



Norwell 2021 Open Space and Recreation Plan

WORKING DRAFT

November 11, 2020

This version of the Norwell 2021 Open Space and Recreation Plan (OSRP) is a working document intended to involve and collect feedback from interested stakeholders and community members early in the drafting process. Feedback will be considered and integrated where appropriate into the draft OSRP in mid-December 2020. The final OSRP will be completed in late winter. A few key components of the draft OSRP are still forthcoming and noted within the text of the OSRP. Examples of forthcoming components include the ADA Self-Assessment and the full Open Space Inventory.

In order to promote easy editing, this working draft is provided with minimal formatting. The final OSRP will be graphically designed with images and photos. We are collecting photos to include in the final OSRP from the community—please submit your favorite images!

*Please send comments and/or photos to Marynel Wahl by Monday, December 1, 2020.
Marynel Wahl, Chair of the Conservation Commission
mwahl@isdsi.com*

In memoriam

The Norwell 2021 Open Space & Recreation Plan is dedicated to the memory of:

Nancy Lynn Hemingway-Ryder

Norwell's respected Conservation Agent who passed away during the development of this Plan on September 2, 2020.

Wesley H. Osborne Jr.

Wes was the town's tree warden for 35 years and was also its first conservation agent. He is being fondly remembered as a gentleman who affected the lives of three generations of Norwell residents through his work protecting and planting the trees that line town streets and his leadership in building a network of walking trails.

As a conservation agent and in retirement, he developed walking trails near Jacobs Pond with the town's Boy Scouts and maintained them. In 2000, conservation officials dedicated the 2-mile Wes Osborne Trail at Jacobs Pond. He was also recognized by the Nature Conservancy in 1992 for helping to preserve Black Pond Bog Preserve, a 1-acre kettle hole formed by a glacier.

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1. PLAN SUMMARY

This Open Space and Recreation Plan (OSRP) continues the ongoing efforts by the Town of Norwell to protect natural resources, conserve open space, and provide a variety of well-maintained recreational opportunities. The previous OSRPs were completed in 1977, 1987, 1997, 2005, 2010, and 2012.

Section 2 includes a statement of purpose and outlines the planning and public participation process undertaken for this OSRP.

Sections 3 and 4 provide background information on the Town, including history, demographic data, development patterns, and the natural environment. This information helps to set the community and natural context for the inventory of the Town's present open spaces and recreation facilities, contained in Section 5. Sections 6 through 8 identify the Town's future open space and recreation needs and outline community priorities. Finally, the detailed Action Plan in Section 9 provides a prioritized seven-year program to address the identified community needs.

The open space and recreation goals of the Town identified in this Plan are as follows:

- 1. Protect the quality and quantity of Norwell's water supply**
- 2. Provide a safe pedestrian and bicycle network**
- 3. Support and enhance passive and active recreation in balance with nature**
- 4. Protect Norwell's scenic quality and historic resources**
- 5. Protect natural resources and promote biodiversity**
- 6. Create reliable and strategic means for implementing the OSRP**

2. INTRODUCTION

STATEMENT OF PURPOSE

The purpose of the 2020 Norwell Open Space and Recreation Plan (OSRP) is three-fold: (1) to serve as a seven-year roadmap for addressing the Town's open space and recreation needs; (2) to ensure Norwell's eligibility for grants from the Commonwealth of Massachusetts to acquire new land parcels for conservation and recreation purposes; and (3) to inform Norwell citizens about the Town's current open space and recreation resources so that they may be used and enjoyed to their maximum potential.

As a planning document, the 2021 OSRP is designed to work in concert with Norwell's 2005 Master Plan, which describes a vision of Norwell in 2021 as "green, with a network of protected open space and regulations that promote environmentally-sound, appropriate development." The 2020 Plan's goals and objectives are consistent with other Master Plan objectives including:

- Shaping development to be in harmony with town character and environmental constraints
- Protecting the town's natural beauty, water resources, and environmental health through a network of "green infrastructure."
- Preserving historic buildings and landscapes

The 2021 OSRP also ensures Norwell's eligibility for future land grants from the state. Norwell has benefited from state grants in the past, which have enabled the Town to purchase significant open space resources. In order to continue to qualify for these and other grants, the Town must have an updated and state-approved OSRP. The 2020 updated Plan will meet that requirement for the next seven years.

This OSRP is not only a valuable planning document; it is an outreach and educational tool as well. It provides a wealth of information about the Town's history, regional setting, demographics, and development patterns. It offers an overview of important natural resources found in Town and a comprehensive parcel-based inventory of all lands that hold open space and recreational value. The 2021 OSRP Committee hopes that the information provided in the 2012 Plan helps further engage Norwell citizens in advancing open space, conservation, and recreation goals in Norwell.

PLANNING PROCESS & PUBLIC PARTICIPATION

The planning process and preparation of this OSRP were coordinated by the Metropolitan Area Planning Council (MAPC), under the direction of, and with input from the OSRP Committee (Committee) composed of staff and members of the Conservation Commission, Recreation Department, Planning Department, Water Commission, Historical Commission, Pathways Committee, Athletic Fields Committee, and Town residents.

As a first step in the public outreach process, the OSRP Committee and MAPC developed an OSRP Survey that aimed to identify community goals and priority projects, assess community satisfaction of open space and recreation resources, and invite input on community actions to preserve open space and improve recreation facilities. The survey was primarily distributed on-

line and paper copies were available at Town Hall. The survey was distributed through the following means: Distribution of the survey included:

- Postcard with link to an online survey mailed to every household;
- Press releases in local newspapers;
- Announcements on cable TV;
- Town email listservs;
- Social media;
- Individual outreach to nonprofits and community groups;
- Individual outreach to Town Boards and Committees; and
- Individual outreach to members of the public who have been involved in past planning efforts.

There were 691 responses to the survey, providing valuable insight into the community's open space and recreation use, goals, and needs.

The OSRP Committee also hosted a virtual public forum on October 1, 2020, available through computer and phone, which approximately 45 residents attended. Due to the coronavirus pandemic and public health concerns, an in-person forum was not possible. The purpose of the forum was to introduce the OSRP planning process, present the survey findings, and discuss the 2021 OSRP goals. In addition, participants at the forum engaged in small group discussions about the objectives of each goal

As the OSRP was being prepared, the OSRP Committee conducted targeted outreach to community leaders, including the Select Board, Planning Board, and the Council on Aging.

[Forthcoming: more information on the public outreach as the planning process progresses]

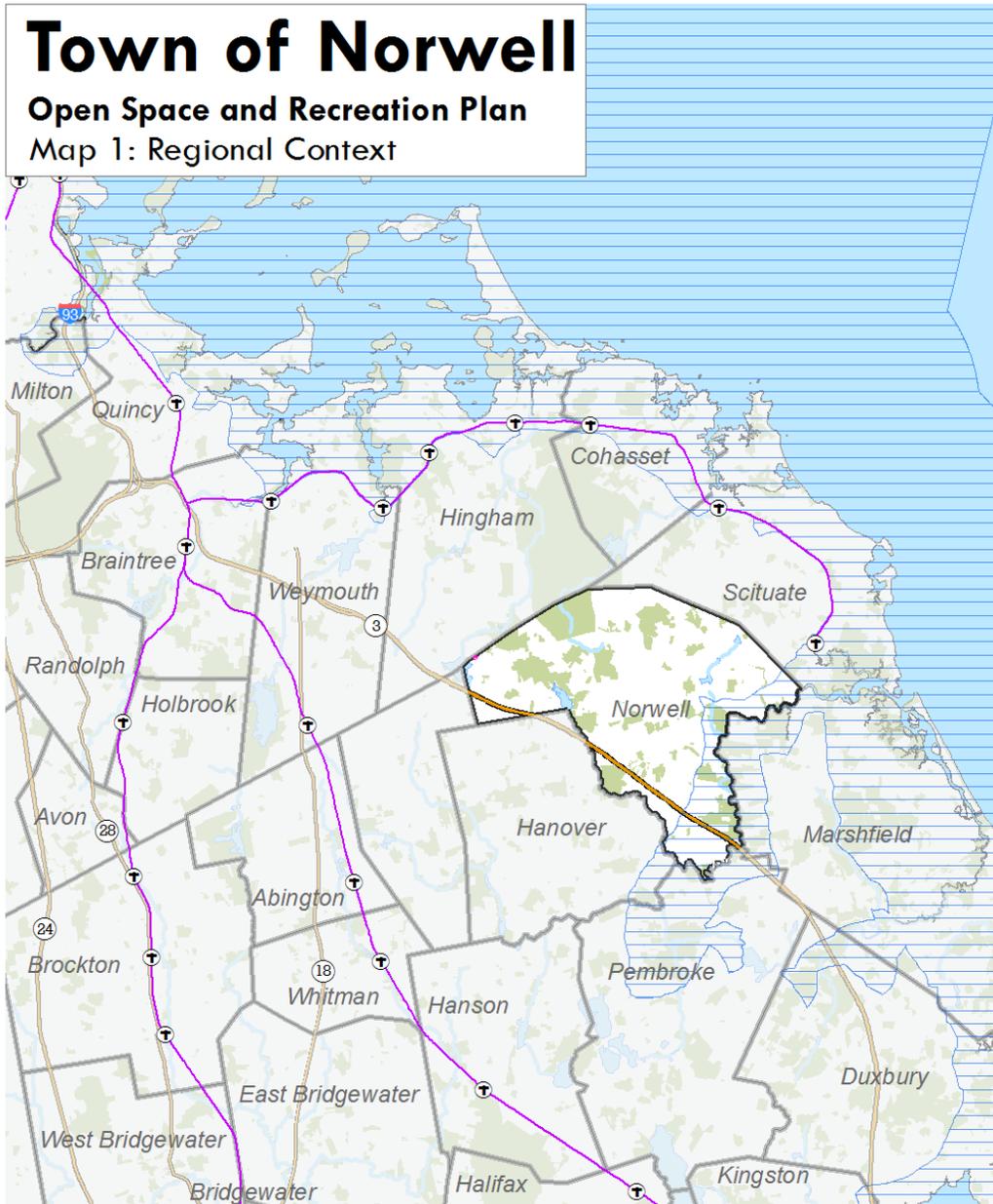
3. COMMUNITY SETTING

REGIONAL CONTEXT

- *County:* Plymouth
- *Land Area:* 21.2 square miles or 13,548 acres
- *Neighboring municipalities:* 23 miles south of Boston. Adjacent Towns include Hanover and Rockland to the west, Pembroke to the south, Marshfield to the southeast, Scituate to the east, and Hingham to the north, as shown in Map 1: Regional Context.
- *Defining natural features:* The Town’s eastern boundary with Marshfield is defined by the North River, a tidal estuary that is also a state-designated Scenic River. While Norwell does not have a coastal waterfront, it is considered a “South Shore” Town and is part of the Massachusetts South Coastal Watershed.

Regional Planning

Norwell is a part of the 101 municipalities in the Boston metropolitan area that are represented by the Metropolitan Area Planning Council (MAPC). MAPC works with communities through eight sub-regional organizations whose members are appointed by chief elected officials and planning boards. Figure 1 illustrates Norwell is a member of one of such eight sub-regional organizations, the South Shore Coalition (SSC), which also includes the Towns of Braintree, Cohasset, Duxbury, Hanover, Hingham, Holbrook, Hull, Marshfield, Pembroke, Rockland, Scituate, and Weymouth.



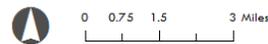
- MBTA Commuter Rail Stations
- MBTA Commuter Rail Lines
- Open Space
- Water Bodies
- Massachusetts Coastal Zone
- Major Roads
- Massachusetts Towns

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

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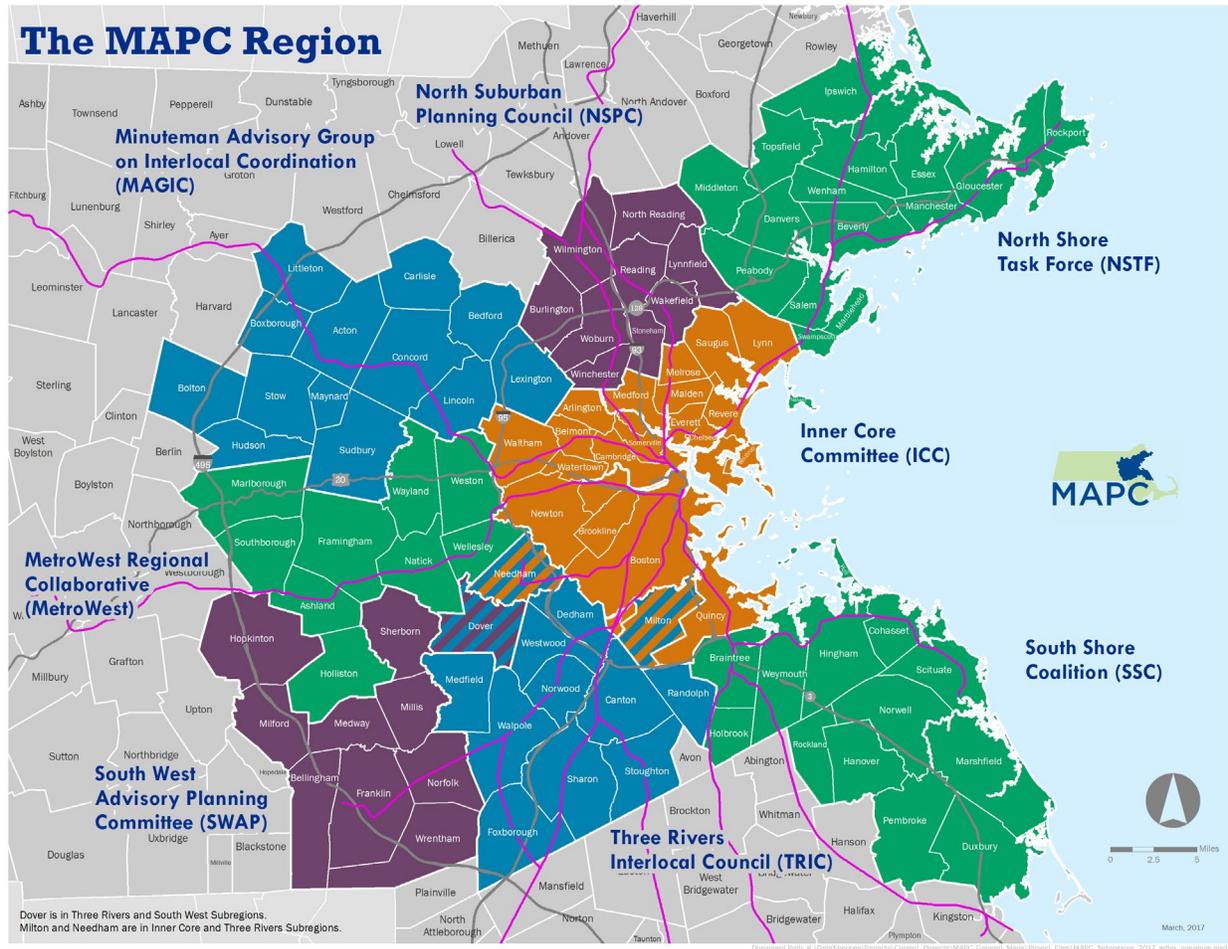
Data Sources: MAPC, MassGIS, MassDOT, Mass CZM

August 2020



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Figure 1. MAPC Region



MetroFuture is the long-term regional plan for the Boston metropolitan area.¹ The plan includes goals and objectives as well as strategies for accomplishing these goals. Some of the goals particularly relevant to Norwell’s Open Space & Recreation Plan include:

- #9 The region’s landscape will retain its distinctive green spaces and working farms.
- #10 Growth in the region will be guided by informed, inclusive, and proactive planning.
- #11 The region will be prepared for and resilient to natural disasters and climate change.
- #23 All neighborhoods will have access to safe and well-maintained parks, community gardens, and appropriate play spaces for children and youth.
- #25 More residents will build regular physical activity into their daily lives.
- #31 The region’s residents—including youth, seniors, and immigrants—will be well informed and engaged in civic life and community planning.

¹ MAPC, *MetroFuture*, May 2008.

- #47 Most people will choose to walk or bike for short trips.
- #63 The ecological condition of wetlands will improve, and fewer wetlands will be lost to development.
- #64 The region will retain its biodiversity and will have healthy populations of native plants and animals, and fewer invasive species.
- #65 A robust network of protected open spaces, farms, parks, and greenways will provide wildlife habitat, ecological benefits, recreational opportunities, and scenic beauty.

It is imperative that municipal governments coordinate their efforts to identify and protect important shared resources. Many of Norwell's ecologically valuable resources, including wildlife and waterways, extend beyond the Town's borders. While this coordination is not always easy to accomplish, especially in New England, which prides itself on home rule governance, it is an important and necessary goal that communities actively pursue. Norwell is cognizant of this fact and has worked successfully with neighboring communities in various municipal projects in the past, and will continue to do so in the future. For example, Norwell's Conservation Agent initiated the South Shore Conservation Commission Network to increase education, awareness, and collaboration around conservation issues.

Coordinated efforts are increasingly focused on building resiliency to the effects of climate change, as communities along the South Shore are threatened by more significant inland flooding, more extreme storms, sea-level rise, high heat, and drought. The South Shore Climate Resiliency Network is a new collaboration between Massachusetts Coastal Zone Management, Massachusetts Audubon Society, Massachusetts Bays National Estuary Partnership (MassBays), the municipalities in the South Shore Coalition (as referenced above), Kingston, and Plymouth. The South Shore Climate Resiliency Network meets quarterly to share information and resources and, as of November 2020, aims to start pursuing regulatory changes in an effort to strengthen resiliency.

HISTORY²

- Pre 1600: The history and development of Norwell has been shaped by the North River. The first inhabitants of the land, the Massachusett tribe, lived in what is now the greater Boston area. Their territory extended across the Mystic, Charles, Neponset, Weymouth Fore and North Rivers, which they called home for thousands of years. The Massachusett managed the land for agriculture, hunting, fishing, and gathering of wild seeds, nuts, greens, berries, and fruits. Their settlements were mostly along the North River and in the Assinippi area. The Massachusett spoke the same language as their native neighbors to the south, the Wampanoag.
- Early 1600's: The first European settlers arrived and introduced disease that decimated the densely populated coastal areas of the Massachusett. With mortality rates as high as 90 percent, the Massachusett were left vulnerable to attack from other tribes, as well as an onslaught of English colonists in the mid-1600's.³
- 1634: Robert and Honor Stetson left the Scituate harbor area and settled upriver--thus becoming the pioneer European settlers of what would become South Scituate (in 1849) and then eventually Norwell (in 1888).
- 1653: Within only 50 years of the arrival of Europeans, the Indian title to the lands comprising Scituate and today's Norwell was purchased from Josiah Wompatuck, Chief of the Mattakeesets.
- 1670: The prolific shipbuilding industry in Norwell began with the establishment of the Wanton Yard. The confluence of natural materials (timber from the forests lining the river and iron from the ponds of Hanover and Pembroke upstream) made the tidal river an ideal location.
- Norwell was primarily an agricultural town. Hay was harvested in the salt marshes and used as animal forage. The endless web of stone walls today attests to the former layout of fields and to the previously tree-less landscape—a result of both shipbuilding and fuel needs.
- 1675-1678: King Philip's War marked the final and unsuccessful armed attempt by Native Americans to defend their land from colonization. After the conclusion of the war, the European settlement at South Scituate began to prosper.
- 1675-1775: Shipbuilding increased, and more families settled on the North River.
- 1720s: European development began in the Assinippi area when David Jacobs of Greenbush built grist and sawmills at the boundary of Hanover and Norwell. At this time, Third Herring Brook was dammed to form Jacobs Pond. These mills operated for nearly two centuries.
- 1775-1830: Shipbuilding on the river peaked with five shipyards in operation, after which increased demand for larger ships requiring deeper water led to a decline in shipbuilding on the North River.

² 2012 *Norwell Open Space Plan*, unless otherwise indicated.

³ <https://en.wikipedia.org/wiki/Massachusett>

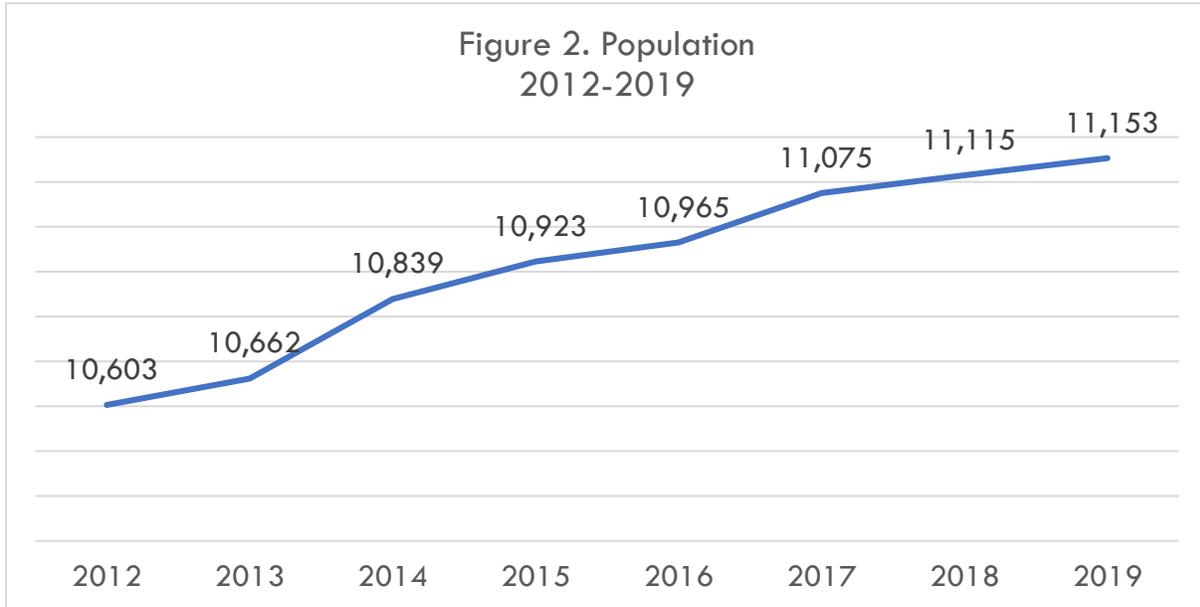
- Larger-scale farming and poultry farming increased.
- 1849: 213 years after the incorporation of the Town of Scituate, the people of what is now known as Norwell voted to establish South Scituate as a separate Town.
- 1870s: The High Street area of town was home to the successful Grose Shoe Factory—one of the biggest employers in the area.
- 1870-1915: The Late Industrial Period saw the construction of a trolley line on Washington Street (Route 53) between Assinippi/High Street and Accord Pond in Hingham, increasing growth at Assinippi.
- 1874: The James Library in Norwell Center was dedicated after the land was donated by Israel Nash and funds donated by Josiah James and matched by numerous townspeople.
- 1888: Summer resident Henry Norwell offered the Town \$2,500 (\$68,500 in today's money) per year for ten years toward the upkeep of the roads, and the residents voted to change the Town's name to Norwell in his honor.
- 1895: Thomas Gaffield offered eight acres between River and Forest Streets to be used as a park for the town.
- 1919: The prevalence of poultry thefts in town necessitated the presence of the state police, who first occupied a small building in Norwell Center and, in 1935, built a modern facility which still stands today.
- 1921: The Ridge Hill Grove on High Street was purchased by the Union Athletic Association and hosted numerous baseball leagues.
- 1930s: "Jacobs Lake Shores" was built off of Route 53 on Jacobs Pond.
- After World War II, the GI Bill enabled many veterans to obtain low-interest mortgages, and home building increased sharply—roughly 73% of the homes seen in Norwell today were built between 1940 and 1990.
- 1942: The first zoning bylaws were created for Norwell. Business districts were established in Norwell Village, Queen Anne's Corner, and on Route 53. Residential districts restricted building height, setbacks, and lot sizes—which were set at 20,000 square feet (less than ½ acre).
- 1947: The land court ruled that the zoning bylaws were invalid.
- 1948: Planning Board established.
- 1950: Zoning Board was established.
- 1952: New zoning bylaws are enacted. Business District A (Norwell Center) and B (Washington Street) are created. Residential Districts are restricted to 1-acre lots or ½ acre lots with frontage of 100 feet or more.
- 1952: The Zoning Board granted permission for 163 lots to be created on Franklin Road, off Grove Street, called Norwell Homes.

- 1953: The Subdivision Control Law, (MGL c.41 §§81K-GG) is adopted.
- 1961: Conservation Commission was established. 1961: The construction of the Southeast Expressway (Route 3) to Derby Street was completed and plans to complete the final 11 miles to Duxbury were imminent. Norwell became less of an agricultural community and more of a commuter town.
- 1962: Saltmarsh Conservation District was established.
- 1963: Route 3 was completed between Boston and Cape Cod.
- 1974: Floodplain, watershed, and wetlands protection districts were established.
- 1978: The Zoning Act, (MGL c.40A) is adopted.
- 2002: The Community Preservation Act (MGL c.44B) is adopted.
- 2015: The Complete Streets Program (MGL c.90I) is adopted.

POPULATION CHARACTERISTICS

Population

The population of Norwell is estimated at 11,153⁴ residents. Figure 2 illustrates Norwell’s population growth between 2012 and 2019. Over the seven years, the population increased by about 5%; over the same time period, the population of Plymouth County grew a similar amount of 4%.



The current growth rate is modest compared to the mid-twentieth century. Table 1 illustrates Norwell’s population grew rapidly between 1950 and 1970, tripling from 2,525 residents to 7,796.

Year	1930	1940	1950	1960	1970	1980	1990	2000	2010	2019
Population	1,519	1,871	2,525	5,207	7,796	9,182	9,279	9,765	10,506	11,153
Percent Change		23%	34%	107%	50%	18%	1%	5%	8%	6%

Source: US Census

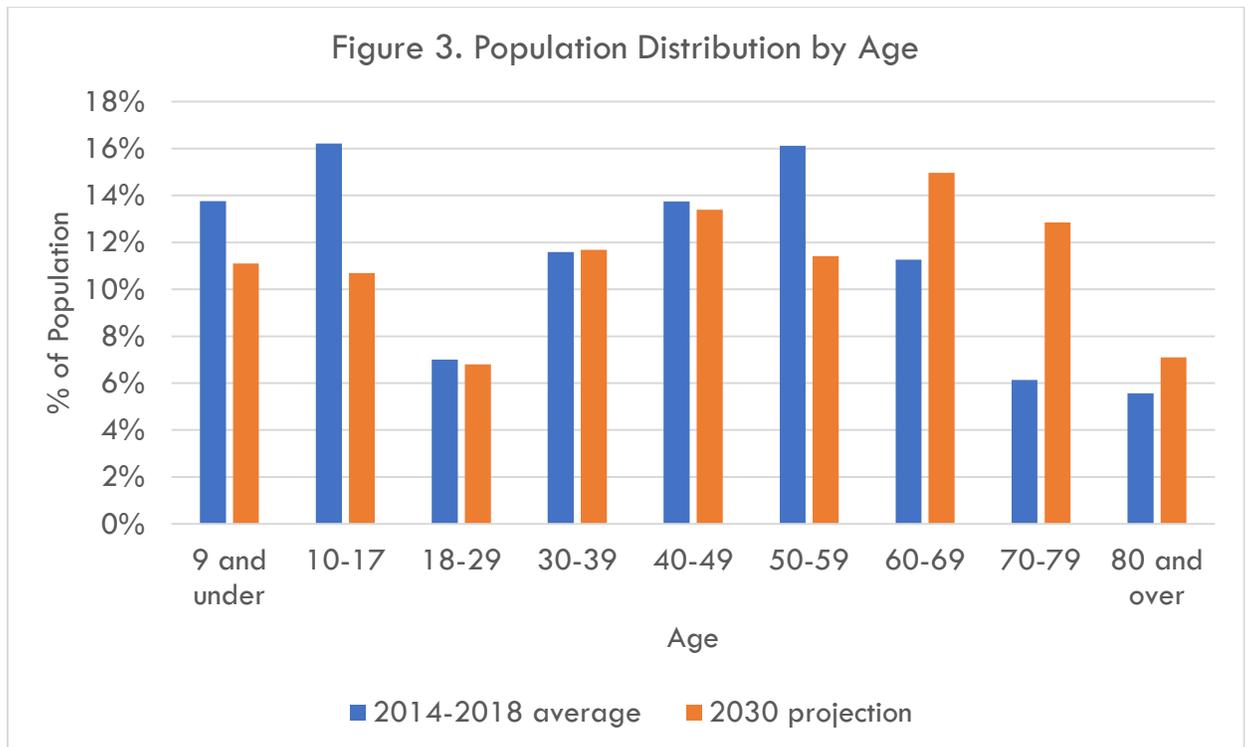
Demographics

- **Race:** Norwell’s population is racially homogenous—95% of residents are non-Hispanic white. About 2% of the residents are Latino, and another 2% Asian American.
- **Age:** Median age is 42.5 years, a decrease from 43.8 in 2010. Figure 3 illustrates the percentage of the population by age and the projected age distribution by 2030. There are a substantial number of young people in Norwell—28% of the population is 18 years

⁴ US Census Population Estimates, July 1, 2019

or under, compared to 20% in Plymouth County.⁵ Twenty-three percent of Norwell residents are 60 years of age or older (same as in 2010).

However, the current age distribution is projected to shift. As is true in most municipalities in Massachusetts, Norwell’s population is getting older. Currently, 17% of Norwell residents are 65 or older.⁶ In comparison, about ten years ago, only 9% of the population was 65 or older.⁷ The senior population is projected to increase rapidly to an estimated total of 28% of the population by the year 2030.⁸ The Town should plan for this potential growth by working through the Town’s Council on Aging to examine services, recreational needs, and housing options for the elderly population. In addition, the portion of the population under 18 years is expected to decline by 2030.⁹



Sources: MAPC, *Stronger Region Projections*, 2014; US Census: American Community Survey, 2014-2018

- **Disability:** Eight percent of the population has a disability, compared to 12% in Plymouth County. Most residents with disabilities are seniors, yet almost one in five people with a disability are youth under the age of 18. Although a relatively small portion of Norwell’s population has a disability, this updated OSRP aims to provide access and serve each Norwell resident.
- **Environmental Justice:** In 2002, the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) adopted an Environmental Justice Policy to provide equal

⁵ US Census: American Community Survey, 2014-2018.
⁶ US Census: American Community Survey, 2014-2018
⁷ US Census: American Community Survey, 2005-2009
⁸ MAPC, *Stronger Region Projections*, 2014
⁹ MAPC, *Stronger Region Projections*, 2014

protection and meaningful participation for all Massachusetts residents with respect to environmental regulations and policies. This policy also supports equitable access to environmental assets, including parks, open space, and recreation areas.¹⁰ The State has identified communities that contain Environmental Justice Populations—communities with high percentages of low-income households, residents that identify as a race other than white, and households that have no one over the age of 14 who speaks English very well.

