



# *Open Space and Recreation Plan*

Town of Essex, Massachusetts

*2016—2023*

*February 2016 Draft*





**Prepared by the Essex Open Space and  
Recreation Committee**

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## **SECTION 1: PLAN SUMMARY**

This 2016-2023 update to the Essex Open Space and Recreation plan proposes to continue efforts of the 2007 plan to preserve and protect the scenic character of Essex's open space that make our town such a unique and wonderful place to live.

Wetland and sewage handling regulations constrain development of many lots in Essex; nevertheless, residential growth continues at a modest 0.5% annually. Projections indicate Essex's population of individuals 60 and over will continue to grow. Slow residential growth and an aging population means that the Town's resources will be best spent on updating existing recreational facilities to current needs rather than adding new facilities.

Modest development can result in disproportional impact on open space. Between 1951 and 2014, developed land in Essex nearly tripled from 423 acres to over 1200 acres while Essex's population nearly doubled during the same time period. Most new development occurs on the outskirts of town center, often carved from the woods or placed in former agricultural fields. Developers have yet to take advantage of the Open Space Residential Design bylaw adopted in 2007 that encourages clustered development in return for open space protections.

The Town has expended significant time and resources since 2007 on sewage issues. Septic issues associated with Conomo Point have been addressed through septic upgrades, anticipated leases for Northern Conomo lots and with rezoning and sale for Southern and Central Conomo lots. Sewer system flows to Gloucester have been less than originally projected so some capacity exists to add additional flow from the expansion of existing facilities.

As a coastal community on the Great Marsh, Essex faces effects from climate change. The low-lying areas expected to be affected by climate change coincide with Essex's major clam flats.

This new plan has been developed by using the digitized property maps created over the past few years with Geographic Information System (GIS) software and data. The Massachusetts GIS office also offers more comprehensive mapping information. A new, detailed Open Space and Recreation Map (**see Map 12**) has been created indicating the open space status of every parcel in Essex and whether those parcels have been protected.

Despite development since 1951, 81.9% of the Town's land remains as open space with 35.0% permanently protected from development and another 17.9% with development restrictions. Unrestricted open space constitutes 29.0% of the land in Essex.

## SECTION 2: INTRODUCTION

### A. *Statement of Purpose*

Essex's 2016 – 2023 Open Space and Recreation Plan seeks to increase our Town's focus on environmental protection and preservation of natural resources as indicated as residents' number one priority in a 2010 town survey.

The residents of Essex – be they humans, animals, or plants – will derive the greatest benefit from living here in the future if the town's unique landscape and history is preserved while, at the same time, enough contiguous open space remains to create valuable habitats that can protect and preserve its flora and fauna.

The Town of Essex Long Term Planning Committee ("LTP") has been developing a "Plan to Preserve the Town of Essex"<sup>1</sup> for over five years. The LTP's process has included several community-wide surveys to identify Essex's community defining resources several which relate to open space and recreation including:

- The Great Marsh and Essex River (Ranked #1 out of 18 resources)
- The Town's Water Resource District (#2)
- Scenic byways (#8)
- Water access and recreational opportunities (#10)
- Clamming and fishing (#13)
- Woods (#14)
- Agriculture (#16)
- Chebacco Lake (#17)

The LTP's work ended with its recent report. The 2016 Essex Open Space and Recreation plan builds on the LTP's efforts to preserve and protect those key resources. A new Strategic Planning Committee, which includes representation from the Open Space and Recreation Committee, will continue the Town's overall planning effort that the LTP started.

Major actions items have been set forth in Section 9 and on the Open Space and Recreation Plan Action Map (**Map 13**), these include:

1. Preserve and protect scenic open spaces with additional focus on areas along John Wise Avenue, Island Road and Lufkin Road;
2. Support the acquisition of Sagamore Hill along the Hamilton town border;

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<sup>1</sup> Town of Essex Long Term Planning Committee, July 2015 Report to the Board of Selectmen "Planning to Preserve the Best of Essex".

3. Support the efforts of the Memorial Park Committee to plan and improve the recreational facilities located there;
4. Preserve and protect the Manchester - Essex Woods through continued research into property ownership and support of conservation restrictions and / or acquisitions;
5. Improve the Centennial Grove Trail by encouraging local volunteers and students to update and provide stewardship for the trail; and
6. Support the creation of a River Walk along the Route 133 corridor.

***B. Planning Process and Public Participation***

Details of the public input process can be found in Section 6, while public comments are detailed in Section 10.

Finally, this draft of the Plan was circulated among Town Boards, local and state officials, nonprofits, and provided for public review. Table A lists the groups and individuals receiving copies, while Table B shows the locations of copies for public review (notice of locations and availability was published in local newspapers). Public comments are summarized in Section 10.

**Table A. Entities Receiving Draft Open Space Plan for Comment.**

Essex Board of Selectmen
Essex Planning Board and Matt Coogan Town Planner
Essex Conservation Commission
Brendhan Zubricki, Essex Town Administrator
Essex Department of Public Works (includes Water Department)
Essex Open Space Committee Contact List
Ralph Willmer, Senior Planner, Metropolitan Area Planning Council (MAPC)
Kathy Leahy, Manchester-Essex Conservation Trust (MECT)
Ed Becker and Chris LaPointe, Essex County Greenbelt Association (ECGA)
David Santomena, Trustees of Reservations (TTOR)
Peter Phippen, Eight Towns and the Bay (8T&B)
Nick Holland, Cape Ann Trail Stewards

**Table B. List of Copy Locations for Public Comment.**

Town Library
Town Hall

RESERVED

## SECTION 3: COMMUNITY SETTING

### *A. Regional Context*

Located on Cape Ann, 35 miles northeast of Boston, Essex shares spectacular natural resources with its neighbors, but is unique among them in its socioeconomic and cultural nature as a rural, predominantly working-class community (*Map 1: Regional Context*). It is bounded on the south by the town of Manchester-by-the-Sea, on the west by the towns of Hamilton and Ipswich, on the north by Essex Bay, and on the east by the City of Gloucester. The town is located in the North Coastal watershed, and contains approximately 16 square miles or 9,200 acres, 1580 of which are under water, and 2176 of which are saltmarsh (all the acreage of saltmarsh and water is considered protected under state law, which constitute over 64% of the protected open space in Essex)<sup>2</sup>.

Route 128 from Boston to Gloucester is located just to the south of Essex, with access via Southern Avenue. Routes 133 and 22 provide major access roads through Essex. In addition to its road system, Essex residents can connect to CATA buses at the Gloucester line and to the M.B.T.A.'s Rockport and Newburyport lines, by traveling to stations located in West Gloucester, Manchester, Hamilton, Beverly and Ipswich. The Essex Council on Aging operates a van service for the elderly and disabled.

Essex shares many vibrant open spaces and natural resources with neighboring communities including Chebacco Lake (really a great pond) with Hamilton, and the Essex/Manchester Woods with Manchester, Gloucester, and Hamilton. Chebacco Lake is one of the last remaining Alewife breeding grounds on the North Shore, while the Woods are characterized as some of the most outstanding habitat remaining on the entire Atlantic seaboard, sheltering several rare and endangered species. Along with Ipswich and Gloucester, Essex makes up the Essex River estuary, which itself is a component of the Parker River/Essex Bay's "Area of Critical Environmental Concern" (ACEC). This ACEC was designated in 1979 under the Commonwealth ACEC program. Regional planning efforts that have included multiple towns include the North Coastal Watershed Plan, and the "Campaign to Save the Woods", driven by the Manchester-Essex Conservation Trust. Both of these initiatives have served to extensively inform this Plan.

Unlike neighboring communities, Essex has remained very rural, with a much slower rate of development due to its topography and distal relationship to most services. With a small tax base and a large geographic area, this means the Town faces significant challenges to preserving open space, providing affordable housing, and promoting smart growth. The adjacent communities of Manchester, Gloucester, Ipswich and Hamilton have completed extensive open space planning. The Town of Essex hopes to work closely with its neighbors to ensure that open space is protected in a coherent and cohesive regional context. To this end, Essex belongs to the North Shore Task Force, organized by the Metropolitan Area Planning Council, which is a group of communities that meets regularly to discuss issues of common interest and is an excellent forum for

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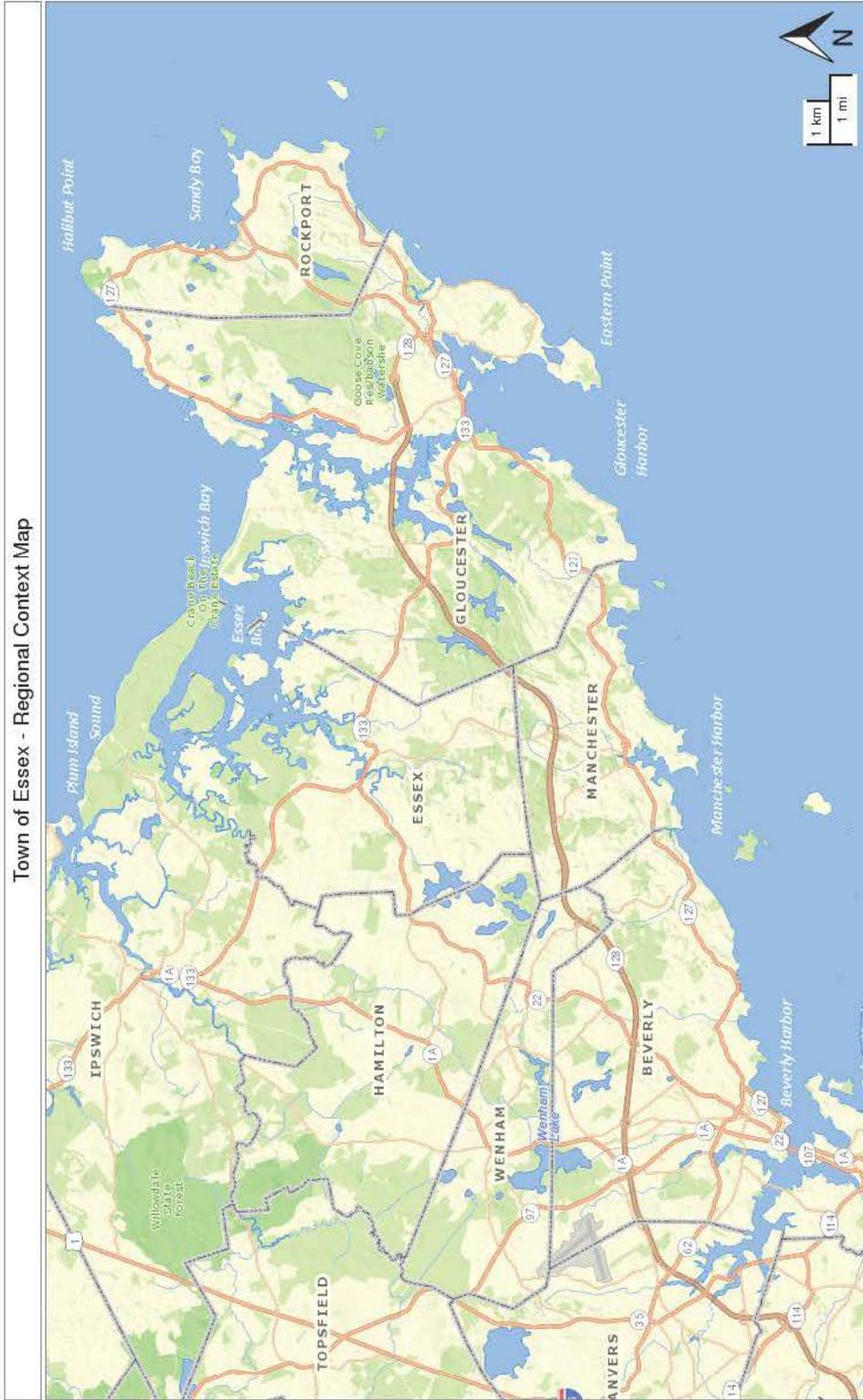
<sup>2</sup> Communication from Therese Smith of CAI Technologies to Stephen Winslow January 14, 2016

# Map 1 - Regional Context

Town of Essex - Regional Context Map

Town of Essex - Regional Context Map

7/15/2015



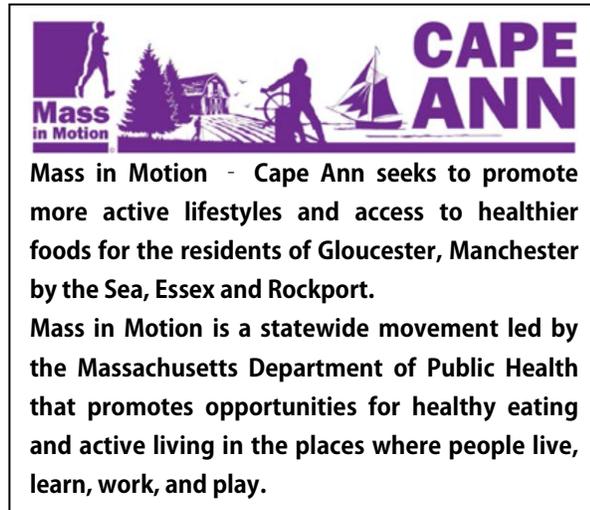
discussing regional open space issues and opportunities (refer to Section 7B for a review of the MAPC MetroFuture Regional Plan's regional open space priorities). The Town has also joined with the Gloucester, Manchester and Rockport to create Mass in Motion – Cape Ann in order to work for a healthier eating, more active Cape Ann.

### ***B. History of the Community***

Distinctive coastal landscape features were instrumental in shaping the history of Essex, from the earliest use of the land by Native Americans to its shipbuilding, fishing and farming traditions.<sup>3</sup> The first Europeans settled in Essex in 1634, originally as part of Ipswich known as Chebacco Parish. Until then, and for thousands of years, the land now known as Essex and surrounding areas were inhabited by Native Americans of the Agawam tribe. In 1638, John Winthrop, the son of the Governor of the Massachusetts Bay Colony, purchased the land from Masconomet, the Chief of the tribe, for 20 pounds sterling. The name Chebacco is Agawam in origin, and refers to the large lake whose waters extend into neighboring Hamilton. Conomo Point, the eastern-most part of the town, is named for Chief Masconomet. Chebacco remained a parish of Ipswich until 1819, when it was incorporated as the town of Essex.<sup>4</sup>

The early agricultural settlement in outlying areas of Essex was sustained by growing fruit and vegetable crops as well as hemp, flax and the harvesting of saltmarsh hay. But it was the river winding through the marshes and fields of Essex that defined much of its history. Originally called Chebacco and later renamed Essex, the river flows out into Ipswich Bay, where its waters join with those of Gloucester's Annisquam River. Choate/Hog Island, the most prominent island in the River, served as a summer shell fishing ground for the native Agawams, then as a subsistence farm, and later as a summer community and retreat for the Crane Family, who later donated it for use as a Wildlife Refuge.

By the Colonial Period (1675-1775), fishing had become an important part of the local economy. The river's calm harbor, situated at the mouth of the river basin, provided a perfect location for building and launching the vessels needed by local fishermen to navigate the rich fishing grounds off New England's shores and, eventually, all over the world.



<sup>3</sup> Massachusetts Heritage Landscape Inventory Program website (<http://www.mass.gov/eea/docs/dcr/stewardship/histland/recon-reports/essex-with-map.pdf>) May 2006.

<sup>4</sup> Town of Essex website ([http://www.essexma.org/Pages/EssexMA\\_WebDocs/past](http://www.essexma.org/Pages/EssexMA_WebDocs/past)) December 2015.

Sawmills on the Essex River were instrumental to the substantial ship building industry. Chebacco boats, characteristic of the area, were built on the Essex River and used for fishing. At the turn of the 19th century there were more than 2,000 Chebaccos in Essex and nearby seafaring towns. In the early 1800s there was a shift to large ship building and related businesses such as the manufacturing of ropes and lines, sails, masts, pumps and blocks. Fishing, including clamming, remained important to the economic base.

The Essex Canal Company was established in 1820 and a canal was dredged from the Chebacco River to Fox Creek to bring lumber from the Merrimac Valley. Essex had three centers of industrial activity: the Falls in the west, the Causeway at the central village near the mouth of the Essex River, and South Essex. These three districts were not well linked until the mid-19<sup>th</sup> century after the construction of Martin Street between the Falls and the Causeway, which already linked the central village with South Essex.

Early vessels were primarily constructed for use by their builders. Gradually, captains from other ports came to Essex to contract for new vessels. By the 1840s, Essex no longer had her own fishing fleet but had turned to year-round shipbuilding.<sup>5</sup>

*Direct quote from the Essex Shipbuilding Museum website:*

From these beginnings, there grew an industry so specialized, it became unique in maritime history. By the 1850's, over 50 vessels a year were being launched from 15 shipyards and Essex became recognized worldwide as North America's center for fishing schooner construction. Gloucester's fleet was largely built in Essex and the town so dominated the industry that Essex vessels could be found in all major U.S. and Canadian fishing ports. One out of every 28 wooden vessels that flew the American Flag was built in Essex. The shipyards of Essex probably launched more two-mast vessels than any other town in the world.

Since many residents of Essex both fished and farmed until the town's three largest shipbuilding industries became large enough to employ many men full-time, the town established both "wood lots" and "hay lots" for each landowner. The wood lots were located along what is now Southern Avenue, in the Essex Woods, and the hay lots were located along the marsh throughout the town. Ditchings done in the 1930s account for the marsh's distinctive cross-hatched pattern.

