federal Listed Species and Significant Natural Communities. Information on listed species is collected and compiled by the Natural Diversity Data Base (NDDB) from a number of data sources . Exact locations of species have been buffered to produce the general locations. Exact locations of species and communities occur somewhere in the shaded areas, not necessarily in the center. A new mapping format is being employed that more accurately models important riparian and aquatic areas and eliminates the need for the upstream/downstream searches required in previous versions.
This map is intended for use as a preliminary screening tool for conducting a Natural Diversity Data Base Review Request. To use the map, locate the project boundaries and any additional affected areas. If the project is within a shaded area there may be a potential conflict with a listed species. For more information, complete a Request for Natural Diversity Data Base State Listed Species Review form (DEP-APP-007), and submit it to the NDDB along with the required maps and information. More detailed instructions are provided with the request form on our website.
www.ct.gov/deep/nddbrequest
Use the CTECO Interactive Map Viewers at www.cteco.uconn.edu to more precisely search for and locate a site and to view aerial imagery with NDDB Areas.
QUESTIONS: Department of Energy and Environmental Protection (DEEP)
79 Elm St., Hartford CT 06106
Phone (860) 424-3011
Connecticut Department of Energy & Environmental Protection
Bureau of Natural Resources
Wildlife Division
Suffield
East Granby
Windsor Locks
Seymour Hollow
Lighthouse Hill
Poquonock
Hathaway Hollow
Windsor
Mundy Hollow
Beirges Hill
Enfield
Warehouse Point
East Windsor
Exit 45
Exit 44
Exit 44
Exit 42
Exit 41&39
Exit 40
Exit 40
Exit 39&41
75
159
91
140
5
20
20
191
0
0.5
1
Miles
N

**Agriculture and Farming**

The Town of Windsor Locks is geographically small and largely developed. The amount of farm acres continues to decrease and development pressures are increasing. Windsor Locks, known to be an industrial mill town, shares that industrial history with acres of tobacco, horse pasture, vineyards and vegetable crop. Agriculture and farming are a part of the fabric of the Windsor Locks community, helping to create the Town's and Regionals character and economy. Windsor Locks residents and farmers, especially since 2014, have expressed interest in establishing a formal agency for promoting the preservation of remaining agricultural lands in Town. It is important that the Town include a goal and related objectives in this Plan to inventory, rank and protect existing farms, to seek balance between development and the continuance of agriculture and provide support to the farmer and resident who desire farm preservation.

Several CT municipalities have created a formal town commission or a less formal committee to both provide the farmers input into town policies and to help develop initiatives that will keep farming in the community viable. In 2016, the Windsor Locks Conservation Commission agreed to take on the role of the Agricultural Commission and has voted to also work in conjunction with an Agricultural Advisory Committee. The Conservation Commission would, as it does now, keep agendas and minutes and all other recording requirements for such business which may happen within both special meetings and regularly scheduled meetings.

Municipalities may establish a local agricultural council by vote of the Board of Selectmen per Section 7-131v. CGS. The Conservation Commission, acting as this council, should seek to:

- Provide information to local farmers and to municipal boards and commission about the benefits of a balance between agriculture and other land uses
- Educate municipal officials about agricultural lawns and safety issues
- Identify grant sources to grow the recently established Agricultural Land Preservation Fund, support local farmers and encourage farm preservation
- Enable a common understanding of agriculture among all municipal departments
- Provide information and guidance about zoning issues related to agriculture
- Support local, regional and state vocational agricultural programs concerning agricultural matters

**Farmland Inventory and Ranking System**

In 2016, eighteen (18) properties were identified during the initial farmland inventory. Agricultural uses include tobacco, corn/other vegetable crop and horse / pasture. Some confirmation through property owner outreach, site visits and Assessor involvement should take place in order to more fully understand the community's agricultural offerings. It is suggested that the town utilize a ranking system for preservation efforts.

The following criteria is common for inventory ranking:

- Parcel size
- Percent of prime or important soils
- Percent active cropland
- Contribution to availability of local fresh foods
- Development pressure
- Natural significance (waterways, endangered species, vernal pools)
- Cultural significance (community support, historic recognition, iconic features)
- Nearness to open space land (preserved through deed or restriction, natural state, recreation or farming
- View from Town Road, Access, Character and placemaking opportunity

**Creating a Supportive Agricultural Business Environment**

As agriculture and farming can be an integral part of a local economy it is important for the community to understand what they offer and what they need to remain viable. Here is a list of questions for community members, land use commissions, economic development committees and others to consider in developing future goals and objectives.

1. Do the community's farms provide on -site and/or off-site sales?
2. Does the farm contribute to a farmers market or other farm related celebration or festival?
3. Do the Zoning Regulations permit agriculture related stands and signage?
4. Do the Zoning Regulations promote smart growth principles, encouraging a balance between development and preservation? (Flexible Residential Regulations, Conservation Subdivisions)
5. How does the town publicize state tax exemptions for the local farmers?

