Chapter 8
Natural Resources, Open Space & Recreation

Beaches, marshes, farm fields, pastures, and views of Merrimack River form Newburyport's heritage landscapes, with many open spaces providing habitat for endangered, rare, and threatened species. More than 20 parks offer residents and visitors the opportunity for wholesome and healthful recreation and lifestyle opportunities, while local regulations and permitting processes seek to encourage the incorporation of green infrastructure in development projects to assist in the provision of clean air, clean water, storm water dispersal and noise attenuation. This chapter provides a structure for ongoing efforts to protect and manage the City's natural areas, to maintain, expand and improve its parks and recreational spaces, and to continue to enhance management of its green infrastructure.

Since the Master Plan of 2001 was complete, the City has made great strides in achieving its goals in the area of Natural Resources, Open Space and Recreation, including:

- Reopening the Merrimac River clam flats;
- Adding full time Parks Department staff, including a Director and Manager;
- Creating the position of Conservation Administrator;
- Adopting a Beach Management Plan;
- Implementing City-wide wetlands protection and storm water management ordinances and regulations;
- Establishing the Open Space Committee, who is instrumental in pursuing land purchases that protect important open space resources, create connections between existing open spaces, recreational areas, the downtown, and neighboring communities;
- Completing Phase I of the Clipper City Rail Trail, with Phase II now close to substantial completion;
- Purchasing three acres of the former 'Colby Farm' at 179 Low Street;
- Undertaking several park improvement projects including renovation of Joppa Park and replacing an asphalt lot with a new green space at Atwood Park;
- Building a new baseball diamond, track facility, soccer field, and a synthetic turf field at the high school;
- Enhancing the Little River Nature Trail;
- Furthering the Border to Boston trail through the undertaking of the Merrimac River pedestrian crossing as part of the Whittier Bridge construction project;
- Maintaining public access to the Merrimac River and Plum Island beaches under the direction of the Beach Management Plan and Beach Management Committee; and
- Updating the City's Open Space and Recreation Plan.

Newburyport continues to move toward expanding and enhancing its open spaces. Continued allocation of additional financial resources each year and establishment of a Parks Department, marked by the hiring of a full time Parks Director, reflects a trend toward increased maintenance of open space and recreation facilities. The City has begun to focus on athletic field renovations and a commitment to maintaining those improvements. Trends toward public private partnerships and volunteer engagement enhance expansion and maintenance of trails, other park spaces and athletic fields. A trend toward open space expansion continues with addition of parks such as 270 Water Street and Phase II of the Clipper City Rail Trail. The City continues to seek new revenue streams to support our open spaces as witnessed by the establishment of the Newburyport Parks Conservancy and adult recreational programming.

A new area of focus in natural resource and open space protection is related to the growing concerns about ongoing climate change, sea level rise and associated storm damage. As a coastal community with important public infrastructure, business, residential and community resources located on its shoreline, Newburyport is particularly vulnerable to the impacts of increased flooding and storm damage. For this reason, the City has joined other municipalities throughout the country in the effort to become a "climate resilient" community. Natural resource and open space protection and enhancement play a critical role in this area.

Section A: Environmental Inventory & Analysis

This section summarizes the 2012 Newburyport Open Space & Recreation Plan's Environmental Inventory and Analysis and includes information on Newburyport's natural resources, including soils, landscape character, water resources, and biological resources.

Soils

Because Newburyport is a coastal city located on lowlands, deposits of marine sand, silt, and clay abound. Soil ranges from low marsh deposits of muddy, fibrous peat to generally poorly drained deposits of non-stone, heavy clay and silty material, for better drainage of glacial tills. Windblown and alluvial deposits of sand appear as dunes on Plum Island and occur in some areas bordering the Merrimack River. A ridge runs parallel to the Merrimack along much of High Street. Rocky outcroppings can be seen in and around parts of Maudslay State Park. Large areas of the Common Pasture consist of wet meadows interspersed with upland areas. For the most part, soil areas best suited for development have already been developed, although certain areas of great conservation interest remain at risk.

More than 40 types of soil underlie Newburyport. Some types, such as "Whately," are found in a total of two acres (.05%). On the other hand, "scantic silts" are found in 784 acres (13 %) in Newburyport. Each soil is categorized by characteristics such as kind, thickness and arrangement of layers and horizons. These groupings, called soil series or associations, are named after the place where they were first found or studied. Newburyport is divided into six major soil associations as listed in **Table NR-1** below.

Table NR-1: General Soil Areas in Newburyport

Soil Association	Acres	Percent
Merrimac-Agaway-Hinckley	2,200	39%
Scantic-Biddeford	1,400	25%
Paxton-Broadbrook-Woodbridge	700	12%
Tidal Marsh-Dune Sand-Made Land	612	11%
Hollis-Buxton	460	8%
Suffield-Buxton	308	5%
Total	5,680	100%

Landscape Character

Newburyport's character is shaped by its physical location along the south side of the Merrimack River, where its historic harbor reaches the Atlantic at the northern point of Plum Island. The Artichoke River, which flows north into the Merrimack River, forms part of the City's western boundary. To the South, historic pasture and hayfields stretch to West Newbury and Newbury, and the Little River and its tributaries flow southward into the Parker River and then into the Great Marsh. Each of these waters – the Merrimack River, the Artichoke River, the Little River, the Parker River and the Atlantic Ocean – played a role in shaping the City.

