

Smaller corridors, some with limited connectivity with the major corridors to the east and west, are scattered throughout town and should be targeted for preservation. Primary objectives in prioritizing these corridors should include the need to identify and protect specific areas which support significant natural communities and provide habitat for rare species. A second major objective is to provide corridors which allow for passive recreational use thus facilitating a healthy interaction between humans and wildlife in Foxborough. Stretches closest to wetlands, other sensitive areas, and/or adjacent to or linking public open space should be prioritized for attention.

#### 4. **Rare Species**

The Department of Fisheries and Game (DFG) determines a status category for each rare species listed under the Massachusetts Endangered Species Act or “MESA” (M.G.L c.131A).

It is important to note that the DFG’s Massachusetts Natural Heritage & Endangered Species Program (NHESP) does not have the resources to conduct methodical surveys of rare species by town, so species which were last seen many years ago may still be present but difficult to detect.

The Conservation Commission would appreciate information about sightings of any of the rare species listed below, as well as any of the species listed in neighboring towns. Any rare species observed should be documented on a Rare Animal Observation Form and submitted to the NHESP. Detailed species descriptions and habitat requirements can be found on the NHESP fact sheets, downloadable at <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/>.

a. **NHESP Guidelines** - The NHESP provides guidelines on methods of protecting rare and endangered species as well as their habitats. Protective measures such as conservation restrictions or easements, special zoning regulations, and land acquisition are encouraged. Town boards and commissions are also asked seek the advice and assistance of the NHESP in reviewing any proposed development projects or other activities that may occur in the vicinity of habitat areas. Foxborough’s rare species, listed below (including date of record), are categorized as endangered, threatened, or of special concern as follows:

- “**Endangered**” (E) species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- “**Threatened**” (T) species are likely to become endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- “**Special Concern**” (SC) species have either suffered a decline that could threaten the species if allowed to continue unchecked, or which occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become threatened.

**Table 11A – State Listed Wildlife Species Documented in Foxborough**

Amphibian	<i>Ambystoma opacum</i>	Marbled Salamander	T	2013
Amphibian	<i>Ambystoma laterale</i>	Blue-spotted Salamander	SC	1994
Reptile	<i>Glyptemys insculpta</i>	Wood Turtle	SC	2010
Reptile	<i>Emydoidea blandingii</i>	Blanding's Turtle	T	2011
Fish	<i>Notropis bifrenatus</i>	Bridle Shiner	SC	1998
Butterfly/Moth	<i>Callophrys hesseli</i>	Hessel's Hairstreak	SC	1988
Butterfly/Moth	<i>Callophrys irus</i>	Frosted Elfin	SC	2013
Butterfly/Moth	<i>Satyrium favonius</i>	Oak Hairstreak	SC	1999
Dragonfly/Damselfly	<i>Somatochlora linearis</i>	Mocha Emerald	SC	2002

Source: Natural Heritage and Endangered Species Program (pre-2010 sightings; updated 2015)

The NHESP defines two types of habitats for which it urges that special measures be taken to ensure their protection. These include Priority Habitats for Rare Species and Estimated Habitats of Rare Wetlands Wildlife. Foxborough has four Priority Habitats and two Priority and Estimated Habitats, reviewed below.

- b. Rare Salamanders - The major threat to most salamanders in general is the loss, degradation and fragmentation of both aquatic breeding pool habitat required for reproduction and terrestrial habitat needed for foraging, overwintering, growth and development to development and urbanization. Some population declines may be attributed to over collection, heavy road traffic, and pesticides or other toxic chemicals polluting breeding pool water.

Marbled Salamander (T) - There are only 75 towns in the State where marbled salamanders have been observed. They have recently been documented in Foxborough (*photo of 1" larvae, right*) and will appear on the next update of the NHESP List of Endangered, Threatened and Special Concern Species. Conservation of the marbled salamander must focus on the preservation of vernal pools and small ponds known to be inhabited by this species, as well as a significant parcel (250-1,600 meter radius) of upland habitat surrounding breeding sites (see Section E.2, above).