When the Essex shipbuilding industry ceased in the late 1940s, nearly 4,000 vessels had been launched into the Essex River. While the emergence of new druggers and trawlers rendered Essex's schooners somewhat obsolete, small-scale boatbuilding continued, passed along to a few people in each generation who preserved the traditional construction methods that served thousands of vessels so well. Today, one shipyard, operated by Harold A. Burnham, maintains the traditional boatbuilding methods, and has

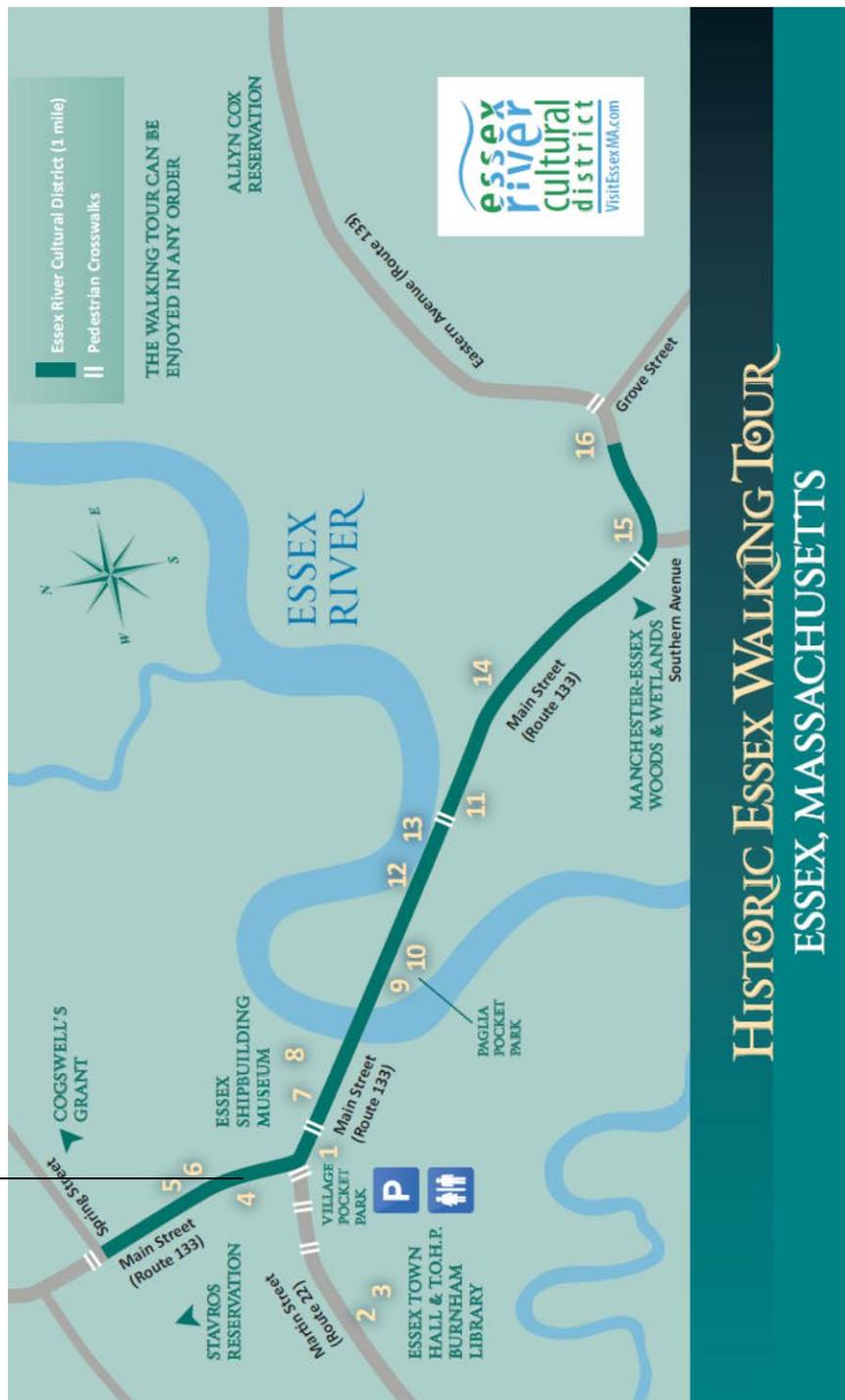
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<sup>5</sup> Essex Shipbuilding Museum website (<http://www.essexshipbuildingmuseum.org>, May 2006) [2016 note: this information no longer available at this website].

launched a number of new and restored vessels down the same winding river that brought so many ships out to sea.<sup>6</sup>

A substantial number of antique shops and restaurants now dot the causeway that once hosted most of the shipyards. The town has become a magnet for visitors who come for recreation on the river (in the form of boating, kayaking, hunting, and fishing), dining experiences with beautiful river vistas, and the rural New England town atmosphere that still exists here. The Massachusetts Cultural Council designated the Essex River Cultural District in 2012 and a walking map and website have been created to highlight the history of this area.

Figure 1 – Essex River Cultural District



<sup>6</sup> Ibid.

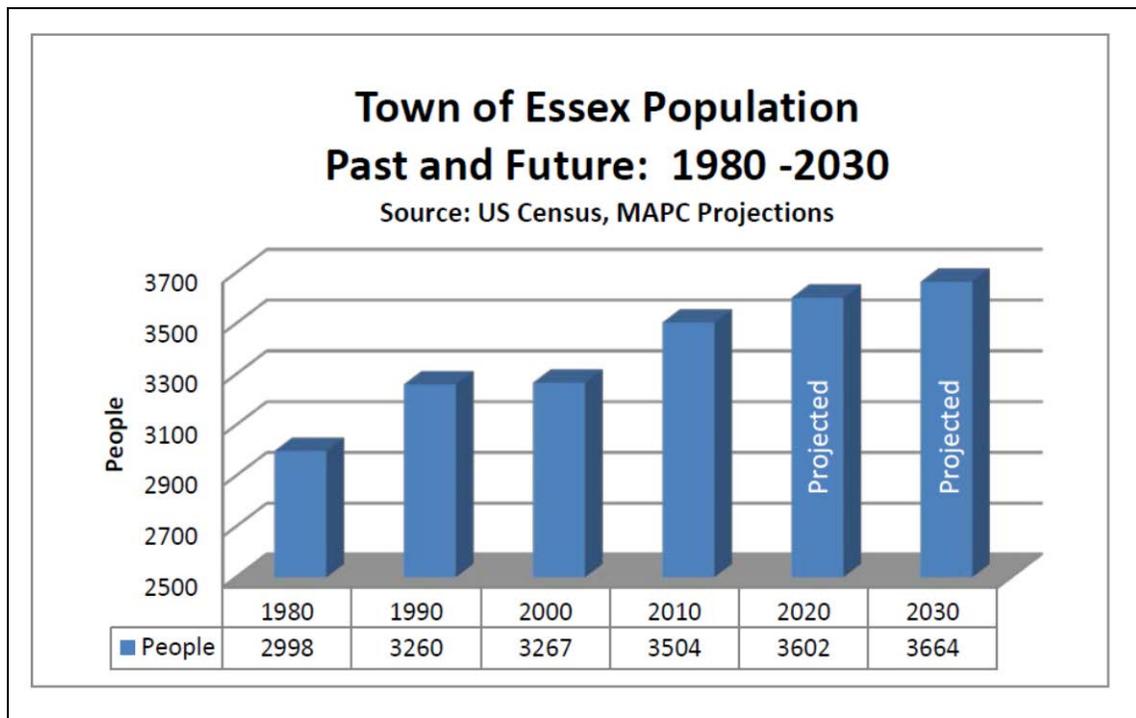
Essex is also home to many home-based businesses, independent clambers, tradespeople, and an increasing population of white-collar commuters. Development patterns, which historically centered around the causeway and its environs, have expanded out toward some of the wooded areas once reserved as wood lots, as well as farmlands on the west side of town. For reasons documented throughout this plan related to scenic value, habitat preservation, and ecosystem health, it is vital to protect the town’s landscape features. Much of Essex’s past, present, and future depends on the fragile natural resources – river, marsh, forest, agricultural land, and more – that have shaped human activity here for so long.

**C. Population Characteristics**

The current population in Essex (in 2013) is 3,606 persons. This compares with next-door Ipswich, Manchester-by-the-Sea and Gloucester, with 13,574, 5,249 and 29,393 respectively. Given the Town’s approximately 15 square miles, its population translates to a population density of about 240 people per square mile.

Figure 2 shows the growth in the town’s population from 1980 to 2010 and the projected growth through 2030<sup>7</sup>. The pattern is one of a gradual increase of 13 to 17 residents per year, only ½ percent a year. Essex’s population continues to grow slowly despite past projections that it would decline.

**Figure 2. Current and Projections Population**



<sup>7</sup> The projections shown are MAPC’s January 14, 2014 “Status Quo” regional growth projections. The strong growth projections are 2% higher)

Over the same periods, the Metropolitan Area Planning Council (MAPC) data tracks a decline in the size of the average household which means that smaller increases in population exert greater pressure on land and housing stock than has historically been the case. The trend toward smaller households is a nationwide phenomenon, driven largely by the growing diversity of household types and lifestyle choices. People are marrying later, living in a greater variety of household configurations, and living longer, often outliving spouses as the overall population ages.<sup>8</sup>

Changes in household size were accompanied by changes in household composition. Of Essex's current households, 66% are families and 34% are non-families. Of households in Essex, 30% are two-parent families with children, 10% are single-parent families and 10% are elders living alone.

In its population projections MAPC classifies Essex as a developing suburb. Along with these changes in total population come changes in the age mix that have implications for the town. Highlights of those changes include the following (changes projected through 2030):

- A 33% decline in the number of pre-school children and a 32% decrease in school-age children from 2010 to 2030
- A slight 3% increase in the household formation years (ages 20-34).
- A modest 12% rise in the middle years, ages 35-54
- A modest 7% decline in the 55-64 age bracket
- A leap of 125% in the number of seniors

The rise in residents 35 and over, particularly the leap in senior residents, indicates support for passive recreational opportunities such as boating, hiking and bird-watching and the need to develop readily-accessible facilities with bathrooms. Past projections have overestimated the decline in school age children potentially due to the turnover of homes from seniors to younger families and new dwellings that continue to be built each year. Additional data on population characteristics in Essex, including family income, industries and employment trends are shown in the graphs below.

MAPC's 2003 projection of a population decline in Essex did not occur. The 2010 Census data show a substantial increase in the number of early school age children as compared to pre-school children. That increase indicates that families with children becoming school age move into Essex perhaps to take advantage of the excellent quality of Essex's school system. The census data indicates that the parents of these families are slightly older, in their forties and fifties, perhaps moving into homes of empty nesters

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<sup>8</sup> Metropolitan Area Planning Council, *Essex Community Development Plan*, 2003. Note 2015 Committee members believe that these trends continues.

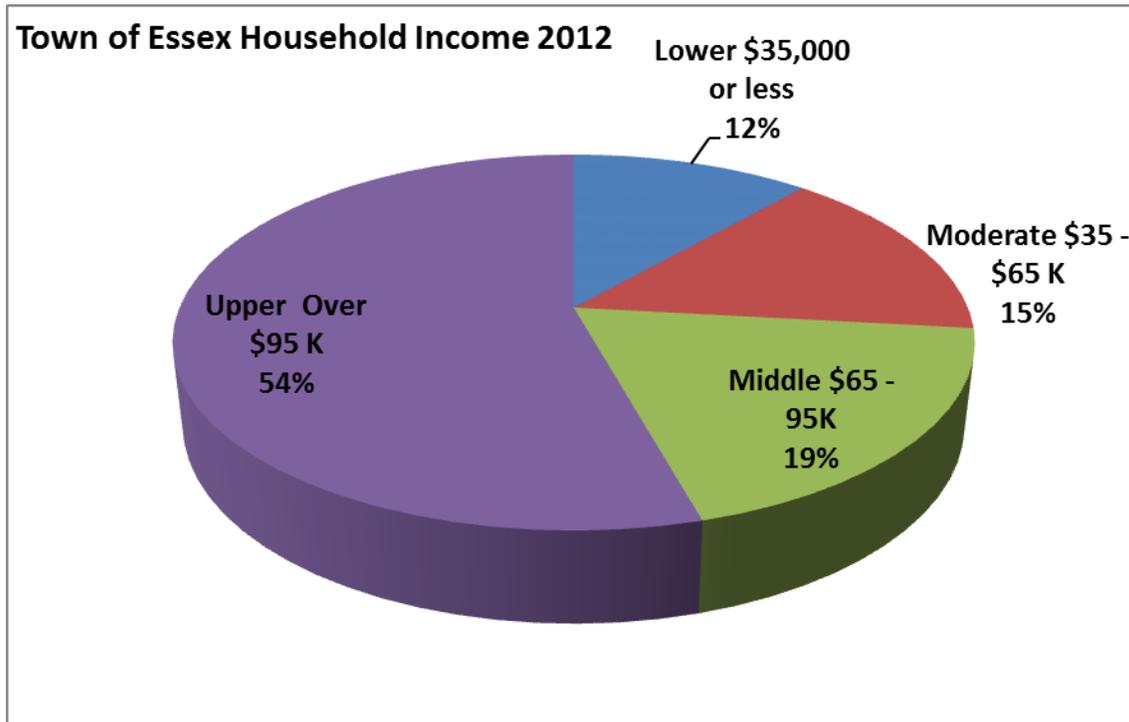
sooner than the MAPC models project. Families of school age children also find that housing prices in Essex are more attractive than in Manchester and are comparable to other adjoining towns.

Essex household income consistently remains well above the Massachusetts median. In 2012, the Essex median household income was 25% above the state median and over 54% of Essex households earned over \$95,000.

**Table 1. - Town of Essex – Trends in Median Household Income<sup>9</sup>**

	<b>Town of Essex (real dollars)</b>
1980	\$16,924
1990	\$46,304
2000	\$59,554
2006	\$66,317
2012	\$82,009
	<b>Massachusetts Median Household Income</b>
2012	\$65,378

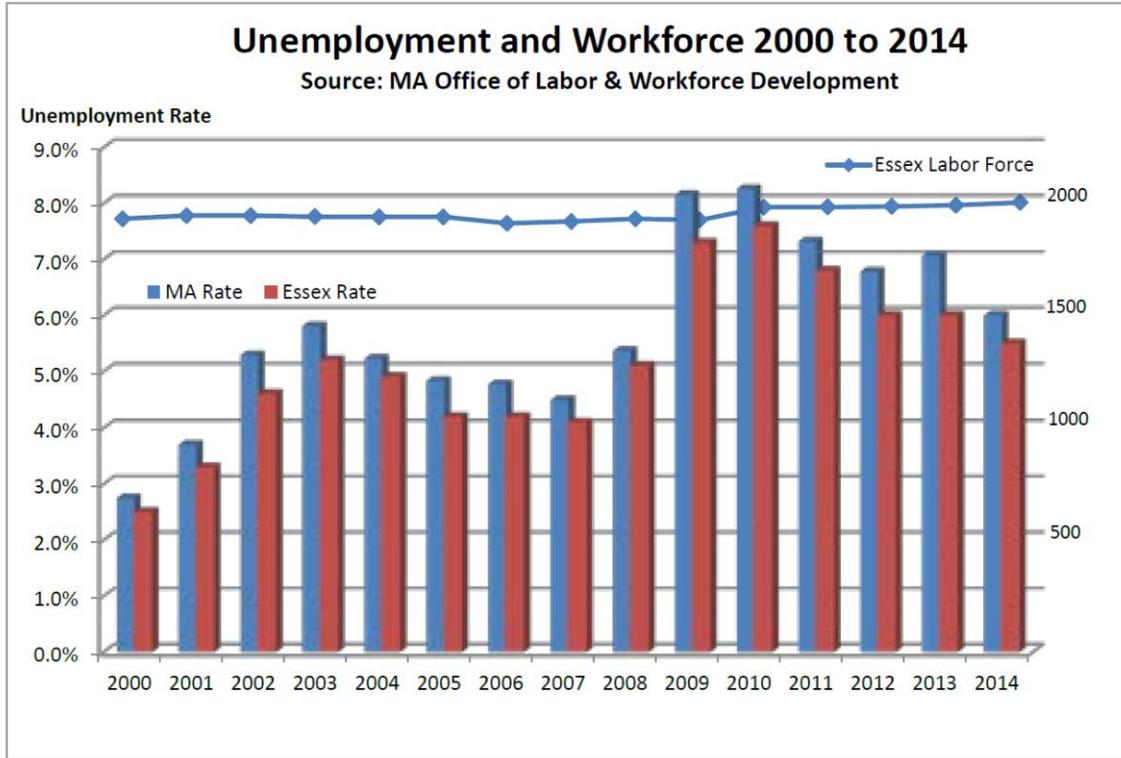
**Figure 3. Household Income Distribution**



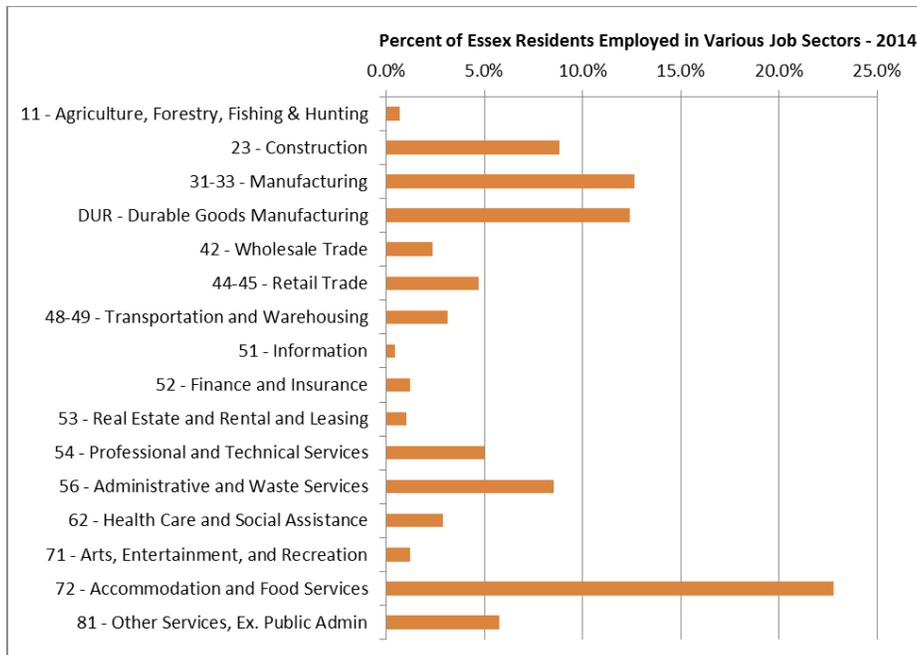
<sup>9</sup> Table 1 and Figure 2 - US Census, 2012 income data

The number of Essex residents in the labor force remains relatively steady while Essex’s unemployment rate consistently remains slightly below the state average<sup>10</sup>.

**Figure 4. Essex Unemployment Rate and Number of Residents in the Workforce**



**Figure 5. Occupation of Residents**



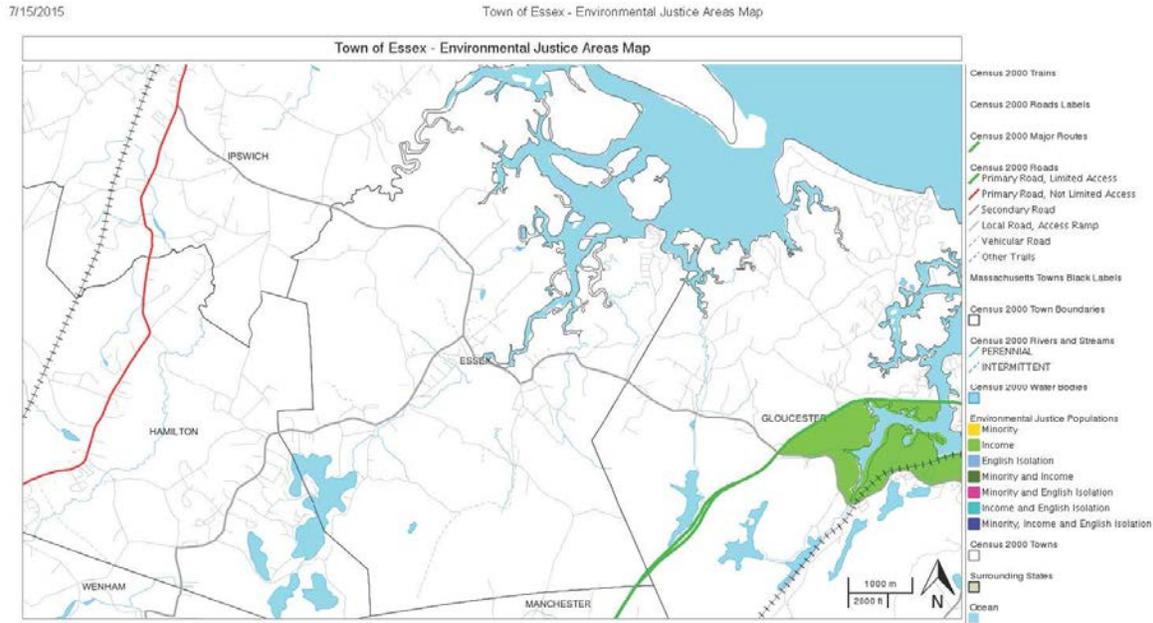
<sup>10</sup> Source for Figures 3 and 4: MA Executive Office of Workforce and Labor Development 2015.