Water Resources

Surface Water

Several ponds are scattered across Newburyport. Bartlet Spring Pond, near Maudslay State Park, provides drinking water. Downtown, the Frog Pond lies at the center of the Bartlet Mall. A pond in Oak Hill Cemetery drains to a stream that flows into Newbury. A small pond is located in the business and industrial park west of Graf Road. There are also several small ponds in Maudslay State Park, on Water Division land and in agricultural areas.

There are four major river systems that traverse the City:

- **The Merrimack River.** The Merrimack River, among the largest rivers in the Northeast, is the primary flowing body of water in Newburyport. It flows alongside the historic downtown area before it drains into the Atlantic Ocean. As water approaches the western boundary of the City, it is joined by the Artichoke River, which is dammed to create the Artichoke Reservoir – a public drinking water supply. More than three centuries ago, Newburyport's harbor made it suitable for shipbuilding, which led to maritime commerce and wealth, and so in turn to the City's cherished Federal-era architecture and its continuing role as a regional commercial hub and destination for travelers. In later times, the Merrimack River supported small mills and other industrial efforts. The river today is a resource shared with many communities along its banks. The river supports commercial fishing, recreational boating, whale watch and eco-tours.
- **The Artichoke River.** The Artichoke Reservoir at the western border of the City is a major drinking-water source for Newburyport. The River provides one border to Maudslay State Park and with its forested and marshy banks, offers valuable wildlife habitat. The Artichoke watershed includes the City Forest and extends well into the southernmost sections of Newburyport, in the western part of the Common Pasture. The historic Curzon Mill area – a heritage landscape – is associated with the Artichoke.
- **The Little River.** The headwaters of the Little River originate on both sides of Route 95, north of Hale Street. The main branch meanders along the former Route 95 roadbed, near the Little River Nature Trail. One tributary starts behind the Storey Avenue shopping centers; the other drains two small ponds. The Little River flows south through Newbury and enters Parker River; the Parker, along with the Ipswich and Rowley Rivers, are the major sources of fresh water for Plum Island. The River provides the easterly border for the historic farms and wet meadows of the Common Pasture.
- **The Parker River.** The Parker River (along with the Plum Island River) separates the mainland from Plum Island – a barrier island with a mix of old, camp-style cottages and newer, larger homes, as well as the Parker River National Wildlife Refuge and the Commonwealth's Sandy Point Reservation, both outside the City boundaries. River marshes are part of the Great Marsh ecosystem and support a wide range of local and migratory birds. Birding in this area – identified as an Important Bird Area by Mass Audubon – plays an important and growing role in the City's economy. These beaches and marshes also have historic importance for clamming, fishing, duck hunting and salt-hay farming.

There are three watersheds located within Newburyport:

- **Merrimack River Watershed –** with headwaters emerging from the White Mountains, the Merrimack River flows 115 miles before meeting the Atlantic Ocean in Newburyport. The entire watershed encompasses 5,010 square miles and is affected by 203 communities. Given this setting, water quality decreases downstream due to development, inadequate wastewater treatment facilities, and

impervious surfaces. Even so, efforts to clean up the river and identify sources of pollution have met some success, as evidenced by the periodic reopening of the Joppa Flats clam flats for commercial clamming.

- **Artichoke River Watershed –** on the western side of the City lies the Artichoke River watershed, which directs water to the north-flowing Artichoke and eventually into the Merrimack River.
- **Little River Watershed –** this watershed has an entirely different character, with its saucer-like form defined on the northwest by High Street and Storey Avenue. The Little River drains much of the Common Pasture, a significant habitat of wet meadows and influences the ecology of the Great Marsh, an "Area of Critical Environmental Concern" (an official designation by the Commonwealth recognizing the quality, uniqueness and significance of the natural resource). Beginning in the 1960s, parts of the pasture and the Little River watershed were converted into a business park; this construction required a network of drainage ditches to address frequent flooding. This watershed's impervious surfaces now surpass 15% of the total land area, which increases flooding, sedimentation transport and non-point source pollution.

Flood Hazard Areas

When a water body can no longer accommodate increased discharge from heavy rains or snow melt, the excess water flows onto the adjacent land. The land adjacent to streams, lakes or rivers that is likely to flood during a storm event is known as a floodplain. Flood hazard areas present risks to people, wildlife and property that must be assessed and minimized. Unregulated development in a floodplain can increase the likelihood of flooding by adding impervious surfaces and increasing surface runoff into the stream channel. In addition, water contamination from flood-damaged sewage or septic systems and debris swept downstream from flooded properties can result in unnecessary hazards to properties downstream.

Floodplains are delineated based on topography, hydrology and development characteristics of the area. The Federal Emergency Management Agency (FEMA) updates the Flood Insurance Rate Maps (FIRMs), which reveal areas at risk of flooding. The maps reveal risk areas along the Merrimack, Artichoke, and Little River areas, as well as on Plum Island beaches. Newburyport has adopted a Floodplain Overlay District to regulate development in FIRM-identified flood hazard areas.