Map 2 illustrates that Norwell does not have any formally identified Environmental Justice Populations. Nonetheless, it is critical to assess the distribution of environmental benefits such as open space and parks, and burdens such as polluted sites, across the Town. The distribution of and access to open space and parks is further discussed in Section 4: Environmental Inventory and Analysis under Environmental Equity.

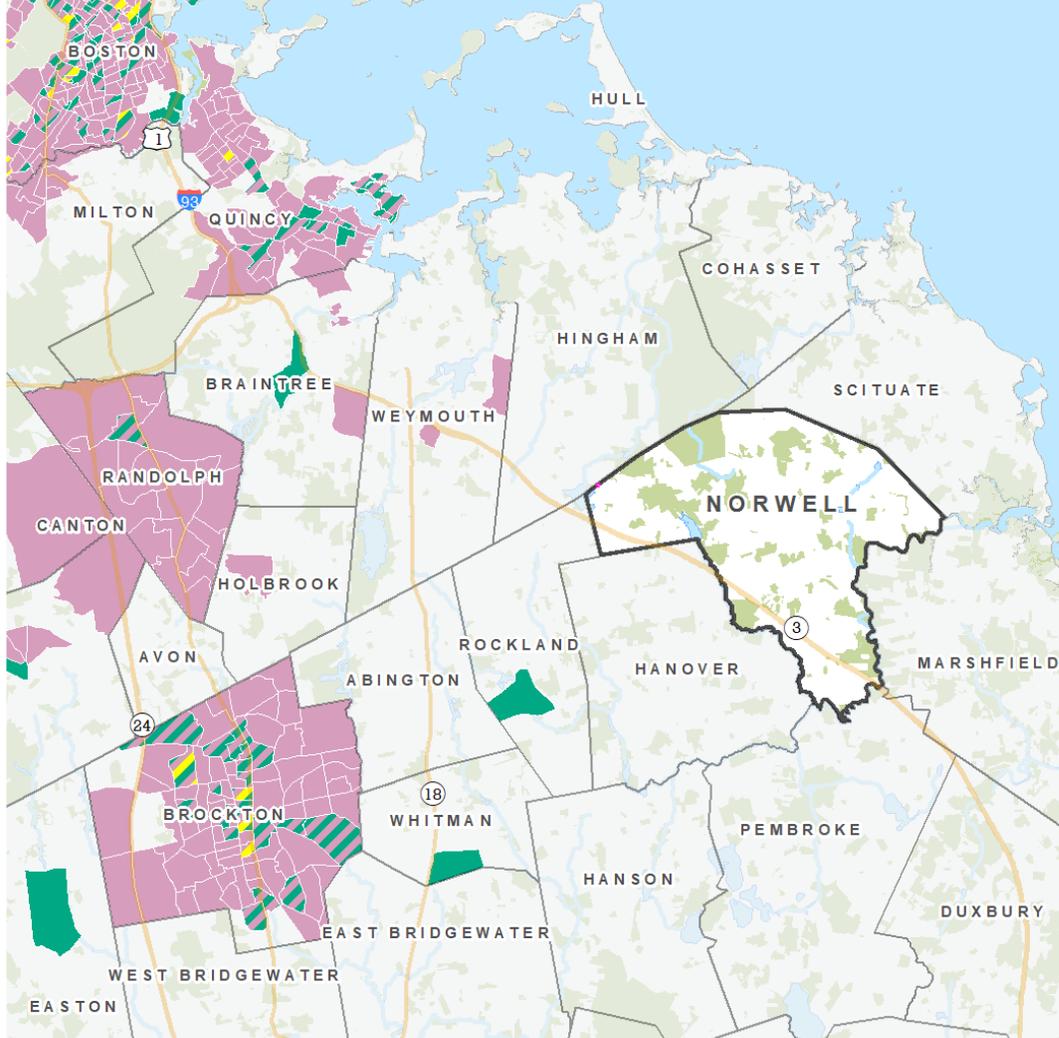
There are no active landfills in Town that would impact the environmental health of adjacent neighborhoods.

¹⁰ Massachusetts Executive Office of Energy and Environmental Affairs. “Environmental Justice Policy”

Town of Norwell

Open Space and Recreation Plan

Map 2: Environmental Justice Communities



Population Meeting EJ Criteria

- English Proficiency
- Income
- Minority Population
- Income & English Proficiency
- Minority Population & English Proficiency
- Income & Minority Population
- Income, Minority Population & English Proficiency

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

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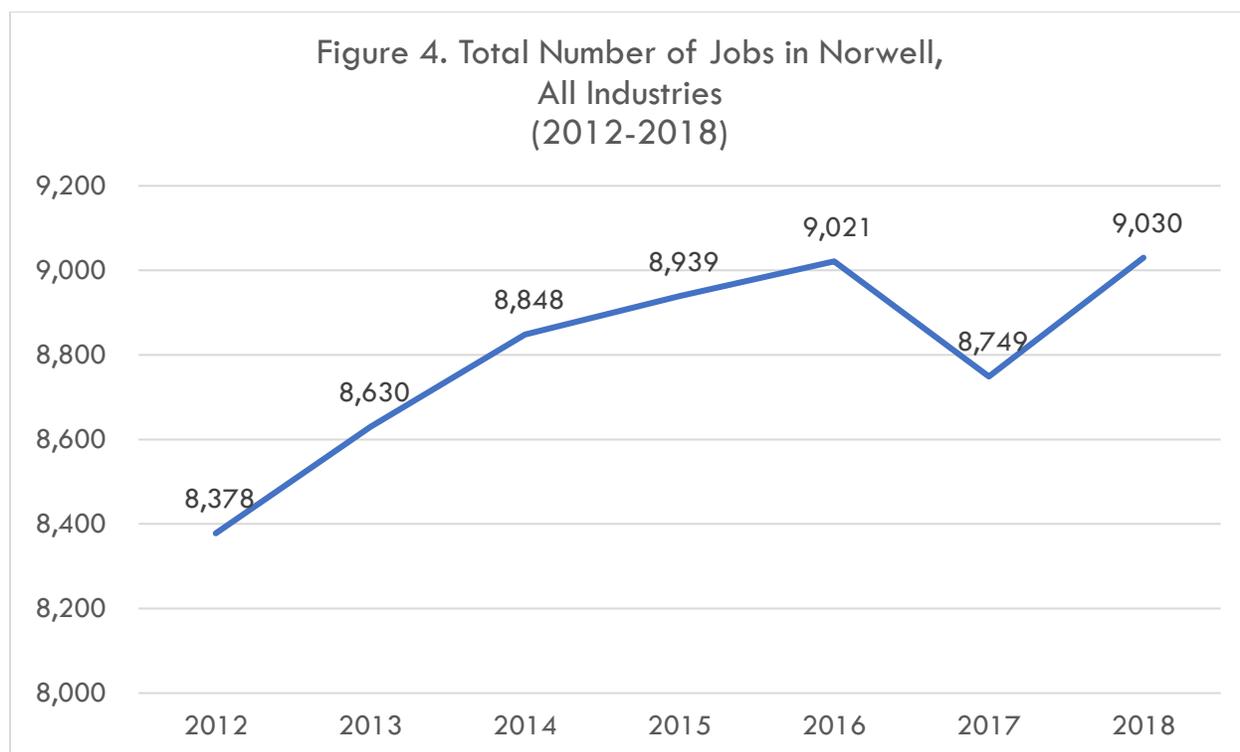
Data Sources: MAPC, MassGIS, MassDOT

August 2020



Economy

- Income:* Norwell is an affluent town with an annual household median income of \$151,300. In comparison, the median household income in Plymouth County during the same time was \$85,700.¹¹ However, the number of residents experiencing poverty is increasing. Approximately 10 years ago, there were between 100-300 residents in poverty and now there are between 200-500.¹² The definition of “poverty” depends on the household size—for example, the poverty line for a family of four is \$26,200 annual income.
- Unemployment:* According to data showing the average between 2014-2018, the unemployment rate in Norwell is 4%.¹³ The coronavirus pandemic that began in spring 2020 has dramatically impacted the economy of Massachusetts. Between March 16 and April 11, over 561,000 initial unemployment claims were filed in Massachusetts.¹⁴ Data on the impact of the pandemic on Norwell’s economy is not yet available.
- Job growth:* Figure 4 illustrates the increase in the number of jobs located in Norwell. Between 2012 and 2018, the number has increased by seven percent from 8,378 to 9,030 jobs. At the same time, the number of “establishments” (i.e. employers) as well as the average wage, adjusted for inflation, has also grown. However, as stated above, the coronavirus pandemic has resulted in substantial unemployment, which would seem to suggest that the number of jobs in Norwell will likely decline.



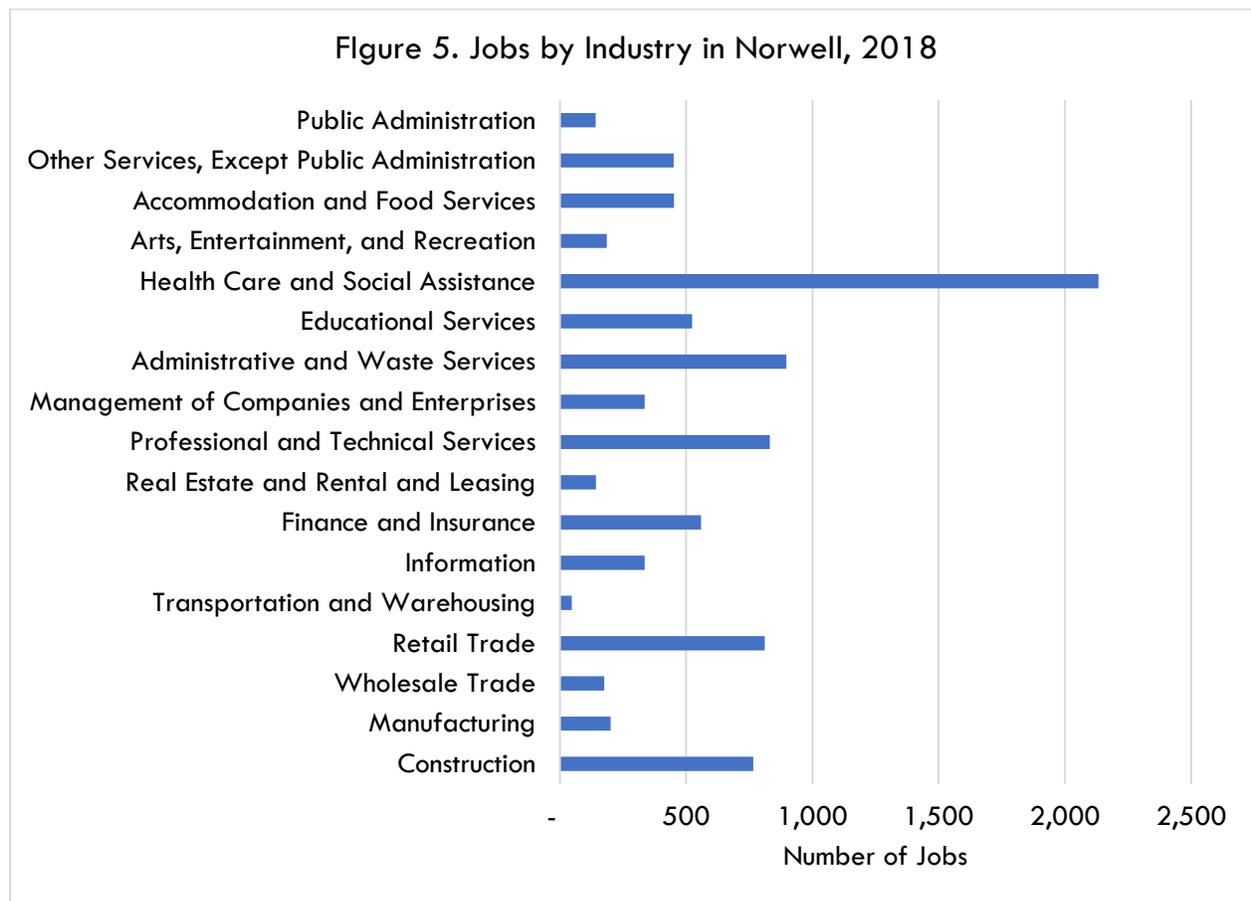
¹¹ US Census: American Community Survey, 2014-2018.

¹² US Census: American Community Survey, 2005-2009.

¹³ US Census: American Community Survey, 2014-2018.

¹⁴ MAPC 2020

- Industry:* Health Care and Social Assistance is the dominant industry in Norwell, providing almost a quarter of the jobs in town. Figure 5 illustrates employment distribution by industry.¹⁵ The coronavirus pandemic has hit the hospitality and retail industries the hardest, thus suggesting that Norwell’s jobs in other industries may be more insulated from the pandemic’s economic effects.



Source: Executive Office of Labor and Workforce Development, 2018

Housing

- Units:* 3,700 occupied housing units, including 250 renter-occupied units.¹⁶
- Cost of housing:* The median sales price for a single-family home in Norwell in 2019 was \$639,000, an increase of 35% from 2012.¹⁷ Table 2 shows the median prices for single-family homes in Norwell from 2012-2019. A household would have to have an annual income of approximately \$160,000 to afford the typical single-family home in Norwell,

¹⁵ Executive Office of Labor and Workforce Development, 2018

¹⁶ US Census: American Community Survey, 2014-2018

¹⁷ The Warren Group

almost double the median income of Plymouth County.¹⁸ Therefore, Norwell housing costs are prohibitively expensive for most residents of the County.

Table 2. Norwell Median Sales Price for Single-Family Homes, 2012-2019

Year	Median Price	% Annual Change
2012	\$ 475,000	
2013	\$ 546,250	13%
2014	\$ 500,000	-9%
2015	\$ 542,500	8%
2016	\$ 588,575	8%
2017	\$ 594,625	1%
2018	\$ 599,450	1%
2019	\$ 639,000	6%

Source: The Warren Group

There are more than 1,000 households in Norwell that are “cost-burdened” by housing (15% of the total number of households). “Cost-burdened” is defined as spending more than 30% of annual income on housing. Households that rent are particularly cost-burdened—approximately half of all households that rent in Norwell spend more than 30% of their annual income on housing.¹⁹

Without new low-cost housing options, Norwell will continue to exclude households with lower incomes and wealth and will continue to stay economically homogenous. In addition, limiting housing options also perpetuates Norwell’s racial homogeneity and regional segregation. As explained in the *Greater Boston Housing Report Card 2019*, “lack of diversity in the housing stock means a lack of diversity in our communities—whether it be by income, race, ethnicity, family type, or generation.”²⁰ This Plan considers the need for new housing, as well as the potential to provide access to Norwell’s open space and parks to non-residents, especially those unable to become Norwell residents due to income.

- *Subsidized housing:* Approximately 100 subsidized housing units. The Commonwealth has a goal that 10% of each municipality’s units are subsidized to promote income diversity and reduce concentrations of wealth and poverty in the region.²¹ Norwell falls far short of this goal, with about three percent of its units subsidized. The Town is working to build more affordable housing, and there are a few projects are currently in process.

¹⁸ Mortgage affordability was determined based on a calculated monthly mortgage payment according to a 30-year term with a standard down payment of 5%, \$1,000 in annual homeowner’s insurance, a 4% annual interest rate, and a PMI factor of 7.5%.

¹⁹ US Census: American Community Survey, 2014-2018

²⁰ The Boston Foundation. *The Greater Boston Housing Report Card 2019: Supply, Demand and the Challenge of Local Control*. June 2019.

²¹ In order to promote more affordable housing, the Chapter 40B Comprehensive Permit Law allows housing proposals to seek exemptions from local zoning and other regulations in municipalities where less than 10% of the total housing stock is affordable for low or moderate-income residents (households at or below 80% of median area) [finish parenthetical]

GROWTH & DEVELOPMENT PATTERNS

Patterns and Trends

With the arrival of European settlers, shipbuilding along the North River and agriculture became the primary industries beginning in the 1600's continuing through the early 1800's (shipbuilding) and early 1900's (agriculture). As land was cleared and harvested of trees for shipbuilding, farms were developed. As shipbuilding waned, the sawmills continued, and tanneries, shoemaking, produce farming, and poultry farming was pursued. Forested areas began to rebound.

The population increased sharply during the mid-twentieth century. Roughly 73% of the homes seen in Norwell today were built over a 50-year period (1940–1990). This growth in residential homes is directly related to the construction of the Southeast Expressway, which provided highway access from Norwell and the rest of the South Shore to Boston for employment, goods, and services.

In addition, federal and state policies and programs of the early and mid-twentieth century contributed to the development of low density, predominately white, suburban growth. For example, the Federal Housing Administration's loan program explicitly discriminated against people of color by assessing credit-worthiness based on the racial composition of neighborhoods, commonly known as "redlining." In addition, a substantial portion of white residents in Boston moved out of the city as a result of the effort to integrate the City's schools, resulting in what is called "white flight" to suburban areas, such as Norwell.²²

Residential growth first began in the section of Town adjacent to Route 53 (Washington Street). Small houses typical of that era were built on lots as small as 7,000 square feet, but in 1973, residential zoning was changed to one-acre lot minimum and has remained so since. If the zoning had continued to allow smaller lot sizes, then the same population growth might have had less impact on the open space and natural resources of Norwell. Smaller lot sizes allow for a smaller footprint on the land, requiring less land for each new resident and less land for new roads and infrastructure. Smaller lot sizes also often require less water as lawns are smaller, and they emit fewer greenhouse gas emissions as destinations are closer to each other, allowing for residents to walk to their destinations or to take shorter automobile trips. Instead, the increase in low-density development resulted in the conversion of agricultural and forested land. The Trust for Public Lands has found that since 1950, Massachusetts has developed land at a rate six times that of its population growth.

In the past 20 years, a few subdivision projects have both included new homes and conservation of open space, as described below.

- Donovan Farms: Donovan Farm is a 55 years and older restricted Village Residence Development (VRD) built-in 1999 under the 55+ Village Overlay District (VOD). Developments in the VOD require a two-thirds supermajority Town Meeting vote but allow for cluster development on any parcel(s) of land within the VOD.
- Wildcat Hill: This 46-lot "cluster" development was the first approved and built under Norwell's Open Space and Residential Development (OSRD) Bylaw adopted in 2009. The houses are on half-acre lots surrounded by open space.

²² <https://www.brandeis.edu/investigate/race-justice/busing-desegregation.html#:~:text=In%20Boston%2C%20%E2%80%9Cwhite%20flight%E2%80%9D,overwhelmingly%20black%2C%20Hispanic%20and%20poor.>

WILDCAT HILL

OSRD Definitive Subdivision Plan

in

Norwell, Massachusetts



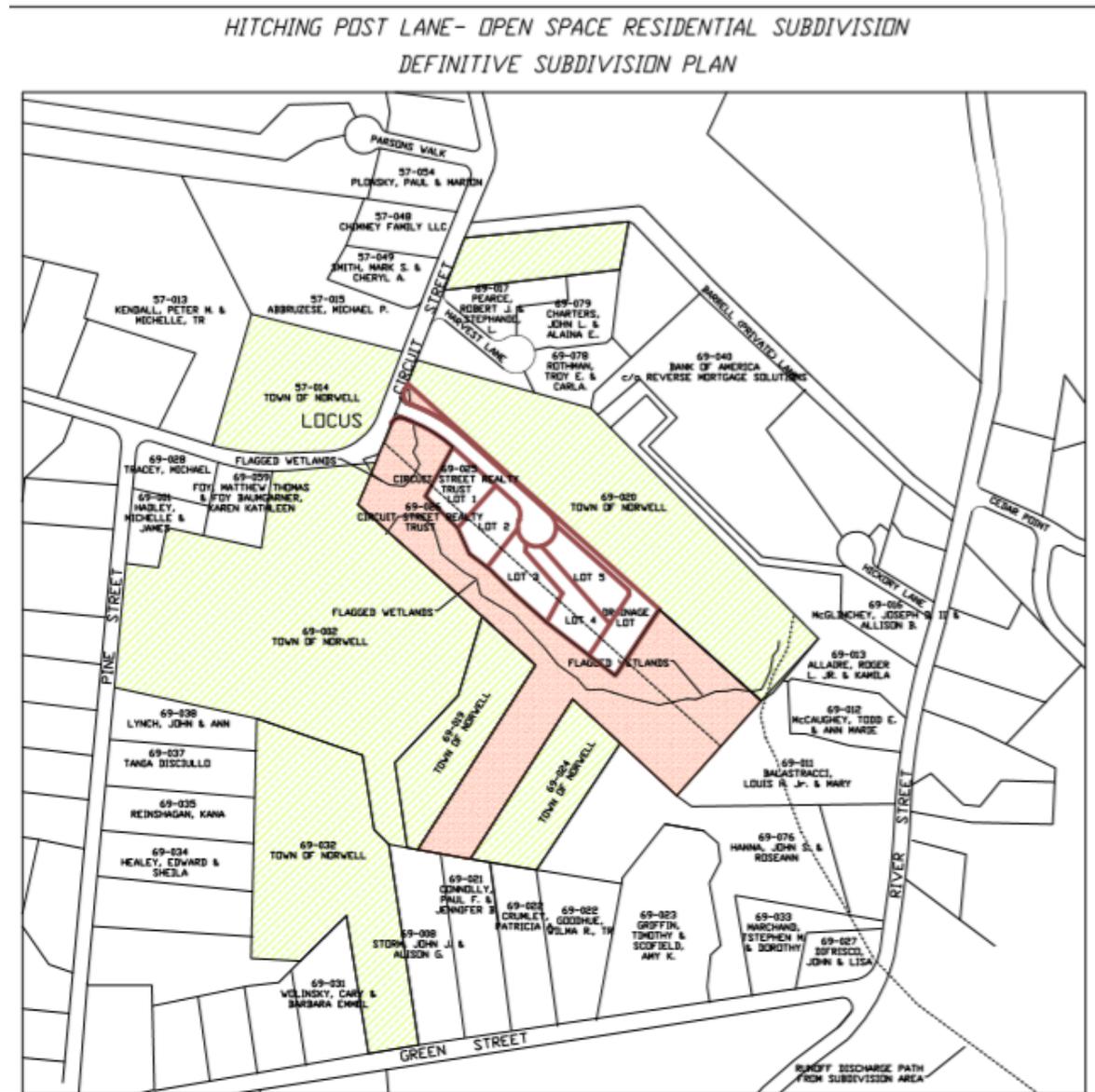
January 28, 2010
Revised April 28, 2010

SCALE: 1" = 200'

Revised August 18, 2010
Revised October 28, 2010
Revised December 30, 2010
Revised January 13, 2011



- Hitching Post Lane: This 5-lot OSRD subdivision is under the permitting stage, as of 2020. The site plan exemplifies the purpose of the OSRD Bylaw, with relatively smaller lots and large amounts of contiguous open space that is connected by a trail to surrounding public open space and trail system.



Infrastructure

Municipal Groundwater Wells and Drinking Water

Norwell is served almost entirely by a municipal water system that relies on ten wells that pump groundwater after treatment into the municipal system. A few residences in Norwell are served by the Hingham and Scituate municipal systems.

All of the Norwell municipal water is disinfected with chlorine and adjusted for pH with potassium hydroxide. Treatment locations are located at Grove Street (Wells 2,3,5, and 10), Washington Street (Wells 4, 7, and 8), South Street (Wells 1 and 6), and Bowker Street (Well 9). The wells in the South Street Wellfield are also treated to remove elevated levels of iron, manganese, and organic color.

Every year, Norwell conducts more than 1,000 water quality tests for more than 100 drinking water contaminants. The results are summarized in a Consumer Confidence Report that the Town mails to all residents every summer and is available on the Water Departments.

The Town has a permit from the Massachusetts Department of Environmental Protection to pump an average of 1.35 million gallons per day (mgd), with a peak day demand (usually in early June) of over 2 mgd. The system now serves nearly 3,550 residential, commercial, municipal, and industrial customers. The system pumps about 360 million gallons of water per year, resulting in an average daily demand of just less than one million gallons. Long term systematic improvements have resulted in higher and more sustainable yields of drinking water.

The system is managed by a Superintendent who reports to an elected three-member Board of Water Commissioners. The Town by-laws empower the Board to impose water restrictions during periods of high demand. In the summer of 2020, the Commissioners instituted voluntary water restrictions due to demand that exceeded the safe removal of water from the well fields. The search for new water supplies is ongoing.

Wastewater

The Town has no municipal or industrial wastewater treatment system. Wastewater disposal is on-site, except for a few buildings located in Assinippi Industrial Park, a portion of which is tied into the Rockland Wastewater Treatment System.

Increasingly, residential developments within the Town are providing shared septic systems, innovative/alternative technology systems, and/or small on-site wastewater treatment plants for multiple residences. The on-site innovative/alternative technology systems and small wastewater treatment plants improve the resulting effluent quality.

Transportation

In recent years, Norwell's connection to public transportation has improved, restoring the rail access to Boston that the area historically had benefited from. In 1845, the Old Colony Railroad Company built a train line from Boston to Plymouth. Usage hit an all-time high in 1911, but started to decline soon after as service reductions were mandated during World War I to conserve fuel, equipment, and labor for the war effort. The decline continued with competition from the automobile in the 1920's, and ultimately ended in June of 1959, coinciding with the opening of the Southeast Expressway (Route 3). However, rail access between the South Shore and Boston

was restored in 2007, when the Greenbush Line was completed, with stations in Scituate and Hingham, as well as Cohasset, Weymouth, Quincy, and Boston.

Historically, population growth has paralleled the Town's improved transportation infrastructure as more residents commute to jobs and opportunities outside of Town. The restoration of the commuter rail from Boston to Scituate may contribute to population growth in the area, as new residents are attracted to the convenience and climate benefits of commuter rail. The terminus of the commuter line resides in the Greenbush area of Scituate, located less than a mile from the Norwell town line, at the intersection of Routes 3A and 123. Unless new housing is built in infill (vacant parcels within previously built areas) and higher-density locations, population growth may result in loss of open space.

The bicycle infrastructure is limited. The Bicycle & Pedestrian Path (Pathway), which, when complete, will run east/west connecting the High School to the Town Center, provides a paved, off-road bicycle, walking, and ADA-compliant path. As of 2020, Phase I and II of the Pathway have been completed, extending from the High School to Gaffield Park and connecting the Middle School along the way. Phase IIIA from Gaffield Park to Norris Reservation and Town Center is under construction. In addition, there are shared-lane markings (sharrows) along Old Oaken Bucket Road.

There is also an ongoing project to improve the sidewalks along Main Street from the Hanover Town line to the Town Center. Phases I and II are completed with improved sidewalks from the Town line to the Town Hall, and the final phase from the Town Hall to Town Center is in progress. The sidewalks are intended for both pedestrians and bicyclists.

Most subdivisions in Town are granted a waiver to construct a sidewalk on one side of the road instead of on both sides; In return, the developer donates to the Planning Board's Pedestrian Enhancement Fund, which funds pedestrian enhancements in other areas of Town. The Complete Streets Committee has utilized most of those funds for the construction and design of the Main Street Sidewalk Project.

Long Term Development Patterns

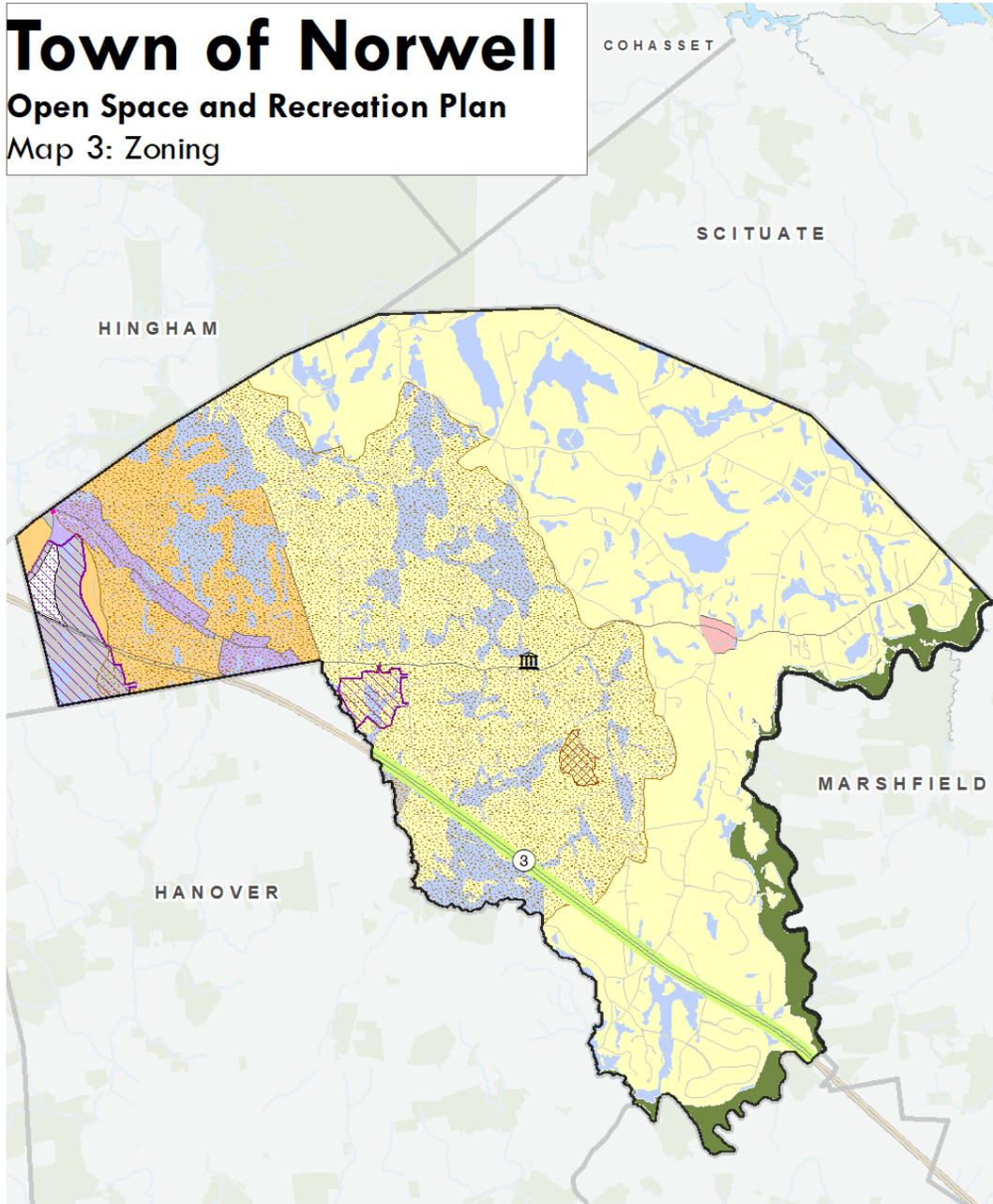
Norwell has a relatively simple zoning structure with two residential zoning districts (Residence A and B), three business districts (Business A, B and C), and seven overlay districts (Village, Aquifer, Wireless, Adult, Salt Marsh Conservation, Route 3 Buffer, and Solar²³), as shown in Map 3: Zoning. All districts have a one-acre minimum lot size, and the Town is primarily zoned for residential use.