### Community Diversity and At-risk Populations

Essex’s population in 2010 was 96% white with small percentages of people of Hispanic, Asian or mixed race background. Undoubtedly the trend over the next twenty years will be towards more diversity as Massachusetts and surrounding communities become more diverse. (Source 2010 US Census). Essex does not have any environmental justice areas (*see Map 2- Environmental Justice Areas in the Town of Essex*)

Though the majority of Essex residents are middle or upper income, 12% of the population is low-income. Also, 7.4 % of Essex elementary students are from families with low or moderate incomes, making the eligible for free or reduce cost lunches. Ten percent of Essex Elementary students have disabilities and 1.9% are English Language Learners (Sources Manchester-Essex School District information from MA Department of Education, 2014)

## Map 2 – Environmental Justice Areas in the Town of Essex



Note: The Town of Essex does not have any environmental justice areas

## ***D. Growth and Development Patterns***

### **1. Patterns and Trends**

As discussed earlier, Essex began as a small fishing village, surrounded by farms and woods. While the boat building industry has all but disappeared from Essex, the landscape remains very similar today, although residential density has decreased as more and more subdivisions are developed with large lot sizes. A 2006 study by the Boston Globe found that Essex had the second highest lot size per new house of 3.61 acres, topped only the Town of Boxford.<sup>11</sup>

Over the past decade, Essex's antiques traders and restaurants struggled due to the 2008 economic recession and the disruption caused by sewer and road construction along the Route 22 causeway. Those businesses remain important components of the Essex economy and should rebound now with the completion of construction and the improving economy. Small, resource-based businesses focused on eco-tourism such as boating and kayaking continue to grow. There has also been growth of light industrial development along the Route 22 corridor.

Between 1951 and 2014, developed land nearly tripled from 423 acres to over 1200 acres<sup>12</sup>. The largest gain was reflected in commercial land use; the largest loss in agricultural and open space land resulting in more land being lost since 1951 than in the prior 200 years. Since then, new dwellings have continued to be built in the town, averaging eight new dwellings per year since 2007.<sup>13</sup> Most of these developments are subdivisions placed on the outskirts of town, often carved from the woods or placed in former agricultural fields. Not much additional development has occurred in the town center, where most new development could be centralized around services and schools.

Essex does not have formal zoning beyond the state minimum requirements, although it does have a water resources overlay district and Conomo Point overlay districts (*See Map 4 on Page 20*) and an Open Space Residential Design Bylaw. The Office of Coastal Zone Management has recommended that formal zoning bylaws be enacted to protect the estuary<sup>14</sup>; however, much resistance remains due to the belief that a formal zoning bylaw will facilitate development by giving developers a defined process, and that numerous problems would arise from current nonconforming uses.

A 2001 full build-out analysis indicated that Essex's population could theoretically quintuple to nearly 17,000 if all potentially developed land was densely developed<sup>15</sup>. While it is generally agreed upon that the build-out is a worst case scenario, it is both undesirable and unlikely to occur; however, the sheer magnitude of the numbers relative

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<sup>11</sup>Greenberger, Scott. "Housing Slowdown Blamed on Local Rules," *The Boston Globe*. January 1, 2006.

<sup>12</sup> See Town of Essex 1997 Open Space and Recreation Plan and Section 5, Table G of this Plan

<sup>13</sup> Town of Essex Annual Town Reports, 2007-2013.

<sup>14</sup> Rickards, et. al., *An Assessment of Resource Management Strategies in the Parker River/Essex Bay Area of Critical Environmental Concern*, Winter 2002.

<sup>15</sup> Essex Community Development Plan, developed under Executive Order 418 (EO 418) by the Metropolitan Area Planning Council (MAPC) (2001)

to current conditions lends gravity to the mission of protecting remaining open spaces and preserving the community's character.

It should also be noted that the lack of affordable housing in Essex has led to the phenomenon of "land rich/cash poor" landowners splitting off parcels as a means of generating income or providing housing lots for family members. Therefore, an increase in well-planned affordable housing units may well reduce the amount of unplanned development of open spaces; however, the septic constraints on multi-unit housing will likely discourage this for the time being and no continued action is currently occurring under Essex's Community Development plan at this time.

## 2. Infrastructure

### **a) Transportation Systems**

North-south and east-west roads characterize Essex's transportation corridors. Route 22 runs generally west to Hamilton and Eastern Avenue runs east towards Gloucester. Southern Avenue runs south towards Manchester and Route 128, and John Wise Avenue runs north towards Ipswich. While in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries Essex had both railroad and tramway service, it no longer has a train station but has relatively close access to the surrounding town commuter train stations in Ipswich, Hamilton, Manchester, West Gloucester and Beverly.

In terms of pedestrian facilities, some of Essex's main streets have walkable, handicapped-accessible sidewalks, mostly centering on the downtown area. In 2012, MassDOT completed reconstruction of Main Street (Route 133) from Western Avenue to Waters Street including granite curbs and new wider sidewalks on both sides of the street and the Essex River Causeway bridge. This helped fulfilled Objective B-1, Item 2 of the 2007 Open Space & Recreation Plan.

Efforts are now underway to design a Riverfront walk that will further contribute to walkability downtown. Salem State University has completed a preliminary study of the Riverwalk laying out the concept, figuring costs and identifying action steps.

Outside Essex's village core, the town is less pedestrian-friendly, with older, narrow sidewalks that are in poor condition, if provided at all.

Bicycle facilities are few and far between, and the Statewide Comprehensive Open Space and Recreation Plan of 2012 clearly reflects a strong desire for more bicycle accommodations. As other towns' infrastructure and land availability becomes saturated, commercial and residential sites in Essex may be increasingly appealing to developers and home-seekers alike. A well-planned transportation system that includes pedestrian and bicycle access can help as the town plans for managed growth. Since 2007, the Town passed on the opportunity to purchase rights to the former Essex railroad corridor that parallels Route 22 from Chebacco Lake to Memorial Park and then crosses the Essex River towards Southern Avenue. Former rail corridors have recently been

converted to recreational trails in nearby communities such as Topsfield and Danvers. The Selectmen at the time indicated that it did not want to acquire the ROW due to the number of encroachments. Part of the ROW remains intact from Memorial Park towards Landing Street and near Chebacco Lake. The Village Development study proposed at developing the trail from Woodman's Beach thru Memorial Park, with a potential extension to Landing Street.

#### **b) Water Supply Systems**

The facility and resources for the Town's water system were designed and built for the potential of substantial growth. Obtaining water from two wells, the Filtration Plant is currently rated to produce approximately one million gallons of water per day. However, the Town of Essex has the authorization from the Department of Environmental Protection to pump on average only 220,000 gallons per day<sup>16</sup>. In 2013, Essex averaged 215,000 gallons per day (gpd), for an average of 61 gallons per capita per day (gpcd).<sup>17</sup>

Currently, the Town of Essex services approximately 975 year round residences, with an additional 135 summer services that are operational from mid-April through mid-October<sup>18</sup>. The Town water supply is also connected to Gloucester and Hamilton, and Essex provides them with water if their resources are diminished or have an emergency situation. The municipalities are charged at a comparable rate to Essex residents. According to the Town Administrator Brendhan Zubricki, water supply does not currently constrain development in Essex.

#### **c) Municipal Sewer Service/Individual Septic Systems**

In 2000, the Town entered into an Inter-municipal Agreement (IMA) to address long-standing issues with septic system failures in Essex that now serves as the blueprint for the Town's wastewater planning. The project was designed to eliminate wastewater-related pollution to the coastal environment without substantially changing the character of the Town through new development opportunities.

The project created a "Sewer Service Area" (SSA) extending along Route 133 (*see Map 3 - Town of Essex – Sewer Service Area*). The sewer extension was completed in 2006, and residents within the SSA have now been connected. The SSA serves all of the already-developed parcels (each parcel can discharge its existing flow or 330 gallons per day based on Title 5 of the State Environmental Code, whichever is greater). The SSA also serves approximately 20 vacant lots. In all, the SSA includes over 800 residences and businesses out of approximately 1200 developed parcels in Town. All properties outside of the SSA must rely on new on-site wastewater systems (for both new construction and upgrades) and parcels within the SSA that are subdivided for

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<sup>16</sup> MA DEP permits provide flexibility to increase withdrawals from the Zone I areas of permitted wells up to 100,000 gallons per day. Conversation with Michael Galli, Town Water Department.

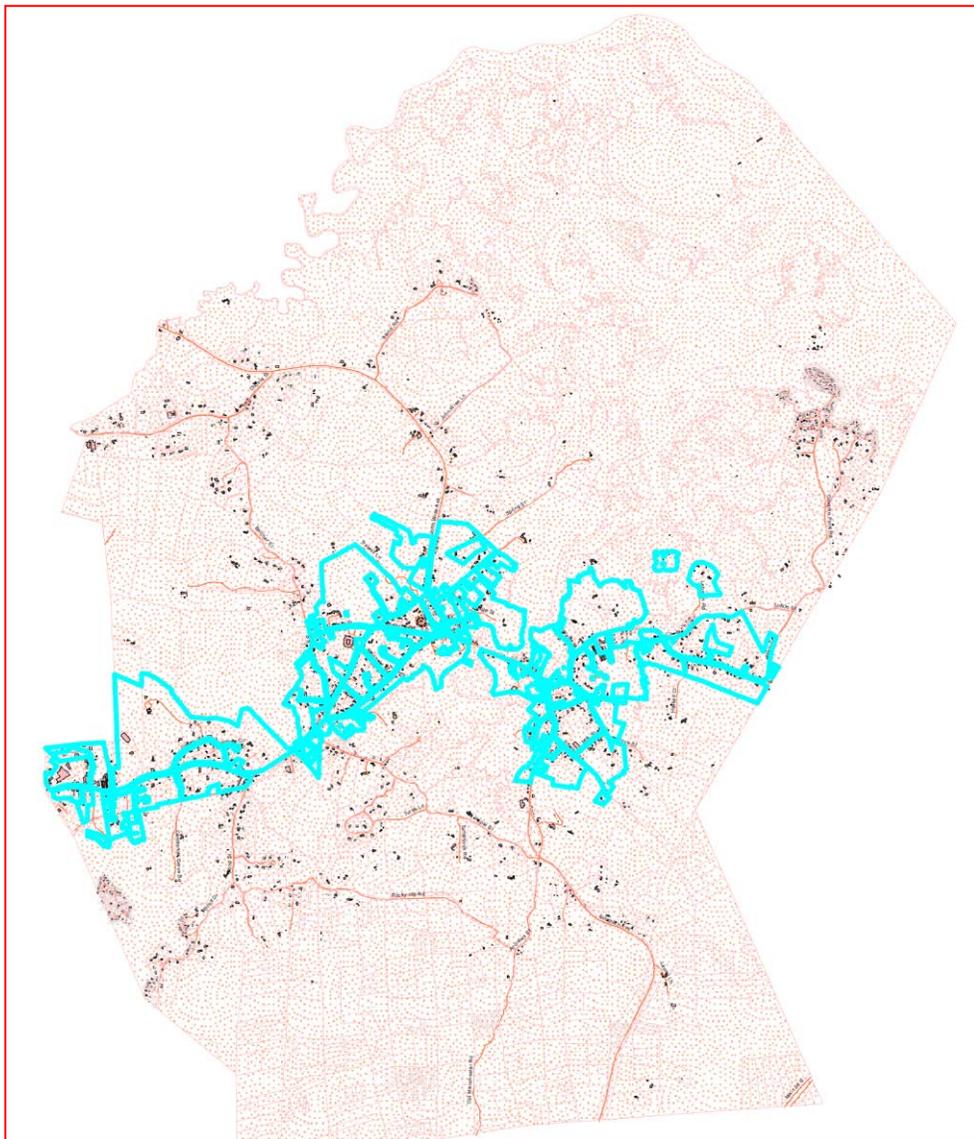
<sup>17</sup> Town of Essex 2013 Annual Report .

<sup>18</sup> Conversation with Michael Galli, Town Water Department

development may be developed only if on-site systems can be sited in compliance with Title 5 (leaving the original parcel with one sewer connection).

The Town’s Sewer By-laws and Sewer Use Regulations clearly state that the new sewer system is aimed primarily at solving the pollution problem and not at allowing new parcels to be developed. In fact, since the IMA with Gloucester requires that Essex never exceed a known amount of wastewater flow each day, the capacity of the new sewer system is finite. After 6 years of operation, total sewer flows from already-developed parcels have not exceeded the IMA limit. The Town has begun to allow the expansion of existing facilities within the SSA for additional flows of up to 1000 gallons per day. Larger flows may be allotted by Town meeting.

### Map 3 – Town of Essex Sewer Service Area (SSA)



Note: Sewer Service Area (SSA) boundary highlighted in [blue](#)

### 3. Long-Term Development Patterns

Historically, residential and commercial zoning districts have not been created by the Town of Essex. Most of the Town has been one mixed-use zoning district where each lot can have residential or commercial uses. Lots must be 30,000 square feet or greater if they are located on a road established by 1972, or 40,000 square feet or greater if they exist on a road created after 1972. The only exception to this is in the Water Resource Protection District, where a 40,000 square foot minimum lot size is required regardless of when the road was created. Business uses in this district are exempted however, and as a result, business use continues to grow along Route 22 in the Water Resource Protection District (*see Map 4*). The Town also has Wetlands and Floodplain Overlay districts that help protect those resources from damaging development. The Floodplain Overlay district is based on the latest FEMA Flood Plain maps<sup>19</sup>.

Attempts were made to pass usage districts for Essex since the 1980's, but most attempts failed. Proposals for zoning protections in northern Essex along John Wise Avenue (Route 133 north of downtown) also failed. A few zoning district changes have recently passed that will provide some open space benefits. Since 2012, the Town has established special residential zoning districts for Southern and Central Conomo Point area in conjunction with the implementation of the Conomo Point Plan (*See Maps 4B and 4C*). Plans for Northern Conomo point will open up some previously leased lands to open public use. Essex has also adopted an Open Space Residential district by-law that encourages denser development in return for protecting open space. No developers have submitted proposals under that by-law though some discussions have occurred between developers and the Planning Board.

Town data shows that slow-but-steady growth has occurred in the number of new dwellings, a rate of about eight per year. Due to large lot zoning this new development occurs on undeveloped plots often divided from larger parcels. The sewer district also limits the extent of future growth within that district. Remaining lots outside the sewer district can be on rugged terrain including granite outcroppings and rocks that make it difficult to meet septic requirements and minimum acceptable slopes for streets.

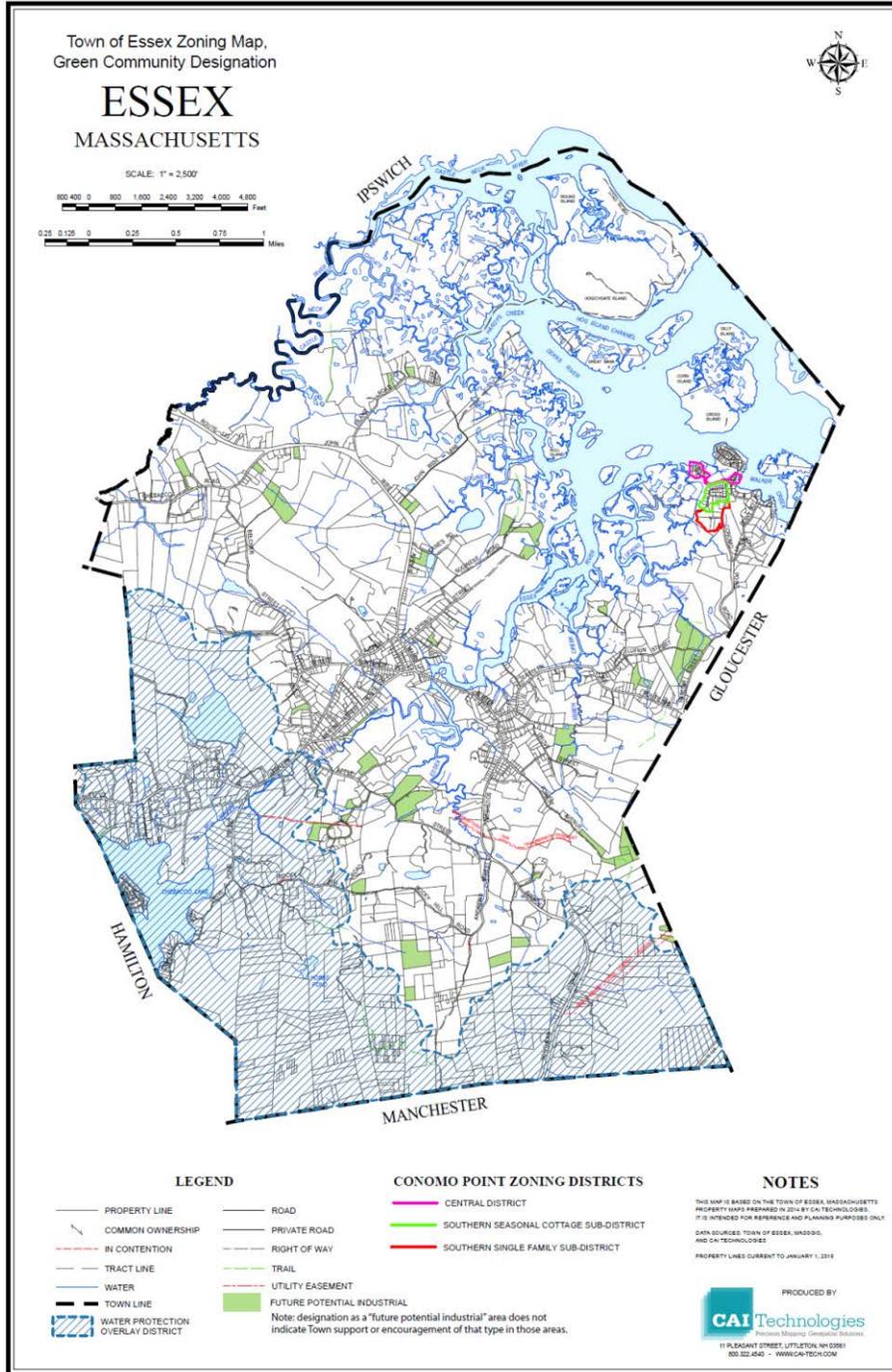
Large lot zoning and sewer restrictions combine to create pressure to develop large, traditionally open tracts of land, such as family farms and horse farms. Essex County farms have not traditionally been protected by agricultural conservation restrictions because the default soil quality standards in federal and state programs are difficult for local farms to meet in a rocky, coastal location like Essex.