Wetlands

Wetlands include marshes, swamps and bogs and often lie within a floodplain. They serve not just as a sponge to soak up inundations, but also as protection for groundwater, to prevent aquifer pollution and as habitat for wildlife. In addition to the Massachusetts Inland Wetlands Protection Act that provides the basic authority, Newburyport has adopted a wetlands ordinance that includes additional protections. Eleven varieties of wetlands lie within the City boundaries:

- Plum Island, Joppa Flats and the Basin incorporate distinct wetland types, including
  - Barrier Beach System,
  - Barrier Beach Coastal Beach,
  - Barrier Beach Coastal Dune Wetlands,
  - Tidal Flat, and Salt Marshes.
- Along Water Street, headed toward Plum Island, there are areas of
  - Shallow Marsh Meadow,
  - Coastal Bank Bluff, and
  - Deep Marsh wetland.

- The remaining wetlands in the City are mostly located along the Merrimack, Artichoke and Little Rivers, in the Common Pasture and around small ponds. The wetland types in these areas are
    - Shallow Marsh Meadows,
    - Shrub Swamp,
    - Wooded Swamp Deciduous,
    - Deep Marsh,
    - Wooded Swamp Mixed Trees,
    - Coastal Bank Bluff, and
    - Coastal Beach.

Aquifer Recharge Areas

Aquifers of sufficient capacity to serve as municipal water supply are scarce and found only in locations with certain geologic and hydrologic conditions. Most aquifers with such a volume were formed in valleys carved into bedrock millions of years ago by ancient rivers that drained the continent. The City's Water Division operates wells on Ferry Road in Newburyport within two high yield aquifers.

Biological Resources

Newburyport's urban landscape contains a wide range of native and cultivated species in gardens around the city including very large tree specimens. Various natural areas support a range of natural communities, and a few degraded landscapes host invasive species.

Vegetation

The City Forest, Maudslay State Park, Moseley Woods, March's Hill, some of the Little River Watershed area, part of the Common Pasture, and private lands abutting these areas support stands of white pine, oak, maple, hickory, elm and white birch. Additionally, these areas include native flowering shrubs and wildflowers. Several cemeteries and City parks feature large historic trees, many having seen recent and continued care by arborists.

The Merrimack River itself contains a variety of plant life. Six species of green algae, two red algae, six brown algae and twelve species of vascular plants have been cataloged in the river. The species of greatest importance in constraining is salt water cord grass (S*partina alterniflora*) that accumulates sediment deposits and over time changes a water environment to a terrestrial one. A vast quantity of cord grass grows within the City's boundaries, notably just east of the Chain Bridge and just east of the American Yacht Club. Thousands of acres of the cord grass grow within the Merrimack and Parker River estuaries. Marshes restored by Massachusetts Audubon, as part of its development of the Joppa Flats Education Center, include several salt-water species. Each year, volunteers remove the invasive perennial pepperweed from certain coastal areas. In addition to the marine vegetation described, freshwater wetlands occur along the Artichoke and the Little River and in the Common Pasture. They also occur in many developed areas, including the business and industrial park – where there are areas of invasive purple loosestrife, phragmites, and Japanese knotweed – the "Kelleher Pines" neighborhood west of Route 95, Woodman Park, and in small cemetery ponds.

Newburyport's pastures and agricultural lands include grasses and sedges, most notably a few occurrences of Long's bulrush (S*cirpus longii*), a state-listed threatened species, as well as hemlock parsley (*Conioselinum chinense*), a state-listed species of special concern. Hayfields dominate fields in privately-owned farms – Sweeney Farm and Turkey Hill Farm – in the Newburyport section of the Common Pasture. Arrowhead Farm near Maudslay State Park grows vegetables and some fruit (in addition to raising livestock).

Rare, Threatened and Endangered Vegetated Species

Table NR-2 lists the rare plants recorded in Newburyport by the Natural Heritage and Endangered Species Program of the State Division of Fisheries and Wildlife:

Table NR-2: Rare, Threatened and Endangered Vascular Plants

Scientific Name	Common Name	State Status	Year Last Seen in Newburyport
Aristida tuberculosa	Seabeach Needlegrass	Threatened	2004
Bidens eatonii	Eaton's Beggar-ticks	Endangered	2001
Bidens hyperborean	Estuary Beggar-ticks	Endangered	1902
Bolboschoenus fluviatilis	River Bulrush	Special Concern	1982
Conioselinum chinense	Hemlock Parsley	Special Concern	2006
Cyperus engelmannii	Engelmann's Umbrella-sedge	Threatened	1981
Elatine Americana	American Waterwort	Endangered	2004
Equisetum scirpoides	Dwarf Scouring-rush	Special Concern	1897
Eriocaulon parkeri	Parker's Pipewort	Endangered	1903
Liatris scariosa var. novae-anglia	New England Blazing Star	Special Concern	2000
Rumex pallidus	Seabeach Dock	Threatened	2006
Sabatia kennedyana	Plymouth Gentian	Special Concern	1800s
Sagittaria montevidensis	Estuary Arrowhead	Endangered	2004
Scirpus longii	Long's Bulrush	Threatened	2006
Tillaea aquatica	Pygmyweed	Threatened	1903

Fisheries

The Merrimack River provides spawning and nursery habitat for anadromous fish species including alewife, American salmon, Atlantic sturgeon (endangered), blueback herring, rainbow smelt, sea lamprey, and white perch. While shortnose sturgeon (endangered) and striped bass are found in the river, evidence of their spawning has not been documented. American eels, a catadromous species, are abundant in the Merrimack Basin. Annual fish runs in the Merrimack occur primarily from mid-March to the end of June. Limited commercial clamming has been restored in Newburyport in the Joppa Flats and Plum Island Basin areas.