**Farm and Agricultural Preservation Plan and Strategies**

It is recommended that the Town create a formal Preservation Plan for open space and agriculture, separate from the Plan of Conservation and Development. There are a number of resources for collaboration and planning for preservation.


Winlox Farm West Street Windsor Locks

**Goal: Establish an agricultural land and farming preservation plan in order to ensure the availability of local fresh food, to support the local economy and to assist with preservation of land and culturally significant community assets.**

**Objectives:**

1. **Continue to work with the State of Connecticut to map/formally recognize the Town's agricultural soils.**
2. **Create an updated inventory of agricultural and farm lands.**
3. **Survey property owners to understand what their needs and wants are for the future of their lands and identify which properties are ripe for preservation.**
4. **Utilize the recently established ranking system to score identified parcels.**
5. **Consider annual appropriations to grow the recently established Agricultural Land Preservation Fund.**
6. **Review and amend the zoning regulations and subdivision regulations to encourage and support the farm community.**
7. **Provide resources to the farm community regarding town policies, regional support and available grand funds.**

Helpful Resources:

Natural Resources Conservation Service (NRCS)
http://www.nrcs.usda.gov/wps/portal/nrcs/site/ct/home/
University of Connecticut Center for Land Use Education and Research (CLEAR)
http://clear.uconn.edu/
State of CT Community Preservations Program
A guide for Connecticut Municipalities www.ctplanningforagriculture.com
CRCOG Sustainable Region http://crcog.org/community_dev/sustainable-dev.html

EPA Smart Growth https://www.epa.gov/smartgrowth

## Open Space and Greenways

In the period between 2007 and 2017 Windsor Locks has continued to prioritize the expansion of its system of open spaces and neighborhood parks. This effort is particularly important due to the overall developed nature of the town and the reduction in green space over the last number of decades. While opportunity for development is important, so is preservation of the landscape. Both development and preservation are valuable to a community's economic health and sustainability.

While areas of active and passive recreation are also identified, and discussed in the Parks and Recreation Section of the Plan, this section of the Plan will discuss the broader Open Space / Greenway concepts and opportunities in Windsor Locks.

### Open Space

Open space is a parcel or group of parcels, typically undeveloped or relatively natural land, including forest land, land designated as wetland under section 22a-30, and not excluding farm land, **the preservation or restriction of the use of which would** (A) maintain and enhance the conservation of natural or scenic resources, (B) protect natural streams or water supply, (C) promote conservation of soils, wetlands, beaches or tidal marshes, (D) enhance the value to the public of abutting or neighboring parks, forests, wildlife preserves, nature reservations or sanctuaries or other open spaces, (E) enhance public recreation opportunities, or (F) preserve historic sites.

The State of Connecticut envisions a mixed landscape preserving natural communities, protecting water quality, providing outdoor recreation, and offering green spaces for all residents.

The State's goal is to preserve 673,210 acres or 21% of Connecticut's land as open space by the year 2023, including 10% of open space to be DEEP-owned as additions to the State's

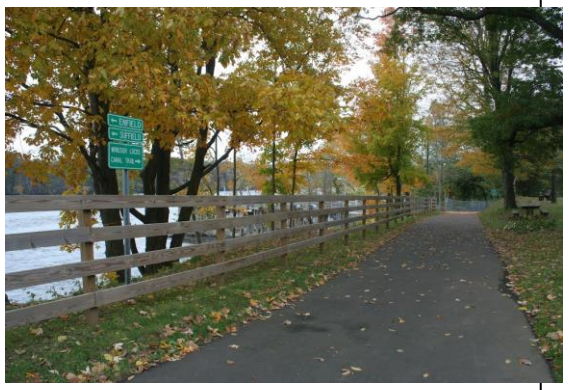
**Greenways**

Greenway are corridors of connected open space parcels that provide a much-enhanced open space experience superior to a Town owning small, disconnected parcels of Town owned land. They hold the potential of containing a system of hiking trails, multi-use (non-auto) paths and interconnected public spaces available to Town residents. They generally better preserve the natural feature it surrounds, such as a watercourse or wetland area, and they also provide a permanently protected wildlife corridor.

This Section of the Plan identifies where there are real possibilities to expand existing open space, enhance existing greenways or to establish future greenways. There are a variety of ways that these objectives can be achieved. Open space can be required as part of future subdivision and clustered residential development approvals by the Planning and Zoning Commission. To achieve these important objectives, the Commission should increase the percentage of open space required through such approvals. The amount of required open space in subdivisions should be increased from 10% to 20% as is common with many surrounding communities, and larger percentages in clustered residential developments allowed by Special Permits.