New homes on large lots cost well above the median price of a single-family house in downtown Essex and do not relieve competition for the more affordable homes near Essex center. People who are locally employed or below the median income will ultimately find fewer affordable dwellings. In a town with a long history of local employment and hands-on trades, it would be unfortunate if the current economic and land-use realities were to force out the very elements that have shaped Essex for so long.

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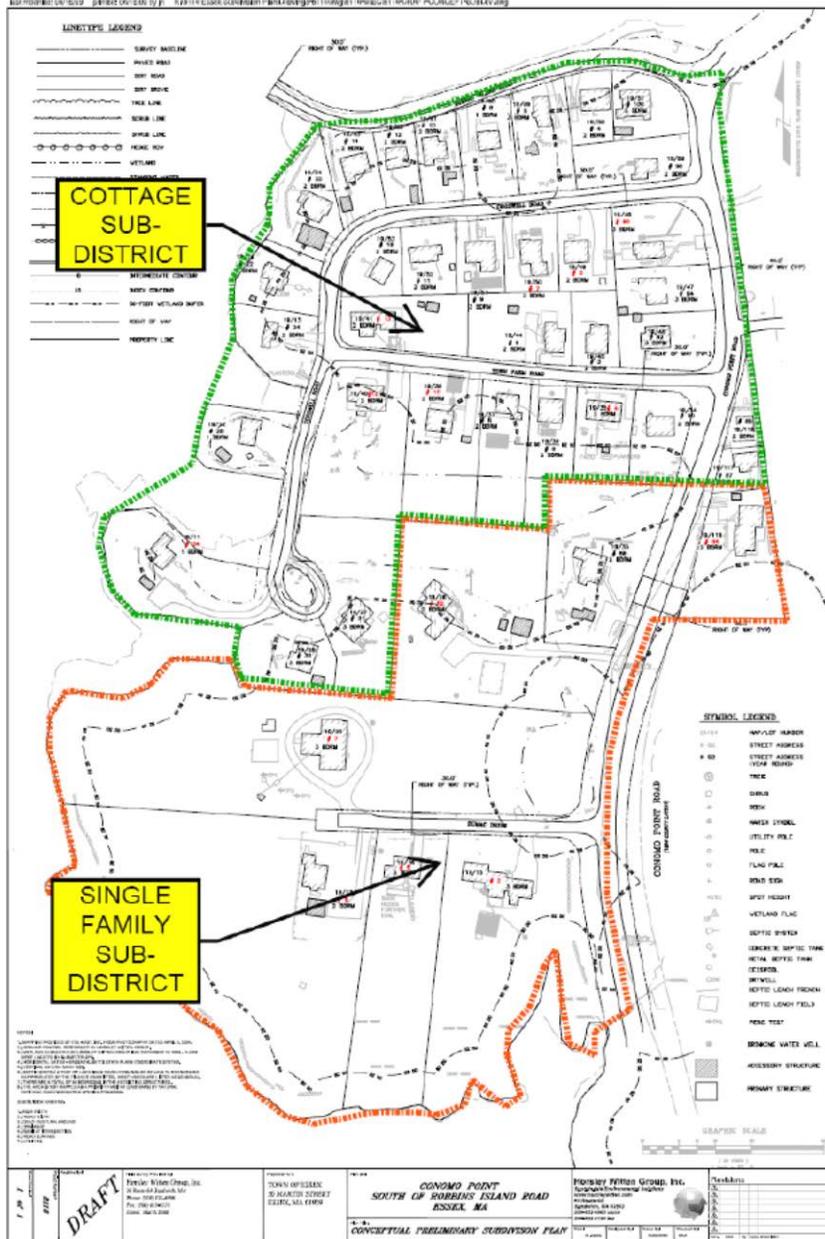
<sup>19</sup> Source, Essex Planning Board, November 2015

## Map 4 Town of Essex Zoning Districts and Potential Development Areas



MAP 4B

SOUTHERN CONOMO POINT - ZONING MAP



Source: Town of Essex Bylaws

MAP 4C

Zoning Map – Central Conomo Point



Source: Town of Essex Bylaws

Note: Town of Essex retains ownership of Northern Conomo Point (area to the upper right of Map 4C). The Town also retains ownership of some properties in the southern area (below the area shown on Map 4C) and on Beach Circle (right lobe of area outlined in red on Map 4C) that were not sold to former tenants, and to the entirety of Robbins Island (left lobe of the area outlined in red on Map 4C), which may be sold by the Town in 2016.

## **SECTION 4: ENVIRONMENTAL INVENTORY AND ANALYSIS**

### ***A. Geology, Soils and Topography***

Understanding our landscape is key to prioritizing and preserving open spaces, and in fact geology, soils and topography have all played a major role in Essex's historic patterns of development (*refer to Map 5: Soils and Surface Geology at the end of Section 4.A.*). Much of the unique character of this area is a result of the rolling topography formed by ancient glacial and coastal processes. The soils in this area have also helped determine development and farming patterns, based on their drainage, mineral, and matrix properties. They continue to influence building patterns and real estate development in modern Essex; however, it is important to note that soils and geology alone cannot and will not prevent development of important open spaces.

#### 1. Bedrock

Bedrock forms the foundation of land. In Essex it also contributes to the external feature of the landscape, outcropping regularly throughout the topography. Most of Essex's bedrock is granitic, with many different types underlying Essex as a result of differing base components. There are also pockets or intrusions of other igneous rock such as basalt, which originates in marine environments, as well as formations of metamorphic and coastal sedimentary bedrocks.<sup>20</sup>

#### 2. Topography

The landscape of Essex, like most of Massachusetts, was shaped by glacial and coastal geologic processes, which gave the Town its characteristic rolling topography. The coastline in this area has dramatically shifted with changes in sea level over time, resulting in fluctuations of almost 200 miles. As glaciers advanced and receded over this area over the last 250,000 years, many unique landforms were developed. During this period, this region was inundated by 300 feet of water and was called the Champlain Sea of Subsidence. As storms on this regional sea produced wave energy, the recently glaciated landscape was shaped at lower elevations into well-defined ridges of beach sands and gravels.

One of Essex's most important resources, the salt marsh, was born out of the sweeping geologic changes brought on by the Laurentide Glacier, which receded from this area more than 10,000 years ago. These marshes "were formed on land scraped bare by the ice or on new land created by the piles of debris left by retreating ice".<sup>21</sup> The geology of the marshes has evolved distinctly from the upland areas of Essex, with vastly different soils and topography.

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<sup>20</sup> Flint, Richard Foster. *Glacial and Quaternary Geology*. John Wiley and Sons, Inc., New York, NY, 1971.

<sup>21</sup> Teal, John, and Mildred Teal. *Life and Death of the Salt Marsh*, 1969, p. 58.

Glaciated forms dot the Essex landscape. Drumlins, or glacial hummocks, are hills probably best known and easily recognized by their elongated shape and north-south orientation. They were shaped and streamlined into oval humps by the glacial ice sheets riding up and over hills of more resistant rock or till. Hog or Choate Island is the best-known drumlin in Essex, but there are other smaller examples including Sagamore, Franklin, Mears, and Prospect Hills. All of these drumlins are less than 200 feet high.

Another representative feature of glaciated topography is the kettle-hole pond or lake. The melting of ice blocks left from retreating glaciers formed these water resources. Although there are 80 such depressions in the greater Cape Ann region, Essex has only one of any significant size, Chebacco Lake, which is about 150 acres, shallow, and is technically defined as a Great Pond.

### 3. Soils<sup>22</sup>

The recent glacial episodes produced the base for the mineral soils that are now found in Essex. These shallow, predominantly mineral-based soils are known as Inceptisols, and occur throughout New England. In well-drained, undisturbed sites this topsoil averages between 2.5 and eight inches deep. Due to their glacial origin, these soils also contain high densities of boulders and rocks throughout their matrices. This has made farming in Essex an arduous enterprise over the years, and contributed to the importance of the shipbuilding and fishing industries over farming in the local historical economy.

In addition to the Inceptisols, other soils exist in Essex. There are coastal salt marsh expanses that are underlain with an organic base that formed since sea level declined and consists primarily of decomposed salt marsh grasses. Other soils in the area have been created in freshwater kettle-hole systems extending into surrounding zones that are poorly drained. Under these conditions, there is an accumulation of organic matter resulting from the lack of aerobic decomposition throughout the growing season. Over time these deposits increase, producing thick, mucky soil with a variable percentage of identifiable plant material.

Starting landward from Essex Bay, heading southwest, the salt marsh (*marked in purple on Map 5*) is comprised of soil termed the Ipswich-Westbrook-Udipsamments Association. The Ipswich and Westbrook soils are poorly drained organics, subject to tidal flooding, and with soil depths between 16 and 51 inches. The Udipsamments are well drained, wind-deposited sand, partly stabilized by vegetation, but extremely susceptible to wind erosion.

In the vicinity of the Ipswich and Gloucester lines, there are sand and gravel based outwash plains. This soil unit is known as the Merrimac Hinckley-Urban land association. Over the gravel base are loamy to sandy soils, depending on the particular topography. Historically functioning as a forest base, farmland, or swampland in low-

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<sup>22</sup> Soil Conservation Service. *Soils and Their Interpretations for Various Land Uses: Town of Essex, Massachusetts*. U.S. Department of Agriculture, 1973.

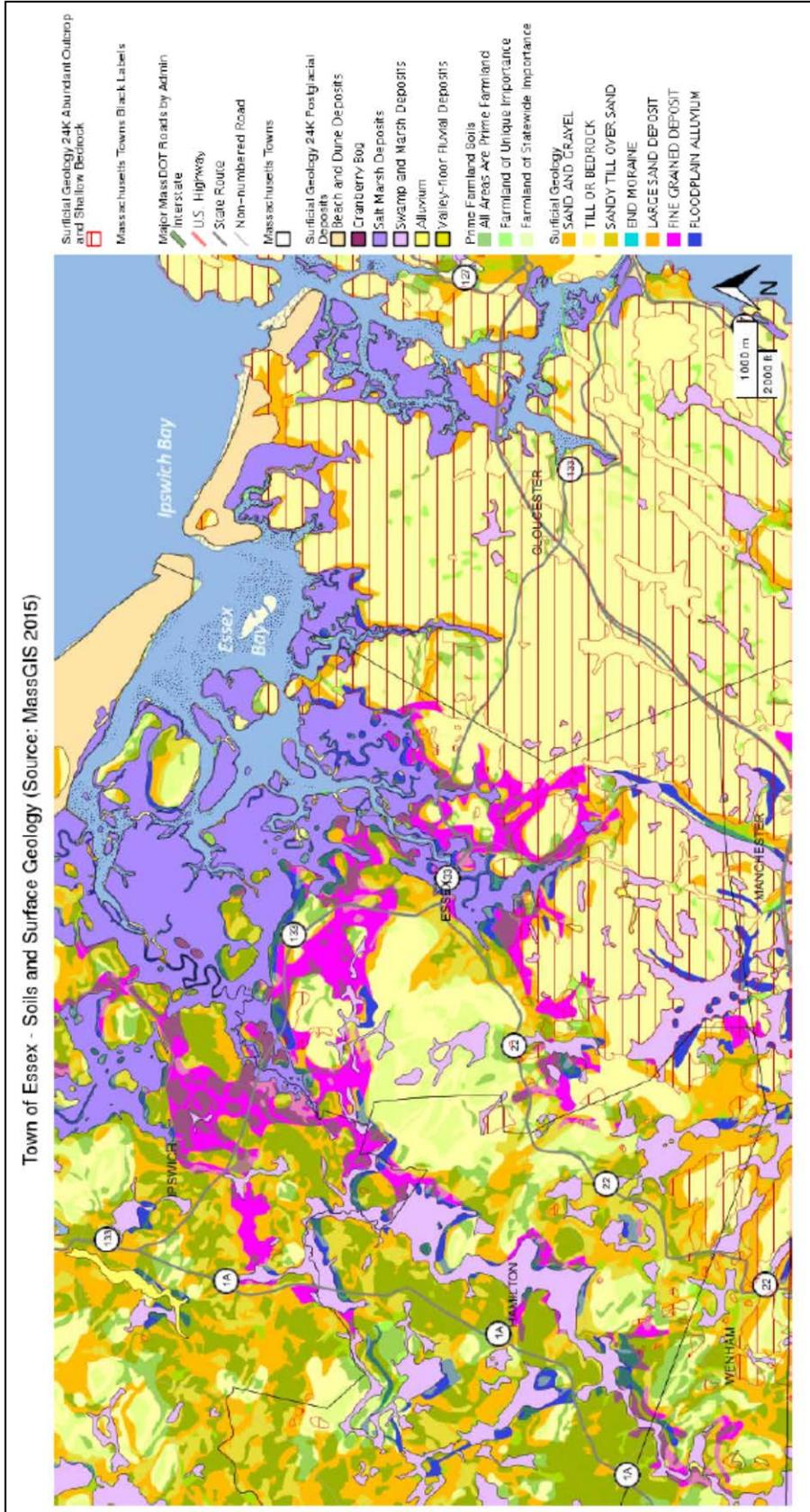
lying areas, these regions are presently mostly used for housing (*marked in yellow & light green on Map 5*).

The greater part of the Essex land surface consists of low irregular hills, ridges and plains. There are commonly bedrock exposures with small depressions of very poorly drained organic soils. The tops and sides of the low hills are comprised of well-drained Chatfield and shallow Hollis soils. The majority of this soil association in Essex remains woodland (*marked with yellow with red hatching on Map 5*). The areas of rock outcrop, the shallow depth to bedrock, and the slope hampered residential development in the past. Many of these woodlands have been preserved by the Manchester Essex Conservation Trust or have reverted to the Town through tax-title. For the parcels still held privately, many of the physical constraints that once inhibited development can now be alleviated with advanced, Title V compliant septic technologies, sewerage, and building methods that have become economically feasible as property values have increased.

A small part of Essex, located at the junction of Routes 22 and 133 is a separate soil association. This Canton-Woodbridge-Freetown Association has bedrock exposed hills and loamy soils formed in glacial till. The Woodbridge soils are loamy, while the Freetown soils are organic to a depth of more than 51 feet. The distinguishing feature of this association is a seasonal (or longer) high water table; however, building has not historically been severely limited in this area as it is located in the village center.

As much as soils, topography and geology have influenced development and open space patterns in Essex in the past, they cannot be counted on to do so in the future. Innovations in building techniques, skyrocketing property values, and advancements in wastewater technologies could allow areas to be developed in the near future that were considered all but impossible to develop in the recent past. Therefore, it is imperative to plan proactively and target designated spaces for development, open space, and conservation.

**MAP 5 – Town of Essex – Soils and Surface Geology**



## ***B. Landscape Character***

The coastal, forested, and agricultural landscapes of Essex lend this town a signature beauty which has contributed greatly to its popularity as a tourist destination and scenic byway. From the granite outcrops that have often prevented development, to the Essex River, which housed a long-time shipbuilding industry, these unique landscapes have shaped the history of Essex, and have been shaped in turn by the economic activities of its inhabitants: mainly in agriculture, fishing, boat building and tourism.

The agricultural vistas along John Wise Avenue (Route 133), and Southern Avenue are renowned, and have been designated as Heritage Landscapes by the Commonwealth. The defining views of the Great Marsh sweep the downtown, and are protected through its designation as an Area of Critical Environmental Concern (ACEC). The forests and rocky outcrops of the Manchester-Essex woods provide a backdrop for hikers, mountain bikers, and bird watchers. Coupled with historic properties, like the Essex Shipbuilding Museum and Cogswell's Grant, these landscapes are an invaluable part of Essex's character.

The scenic resources and unique environments of Essex are discussed further in Section F., including heritage landscapes, the ACEC, and scenic protected environments.

### **Scenic Roads: Belcher, Choate, Apple, Story.**

## ***C. Water Resources***

### **1. Watersheds**

All of Essex lies within the North Coastal Watershed that drains to the Essex Bay through the Essex River, and to Manchester Harbor (*see Map 6: Water Resources at the end of Section 6.C.*). Essex has one Great Pond<sup>23</sup>, Chebacco Lake, which feeds into the Essex River via Alewife Brook. According to the Executive Office of Environmental Affairs' North Coastal Watershed Action Plan<sup>24</sup>, the priorities for the watershed are:

- Work to reduce contaminated stormwater emanating from street drainage systems along highways and local roads
- Implement sustainable growth management techniques and innovative land use planning, specifically in the Town of Essex, by addressing wastewater management
- Conserve and protect open space
- Prevent the introduction of invasive plant species and reduce the loss of productive shellfish habitat

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<sup>23</sup> A great pond is defined by Massachusetts Law as "a pond or lake that contained more than 10 acres in its natural state." MA General Law Chapter 91 Section 35. The public has the right to navigate great ponds and the Commonwealth regulates private development under MA General Law Chapter 91.

<sup>24</sup> Massachusetts Executive Office of Energy and Environmental Affairs website (<http://www.mass.gov/eea/docs/eea/water/wap-north-coastal-2004.pdf>). (Link active in December 2016).

- Determine the impacts of growth on drinking water supplies and work to maintain adequate base flows in rivers and streams

This Open Space Plan also recognizes the need to protect and restore Alewife breeding habitats as a watershed priority.

## 2. Surface Water

### **a. Essex River and Estuary**

The Essex River and its estuary are connected to the Great Marsh, and Essex's salt marshes comprise 13 percent of the 25,500 acre Parker River/Essex Bay Area of Critical Environmental Concern, as designated by the Massachusetts Executive Office of Environmental Affairs. The Essex River together with its tributary, Alewife Brook, and Chebacco Lake, is one of the last waterways on the North Shore, which provide suitable breeding grounds for Alewife herring populations. Alewife Brook provides passage to Chebacco Lake, where river herring return annually to spawn. The Essex River and Essex Bay are designated as a Class SA tidal estuary by the MA DEP.

The Essex River and its estuary provide a rich combination of vital habitat for fish and wildlife, recreational opportunities, tourist revenue, and shell fishing. However, water quality problems exist, particularly in respect to bacteria loading from septic systems and stormwater runoff from roads, which has caused the river to be closed to shell fishing and swimming in the past. The Massachusetts Division of Marine Fisheries has listed the shellfish beds in the River from the Route 133 causeway and for a mile downstream in the Prohibited class, while the MA DEP includes this section of the river on the Integrated Waters List (303d), requiring a total maximum daily load (TMDL) for pathogens.