Wildlife

The Merrimack River estuary is heavily used by many species of waterfowl. Some 7,000 to 8,000 ducks appear to feed on seed clams at peak periods in the fall and early winter. Birders frequently observe nesting and migratory waterfowl in the lowland fresh and salt-water marshes bordering the rivers. The designation of "Important Bird Areas (IBA) by Mass Audubon for the Great Marsh is an indication that the area provides essential habitat to one or more species of breeding, wintering and/or migrating birds.

Forested areas and wooded riverbanks near Maudslay State Park support bald eagles, fishers, deer, opossum and other species. Fireflies are abundant along the Artichoke River. The Common Pasture and Little River watershed area contain some of the finest grassland remaining in eastern Massachusetts. The flooding of this grassland in the early spring provides habitat for a variety of waterfowl, most notably the American widgeon, American black duck, mallard, northern pintail, and green-winged teal. Additionally, under proper rainy

conditions, large numbers of Wilson's snipe forage in the wet pastures, along with lesser numbers of greater yellowlegs and pectoral sandpipers. The state-listed American bittern (threatened) may still nest, along with other uncommon species like the Virginia rail, in the area. By early summer, bobolinks and meadowlarks nest in the grasslands.

Other rare species, such as upland sandpiper, northern harrier and barn owl, have been documented. Vernal pools in the Little River watershed area provide a breeding area for wood frogs and are home to snakes, the spotted turtle, and the blue-spotted salamander. The few upland areas of the Common Pasture and Little River watershed area provide habitat for pheasant, rabbit, grouse, wild turkeys, red fox, gray fox, coyotes and songbirds.

Rare, Threatened and Endangered Wildlife Species

Table NR-3 lists the rare wildlife species recorded in Newburyport by the Natural Heritage and Endangered Species Program of the State Division of Fisheries and Wildlife:

Table NR-3: Rare, Threatened and Endangered Wildlife

Scientific Name	Common Name	State Status	Federal Status	Year Last Seen in Newburyport
Ammodramus henslowii	Henslow's Sparrow	Endangered		1974
Ammodramus savannarum	Grasshopper Sparrow	Threatened		1978
Bartramia longicauda	Upland Sandpiper	Endangered		1990
Botaurus lentiginosus	American Bittern	Endangered		1984
Charadrius melodus	Piping Plover	Threatened	Threatened	2006
Circus cyaneus	Northern Harrier	Threatened		1984
Podilymbus podiceps	Pied-billed Grebe	Endangered		1973
Rallus elegans	King Rail	Threatened		1984
Sterna hirundo	Common Tern	Special Concern		2007
Tyto alba	Barn Owl	Special Concern		1970s
Acipenser brevirostrum	Shortnose Sturgeon	Endangered	Endangered	1990
Acipenser oxyrinchus	Atlantic Sturgeon	Endangered		1990

Section B: Scenic Resources, Geologic Features & Distinctive Landscapes

Scenic Resources

In 1982, the Department of Environmental Management published a report entitled *Massachusetts Landscape Inventory - A Survey of the Commonwealth's Scenic Areas*. This study devised a system for classifying landscapes worthy of protection and applied it throughout the Commonwealth. Much of the Common Pasture, as well as Joppa Flats, portions of the Merrimack River, and the Plum Island Turnpike were identified as Distinctive Landscapes. In addition to these areas, Newburyport is rich in scenic resources including the following:

- **Hilltops –** March's Hill, Highland Cemetery, and Turkey Hill; Coffin's Island, a highland at the southern edge of the Common Pasture, offers scenic views over the pastures and hayfields to the north.
- **Meadows –** Meadows occur around Curzon Mill Road, Hale Street, Low Street and in Maudslay State Park.
- **Scenic Roads –** Curzon Mill Road, Hoyt's Lane, Old Ferry Road, a section of Turkey Hill Road, and the Plum Island Turnpike. Newburyport's downtown core contains many scenic streets as well. The 85-mile Essex Coastal Scenic Byway (ECSB) follows state and local roadways between Lynn and Newburyport, curving along the coast and looping around Cape Ann. In Newburyport, the ECBS extends from Atkinson Common along High Street to Newbury and includes a loop down Green Street and up State Street as well as a spur along Water Street, passing Joppa Park on the way to the Plum Island Turnpike and out to Plum Island Point.
- **Shoreline –** The shoreline changes dramatically throughout its length with pockets of pristine shore and sandy beaches to Joppa Flats – the largest and most productive shellfish area in the harbor – to a relatively densely developed urban edge along the downtown area. As the shoreline travels inland, privately-owned homes dot the waterfront and finally give way to a shoreline that is close to its natural state as it approaches the West Newbury border.

Geologic Features

Newburyport's geologic features range from the sand dunes on Plum Island and in some areas bordering the Merrimack River, to the "Ridge", which runs parallel to High Street, to kettle holes at the Bartlet Mall and the wet meadows of the Common Pasture.