²³ The Solar overlay is not shown in Map 3: Zoning.

Town of Norwell

Open Space and Recreation Plan

Map 3: Zoning



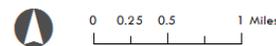
- | | |
|---------------------------------|--------------------------------------|
| Interstate | Business A |
| U.S. Highway | Business B1-8 |
| State Route | Business C1-3 |
| Non-numbered route | Residence A |
| Route 3 Buffer Zone | Residence B |
| Wetlands | Aquifer Protection District |
| Saltmarsh Conservation District | Wireless Facility Overlay District |
| Town Halls | Village Overlay District |
| | Adult Entertainment Overlay District |

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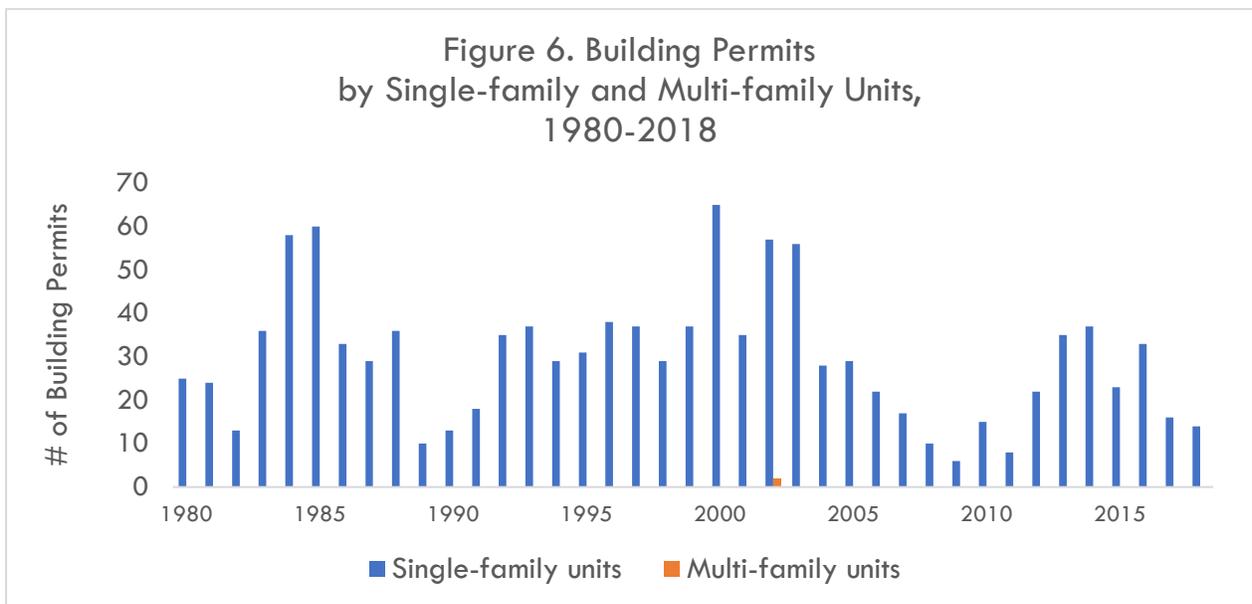
August 2020



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Recent Zoning amendments include: allowances for medicinal marijuana (2013) as well as medicinal and recreational marijuana cultivation, research, and development (2020); the creation of a solar overlay (2015); updated FEMA mapping (2017); increased signage (2020); stormwater MS4 compliance (2020); and the creation of the Accord Pond Park Economic Development District (2020).

Figure 6 shows the number of building permits granted each year over the past few decades in Norwell. The number of permits tracks with trends in the national economy, including a decrease in building during the Great Recession. The figure also shows that nearly all residential development in Norwell is single-family units, rather than multi-family. However, this trend may be changing with the 2018 development of 40 River Street), a 18-unit multi-family development called “Herring Brook Hill 40B,” and the approval of a couple of multi-family affordable housing projects.



Source: Census Building Permit Survey, 1980-2018

Table 3 lists recent and planned development projects in Norwell from 2012 to 2000.

Table 3: Recent and Planned Development Projects in Norwell (2012-2020)

Development	Type/Description	Status	Location
White Barn Village	40 residential units	Planning	South of Route 123 near the Middle School
Simon Hill Village	126 residential units	Planning	Central Norwell, near Simon Hill and the Howe Conservation Land
Hitching Post Lane OSRD	5 residential units	Planning	Central Norwell, off of Circuit Street
Anthemion Memory Care Center	60-bed memory care facility	Permitted	Western Norwell, off Cordwainer Drive
Elevated Access Center	20,000 sq. ft. marijuana manufacturing facility	Permitted	Western Norwell, off Cordwainer Drive
Old Oaken Bucket Estates	26 residential units	Permitted	Northern Norwell, north of Cross Street
Schooner Estates	9 residential units	In Construction	Southern Norwell, north of Stetson Road
Damon Farm at Queen Anne's Corner	32 residential units	In Construction	Corner of Routes 53 (Washington Street) and 228 (Pond Street)
Norwell Estates	15 residential units	In Construction	Southern Norwell, west of River Street
40 River Street Herring Brook Hill	18 senior residential units	Completed in 2018	Downtown, off of River Street
Forest Ridge	5 residential units	Completed in 2017	Northern Norwell, east of Summer Street
Wildcat Hill	46-lot residential units	Completed in 2017	South-central Norwell, off Wildcat Lane
Henry's Lane	8 residential units	Completed in 2017	Northern Norwell, off Norwell Avenue
Cowings Cove	7 residential units	Completed in 2015	Northern Norwell, east of Summer Street
South Shore Medical Center	Medical buildings and office space	Completed in 2015	Off of Route 3, in Assinippi Business Park

Source: MAPC, 2020, <massbuilds.com>

4. ENVIRONMENTAL INVENTORY AND ANALYSIS

GEOLOGY, SOILS & TOPOGRAPHY

Geology

Norwell's surficial geology was created by glacial and wind action. Glacial action and soft bedrock material are responsible for carved-out valleys that were later filled with a variety of materials, including till, clay, sand, gravel, cobbles, and boulders. Now, Norwell's surficial geology is defined mostly by till or bedrock, with large areas of sand and gravel in the western portion of the Town and floodplain alluvium along the waterways. As shown in Map 4: Surficial Geology, Avalon Granite is the dominant rock type. There are a number of wetland areas that may have been historic ponds that are now characterized by many feet of peat, clay, sands, and gravel deposits. The deepest layer of these historic pond deposits discovered to date is an area of 90-foot thick materials in Old Pond Meadows, south of Route 3 and about a half-mile east of the end of South Street. The second deepest layer of deposits above bedrock is at the end of South Street near the present course of Third Herring Brook at Municipal Pumping Well No. 1, where the deposits are about 60 feet deep. In some locations, there are ledge outcrops where bedrock reaches ground elevation.

Norwell's few bedrock outcrops give a glimpse of the glacial influences that shaped this area:

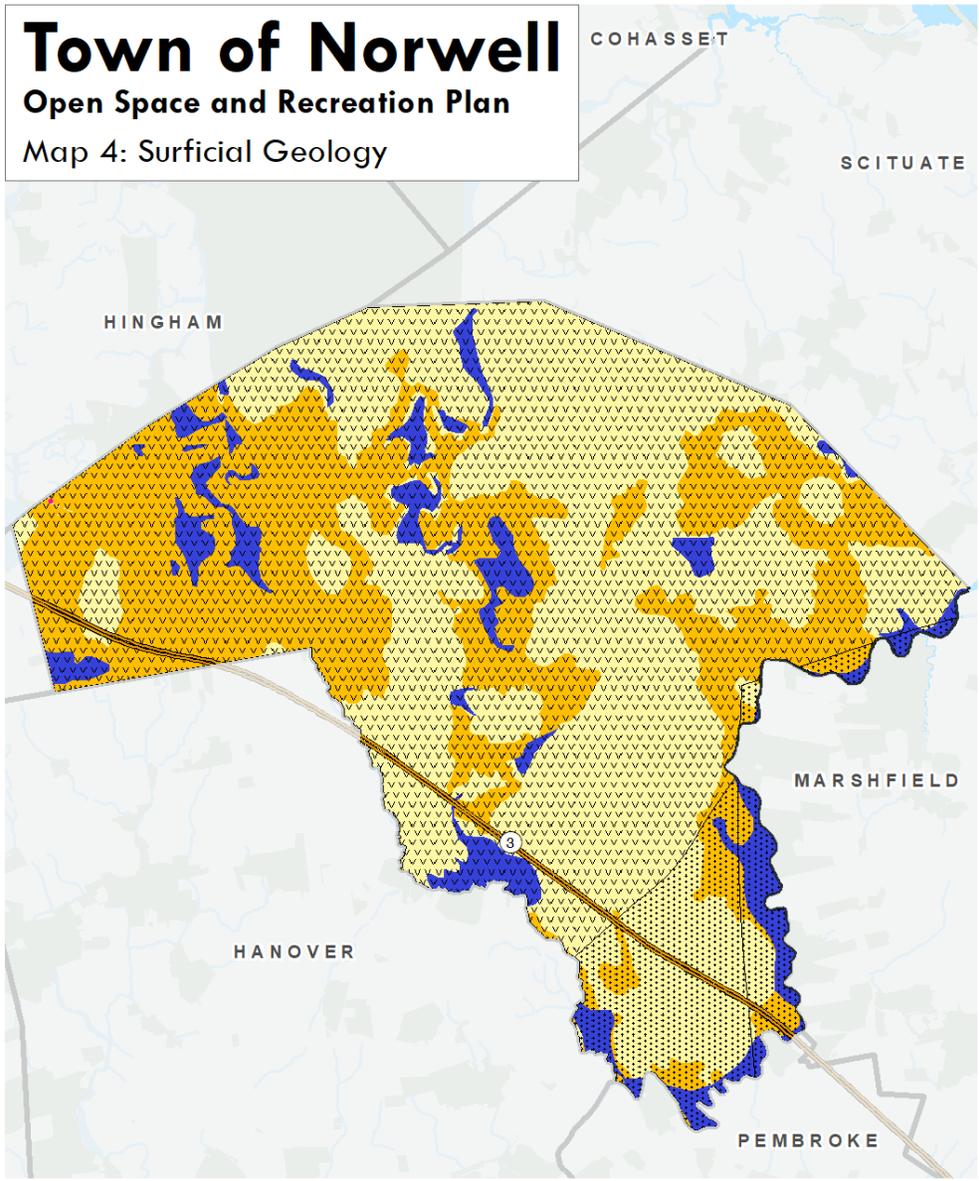
1. Hoop Pole Lane directly behind Town Hall, likely the largest rock outcrop in Town
2. East Side of Damon Pond
3. Just West of Wildcat Brook on Forest Street (Diorite, mafic rock)
4. Gaffield Park
5. The far end of High School Rock Football Field (Dedham Granite)
6. The Rapids on the North River
7. The intersection of Mill and South Streets (Removed – was a Dedham Granite outcrop)
8. Tiffany Road by Third Herring Brook
9. Main Street

"Eskers", characterized by long winding ridges of stratified sand and gravel, are found in several locations in Norwell. It is believed that eskers were formed within ice-walled tunnels by streams that flowed within, above, and under glaciers as they slowed. After the retaining ice walls melted, stream deposits were left behind as long winding ridges. The esker trail around Jacobs's Pond is an excellent local example of this phenomenon.

Norwell's soils are primarily a Scituate-Essex-Merrimac soil association characterized by nearly-level to gently-sloping, moderately well-drained soils formed in glacial till. Scituate soils tend to be very stony sandy loams, wet in spring and fall, and most suitable for pastureland or woodland. Essex soils also are well-drained but stonier and tend to follow the higher elevations in Town. Merrimac soils were formed in sand and gravel and are very well-drained.

These soils usually present no major barriers to construction. However, because nearly 30% of the Town is comprised of wetlands and there are areas with pockets of boulders and other obstacles, it is often necessary to try several locations to find a suitable site for a septic system for a private residence. This often results in a need for larger lots and sometimes limits the number of lots in a subdivision.

Norwell's sloping hills are the creation of a Town-wide drumlin field leftover from the ice ages. The lowest points in Town are found along the North River (sea level), while the highest is Mt. Blue (220 ft.) and Judge's Hill (240 ft.) at the northern end of the Town. The top of both Judge's and Paradise Hills (200 ft.), are home to water standpipes that create a gravity-pressurized municipal water system. Most of the rest of the Town gently rises and falls between 75 foot and 150-foot elevations. The North River and its floodplain cuts a half-mile-wide channel through this sandy plateau, leaving fairly steep 50'-100' wooded bluffs in some areas.



- Major Roads
- Rock Type**
-  Avalon Granite
-  Narragansett Basin Sed.
- Surficial Geology**
-  Sand and Gravel
-  Till or Bedrock
-  Floodplain Alluvium

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LANDSCAPE CHARACTER

The Town of Norwell is located in the “Southern New England Coastal Plain and Hills” region as defined by the EPA. Norwell’s landscape character is defined by scenic roadways lined with trees and stone walls. Common, treasured Town features include open fields, ponds, large wetland resource areas, and the North River. The North River forms a portion of the Town’s boundary stretching from Scituate to Pembroke. Norwell’s landscape can be characterized as a sloping coastal plain dotted with small hills and valleys.

Norwell contains many broad, flat swamps, some of which are associated with streams and others that are isolated, including one notable wetland southeast of the intersection of Grove and Prospect Streets that is completely isolated from any other surface waters. Surface and subsurface hydrology and flow direction are significant factors that impact land use as well as resource areas.

WATER RESOURCES

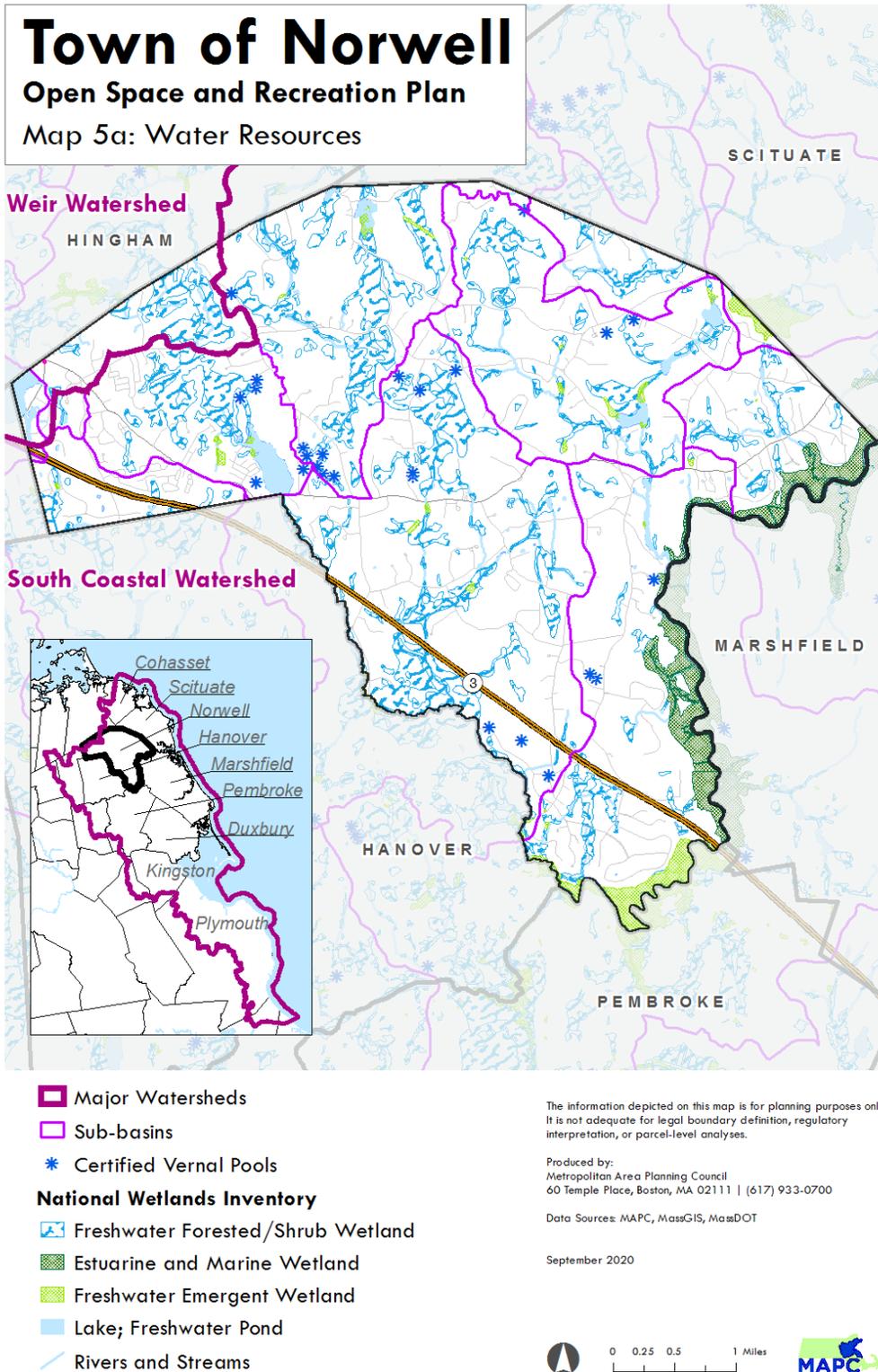
Watersheds

Roughly 30% of the Town’s area is comprised of water and wetlands. Norwell is part of the Massachusetts South Coastal Watersheds, but more specifically, the Town lies in two major watershed basins: the Weir River in the north, and the North River Basin for the remainder and majority of the Town, as shown in Map 5a: Water Resources. The following lists the watershed sub-basins and significant surface water bodies found in Norwell:

- Accord Pond along Norwell’s west border flows into the Weir River Basin to the north.
- Jacobs Pond (Upper Third Herring Brook) drains into the Third Herring Brook to the south and ultimately the North River to the southeast.
- Wildcat Brook watershed includes, from west to east, Wildcat Creek, Margaret’s Brook (just east of the Town Offices), and Wildcat Brook, all flowing into Third Herring Brook.
- Upper Second Herring Brook flows south into the North River Basin at Norris Reservation.
- Stony Brook at the easterly end of Norwell flows southeasterly into the North River.
- First Herring Brook at the northeast portion of Norwell flows south and then easterly into the tidal Herring River before merging into the North River estuary in Scituate.
- The North River Basin which includes the creeks and streams along River Street, including Dwelley’s Creek, Copeland Tannery Brook, and the un-named stream that crosses Lantern Lane and Tiffany Road before flowing into the Third Herring Brook at Tack Factory Pond.

Under the Massachusetts Rivers Protection Act, the area within 200 feet of the mean annual high water line of a permanently flowing river is designated as “Riverfront Area” and afforded special protection as a resource area (rather than a buffer zone). In addition to having jurisdiction over various wetlands and 100-year floodplain, the Norwell Conservation Commission also has jurisdiction over any project proposed in the 200-foot Riverfront Area. Further, the Norwell [Town Code §61.3\(B\)](#) affords a 50-foot no-disturb zone around any jurisdictional wetland, vernal pools and perennial rivers and streams.

The upper reaches of streams, or headwaters, are essential habitats for the food chain base within aquatic systems. These areas can also provide high species diversity, which is a measure of system health.



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Ponds

Norwell has one natural pond, Black Pond, identified as a kettle hole. There are 13 man-made ponds of varying sizes throughout Norwell that were primarily built for saw and grist mills in the 1700's and 1800s. None of the ponds are suitable for swimming, but many are used as fishing spots, for ice-skating, and some for non-motorized boating. The most notable ponds include:

- Jacobs Pond, a man-made recreational pond used for fishing, canoeing, and skating and historically also used for swimming, located between Washington Street (Route 53) and Jacobs Lane, is the Town's largest and most visible pond with more than 50 acres. Although Jacob's Pond was listed on the 1998 Massachusetts DEP 303d list of impaired waterways due to "noxious aquatic plants," it has since been removed and is now identified as "Category 4B".²⁴
- Hatch Pond, which connects to Cole School and contains trails, observation platforms, benches, and outdoor classroom areas.
- Accord Pond is located partially in Norwell, and the water rights belong to Hingham.
- Bound Brook Pond (aka Stockbridge Pond) is a significant resource to wildlife, especially waterfowl. It also provides skating, fishing, and other recreational values. It, too is plagued by noxious weeds and poor water quality.
- Torrey's Pond off of Mill Lane, a man-made pond from the damming of Second Herring Brook and a popular skating location.

Eutrophication, which is a very slow process when naturally occurring, taking five to 10 thousand years in kettle holes, has resulted in the conversion of a number of kettle holes to swamps. The bulk of this conversion has occurred more recently within the last 100-200 years. The increased density of houses and other impervious surfaces can expedite eutrophication due to associated nutrients entering the waters in runoff containing fertilizers.

The Black Pond Bog property was purchased by The Nature Conservancy in 1962 as its first purchase in the Commonwealth due to its unique features and surrounding habitats. The flows from the Pond and wetlands complex reach the Second Herring Brook just below Torrey Pond.

The North River

The North River is a tidal estuary that comprises most of the Town's eastern border and is one of the South Shore's most scenic and historically significant attractions. An estuary is a river that is heavily influenced by the tides and has both fresh and saltwater features. The headwaters of the river are in Pembroke, and the River and/or its tributaries pass through Hanson, Pembroke, Hanover, Marshfield, Norwell and Scituate before emptying into the ocean between 3rd and 4th Cliffs in Scituate. Many different habitat types are found in and around the North River estuary, including shallow open waters, freshwater tidal marsh (one of three in Massachusetts), salt marshes, mud flats, wooded swamps, and even a freshwater Wild Rice stand. The North River is a unique natural resource and as such is afforded special protection as the Commonwealth's only Scenic River to date.

²⁴ Category 4b is reserved for waters impaired by one or more pollutants that are expected to attain their designated uses without TMDL implementation

In May of 1977, the North and South Rivers were designated as a National Natural Landmark (NNL) by the Secretary of the Interior. Under the NNL program, the North and South Rivers are described as “classic examples of drowned river mouth estuaries, supporting at least 45 species of fish and many species of birds . . . the site contains salt marsh, brackish marsh, and freshwater marsh areas.” The NNL Program encourages and supports the preservation of sites that illustrate the geological and ecological history of the United States, thus strengthening an appreciation of America’s natural heritage.

The North River is the only “Scenic River” in eastern Massachusetts, protected as such under the 1978 Scenic Rivers Protection Act (M.G.L. Ch. 21, s.17B). The North River Commission was established that same year to enforce protection of the River with authority to regulate such actions as development and vegetative cutting within a 300-foot corridor of the River’s natural banks. The Commission is comprised of representatives from each of the six Towns that abut the River, including Norwell.

Aquifer Protection

Norwell relies solely on groundwater for its municipal water system. As a result, actions occurring on lands above the groundwater aquifers must be monitored closely. The Town owns or controls a 400-foot diameter around each of its drinking water wells, called Zone A, as shown on Map 5b: Water Resources. There are strict limitations on land use activities within these Zones due to the potential for contamination. Zone B is the theoretical area from which the wells draw water under drought conditions and Zone C is the area that contributes surface water to the Zone II soils under drought conditions.

The Town has mapped these zones into a series of Aquifer Protection Overlay Districts to assist with appropriate development. These zones outline the most sensitive areas for groundwater and surface water pollution in Norwell. The aquifer areas are composed mainly of sands and gravels that can allow pollutants to travel quickly to groundwater resources. The deepest public well in operation in 2020, Well #10, is about 60 feet; Well #11 expected to be put into operation in another decade will be about 90 feet deep. The aquifer, or groundwater protection zones are shown on Map 5b: Water Resources.

The Town has also taken the step of identifying contributory areas to the Town of Scituate Municipal Wells and surface water supply, and the Town of Cohasset’s Surface Water Supply. One of Norwell’s Overlay districts in the eastern portion of Town protects the Town of Scituate well fields. Conversely, the Town of Scituate owns 28 acres off First Parish Road in Norwell for surface water protection purposes.

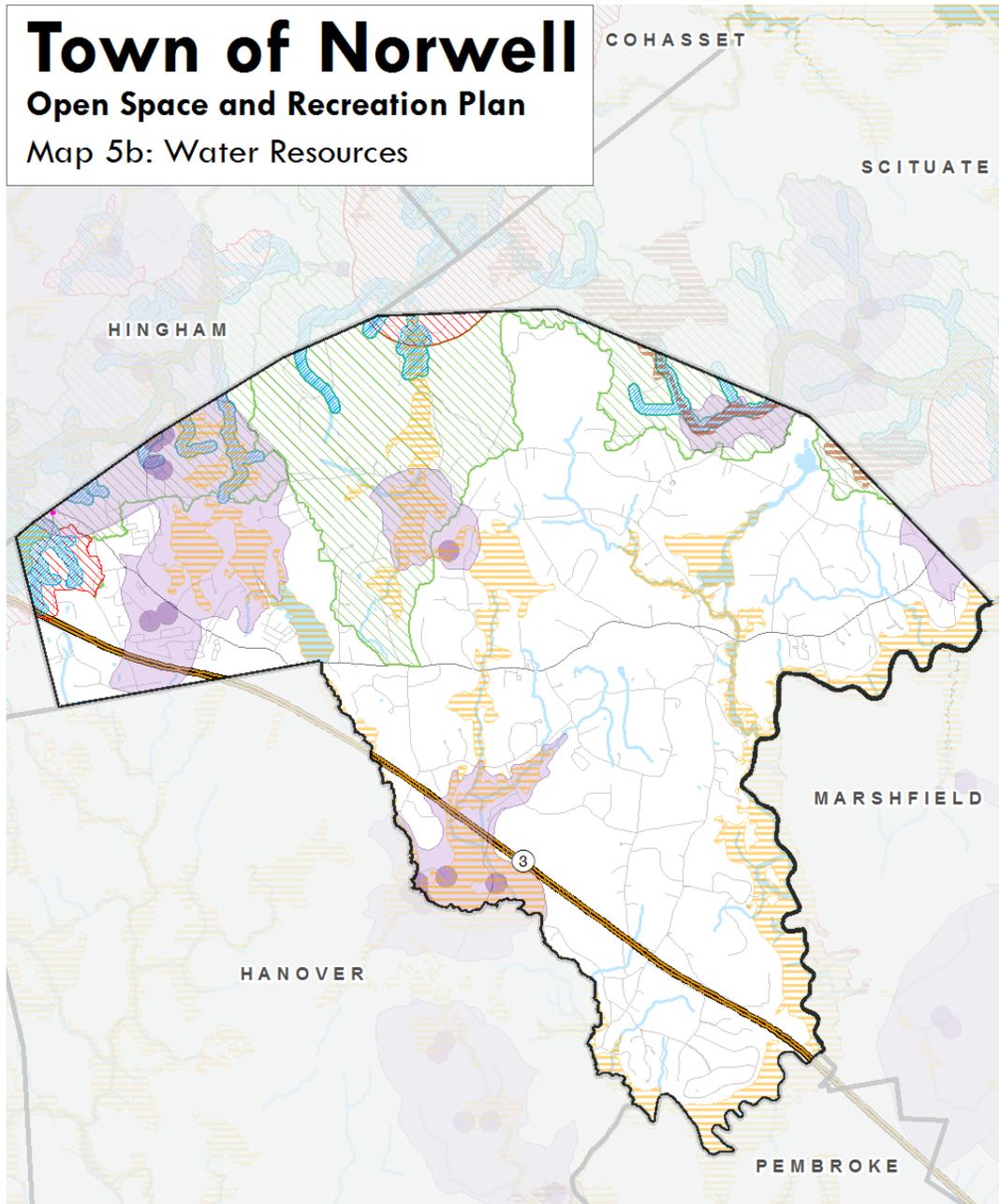
The Weir River Watershed

Norwell’s Grove Street wellfield lies entirely within the Weir River watershed. Municipal pumping wells 2, 3, 5, and 10 currently supply more than 30% of the drinking water in Norwell. Wise management of the water and wetland resources along Accord Brook by both Norwell and Hingham is an important component of conserving the resources while continuing to use the groundwater from these wells. Pumping well Number 2 has the best quality water in Norwell, similar to the Mount Blue spring within Wompatuck State Park.

Norwell Flood Hazard Areas

Map 5b: Water Resources delineates the location of the 100-year floodplain (shown as “1% Annual Chance Flood Hazard”) and 500-year floodplain (shown as “0.2% Annual Chance Flood Hazard”) in Norwell. These flood hazard areas are mapped by the Federal Emergency Management Agency (FEMA) based on historical flooding. There is a small amount of 500-year floodplain in the northeast portion of Norwell along the First Herring Brook. The 100-year floodplain extends along the North River along the eastern edge of Norwell, Wildcat Brook in southern Norwell, within Wompatuck State Park in northern Norwell, and in northwestern Norwell.

The FEMA floodplains do not account for the projected change in precipitation patterns due to climate change. Analyzing more recent flood events can help inform planning and preparation for future flooding. For example, scientists suggest that the rainfall and flooding that occurred in March 2010 will become increasingly common. The March 2010 event was so severe that 87 properties in Norwell received flood insurance or disaster assistance. Map 5b: Water Resources shows the location of flood claims from March 2010, which are mostly located in northwestern Norwell along Route 53.



FEMA National Flood Hazard Layer
 1% Annual Chance Flood Hazard
 0.2% Annual Chance of Flooding

Surface Water Protection Area
 ZONE A
 ZONE B
 ZONE C

Ground Water Protection
 DEP Approved Zone II
 DEP Approved Zone I

Rivers and Streams

**March 2010 Flood Claims*
 Lowest Floor Flood Depth**

0 to 3 inches
 4 inches to 1 foot
 1 foot plus

Lakes and Ponds

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September 2020

*Locations enlarged to comply with federal privacy requirements.