- c. Rare Turtles - The evolutionary strategy for turtles in general, to compensate the small number of eggs or hatchlings that live to become reproductive adults, is long life and many years of reproductive viability to maintain populations. Hatchling and juvenile survival rates are very low and the time to sexual maturity is long. These characteristics make turtles vulnerable to



human disturbances. Therefore, the removal of just one adult turtle from a population through any of these hazards can significantly impact a turtle population. The following species of rare turtles are found in Foxborough:

(1) Blanding's Turtle (T) - The Blanding's turtle is a midsized turtle (6 to 9 inches) with a high-domed carapace (top shell) that is dark and covered with pale yellow flecking. The most distinguishing feature is its long, yellow throat and chin (*photo of adult male, left*), which makes it recognizable at a distance. They use a variety of wetland and terrestrial habitat types and have been observed in seasonal pools, marshes,

scrub-shrub wet-lands and open uplands (Sievert et al. 2003). Habitat use appears to vary according to the individual and amount of precipitation, with more upland utilization during dry years (Joyal et al. 2001). Wetlands are used for over-wintering during their inactive season (Nov-Mar). Blanding's turtle is listed as a species of Greatest Conservation Need by U.S. Fish and Wildlife Service in the Northeast where it occurs. Suffice it to say that Blanding's turtles across their New England range are losing ground.

- (2) Wood Turtle (SC) - The Wood Turtle is a medium-sized turtle (5.5-8 inches) that can be recognized by its sculpted shell and orange coloration on the legs and neck (*photo right*). The preferred habitat of these turtles is slower moving mid-sized streams, with sandy bottoms and heavily vegetated stream banks. Wood Turtles spend most of the spring and summer in mixed or deciduous forests, fields, hay-fields, riparian wetlands including wet meadows, bogs, and beaver ponds. Then they return to the streams in late summer or early fall to their favored overwintering location.



Population declines of Wood Turtles have likely been caused by hay-mowing operations, development of wooded stream banks, roadway casualties, incidental collection of specimens for pets, unnaturally inflated rates of predation in suburban and urban areas, forestry and agricultural activities and pollution of streams.

- d. NHESP Rare Species in Neighboring Towns - Although most of the abutting towns' rare species occurrences are similar to those found in Foxborough, some include additional species that *could* also be found in Foxborough.

**Table 11B – State Listed Wildlife Species in Neighboring Towns**

Rare Species	Mansfield	Sharon	Wrentham	Norfolk	Plainville	Walpole
Eastern Box Turtle (SC)	2001	2007	2003	2006	2006	
Blanding's Turtle (T)	2002	2007	2003			
Marbled Salamander (T)	2006		2006	2005	2007	
Blue-spotted Salamander (SC)	1997	1995				1992
Bridle Shiner (SC)	1999	1956	2003	1995	1999	
Eastern Pondmussel (SC)		2000	1983			
Mocha Emerald Dragonfly (SC)			2002	2002		
Hessel's Hairstreak Butterfly (SC)		1988				1987
Oak Hairstreak Butterfly (SC)		1992	1992			
Frosted Elfin Butterfly (SC)		2005				

Source: Natural Heritage and Endangered Species Program, 2011

- e. NHESP Priority and Estimated Habitats - Priority Habitats and Estimated Habitat delineations are based on observations of state-listed species from the past 25 years that have been recorded in the NHESP database. Proposed habitat alterations within Priority Habitats may result in a take of a state-listed species and are therefore subject to regulatory review by the NHESP under the MESA. The Natural Heritage Atlas is the authoritative delineation of the boundaries of priority and estimated habitats. Currently, the 13th (2008) edition of the Atlas is the product of a statewide revision of Priority Habitat and Estimated Habitat boundaries to reflect the latest state-listed species data, understanding of species biology and habitat requirements, and GIS technology and data. Certified Vernal Pools (certified as of July 31, 2008) are also displayed in the Atlas.

- (1) Priority Habitats are based on the known geographical extent of habitat for all state-listed rare plant and animal species. Foxborough's Priority Habitats (per 2008 Atlas, with details from the 2004 NHESP Report *Core Habitats of Foxborough*):

PH 298 NE corner of Foxborough, near Sharon  
 PH 367 SE corner of Foxborough, near Beaumont's Pond (BM1094)  
 PH 488 Cocasset River/Cocasset River Park (details about this significant habitat area was not included in the 2004 report)  
 PH 1325 Lake Mirimichi and Witch Pond area (BM1162)

- (2) Estimated Habitats are a subset of Priority Habitats and do not include those areas delineated for state-listed plants or rare wildlife with strictly upland habitat requirements.

Foxborough's Priority and Estimated Habitats (per 2008 Atlas):

PH 566 and 567 Foolish Hill (BM1140)  
 PH 708 and 709 Near Gavin's Pond

## F. Scenic Resources and Unique Environments

### 1. Scenic Landscapes

The varied topography of the town provides many scenic areas and vistas, including the following trails and other significant areas.