As recommended in the Plan of 2007, the Town has established an Open Space Land Acquisition Fund. This has been funded by contributions through "fees in-lieu of open space" from new development but has not yet been funded by contributions from annual budget appropriations. Such annual contributions should be considered. As Windsor Locks is already largely developed the community is not likely to realize a great deal of new residential development. The Town's open space fundraising efforts should not rely on fees in-lieu of open space alone. Open space grants should be aggressively pursued by the Town to achieve its open space goals.

"Greenway" means a corridor of open space that (1) may protect natural resources, preserve scenic landscapes and historical resources or offer opportunities for recreation or nonmotorized transportation, (2) may connect existing protected areas and provide access to the outdoors, (3) may be located along a defining natural feature, such as a waterway, along a man-made corridor, including an unused right-of-way, traditional trail routes or historic barge canals or (4) may be a greenspace along a highway or around a village. (CGS section 23-100)



Windsor Locks Canal Trail State Park 4.5 mile greenway connecting Windsor Locks to Suffield, now also connects to trail improvements between Suffield and Enfield over the Route 190 CT River bridge.

**Existing Open Space and Greenway/Trail Opportunities**

**Spring Park / Kettle Brook Greenway -** The existing town open space, consisting of Spring Park along an expanse of Kettle Brook forms a modest greenway in the center of the community. The town should seek opportunities to expand open space along this natural feature.

**Merrigan Brook –** The area around Merrigan Brook provides a greenway opportunity. The headwaters of Merrigan Brook are generally undeveloped, although the downstream portion of the brook has experienced significant development. Near the upper reaches of this brook lies Circle Drive Park, and further to the west is the open space secured during the development of the new subdivisions near Acorn Drive. There is an opportunity to connect these areas with open space as the surrounding land develops, creating a greenway along Merrigan Brook, including surrounding wetlands, providing both protection for this natural feature and additional passive recreational opportunities. Windsor Locks should continue conversations with the Town of Suffield regarding a coordinated effort at the town line.

**Waterworks Brook Greenway –** This waterway is one of the longest undeveloped watercourse corridors within the Town of Windsor Locks. The majority of this watercourse lies within what was previously known as the Connecticut Water Company's wellfield site in the southeast corner of Windsor Locks. The brook continues under I-91, through mostly undeveloped properties, to the Connecticut River. The CT DEEP's Natural Diversity Data Base (see above) shows an Area of Concern within the upper reaches of Waterworks Brook. The open space opportunities, recreational potential and existing wildlife habitat was realized in the 2007 Plan and the land has since been preserved, expanding the Town's greenway system. The community should look for ways to expand the preservation area onto adjacent parcels when appropriate or require significant natural buffers when adjacent parcels are developed. Additionally, the community has shown interested in organizing continued clean-ups, enhancing the park entryways, adding wayfinding and educational signage and connecting the land to adjacent neighborhoods through travel paths.

**Connecticut River / Windsor Locks Canal Greenway -** The State of Connecticut has a long standing, yet conceptual, plan to establish a state recognized Greenway along the Connecticut River highlighting the river, canal and locks, the agricultural heritage within Suffield and the canal and mill history of the Windsor Locks riverfront land. This Greenway has already had the beginnings of the 4.5 mile Canal Trail State Park, a bikeway established along a portion of the riverfront area through easements secured with the State of CT and the land owners. There is continued interest by both Towns and the State in moving

this formal greenway plan into reality, preserving the canal and locks, adding additional access points to the river and an expanded park area. The Town may also want to have further discussions regarding a Hydropower Feasibility Study. This park is currently a tremendous recreational, tourism and economic asset to the community and its residents. The Town has re-energized its efforts to work with the State of CT, Town of Suffield, land owners and other stakeholders to find ways to achieve this Greenway plan.

**Small Abandoned Parcels** - The town should seek to identify "abandoned" and tax delinquent parcels which could be acquired for future open space. In 2016, the Tax Office and Land Use departments worked together to establish a list of 14 of such smaller parcels which were directly adjacent to other Town owned open space, undeveloped land, active recreation areas or otherwise provided potential connecting pathways to open space. Often these small parcels were approved for subdivision decades ago by developers or owners who for one reason or another did not ultimately develop the land. In some cases, the parcels are "paper streets" or are encumbered by watercourses or poorly drained soils, ideal for preservation and not ideal for development. Windsor Locks should continue to pursue acquisition of this set of parcels and similar parcels that become available through this process in order to expand existing open space or greenways.

**Hillside Greenway –** Hillside Avenue is a "paper street" that was never developed, adjacent to several town owned parcels and wetland soils. It is located between North Main Street and Mabel at the town line of Suffield. While the Town of Suffield has not identified the land north of these properties as prime for preservation, discussions between the towns should continue regarding the opportunity to expand the greenway beyond the town line to the North, at least as a buffer to any new industrial development in Suffield.