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Wetlands

Wetlands, including marshes, swamps, and bogs, serve a number of vital roles in both the natural and built environments. First, wetlands are highly productive systems and provide important habitat for many species of wildlife. They also act as “sponges,” absorbing and detaining surface waters. In this latter role, wetlands are critical to maintaining the quantity of water supplies by maintaining relatively stable groundwater levels. They also protect water quality by filtering out pollutants and thereby reducing the contamination of streams, lakes, and groundwater. Wetlands also prevent downstream damage from flooding.

Because of the important roles played by wetlands, it is essential that they be protected. Activities that create impervious surfaces result in increased runoff rates, reduced flood storage, and elevated peak flows, leading to more significant damage from storms. Alteration of wetlands reduces wildlife habitat and plant diversity and can increase contamination of streams, rivers, and ponds due to reduced filtration of pollutants. Under the Wetlands Protection Act (M.G.L., Ch. 131, sec. 40) wetlands are defined in terms of vegetative cover and hydrological indicators (including soil characteristics), and the Act regulates dredging, filling or altering areas within 100 feet of such wetlands. Additionally, the Wetlands Protection Act also regulates activities in the previously-described Riverfront Area, as well as within other resource areas, in order to contribute to eight interests: 1) protection of public and private water supply; 2) protection of groundwater supply; 3) flood control; 4) storm damage prevention; 5) prevention of pollution; 6) protection of land containing shellfish; 7) protection of fisheries; and 8) protection of wildlife habitat. Under Massachusetts law, local Conservation Commissions are responsible for implementing the requirements of the Wetlands Protection Act.

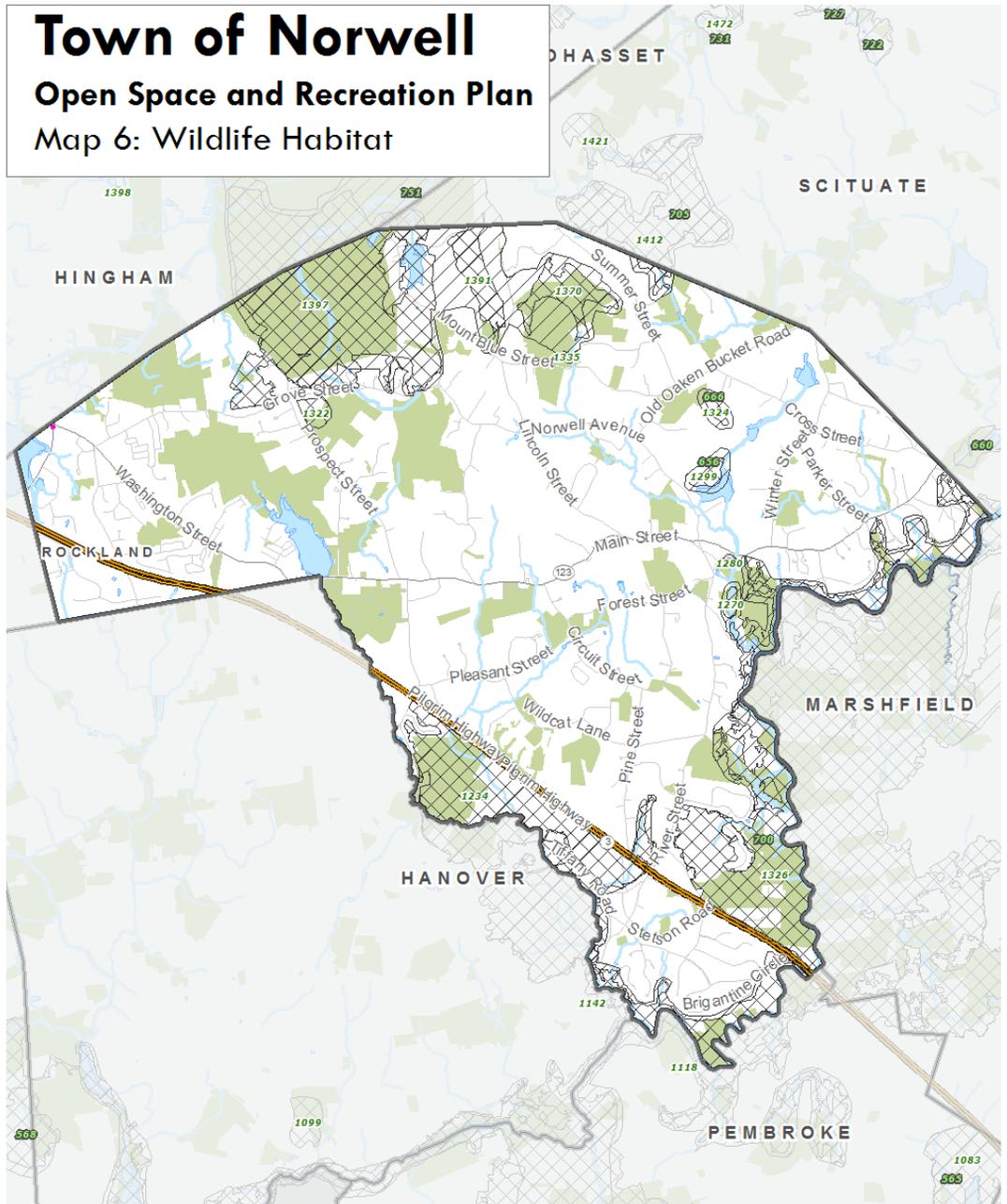
Map 5a: Water Resources included previously herein illustrates the locations of wetlands in Town. Freshwater Forested/Shrub wetlands are found throughout Town, especially in the northern and central portions of Norwell. Estuarine and Marine Wetlands extend along the North River on the eastern edge. Lastly, the main Tidal Freshwater Emergent Wetland is located at the southern tip of Norwell, although a few others can be found throughout the Town.

VEGETATION

Freshwater resources and the tidal influence of the North River have helped create diverse natural communities in Norwell. There are extensive, intact fresh and saltwater marshes along the North River. White pine, red maple, and various oak trees, including red, black, and white oak, are the predominant upland tree species. Groves of beech and clusters of holly trees reaching 30 to 40 feet are also prevalent. One significant grove of tall holly trees exists on private land off of Hoop Pole Lane. Red maples, black tupelo, and sweet pepperbush are commonly found in the lowland and swampy areas.

Core Habitat

Massachusetts BioMap2 is a statewide map produced by the Natural Heritage and Endangered Species Program (NEHESP) with funding from the Executive Office of Environmental Affairs (EOEA), and is designed to guide the protection of the state's biodiversity. Habitat identified as crucial to the state's rare species, and exemplary natural communities were mapped. The map itself represents the areas that are the most viable exemplary natural communities and habitat for rare plant and animal species and depicts the surrounding landscape that buffers and connects habitat areas. Map 6: Wildlife Habitat illustrates the Core Habitat and Critical Natural Landscapes, according to BioMap2 in Norwell. Core habitat is found along the North River at the eastern edge of Norwell, around Wildcat Brook in southwestern Norwell, and in Wompatuck State Forest Park and Cuffee Hill in the northern portion of Norwell. Critical Natural Landscapes surround the areas of Core Habitat.



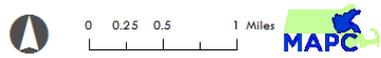
-  BioMap2 Core Habitat
-  BioMap2 Critical Natural Landscape
-  Lakes and Ponds
-  All Open Space

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Forest Lands

The total area of Norwell is 21.2 square miles of which approximately 0.3 square miles is open water and approximately 20.9 square miles is land. Forested land occurs throughout the Town but is a patchy mosaic interspersed and broken by large developments, open water, and farmland. However, Norwell is fortunate to have some areas of large, uninterrupted, and protected woodland. Wompatuck State Park is situated in Norwell, Hingham, and Cohasset and has 3,467 acres of undeveloped land; 537 of those acres lie in Norwell. Wompatuck State Park contains many diverse natural communities, including Successional White Pine Forest and many different types of wetlands. Almost half of the Norwell portion of Wompatuck State Park is considered an Estimated Habitat of Rare Wildlife by the NHESP.

The Cuffee Hill and Judges Hill/Black Pond Bog complex provides approximately 277 acres of contiguous, undeveloped, and protected open space. This entire open space area is valuable because of its position in the landscape. It is situated at some of the highest elevations in Norwell and is therefore valuable for sub-watershed protection, and it also protects Core Habitat.

The majority of the forests on conservation lands are comprised of mature state trees approaching the century mark. These forests are largely in an unmanaged state resulting in dense white pine areas with no understory. This combination frequently leads to the death of the forest. A long-term, comprehensive forest management plan is a priority action item for the Town.

Notably, Norwell is home to the Super Maple, large-diameter maple trees. The Super Sugar Maple on Judges Hill is more than six feet in diameter.

Agricultural Lands and Open Fields

Agricultural lands contribute both scenic and wildlife values to a community. As Norwell has become more and more residential, much of the farmland has been sold to development. There are still some active farms in Norwell today that farm hay and a variety of produce. Others maintain farm animals such as sheep, cows, alpacas, chickens, and horses. Many species of wildlife find the resources they need for all or part of their lifecycle on agricultural lands, including cranberry bogs, where migratory birds and ducks stopover in the open reservoirs, spotted turtles have been known to estivate on the bottom, frogs inhabit the channels and adjacent ponds, and raptors perch on the surrounding tree canopy. Other animals, such as white-tailed deer and foxes, will often use cranberry bog reservoirs for a water source.

The Hornstra Farm (formerly Loring Farm) on Prospect Street is the largest active farm in Town. This idyllic farm property is roughly 71 acres and was farmed for more than 240 years by the Loring Family. In 1980, Mr. Loring sold the development rights to his property to the Commonwealth of Massachusetts and Town of Norwell to provide protection in perpetuity under Norwell's first Agricultural Preservation Restriction (APR), and one of the first APRs written by the Commonwealth. In 2010, Norwell acquired an additional Conservation Restriction on the remaining 2.4 acres with Community Preservation Act funds, which ensures that no part of the land can be used for anything except an active farm. The character and historical significance of this charming farm echo the importance of farms to our local community in earlier days. Only a few dairy farms remain in Plymouth County, where once scores of such farms supplied food for local residents and summer visitors.

There are not many remaining areas of open meadows or fields in Town. In addition to the cranberry bogs, the Donovan Farms on Pleasant Street, the Cushing Fields on Main Street, Fresh

Meadow (an old hay field), and Jacob's Farm on Jacobs Lane and Main Street are the major areas of open land. Some of these areas are already protected in perpetuity while others are in some type of conservation restriction. See Chapter 5 for more details.

Public Shade Trees

Massachusetts regulations define public shade trees as all trees within a public way or on the boundaries thereof, including trees planted by the tree warden (or a private organization acting with the written consent of the tree warden) for the purpose of improving, protecting, shading, or ornamenting the public way. Norwell has a Tree Warden whose responsibilities are primarily maintenance and responses to calls and complaints, including keeping brush and growth down on Town roadsides, drainage areas, culverts, and rights-of-way.

Upland Communities

The following upland natural communities are located in Norwell. The state listed index of rarity is given beside each natural community, and classifications are primarily found in "Classification of Natural Communities of Massachusetts" by Swain and Kearsley, 2001. This Classification system assigns an alpha-numeric reference to natural communities based upon the rarity of the community. Those natural communities that are considered rare are listed as S1 on the continuum and those considered secure are listed as S5. Discussions with local naturalists Fred Saint-Ours and Steve Ivas helped to identify locations where these types of communities occur in Norwell.

Oak/Hickory Forest (S4) Oak-Hickory Forest is defined as a hardwood forest dominated by a mixture of oaks with hickories mixed in at lower densities. The subcanopy can include hop hornbeam (*Ostrya americana*), flowering dogwood (*Cornus florida*), and shadbush (*Amelanchier arborea*). This is a broadly defined and variable forest type. The Norris Reservation contains examples of this natural community.

White Pine-Oak Forest (S5) White Pine-Oak Forests are comprised of a mixed dominance of oaks and white pine in the canopy and dominate the upland forests of Norwell. This natural community usually has a prominent heath shrub layer, with low bush blueberries (*Vaccinium angustifolium* and *V. pallidum*), huckleberry (*Gaylussacia baccata*), mountain laurel (*Kalmia latifolia*), and sheep laurel (*Kalmia angustifolia*). The White Pine-Oak Forest is probably the most common natural community in Norwell and the area in general. Good examples can be found on the Town-owned Stetson Meadows property.

Successional White Pine Forest (S5) Successional White Pine Forest is defined as old-field (several decades) with a white pine overstore and other non-dominating co-occurring species. Other co-occurring species include white oak (*Quercus alba*), red oak (*Quercus rubra*), and red maple (*Acer rubrum*). The shrub layer varies from sparse to thick and usually contains elderberry (*Sambucus canadensis*), black cherry (*Prunus serotina*), maple-leaved viburnum (*Viburnum acerifolium*), and sometimes non-native species such as buckthorn, honeysuckle, and multi-flora rose. This community can also be found throughout Norwell.

Cultural Grassland (No state ranking) Cultural Grasslands are open communities created and maintained by humans that generally occur on sand or other droughty, low nutrient soils. They are important for the conservation of grassland bird communities. Donovan and Cushing Fields, owned by the NCC, and Jacobs Farm, owned by the Town, are good examples of cultural grasslands. Hilltop Meadow, an upland area on Pine Street behind the soccer fields that was the former Town

landfill, provides habitat to a surprising diversity of wildflowers, red-tail hawks, saw-whet owls, Eastern meadowlarks, and migratory dragonflies.

Wetland Communities

The following wetland natural communities are located in Norwell. These natural communities are referenced using the same alpha-numeric system used for Upland Communities following “Classification of Natural Communities of Massachusetts” by Swain and Kearsley, 2001. The complete NHESP description is available for each rare and unique natural community in Appendix J, Helpful Links Associated with Land Conservation and Recreation.

Freshwater Tidal Marsh (S1) Freshwater tidal marshes are defined as “Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream especially vulnerable to extirpation in Massachusetts for other reasons.” Freshwater Tidal Marshes occur along free-flowing coastal rivers in the upper reaches of tidal influence and are comprised of mixed herbaceous marsh species. Dominant species include blue joint (*Calamagrostis canadensis*), sedges (*Carex stricta*), narrow-leaved cattail (*Typha angustifolia*), jewelweed (*Impatiens capensis*), and sweet flag (*Acorus calamus*). All efforts should be made to maintain the protection of this fragile and rare habitat.

Inland Atlantic White Cedar Swamp (S2) The most significant area of Atlantic White Cedar swamp that is found in Norwell probably does not match the natural community description by Swain and Kearsley. In Norwell, vegetation compositions matching this description typically occur in small pockets within larger hardwood/conifer wetlands. Old Pond Meadows might contain one of the only state-recognized examples of Inland Atlantic White Cedar Swamp in town. The area contains a 3-5 acre stand of Atlantic White Cedar. Jacobs Pond, Bound Brook Pond, and Black Pond Bog also contain small pockets of Atlantic White Cedar.

Acidic Shrub Fen (S3) Acidic Shrub Fens are acidic peatlands dominated by mostly deciduous shrubs. They are less acidic and nutrient-poor than level bogs. In the eastern part of the state, they are usually found along wet pond margins. Black Pond Bog is often considered a very good example of this type of natural community, however, the best examples in Norwell are Valley Swamp, sections of Jacobs Pond, and segments of the Second Herring Brook as it runs through the Norris Reservation.

Level Bog (S3) Level bogs are acidic dwarf ericaceous shrub peatlands, typically with pronounced hummock-hollow topography. They are the most acidic and nutrient-poor of Massachusetts’ peatland communities. Leatherleaf (*Chamaedaphne calyculata*) is dominant with a typical mix of rhodora (*Rhododendron canadense*), sheep laurel (*Kalmia angustifolia*), and bog laurel (*Kalmia polifolia*). The NHESP identifies Black Pond Bog as a Level Bog.

Emergent Marsh (S4) Both Deep Emergent Marshes and Shallow Emergent Marshes (both S4) occur along the North River in Norwell. It is difficult to separate these two natural communities, and according to the DEP Wetlands Inventory 1:5000 data layer, Norwell has both types of communities.

Wet Meadow (S4) A Wet Meadow is defined as a graminoid emergent marsh that is temporarily flooded. Repeated disturbances such as mowing keep this habitat open. Tussock-forming sedges are often dominant. An excellent example of a wet meadow is the Third Herring Brook valley below South Street as it enters Hanover.

Hemlock Hardwood Swamps (S4) Hemlock Hardwood Swamps occur in poorly drained basins in bedrock and till and are found typically throughout the central and western portions of the state. Hemlock (*Tsuga canadensis*) is the dominant canopy species but is associated with holly, white pine (*Pinus strobus*), red maple (*Acer rubrum*), and yellow birch (*Betula alleghaniensis*). Shrubs form in canopy gaps between the dense conifers and hardwoods. Commonly associated shrubs include alders (*Alnus* spp.), highbush blueberry (*Vaccinium corymbosum*), winterberry (*Ilex verticillata*), and mountain holly (*Nemopanthus mucronatus*). The ground layer is hummocky and covered with various moss species. Black Pond Brook, north of the power line, contains an excellent example of a Hemlock Hardwood Swamp. More recently, the hemlock woody adelgid has had an effect on the hemlock forest resulting in a decline of large tracts of hemlock.

Red Maple Swamp (S5) Red Maple Swamps are the most common forested wetland in Norwell, as well as in Massachusetts. Red maple swamps are highly variable and occur in a variety of physical settings. Red maple is strongly dominant in the canopy overstory with co-occurrence of a variety of species, which may include yellow birch (*Betula alleghaniensis*), black tupelo (*Nyssa sylvatica*), white ash (*Fraxinus americana*), white pine (*Pinus strobus*), and American Elm (*Ulmus americana*). The shrub story is often dense and well-developed (<50% cover but can be variable).

Red Maple swamps can be important vernal pool habitats in areas where there are two to three months of ponding and an absence of fish. Examples of Red Maple Swamp natural communities in Norwell include the wetlands along both sides of Bowker Street and the swamps of Miller Woods Conservation Area.

Shrub Swamp (S5) Shrub swamps are highly variable communities that are shrub-dominated and occur on mineral or mucky mineral soils that are seasonally or temporarily flooded. Norwell has a number of good examples of this natural community, including Dead Swamp, Hoop Pole Swamp, and portions of Bound Brook Pond.

Vernal Pools Generally, a vernal pool can be defined as a depression where water is confined and persists during the spring and early summer of most years and specific species depend on the ephemeral water body for all or part of their lifecycles, and where fish do not survive.²⁵ Vernal pools often occur in fall as well but do not generate the same attention as the spring pools. In Massachusetts, vernal pools vary widely in size, shape, depth, and other characteristics. Wood frogs (*Hyla versicolor*), spotted salamander (*Ambystoma maculatum*), marbled salamander (*Ambystoma opacum*), and fairy shrimp (*Eubranchipus* spp.) are obligate vernal pool species, meaning they depend on vernal pool habitat to complete all or a portion of their lifecycle. All except the marbled salamander have been identified in Norwell. The marbled salamander is a State-listed Threatened species and has not been confirmed in Norwell or Hingham.²⁶ It should be noted that Massachusetts is at the far northern reach of the habitat range for the marbled salamander. It is prolific in many southern states.

Vernal Pools and the area within 100 feet of the pool are considered a habitat feature under the Wetlands Protection Act. When certified, they are also considered an Outstanding Resource Water and protected by the Massachusetts Surface Water Quality Standards and 401 Water Quality Certification regulations.

²⁵ Burne, 2000

²⁶ Massachusetts List of Endangered, Threatened, and Special Concern species, 2012

Many vernal pool species utilize the pools for breeding and then migrate significant distances to uplands for the remainder of the year. Access by species reliant on vernal pools can be negatively impacted through segmentation of their travel routes by development. Some towns including Norwell have adopted by-laws providing greater protection for the habitat surrounding vernal pools. Map 6a: Water Resources shows the vernal pools in Norwell, which are mostly clustered to the east of Jacobs Pond.

Rare, Threatened and Endangered Plant Species

The rare vegetation species identified and confirmed by the Natural Heritage and Endangered Species Program (NHESP) in Norwell are shown in Table 4.

Table 4: Rare Vegetation Species in Norwell

Common Name	Scientific Name	MA Endangered Species Act Status	Most Recent Observation
Estuary Beggars-ticks	<i>Bidens hyperborean</i>	Endangered	2008
Parkers Piperwort	<i>Eriocaulon parkeri</i>	Endangered	2008
Gypsywort	<i>Lycopus rubellus</i>	Endangered	2000
Pale Green Orchis	<i>Platanthera flava</i> var. <i>herbiola</i>	Threatened	2000
Swamp Dock	<i>Rumex verticillatus</i>	Threatened	2010
Wild Senna	<i>Senna hebecarpa</i>	Threatened	Historical

Source: MA List of Endangered, Threatened, and Special Concern species, www.mass.gov

Invasive Plants

A number of invasive species, both aquatic and terrestrial, have been confirmed in Norwell. No scientific surveys have been done. Local naturalists and scientists can confirm that Japanese barber, pokeweed, Japanese knotweed, Tartarian honeysuckle, Japanese honeysuckle, garlic mustard, European buckthorn, *Phragmites* (common reed), floribunda roses, and purple loosestrife are all present to some extent.

The distribution of these species or the rate of invasion is not known. Most of the invasive species mentioned above can be seen at the Town’s large conservation parcels, including Norris Reservation, Stetson Meadows, Jacobs Pond, and Fogg Forest, as well as at the highway barn area and Town soccer fields. There is an extensive invasion of purple loosestrife just upstream of the Mill Pond Dam owned by the YMCA of Hanover. All of these areas could benefit from an invasive species management plan. However, the management of invasive species is an arduous process and requires thoughtful consideration as to various factors, including effective methods and the likelihood of success based on landscape context and off-site sources.

FISHERIES AND WILDLIFE

The diversity of natural communities in Norwell supports an equally diverse array of wildlife species. Jeff Corwin, a well-known animal activist, grew up in Norwell and began his career by learning about the wildlife right here in town. Norwell wildlife has been well documented from a variety of sources.

In this section, the highlights for each group of wildlife are presented. Species included in these lists are often derived from a “theoretical list” based on the existence of preferential natural communities and reported observations. Species that have been observed and reported in Town

are then confirmed with input from biologists and naturalists. The Town should continue to add to these lists as more is learned about which species inhabit Norwell.

Animals migrate for feeding, breeding, or overwintering, and occasionally vehicular collision result in mortalities or injuries. A consortium has established a public website where observations of animal mortality can be reported. These reports help establish a better understanding of where incidents occur and shape decision making about how to better protect wildlife. Additionally, specialized organizations are equipped to aid injured animals. See Appendix J, Helpful Links Associated with Land Conservation and Recreation.

Birds

There are more than 70 confirmed species of breeding birds and 23 additional possible breeding species in Norwell. Many areas of Town, such as Bound Brook Pond on Mt. Hope Street, provide excellent habitat for a diversity of birds and waterfowl. Local naturalists and residents confirm that this area provides habitat for a diversity of migratory waterfowl. The open land behind the Pine Street Hill soccer field provides habitat for screech owls, barred owls, great horned owls, and American kestrels.

A section of the North River that extends from the Hanover Town line to the Center of Norwell was one of the first areas recognized and nominated for an Important Bird Area (IBA) for the marsh wren (*Cistothorus palustris*), a Species of Conservation Interest in Massachusetts. The Massachusetts Audubon Society defines an IBA as a location providing essential habitat to one or more species of breeding, wintering, and/or migrating birds. The North River is a very important stopover for migratory birds and is also essential to resident waterfowl. The River is incredibly valuable as a wildlife habitat because its tidal influence supports a diversity of habitats.

One bird that has undergone a tremendous rebound statewide is the wild turkey (*Meleagris gallopavo*). Wild turkeys were found commonly throughout Massachusetts at the time of Colonial settlement. By the late nineteenth, turkeys had almost entirely disappeared from the State. By 1996, turkey's populations were thriving once again throughout the state. Turkeys are commonly seen in Norwell crossing streets, grazing in fields, roosting in trees, or even flying.

Amphibians

The Spotted Salamander (*Ambystoma maculatum*), Eastern Red-backed Salamander (*Plethodon cinereus*), American Toad (*Bufo americanus*), Spring Peeper (*Hyla crucifer*), Gray Treefrog (*Hyla versicolor*), American Bullfrog (*Rana catesbeiana*), Green Frog (*Rana clamitans*), Pickerel Frog (*Rana palustris*), and Wood Frog (*Rana sylvatica*) are all relatively common in Norwell. Some are obligate vernal pool breeders.

Reptiles

Snapping Turtle (*Chelydra serpentina*), Painted Turtle (*Chrysemys picta*), Eastern Box Turtle (*Terrapene carolina*-Species of Concern), Spotted Turtle (*Clemmys guttata*-Delisted), Eastern Racer (*Coluber constrictor*), Northern Watersnake (*Norodia sipedon*), Common Gartersnake (*Thamnophis sirtalis*) all find habitat in Norwell. Although Norwell has a habitat appropriate for Wood Turtles (*Glyptemys insculpta*), none have ever been confirmed and documented.

Butterflies

Butterflies are not only enjoyable to observe, but they also serve a vital function in the environment by pollinating many species of plants. They are also very fragile because they often are dependent

upon only one or two species of vegetation for their food source. If that food source becomes rare and hard to find, then the species of butterfly is also put at risk.

Black Swallowtail (*Papilio polyxenes*), Eastern Tiger Swallowtails (*Papilio galucus*), Cabbage White (*Pieris rapae*), and Spring Azure (*Celastrina ladon*) are just a few of the common butterflies that were identified by The Science Center staff during Biodiversity Days. The Massachusetts Audubon Society hosts a butterfly atlas online recording the distribution of butterflies that populate the Commonwealth.

Insects

The Elderberry Long-Horned Beetle (*Desmocerus palliatus*-Species of Conservation Interest in Massachusetts) is a striking insect with dark metallic blue body with bright gold and orange wings that resides in Norwell. It was formerly listed as a Species of Concern until reports around the Commonwealth indicated a more secure population. In 2010, it was delisted and remains a Species of Conservation Interest in Massachusetts.

Norwell's habitat supports pockets where fireflies are prevalent. There are approximately 20 to 30 species of fireflies in New England. The species that flash come in three main genera (groups of closely related species): *Photinus*, *Pyroctomena* and *Photuris*. These flying beetles were once very common in New England but their nighttime presence has become less common in recent years. A citizen science study called Firefly Watch based at the Museum of Science collects data about firefly behavior and distribution is provided by its volunteers.

Dragon flies and damselflies are flying insects of the order *Odonata* commonly found in both wet and dry environments in Norwell. Dragon flies and damselflies are beautiful, harmless, and ancient and prey on other insects, including mosquitoes. These expert fliers control each of their wings independently by flapping their wings both up and down as well as rotating their wings forward and back, which allows them to move straight up or down, fly backwards, stop and hover all while flying at either full speed or slow motion. The Mocha Emerald Dragonfly (*Somatochlora linearis*-Species of Concern) and New England Bluets Damselfly (*Enallagma laterale*-Species of Conservation Interest in Massachusetts) inhabit Norwell.

Nuisance insects, including mosquitos and deer ticks are prevalent in Norwell with the abundance of wetlands and wildlife. Mosquitos potentially carry West Nile Virus and Eastern Equine Encephalitis virus. The Massachusetts Mosquito Control Project administered by the Massachusetts Department of Agriculture keeps Mosquito populations in check. Deer ticks potentially carry diseases like Lyme disease, but not all deer ticks carry the bacteria.

Fish

Norwell has many freshwater brooks and streams, as well as the tidally influenced North River. These factors contribute to a diversity of freshwater species, as well as anadromous fish. The freshwater species include natives such as brown bullhead (*Ameiurus nebulosus*), chain pickerel (*Esox niger*), rainbow smelt (*Osmerus mordax*), and four different species of stickleback. Four species of anadromous fish have been confirmed in Norwell including the blueback herring (*Alosa aestivalis*), alewife (*Alosa pseudoharengus*), american shad (*Alosa sapidissima*), and striped bass (*Morone saxatilis*). All four species live in the ocean, and at least the first three species undertake upriver spawning migrations in the spring. Dams that were established in the early colonial days up to the twentieth century affect the breeding success of anadromous and catadromous fish directly as obstacles to their migration and indirectly by changing the natural conditions potentially affecting

recruitment. In May 2012, a deceased 6-foot sturgeon (*Acipenser* spp.) was landed in the North River. Sturgeon species are listed as endangered by both the Commonwealth and the Federal government.

Every Spring, the Massachusetts Division of Fisheries and Wildlife (Mass Wildlife) stocks Second Herring Brook (Norris Reservation Pond) with trout and the Third Herring Brook with rainbow trout. Smelt eggs have recently been reported in Second Herring Brook by the Division of Marine Fisheries.

Mammals

Woodchuck (*Marmota monax*), striped skunk (*Mephitis mephitis*), common raccoon (*Procyon lotor*), eastern gray squirrel (*Sciurus carolinensis*), eastern cottontail (*Sylvilagus floridanus*), eastern chipmunk (*Tamias striatus*), red squirrel (*Tamiasciurus hudsonicus*), common gray fox (*Urocyon cinereoargenteus*), and red fox (*Vulpes vulpes*) were all identified during The Science Center's Biodiversity Day 2002 and have been easily confirmed by many observers. Norwell has most of the other mammals that are found commonly throughout southeastern Massachusetts but there are a few worth mentioning in more detail because they are either making a comeback or expanding their range.

River otters (*Lutra canadensis*) have been spotted on River Street near Third Herring Brook. In order to survive, river otters require the first 200-300 feet of a riparian corridor (parallel to the river) to have healthy habitat. They were historically distributed throughout the state but have disappeared due to development along their river corridors. Pollution and vehicular collisions have also taken a toll on their ability to survive. In some areas, River Otters appear to be making a comeback.

Fishers (*Martes pennanti*) are a type of weasel, and have been sited crossing River Street, at Jacobs Farm, and also parallel to Winter Street. By the 19th century, fishers had been eliminated from the state due to the extensive clearing of land for agriculture. Fishers made a comeback in the state as mature forests became re-established. Fishers need mature, dense, coniferous or mixed coniferous-hardwood forests with closed canopy and tend to avoid traveling in large open areas. Local naturalists have confirmed that they are present in Norwell. The extent of their range in Town or if they spend their entire lifecycle in Norwell's forests is not known.