- a. Warner Trail (Map 10A) - The Warner Trail is an AMC sanctioned trail from Sharon, to Diamond Hill in Rhode Island; it crosses through the State Forest and continues on to another scenic section around the Neponset Reservoir, across the bottom of Beach Street and then into Sharon near Rt. I-95.

- b. Oldham Trail - Another scenic trail, the Oldham trail, is located on the Sallie Conservation land on Main Street. The trail winds through an area of hardwoods and swamps and streams for several miles within 3/4 mile of the center of Town. This affords many apartment dwellers the opportunity to take quiet nature walks. The trail links up with trail systems of the F. Gilbert Hills State Forest near Sunset Lake.
- c. Canoe River Project (Map 10D) - The Canoe River Project covers approximately 300 acres within the Town of Foxborough and includes a scenic upstream stretch of the river. This area provides habitat for bird communities of unusual diversity and it has been rated of local, state, and regional significance by the 1974 Massachusetts Landscape and Natural Areas Survey. In June of 1991, 1,580 acres within the Canoe River Aquifer was designated as part of the Area of Critical Environmental Concern (ACEC) and given further recognition as a sole source aquifer in April, 1993 (for additional information, please see Section F.4, below).
- d. Scenic Roads - The Town has designated fourteen roads as scenic in their Scenic Road Bylaw (General Bylaw, Section 11). This title affords them closer review upon submittals for development. They are mostly narrow, usually tree lined or bordered by stonewalls and pass through the older areas of town.

- e. F. Gilbert Hills State Forest, 45 Mill Street (Map 10B) - Covering 1,027 acres in Foxborough and Wrentham, the State Forest is a passive use pine and oak forest with 23 miles of trails for hiking, mountain biking, horseback riding and ORVs (motorcycles only). The property was originally acquired in the 1920's, when the Department was buying abandoned farmlands for minimal dollars. Since 1992, the DCR has added over 200 acres to the property in Foxborough. Most of these new parcels were of strategic importance to the Town's open space and recreational interests, since they were adjacent to other Town conservation properties and had long been targeted for protection. In addition, significant wildlife and recreational habitats within the AMC Warner Trail and designated Green Belt areas have been preserved by virtue of gifts from landowners.



*Photo by Eric Nelson*

The Forest's numerous rock outcroppings and overlooks offer a wide variety of vistas. The view from the top of "High Rocks" is quite impressive and for years people have walked to its summit to gain expansive views of land as far away as Rhode Island.

- f. Neponset Reservoir - The Neponset Reservoir is one of the largest water bodies in the I-95 Boston/Providence corridor. According to the Mass GIS April 2001 aerial photo, the Reservoir's total acreage is approximately 320 acres (including approximately 11 acres of upland islands). It is a relatively shallow body of water, ranging from one to four feet in its northern and eastern sections and four to seven feet in southern sections and deepest near the dam, at eight to ten feet. The Reservoir has approximately nine miles of shoreline, with around 300 homes in its watershed (also, see Section 4.G.9). Water levels are managed by removing or replacing boards (5.5 inches each) at the dam outlet structure. The water level is also dependent on precipitation and ground water levels. In 2003, the Reservoir was lowered for safety reasons to reduce hydraulic pressure on the dam; in 2010, the dam was reconstructed, restoring water levels to historic levels (el 629).



2. **Unusual Geological Features**

Several sites, believed to be of Native American origin, are scattered in secret locations around Town, including a bowl-shaped impression/hole in a large flat rock (*photo, right*) that is believed to have been used to crush acorns or corn.

In the eastern section of town, the Canoe River Aquifer ACEC (see Subsection 4.a below) contains archaeological and historical resources dating back 7,000 years including Native American settlements, national historic districts and colonial architecture.

To the northeast is the King Phillip Cave and Rock Area conservation land in Sharon, where it is surmised that ancient peoples once gathered for observance of the solstice and made other astronomical observations. Nearby, on the west side of the Boston-Providence railroad, there is a large woodland area bordered on the east by the above conservation area. It extends north to the "Bell Rock" that marks the corner of Sharon and Foxboro town lines, where it is bounded on the west by land owned by the Sharon Conservation Commission. In the western part of Town, the F. Gilbert Hills State Forest contains a dolmen and boulders that some believe to be of Celtic origin.