Distinctive Landscapes

Newburyport includes many distinctive landscapes – beach and dunes, marsh, harbor, rivers, a substantial National Register Historic District, pastures and hayfields, forests, scenic byway, City parks with manicured gardens, and more. Newburyport's coastal zone consists largely of a barrier beach, Plum Island, and is separated from mainland Newburyport by the northern section of the Town of Newbury. "The Island" contains extensive areas of sand dunes and beach grass. Between Plum Island and downtown Newburyport one can see many beautiful salt marshes, including low-lying river islands and Joppa Flats. The terrain rises from the river at sea level through the densely developed and restored historic downtown to the ridge along High Street, with a plateau where a city common, Bartlet Mall, is located. At the center of Bartlet Mall lies a kettle hole called the Frog Pond. Hills near Bartlet Mall have been used for centuries for cemeteries.

Moving upriver, the Belleville neighborhood, once called "the plains," contain a Victorian park with fountains and manicured gardens, which then give way to the forested Moseley Woods Park, city drinking-water well sites, and Maudslay State Park. Dramatic views of the Merrimack can be had from both Maudslay and Moseley Woods. South of the High Street ridge, a large shallow "saucer" landform comprises much of the Common Pasture, a section of which has been developed as a business and industrial park. Farming still occurs in the fields, wet meadows, and pastures on the southerly and westerly sections of the Common Pasture. As viewed from Scotland Road in Newbury and Route 95, it provides a signature pastoral landscape and entry to the community.

Section C: Inventory of Lands of Conservation & Recreation Interest

Private Properties

Many significant privately owned open spaces add to the character of Newburyport. According to the city Assessor Database, approximately 857 acres of privately owned (excluding tax-exempt) properties are undeveloped.

- **Common Pasture** – Significant progress has been made in protecting the Common Pasture. The city's land-trust partners – including Essex County Greenbelt Association, the Trust for Public Land, The Trustees of Reservations, and Mass Audubon – as well as several grant-giving agencies and foundations, all recognize the conservation importance of the area. Most of the parcels in this area are zoned agricultural/conservation. The City has identified 16 parcels (337 acres) south of Hale Street of conservation interest within the Common Pasture. Eleven of these (313 acres) are classified as Chapter 61A lands. The remaining five (24 acres) are either vacant or partly occupied by a single-family residence.
- **Little River Headwaters –** The City has identified 13 properties (154 acres) of land near Crow Lane and Low Street that include the headwaters of the Little River. The land is bordered by developed areas and surrounds the City's compost/recycling area and landfill. This area is characterized by a mix of natural, agricultural, and developed spaces. Parcels along Low Street are used for a small farm that pastures horses and brokers hay, and by residences, schools, churches, and businesses. Nine of these properties (88 acres) are classified as Chapter 61A lands; the remaining are vacant.
- **Curzon Mill Area –** Seven parcels, all zoned agricultural/conservation, make up this scenic, historic 20-acre wooded area surrounded by the Artichoke River and Maudslay State Park. The area, which includes wetlands and habitat, contains three historic houses and a historically significant mill, now used as a residence. Three parcels (10 acres) are under Chapter 61B. The City owns a total of 15-acres that are permanently protected with Conservation Restrictions.
- **Old Ferry Road Area –** This area consists of five agricultural/conservation parcels totaling 77 acres near the Merrimack River, next to Maudslay State Park and city Water Department land. A portion of the historic Arrowhead Farm (28 acres) has been protected since 1993 by a conservation restriction held by the State. Another small property associated with Arrowhead is largely protected by a conservation restriction held by the City; much of that same parcel falls within Water Protection District Zones I or II. Ferry Landing Farm (25 acres) is covered by an early version of an agricultural preservation restriction, held by the State. The Open Space Committee is interested in strategies that would strengthen protections for this parcel. The other properties, including a large historic estate on the Merrimack River, are of historic preservation interest as well as conservation interest.
- **Woodbridge Island –** This 127-acre marshland on the Merrimack River, zoned for agricultural/conservation use, is divided into five lots held by two owners. An important part of the estuary, it sees some use for private "camps" for duck-hunting. It is a state Restricted Wetland. Although this island would seem to be little threatened, the Open Space Committee has identified it as a conservation property of interest to enhance monitoring of the Restricted Wetland designation.
- **Kelleher Pines –** This property includes wetlands surrounded by houses, with likely access from Frances Drive. These 55 lots make up roughly 15 acres, all zoned for residential use. As the character of this land includes wetlands, it should be considered only for sensitive passive use, such as boardwalk trails or other nature-related recreation.
- **Landfill –** The Massachusetts Department of Environmental Protection and a private owner are currently completing a multi-year task of capping the landfill off Crow Lane. In the long term, the

landfill may present public use opportunities or options to install solar panels or other alternative energy.

- **Historic Gardens and Lawns of High Street –** Extensive and historic gardens and backyards along the High Street ridge represent an important heritage landscape that reflects a significant period in Newburyport's history. Essex County Greenbelt holds conservation restrictions on a few of these properties. Some of these gardens have been lost or are threatened, in part, through subdivisions of the properties.