**Strawberry Meadow Brook / Back access –** This waterway is a significant feature that runs somewhat parallel to and to the east of Ella Grasso Turnpike/Route 75. It acts as a natural separation between the industrial and residential uses on Old County Road and the commercial uses on Ella Grasso Turnpike. Much of the brook is located on private properties where there is development potential. Additionally, a back-access road to Ella Grasso Turnpike was recommended several years ago as part of the Bradley Area Transportation Study along this brook, in order to open up additional land for development and alleviate traffic on the route 75 corridor. This area, should there be proposals for any type of development, will need careful planning and a cooperative effort between property owners to accomplish ideal development and connectivity for either a road and/or multi-use path adjacent to the

brook in a way that preserves the watercourse, it's upland area, adjacent wetland soils, and at least three identified ponds along the stretch between Route 20 to Loten Drive.

**Route 20 Corridor –** There are a number of highly visible parcels being marketed for commercial development along the Route 20 corridor. The community should consider the opportunity to create and/or maintain a linear greenway consisting of a multi-use path adjacent to the highway right of way from approximately South Center Street to Hamilton Road. Such a greenway could incorporate natural features, portions of historic farm fields, connections to the Town of Windsor and other adjacent open space lands. Once established this could be an alternative travel way connecting Main Street to the airport corridor and could enhance any new development proposals.

**River Road –** Windsor Locks, a CT River community, has very little public access to the river. The town owns land on the east side of River Road along the water and so should consider creating a formal public access point, park and potential greenway feature in this location. Further, the town should consider the future development of this neighborhood. River Road is currently zoned industrial. Given the existing residential homes on the west side of the street, the proximity to a major waterbody and the tendency of the area to flood, the town should also consider a zone change. Together with the property owners, other neighborhood stakeholders and the State of CT DEEP the town should establish a plan for River Road which considers existing residences, flood management, public access and preservation.

**Goal: To enhance and establish permanent open space and greenway corridors within the community where opportunities exist that serve the multiple roles of natural resource and wildlife habitat preservation, celebration of heritage, providing opportunities to experience nature, creation or extension of non-motorized multi-use trails encouraging connectivity, physical fitness and healthy lifestyles.**

**Objectives:**

1. **Continue efforts initiated during the previous planning period regarding the Windsor Locks Canal and Canal Park (now a State recognized 4.5 mile multi-purpose trail), including:**
   a. **Strengthening partnerships with State of CT departments, Town of Suffield, Ahlstrom Corporation and the owner of the vacant mill building**
   b. **Seeking funding to resurface and maintain the trail.**
   c. **Constructing a new entry park at the head of the trail on the southern end in Windsor Locks.**

d. **Restoring, preserving and utilizing the canal and locks**
e. **Revisit past discussions regarding conducting a Hydropower feasibility study**

2. **Continue planning efforts to discover potential extensions and preservation of the Kettle Brook Greenway.**
3. **Continue planning efforts to discover potential extensions and preservation of open space along Merrigan Brook.**
4. **Continue planning efforts to discover potential extensions of the Waterworks Brook Preservation Area Greenway (nearly 200 acres of town preserved land formerly known as the CT Water Company property) on South Center Street.**
5. **Amend the Windsor Locks zoning and subdivision regulations to strengthen the open space provisions by increasing the minimum amount of required open space with new development from 10% to a minimum of 20%. Also seek to encourage the preservation of open space greenways when lands within these corridors are proposed for development.**
6. **The Town has established a formal Open Space Land Acquisition Fund. The Town should request that this account be funded by annual appropriations from the Town's budget in addition to already established subdivision regulations which require "fees-in-lieu of open space" contributions from new development. Development opportunities for new subdivisions are minimal given the developed nature of the community.**
7. **The Conservation Commission, with input from the Planning and Zoning Commission and Inland Wetland and Watercourses Commission should coordinate, plan, and seek implementation and funding methods, for potential greenways in Windsor Locks. This group should consider using the "Integrated Natural Resource Values Analysis" to identify high value areas for preservation efforts.**
8. **The Town should continue to inventory, and seek opportunities for acquiring, abandoned properties if they contain natural resources or provide opportunity to extend or connect greenways.**

INSERT OPEN SPACE AND GREENWAYS MAP HERE

## Environmental Sustainability

The term "sustainability" will be referred to a number of times throughout this document. A sustainable community has resources (for example: food, jobs, economic wealth, health, transportation and housing) available to it in the long term. The way a community conducts itself today impacts its overall wellbeing for decades to come. Environmental sustainability specifically allows for the needs of today's community to be met without jeopardizing valuable natural resources, agriculture and energy needed by future generations.