### 3. Cultural and Historical Areas

Three organizations, the Foxborough Historical Commission (a Town commission), the Foxborough Historic District Commission and the Foxborough Historical Society, are at the forefront of historic preservation efforts in town. The Foxborough Historical Commission is chartered to preserve the Town's historic assets. For information about the Historical Commission, including an inventory of cultural resources and Foxborough sites that are listed on the National Register of Historic Places, please visit their website linked to the Town's site at [www.foxboroughma.gov](http://www.foxboroughma.gov). In addition, the Commission has prepared a guide book entitled "Opportunities & Guidelines for Preserving Foxborough's Historic Past" (September 12, 2006), which may be reviewed at Boyden Library. The Foxborough Historical Society is a non-profit community partner to the Historical Commission sharing common interests and goals. The Society presents historical programs of community interest and also sponsors an annual multi-year Evelyn Thomas Scholarship for local college students focusing on history. The Foxborough Historic District Commission is responsible for the Baker Street Historic District.

### 4. Unique Environments

- a. Canoe River Aquifer ACEC (Map 8) – In 1991, the Secretary of Environmental Affairs designated the Canoe River Aquifer and associated areas as an Area of Critical Environmental Concern (ACEC), due to the highly significant environmental resources and high-yield aquifers found in the area. The Canoe River Aquifer is defined as a Sole Source Aquifer, which means that it supplies at least 50% of the drinking water to overlying towns and there are no physically, economically or legally viable opportunities for the development of alternative drinking water sources. The ACEC's boundary includes the Canoe River watershed and underlying aquifer in Sharon, Easton, Foxborough, Mansfield, Norton and Taunton. The Canoe River ACEC designation document states that the aquifer's [now 22] municipal wells are the primary source of drinking water for approximately 66,000 people. The DEP Division of Water Supply indicates that the aquifer is highly permeable and therefore highly threatened by inappropriate land uses and accidental spills in well recharge areas. In light of the dependence of several communities on the Canoe River aquifer for drinking water, and the vulnerability of the resource, contamination could have irreversible consequences and the adverse effects to the availability and quality of public drinking water supplies would be highly significant. In addition, the ACEC's extensive system of surface waters and wetlands supports a rich and diverse wildlife habitat, with almost 600 species of plants, birds, mammals, reptiles, amphibians and fish.



#### Water Bodies in Foxborough's portion of the ACEC:

Ponds: *Beaumont Pond, Factory Pond, Greeley's Pond* (photo, above)  
Rivers: *Canoe River; Little Canoe River*

Noteworthy wildlife sightings include bluebirds and indigo buntings, which migrate through the area every spring and fall, rough legged hawks nesting far south of their traditional breeding range, red-bellied woodpecker (northern edge of their range), spotted turtles, and many other birds and mammals. Publicly owned areas of the watershed are enjoyed by canoeists, fishermen, hikers, and outdoor enthusiasts. However, much of the vacant land within the riparian corridor is privately owned and is not protected or available for public use. It is crucial to protect and preserve lands within the aquifer to ensure continued water quality for the region.

The Massachusetts Wetland Protection Act and other State regulations require that added scrutiny and higher performance standards be applied to the evaluation of projects proposed within a designated ACEC. This enhanced protection gives communities the tools to preserve these watershed lands and unique cultural resource areas.

- b. Day Lighting of the Neponset River ~ An Environmental Success Story - One of the Town's most unique sites is the relocated Neponset River, which now runs along the rear section of the Gillette Stadium, Patriot Place complex. Significant alterations had occurred to the river and associated wetlands on the property in the 1940s to accommodate the construction of a horse racing track which included directing 1,900 linear feet of river into three buried culverts.

In 2001, the improvement of ecological conditions of the Neponset River became an integral part of the reconstruction of 238 acres of Patriots Stadium, a portion of the current Gillette Stadium property located near Route 1 in Foxborough. Through the cooperative efforts of the Patriots organization, federal, state and local agencies, the ecological value of the river was greatly improved by "day lighting" (*photo, right*) or restoring the river to an open channel as mitigation (replacement) for wetland related impacts associated with the construction of the new stadium.



This noteworthy project came to fruition in 2002, when an 8.4 acre river corridor was relocated and constructed on the property. The new river corridor increased the open channel by 2,100 linear feet, increased associated riverine wetlands from 0.94 acres to 3.9 acres and provided 3.3 acres of adjacent upland habitat. The project also provides water quality benefits to the Neponset River through sediment removal and pollution attenuation as well as aesthetic benefits to patrons during stadium events. As testimony to the project's success, wildlife species (birds, turtles, etc.) were almost immediately observed to be using the newly created and vegetated river corridor.