Much is being done to address these water quality issues. As discussed in Section 3, under Wastewater Infrastructure, Essex constructed a new sewer system connected to the Gloucester wastewater treatment plant in 2006. Monitoring conducted through 2007 indicated that the new sewer infrastructure successfully improved water quality to the point where MA DEP allowed the Town to stop its quarterly monitoring program.

Until the year 2000, Essex did not have any mechanism within its zoning bylaw for enforcing stormwater standards. To address this concern, the town approved an amendment to the site plan review bylaw that includes drainage management review for commercial and multi-family projects. This action was a major step in reducing water quality impacts to critical resources protected within the town's wetland district, the flood plain district, and the water resources protection district. However, stormwater from residential development is not covered under the site plan/special permit change because these sections only cover commercial and multi-family rather than single family and subdivision development. It seems only logical to extend the amendment to include these forms of development, as they too stand to impact protected resources.

Recreational access is provided to the River via several points. The public boat launch is located off of the Route 133 causeway, on the western side of the River, and is used as both a canoe/kayak launch and a powerboat launch. Although Essex has a small harbor with two marinas, and used to be the site of a thriving boat building industry in the 1800's, the shallowness and complexity of the River limits harbor access to small recreational boats today. Therefore, it is not a working harbor covered under the Office of Coastal Zone Management's Harbor Planning program.

Conomo Beach on the eastern side of the River provides recreational swimming access, and the causeway bridge itself is used as a swimming entry point. The Essex portion of Crane's Beach is accessible by boat or via the Trustees of Reservations' entry in Ipswich.

**b. Chebacco Lake:**

Chebacco Lake is a 209-acre Great Pond located in Essex and Hamilton. Its watershed comprises 3,756 acres of the two towns, and it is part of the watershed of the Essex River. The lake serves as a significant recreational resource to the Town. A beach at Centennial Grove in Essex draws swimmers and allows kayakers and canoers to put in and come ashore. Boating, fishing, and other activities are also popular, making Chebacco a vital recreational resource within the Town. The public boat launch is located on the Hamilton side of the Lake.

As mentioned previously, the Lake is also a spawning ground for Alewife river herring, which make their way from the ocean and swim up the Essex River to Chebacco, where they spawn in the spring<sup>25</sup>. Chebacco Lake is particularly important, because it is the last remaining Alewife spawning lake on the North Shore that has not been converted to a water supply source and made impassable to the herring.<sup>26</sup>

A citizens' group, the Chebacco Lake Watershed Association, engages in activities such as monitoring beaver activity, checking the water level at Alewife Brook (the lake's outlet to the Essex River) to ensure that spawning Alewife can make it upstream, and educating Lake residents about the importance of taking care of the lake and its watershed. They maintain a website ([www.chebaccolake.org](http://www.chebaccolake.org)) which provides information regarding wildlife around the lake, phosphorous-free dishwashing detergents, upcoming events sponsored by the Association, and photographs (current and historic) of the wildlife and homes on the lake.

The key problems in and around the lake as identified by regional and local officials include: eutrophication, water quality deterioration, invasive aquatic weed growth, gradual reduction of depth due to sediment buildup, and reduction of recreational opportunities due to alien weed infestation. In its 1996 *Draft Chebacco Lake Restoration Reconnaissance Report*, the Massachusetts Department of Environmental Management (now Department of Conservation and Recreation) made the following recommendations:

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<sup>25</sup> U.S. Fish & Wildlife Service Central New England Fishery Resources Office website ([www.fws.gov/r5cneafp/herring/htm](http://www.fws.gov/r5cneafp/herring/htm)), September 2002.

<sup>26</sup> Phippen, Peter. *Annual Herring Count Report, 2005*. Eight Towns and the Bay, 2005.

- Develop an in-lake management program
- Develop a lake watershed management program
- Develop a waste disposal management plan for all homes around the lake, with an emphasis on phosphorus-reducing alternative septic systems
- Begin studies to determine the advisability and best management practices for the use of herbicides and dredging

Measures to preserve open space around the lake – through zoning restrictions, more stringent septic regulations, and a campaign to acquire parcels for preservation - could help slow eutrophication and allow for passive water quality improvement.

### 3. Aquifer Recharge Areas

The MA DEP Town of Essex Source Water Protection Program Report (SWAP Report) was last updated in 2002<sup>27</sup>. The 2002 SWAP Report details the contamination threats and management recommendations for protection of the wells' zones of contribution. Also known as Zone II's, these zones of contribution are delineated on Map 6. Rainfall infiltration and induced stream water infiltration from Alewife Brook, Chebacco Lake, and the surrounding wetlands are the major sources of recharge to the Town's three wells, which draw from an unconfined aquifer.<sup>28</sup> This aquifer is the remnant of glacial stream deposition, and its configuration appears to represent an interconnected series of relatively narrow stream valleys, separated by exposed bedrock and glacial till. This mainly occurs over a large area of bedrock in the Chebacco Lake wetlands area, making the 1996 Chebacco Lake Management Plan and the work by MECT and ECGA to protect the Manchester-Essex Woods all the more important. The MA DEP SWAP Report considers all three wells to be susceptible to contamination since there is not a geologic barrier between the aquifer and surface water recharge.

The Town of Essex has worked with the MA DEP to implement the recommendations of the SWAP Report, and to educate residents regarding source water protection.<sup>29</sup> The Town has delineated protection areas for all public ground and surface water sources where potentially hazardous activity should be closely monitored. These areas have been inventoried to ensure the prohibited activities for the Zone II area are not occurring. By assessing the activities that occur in the Zone I and II areas, and through laboratory testing, the Water Department can proactively manage contamination threats and protect source water.<sup>30</sup>

The Town of Essex is currently not divided into residential, commercial, and industrial zoning districts. While concerns remain that instituting such districts would actually increase the rate of development due to the added security it would allow developers, as well as increase nonconforming uses, thoughtfully defining such districts may better

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<sup>27</sup> Appendix B of the 2007 Essex Open Space Plan also at MA Department of Environmental Protection Website (<http://www.mass.gov/eea/docs/dep/water/drinking/swap/nero/3092000.pdf>) December 2015

<sup>28</sup> Paul Goodwin, personal communication, April 2006.

<sup>29</sup> *Ibid.*

<sup>30</sup> *Ibid.*

define suitable locations for residential, commercial, and industrial development and better guide future growth management in the town, leading to better protection of water resources. For the purposes of open space preservation, this plan does not take a position on this issue, but does support further exploration of land use planning and zoning bylaw approaches as soon as possible.

The Open Space Residential Design bylaw, drafted with the help of the Massachusetts Audubon Society, was adopted in 2007. This bylaw gives the Town and developers the flexibility to preserve large, contiguous acreages of open space by clustering housing units more densely than is allowed under current subdivision regulations. It also outlines low impact development (LID) principles for developers that may be economically attractive as well as result in decreased environmental impacts. These LID principles include landscape management practices that reduce water consumption and encourage active conservation, progressive stormwater mitigation approaches, and techniques for minimizing impervious surface coverage.

According to the Office of Coastal Zone Management, there is concern that “a provision within the water resource protection district of the [Essex] zoning bylaw...allows more impervious surface coverage for commercial development. The zoning district standards specifically prohibit residential development on lots less than 40,000 square feet or that renders impervious area more than 15% of the lot area. On the other hand, commercial developments are permitted by special permit if more than 15% of lot area or 2,500 square feet is made impervious provided that a system for artificial recharge of stormwater is incorporated into the plan. This provision, combined with the lack of zoning districts, leads to the potential for more commercial development with overall increased impervious surface coverage throughout the town.”<sup>31</sup>

#### 4. Flood Management

The FEMA zones A and V are depicted on Map 6. Substantial flooding occurs regularly in Essex due to tidal inundation of the Route 133 causeway, and periodic flooding of Alewife Brook and the Essex River also occur during and after major storm events. Some limited flooding of residences around Chebacco Lake also occurs due to beaver activity, although measures are being taken to mitigate this using “Beaver Deceivers” to lower water levels. It is important to note that the substantial saltwater and freshwater wetland acreage within the Town provides vital buffer from flooding due to the immense water storage capacity of these ecosystems. Coupled with the relatively low impervious surface coverage in Essex, which allows more natural rates of water infiltration, flooding is currently less of a problem in Essex than it may be under future, more developed conditions.

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<sup>31</sup> Rickards, et. al., An Assessment of Resource Management Strategies in the Parker River/Essex Bay Area of Critical Environmental Concern, Winter 2002, p 18. [2015 Note: There have been no changes in this provision, Memo from Mary Ellen Feener, Planning Board Administrator November 4, 2015].

## 5. Wetlands

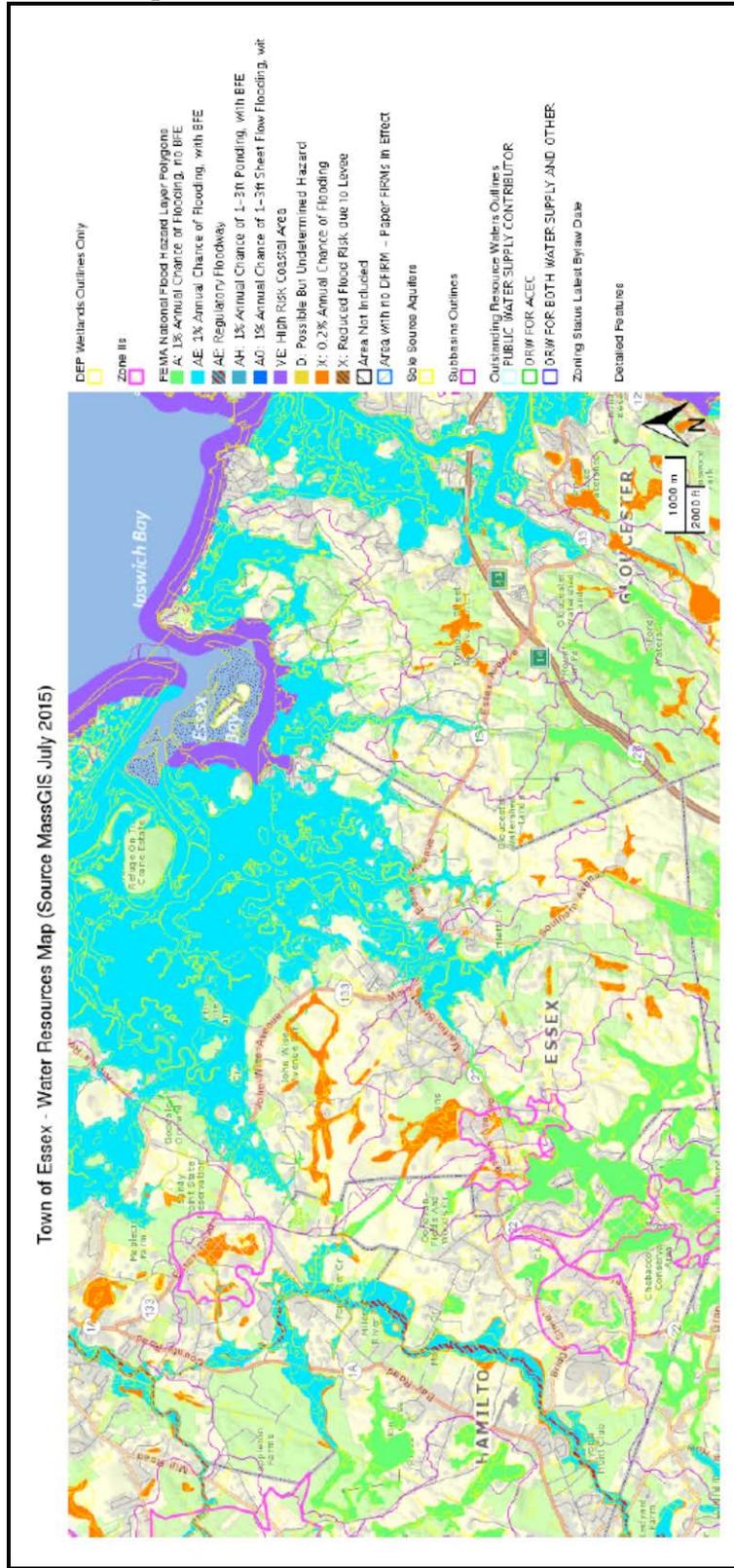
Essex has extensive areas of freshwater, brackish, and saltwater wetlands, including 3,435 acres of the Great Marsh ACEC, a designated Area of Critical Environmental Concern (ACEC). An excellent source of information regarding the environmental issues facing the ACEC and resource strategies for managing it is the Office of Coastal Zone Management's publication *An Assessment of Resource Management Strategies in the Parker River/Essex Bay Area of Critical Environmental Concern*<sup>32</sup>. The wetlands and salt marshes of Essex are also discussed further in Section 4.D. Vegetation.

While it does have a Water Resources Protection Overlay District, the Town of Essex currently does not have a wetlands bylaw, relying instead on the Massachusetts Wetlands Protection Act and the Rivers Protection Act to adequately protect these resource areas. Currently, a wetland district defined within the zoning bylaw acts as an overlay district. This district, which primarily addresses water quantity rather than quality, is defined to serve the purposes of flood protection, water table preservation, and conservation of natural resources for education, recreation, and general public welfare. The planning board is the entity acting as the special permit granting authority for exceptions to restricted uses. However, missing from the wetland district are performance standards addressing water quality, open space, and wetland habitat particularly within buffer zones to resource areas.

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<sup>32</sup>*Ibid.*

### Map 6 – Town of Essex Water Resources



## D. Vegetation

### 1. General Inventory

Essex is characterized by a mixture of saltwater and freshwater wetlands, woodlands, granite ridges, open meadows, and glacial drumlins. Recreational opportunities such as hunting, nature photography, bird watching, and wildlife tracking are dependent upon the diversity of these vegetation zones. Historical development and clearing have significantly shaped the vegetation communities seen in Essex today. However, it is important to note that not all of Essex's forests were cleared for agriculture, due to their wetness and granitic outcrops, leaving portions of undisturbed soils and old growth forests so vital to rare and endangered plant species.

### 2. Forests

The forested portions of town include areas of upland and forested wetlands. Although specific acreages of each have not been defined, MECT has calculated the Manchester-Essex Woods as roughly 3,400 acres of contiguous woodlands<sup>33</sup>. The forestlands are a mixture of hardwoods such as hickory, beech, birch, chokecherry, white and red oak, together with softwoods such as white pine, hemlock, and red cedars. Understory vegetation includes shrubs such as viburnum, witch hazel, blueberry, and mountain laurel. Forested wetlands or "swamps" include such species as swamp white oak, Pepperidge tree, red maple, blueberry, clethra, benzoin, and a few remaining Atlantic white cedars.

According to the Nature Conservancy, "the plant communities of the Manchester-Essex Woods, together with the natural landscape that supports them, are among the best of their type remaining on the entire north Atlantic coast." The Manchester-Essex Conservation Trust (MECT) states the following in their 2005 report, *Save Our Woods*:

"The Woods are especially precious because they are a rare remnant of a landscape that was common in our state's pre-colonial era. Because the area was never used for growing crops, its soils are largely undisturbed. Specialists tell us that this condition, as well as the area's relative isolation, large size, and diverse terrain (rugged hills, steep slopes, many granite outcrops, isolated and fragmented wetlands, perennial and seasonal streams, vernal pools, ponds, and two large floodplain swamps), suggest the presence of significant populations of plants and animals that have become rare or endangered in Massachusetts. The Woods lie at the southern edge of the range for northern species and the northern edge of the range for southern species; this adds to biodiversity."<sup>34 35</sup>

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<sup>33</sup> Helen Bethell, MECT Executive Director, personal communication, January 21, 2007.

<sup>34</sup> Manchester-Essex Conservation Trust. *Save Our Woods: The Campaign for the Wilderness Conservation Area in Manchester and Essex, Massachusetts*. June 2005, p. 5.

<sup>35</sup> Note: Manchester-Essex Conservation Trust prepared a Wilderness Conservation Area Management Plan in July 2013 see <http://www.mect.org/wp-content/uploads/2013/09/WCA-Management-Plan-7.13.pdf>

### 3. Meadows

As is the case throughout Massachusetts, most of the open meadow environments in Essex were created through historical clearing and farming, and as such represent largely transitional landscapes with the associated vegetation. Meadow species include sumac, juniper, elderberry, silky dogwood, shadbush, poison ivy (located through upland environments as well), and bayberry. As transitional environments, these vegetation patterns are crucial for “border” species, or wildlife that depend on the intersection of forested cover and open spaces for their habitat. However, the tendency of most of these meadows, without human intervention and clearing, is to revert to forested growth.

### 4. Wetland Vegetation

With large surficial water bodies such as Chebacco Lake, Alewife Brook, and the Essex River and its estuary, Essex has substantial wetland resources. Most of these forested wetlands or “swamps” include such species as red maple, blueberry, clethra, winterberry, willows, alders, benzoin, and a few remaining Atlantic white cedars. They also provide habitat for several threatened and endangered species including the Blandings Turtle.

The Town of Essex is also a coastal community and as such boasts thousands of acres of spectacular salt marsh. Rising above these salt marshes are the coastal islands in the Essex River, including Choate (Hog), Long, and Round Islands. Although these islands are primarily vegetated with forests consisting of oak, cedar, red and Scotch pine, spruce, and abandoned and mown pastures, their margins blend with the surrounding salt marsh.

Saltmarsh estuaries support great species diversity in Massachusetts. Essex’s marshes, as part of the Parker River/Essex Bay Area of Critical Environmental Concern ACEC, must therefore be a priority for conservation. Essex contains 3,435 acres of the ACEC, or 13 percent of the 25,500 acre ACEC.

The marshes are defined by the kinds of plants growing within them. According to *Life and Death of the Salt Marsh*<sup>36</sup>, “Out of the thousands of species of land plants in North America, only two species of grass, *Spartina alterniflora* and *Spartina patens*, thrive on this rigorous salty regime and dominate the marshes of the East Coast.” This pattern remains true in Essex where the spartina species are joined by salicornia and limonium. According the Executive Office of Environmental Affairs’ State of Our Environment Report, “acre for acre, there is more life...in a coastal salt marsh than in any other environment found in Massachusetts.” This means that Essex is rich in one of the most unique and important vegetative ecosystems possible, a resource which must be appropriately valued and protected. It also serves as a breeding ground for species vital to commercial fisheries, and as such is an important economic resource as well.

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<sup>36</sup> Teal, John, and Mildred Teal. *Life and Death of the Salt Marsh*, 1969.