Since the 2007 Plan, Windsor Locks has participated in the following activities:

- Motion sensor and LED lighting within Town Hall
- Upgraded heating and cooling systems within Town Hall
- School district solar panels
- Town Library Energy Efficiency Upgrades
- Rain barrel / Open Space Fund program
- High School MS4 Education / Science Classes
- Staff APA Ambassador Program (introducing youth to the Planning field)
- MS4 Outreach and Education events

**Renewable Energy, Energy Efficiency**

Per the Department of Energy and Environmental Protection website, "The term renewable energy generally refers to electricity supplied from renewable energy sources such as wind and solar power, geothermal, hydropower, and various forms of biomass. These energy sources are considered renewable sources because they are continuously replenished on Earth." States, regions and local communities are asked to participate in efforts to use, and possibly produce, clean sources of energy. Since we know that fossil fuels are not infinitely available and create harmful greenhouse gases it is important to do so. Producing and using clean sources of energy locally can reduce dependency on others, minimize our contribution to these negative environmental impacts and create local jobs. Similarly, energy efficiency efforts reduce the amount of energy required to do all of the things we need energy to do on a daily basis. Undertaking energy efficiency projects is one of the easiest ways to help lower energy usage and minimize impacts of energy use on the environment. Energy efficiency can take place in the home or in a business, in public facilities and among the private sector, no matter how big or how small.

This Plan provides a number of recommendations related to resource preservation, community health and similar efforts. This section will build on this discussion in order to create an even more environmentally responsible Windsor Locks.

**Goals and Policies:**

**Goal: To prioritize, as a community, the efficient use of all resources in order to better preserve available natural resources for future generations.**

**Objectives:**

1. **Land Use - Create a program that incentivizes "green construction" or similar retrofitting projects throughout the planning and zoning process.**
2. **Land Use - Amend the Zoning Regulations to include Low Impact Development standards**
3. **Municipal – Develop a community wide policy committing to a Sustainability Plan**
4. **Municipal – Consider becoming a Sustainable CT member**
5. **Municipal - Review current Town Hall / Municipal Department recycling, office supply and equipment purchasing, digital filing programs for opportunities for eco-friendly improvement.**
6. **Municipal - Review current municipal services related to residential recycle programs to look for opportunities for improvement.**
7. **Municipal – Continue the discussion on the purchase of an electric vehicle fleet and charging station at Town Hall**
8. **Citizen - Create new ways to provide community education and outreach on changes that can be made at home. This can build on the current MS4 Stormwater Management best practices.**

**Helpful Resources:**

Energy Basics: Renewable Energy on Energize Connecticut
https://www.energizect.com/
https://www.ct.gov/deep
https://sustainablect.org
http://crcog.org/sustainable-capitol-region/

## Climate and Resiliency

In the fall of 2005, due to heavy and prolonged rains resulting from tropical storms, many areas in Windsor Locks were inundated, a few citizens nearly lost their homes to slip surfaces and erosion. Since then there have been a number of storms (snow, rain, wind) that have negatively impacted properties in town. The following paragraphs will continue the conversation of planning for intense weather patterns and the possibility of prolonged changes in our environment by exploring the idea of resiliency and helping to prioritize next steps for decision makers as they are presented with new predictions related to warmer air and land, mean sea level rise, frequency and intensity of storms.

**Resilience** - the capacity to recover quickly from difficulties, toughness.

A resilient community:

- Is attractive, safe and welcoming
- Is affordable to many
- Prioritizes walking, cycling and public transportation as much as it does the automobile
- Is designed to accommodate a mix of uses and a diverse economy
- Is designed to permit somewhat increased densities to allow for increased open space
- Is convenient to quality services and amenities (jobs, school, grocery, worship, social)
- Has a distinct sense of place, is unique with small hints of delight and surprise (unique features, color, art, culture)
- Has a quality public realm, spaces where people feel encouraged to sit, enjoy, spend time
- Has enhanced green infrastructure
- Has maintained its biodiversity both in its backyards and in its public spaces
- Protects and celebrates local heritage

It is known that the above characteristics helps a community to be desirable, sustainable and economically strong (resilient) but what does resilience mean when it comes to **climate and weather**?

**What is the difference between weather and climate?**
Weather is the measure or assessment of the atmospheric conditions manifesting over a certain geographical location, at an exact moment in time. Climate is the measure or assessment of atmospheric conditions that manifest on a certain geographical location over an elongated period of time, often exhibiting repeatable patterns of change or stability on an annual or longer basis. www.nasa.gov

**What information should Windsor Locks consider?**
While Windsor Locks is not a coastal community and is therefore not as directly impacted by sea level rise, it is important to review available data and consider the possible local impacts of various weather and climate scenarios related to this increase, as well as our community's overall impact to the environment which everyone shares. Global Mean Sea Level Rise scenarios, NOAA Technical Report shows a very high confidence that global mean sea level will rise at least 0.2 meters (8 inches) and no more than 2.0 meters (6.6 feet) by the year 2100. Consideration of this report and what it may mean for our local communities is required by CT State Statute when preparing local Plans of Conservation and Development. Such review and consideration can lead to better regional planning and therefor smarter local decision making by boards and commissions, as well as increased preparedness.