White tailed deer (*Odocoileus virginianus*) populations have rebounded from nearly a century of decline. Early colonial impacts on forest habitat virtually eliminated the species from the Commonwealth. Today, efforts to conserve and restore habitat are associated with a thriving white tailed deer population. These deer are highly adaptable and successful breeders. Their increased numbers have brought several negative impacts including a wide distribution of deer ticks, vehicular collisions, and over-grazing of numerous native plant species. Research is ongoing focused on deer impacts to shrubs and the succession of the forest canopy. Towns across Massachusetts are identifying deer management strategies to mitigate the impacts of the white-tailed deer. The United States Forest Service employs a botanist who specializes in deer management studies that help towns, states and private organizations to make informed decisions about managing their local deer populations.

Bats are nocturnal and consume a vast amount of mosquitos and other insects. They suffer from White-Nose Syndrome (WNS), a white, crusting fungus on their muzzles and other parts of their bodies during winter hibernation. WNS depletes the winter fat reserves too quickly by the middle of winter, causing them to begin to forage during the winter, which leads to starvation. Norwell

resident, Roger Landry, is a bat expert who also builds bat houses that provide an alternative to natural bat dwellings such as caves where high rates of WNS are now impacting bat populations.

Rare, Threatened and Endangered Wildlife

NHESP has documented two Species of Concern in Norwell: the eastern box turtle (*Terrapene carolina*) and the mocha emerald dragonfly (*Somatochlora linearis*). “Species of Concern” are native species that have suffered a decline that could threaten the species if allowed to continue unchecked, or which occurs in such small numbers or with restricted distribution or very specialized habitat requirements that they could easily become threatened within Massachusetts (Endangered Species Act).

Wildlife Corridors

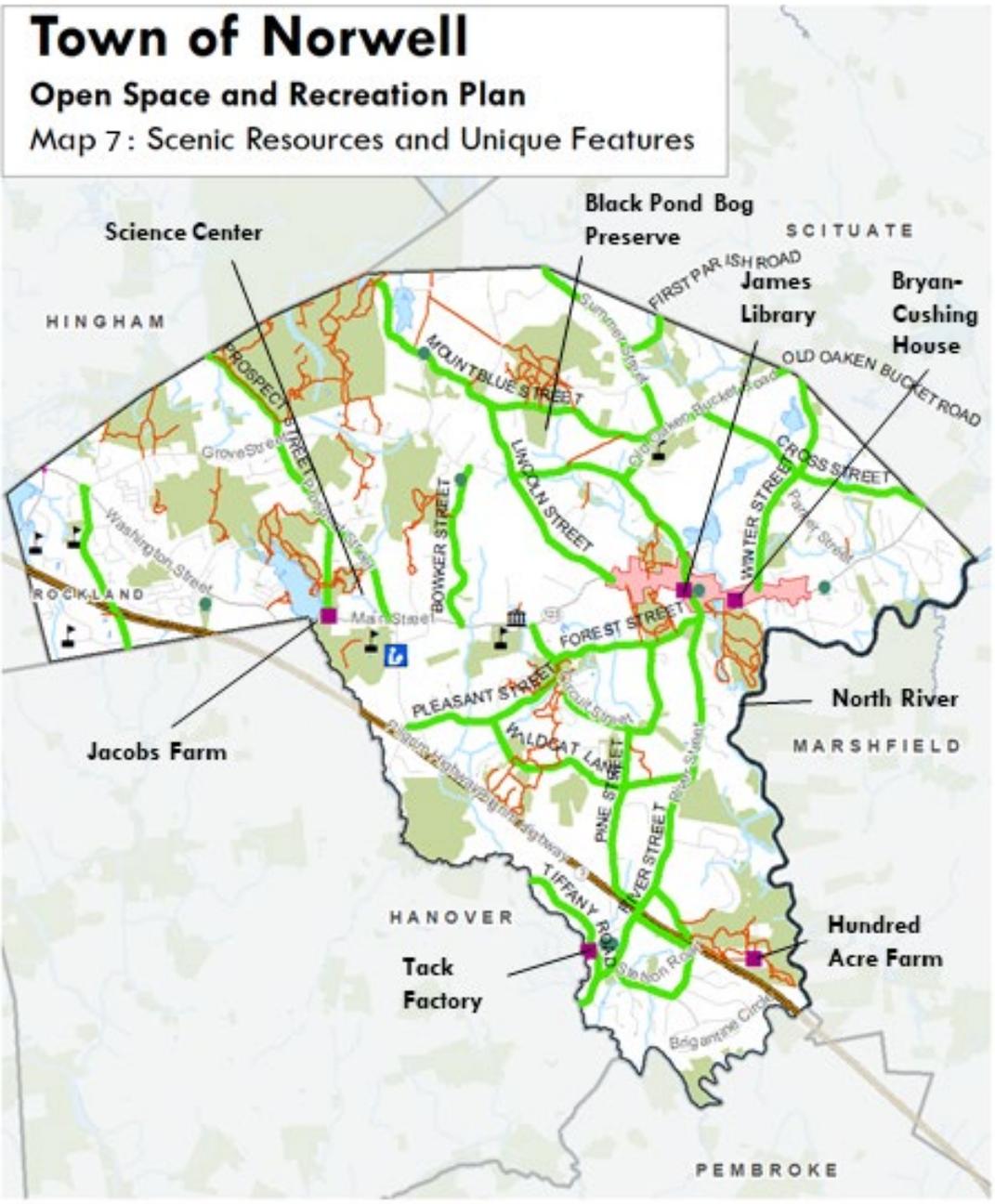
Wildlife corridors are unfragmented areas of wildlife habitat that allow populations of animals to move freely, disperse into new areas, and intermingle with other individuals of their species. fragmentation is a growing problem for wildlife species that depend on intact areas of habitat for their survival. The North River serves as riverine corridor for four species of anadromous fish: the blueback herring (*Alosa aestivalis*), alewife (*Alosa pseudoharengus*), striped bass (*Morone Saxatilis*) and american shad (*Alosa sapidissima*), and is a likely corridor for river otters (*Lutra canadensis*).

Habitat fragmentation is a major threat to the survival of many species. Not only do species face fragmentation of their habitat due to development, but physical barriers such as highways, dams, substandard culverts, and large expanses of impermeable surfaces restrict the animals’ ability to breed, find the resources they need to survive, and migrate without the threat of vehicle mortalities. Many species move out daily to seek food or shelter. Sufficient continuity in their range is needed for adaptation and survival. Additional impacts to habitat loss include the conversion of meadow edges to lawn or forest. The transitional shrub layer between field/lawn and forested areas is critical to many species but is one of the most endangered habitat areas due to development into areas previously considered marginal.

Norwell’s major highways and state roads, including Route 3, Route 53 (Washington Street), and Route 123 (Main Street), act as barriers for many terrestrial and semi-aquatic species. Turtles, snakes, salamanders, frogs, and many small mammals fall victim to vehicular mortality more often than the larger mammals. Dead gravid (egg bearing) female turtles are often found on Grove Street, Prospect Street, Jacobs Lane, Winter Street, and Mount Blue Street. All of these streets have extensive wetlands/habitat areas on both sides, and the turtles often cross to find appropriate habitat to lay their eggs. The Town should attempt to protect large tracts of open space that can provide un-fragmented habitat, including transitional meadow edge, for a wide variety of species. Reporting animal mortalities will also assist in establishing greater protection.

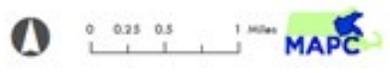
SCENIC RESOURCES & UNIQUE ENVIRONMENTS

Norwell possesses features of great natural beauty engendering pride and appreciation in its citizens and admiration from visitors and neighbors. The beautifully maintained colonial homes, historic village district, open fields, stone walls, and forests are awe-inspiring and reflect the pride its citizens have in its history. The North River, as seen through the eyes of a hiker or a boater, is enchanting. See Map 7: Unique Features for numerous points of interest in Town, including those listed below.



	Town Halls	MA Historical Commission Inventory	The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.
	Schools	Burial Ground	
	Public Library	Historic Buildings	Produced by: Metropolitan Area Planning Council 60 Temple Place, Boston, MA 02111 (617) 933-0700
	Walking Trails	Scenic Roads	Data Sources: MAPC, MassGIS, MassDOT, MACRS
	Lakes and Ponds	National Register of Historic Places	August 2020
	All Open Space	Preservation Restriction	

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The North River

The North River is a beautiful tidal estuary, a unique and fragile habitat with salt and freshwater features. The River is bordered by several large tracts of conservation land (most notably Norris Reservation and Stetson Meadows) that offer walking trails and beautiful views of the River. Norwell also has two public boat launch sites: the Union Street Bridge and the end of Chittenden Lane.

Black Pond Bog

The 87-acre Black Pond Bog Nature Preserve was The Nature Conservancy's first purchase in Massachusetts in 1962. It is a unique environment that contains a pocket of Atlantic White Cedar swamp, an upland forest, a meadow where one can see ecological succession, and a quaking bog surrounding Black Pond. Quaking bogs are composed of sphagnum moss, rushes, sedges, and decaying vegetation forming an apparent solid base that is actually a woven mat laying over pooled water or mud. The name stems from the shaking or quaking effect that occurs when weight is placed on the bog mat. The Pond itself is a glacial kettle hole filled with peat that has a limited water supply. The water is extremely acidic and low in nutrients. These factors, combined with the cool, coastal climate, make the Black Pond Bog plant community unusual.

Surrounding the Bog are concentric rings of plant communities beginning with a floating mat of sphagnum moss that contains carnivorous plants including sundews and pitcher plants, as well as sedges, cranberries, cotton-grass, wild orchids, Leatherleaf, and swamp loosestrife. Around this mat is a wet shrubby zone with highbush blueberry, poison sumac, and Atlantic white cedar. A red maple swamp is outside the shrub zone, which grades into the nearby upland forest dominated by white and red oak, American beech, eastern hemlock, and some American holly. A boardwalk and trail system provides accessibility to the property and connects with the Town's Cuffee Hill Conservation Area to the west and north.

South Shore Natural Science Center/Hanover YMCA (The Science Center)

The Science Center is located on Jacob's Lane in Norwell, adjacent to Jacob's Farm. The Science Center is run under the auspices of the YMCA and is dedicated to educating the public about the natural and cultural environments of the South Shore through a variety of programs for people of all ages.

The Science Center sits on 27 acres and is surrounded by an additional 200 acres of Town conservation and recreation land consisting of meadows, woodland, and Jacob's Farm fields and Jacob's Pond. There are many trails and picnicking spots for residents and members to enjoy as well as wildlife exhibit displays within The Science Center.

Scenic Roads

One way in which towns may protect scenic vistas is through the Scenic Road Designation Program (M.G.L. Ch. 40, s.15c). This law allows a road other than a numbered route going beyond a town's boundaries, and not owned or maintained by the Commonwealth, to be designated as a Scenic Road. After a road has been designated as a Scenic Road, any repair work that involves the cutting or removal of trees or stone walls must be approved by the Planning Board. Adopted at the 1976 Annual Town Meeting, Table 5 lists Norwell's Scenic Roads, as shown on Map 7: Unique Features.

Table 5: Norwell’s Scenic Roads

1	Bowker St	13	Circuit St
2	Norwell Ave	14	Green St
3	Jacobs Ln	15	Lincoln St
4	Stetson Rd	16	Pine St
5	Stetson Shrine Ln	17	Pleasant St
6	Tiffany Rd	18	Mount Blue St
7	Central St	19	Wildcat Ln
8	First Parish Rd	20	Winter St
9	High St	21	Cross St
10	Old Oaken Bucket	22	Forest St
11	Prospect St	23	Summer St
12	River St		

The Planning Board, Conservation Commission, or Historical Commission may recommend such a designation, which then must be approved by the voters at Town Meeting. Usually residents initiate the request for scenic road designation of their street. For example, the residents of Bowker Street, alarmed by a plan to widen their street, were instrumental in the designation of their street as a Scenic Road at a 1976 Town Meeting. It is apparent that the protection afforded by the Scenic Road designation has enabled these roads to retain much of their historic rural charm.

Historical Sites

Norwell has a tremendous history and has many beautiful structures and sites that illustrate this in modern times. Beautiful old homes are marked with small but visible plaques, and the sites of several historic shipyards are marked today by handsome signs along the edge of the North River. As shown in Map 7: Unique Features, Norwell Town Center is on the National Register of Historic Places. Listed in 1982, the district includes 34 buildings, such as the Cushing Center (formerly the Town Hall), the James Library, fire station, post office, several restaurants, and small shops, a church and cemeteries, several homes, and also the Town Common and patriotic monuments. In addition, there are other historical sites in Norwell, as listed in Table 6.

Table 6: Historic Sites in Norwell

Site	Address	Notes
Jacobs Farmhouse	4 Jacobs Lane	- State Register of Historical Places - Town owned
Stetson-Ford House	2 Meadow Farms Way	- National Register of Historic Places, Individual Property - Town owned
Bryant-Cushing House	768 Main Street	- National Register of Historic Places, Individual Property - Privately owned
Tack Factory	49 Tiffany Road	- National Register of Historic Places, Individual Property - No longer standing, demolished by fire in 1983

G. ENVIRONMENTAL CHALLENGES

CLIMATE CHANGE

Climate change will exacerbate many of the existing environmental challenges in Norwell, including erosion and flooding due to more intense storms and invasive species resulting from increased heat and drought. The impacts are already being felt. In the last five years, Massachusetts has experienced increasingly more frequent and severe weather events. Record-breaking snowfall in 2015, a wide-spread and severe drought in 2016, the warmest year on record in 2017, and four Nor'easters in one month and flooding comparable to the Blizzard of 1978 in 2018 are just some examples.

In order to avert the most catastrophic impacts of climate change, the global community must cut emissions in half within the next 10 years (by 2030). In comparison, if emissions continue at current rates, scientists expect devastating impacts including severe heat waves that will affect more than one third of the world population, severe drought that will affect more than 400 million urban residents, and that nearly all of the world's coral reefs will die.²⁷ These most catastrophic impacts can be averted with emissions reductions and natural carbon sequestration, such as wetlands restoration and afforestation. However, even if emissions are dramatically reduced within the next 10 years, a certain amount of climate change is inevitable due to the gases that have already been emitted. The US Environmental Protection Agency projects that climate change will continue to result in increasing temperature and changes in precipitation patterns; sea-level rise, wetland loss, and coastal flooding; threats to ecosystems and natural resources; and public health hazards.

However, there are effective strategies for reducing greenhouse gas emissions within the Town. MAPC's Community Greenhouse Gas Inventory Tool²⁸ provides a step-by-step guide for municipalities to account for local emissions, from which strategies to reduce climate pollution can be developed, as well as becoming resilient to the impacts of climate change.²⁹ Open Space & Recreation Planning can mitigate flooding, erosion, invasive species, extreme temperatures, and other climate change impacts.

Norwell has been proactive in planning for becoming more resilient to the impacts of climate change, including completing a Municipal Vulnerability Preparedness (MVP) Plan in 2020.³⁰ The full MVP Plan is provided in the Appendix. It was developed based on data analysis and a full-day workshop with Town and community leaders in November 2019. Norwell's MVP identifies the Town's top four hazards that will be exacerbated by climate change:

- Flooding
- Heatwaves/drought
- Severe storms (wind, ice, snow)
- Sea level rise (the tidal portion of the North River runs along Norwell's southern border)

In addition, through the planning process of this updated OSRP, wildfire was identified as a potential threat of climate change, as drought and invasive species damage the health of Norwell's forests.

²⁷ International Panel on Climate Change. *Special Report: Global Warming of 1.5 Celsius Summary for Policymakers*.

²⁸ MAPC *Community Greenhouse Gas Inventory Tool*

²⁹ US Environmental Protection Agency. *What Climate Change Means for Massachusetts*.

³⁰ Norwell Municipal Vulnerability Preparedness Plan.

Temperature

According to the US National Climate Assessment 2018, temperature in the Northeast US has increased by almost two degrees Fahrenheit between 1895 and 2016. Future temperature projections for the Northeastern US show an increase in average summer temperatures and are projected to increase at an accelerated rate.³¹ A number of local temperature projection models for Massachusetts and the Boston region also demonstrate an increased likelihood of heatwaves, as indicated by the increased number of days over 90 and 100 degrees each year.^{32,33,34} Just within the 7-year time horizon of this updated OSRP, Norwell can expect an increase in the number of hot summer days over 95° Fahrenheit above what is currently experienced.³⁵ Young and elderly populations and people with preexisting health conditions are especially vulnerable to hot weather.³⁶

According to a 2019 analysis of climate vulnerability in the Boston region, Norwell has “extremely low” and “moderately low” vulnerability to extreme heat compared to other towns in the area.³⁷ The analysis is based on exposure to heat islands (in which the immediately local temperature is greater than the regional temperature due to the retention of heat by pavement and dark roofs), as well as the sensitivity and adaptive capacity of the population. The heat exposure is expected to be relatively low in Norwell, due to a large amount of forest land and open space that reduces ambient temperature, as opposed to large amounts of paved surfaces and black roofs which increase ambient temperatures.

ENVIRONMENTAL EQUITY

In the context of Open Space & Recreation Planning, environmental equity refers to differences in the benefits and burdens of land use and air quality. For example, environmental equity can be impacted by the siting of landfills near residential areas with African American and Latinx households or the disinvestment in parks near residential areas with low-income households. In Massachusetts, a community is identified as an “Environmental Justice” community based on median household income, race, and English-language proficiency. Norwell does not have any formally identified Environmental Justice populations.

However, important differences in access to open space and recreation still exist between different groups of residents. For example, residents who do not have access to a vehicle or cannot drive, including the youth, elderly, people with disabilities, and some low-income residents, are unable to access most parks and open spaces in Norwell without the help of someone who can drive them. Generally, protected open space and conservation areas are well distributed throughout town, with a slight preference for long-term protected areas in northern Norwell.

Passive recreation areas are also well distributed throughout Norwell. Active recreation areas are concentrated around the schools in central Norwell. Although there are trails in the northern and southern portions of Town, there are no playgrounds or active recreation facilities outside of the

³¹ Climate Ready Boston

³² City of Cambridge, *Climate Change Vulnerability Assessment*

³³ Boston Indicators, “Trends in Climate Change, Metro Boston and New England”

³⁴ Northeast Climate Science Center, UMass Amherst. Massachusetts Climate Change Projections.

³⁵ *ibid.*

³⁶ Massachusetts Emergency Management Agency, Massachusetts Executive Office of Energy and Environmental Affairs. *Massachusetts State Hazard Mitigation and Climate Adaptation Plan.*

³⁷ Metropolitan Area Planning Council. “Climate Vulnerability in Greater Boston”.

central east-west Main Street corridor. Recent investment in Reynolds playground were aimed to better serve the local, middle-income neighborhood.

[Forthcoming: In order to promote greater equity across municipal lines, discussion will be added about access to State and federally-funded parks in other municipalities, as well as access to State and federally-funded parks in Norwell from other municipalities.]

In addition, certain environmental challenges affect vulnerable populations more than other populations. According to the Massachusetts Executive Office of Health and Human Services, the factors that lead to vulnerable population health impacts are:

- “Exposure: Exposure is contact between a person and one or more biological, psychosocial, chemical, or physical stressors, including stressors affected by climate change;
- “Sensitivity: Sensitivity is the degree to which people or communities are affected, either adversely or beneficially, by climate variability or change; and
- “Adaptive capacity: Adaptive capacity is the ability of communities, institutions, or people to adjust to potential hazards, to take advantage of opportunities, or to respond to consequences.”³⁸

As climate change will affect different people differently, environmental equity is an important consideration in becoming more resilient to extreme weather. For example, older residents are at higher risk from hot temperatures from climate change due to their increased sensitivity to extreme heat. Low-income residents who cannot afford air conditioning are more vulnerable to heat, due to their increased exposure and lack of adaptive capacity. To clarify, these populations are not inherently more vulnerable—instead, there are systems and policies that result in greater vulnerability for certain populations. If the systems and policies reduced vulnerabilities, the threat of climate change would be mitigated.

Norwell’s MVP identifies the following potentially vulnerable segments of the community:

- Seniors
- People with medical needs
- Low-income residents

HAZARDOUS MATERIALS & WASTE

Disposal Sites

There are no known Federal Superfund Sites in Norwell. There have been, however, 81 Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup disposal sites for oils and hazardous materials in Norwell.³⁹ See the Appendix for the full list of hazardous materials sites in Norwell. Sixty-six of these sites have undergone appropriate cleanup and have achieved regulatory closure in accordance with the Massachusetts Contingency Plan (MCP; 310 CMR 40.000). There are five clean-up phases, beginning with an initial site investigation (Phase I), and culminating in a full-scale clean up (Phase V). There are 15 active disposal sites listed in Table 7 that have not achieved regulatory closure in Norwell, one more than in 2012.

³⁸ Massachusetts Executive Office of Health and Human Services. *Vulnerable Residents and Areas*.

³⁹ MA Department of Energy and Environmental Affairs. *Waste Site and Reportable Releases*.

Table 7: Hazardous Materials Sites in Active Clean-Up Process

Release Address	Site Name Location Aid	Phase	Chemical Type
72 Washington Street	Former Shell Station	PHASE V	Oil
West Street	State Police Barracks	PHASE V	Oil
32 Pond Street	Fabricare House	PHASE V	Oil
4 Whiting Street	Getty Service Station	PHASE V	-
Route 228 and 53	Former Queen Anne's Arco	PHASE V	Oil
724 Main Street	Joseph's Pontiac Garage and Gulf Station	PHASE V	Oil
49 Washington Street	Jiffy Lube	PHASE IV	Hazardous Material
507 Washington Street	Norwell Cleaners	PHASE IV	Hazardous Material
32 Gln. Trailer Park	Off 214 Washington Street Route 53	PHASE IV	Oil
22 Pond Street	Former Shaw Saab	PHASE II	Oil and Hazardous Material
16 Old Oaken Bucket Road	Residence	PHASE II	Oil
109 Prospect Street	None	PHASE II	Oil
310 Main Street	None	PHASE II	Oil
10 Pond Street	Former South Shore Acura	PHASE II	Oil and Hazardous Material
46 Bridge Street	Off Route 123	PHASE II	Oil

Source: MA Department of Energy and Environmental Affairs. *Waste Site and Reportable Releases*.

Norwell Landfill

The Pine Street Landfill, located at the intersection of Pine and Circuit Streets, was closed in 1976 and capped in 1977. A leachate collection system was not constructed to collect direct leachate from the facility.

EROSION & SEDIMENTATION

Erosion and sedimentation from construction sites is problematic and requires considerable diligence in the implementation of effective control measures. For the upland areas, construction sites that are adjacent to wetlands are managed in accordance with the Town of Norwell Wetlands Protection Bylaw, ([Chapter 61 of the Norwell Town Code](#)), and the Massachusetts Wetlands Protection and Rivers Protection Acts, (MGL c.131 §40). Erosion and sedimentation controls are standard conditions in all Orders of Conditions issued under the above-referenced Bylaw and the Act. Planning Board and Board of Appeals regulations for subdivisions and site plan review (Chapters [302](#) and [301](#) of the Norwell Town Code, respectively) also require compliance with MassDEP stormwater management regulations. This extends the requirements for erosion and sedimentation controls of smaller sites beyond the 100-foot buffer zone of wetlands.

EPA requirements under the National Pollutant Discharge (NPDES) Program have resulted in a required stormwater permitting process for any development that disturbs more than one acre of land. This process will result in developers submitting a plan for review that will show how they will control runoff, sedimentation, and erosion. Norwell also is subject to the Municipal Separate Storm Sewer Systems (MS4) requirements of the NPDES Phase II Storm Water Program, which requires

identification of stormwater outfalls, maintenance of the stormwater system, development and implementation of a stormwater management program (SWMP), and obtaining an NPDES permit.

Stormwater is one of the largest sources of sediment loading into wetland resources. Norwell's stormwater bylaw includes best management practices to address stormwater discharge with new green technology, design, and materials. Many of the stormwater drainage structures in Norwell discharge directly either into wetlands or watercourses and if systems are not maintained or if inadequate controls are implemented on construction sites, this can result in the discharge of large amounts of sediments to these waterways.

Beyond construction, the factors that lead to contaminated stormwater include many seemingly innocuous residential activities such as landscaping activities, chemically treating lawns, salting driveways, washing cars in driveways, not picking up pet waste, and other common daily actions in addition to the more obvious industrial and construction activities that release sediments and pollutants into stormwater systems.

There is another type of erosion concern present in Norwell—the erosion of the banks along the North River Estuary and tidal creeks caused by recreational boating. River speed limits have been set at six miles per hour for more than two decades to mitigate this source of erosion. The presence of the Norwell Harbormaster helps reduce some of the vessel speeding that erodes the banks.

GROUNDWATER & SURFACE WATER

Norwell's water system is completely dependent upon groundwater wells. The 10 active wells are less than 60 feet deep, resulting in a high potential for contamination from ground or surface water. Wells that are greater than 60 feet deep are more likely to have clay layers between the surface and the water-bearing sands and gravels, thus reducing pollution risks. Plans for an 11th well include construction to approximately 90 feet deep, and the well is anticipated to come on-line in approximately 10 years.

Since the Town has no Municipal or Industrial Wastewater Treatment System, the aquifer or water-bearing areas may be subject to contaminants that flow off the streets through catch basins and into wetlands and streams, or substances that are poured down a residential or industrial drain. Additionally, poorly designed development could adversely impact the protected areas around the wells and potentially reduce the land available to develop potential additional water sources. The efficiency of older septic systems will be reduced over time and could further adversely impact the Town's drinking water supply by the addition of fecal coliform bacteria and nitrates. Title V upgrades to these septic systems will reduce but not eliminate the negative impacts of effluent entering wetlands, groundwater resources, and water bodies.

Road salt intrusion from winter snow and ice clearing operations also will adversely impact the shallow well-drinking water supply. The search for alternatives to road salt includes pre-treating roads with brine, which keeps ice and snow from adhering to roads and leaves less salt residue to enter wetlands and stormwater systems. To enhance wellhead protection, the Town has approved Aquifer Protection Overlay Zoning and Town Wetlands Zoning to provide guidance on local sensitive areas.

Norwell's Water Department and Boston College conducted research on a plume of road salt emanating from the Massachusetts DOT salt barn along Route 53 in Hanover. The Town also has a source of road salt at its DPW yard on Main Street that affects Wildcat Brook. The Town has begun

upgrading the storage area at the DPW yard and adopting new road salt handling methods to address this issue.

The Massachusetts DEP 303d list identifies surface water bodies that do not meet expected water quality standards. There is one surface water body in Norwell that is listed on the 2016 Massachusetts DEP 303d list of impaired waterways: Longwater Brook from Norwell to the confluence with Drinkwater River for E. Coli levels.⁴⁰ In comparison, the 1998 303d list included Jacob's Pond and Bound Brook Pond.

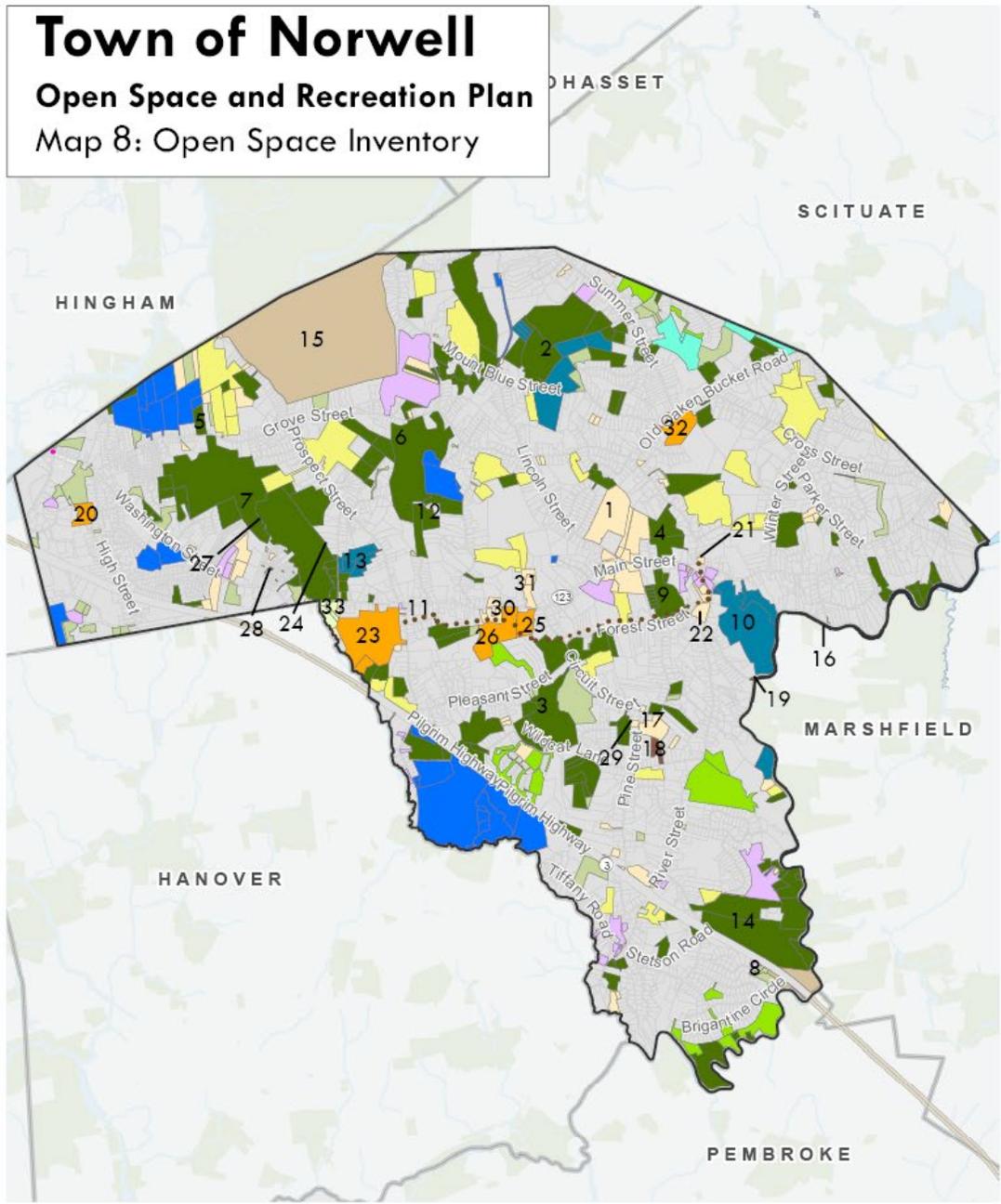
⁴⁰ MassDEP, *2016 Integrated List of Waters*.