## 5. Threatened and Endangered Species

The Natural Heritage and Endangered Species Program lists only one vascular plant species of special concern, American Sea-blite, which was observed in 1953. It most often occurs near the upper intertidal limit and has been found both in salt marshes and along sandy or gravelly shores. However, a survey conducted by Erica Sonder, M.S., for the Manchester-Essex Conservation Trust, found the following rare vascular plants, which were reported to the Natural Heritage Program: *Bartonia paniculata*, *Bartonia virginica*, *Rhexia virginica*, *Polygala polygama*, *Picea mariana*, *Drosera rotundifolia*, *Hottonia inflata*, *Isotria medeoloides*, *Cornus Canadensis*, *Pyrola elliptica*, *Chimaphila maculata*, and *Goodyera pubescens*.<sup>37</sup>

## 6. Threats To Vegetation

Invasive species pose one of the greatest threats to native vegetation in Essex. Areas of salt marsh, cutoff by roads and inadequate culverts, have been invaded by phragmites, otherwise known as the common reed. Phragmites choke out other species' and due to the density of their root mass, significantly alters wildlife habitat. It is also very difficult to eradicate, although preliminary research shows that restoring tidal flushing to these areas will largely reverse the expanse of phragmites.

Other plant invaders of uplands and freshwater wetlands include Japanese barberry, oriental bittersweet, buckthorn, garlic mustard, purple loosestrife, and Norway maple. Japanese knotweed stands have been observed adjacent to Apple Street in Essex as well. Spread of these invasive species is facilitated by human actions such as site disturbance, accidental introduction from domestic landscapes, and gathering of invasives for decorative purposes (such as bittersweet wreaths), which distributes their seeds. Invasives take advantage of degraded environments such as those where erosion has taken place, and squeeze out native species. Once they obtain a foothold, they can completely take over large areas, wiping out important habitat and food provided by native plants.

Other threats to vegetation in Essex include boat wakes in unauthorized areas and illegal disposal of boat wastes, which affect the salt marshes through erosion and nutrient inputs, unplanned recreational trails for mountain biking and motorized vehicles which facilitate erosion, illegal dumping of wastes and trash, and of course site clearance and encroachment for development.

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<sup>37</sup> Sonder, Erika. *Vascular Plant Survey of the Manchester-Essex Woods (Wilderness Conservation Area)*. June 2005.

## ***E. Fisheries and Wildlife***

### **1. Wildlife Inventory**

Essex benefits from large areas of as-yet undeveloped forested upland, saltmarsh, and freshwater wetlands, allowing for a diversity of wildlife species. Unfortunately, much of this land is vulnerable to habitat destruction due to the lack of zoning protections and the increasing value of real estate, which combined may make financially attractive development of previously infeasible ledge and wet soils.

A list of observed mammal, reptile, and amphibian species is contained in Table E. Essex is home to a rich diversity of bird populations, with important migratory nesting habitat. Appendix C of the 2007 Essex Open Space and Recreation Plan contains a copy of Mass Audubon's birding checklist as completed by local ornithology expert Jim Berry in 2003<sup>38</sup>. Although not listed here, Alewife Brook and its tributaries, the Essex River, and the Great Marsh are home to many economically and ecologically vital fish and shellfish species including the Alewife herring, which showed significantly increased population numbers during the 2005 spring counts on Alewife Brook at Apple Street, but have otherwise dramatically declined in number.<sup>39</sup>

It is also worth noting that Essex has in place a hunting bylaw, and that hunting and fishing are popular recreational activities in Essex. Hunting is also important for controlling the burgeoning deer population that currently threatens other natural resources by wiping out the forest understory (this affects nesting birds and rare plant species such as Ladyslippers). Responsible hunting should therefore be encouraged and supported. However, our current bylaw is very vague, and could improve safety and encourage hunting by requiring hunters to register at Town Hall, state where they will be hunting, and receive a permit that is dated, applies only to one named individual, and identifies the land to be hunted. Manchester and Ipswich have such bylaws, which could be used as examples.

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<sup>38</sup> The Essex County Ornithological Club's most recent inventory of birds of Essex County is from 2002. (Source: <http://www.massbird.org/ecoc/ECOCChecklist.htm>) December 2015.

<sup>39</sup> Phippen, Peter. *Annual Herring Count Report, 2005*. Eight Towns and the Bay, 2005.

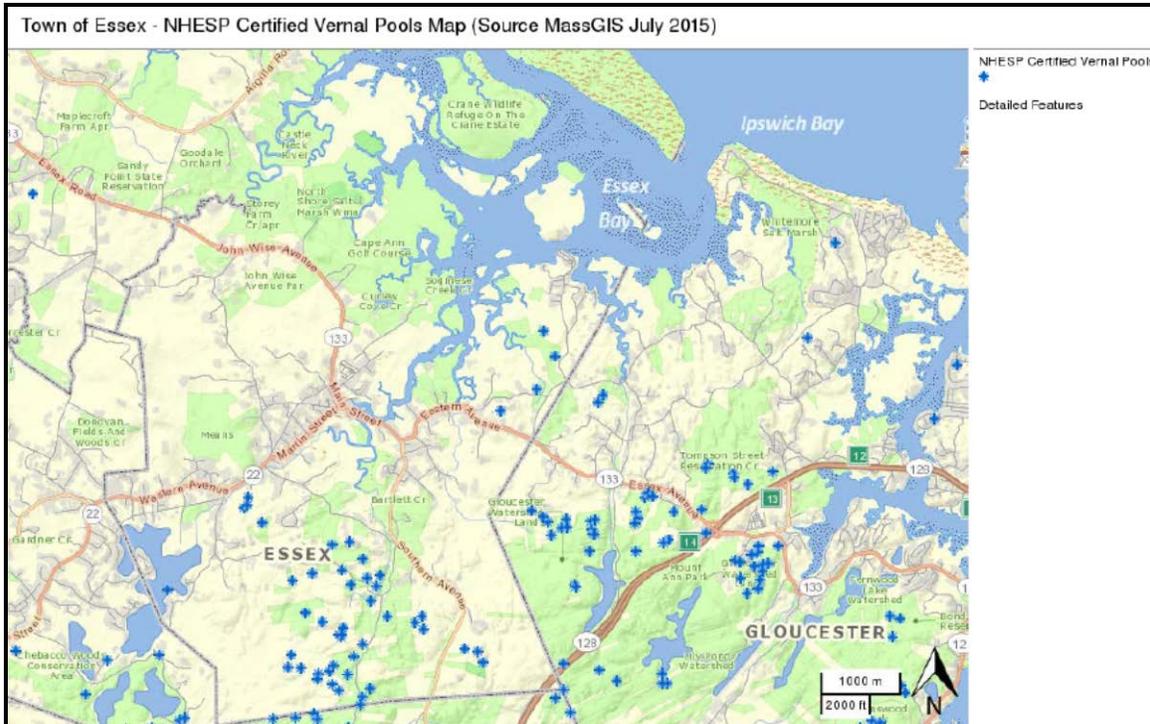
**Table E. Wildlife Inventory**

	<b>Species</b>
<b><i>Mammals</i></b>	Coyote
	Red fox
	White Tailed deer
	Striped skunk
	Eastern chipmunk
	Muskrat
	Grey squirrel
	Red squirrel
	Northern Flying squirrel
	Southern Flying squirrel
	Eastern pipisterelle
	Brown bat
	Masked shrew
	Northern short-tailed shrew
	Star-nosed mole
	Meadow vole
	Pine vole
	Red-backed vole
	White Footed mouse
	House mouse
	Norway rat
	Beaver
	Fisher
Otter	
Mink	
Virginia opossum	
Long Tailed weasel	
Short Tailed weasel	
<b><i>Reptiles</i></b>	Spotted Turtle
	Blanding's turtle
	Painted turtle
	Snapping turtle
	Stinkpot turtle
	Eastern garter snake
	Milk snake
	Northern ring necked snake
	Smooth green snake
	Eastern ribbon snake
	Black racer snake
	Northern water snake
<b><i>Amphibians</i></b>	Red-spotted newt
	Spotted salamander
	Red-backed salamander
	Two-lined salamander
	Blue spotted salamander
	Tremblay's salamander
	Jefferson salamander
	Northern spring peeper
	Grey tree frog
	Wood frog
	Pickerel frog
	Leopard frog
	Green frog
Bull frog	
American toad	

2. Vernal Pools

As of 2015, according to the Natural Heritage website, Essex has 41 certified vernal pools. This constitutes a major increase from the two that had been certified by 2006 and represents an important achievement of goal A of the 2007 Open Space and Recreation Plan. The certified vernal pools have primarily been identified within the Manchester / Essex Woods area. (*See Map 7*)

**Map 7 – Town of Essex, Certified Vernal Pools (Source MassGIS 2015)**



3. Wildlife Corridors

The Essex River and its tributaries including Alewife Brook are major wildlife corridors and provide the only continuous, protected corridors in Essex (they are protected under the Massachusetts Rivers Protection Act as rivers and perennial streams). For this reason, providing corridors between existing parcels of protected open space is a priority recommended by this report. It is also important to note that the River provides the only access to Chebacco Lake for migrating Alewife herring. The Lake is the last remaining Alewife breeding ground on the North Shore.

#### 4. Rare and Endangered Species

The Natural Heritage Inventory identifies six wildlife species in Essex that are threatened or of special concern (Table F.) Detailed information on these species can be found in Appendix D of the 2007 Essex Open Space and Recreation Plan.

**Table F. Species and Status**

<b>Taxonomic Group</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>State Rank</b>	<b>Federal Rank</b>	<b>Most Recent Observation</b>
Amphibian	<i>Ambystoma jeffersonianum</i>	Jefferson Salamander	Special Concern		1916
Reptile	<i>Emydoidea blandingii</i>	Blanding's Turtle	Threatened		2004
Bird	<i>Accipiter striatus</i>	Sharp-Shinned Hawk	Special Concern	Protected Species	2000
Bird	<i>Parula americana</i>	Northern Parula	Threatened		1983
Crustacean	<i>Crangonyx aberrans</i>	Mystic Valley Amphipod	Special Concern		1986

#### 5. Open Space Priorities for Wildlife Habitat

Acre for acre, saltmarsh estuaries support the greatest species diversity in Massachusetts. Therefore, Essex's marshes, as part of the Parker River/Essex Bay Area of Critical Environmental Concern ACEC, must be a priority for conservation of wildlife habitat. Essex contains 3,435 acres of the ACEC, or 13 percent.

Outside of the saltmarsh, all of which is designated as core habitat on the NHESP's BioMap, most of southern Essex including the Manchester-Essex Woods, Maple Swamp, and the forested uplands and wetlands on either side of Southern Avenue and south of Apple Street, are identified as core habitat on the NHESP's BioMap. This acreage corresponds to the Blanding's Turtle habitat discussed below. Also identified as core habitat on the BioMap is the entirety of the saltmarsh and barrier beach system contained within the town's boundaries. Finally, with the exception of the farmland and densely developed parcels adjacent to major roadways such as Route 22, Route 133, and Southern Avenue, most of the rest of Essex is identified by the BioMap as supporting natural landscapes (*Map 8: NHESP Habitats at the end of Section 4.F.*).

When determining open space preservation priorities, the following factors should be considered to ensure that viable wildlife corridors and habitat varieties are conserved.<sup>40</sup> The targeted open space should help to:

- Provide habitat for game and non-game, including threatened, endangered, and special concern animals
- Maintain biological diversity
- Maintain connectivity
- Contribute to groundwater recharge and improved water quality
- Represent high to outstanding examples of native plant communities, or contain populations of state-listed rare plants, rare animals and/or animal aggregations

The following principles should inform parcel prioritization:

- Size of a patch is important (bigger is better)
- Shape of a patch is important (rounder is better)
- Connectivity is important
- Adjacent land uses are important (the more compatible the surrounding land uses, the better the chances for persistence)
- Higher native species diversity contributes to higher productivity and resiliency

Because of the variability of habitat needs of different species and interdependent species sets, target species are often used to act as indicators of necessary habitat characteristics such as acreage, vegetation, food availability, ecosystem quality, and corridor viability when determining priorities for land preservation.

For the purposes of determining current open space constraints on wildlife habitat in Essex and priority preservation status for open space parcels, this report uses the Blanding's turtle (*E. blandingii*), a state-designated threatened species, as the target or indicator species for non-tidal habitats. The Blanding's Turtle requires near pristine habitat conditions and extensive buffer acreage to survive and thrive. It was most recently observed in Essex in 2004, and is extremely rare, with highly vulnerable population levels. Because of the extensive, high quality habitat requirements of the species, it is an excellent benchmark species for determining optimal habitat needs for other species. In particular, it has very similar habitat requirements to other freshwater turtle species and most present amphibian species: two of the most threatened wildlife sets in Massachusetts.

The Blanding's turtle spends a great deal of time on land, traveling among various wetlands in search of food. An individual Blanding's turtle may travel several miles over the course of the summer, visiting marshes, beaver ponds, slow-moving streams, and other sites where it can find food. They depend on aquatic habitat for much of their lives, but they also require undeveloped uplands for traveling safely. As these areas are converted to residential and commercial developments, Blanding's turtle habitat is

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<sup>40</sup> Minnesota Department of Natural Resources website (<http://www.dnr.state.mn.us/nr/index.html>), Fall 2005 [2016 Note: referenced quote no longer posted at that website].

destroyed and remaining areas of undeveloped lands are becoming increasingly isolated from one another by roads. Roads present major barriers for turtles and other small, slow-moving wildlife.

Therefore, in order to ensure the continued survival of Blanding's populations in Essex, enough contiguous acreage must be preserved to allow for turtle migration patterns without forcing them to encounter more roads than at present. It is also imperative to provide adequate buffer between development and the freshwater wetlands that provide the primary habitat for these turtles, in order to ensure that water quality degradation, siltation, and invasive plant and animal species do not threaten populations. A summary of the research findings regarding Blandings' habitat needs is contained in the report *Wetland Buffer Zones and Beyond* (Boyd 2001), which is excerpted in Appendix E. Such research suggests that Blandings need a minimum buffer zone of 900 linear feet, and up to 3,300 linear feet to preserve breeding and feeding grounds. Contrast these requirements with the 100 and 200-foot buffer zones provided by the Massachusetts Wetlands Protection Act and Rivers Protection Act respectively, and it is clear that Essex must work to provide adequate open space buffers to prime wetland habitats to ensure that important reptile and amphibian species are preserved.

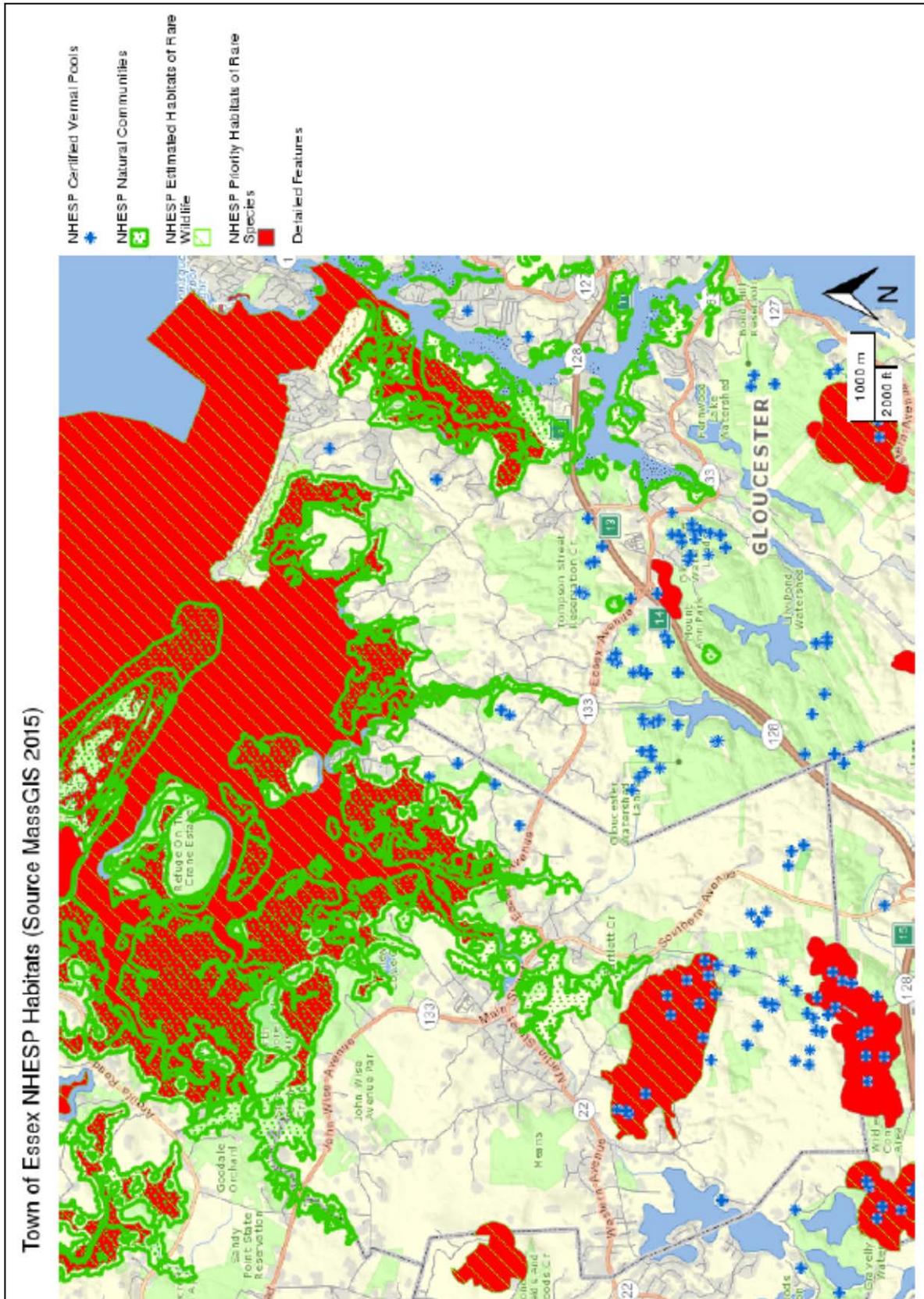
#### 6. Recommendations for Open Space Preservation Based on Wildlife Habitat

Together with the marshlands making up the Area of Critical Environmental Concern, the Manchester-Essex Woods are the priorities for open space conservation for wildlife habitat. These environments are hydraulically and ecologically connected, forming important wildlife corridors and habitat. Based on the findings of the previous sections, it is this report's recommendation that the following areas be given priority for open space preservation:

1. Parcels providing adjacent and connective land to the Manchester-Essex Conservation Trust and Essex County Greenbelt properties in southern and western Essex.
2. Parcels providing upland buffer around large freshwater wetlands (20 acres+) such as those found off of Apple Street, Atwater Avenue, and near Chebacco Lake.
3. Parcels containing certifiable vernal pools and adequate (1500 linear feet) buffer zone.
4. Parcels adjacent to the saltwater marsh system that provide meaningful water quality protection buffer, as defined in the prior section.

Together with the important agricultural, recreational, and historic resources discussed later in this Plan, these open spaces supporting vital natural resources are the top priorities for preservation in the Town of Essex.