Municipal Land

Table NR-4: Conservation Land in Newburyport

Name	Size (Acres)
Municipally Owned Conservation Land	
City Forest	40.36
Little River Nature Trail	55.81
Common Pasture (Coffin's Island)	13.58
Cooper North Pasture	101.76
Wet Meadows	125.19
Curzon Mill Road Conservation Land	15.97
Total:	**352.67**
Water Department Resource Land	
Artichoke River Watershed	50.43
Ferry Road Well	16.30
Ferry Road abutting Moseley Woods	34.80
Spring Lane Wells	33.00
Artichoke River Islands	1.2
Plummer Spring Road	2.9
Old Ferry Road – Radius around well	11.08
Total:	**149.71**

Table NR-5 Municipal Parks and Recreation Areas

Name	Size (Acres)
270 Water Street	1.06
Atkinson Common & Pioneer League Fields	21.14
Atwood Park	0.66
Bartlet Mall/Washington Park	7.27
Bradley Fuller Park	10.4
Brown School Playground	0.25
Brown Square	0.59
Cashman Park	12.52
Cherry Hill Soccer Fields	9.66
Clipper City Rail Trail	5.00
Cornelius Doyle Triangle	0.22
Cushing Park/Ayer's Playground	1.80
Harborwalk	0.50 (miles)
Inn Street Mall	1.05
Future Rail Trail Extension (Phase 2)	7.65
Jason Sawyer Memorial Playground	0.25
Joppa Park	0.50
March's Hill	5.04
Market Square/Bullnose	0.20
Market Landing Park/Waterfront Park	4.1
Moseley Woods	13.00
Moulton Square	.5
Newburyport Skate Park	.3
Patrick Tracy Square	0.15
Perkins Park	8.00
Woodman Park	9.37
YMCA Park (98 State Street)	.38
Total:	**121.06***

* Acreage does not include the 0.5 mile long Harborwalk.

Municipal Parks and Recreational Areas

Generally, the City's parks and athletic fields are under the jurisdiction of the Parks Commission and Department with maintenance being performed by the Parks Department and some services provided by the Department of Public Services. In some cases, a City-appointed commission oversees additional management for specific parks. Maintenance and upkeep are sometimes overseen and funded by private organizations and volunteers.

School Properties

Table NR-6: School Recreational Properties

Name	Total Size (Acres)	Recreation / Field Size (Acres)
Bresnahan School	17.53	5.25
Newburyport High School	13.30	3.50
Nock/Molin School	19.60	6.75
Total:	**50.43**	**15.50**

School properties are managed by the School Department and maintained by the City's Highway Department, school personnel, and through private contracts. School athletic fields are maintained in partnership with the Newburyport Parks Department. School fields, playgrounds, and athletic facilities comprise nearly 26 acres within the City and represent 42 percent of school related parklands.

Central Waterfront Lots

Table NR-7: Central Waterfront Lots

Name	Total Size (Acres)
Market Landing/Riverside Parks	4.12
Peter J. Matthews Boardwalk*	1.00
NRA lots	5.10
Total:	**10.22**

** The Boardwalk is part of the portions of Market Landing and Riverside Parks as well as NRA lots*

The Newburyport Redevelopment Authority (NRA)-retained land on either side of Market Landing Park, which is now used primarily for parking, and has been the focus of public debate since the late 1960s. The NRA currently manages five lots (5.1 acres) on the waterfront; four of these are for parking. In addition, a portion of the Custom House lot, including the Robert Mills Custom House, is leased to the Newburyport Maritime Society.

The Waterfront Trust serves as executive manager of certain central waterfront open space, parkland and public ways for the City. The Trustees operate as a non-profit charitable organization. The City agreed in the 1991 Declaration of Public Trust to provide for maintenance of the Waterfront Trust properties. The area of land owned by the Trust is 4.24 acres, which is comprised of a number of individual parks and ways – Market Landing Park, Riverside Park/Somerby's Landing, five ways to the Water (Somerby's Way, Central Wharf Way, Railroad Avenue, Ferry Wharf Way, and Custom House Way. Most of the boardwalk extending along the waterfront in front of Market Landing Park and the NRA property is owned by the Trust.

Table NR-8: Other Conservation and Recreational Lands

Ownership	Name	Size (Acres)
Public and Private Cemeteries		
Private	Belleville Cemetery	13.00
Private	Oak Hill Cemetery	34.77
Private	Sawyer's Hill Burying Ground	3.55
Private	St. Mary's Cemetery	23.70
City	Highland Cemetery	12.63
City	Old Hill Cemetery	5.31
Total:		**92.96**
State/Federal Land		
MA DCR	Graf Skating Rink	6.90
MA DCR	Maudslay State Park	488.12
USFWS	Parker River Nat. Wildlife Refuge	10.17
USCG	Plum Island Station	3.20
Total:		**508.39**
Non-Profit Land		
Hale Park Trust	Hale Park	1.25
Mass Audubon	Joppa Flats Education Center	53.54
Historic New England	Plum Island Airfield	8.81
Historic New England	Plum Island Turnpike land	34.57
Essex County Greenbelt	Former Hiller Property	13.50
	Total:	**111.67**

Section D: Analysis of Needs

This section analyzes Newburyport's present and future needs for natural resource protection, open space and recreation. Inland wetlands, undeveloped uplands, scenic roads and vistas, agricultural lands, unprotected lands that provide linkage between existing dedicated open spaces, and potential lands suitable for active recreational uses are at high risk due to demand for residential development. Development pressure consumes land quickly and forever limits opportunities to retain space for conservation and recreational purposes.