Sea Level Rise, related to climate trends, warm air and land temperatures and ice melt, is predicted to impact shorelines and riverine communities, increasing erosion and flooding risk, which should be assessed based on local risk and conditions.

Inland communities, like Windsor Locks, should consider the following impacts:

- more frequent and more severe storms
- warmer air, water and land temperatures
- longer periods of drought in between rainstorms
- flood
- health
- economy

This could mean that new areas will flood, however it is more likely that areas already known to be inundated or have poorly drained soils may now have standing water, or areas that are known to flood may flood more frequently and with more intensity.

Health impacts of changing weather patterns or longer-term shifts in climate for an inland community could be poor air quality, increase in infectious diseases or conditions ripe for breeding of mosquitos, for example. Local farm crops can be impacted adding to fresh food insecurity.

Shallow waters and warmer temperatures can impact the economy, especially for those industrial companies that rely on bodies of water to cool their plants. Road closures due to flood can also impact commerce and local transportation.

The community may want to consider this question, "Would you be concerned that the recent patterns of storms will continue?" If so, it may be time to assess the community's resiliency if these storms were to maintain their frequency. Additionally, there are steps that can be taken in order to reduce vulnerability, whether storm severity or frequency continues or not:

**Mitigation**

Mitigation means preventing or reducing impacts from occurring, making changes proactively. In November 2019 FEMA approved the Capitol Region Natural Hazard Mitigation Plan 2019-2024, in which are specific mitigation goals for Windsor Locks related to storms, flood, wind and similar potential climate related impacts.

**Mitigation Strategies and Actions**

The Town proposed to initiate several new mitigation actions as part of the Natural Hazard Mitigation Plan. The full list of actions should be reviewed, updated and acted upon based on their priority. Actions guided by the mitigation plan have been incorporated into this Plan to assist departments in planning for the upcoming ten years. The actions have been prioritized based on FEMA guidelines.

Action: Monitor infrastructure. Enforce and maintain, as appropriate, cleaning of grates along Main Street and clearing of trash rack adjacent to 1 and 8 Main Street
Goal. Improve the resilience of local and regional utilities and infrastructure using strategies including adaptation, hardening, and creating redundancies.
Category: Prevention
Lead: Public Works
Cost: $5,000 - $10,000
Funding: Town Operating Budget, Grants as needed
Timeframe 01/2020 - 12/2025
Priority: High

Action: Enter the Sustainable CT program through Registration and review actions that can be undertaken to pursue Certification. Make progress with actions related to hazard mitigation and low impact development.
Goal. Increase the use of natural, "green," or "soft" hazard mitigation measures, such as open space preservation and green infrastructure.
Category: Natural Resources Protection
Lead: Planning
Cost: $0 - $10,000
Funding: Town Operating Budget, Grants as needed
Timeframe: 01/2020 - 12/2025
Priority: High

Action: Update voluntary list of people who identify as vulnerable or people who are disabled and may need assistance with evacuation, oxygen, transportation or other accommodations during an emergency event or natural hazard. Improve interdepartmental coordination and protocal. Increase communication to residents related to emergency preparedness.
Goal. Improve public outreach, education and warning systems.
Category: Education and Awareness
Lead: Public Works
Cost: $0 - $1,000
Funding: Town Operating Budget, Grants as needed
Timeframe 01/2020 - 12/2025
Priority: High

Action: Develop designs and a cost-estimate for elevation of the fueling tank at the 1 Stanton Road DPW site; tank is currently underground and at-risk of being impacted by flooding.
Goal. Improve the resilience of local and regional utilities and infrastructure using strategies including adaptation, hardening, and creating redundancies.
Category: Structural Projects
Lead: Public Works
Cost: $10,000 - $25,000
Funding: Town Operating Budget, Grants as needed
Timeframe: 01/2020 - 12/2025
Priority: High

Action: Conduct outreach to local businesses with the aim of preventing the accidental release and pollution from chemicals stored and used at their facilities during or following natural hazard events.
Goal. Improve public outreach, education and warning systems.
Category: Education and Awareness
Lead: Planning and Development, in coordination with DEEP
Cost: $200 - $1000
Funding: Materials and Resources Provided by CT DEEP, Town Operating Budget, Grants as needed
Timeframe: 01/2020 – 12/2025
Priority: Medium

**Low Impact Development**

Low Impact Development, or LID, is a site design and stormwater management strategy intended to maintain or replicate predevelopment hydrology through the use of small-scale controls integrated throughout the site. Low Impact Development manages runoff by i. Encouraging conservation, ii. Reducing impervious areas, iii. Slowing runoff by using landscape features, iv. Using measures to reduce and cleanse runoff and v. preventing pollution as close to its source as possible. LID is also referred to as "Green Infrastructure," or "Green Stormwater Infrastructure". Low Impact Development can be a tool for both mitigation and adaptation.