5. INVENTORY OF CONSERVATION AND RECREATION LANDS

The term “open space” can refer to a wide range of land uses from school athletic fields to conservation lands held specifically for wildlife habitat management. This section identifies lands in Norwell that are protected in perpetuity, as well as other lands that contribute to the Town’s current open space and recreational resources but are not protected as such because their use can easily change. See Map 8: Open Space Inventory for the location of protected and unprotected open space in Norwell.

[Forthcoming: Completed Open Space Inventory with a full list of municipally-owned open space and recreation, including information about ownership and management, current use and condition of the land, recreation potential, accessibility, zoning, type of grant received for acquisition of land, and level of protection. See attached for the draft of Open Space Inventory.]

The inventory was created based on the 2012 Open Space Inventory, data from the Town Assessors’ 2015 records, and the knowledge of Town staff and the OSRP Committee members. Through the preparation of the 2021 OSRP, it became apparent that there was a major lack of digital and spatial documentation of Norwell’s open space, including the ownership of parcels and level of protection. Unlike other Town’s records, the Norwell Assessor’s records does not clearly identify open space or recreation land in Norwell. The 2012 Plan had recommended the Town thoroughly investigate and document accurate property ownership for all questionable parcels. This process is still ongoing.



Protected Land (2012)

- Conservation Restriction
- Chapter 61 Parcels
- Conservation Commission
- Woodward Fields Protected by Historic New England
- Commonwealth of Massachusetts
- Environmental Organization
- Town of Scituate (Conservation or Water Dept)
- Water Department

Unprotected Land (2012)

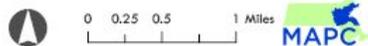
- Recreation Use
- Schools
- Non-profits
- Town Land (2012)
- Potential new open space, verification needed (2015 data)
- Pathway

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

Produced by:
Metropolitan Area Planning Council
60 Temple Place, Boston, MA 02111
(617) 933-0700

Data Sources: MAPC, MassGIS, MassDOT

November 2020



Document Path: K:\DataServices\Projects\Current Projects\OpenSpace Plans\Norwell\ProjectFiles\Norwell OSRP 7v4 OpenSpaceInventory.mxd

Map 8: Open Space Inventory Labels

Map ID #	Name
1	Carleton Property
2	Cuffee Hill & Black Bog Pond
3	Donovan & Wildcat
4	Fogg Forest
5	Grove Street Trails
6	Hatch Lots
7	Jacobs Woods
8	Masthead
9	Miller Woods
10	Norris Reservation
11	Pathway
12	Simon Hill & Bowker Street
13	South Shore Natural Science Center
14	Stetson Meadows
15	Wompatuck State Park
16	Bridge Street Landing
17	Centennial Park
18	Charles "Ed" White Recreation Land
19	Chittenden Landing
20	Cole School
21	Cushing Center
22	Gaffield Park
23	High School
24	Jacobs Lane Landing
25	Middle School
26	Clipper Complex & Osborne Field
27	Prentiss Bridge Landing
28	Reynolds Playground
29	Senior Center
30	Sparrell School
31	Town Hall & Fields
32	Vinal School
33	Woodworth Park

PROTECTED LAND

For the purpose of this updated OSRP, the term “protected lands” will refer to land that is permanently committed for conservation. On the municipal level, lands that are acquired through the Town’s Conservation Commission and Water Department for conservation purposes are protected under Massachusetts Constitution Article 97. Changing the use of lands held under Article 97 requires a two-thirds vote at Town Meeting followed by a two-thirds vote of the state legislature, making it very difficult for a municipality to sell or transfer those lands for other purposes. Parcels held by a state or federal conservation agency are also protected under Article 97.

Municipal Norwell Conservation Commission (NCC)

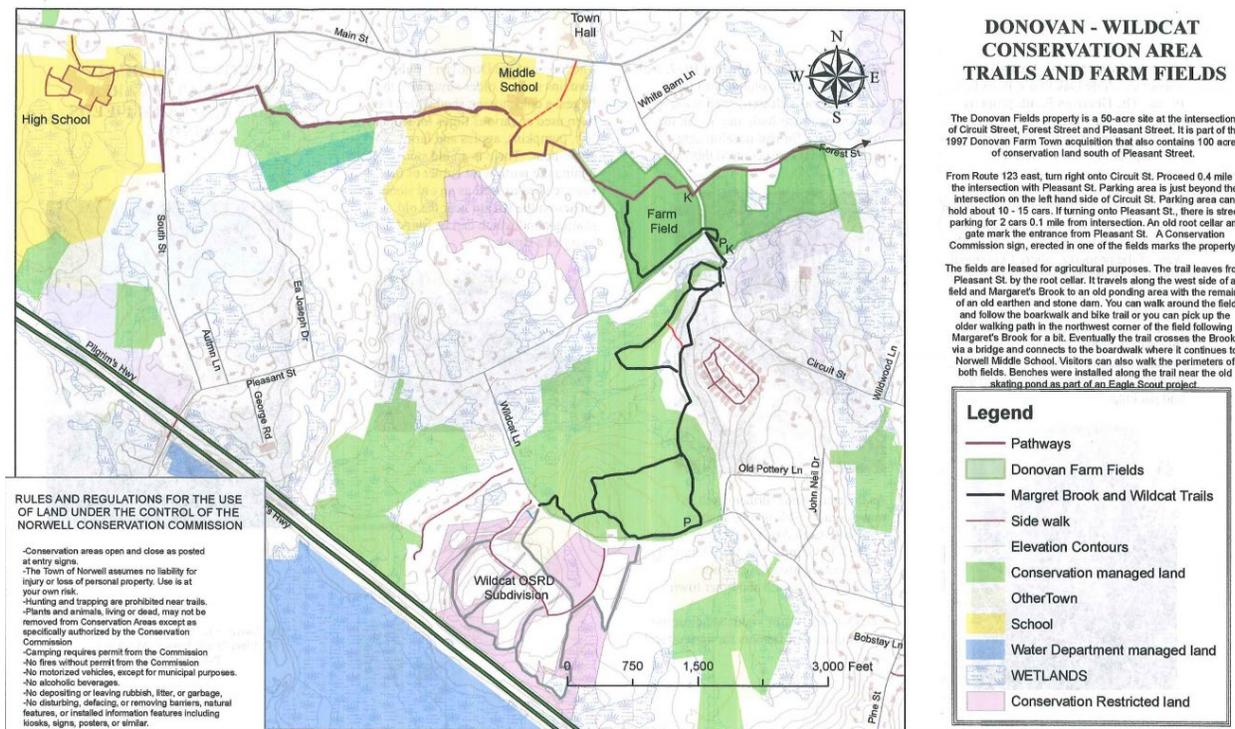
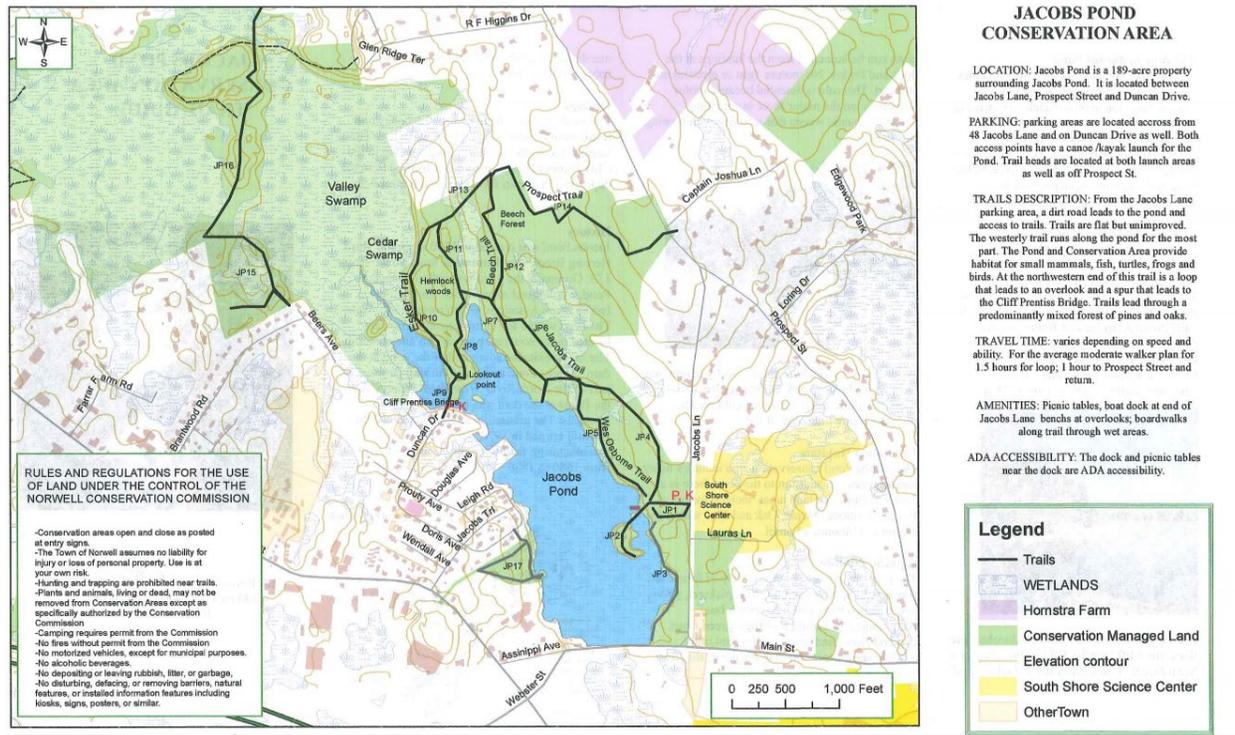
The NCC was established in 1958 and acquired its first piece of property in 1965. The Commission acquires lands by purchasing fee title and receiving and stewarding gifted lands and manages activity that takes place on those parcels.

Based on the 2015 Assessors’ records, the number of parcels under the Commission’s ownership is unclear. In 2005, the Commission believed that it owned more than 131 parcels totaling roughly 1,600 acres. This was an increase from the previous 1,522 acres, accounting for the addition of five parcels as well as the identification of 14 other primarily 1-2 acre parcels donated or sold to the Town for conservation purposes that were not included in plans prior to 2005. This represented slightly more than 11% of the Town’s total area. However, data from the Assessor’s Office showed the NCC owning a total of only 80 parcels, totaling 947 acres. This discrepancy has yet to be resolved. Based on the 2012 OSRP open space inventory and acquisitions since 2012, it is estimated that the Conservation Commission owns 164 parcels totaling 1,873 acres.

[Forthcoming: A summary of the new land under the management of the Conservation Commission since 2012.]

The NCC has established rules and regulations governing the use of its land. Many of these conservation lands provide for passive recreation such as walking and horseback riding trails, cross country skiing in the winter, and boating and fishing. Management plans are available for Stetson Meadows (144 acres) off Stetson Shrine Lane, Jacobs Pond Recreational Area (335 acres), and Donovan Farm (130 acres). Extensive woodland trail systems are maintained by the Norwell Senior Volunteers on eight conservation parcels, including Cuffee Hill, Wildcat Trails, Donovan Fields, Jacobs Pond Area, Stetson Meadows, Miller Woods, Fogg Forest, and Hatch Lots. Trail connections and loops have been created, linking many trail systems. For example, the trails on Donovan link to a trail system on recreation land located on Wildcat, which then links to a trail network created on conservation restriction land that is part of the Wildcat subdivision. Another similar trails network exists between the multiple parcels held by the NCC and The Nature Conservancy off of Mt. Blue Street. Maps and guides of trails in Norwell are available on the Town website, examples of which are shown in Figure 7.

Figure 7: Examples of Norwell Trail Maps & Guides



Water Department

The Norwell Water Department currently services approximately 95% of the total population with municipal water. The Norwell Water Department currently has 10 well pump stations that lie in four well field areas: South Street (356 acres), Washington Street (16 acres), Grove Street (135 acres), and Bowker Street (46 acres). The Town of Scituate owns 28 acres off First Parish Road for wellhead protection. The 2012 OSRP claimed that the Norwell Water Department-owned and managed approximately 602 acres, including wells, aquifer protection buffer lands, water treatment plants, and water storage tanks. According to the 2012 OSRP spatial data, the Water Department manages 506 acres across 27 parcels. With their specific permission, the Board of Water Commissioners allows passive recreation, such as walking and hiking, on the land under their care and control.

Historic New England

Two Town-owned properties are protected by a historical deed restriction held by Historic New England, formerly known as the Society for the Preservation of New England Antiquities:

- The Woodworth Park/Little League Fields (13 acres) located on the south side of Route 123 across from Jacobs Pond
- Jacob Farm Homestead (15 acres) located at the intersection of Route 123 and Jacobs Lane.

Other Town Owned Property

Gaffield Park, located at the intersection of River St. and Forest St., is a children's playground located on eight acres. The land was deeded to the Town in 1896 to be used as a public park.

Commonwealth of Massachusetts State Park Land

Wompatuck State Park lies within the Towns of Hingham, Cohasset, Norwell, and Scituate. The land was previously used as a Federal military storage depot. In 1967, the Federal Government's General Services Administration sold 2,900 acres to the Commonwealth's Department of Environmental Management. An additional 604 acres of federal property at the northeastern boundary of the park were donated to the state in 1985.

Approximately 537 acres (or 15% of the total park acreage) are within Norwell. In the southern portion of the park in Norwell, there are two ponds, Holly Pond and Boundary Pond that are used by hikers and birdwatchers. Mount Blue spring is a beneficial source of spring water used by many visitors. There is a 12-acre cleared field used for ball games and other activities. There are 12 miles of bicycle trails within the park that are located in Norwell.

PRIVATE AND NON-PROFIT PROTECTED LAND

The Trustees of Reservations (TTOR)

The Norris Reservation is a 130-acre parcel owned by the Trustees of Reservations with frontage on the North River. It is an exquisite piece of land that features small mill ponds, river views, Second Herring Brook, and an old boathouse on the North River, wooded upland, and salt marsh.

The Nature Conservancy

The 87-acre Black Pond Bog Reserve was the first parcel acquired in Massachusetts by The Nature Conservancy. The property includes a pond and peat bog, a unique feature in this area. Black Pond

is a typical "Kettle Hole" pond surrounded by a quaking bog and white cedar, red maple swamp. The property is mostly wooded and has trails, including a boardwalk around part of the bog. It was acquired through the joint efforts of well-known local conservationists, Captain Bill Vinal, the Town of Norwell, and The Nature Conservancy and was dedicated June 2, 1962.

The Reserve is leased and maintained by the Massachusetts Audubon Society and it is used for nature education and guided tours. This parcel abuts several other large parcels managed by the Norwell Conservation Commission.

The Massachusetts Audubon Society

The Massachusetts Audubon Society owns a 12-acre parcel of marsh along the North River. There are no facilities and no public access other than from the River. The land is known as the Chase Garceau land.

The South Shore Natural Science Center/Hanover YMCA (The Science Center)

The Science Center offers natural history programs for children and adults. The 27-acre parcel features self-guided nature trails through woodlands and wetlands. There are four Certified Vernal Pools on the grounds. One trail, the Tupelo Trail, is for people with disabilities and meets the American Disabilities Act standards.

Permanent Conservation Restrictions

A Conservation Restriction or CR is a legally binding agreement that divides interests in the land among two or more parties with the landowner retaining ownership of the property and the land conservation organization, such as a land trust or a public agency, holding the conservation restriction. The conservation organization is responsible for enforcing the terms of the conservation restriction to ensure that the conservation values of the property are protected in perpetuity. Conservation Restrictions are permitted under the Conservation Restrictions Act (M.G.L. Ch. 184) and must be approved by the Secretary of Environmental Affairs.

There are many forms of conservation restrictions, some permanent and some with defined time limits. Public access may be permitted but is not required. Conservation restrictions have a number of advantages: (1) they cost less than a fee simple acquisition, (2) the owner still pays real estate taxes (although at a lower rate), and (3) the owner continues to maintain the land.

As of 2012, there were seven listed conservation restrictions in Norwell, according to the Registry of Deeds totaling eleven parcels and approximately 253 acres. They range in size from 1.42 acres to 106 acres. The largest conservation restriction is held by The Trustees of Reservation on 106 acres located along the North River. This property, owned by Fred Saint. Ours, Sr., has been referred to in the past as "The Hollow" and has open fields, salt marsh, woodlands, and a historical home. Dwelley's Creek flows through the property to the North River. The Wildlands Trust of Southeastern Massachusetts holds a conservation restriction to an additional nine acres adjoining this parcel that is owned by David DeGhetto. The Barque Hill Neighborhood Association owns 64 acres abutting the North River with a CR held by the Town.

[Forthcoming: The updated inventory of conservation restrictions in Norwell according to the Registry of Deeds.]

A dedicated and thorough review of Town records may uncover additional conservation restrictions.

Agricultural Preservation Restrictions

An Agricultural Preservation Restriction (APR) is a variation of a Conservation Restriction whereby the purpose is to preserve agricultural land. The APR program pays farmers the difference between the fair market value and the agricultural value of their farmland in exchange for a permanent deed restriction that precludes any use of the property that will have a negative impact on its agricultural viability.

There is one APR in the Town of Norwell: the 71-acre Hornstra Farm property located on Prospect Street. In 1980, Albert Loring, the last member of the Loring family to farm this historic property, signed an agreement to preserve the property as a farm in perpetuity. The restriction is held jointly by the Town and the Massachusetts Department of Food and Agriculture and prohibits any construction or activity detrimental to retaining the agricultural use. It allows only the construction of houses for family members and employees and structures related to the sale of agricultural products, but only with the prior approval of the holders of the restriction. In 2009, John Hornstra, a local family farm owner, purchased the land with plans to continue the tradition of farming. Hornstra Farm raises dairy cattle, pasture and hay feed, and produces and processes milk and dairy products for sale to the local community. Hornstra's ice cream has become a regional favorite.

UNPROTECTED LAND

The term "unprotected lands" refers to properties that currently hold some conservation or recreational interest but are not protected as such in perpetuity and could be developed for other purposes in the future. Unprotected lands include:

- Town-owned lands are not protected under Article 97, such as lands held by the Recreation Commission. School athletic fields are valuable as open space at the moment but might be needed to accommodate future building additions.
- Private lands restrict land use for a short term (5-30 years) under a Conservation Restriction (CR). The most common program restricts land use to forestry, agricultural/horticultural or recreational uses under Massachusetts General Law Chapter 61, 61A, and 61B, respectively. Landowners who elect to enroll their property under Chapter 61/61A and 61B or chose to put a CR on their property do so in exchange for a sizeable reduction in property taxes on that land. If the landowner wishes to sell the property or make a change in the land use, the Town must be given the right of first refusal. With this potential, these lands are vulnerable to development and should be considered part of a strategic plan for potential conservation and/or recreation purposes.

Recreation Commission

Norwell's Recreation Commission owns and manages several public recreational areas totaling about 41 acres. These lands include Reynolds Playground on Prouty Avenue, the Woodworth Park on Main Street, Stetson Meadows recreation area off River Street, and the Ed White recreation area on Green Street. Only the Woodworth Park is protected for recreational uses in perpetuity.

Schools

Norwell's five school sites have approximately 27 acres of playing fields.

Historical Commission

The Historical Commission is a dedicated group of Norwell residents working to protect and preserve the historical integrity of the Town and overseeing two historic properties owned by the Town: the Jacobs Farmhouse and outbuildings and the Stetson-Ford House. The Jacob's Farm is protected by a historical restriction held by Historic New England, but the Stetson-Ford House, a 1700's colonial, has no preservation restriction. The Stetson-Ford House is currently listed on the National Register for Historic Places, and the Jacobs Farmhouse application for the National Register was compiled during the preparation of this updated OSRP.

Cemeteries & Burial Grounds

Norwell has nine cemeteries with known gravestone locations that are maintained privately or by the Town: the newly-built Stetson Meadows Cemetery, Washington Street Cemetery, First Parish Cemetery, Second Church Cemetery, Stockbridge Cemetery, Bowker Cemetery, Church Hill Cemetery, Pinehurst Cemetery, and the Jacobs-Collamore Cemetery. The site of the old Quaker Cemetery is unknown, but a location is presumed. A large stone marks the site of both the former Second Church Graveyard at Wilson Hill, but no gravestones remain at that location. There is a single gravesite at the Damon Cemetery off of Damon Way and a few private burial grounds and tombs throughout the Town. These cemeteries total almost 55 acres, with one of the largest being the Stetson Meadows Cemetery, which is adjacent to the Stetson Meadows Recreation and Conservation Area.

Public Access to the North River

There are two Town-owned public access landings along the North River: the Bridge Street Town landing and the Chittenden Lane landing. Utilizing Community Preservation Act funding, both landings underwent construction to improve access in 2008 and 2009. Bridge Street landing provides a launch for both motor powered and non-motorized boats, as well as two benches that overlook the River and trash receptacles. The Chittenden Lane landing, primarily used as a local fishing spot, has four parking spots, a dock, benches, and trash cans.

Chapter 61 Land

Chapter 61 of the Commonwealth's General Laws relates to the classification and taxation of forest land and forest products. Under this taxation program, parcels of 10 or more contiguous acres under an approved management plan are taxed at 5% of fair market value. Taxes for properties enrolled in chapter 61/61A are calculated based on current property use (e.g., the productive potential of the land for growing trees), instead of the fair market or development value. If the forestry use is discontinued, a penalty must be paid. When land under Chapter 61 is put up for sale, the municipality has 120 days in which to exercise its right of first refusal to purchase the land at full market value. This provision allows municipalities the opportunity to plan for the acquisition of parcels with conservation and recreation value.

[Forthcoming: Upcoming inventory of Chapter 61 parcels.]

Chapter 61A

Chapter 61A is the Farm Assessment Act that provides for the use-value assessment of agricultural and horticultural land of at least five acres. There are provisions similar to Chapter 61 regarding taxation, the penalty for discontinuing the use, and the municipality's right of first refusal when the land is put on the market. Several of the fields on Main Street are held in this program. This offers

the Town an opportunity for acquiring parcels that are priorities for maintaining Norwell's much valued rural scenic quality. Both conservation and recreation uses would apply.

Chapter 61B

Chapter 61B provides for a reduction in the tax assessment of at least 75% on parcels five acres or more that are classified as recreational, wild, or open land.

Wetlands

Norwell has an abundance of wetlands and salt marsh, totaling roughly 30% of the Town's land area. There are about 4,264 acres of wetlands and salt marsh along rivers, on municipal lands, and in residents' backyards. Wetlands are currently protected from development under the Norwell Wetlands Protection Bylaw, the Massachusetts Wetlands Protection Act, and the Massachusetts Rivers Protection Act but laws can change. The only true way to protect land is to purchase and preserve it through Article 97 status and/or Conservation Restrictions in perpetuity.

Other Town Owned Property

There are a number of other Town-owned properties that offer some conservation protection. These are lands managed by the Fire Department, Police Department, the Highway Department, and the Board of Selectmen. The Board of Selectmen oversees two soccer fields: Pine Street Fields and the Osborne Fields with 23.7 acres. None of these parcels offer any kind of long-term conservation protection other than the fact that the Town owns them. These lands are largely developed, but some have land that could be evaluated for conservation and/or recreation uses.

[Forthcoming: Updated inventory of other Town-owned parcels.]

LANDS OF CONSERVATION OR RECREATION INTEREST

In 2005, there were 3,258 acres of protected lands in Norwell that comprised 24% of the Town's area. The 2005 Open Space and Recreation Committee proposed that 30% of the Town should be protected in order to maintain its semi-rural character and ecological integrity. The 2012 Plan maintained the same goal and established a ranking system to guide conservation activities shown in Table 8. This updated 2021 OSRP pursues the same goal. Properties that fall into the protected lands category include:

- Town-owned land held in fee simple by a municipality for natural resource protection (Article 97).
- Town-owned historical land protected through a historical restriction held in perpetuity.
- State-owned park lands (Article 97).
- Private Land Trust-owned lands, held outright, with deed restrictions or through a Conservation Restriction (CR) held in perpetuity.
- Private lands that have enrolled in the state's Agricultural Preservation Restriction Program (APR).

Table 8: Open Space Criteria

Ground Water Supply (including Hanover, Scituate, and Cohasset)	
Existing Zone 1 (identified as potential ground water supply)	3 points
Existing Zone 2 (mapped recharge area surrounding ground water supply)	2 points
Existing Zone 3 (within watershed of ground water supply)	1 point
No existing or potential function as water supply	0 points
Surface Water Supply/Quality/ Soil Erosion (including Scituate, Hingham and Cohasset)	
Parcel would protect a Class A water (within 400 ft. of surface water supply & 200 ft. from tributary to surface water supply)	3 points
Parcel would protect a Class B water (within half mile of surface water supply)	2 points
Parcel would protect a Class C water (within watershed of surface water supply)	1 point
Parcel is not proximate to any surface waters	0 points
Maintenance of Biological Diversity or Wildlife Habitat	
Parcel is within Core Habitat, Supporting Natural Landscape, and certified and potential vernal pools in the NHESP Biomap	3 points
Parcel is identified as Natural Resources Priorities in the Master plan	2 points
Parcel is identified as local natural communities or is contiguous to existing habitat	1 point
Parcel does not provide significant habitat functions	0 points
Buffering Conflicting Uses	
Site buffers public site or large scale private site from conflicting adjacent land uses	3 points
Site buffers small scale private sites from conflicting uses	2 points
Site buffers sites that are not sensitive to adjacent uses	1 point
Site does not serve a buffering role	0 points
Recreational Value	
The parcel is recognized as a destination for recreational activities including potential bikeway, athletic fields and pedestrian network as outlined in the master plan and/or Open Space & Recreation Plan	3 points
The parcel meets criteria identified in the Master Plan and/or Open Space and Recreation Plan for recreation/open space	2 points
The parcel is not identified in the Master Plan and/or Open Space and Recreation Plan but provides recreational opportunities	1 point
The parcel does not provide recreational values	0 points
Scenic Views	
The parcel provides a distinctive landscape view from a public way or provides a vista from which to view significant and distinctive landscape qualities.	3 points
The parcel is associated with an identified visual element of the town including scenic roads.	2 points
The parcel provides distinctive views but is not readily accessible to the public	1 point
The parcel does not provide scenic qualities	0 points
Landscape/Greenways Context	
The parcel is contiguous to existing protected open space and recreation lands AND is identified as a greenway corridor between open spaces	3 points
The parcel is located in the “Protective River Corridor” as identified in the NSRWA’s <u>North River Mapping Project</u>	3 points
The parcel abuts existing open spaces and recreation lands	2 points
The parcel does not abut open space but is identified with a greenway corridor between existing open spaces	1 point

Lands of Interest: Norwell’s Islands, Clam Flats, and Other Land in Scituate

In 1849, Norwell (then called South Scituate) separated from Scituate and the two Towns agreed upon a division of so-called “common” land. For the sum of \$1,350 Norwell acquired an amount of real estate that included the Town common and other parcels such as the land where Cushing Hall (the old Town hall) sits today.

The Town was also granted sections of salt meadow or flats on North River. More precisely, the deed names the land: “The Gulph Island, the Middle Green Island and sunken flat, the Jacob Flat, the Northey Flat, the Great Green Island...The Great Green Flat and Hummock Flats, they being all the flats that have been annually let at auction” apparently for the purposes of shellfishing and salt haying.

Scituate renounced any claim to the land: “To them, the said inhabitants of South Scituate, their successors and assigns to their own exclusive use and behoove forever so that neither the said inhabitants of Scituate nor any person nor persons claiming by, though, or title to the above named real estate or its appurtenances or to any part or parcel thereof forever.”

The land was very valuable property in 1848 and remained so for many years. After the Great Storm of 1898 (called the Portland Gale after the steamship that sunk during the storm), the configuration of the North River changed dramatically, creating a new mouth, today known as the “New Inlet.” New beaches, channels, islands and flats appeared, changing the appearance of the Norwell property. Unfortunately, it does not seem that either town established clear boundaries after the storm, or as a result, over time, it became unclear which flats belonged to Norwell and which ones did not.

For years Norwell residents could obtain parking stickers to be able to use Scituate beaches, and a few “old-timers” still remember the free clam licenses Scituate used to provide Norwell residents. For 137 years, the Townspeople of Norwell paid taxes to Scituate on the islands and flats in the North River; the payments finally stopped in 1986. A competent title search would establish boundaries, and Norwell residents could potentially enjoy clamming, picnicking, swimming and fishing on Scituate beaches as earlier generations once did.

6. COMMUNITY VISION

DESCRIPTION OF PROCESS

This 2021 update adds to a history of OSRPs adopted in Norwell in 1977, 1987, 1997, 2005, 2010, and 2012. The 2021 OSRP reflects fundamental principles common to each of the previous OSRP’s with some adjustments as necessary to address the changing needs and desires of residents, as well as the changing challenges and opportunities for conservation and recreation.

To refine the goals of the 2021 OSRP, the OSRP Committee conducted a public outreach process, including a Town-wide survey and virtual public forum, as described in Section 2: Introduction. In particular, the virtual public forum on October 1, 2020 focused on reviewing and updating the goals. At the forum, the goals of the 2012 Plan were presented and participants were invited to respond to live polling questions about the prioritization of each 2012 goal. The results of the poll are presented in Table 9. The goals of the 2021 Plan are listed in order of priority, based on the virtual public forum poll results.

Table 9: Poll Results from Participants at Virtual Public Forum on 10/1/2020

Goal	“This goal is of highest priority.”	“This goal is still relevant but less of a priority.”	Discard: this goal has been sufficiently addressed or is less of a priority.”
1. Support passive and active recreation in balance with nature.	68%	32%	-
2. Protect quality and quantity of Norwell’s water supply.	93%	7%	-
3. Protect natural resources and promote biodiversity.	38%	62%	-
4. Protect Norwell’s scenic quality and historic resources.	59%	38%	3%
5. Overarching – sustain and protect the Town’s quality of life as an overall Town initiative.	50%	31%	19%

In addition, participants were invited to suggest new goals, and participants were able to vote the proposed goals up or down. Two of the most highly supported suggestions related to safe pedestrian and bicycle access. Based on this feedback, a new goal—“Provide a safe pedestrian and bicycle network”—has been added to the 2021 OSRP.

Discussion at the October 1 virtual public forum also revealed confusion about the purpose of Goal 5—“Over-arching: Sustain and protect the Town’s quality of life as an overall Town initiative”. Comments were also made about the need for stronger implementation of the OSRP, including the need for greater coordination between and clarity among the different volunteer committees in town. Therefore, Goal 5 was clarified to focus on implementation.