### MAP 8 –Town of Essex – NHESP Habitats



## ***F. Scenic Resources and Unique Environments***

### **1. Scenic Resources**

The coastal, forested and agricultural landscapes of Essex lend this town a signature beauty which has contributed greatly to its popularity as a tourist destination and scenic byway. From the granite outcrops that have often prevented development, to the Essex River, which housed a long-time shipbuilding industry, these unique landscapes have shaped the history of Essex, and have been shaped in turn by the economic exploits of its inhabitants: mainly agriculture, fishing and boat building, and tourism.

The agricultural vistas along John Wise Avenue (Route 133) and Southern Avenue are renowned, as are the views of the saltmarsh from many areas including Main Street. The forests and rocky outcrops of the Manchester-Essex Conservation Trust and Essex County Greenbelt properties provide a backdrop for hikers, mountain bikers, and bird watchers. Coupled with historic properties like the Essex Shipbuilding Yard and Cogswell's Grant, these landscapes are an invaluable part of Essex's character.

The scenic resources and unique environments of Essex are discussed below, including heritage landscapes, areas of critical environmental concern (ACEC), and scenic protected environments.

### **2. Heritage Landscapes**

A major component of Essex's scenic resources and unique environments are the heritage landscapes throughout the town. A heritage landscape is a place created by people's interactions with the natural environment.<sup>41</sup> As part of the Massachusetts Heritage Landscape Inventory program, a reconnaissance report was put together for the town of Essex. The following is an excerpt from that report, identifying the major heritage landscapes in Essex:<sup>42</sup>

“The Essex Heritage Landscape Identification meeting, attended by about seven residents, some representing town boards and local non-profit organizations, was held on June 18, 2004. During the meeting residents identified a lengthy list of Essex's heritage landscapes...Once the comprehensive list was created, attendees were asked to articulate the value of each landscape and the issues relating to its preservation. Based on the information gathered, community members identified a group of high priority heritage landscapes to be visited by the consulting team during the fieldwork.

Each of the priority landscapes is highly valued, contributes to community character and is not permanently protected or preserved. The following text describes the priority heritage landscapes that are the focus of the reconnaissance work in Essex. In most instances intensive survey work will be needed to fully document the physical characteristics and the historical development of the

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<sup>41</sup> Massachusetts Heritage Landscape Inventory Program website (<http://www.mass.gov/eea/docs/dcr/stewardship/histland/recon-reports/essex-with-map.pdf>) May 2006..

<sup>42</sup> *Ibid.*

Map 9



landscape. The heritage landscapes, which are listed in alphabetical order, represent a larger scale than a single property.

### **Conomo Point**

Conomo Point is a small peninsula that juts out into the Essex River near its confluence with Essex Bay and the Atlantic Ocean beyond. Together these two points – Robbins Island and Conomo Point - form a tidal flats inlet. Cross Island is north of Conomo Point.



The Conomo Point neighborhood is approached by Harlow Street to Conomo Point Road, which forms a loop out on the Point. Cottages are arranged along the inland side of the loop road on the north side, the water side on the south side and along the south side of Middle Road, which bisects the loop of Conomo Point Road. The openness of Conomo Point, the nearby islands and peninsulas in the Essex River and Essex Bay, and the views of the River and the Bay make this neighborhood an important heritage landscape with a high degree of scenic quality. On the north side of Conomo Point Road is a small park-like greensward with benches, some shade trees and marsh land sloping to the water. The property on Robbins Island and the northern tip of Conomo Point is owned by the Town of Essex with most of the area being leased to cottage owners while most of the southern and Beach Circle lots have been sold (see Pages 22 and 23).

While the vast majority of the land bordering the water is public (town owned), there are two points of obvious public access to the water; a small public beach, which faces east and fronts on tidal flats, and a public landing at the northwestern end of the Conomo Point Road opposite Cross Island. Most of the houses on Conomo Point are modest late 19th and early 20th century summer cottages with some architectural elaboration. Shingled weathered sheathing covers many of the

one and one-half and two story dwellings built on small lots and sited with picturesque views.

### **Essex River Estuary**

Essex boasts one of the most interesting, picturesque and sensitive estuaries along the North Shore. The estuary comprises the river, creeks and coves, salt marsh, and tidal mud flats, beaches and landings. The Essex Salt Marsh, which is part of the Great Marsh, consists of over 1,500 acres in the town of Essex. The Great Marsh extends from Cape Ann into New Hampshire, encompassing 17,000 acres in total. An interpretive sign at Ebben's Creek on Eastern Avenue tells of the vitality of this Great Marsh. Essex salt marsh acreage is along the Essex River, Ebben Creek, Lufkin Creek and the many coves in Essex Bay. Clam flats are found throughout the coastal waters of Essex and are a vital part of this immense ecological system, besides providing economic vitality to the fishermen of the area. In addition to its environmental importance, the estuary embodies the community character of Essex with some of the most beautiful and complex vistas from many vantage points in town.



(Essex River and Hog Island)

### **John Wise Avenue Farms**

Some of the most scenic farmland is in the western part of town along John Wise Avenue (Rt. 133). The scenic views of rolling fields and broad meadows along this curving road are cherished by residents and visitors alike. The land has been farmed for centuries and some farms are reminiscent of these past eras with some extant First Period and Second Period farmsteads. Some properties retain large barns and the distinctive poultry barns, a property type not seen elsewhere in Essex.



(picture courtesy of MA DCR)

### **Scenic Roads**

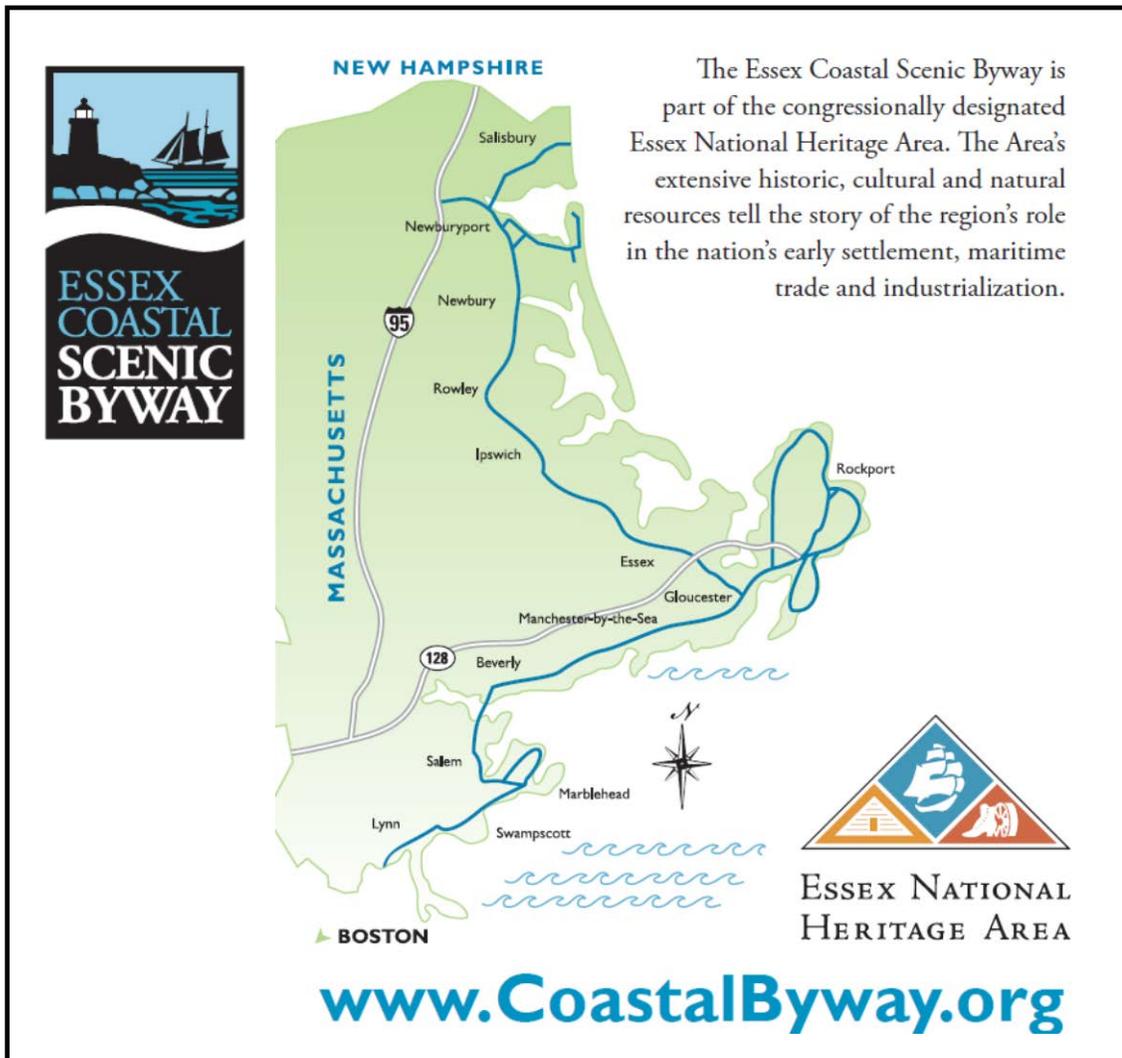
Nearly all of Essex's roads reflect the character of the community with views of forests, agricultural, or marine landscapes across the vast estuary. Like John Wise Avenue, Southern Avenue includes spectacular agricultural views. Another of the more scenic roads is Apple Street, which links Western Avenue to Southern Avenue. On its western end it crosses Alewife Brook where there are remnants of the granite walls in a raceway of an early mill. This hilly, windy road has views of agricultural fields and some farmstead settings with houses and barns. Belcher Street is a winding narrow north-south road that leads from Choate Street south to Story Street, also scenic roads. The road is lined with stone walls and heavily wooded areas. Most dwellings are set back with buffers between the road and structures. Some narrow roads lead from main routes to the water's edge with fine scenic views of the salt marsh and tidal flats. Examples are Island Road and John Wise Road, both off of Route 133 (John Wise Avenue), and Lufkin Street and Conomo Point Road in the northeastern part of town".

*[Committee note: end MA DCR excerpt]*

Although not mentioned in this excerpt from the MA DCR document, Apple, Choate, Belcher and Story streets have been designated as scenic roads by the Town of Essex

under M.G.L. Chapter 40A Section 15C (Scenic Road Law). The Planning Board must hold a public hearing before removal of trees and stonewalls on designated scenic roads. The Scenic Road law currently does not allow a town to designate a numbered route or state-controlled highway as a scenic road unless the road is entirely within the town and is owned and operated by the town<sup>43</sup>.

Route 133 was designated by the state as a Scenic Byway in 2003 and was incorporated into the Essex Coastal Scenic Byway in 2011. However those designations do not provide any regulatory protections.



<sup>43</sup> Comment provided by Mary Ellen Feener, Essex Planning Board Administrator November 4, 2015

## Town Landings

The Open Space and Recreation Plan records 17 documented landings in Essex. They appear on the assessor's maps and are all public landings. However, many are somewhat obscure — at the end of narrow lanes and only wide enough for pedestrian traffic. Some terminate at a small beach, others have a landing built into the water for launching a boat. Several landings are obstructed or not usable due to encroachment of adjacent private property users. The town landing at the western end of the Causeway is the most prominent and best known of the public landings. It is adjacent to the Essex Shipbuilding Museum and has public parking for town residents. A paved ramp is used to drive boat-trailers into the Essex River. A narrow mud and shell path leads to the water at the end of Island Road off John Wise Avenue. At the end of Water Street there is a board fence with an opening which provides public access down a rocky hillside to the Essex River. Private property signs are on both sides of this narrow public landing. The landing on Conomo Point comprises a stone wharf and a beach.”<sup>44</sup>



(Picture courtesy of MADCR)

### 3. Unique Environments

#### **a) Area of Critical Environmental Concern (ACEC)**

Of the 25,500-acre Parker River/Essex Bay Area of Critical Environmental Concern (ACEC), thirteen percent lies within the Town of Essex. The Office of Coastal Zone Management (CZM) determined that water quality, wetlands, and open space and growth management were the priority natural resource issues in Essex that might affect the ACEC.<sup>45</sup> This resource provides perhaps the largest tourist draw to Essex, upon which much of the local economy depends including antique stores, restaurants, and recreational

<sup>44</sup> Massachusetts Department of Conservation and Recreation and The Essex National Heritage Commission. *Essex Reconnaissance Report: Essex County Landscape Inventory*. May 2005, pp. 4-6.

<sup>45</sup> Rickards, et. al. *An Assessment of Resource Management Strategies in the Parker River/Essex Bay Area of Critical Environmental Concern*, Winter 2002.

businesses. The ACEC is, acre for acre, the most biologically productive habitat in Massachusetts.<sup>46</sup> The ACEC is also closely linked to the Manchester-Essex Woods and large agricultural parcels in the Town, as all are hydrologically linked within the watershed.

## b) Scenic Protected Lands

Three major areas of protected land in Essex contribute greatly to the community's undeveloped and rural character. The Manchester-Essex Conservation Trust's (MECT) Wilderness Conservation Area, the Trustees of Reservations (TTOR) and Essex County Greenbelt Association's (ECGA) properties protect over 1,000 acres of Essex's land, with the former two protecting vital parts of the Manchester-Essex Woods.<sup>47</sup>

The Trustees of Reservations has two properties partially or wholly in Essex. The first is the Crane Wildlife Refuge, which was once part of the vast early 20th century summer estate of Chicago industrialist Richard T. Crane, Jr. The Refuge is a patchwork of coastal and island habitats that includes a portion of Castle Neck and seven islands in the Essex River Estuary (Choate, Long, Dean, Dilly, Pine, Patterson and Round).



The largest of the Refuge's islands, the 135-acre Choate/Hog Island supports myriad birds and mammals including deer, fisher, coyote, and otter. The spruce forest planted in the early 20th century attracts golden crown kinglets and sharp-shinned hawks, while Choate/Hog Island's grasslands provide critical habitat for bobolinks and Savannah sparrows. Gulls, sanderlings, and sandpipers feed along the Island's shore.

The second TTOR property is the Stavros Reservation. This property protects more than fifty acres of salt marsh, and contains White's Hill, a coastal drumlin that offers panoramic views of Crane Beach, the Crane Wildlife Refuge (Choate/Hog Island), and Halibut Point. A half-mile loop trail leads through an open field and enters the woods at the base of White's Hill. It climbs gradually to a field at the crest of the hill and then loops back down the hill through a thicket of Devil's walking stick, broken only by a small hillside clearing that offers views over the salt marshes to Castle Hill.

<sup>46</sup> *Ibid.*

<sup>47</sup> MECT owns 732 acres, ECGA owns 160 acres, the Town of Essex owns 34 acres, and a 6-acre parcel is owned by the Town and is under conservation restriction to ECGA. Helen Bethell, personal communication, January 21, 2007.

The ECGA's Cox Reservation is 31 acres, protects important buffer habitat adjacent to the Essex River Estuary, and provides a scenic backdrop for artists, birdwatchers, and the annual and very popular Art in the Barn fundraiser for ECGA. According to ECGA's website, "The Cox Reservation consists of two parcels: a four-acre woodlot on nearby Lufkin Street and the 27 acres of upland, salt marsh, farmland with house and barn, and river frontage on Eastern Avenue. The views from the larger parcel east toward the salt marsh, the Essex River, the back of Crane Beach, and Castle Hill and Choate/Hog Island are magnificent. The Greenbelt headquarters and staff offices are located at the Cox Reservation, as well as many Greenbelt events throughout the year."<sup>48</sup>



Hog Island from the Cox Reservation

The ECGA's Warren-Weld Woodland adjacent to the MECT Wilderness Conservation Area, is 106 acres and is described by Greenbelt as "part of the larger Manchester-Essex Woods. The property protects the headwaters of the Essex River, which is a mere trickle at this location, and is part of a wildlife corridor that runs south from the salt marshes of Essex into the Manchester-Essex Woods. There are several natural communities on this property, the predominant of which is an oak forest. Depending on the amount of moisture in the soil, white, red, scarlet and black oaks are interspersed with black birch, red maple, beech, hemlock, white pine, and shagbark and pignut hickories. The slope of the land is generally to the north creating a slightly cooler climate preferred by beech and hemlock."<sup>49</sup>

The Manchester-Essex Conservation Trust (MECT) is a private non-profit, mostly-volunteer land trust, funded primarily by its membership. Due to generous donations from landowners MECT has taken the lead in preserving over 1,400 acres of open space in Essex and Manchester, beginning in the 1960's and continuing today. MECT's efforts have always been strengthened by cooperation between the two municipalities and with other non-profits, especially Essex County Greenbelt and Trustees of Reservations.

MECT remains committed to protecting the mostly-wooded uplands and wetlands in Essex that support biodiversity, alleviate flooding by slowing storm-water run-off, protect

<sup>48</sup> Essex County Greenbelt Association website ([www.ecga.org](http://www.ecga.org)), December 2015

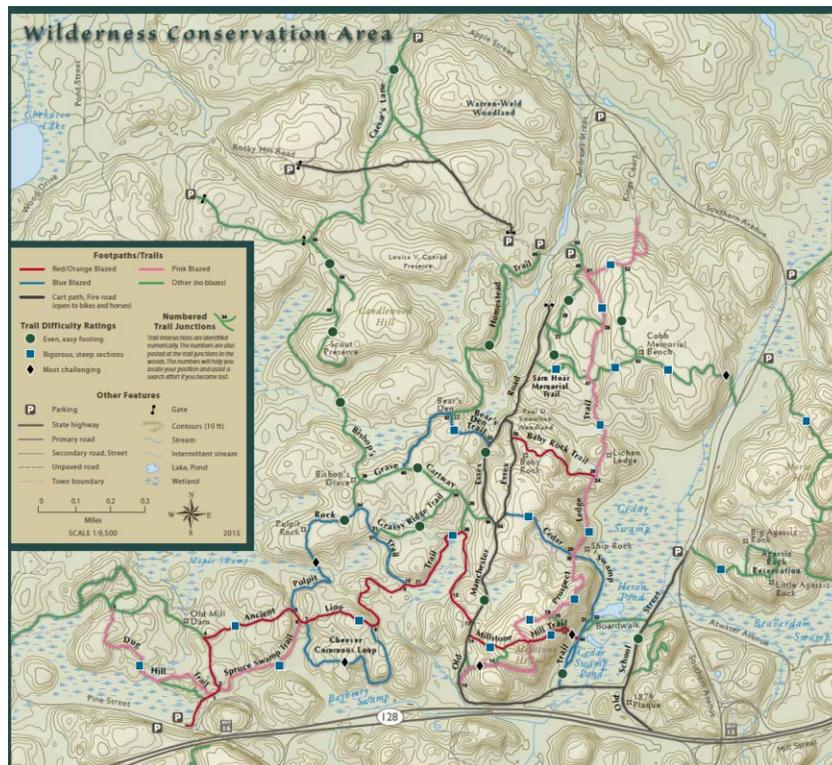
<sup>49</sup> *Ibid.*

drinking water supply and help maintain water quality by filtering pollutants. A substantial, healthy woodland also helps to alleviate the effects of climate change by absorbing carbon-dioxide and providing cooling shade and breezes in the summer. The Essex Woods area also a popular recreational area used in all seasons by town residents and visitors. Any efforts and/or resources the town of Essex can provide to help MECT protect additional critical woodland parcels stand to benefit the economy, ecology and character of this important region of the town.