Natural Resource Protection: Protecting the Water Supply

Newburyport has established local ordinances to help protect important water resources and mitigate potential development impacts, including a wetlands protection ordinance, a stormwater management ordinance, and a water resource protection overlay zoning district. Efforts to continue to improve the City's water resource protection regulations will rely on collaboration between the Conservation Commission, the Parks Department, the Department of Public Services Water and Highway Divisions, Planning Board, Water & Sewer Commission, Board of Health and the City Council. Ongoing communication between these entities will be necessary to ensure that all development regulations and processes are working to protect water resources. Ongoing efforts of the city's Water Division to protect existing water supply source and locate future water supply sources should also be coordinated with land protection priorities of the Open Space Committee. In addition, the city should continue to support efforts of regional and local watershed groups to protect and improve the watersheds of the Merrimack, Little, Artichoke, and Parker Rivers that continue to be impacted by non-point source pollution, invasive species, and sedimentation. Wherever possible the City should limit or prohibit development within the City's Water Resource Protection District (WRPD). If funding is available the City should seek to acquire land within the WRPD so that it remains under City control and does not become available for private development which could jeopardize the quality of the City's water supply sources.

Limiting Development Impacts

Ongoing major development impacts are an increase in impervious areas, which can contribute to flooding, reduced groundwater recharge, and increased stormwater runoff; pollution potential from industrial processes; and loss of open space, tree canopy, and wetlands. The City's permitting entities have roles to play in off-setting the environmental impacts of development. The Planning Department should continue to work collaboratively with these groups to ensure the city's regulations support effective monitoring of these activities.

Sustainability and Climate Change

Preserving open space, protecting natural resources, and providing recreation options close to population centers are all goals that support sustainability. Parks and natural spaces help offset the heat retained by buildings and pavement – the "urban heat island effect." Both street trees and the vegetation in green spaces filters air, improving air quality. Ability to access and connect to parks and recreation areas by foot or bicycle helps decrease fossil fuel consumption. Despite efforts to become a more sustainable community, including reducing potential contributors to climate change, the City is now just beginning to comprehensively address the potential effects of climate change on its population and its physical infrastructure. While there are many uncertainties about the impacts of climate change, it is agreed that coastal communities like Newburyport are likely to be at higher risk due to the increased frequency and severity of weather events and to sea level rise. While it is important to continue the existing efforts, the city needs increased focus on climate *resilience* as

opposed to climate change *prevention.* In planning for a more resilient community, the City will need to evaluate its vulnerabilities and risks from sea level rise, increased storm damage and other factors, and develop recommendations for both short- and long-term approaches to addressing climate change.

Important Wildlife Habitat

Undeveloped land, wetlands and marshes, forests and grasslands all provide direct habitat for a great diversity of species in Newburyport. In the long term, the City should be alert to opportunities to provide or enhance wildlife crossings under major roadways to improve the migration paths between the various open spaces throughout the City. Protecting Plum Island and lands along the Merrimack River corridor through limiting development and preventing erosion will ensure that important shorebird habitat remains. Habitat protection should be incorporated into management strategies for the City's conservation properties. It is also important for those responsible for monitoring and managing the environmental health of these lands to have a strong initial baseline inventory of the environmental attributes of each of these properties.

Heritage Landscapes

Several open space areas are cherished by residents for their scenic and historic features, for how they help create a sense of place and community: The Common Pasture/Little River area; Plum Island/Joppa Flats marshes; Curzon Mill area on the Artichoke River; and Old Ferry Road area on the Merrimack River. These areas must be protected from development pressures so that their scenic beauty may be preserved, which will also be a benefit for other aspects of natural resource protection.

Recreational Needs

It is clear that Newburyport has a shortage of active recreational fields. With the ever-growing popularity of youth and adult sports inevitably comes the growing numbers in sports teams, both locally and regionally. The fields during the peak athletic season are reserved for practices and games; however, the difficulty in scheduling events leads teams to find private fields or use facilities in other communities for their activities. In addition to expanding existing recreational amenities, a 2012 community survey revealed residents would like to see the addition of a public swimming pool and adult recreation programs.

Water-Based Recreation

Newburyport's waterfront has played a significant role in the historical development of the City. It continues to be an important economic asset for the city in addition to the recreational opportunities it offers. Ongoing improvements to and expansion of public waterfront access is critical for supporting this essential City asset.

Park and Recreation Facilities

Fields in Newburyport are in particularly high demand, from both local teams and regional ones, for a variety of reasons: 1) high enrollment in existing field-based sports programs; 2) programs that extend over multiple seasons; 3) density of population and lack of available open land; 4) emerging new sports that compete for the same space (such as Ultimate Frisbee and rugby). Demand for tennis courts is also high due to the level of use for organized recreation programs and school sports. Additionally, demand for tennis courts may increase as the popularity of Pickleball, a racquet sport that can be played on tennis courts that have been modified to include the appropriate boundary lines. All of the indoor public basketball courts are located in the schools, limiting the availability of courts for adult leagues and after-school programs.