STATEMENT OF OPEN SPACE & RECREATION GOALS

Residents and community leaders have consistently sought to protect ecologically and historically valuable open space, including the Town's water supply, and provide quality recreational opportunities for its residents. The 2021 Plan Goals are:

- 1. Protect the quality and quantity of Norwell's water supply**
- 2. Provide a safe pedestrian and bicycle network**
- 3. Support and enhance passive and active recreation in balance with nature**
- 4. Protect Norwell's scenic quality and historic resources**
- 5. Protect natural resources and promote biodiversity**
- 6. Create reliable and strategic means for implementing the OSRP**

7. NEEDS ANALYSIS

The OSRP Committee determined the Town's open space and recreation needs through a combination of examining past OSRPs, public input through a Town-wide survey and a virtual public forum (as described in Section 2 Introduction), and consideration by the OSRP Committee.

A common theme across Norwell's recreation, resources protection, and management needs emerging over the course of the planning process. All three would benefit from greater overall coordination and connectivity:

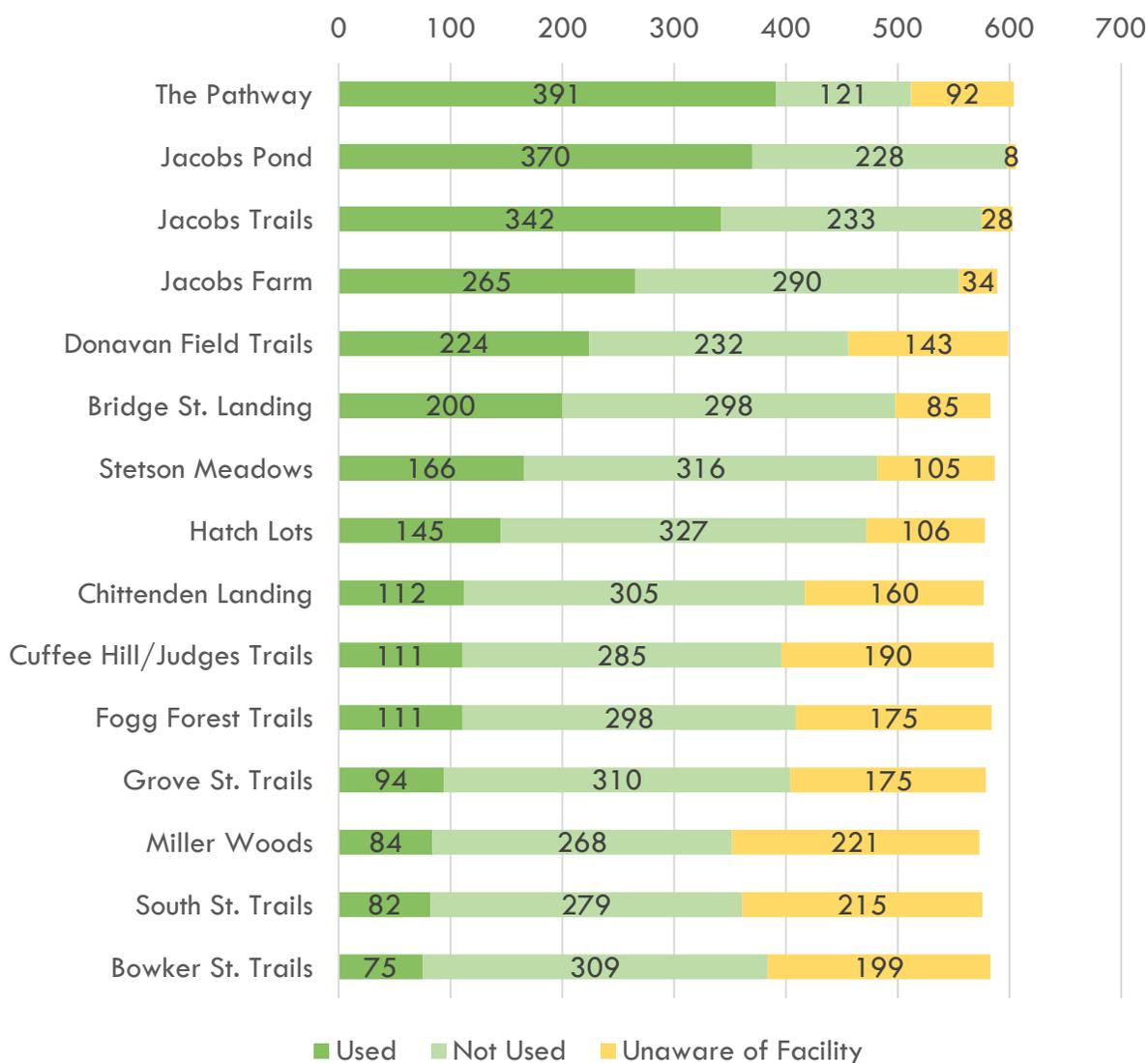
- **Recreation:** There are many trails and parks in Norwell, and the relatively new Pathway is very well-used. However, community members identified a need for greater connection between trails, parks, and sidewalks.
- **Resources protection:** There is a substantial number of parcels protected in Norwell. However, the open space inventory illustrates a fragmented landscape that would benefit from more continuity/connection between protected land.
- **Management:** A strong culture of civic engagement has resulted in several volunteer committees in Norwell. However, throughout the planning process, volunteers and staff identified the need for greater communication and coordination between the different committees and their respective efforts, as well as less reliance on volunteer labor to advance the work of the Town. Therefore, it is recommended that an OSRP Implementation Committee composed of representatives from existing Boards, Committees, Commissions, and Departments assemble and regularly meet to steward this updated OSRP. The OSRP Implementation Committee would provide strategic direction to staff, who would be primarily responsible for implementing the Action Plan.

COMMUNITY & RECREATION NEEDS

Norwell residents are fortunate to have many recreational opportunities available to them. The Norwell Recreation Department develops and oversees numerous recreation programs for residents of all ages and even non-residents when space is available. Activities sponsored by the Recreation Department provide a variety of choices for preschoolers to elders, including playgroups, sports and games, arts and crafts, summer activities, educational courses, music, drama, fitness, wellness, and field trips for all ages.

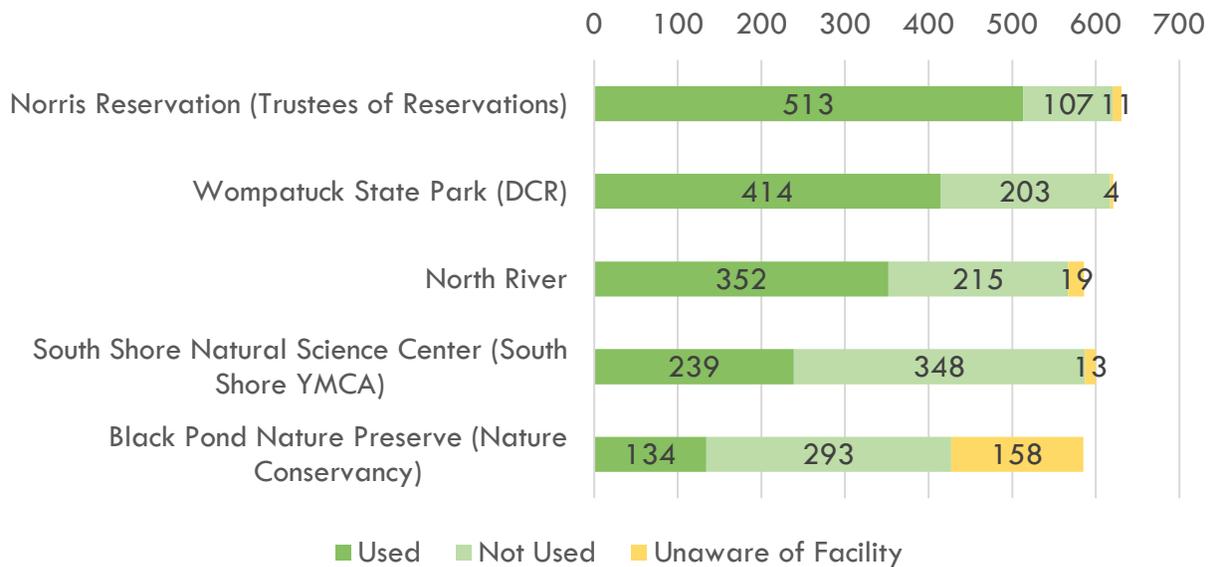
The outreach survey was designed to uncover and better understand the community’s recreation needs. The findings of the survey are illustrated and summarized below. Questions about the use of open space areas were divided into separate questions based on the owner of the area. Survey results demonstrate that the most commonly used Norwell-owned open space areas are the Pathway and Jacobs Pond and its trails; (the Pathway was not included in this question because it is not Town-owned). More than half of the respondents had visited both within the previous 18 months. However, even given that popularity, 15% of the survey respondents are unaware of the Pathway, and more than 30% of respondents are unaware of many of the Town-owned parks available to them, including Cuffee Hill and Miller Woods. This finding demonstrates the need to better inform all Town residents of existing Town resources.

Which Town of Norwell-owned parks, conservation, or open space areas have you or members of your household used for recreation or leisure purposes in the last 18 months?



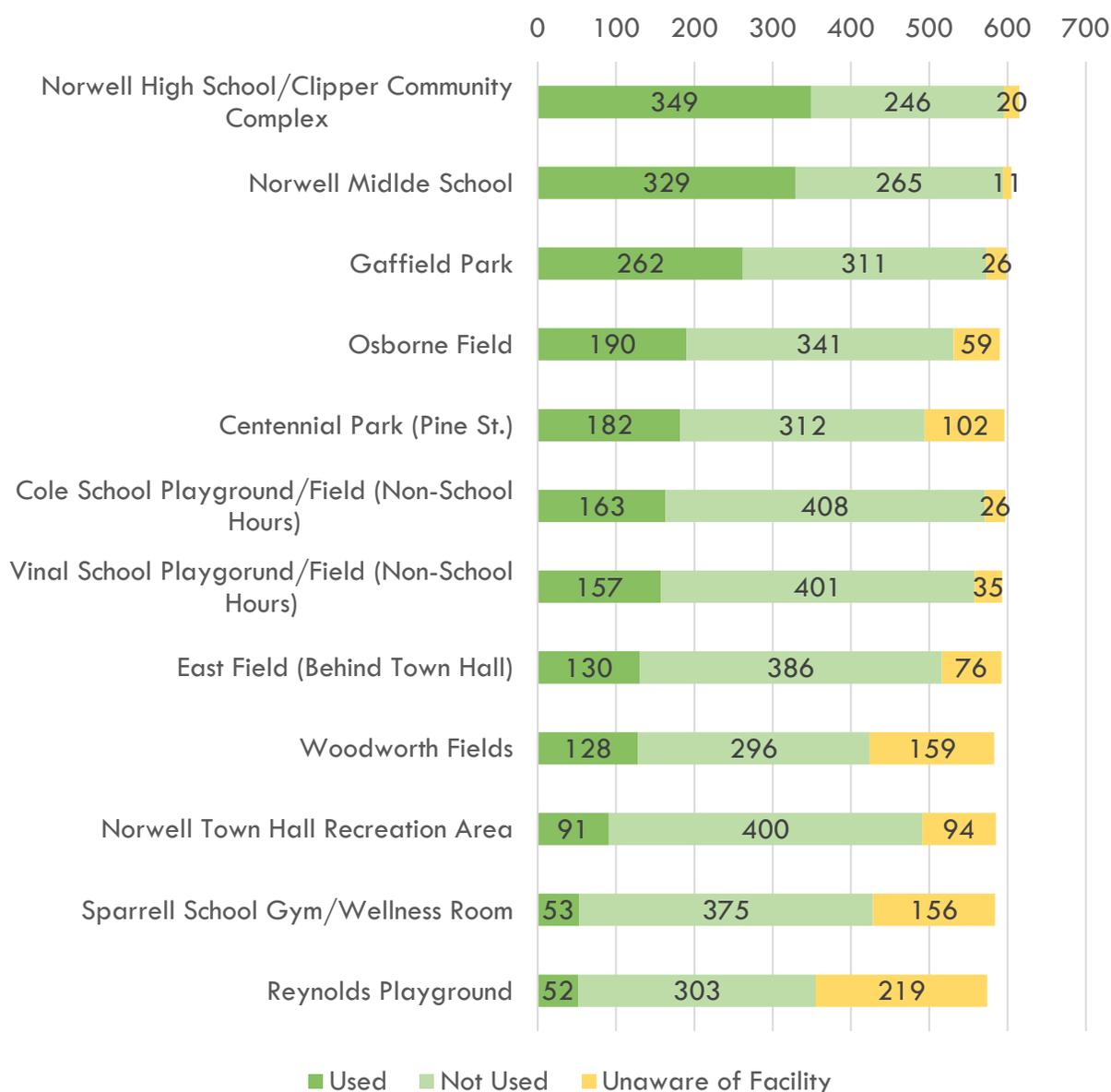
Open space areas in Norwell that are owned by other entities are also very well-used, with the Norris Reservation and Wompatuck State Park being the most commonly used among them. Almost all survey respondents were aware of these areas, the North River, and the South Shore Natural Science Center.

Which Non-Town of Norwell-owned park, conservation, recreation or open space areas have you or members of your household used for recreation or leisure purposes in the last 18 months?



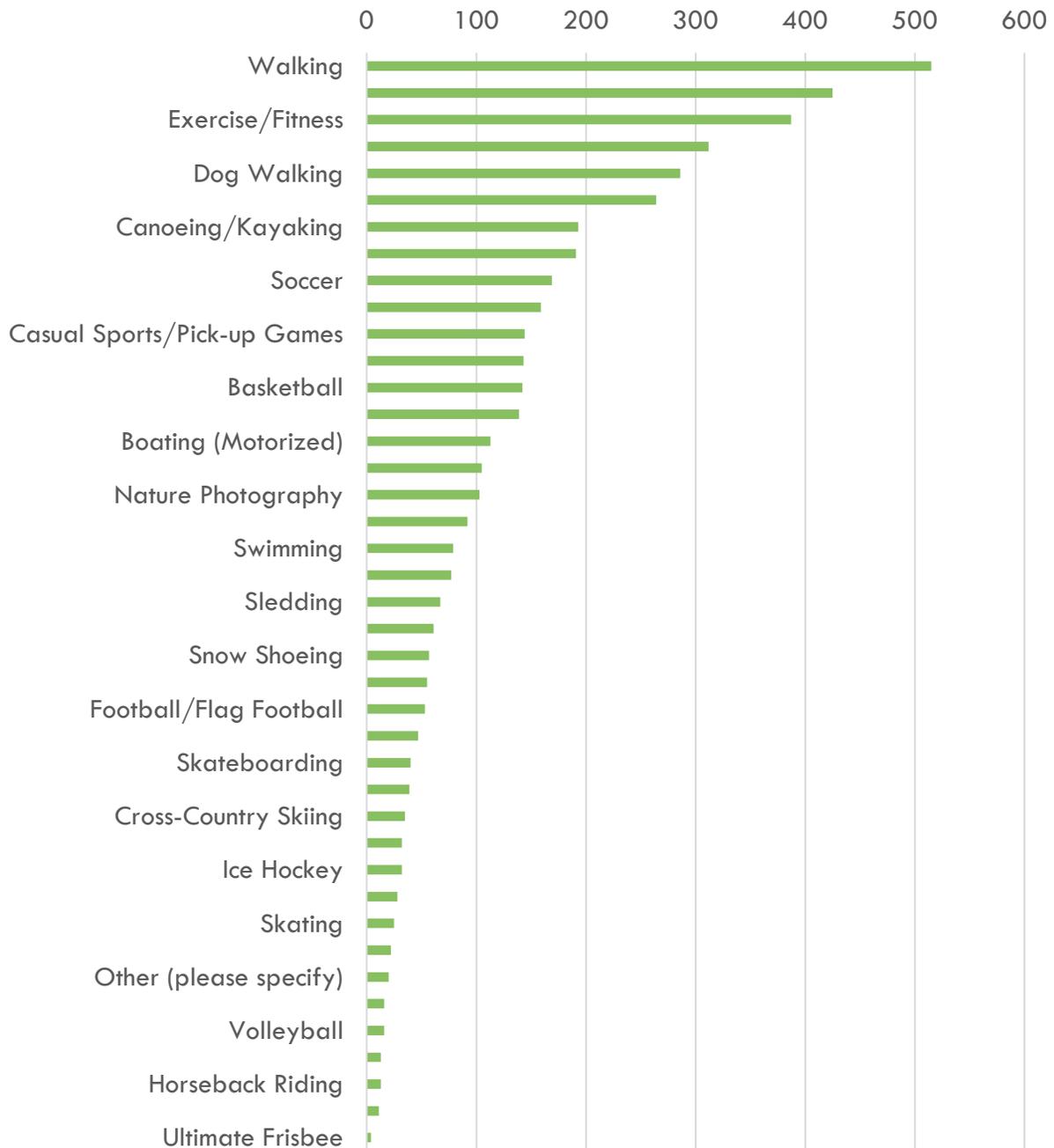
The most commonly used parks and recreational areas are the Norwell High School and Clipper Community Complex, the Norwell Middle School, and Gaffield Park. More than half of the respondents had used the High and Middle School facilities in the previous 18 months. In addition, almost all of the respondents were aware of the High and Middle School fields and Gaffield Park. The fewest number of respondents had heard of Reynolds Playground, but this is expected as Reynolds is mainly intended to serve the local neighborhood. A substantial portion of the respondents were also unaware of the Sparrell School Gym, the Norwell Town Hall Recreation Area, Woodworth Fields, East Field, and Centennial Park.

Which Town of Norwell-owned recreation areas have you or members of your household used in the last 18 months for recreation or leisure purposes?



The most common activities and sports in Norwell are walking, hiking, exercise, bicycling, dog walking, and jogging, according to the survey. Water activities are also very popular: 30% of respondents had canoed or kayaked in the previous 18 months, and 25% had fished. Similarly, team sports such as soccer and basketball are popular, with more than 20% of respondents playing both in the previous 18 months.

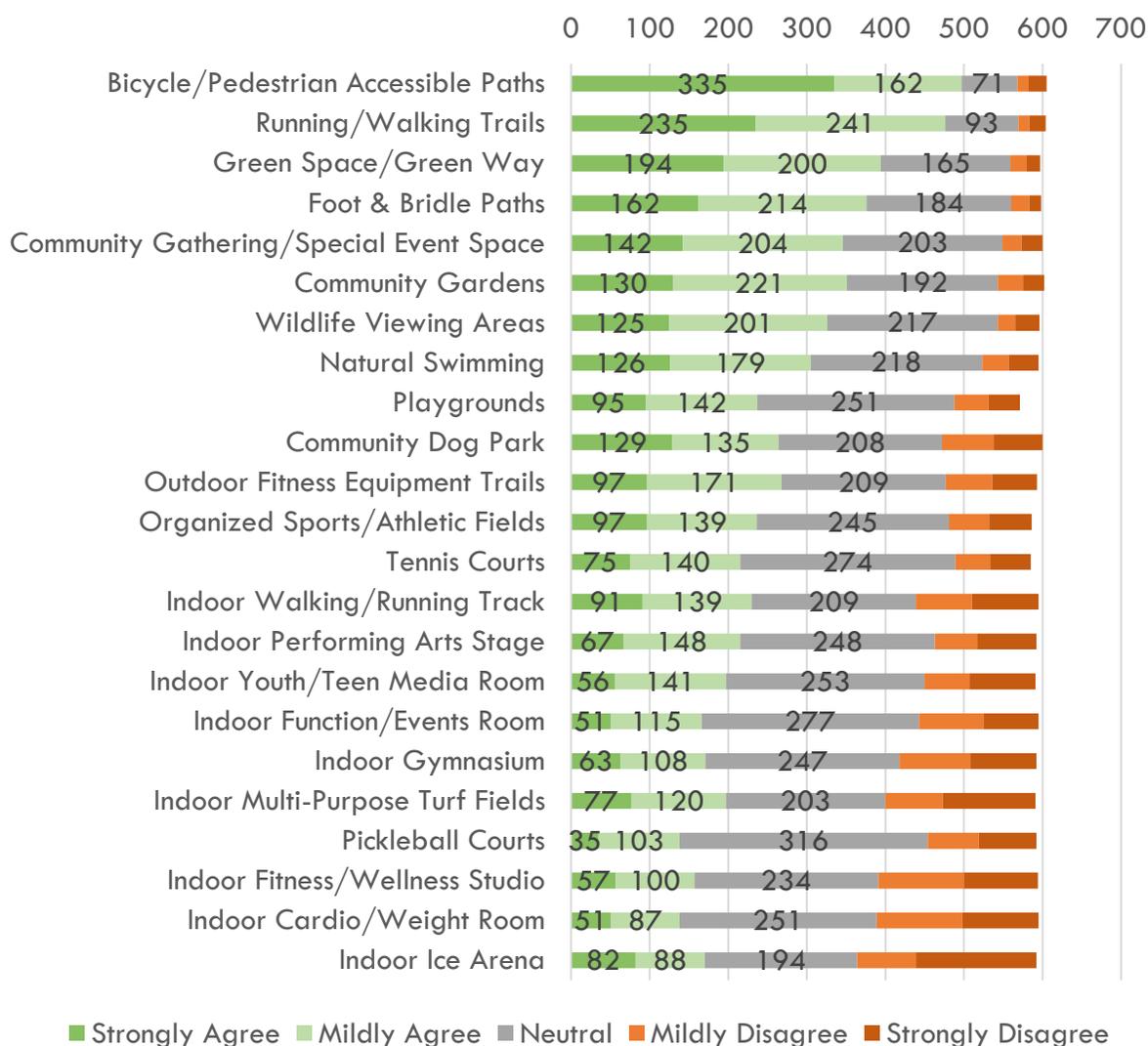
Which activities/sports have members of your household participated in the last 18 months in Town of Norwell parks, conservation, recreation or open space areas?



In terms of new facilities, survey respondents most supported more bicycle and walking paths, as well as a community gathering/event space, community gardens, and swimming facilities. Based on the survey, indoor facilities are in less demand. In particular, one question examined the support for an indoor recreation community center, and approximately half of the respondents responded in support. However, support for indoor facilities may have been impacted by the fact that this OSRP was developed during the coronavirus pandemic. The threat of spreading the virus from spending time indoors with others may have discouraged interest in indoor recreation facilities.

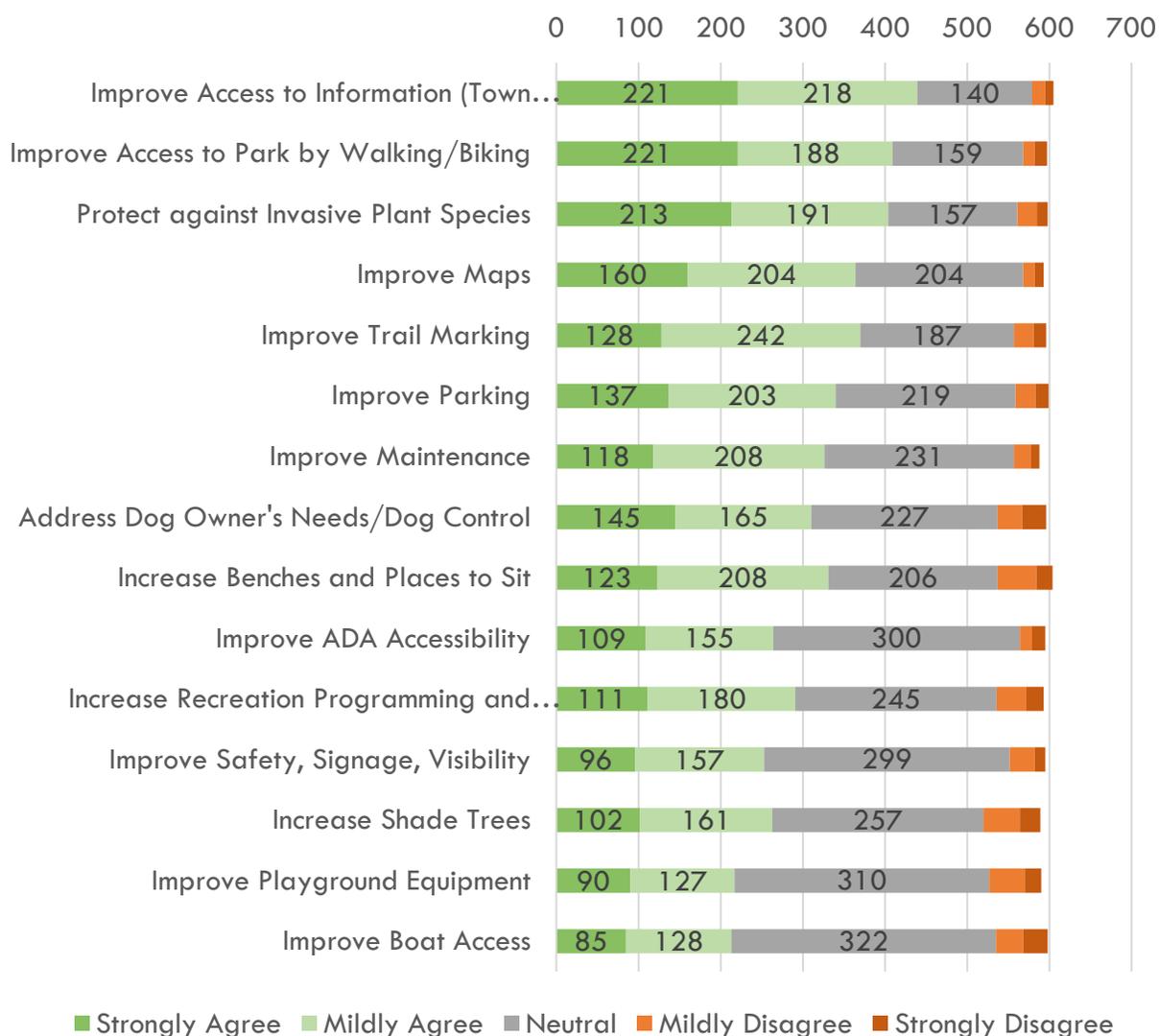
The 2012 Plan had documented strong community support for more athletic fields. However, as described in Section 2—Introduction, tremendous progress has been made in the past few years to offer a greater number of and improved athletic field space in Norwell. In result, increasing the number of and improving athletic fields is a lower priority for survey respondents.

Do you or members of your household agree with increasing the quantity and/or improving the quality of the following?



In terms of improvements to existing facilities, survey respondents most supported improving access to information, improving access to parks by walking and biking, and protecting against invasive species. The 2012 survey found a similar need among respondents for more information, maps, and signage available about areas with public trails and access. The 2012 OSRP also noted that survey respondents commented that sidewalks connecting public facilities (schools, parks, playgrounds) and along busy roadways, including in and around Norwell Center, where desired. This interest continues as the most recent survey, and the virtual public forum found strong support for more safe walking and biking paths and connections. There is relatively little demand for improved maintenance or recreational programming, suggesting that the parks are already relatively well-maintained, and the programming is meeting the community’s needs.

The following is a list of potential areas of improvements that could be made to EXISTING parks, open space, recreation and conservation areas in the next 7 years. Do you or members of your household agree that these improvements should be made?



Age-Friendly Communities

For the first time in the history of the Commonwealth, there are more individuals over age 60 than those under age 20.⁴¹ This trend will continue for many years. In 2018, Gov. Baker designated Massachusetts as an Age-Friendly State, with the goal that all 351 communities would work towards this designation.⁴² As of 2021, there are 195 communities in Massachusetts in the process of or that have successfully acquired the age-friendly status. In 2018, the Governor also introduced this designation as an option within the Community Compact and by doing so, offered funding opportunities for those communities working towards this designation. One of the areas that must be considered and addressed through the age-friendly process is that of outdoor space and buildings. Recreational programming intended for the senior population is also needed to encourage healthy lifestyles and social interaction. Norwell's Senior Center provides activities, weekday lunches, and other services to Norwell's seniors.

Statewide Comprehensive Outdoor Recreation Plan

The Statewide Comprehensive Outdoor Recreation Plan (SCORP) is a five-year plan that assesses statewide recreation demand and supply, identifies future needs, and guides state-wide outdoor recreation policies. It can also be a useful community planning tool.

In 2017, the Executive Office of Energy and Environmental Affairs (EOEEA) updated the Massachusetts SCORP to help guide the distribution of federal funding to state agencies and municipalities for the acquisition of open space, renovation of parks, and development of new parks. The goals and objectives of the 2017 SCORP are shown in Table 10.

⁴¹ Executive Office of Elder Affairs. <<https://www.mass.gov/service-details/age-friendly-massachusetts>>

⁴² <https://spark.adobe.com/page/KvwTMtXUJFNGs/>

Table 10: Massachusetts 2017 SCORP Goals and Objectives

Goal	Objective
1: Access for underserved populations	<ol style="list-style-type: none"> 1. Support the acquisition of land and development of new open spaces in areas that lack existing or useable open spaces, such as Environmental Justice neighborhoods 2. Develop parks and open space that offer amenities that go above and beyond ADA requirements for people with disabilities 3. Consider the needs of underserved demographic groups—senior citizens and teenagers—in park and open space designs 4. Encourage establishment of programming endowments
2. Support the statewide trails initiative	<ol style="list-style-type: none"> 1. Support the acquisition of land and development of new open spaces that can provide a trail network 2. Fill in the gaps of existing trail networks 3. Ensure that any existing or new trails are fully accessible to people with disabilities
3. Increase the availability of water-based recreation	<ol style="list-style-type: none"> 1. Support the acquisition of land that will provide for water-based recreation 2. Support the acquisition of land that will increase drinking water supply protection 3. Develop water-based recreational facilities, including swimming areas, spray parks, boating facilities, fishing areas, etc.
4. Support the creation and renovation of neighborhood parks	<ol style="list-style-type: none"> 1. Promote the acquisition and development of neighborhood parks where none currently exist 2. Develop amenities supported by neighborhood parks, such as playgrounds, off-leash dog parks, and community gardens 3. Work with community development organizations to improve walking access to local parks

Source: Executive Office of Environmental Affairs, 2006.

To inform the 2017 update, EOEEA conducted on-line, and phone surveys and the top 2 facilities that participants wanted to see were biking paths and hiking/walking trails, reflecting the same community needs as in Norwell.

RESOURCE PROTECTION

Impacts of Climate Change

The “2020 Norwell Community Resilience Building Workshop Summary of Findings” identifies stakeholders’ highest priority concerns about local climate change impacts. The top recommendations to improve resilience include:

- Water supply management
- Forest and tree management to address the health of trees during increased droughts, fire risk, and pests and invasive species.
- Stormwater management to address increased inland flooding and severity of storms.