It is important to note that around 1,000 acres of the Essex portion of the Manchester-Essex Woods remain unprotected, including 325 acres east of Southern Avenue. Given that the Nature Conservancy has stated that, “the plant communities of the Manchester-Essex Woods, together with the natural landscape that supports them, are among the best of their type remaining on the entire north Atlantic coast”, [1] such vulnerability is troubling. As discussed in the Vegetation and Wildlife Sections of this report, the Woods were never farmed, and so provide rare undisturbed soils and associated habitat that provide for some of the most threatened and rare species in Massachusetts. Therefore, the unprotected parcels adjacent to the MECT and ECGA lands are of the highest priority for protection.

A map of the trail system published by MECT (*see Map 9*).

**Map 9. The Manchester-Essex Woods’ Trail System**



Courtesy of the Manchester Essex Conservation Trust

## ***G. Environmental Challenges***

Essex is currently at a crossroads in terms of its approach to current and future development trends, and faces a myriad of environmental challenges as a result. Fortunately, much of the groundwork in terms of planning and research has been put in place, and there is still time for the Town to plan strategically and proactively to meet these challenges and prevent many of them from escalating.

### 1. Public Education Regarding Natural Resource Values

Essex is a small community with a strong sense of history and a connection to its past. This has often translated into a public constituency that is well informed and actively involved in town issues of substance. In the case of the outstanding natural resources that Essex possesses, additional public education is warranted.

The surveys conducted for the Open Space Plan found that most of Essex's citizens focus on the protection of the open spaces and natural resources that they see and use every day, namely the scenic landscapes along major roadways, and the Essex River and the salt marshes that are ubiquitous along the Town's coastline. The support for preservation of these areas is strong.

However, in terms of biodiversity, rare habitat, and presence of threatened and endangered species, the woodland areas bounded by Southern Avenue, Apple Street, Route 22, and Pond Street are of highest priority for preservation, yet few Essex residents recognize them as needing such protection. This is partially attributable to the mistaken notion that all of these woods are protected by the Manchester-Essex Conservation Trust, which owns limited parcels within the woods and is attempting to raise the capital to buy more. Another reason for the lack of recognition of the Essex Woods' importance and vulnerability is the fact that it is less visibly prominent than other scenic resources. Also, the unique value placed upon its old growth sections is largely unknown by the public, and it is not used as much for recreation as the river and estuary.

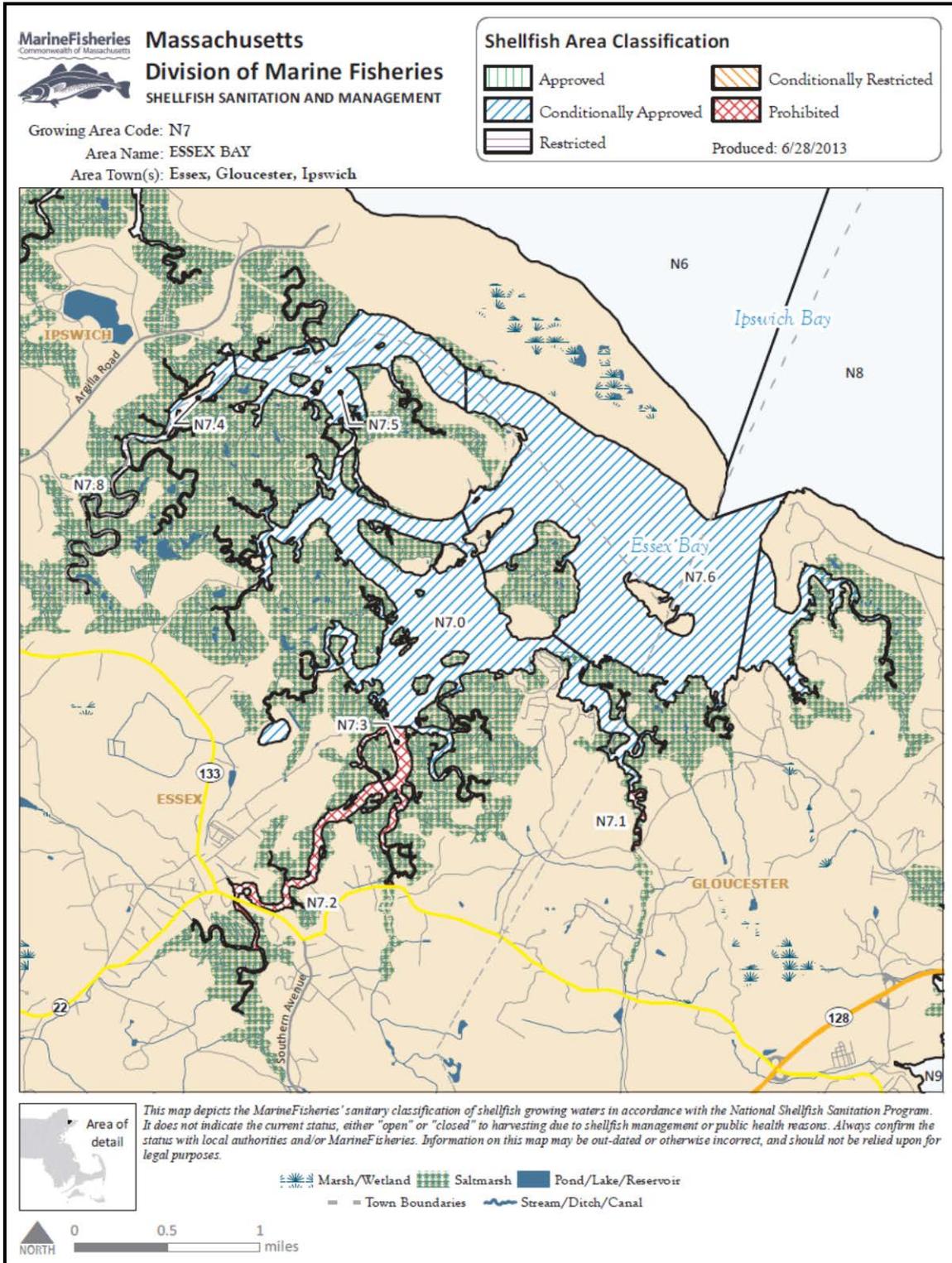
### 2. Stormwater and General Water Quality Issues

The habitat of the Essex River is currently being impacted by the failing septic systems in the Town of Essex. To address this problem the town has installed an extensive sewer system, which was completed in 2006. Water quality testing ended soon after the completion of the sewer project, additional possible pollutant sources to the estuarine portion of the river have yet to be investigated. For instance, stormwater discharge does enter the river from several points, including the Essex Causeway, a section of State Route 133, which follows and crosses over the river. The confined, narrow causeway section of the roadway is significantly developed as a commercial area of Essex and includes several restaurants, marinas, parking lots, retail stores, and residences. Stormwater runoff discharges into the Essex River at several outfall pipes from shallow-sumped catch-basins or directly through stormwater grates. Runoff is suspected to

include high levels of bacteria and sediment from the roadway and unpaved parking areas servicing the commercial district.

The Massachusetts Division of Marine Fisheries has listed the shellfish beds in the river at the causeway and for a mile downstream in the Prohibited class. The Massachusetts Department of Environmental Protection includes this section of the river on the Integrated Waters List (303d), requiring a total maximum daily load (TMDL) to be established for pathogens (see hatched read area on *Map 10*). Despite this, in the vicinity of the road crossing, the river provides contact recreation in the form of an unofficial swimming area for local residents. The river also serves as the passageway for anadromous fish to the Alewife Brook and the spawning grounds of Chebacco Lake, one of the last natural anadromous fish runs on the North Shore. The Essex River is also used for power boating, sailing, and kayak/canoeing and supports several small marinas along the causeway.

### MAP 10 – Shell fishing Classification Areas



For these reasons, the 2004 North Coastal Watershed Five Year Action Plan recommended that non-point source contamination be assessed, particularly contaminated stormwater emanating from street drainage systems along highways and local roads. After such an assessment, stormwater best management practices should be implemented to protect the River and the marsh from further degradation.

### 3. Lack of Protection for Critical Land Parcels

The relatively slow and piecemeal development of critical, vulnerable parcels of woodland in Essex has led to a misguided sense that most of the woods are already protected by one or more of the local land preservation organizations such as Manchester-Essex Conservation Trust, Essex County Greenbelt, and The Trustees of Reservations. In fact, the majority of the Essex Woods remains in private hands, and without conservation restrictions. Furthermore, since Essex has no zoning above state minimum requirements, there are no special regulations guiding the development that does occur in these areas. This is despite the fact that the Nature Conservancy has stated, “the plant communities of the Manchester-Essex Woods, together with the natural landscape that supports them, are among the best of their type remaining on the entire north Atlantic coast.”<sup>50</sup>

It should be noted that the Town of Essex took the important step of voting more than 100 acres of Town-owned tax-title salt marsh under conservation in 2005. The Town could do the same for some 120 acres of woodlots in the Manchester-Essex Woods, and this Plan recommends doing so as soon as possible.

### 4. Chebacco Lake Water Quality

The key problems in and around the lake as identified by regional and local officials include: water quality deterioration, invasive aquatic weed growth, gradual reduction of depth due to sediment buildup, and reduction of recreational opportunities due to alien weed infestation. Most of these problems are attributable to the poor functioning of septic systems of homes surrounding the lake. In a draft report, “Chebacco Lake Restoration Reconnaissance Report,” released by the Massachusetts Department of Environmental Management (now part of the Department of Conservation and Recreation) in 1996, the following recommendations were made:

- Develop an in-lake management program
- Develop a lake watershed management program
- Develop a waste disposal management plan for all homes around the lake, with an emphasis on phosphorus-reducing alternative septic systems
- Begin studies to determine the advisability and best management practices for the use of herbicides and dredging

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<sup>50</sup> MECT, 2005. Manchester-Essex Conservation Trust. *Save Our Woods: The Campaign for the Wilderness Conservation Area in Manchester and Essex, Massachusetts*. June 2005, p. 5.

Currently, Mass Audubon and the Watershed Association are finalizing a Management Plan to address these and other issues. Also of note, in recent years, beavers have constructed dams, which block the flow of water to Alewife Brook and may prevent the migration of alewives upstream for spawning in the lake. The Association is working on a long-term plan for maintaining the water level of the lake and managing the beaver problem. The Essex DPW has been working to keep Alewife Brook clear to encourage the upstream migration of alewives<sup>51</sup>.

#### 5. Management of Development

Essex is continuing to grow, and trends in surrounding towns indicate that growth will continue to increase more rapidly in coming years. Studies and community feedback sessions with the Metropolitan Area Planning Council (MAPC) have repeatedly noted Essex's vulnerability to unplanned, unchecked development that may affect the character of the Town while also not providing much-needed affordable housing. Due to a lack of zoning bylaws and a zoning master plan, the Town is not able to use the full array of tools at its disposal to manage and plan for growth.

#### 6. Landfills and Hazardous Waste Cleanup Sites

The Town of Essex operates a transfer station, having closed its landfill. The Massachusetts Department of Environment Protection (DEP) lists 25 sites of hazardous waste or oil spills in Essex. Most of these have been cleaned up and are fully resolved, however, several remain under DEP's jurisdiction. Two Tier 1D sites, one on Southern Avenue and one on Martin Street, and one Tier 1B (the former Liberty Research Facility on Essex Park Road) site remain in cleanup phases, as do two Tier 2 sites on Main Street. In addition, historical contamination probably exists at many sites along the Essex River, where shipbuilding operations utilized heavy metals and lead extensively.

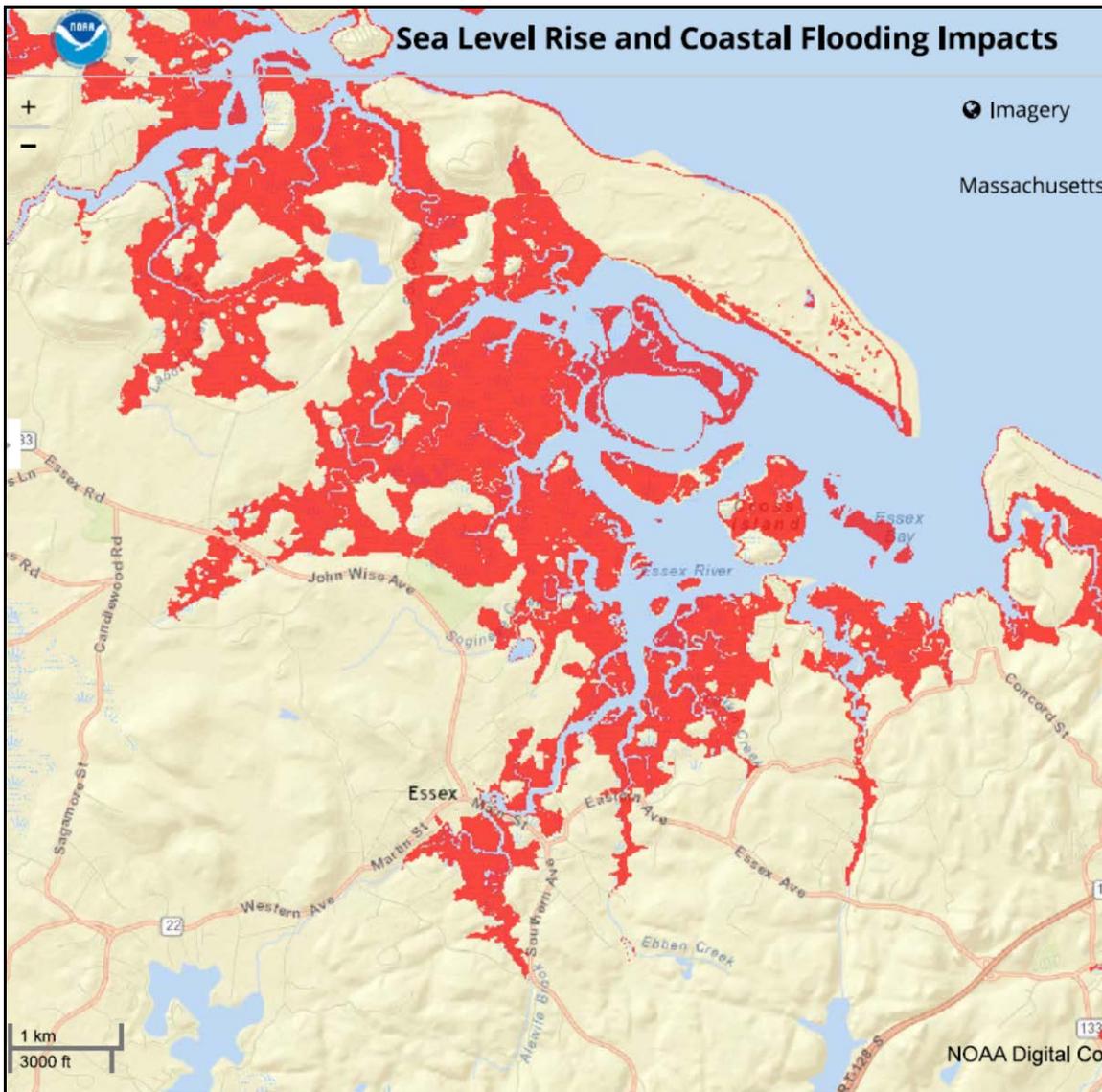
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<sup>51</sup> Essex Long-Term Planning Committee,

### 7. Climate Change and Sea Level Rise

Essex, as a low-lying coastal community, will be significantly affected by even moderate changes in sea level. As ocean levels rise and coastal storms occur more frequently and intensively areas subject to flooding now, will be flooded more frequently. **Map 11** shows in red the parts of Essex most vulnerable to flooding. Those areas are nearly identical to the key shell fishing areas shown in **Map 10**.

**MAP 11 – Town of Essex – Areas Subject to More Frequent Coastal Flooding**



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<sup>52</sup> NOAA Sea Level Rise and Coastal Flooding Impact mapping site, <http://coast.noaa.gov/slr/> August 2015)

The most significant threats to the shell fishing industry are degradation of the flats and declining shellfish populations. The health of the clam population is closely tied to the weather, and cyclical shellfish populations continue to decrease with the warming of the ocean. In years ahead sea level rise may well deny access to many flats now exposed at low tide, a problem for the shellfish and those who harvest them. There is disagreement about whether clam flats can move inland with sea level rise, but the one sure thing is the inevitability of change. Acidification of ocean waters may also impact shellfish harvests<sup>53</sup>.

Essex will participate in the Great Marsh Coastal Community Resiliency & Adaptation Project, a community partnership of the National Wildlife Federation, the Ipswich Watershed Association and the six shorefront municipalities located in the Great Marsh (Essex, Ipswich, Rowley, Newbury, Newburyport and Salisbury). The goal of the Great Marsh Project is to identify and prioritize high-value municipal assets that are at risk from storms, sea level rise, erosion, flooding and other associated hazards. The municipal assets include both natural and human-built infrastructure. A final Coastal Adaptation Plan is expected to be completed by December 2016.<sup>54</sup>

## 8. Invasive Species

The burgeoning invasive green crab population poses another threat. Green crabs consume several times their weight in clams each day and have no natural predators in local waters. Shell fishermen have begun to harvest the crabs simply to remove them from the flats. Culinary experiments have begun exploring the commercial possibilities of this resource. Changing ocean temperatures continue to improve conditions for the crabs, which will likely continue to be a worsening threat to the clam flats and those who rely on this resource to earn a living<sup>55</sup>.

For Chebacco Lake the cabomba weed infestation has been exacerbated by phosphate fertilizer and septic system runoff from abutting properties but has improved since a 1998 Management Plan was developed by Salem State<sup>56</sup>

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<sup>53</sup> The Challenge of Ocean Acidification, White House Report, June 2014.

[https://www.whitehouse.gov/sites/default/files/microsites/ostp/the\\_challenge\\_of\\_ocean\\_acidification\\_june-2014.pdf](https://www.whitehouse.gov/sites/default/files/microsites/ostp/the_challenge_of_ocean_acidification_june-2014.pdf)

<sup>54</sup> Letter from National Wildlife Foundation and Ipswich Watershed Association to Essex Board of Selectmen dated March 26, 2015.

<sup>55</sup> Essex Long Term Planning Committee, "Plan to Preserve the Best of Essex" 2015. p 31

<sup>56</sup> *Chebacco Lake Diagnostic Study*, Salem State University J.M. Sablock Editor (1998) and Friends of Chebacco Lake Newsletter (<http://www.chebaccolake.org/wp-content/uploads/2011/06/CLWA201106-ForWeb.pdf>) June 2011.