**Adaptation**

Adaptation means managing impacts, learning how to accept and live with new impacts, projecting the community's needs, understanding the cost associated with each impact and choosing projects that are "the best bang for your buck".

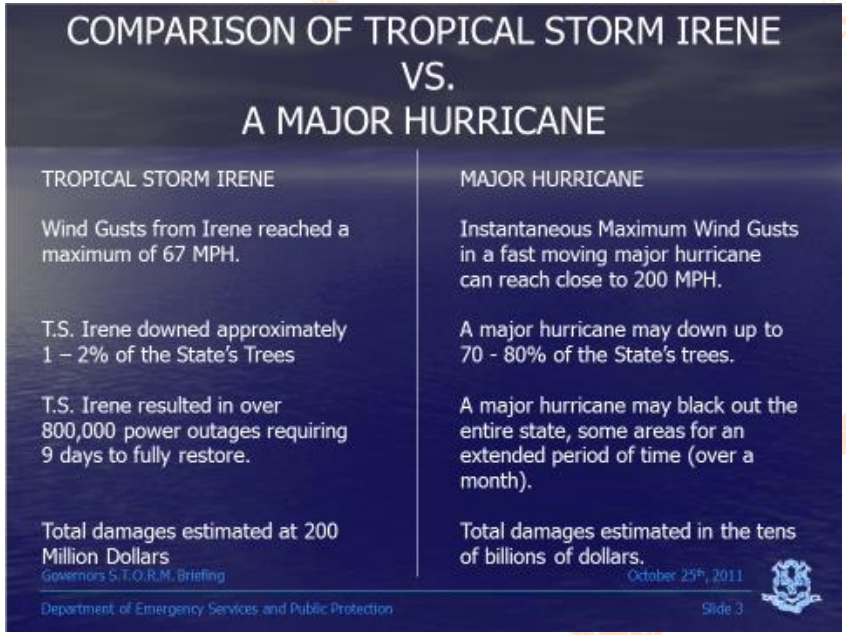
**Beautification/Seek Opportunity**

Mitigation measures provide function, but they can also provide beauty. Consider how the town can embrace the current landscape or anticipated changes. Windsor Locks can creatively seek opportunities for beautification in its existing environmental features, create new wetland areas, rain gardens and other flood storage areas. There is also opportunity in enhancing parks and other natural resource areas such as the CT River, encouraging public access, trails and other types of tourism, so that they become economic generators. Lastly, the Town can consider retreating from flood prone areas and allow dense and diverse growth in other areas of town in order to sustain or grow the tax base.

**Goal: Plan for intense weather patterns and the possibility of prolonged changes in our environment by exploring the idea of resiliency and prioritizing next steps for decision makers as they are presented with new predictions related to warmer air and land, mean sea level rise, frequency and intensity of storms**