Forest and tree management was also a concern raised within the OSRP Committee and in the open-ended survey responses.

Water Supply

Norwell maintains its own water supply; thus, protecting the quality and quantity has and continues to be a high priority for resource protection. Open space conservation, in the form of outright purchases or conservation restrictions on undeveloped land, is a critical strategy for protecting Norwell’s water quality. According to the 2021 OSRP survey, more than two-thirds of respondents support protecting parcels to protect the water supply. In addition, management practices that prevent unwanted pollutants from entering the groundwater supply can complement land conservation

Additionally, public awareness about water conservation and water pollution prevention is a proven way to protect water resources. The Water Department has partnered with the North and South Rivers Watersheds Association (NSRWA) to educate residents about water conservation. A portion of the Water Department budget supports the work of the Greenspaces MA Coalition, a part of the Massachusetts Bays Estuary Association, through the NSRWA. The Coalition has created guidance on mowing, pesticide alternatives, fertilizing alternatives, composting, lawn watering, automatic irrigation systems, planting beds, low maintenance plants, managing stormwater, rain gardens, and urban gardening.

Do you or members of your household agree with purchasing or otherwise protecting undeveloped properties/land for the following recreation or conservation purposes?



Connectivity

Connectivity between areas of open space supports both greater recreational opportunities and natural resources benefits. There are a large amount of parcels protected in Norwell, but many are small and fragmented. Linking natural resources and open areas increases habitat value over that realized by isolated islands of open space.

The 2005 Master Plan prioritized the creation of a network of trails, paths, and routes and identified two particular potential greenways. “Greenways” are defined as protected continuous open space corridors that contain diverse natural resources, historic sites and landscapes, and

opportunities for recreational trails. These corridors help protect unique land and water resources, create public places for passive recreational activities such as walking in the woods and picnicking, in addition to providing creative outdoor classrooms and learning places. The establishment of this network will require private stewardship agreements, conservation restrictions, and land acquisition.

As identified in the 2012 Plan, there are two potential “Greenways” in Norwell that epitomize these concepts by providing uniquely beautiful scenery along walking trails through landmasses that also provide critical wildlife habitat functions. The first and most important should encompass the Third Herring Brook from Church Hill to Wompatuck State Park because it drains the largest and least-disturbed area and contains the wells and recharge areas for most of Norwell’s drinking water. The second Greenway could be developed along the North River and Second Herring Brook from Stetson Meadows to Black Pond. These areas provide great aesthetic value but also important environmental services such as flood control, filtering and recharge of water supplies, and absorption and treatment of runoff from developed areas. These two Greenways could be the focus of a new Area of Critical Environmental Concern.

MANAGEMENT NEEDS

OSRP Implementation

It is necessary for the Town to have the tools and policies at hand to shepherd the updated 2021 OSRP and implement the action items. Based on the survey, the virtual public forum, and discussion among the OSRP Committee, the management needs are:

- Coordination between volunteer committees;
- Accountability to implement the OSRP; and,
- More staff resources.

Coordination

In order to implement the 2012 Plan, it was recommended that a new standing Open Space & Recreation Committee be formed. As stated in the 2012 Plan: “The proposed Committee would work closely with already established Town commissions, boards and departments, as well as Norwell’s citizenry, to achieve the goals and objectives set forth in the 2012 Plan and the overarching goal of setting aside 30% of Norwell as open space in perpetuity as proposed by the 2005 NOSRP Committee.” The Conservation Agent and Recreation Department worked to support a standing Committee but found it difficult to maintain engaged membership. Volunteers serve on numerous Committees in Town and already give generously of their time. In fact, there have been comments in response to the survey, at the virtual public forum, and informally with Town staff that there is a proliferation of volunteer committees. Therefore, the 2021 OSRP aims to improve implementation by leveraging existing resources and supporting better coordination. In addition, the new goal to improve pedestrian and bicycle infrastructure incorporates new entities in the implementation of the 2021 OSRP, including the Complete Streets Committee and the Highway Department.

In order to implement the action items with efficient use of existing resources and time, this OSRP recommends the assembly of an OSRP Implementation Committee composed of a representative from the existing Boards, Committees, Commissions, and Departments critical to successful implementation. The OSRP Implementation Committee will provide strategic direction, while Department staff would perform the majority of the work of actual implementation.

Accountability

Currently, there is no system of accountability for OSRP implementation and monitoring. The newly formed OSRP Implementation Committee would provide oversight and accountability through monitoring progress. In particular, regular reports to the public about the status of the Action Plan items will help strengthen accountability. Where possible, staff will assume responsibility for implementing the Action Plan in order to relieve the reliance on volunteer labor and increase accountability.

Staffing

Currently, the Conservation, Recreation, and Planning Departments have one full-time staff and a part-time administrative assistant. Survey responses demonstrate relative satisfaction with recreation programming. In order to implement the actions in this updated OSRP, better serve youth and seniors, and fully meet the potential of active and passive recreation, additional staffing resources may be needed.

Strategic Conservation

Effective land conservation and stewardship requires careful preparation and management. The 2021 OSRP Committee supports the 2005 and 2012 Committee's goal of protecting 30% of Townlands. To meet the goal of protection of 30% of Townlands, the Town needs to protect approximately 500 acres. Some of this goal will be met through the review process and proper recordings of past transactions, and the remainder will be met through strategic planning, outreach, and future transfer and acquisition of properties.

[Forthcoming: An updated estimate of the amount of land needing protection to meet a 30% goal.]

Parcel Data and Ownership

Moving forward, the 2021 OSRP Committee recommends a town-wide review of conservation, open space, and recreation properties and updated records and maps. As part of this effort, the Committee suggests a thorough review of Norwell's Assessor's records, Conservation Commission records, including Orders of Conditions and Town Meeting records, to establish the full and accurate number of conservation restrictions that exist in Town. In addition, there may be more unrecorded conservation restrictions and easements that would be found through a thorough title search of land ownership. Identifying and mapping the full body of conservation restrictions and easements would be extremely helpful to future strategic land management planning.

Change of Use

Preparing for potential land-use changes is an essential component of conserving open space. Accurate records are necessary for effective ranking and decision-making. In addition, identifying individuals who can build relationships with families, corporations, land trusts, and non-profit organizations interested in conserving land is a key element to a future potential change of use.

Town-owned land not held under Article 97 should be evaluated to see if some lands could be better managed or developed to meet Town goals. Townland that abuts neighborhood areas could be developed for small community parks. Other lands could be developed for bridle paths or more walking trails. Townland with unique or rare environmental features could be transferred to the

Conservation Commission to be held under Article 97. It would greatly benefit the Town to conduct a thorough title search to settle land ownership questions and review management and use status.

Chapter 61, 61A and 61B properties are afforded favorable taxation rates to maintain the intended classification and utilization of those properties as forest land; products, agricultural and horticultural land; and recreation; and wild or open land. When the owners of these properties consider removing these favorable classifications for other options such as development, the Town is granted the right of first refusal. Accurate reporting on these properties is crucial for strategic planning and budgeting to conserve these properties as appropriate.

Land Management Plans

Norwell owns several special parcels of open space that can support more than one activity. Plans for these areas, prepared historically by volunteer effort, encourage use while preserving natural function and beauty. Following up the successful efforts to create Land Management Plans for Stetson Meadows, the Donovan Farm, and Jacobs Pond, the 2021 OSRP seeks action to create Land Management Plans for Fogg Forest, Miller Woods, Hatch Lots, the combined Donovan/Wildcat Trails, and Cuffee Hill properties.

The 2021 OSRP Committee proposes that these Land Management Plans should be consolidated into one booklet and archived digitally for easy reference and access by individuals interested in or assigned to implement the plans. As new Land Management Plans are developed and adopted, the final version should be added to the archives. With time, the value of these individual land management plans might go beyond maintenance and improvement and become the basis for a comprehensive town-wide land management plan that would include land acquisition focused on priority ranked properties. Additionally, the health of conservation lands requires the implementation of invasive species and forestry management plans.

Conservation Restrictions

In the past, the Community Preservation Committee (CPC), as well as the Conservation Commission, had evaluated using one of the local land trusts to hold conservation restrictions on the properties the Town acquires through CPA funding and through Commission acquisition. The Maxwell Trust, Ltd. primarily focuses on protecting land in Scituate. They have expressed an interest in working with the CPC. Wildlands Trust of Southeastern Massachusetts focuses, as the name says, on lands in Southeastern Massachusetts but has also expressed an interest in working with the Conservation Commission and CPC. The 2021 OSRP Committee suggests that the creation of a Norwell-based land trust be explored, while simultaneously, a renewed effort is made to establish working relationships with other land trusts, non-profit organizations, corporations, and residents that might be interested in establishing conservation restrictions on their land in Norwell.

8. GOALS & OBJECTIVES

Norwell's past Open Space & Recreation Plans generated four fundamental goals with associated objectives focused on protecting the Town's natural resources, water supply, and promoting recreation while maintaining the Town's unique aesthetic quality of life. The 2012 Plan added an overarching goal focused on incorporating the objectives and action items of the four existing goals into a town-wide approach to channel and maximize effective Town participation into a united, strategic approach. The 2021 OSRP includes a new goal in response to community input gathered during the survey and virtual public forum.

The fulfillment of all six goals, including the over-arching goal, will be achieved through cooperation at all levels of Town government, the involvement and leadership of dedicated residents, and strategic partnerships with other local and regional organizations. By improving workflow, collaboration, documentation, and planning, the entire Town benefits from the addition of open space and improved recreation activities.

OPEN SPACE & RECREATION GOALS AND OBJECTIVES

Goal 1: Protect the Quality and Quantity of Norwell's Water Supply

- A. Acquire land and/or easements/restrictions to protect water supply quality, quantity, and recharge
- B. Promote water conservation through public education, conservation plans, and prevention of stormwater runoff and water diversions
- C. Protect drinking water quality through best management practices available

Goal 2: Provide a safe and convenient pedestrian and bicycle network

- A. Provide a network of ADA accessible sidewalks and walking trails to connect key destinations
- B. Provide a network of safe bicycle infrastructure to connect key destinations
- C. Improve access with seamless connections between existing walkways, trails, bikeways, parks, and open spaces

Goal 3: Support and Enhance Passive and Active Recreation in Balance with Nature

- A. Support and enhance recreation facilities and programs
- B. Acquire space for active and passive recreation
- C. Improve public awareness of and involvement in recreational resources
- D. Enhance North River access
- E. Increase accessibility

Goal 4: Protect Norwell's Scenic Quality and Historic Resources

- A. Identify scenic, cultural, and historical resources
- B. Protect identified resources
- C. Promote historical knowledge

Goal 5: Protect Natural Resources and Promote Biodiversity

- A. Preserve 30% of Norwell as Open Space (continuation of 2005 goal)
- B. Research and inventory unique habitats and natural resources

- C. Acquire land and/or easements/restrictions to protect natural resources and biodiversity
- D. Improve management of current Town-owned properties
- E. Engage citizens and seek to increase awareness and appreciation of the environment, land conservation, and natural resource issues

Goal 6: Create reliable and strategic means for implementing the OSRP

- A. Promote effective coordination, accountability, and resources allocation amongst municipal Boards, Committees, Commissions, and committees, Boards, and Departments
- B. Update Norwell's database of conservation and recreation parcels
- C. Engage in strategic planning utilizing open space criteria for acquiring properties for recreation, open space, and conservation purposes
- D. Develop/Feasibility study for fundraising, Grants, and other funding sources
- E. Collaborate with neighboring towns' Open Space & Recreation Committees

9. ACTION PLAN

The Action Plan presented below is a combination of short- (3-6 months), mid- (6-9 months), long-term (9-12 months), and ongoing (12+ months) strategies for the years 2021-2028. Implementation of each action will require the coordinated participation of multiple entities, including Boards, Commissions, Committees, and Department staff. However, one “Lead” entity has been assigned for each action. The “Lead” is intended to be primarily responsible for overseeing the action item to completion. Once the OSRP Implementation Committee is established, the “Lead” may be adjusted based on the Implementation Committee’s suggestion. This Action Plan is meant to be used in conjunction with other municipal planning documents, and each recommended action item is subject to additional Town approval and/or appropriation as necessary. Some action items require new funding, for which potential sources are listed; others can be led by volunteer efforts or can be integrated into the existing operations of the respective party without the need for new funding.

The following abbreviations are used in the Action Plan:

Athletic Fields Committee (AFC)
Board of Appeals (ZBA)
Board of Assessors (BOA)
Board of Health (BOH)
Board of Selectmen (BOS)
Capital Budget Committee (CBC)
Commission on Disabilities (COD)
Community Preservation Committee (CPC)
Complete Streets Committee (CSC)
Conservation Commission (CC)
Conservation Department (CD)
Council on Aging (COA)
Highway / Tree & Grounds Departments (H/T&GD)
North and South Rivers Watershed Association (NSRWA)
Open Space & Recreation Committee (OSRC)
Pathway Committee (PC)
Planning Board (PB)
Planning Department (PD)
Recreation Commission (RC)
Recreation Department (RD)
School Committee (SC)
Sports Organizations (SO)
Town Counsel (TC)
Town Meeting (TM)
Town Treasurer-Collector (TTC)
Water Department (NWD)

GOAL 1: Protect the quality and quantity of Norwell's water supply				
	Action	Lead	Time Frame	Funding Source
Objective A: Acquire land and/or easements/restrictions to protect water supply quality, quantity, and recharge				
1.1	Identify areas for future potential well sites, as well as parcels for acquisition to protect the aquifer and/or that are contiguous to Zones II and III.	NWD	Ongoing	WD, TM
1.2	Determine lawful claim of all municipal properties with uncertain ownership to ascertain which parcels are protected for water supply purposes in perpetuity.	NWD, TC	Mid-Term	WD, TM
Objective B: Promote water conservation through public education, conservation plans, and prevention of stormwater runoff and water diversions				
1.3	Create and implement public outreach initiatives and educational materials that promote using water conservation measures such as NSRWA "GreenScapes" Program that teaches homeowners how to create beautiful landscapes while protecting water resources.	NWD	Ongoing	WD, TM
1.4	Analyze possibility of a bylaw limiting the square footage of lawns that can be installed as part of new construction.	NWD	Mid-Term	WD, TM
Objective C: Protect drinking water quality through best management practices available				
1.5	Distribute information on Best Management Practices for landowners within water supply areas.	NWD	Ongoing	WD
1.6	Display information on NPDES Phase II stormwater regulations in the Town Hall, Library and on the town's website.	NWD	Short-Term	WD, TM

GOAL 2: Provide a safe and convenient pedestrian and bicycle network				
	Action	Lead	Time Frame	Funding Source
Objective A: Provide a network of safe and accessible sidewalks, walking trails, and bicycle infrastructure to connect key destinations.				
2.1	Plan for, reach out to landowners, and promote connections between existing sidewalks and trails.	CSC	?	?
2.2	Plan for an install protected bike lanes between key destinations.	CSC, TSC, H/T&GD	Long-Term	N/A, TM
2.3	Continue the “Pathways Committee” to further the development of a town-wide bicycle and pedestrian path system that links schools, recreation facilities, commercial areas, the commuter rail station; & other neighboring towns’ trail systems.	PC	Ongoing	TM
2.4	Incorporate Complete Streets Prioritization Plan into roadway resurfacing activities	CSC, H/T&GD	Long-Term	N/A, TM
Objective B: Expand and improve trail system for passive recreation.				
2.5	Complete construction of path system in the Black Pond Bog areas, including linking the Cuffee’s Lane Property.	PC, CD, CC	Long-Term	CPC, TM
2.6	Develop Feasibility Study in coordination with NSRWA regarding the Third Herring Brook Trail to extend from the South Shore Natural Science Center to the YMCA.	CD, CC, PC	Mid-Term	TM
Objective C: Promote safe and healthy walking and biking.				
2.7	Create signage, programs, and events to make existing sidewalks, pathways and trails more dynamic and invite more usage.	PC, CC, CSC	Mid-Term	CPC, TM
2.8	Create singular town-wide map depicting existing trail systems and character (to inform whether walkable/bikable) as well as roadways and notable locations/destinations	?	?	?

GOAL 3: Support and enhance passive and active recreation in balance with nature				
	Action	Lead	Time Frame	Funding Source
Objective A: Support and enhance recreation facilities and programs				
3.1	Develop and implement maintenance plan for Town/School athletic fields and playgrounds, including a long term capital budget &/or bonding plan.	CBC, RD, AFC	Long-Term	TM, CBC, CPC
3.2	<p>Determine needs, priorities, feasibility, and funding resources for adding or improving active recreation facilities based on data from the 2012 Town of Norwell Athletic Fields Assessment & Master Plan (Gale) and Town of Norwell Open Space & Recreation Plan Community Survey (2020)</p> <ul style="list-style-type: none"> - Feasibility Plan/Needs Assessment to investigate developing 6+ Acres off South St. (abutting NHS and New Library) for Recreational Purposes (i.e. athletic fields, facilities, park, community recreation/gathering space etc.) - Feasibility Plan/Needs Assessment to investigate developing: <ul style="list-style-type: none"> • 20+ Acres on Wildcat Lane for Recreational Purposes (i.e. athletic fields, facilities, park, community recreation/gathering space etc.) • Green St. /Edward White Area for Recreational Purposes (i.e. athletic fields, facilities, park, community recreation/gathering space/trail connection etc.) • West Side of Osborne Fields to expand playing area for soccer/MPR sports. - Feasibility Plan/Needs Assessment/Maintenance Plan for Norwell Schools Grass Fields (JV Grass Soccer Field, JV Baseball Field, NHS Front Field, Vinal School Ballfields, Cole School Ballfield/Grass Fields and NHS Tennis Courts) - Consider existing schools, town buildings or facilities for reuse or development for Open Space preservation or development for recreational purposes based on needs identified in GALE 2012 or OSRP 2020. 	CBC, RD, AFC, SC	Short-term	TM, CBC, CPC
3.3	Implement a maintenance/usage plan for efficient use of fields & facilities in order to reduce excessive wear.	RD, RC, AFC	Long-Term / Ongoing	CBC, TM
3.4	Develop Memorandum of Understanding with Youth Sports Organizations and other user groups to define expectations and responsibilities of maintenance at Woodworth and Osborne Ballfields	RD, RC	Mid-term	RD
3.5	Implement programming to improve community gathering at underused facilities, such as Cushing Center, Pine Street, and Town Center.	RD, RC	Ongoing	RD, TM
3.6	Develop a land use plan for Cushing property.	?	?	?

3.7	Identify a “community recreation area” for a picnic pavilion & play area	RD, RC, AFC	Long-Term / Ongoing	RD, TM
3.8	<p>Improve variety of active recreation opportunities for all age groups and abilities including adults and Active Aging Adult population (50+, 70+)</p> <ul style="list-style-type: none"> -Hire staff or volunteer to work collaboratively with Council on Aging, Recreation Department, Library, and Conservation Department to develop and implement programming. Through staff, programming, signage, and multi-media marketing/communication plan improve awareness and communicate benefits and value of Town’s open space and recreation amenities to Norwell residents. Develop programming to make all recreation areas more dynamic and active to all residents. 	RD, RC, COA	Long-Term	RD, TM
3.9	Encourage Norwell Recreation programming and Town recreation spaces and facilities meet local, statewide and NRPA benchmarks based on town size, population, per capita, etc.	RD, RC,	Mid-Term	RD, TM
3.10	Encourage collaboration between Council on Aging and Recreation Departments and other Town Staff and organizations to obtain Massachusetts “Age Friendly Community”	RD, RC, COA	Ongoing	RD, CD, TM
3.11	Research and pursue the creation of a community garden.	CC	?	?
3.12	Promote safe and healthy recreation options for all ages and abilities during the COVID pandemic.	RD, RC	Short-Term	RD, TM
Objective B: Acquire space for active recreation (see Goal 2, Objective B regarding passive recreation)				
3.13	Encourage or require (wherever possible) adequate open space and park & recreation facilities in new residential & commercial developments and encourage private developers to add amenities such as playgrounds, trails, tennis/basketball court, softball field, etc. (State law specifically prohibits requiring open space within developments as a condition of approval unless fair market value is paid to the developer)	PB, RC	Long-Term	N/A
3.14	Continue to maintain, improve and acquire land for active recreation – for example playing fields. Engage in strategic planning for acquiring, improving and maintaining properties for recreation.	RD, RC, CPC	Ongoing	RC, TM
3.15	Investigate & develop a strategy for the usage of upland tax title properties to develop active recreation areas for neighborhoods and community-wide usage.	RD, RC, TTC	Mid-Term	RD, TM
Objective C: Improve public awareness of and involvement in recreation resources				
3.16	Establish community groups to help maintain trails on town-owned conservation lands and for planning assistance for playgrounds, athletic fields, and trails.	CD, CC	Ongoing	N/A
3.17	Actively distribute, post on-line, and update as needed the Town trail map.	CD, CC	Ongoing	CPC, TM

3.18	Create, improve, and maintain signage to increase awareness of an access to conservation and recreation areas.	CD, CC	Ongoing	CPC, TM
3.19	Provide updates regarding trails and passive recreation to the Recreation Department to incorporate in their communications.	CD, CC, RC	Ongoing	N/A
3.20	Collaborate to develop dynamic programming at trails and conservation areas.	RD, CC	Ongoing	?
Objective D: Enhance North River access				
3.21	Improve public access, parking, signage along the North River by acquiring land, promoting existing access points, and meeting ADA compliance.	CD, CC, NSRWA	Ongoing	CPC, TM
3.22	Do title search of Scituate and Norwell boundaries to potentially restore clamming, picnicking, swimming and fishing on Scituate beaches as prior Norwell generations did.	CD, CC, TA	Ongoing	N/A
Objective E: Increase accessibility				
3.23	Identify and upgrade existing open space and recreation spaces to meet ADA/MAAB accessibility standards	COD, RD, RC	Ongoing	TM
3.24	Proactively consider ADA/MAAB accessibility standards in any new open space and recreation projects	COD, RD, RC	Ongoing	TM

GOAL 4: Protect Norwell's scenic quality and historic resources				
	Action	Lead	Time Frame	Funding Source
Objective A: Identify scenic, cultural, and historical resources				
4.1	Continue to update Norwell's Survey of Historic Resources.	HC	Long-Term	N/A
4.2	Identify priority areas for protections that preserve the scenic and rural qualities of Norwell.	CD, CC, CPC	Long-Term	N/A
4.3	Identify priority areas that preserve the archeological resources of Norwell.	HC	Long-Term	N/A
Objective B: Protect identified scenic, cultural, and historical resources				
4.4	Protect scenic and historic landscapes and structures by acquiring conservation, agricultural or historical restrictions on identified resources.	HC, CD, CC	Long-Term	N/A, TM
4.5	Create outreach materials explaining how historical preservation benefits Norwell's scenic quality.	HC	Long-Term	N/A, TM
4.6	Create additional outreach materials related to scenic roads.	HC, PB	Mid-Term	N/A, TM
4.7	Pursue design guidelines for the Town Center.	HC, PB, PD	Long-Term	N/A, TM
4.8	Revisit the appropriateness of Local Historic Districts in Norwell.	HC	Long-Term	N/A
Objective C: Promote historical knowledge and improve public awareness of Norwell's historical features.				
4.9	Create, improve and maintain signage to improve awareness of historical features, specifically Cuffee's Land on Mt. Blue Street and Native American trail predating Wildcat Trail.	Historical Society, HC	Long-Term	N/A, TM
4.10	Create plan that identifies and markets Scenic, Cultural, and Historic Sites in Norwell through social media, website, print media and improved signage.	HC	Long-Term	N/A

GOAL 5: Protect Norwell's natural resources and promote biodiversity				
	Action	Lead	Time Frame	Funding Source
Objective A: Preserve 30% of Norwell as open space				
5.1	Protect an additional 500 acres, using the Open Space Criteria in Section 5. <i>[Forthcoming: Upon completion of the Open Space Inventory, the estimated additional acres needed to reach the goal may be adjusted.]</i>	CD, CC	Long-Term	CPC, TM
5.2	Employ the Community Preservation Act for the acquisition of open space as well as funding recreation, historical resources and affordable housing initiatives.	CPC	Ongoing	CPC, TM
5.3	Investigate feasibility of developing a Land Trust in Norwell.	CD, CC, CPC	Long-Term	CPC, TM
5.4	Reach out to residents in order to seek new land acquisitions opportunities.	CD	Mid-Term	CPC, TM
5.5	Pursue acquisition of land and/or restrictions/easement to connect open space acres.	CD	Mid-Term	CPC, TM
5.6	Create outreach materials for landowners that present possible options and benefits of land preservation.	CD	Mid-Term	CPC, TM
5.7	Adopt a parcel ranking system, to identify priority parcels, for land acquisition or conservation purposes.	CD, BOA, TTC	Mid-Term	CPC, TM
5.8	Conduct strategic outreach to land owners.	CD, BOS, TC	Long-Term	TM
5.9	Strategically plan for the transfer of 61, 61a, 61b properties.	CD, BOA, TTC, TC	Mid-Term	CPC, TM
Objective B: Research and inventory unique habitats and natural resources				
5.10	Prioritize lands for protection based on unique community habitats and species, including Natural Heritage and Endangered Species Program (NHESP) BioMap2, Living Waters, Potential and Certified Vernal Pools and Priority and Estimated Habitats, and other relevant reports and criteria.	CD, CC	Long-Term	CPC, TM
5.11	Develop bio-inventories of unique habitats and species.	CD, CC	Long-Term	CPC, TM
5.12	Identify potential vernal pools that are located on Town property that could be developed, or that are located on private property using the Natural Heritage and Endangered Species Program (NHESP) latest MassGIS data layer. Survey the vernal pools on developable Town property and, if they meet certification criteria, submit the necessary information to NHESP for their certification. Reach out to landowners with potential vernal pools on their properties and offer to survey for certification, or otherwise offer information as to the environmental benefits of certification as well as other considerations. - Evaluate conservation land on River Street, presumed to be a wet meadow.	CD, CC	Long-Term	CPC, TM
5.13	Continue to investigate (on Town-owned land or with private property owner permission), promote, educate, and certify other Potential Vernal Pools not on the latest MassGIS data layer.	CD, CC	Ongoing	CPC, TM
5.14	Pursue bylaw amendments to initiate additional review thresholds within unique and special habitat areas, such as	CD, CC	Long-Term	N/A

	Important Bird Areas (IBAs) around the North River. Focus on endangered, threatened and species of concern, (e.g., Eastern Box Turtle), species of conservation interest in Massachusetts (e.g. Marsh Wren).			
Objective C: Acquire land and/or easements/restrictions to protect natural resources and biodiversity				
5.15	Acquire lands or conservation restrictions on parcels that are contiguous with existing open space, have unique environmental features, will buffer sensitive ecological resources, or provide unfragmented habitat for wildlife.	CD, CC, CPC	Long-Term	CPC, TM
5.16	Determine lawful claim of all municipal properties with uncertain ownership to ascertain which parcels are protected for natural resources purposes in perpetuity.	CD, BOA, TTC, TC	Mid-Term	CPC, TM
Objective D: Improve management of current Town-owned properties				
5.17	Research and pursue funding options, in addition to CPA, for maintenance and management of open space.	CD, CC, CPC	Long-Term	CPC, TM
5.18	Develop a forest management plan, with particular focus on fire risk management.	CD, CC, CPC, H/T&GD	Long-Term	CPC, TM
5.19	Continue management plans for Fogg Forest, Miller Woods, Hatch Lots, Cuffey Hill, Jacobs Pond, Wildcat/Donovan, Stetson Meadows.	CD, CC	Long-Term	CPC, TM
5.20	Develop invasive species management program, including protecting the Hemlock Hardwood swamp from the infestation of the Hemlock Woolly Adelgid.	CD, CC	Long-Term	CD, TM
5.21	Create management plans for the following special feature areas: Third Herring Brook, Black Pond (in coordination with the Nature Conservancy), areas abutting Wompatuck State Park, and the North River.	CD, CC	Long-Term	CD, TM
5.22	Create management plans for stream corridors or “Greenways.”	CD, CC	Long-Term	CD, TM
5.23	Create a recreation trail scorecard with identifiable standards; initiate school group projects to grade the trails throughout Norwell.	CD, CC	Long-Term	CD, TM
5.24	Transfer Town lands with unique and rare environmental features/values to the Conservation Commission.	CD, CC	Long-Term	CD, TM

GOAL 6: Create a reliable and strategic means for implementing the OSRP				
	Action	Lead	Time Frame	Funding Source
Objective A: Promote effective coordination, accountability, and resource allocation amongst Boards, Committees, Commissions and Departments.				
6.1	Establish a permanent OSRP Implementation Committee to meet regularly to monitor progress on implementing OSRP actions.	?	3-6 months	?
6.2	Establish a communication plan and publicize findings on status and implementation of OSRP action items to encourage accountability.	OSR P-IC	ongoing	?
6.3	Research and pursue, if needed, additional funding and staff for monitoring and implementation of the plan.	?	9-12 months	?
Objective B: Update Norwell's database of conservation or recreation parcels.				
6.4	Update town's GIS data layer , including accurately identifying high priority parcels.	BOA, PD	ongoing	?
6.5	Organize, and convert Conservation Department files to electronic format (e.g.) including at least order of conditions and conservation restrictions.	CD	ongoing	?
6.6	Create a comprehensive conservation restriction and easement list.	CD	ongoing	?
6.7	Develop procedure for town-acquired property to properly register deed and post it on-line for general and ease of use, including all classifications and restrictions.	BOS, BOA, PD	3-6 months	?
6.8	Ensure the BOA has up-to-date and accurate information regarding town-owned conservation & recreation properties, conservation restrictions/easements and special classifications.	CD, BOA	6-9 months	?
6.9	Conduct a thorough title search of Town records to settle land ownership questions to determine management and use status, and to plan for acquisitions.	TC, BOA, CD	?	?
Objective C: Collaborate with neighboring Towns, non-profits, and other entities				
6.10	Collaborate with neighboring Towns, the State, land trusts, and other entities to promote conservation and recreation, for general public benefit.	BOS, CD, CC	ongoing	?
6.11	Continue participation in South Shore Climate Resilience Network.	CD	Ongoing	
6.12	Convey all conservation restrictions to a Land Trust or similar entity for all Open Space and Recreation lands.	CPC, CC, BOS	ongoing	
6.13	Partner with NSRWA to hold informational seminars for private and non-profit landowners regarding land protection strategies and tools.	CC, CD	ongoing	?
6.14	Acquire parcels or conservation restrictions for habitat protection on First Herring Brook through collaborating with Norwell property owners, the Towns of Scituate and Hanover, and/or the Trustees of Reservations.	TC, BOS, CC, CD	ongoing	?