The highest organized sports priorities for Newburyport are baseball fields and multiuse fields that can accommodate field hockey, lacrosse, soccer, football, and other field sports. The addition of field space helps alleviate the heavy levels of use carried by the existing fields and allows for certain fields to be dedicated to one type of activity. Limiting a facility's carrying capacity helps reduce wear and tear, lowering maintenance costs in the long term. Other needs include tennis courts and indoor basketball courts for general public use.

Newburyport has long been challenged to provide adequate maintenance of existing sports and recreation facilities. The recent addition of a Parks Department is making strides toward more consistent maintenance resulting in improved facilities. These efforts needs to be enhanced and supported in the future to make sure parks and recreation facilities are safe and meet the community's expectations.

Newburyport is challenged to serve the recreation needs of households in areas where available land is scarce. It is important to continue to explore opportunities for providing new parks or expanding existing recreation areas for residential neighborhoods currently underserved. In addition, creating safe and convenient bicycle or pedestrian connections to existing parks would help improve service.

Passive Recreation

The variety of open space that can be used for hiking, jogging, or exploring is one of the biggest assets to the City. Passive recreation is considered a high priority for the community as is creating safe linkages among the parcels.

Accessibility Improvements

While Newburyport has improved access for the disabled in recent years, additional improvements are necessary and efforts should be ongoing. The identified needs to improve accessibility generally involve improving access to existing facilities through eliminating barriers at access points, improving parking arrangements, and making use of surfaces that can accommodate wheelchairs. In addition, Youth Services has identified a need for a staff person to run therapeutic recreation programs for people with cognitive, emotional, and physical disabilities, for which a need has been identified in the community.

Section E: Newburyport's Natural Resources, Open Space & Recreation Goals

From the mouth of the Merrimack River to Moseley Woods, Newburyport is a City that values its natural resources as evidenced by the continuing work of its elected officials, City staff and volunteer citizens to protect and preserve the community's open spaces and recreational opportunities. This component of the Master Plan seeks to build upon the City's work in preserving open spaces and maintaining and creating new recreational opportunities. The following goals, objectives and actions support the Master Plan Vision of sustainability in that they:

- Protect lands of conservation interest to support wildlife habitat, water protection, flood control and heritage landscapes;
- Maintain and improve upon the City's recreational lands and their management so that the community is able to access and enjoy both active and passive recreational opportunities; and
- Create an interconnected system of open spaces and recreational areas that will allow residents and visitors to reduce their dependence on motorized vehicles and utilize alternative modes of transportation.

The Goals discussed in the remainder of this chapter provide a coherent framework for meeting Newburyport's natural resource, open space and recreational needs with a focus on protecting, conserving and enhancing the City's resources to ensure that their health and that of the community is preserved.

Goal NR-1: Protect and enhance lands of public conservation and recreational interest, including the City's defining scenic heritage landscapes and areas that support essential wildlife habitat and ecosystems, water protection, flood management, and a variety of recreational interests.

The Objectives and Actions that support this first goal recommend increased advocating for the protection of lands of scenic importance as well as lands that support habitat, those that preserve the integrity of the City's water supply and protect its coasts from flooding and storm surge. The Actions involve creating inventories of lands of conservation and preservation importance, educating the public of these priorities and creating partnerships with others to collaboratively address these issues.

Goal NR-2: Maintain a high quality of parks, recreation areas, trails and other open spaces that are safe, attractive, preserve historic resources, and provide a range of active and passive recreational opportunities for all residents and visitors.

One of the main Actions to support this Goal is to increase the staffing levels for the Parks Department and the maintenance crews. In order to ensure that the City's properties are adequately cared for, there must be staff dedicated to this purpose. This Goal is also supported through the formalizing of volunteer efforts and programs focused on park and trail stewardship. A third component of this Goal is the creation of new recreational facilities for both active and passive recreation. These Actions focus on identifying funding streams, including but not limited to the municipal budget and exploring grant opportunities, which may be used to build new athletic fields and to purchase land to preserve as open space.

Goal NR-3: Improve access to, connections between, awareness and use of public open space and recreation areas.

Goal 3 is primarily focused on improving upon the City's network of open space and recreational areas and is comprised of three Objectives: (1) improving public awareness of the variety of open space and recreational opportunities, (2) improving connections among these opportunities so that Newburyport may have a comprehensive and complete open space and recreational network that the community may safely navigate and (3) improving safety and access for cyclists, pedestrians and other non-motorized users.

Goal NR-4: Improve management of the City's natural resources, including water bodies, forested areas, street trees, wetlands, coastal dunes and the barrier beach.

The fourth and final goal for this chapter explores ways to protect Newburyport's natural areas to ensure that the City's water supply, habitat and other resources are safe and protected from potential climate change and storm impacts. The Objectives and Actions that support this Goal are centered on notions of incorporating green technologies to lessen potential negative environmental impacts of development on our natural resources. A crucial component is a focus on resiliency in the face of climate change. Newburyport has many fragile environments with Plum Island as perhaps the most fragile. As the frequency and intensity of storms continue to impact the Island, several Action items seek to increase protection of

this resource through land acquisition, implementation of the Beach Management Plan, and exploring ways to limit and slow erosion of the coastal dunes. Collaboration among various City departments, Boards and Commissions and private organizations to protect natural resources is crucial to ensuring the future health and prosperity of the City's natural resources and the overall health of the community.