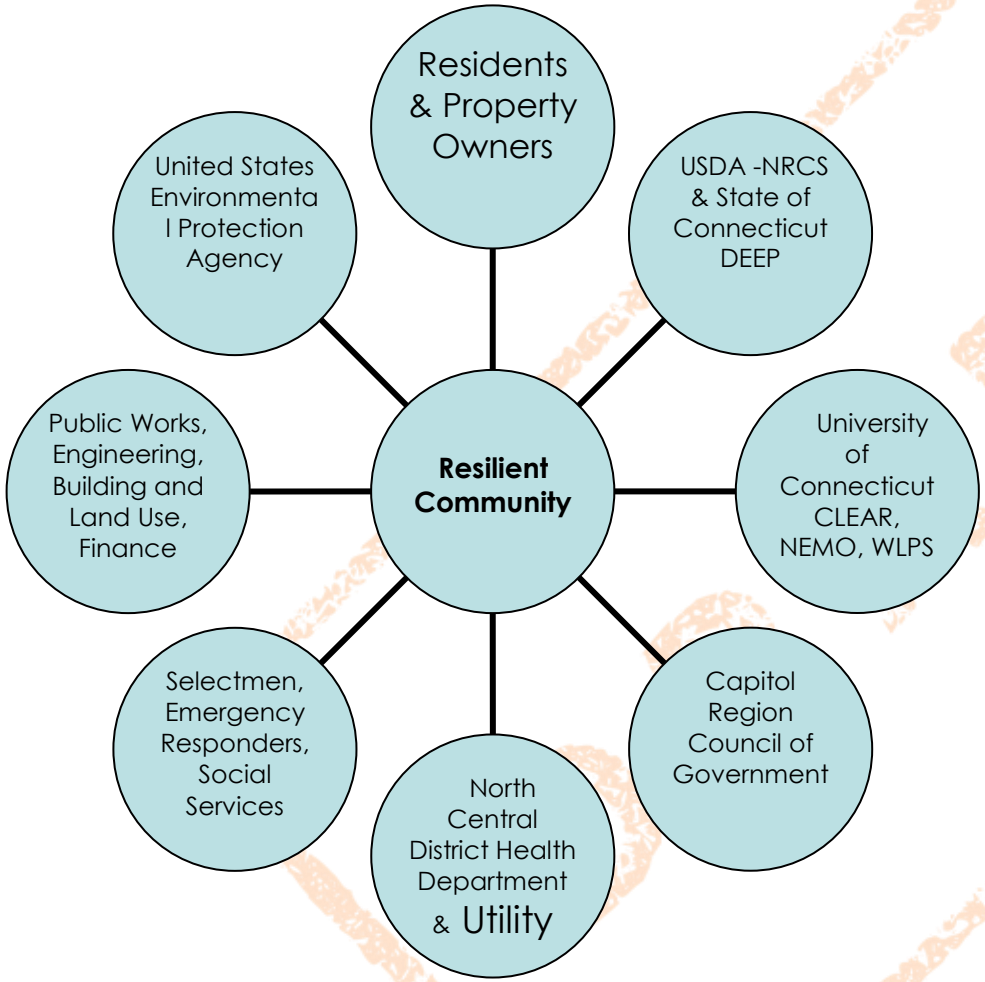
**Objectives:**

1. **Initiate a process for determining the community's resiliency**
2. **Identify the community's questions and concerns**
3. **Assess the community's current development patterns against areas likely to be impacted**
4. **Understand and analyze risks**
5. **Review flood regulations**
6. **Communicate with property owners regularly to gain input and reduce losses**
7. **Write and implement low impact development and compact development regulations**
8. **Strengthen land preservation programs**
9. **Consider community wide goals such as reduced emissions and reduced energy consumption**
10. **Reassess the community's resiliency at least every 10 years in line with the State of Connecticut and University of Connecticut's recommendations and requirements per PA 1319**




"A category 3 hurricane could result in a loss of up to 70 – 80% of the State of Connecticut's trees." *CIRCA Executive Director and UConn Professor of Marine Sciences, James O'Donnell*

## Partners in Creating a Resilient Community




Resources:
Clean Air Partnership
www.cleanairpartnership.org
CT DEEP Adaptation Resource Toolkit
www.ct.gov/deep
CT Climate Change
www.ct.gov/deep/climatechange
UNH Forging the Link Low Impact Development
https://www.unh.edu/unhsc/forging-link-topics
Clean Air Cool Planet http://www.cleanair-coolplanet.org/
CT Institute for Resilience and Climate Adaptation - UConn www.circa.uconn.edu

**Municipal Separate Storm Sewer Systems (MS4)**

The United States Environmental Protection Agency determined that municipal separate storm sewer systems (MS4s) are a major pathway for the introduction of pollutants to waterways and are a leading cause of poor water quality, for both fresh and coastal waters. The Connecticut Department of Energy and Environmental Protection (DEEP) administers and implements this program through the General Permit for the Discharge of Stormwater from Small Municipal Storm Sewer Systems (the General Permit).

The DEEP issued a new General Permit effective July 1, 2017. As part of the General Permit application, Windsor Locks has developed and has begun implementing the Stormwater Management Plan which incorporates:

Public Education and Outreach
Illicit Discharge Detection and Elimination
Post-construction Stormwater Management
Public Involvement and Participation
Construction Site Runoff Control
Pollution Prevention and Good Housekeeping

The Town's Department of Public Works, Planning and Zoning Commission and other departments will need to work cooperatively to continue to meet the new requirements of the General Permit and minimize the discharge of pollutants to Town and State waters.

**Goal: To maintain and improve the quality and functions of the Town's watercourses, the waters of the State of Connecticut and beyond, and protect them from ongoing development activities.**

**Objectives:**

1. Continue to perform a regular inventory of each of the Town's major watercourses to evaluate their health.
2. Build on the current volunteer trail and watercourse "clean-ups" to establish a more formal annual schedule.
3. Continue to involve residents, school groups and other organizations in an education program about the importance of the Town's watercourses, including the function of upland areas and impacts from storm water runoff due to adjacent land uses.
4. Seek new opportunities to create additional public open spaces around the Town's watercourses to preserve their functions and create connectivity among the Town's open spaces areas.

5. Consider new opportunities for public paths and trails along open space corridors (Spring Park, Kettle Brook and Waterworks Brook, for example), along the Town's significant watercourses, as a unique recreational amenity and educational opportunity for Town residents.
6. Develop low impact development land use regulations, requiring site specific stormwater management plans which mitigate polluted runoff and maximize green, open and pervious spaces to minimize impacts to waterways.
7. Evaluate various types of green infrastructure and consider establishing local policies which encourage or require green infrastructure use within the community's roads and development projects.
8. Establish a formal interdepartmental Stormwater Management Plan in order to identify, mitigate and prevent pollution to the waters of the community, the region and the State of Connecticut.