- c. Witch Pond Wellfield Area - Preservation of the Witch Pond wellfield area's irreplaceable natural features is critical, not only for the plants and animals that depend upon these habitats, but for the clean water that the area's wellfield generates for Foxborough's residents.
  - (1) Quaking Bog - Along the northern edge of Witch Pond is one of the most unusual and rare wetland communities, a quaking bog. Bogs are highly acidic nutrient-poor environments, which support a unique variety of plants, including carnivorous sundew and pitcher plants, cranberries, black spruce and tamarack. The foundation of the bog is *Sphagnum* moss, which grows out from the edge of a pond, forming a floating mat. A spongy layer of live and dead moss eventually grows thick and strong enough to support the growth of shrubs and trees and as its name suggests, may "quake" or feel bouncy when walked upon. Visitors should not walk on these floating mats as trampling can compromise the mat and damage fragile plants; there is also a danger of falling through to the water below.

- (2) *Atlantic White Cedar Swamp* - Another rare vegetative community, located along the periphery of the quaking bog, is a large Atlantic white cedar swamp (*photo, below*). A variety of animals, some rare, are found in association with Atlantic white cedar swamps. White cedar was preferred by early settlers for many uses due to its wood characteristics; it is light, workable and resistant to decay, contributing to its rarity. Few trees survived as the forested swamps were cleared for use as joists and frames, fence post and barrels.

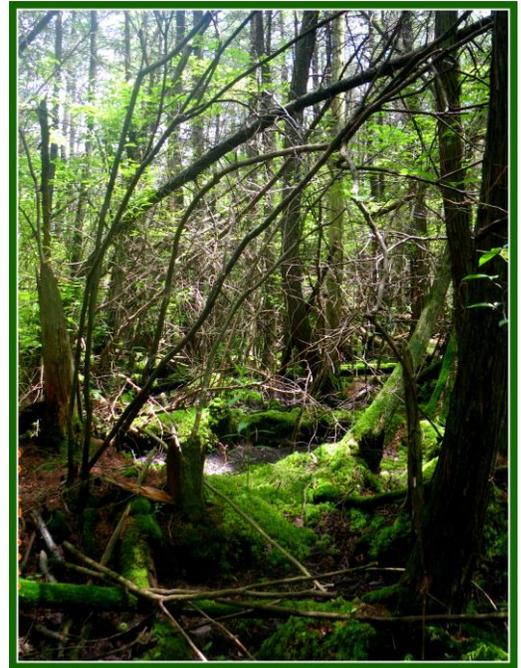
## **G. Environmental Challenges**

To ensure residents' safety on recreational and open space lands, this plan considers potential environmental problems that could conflict with recreation and open space goals. Potential environmental problems such as hazardous waste sites, landfills, erosion, chronic flooding, sedimentation, development impact, and groundwater and surface water pollution, have all been evaluated in setting recreation and open space priorities.

### **1. Hazardous Waste and Brownfield Areas** (Map 9)

According to the DEP, there have been 113 reportable releases of hazardous waste in Town since 1987. Additional information about these releases and their current status is available on the State's website at <http://public.dep.state.ma.us/SearchableSites2/Search.aspx>.

Of those 116 reportable releases, 71 were oil, 14 were hazardous materials, 6 were mixtures of oil and hazardous materials and 25 were unspecified materials. The DEP classifies the sites of hazardous waste releases by their compliance status. Most sites in Foxborough are classified under various categories that are not cause for serious concern. However, three sites in Foxborough are classified under Tier 1, which is the most dangerous level. These three sites include the former Seltsam Junkyard at 170-186 Oak Street, the Evelyn Porter Estate on Cocasset Street and the Neponset Reservoir (for information, see Section G.9). Tier 1A sites are those which represent the most serious threat due to contamination. The Massachusetts Contingency Plan or MCP (21E regulations), requires that listed sites "...be cleaned up to a level that protects people and the environment based on how the site is being or will be used, such as for housing or commercial purposes" (DEP 2008). Three sites fall under Tier 1D for oil releases. Any site/release where the responsible party fails to provide a required submittal to the DEP by a specified deadline is a 1D site. The three sites include the former Mansfield Bleachery, off Morse Street, 222 South Street and 100 North Street.



### **2. Mechanical and Chemical Vegetation Controls**

The mechanical and chemical treatments employed to control vegetation within various utility transmission easements needs to be conducted in an environmentally conscientiously manner. These easements provide valuable "edge" connecting different plant communities and habitats that are significant to wildlife by either directly providing all of the food, shelter and water requirements, or by facilitating easier access to these requirements when they exist in distant areas of a species range. In addition, these easements provide permanently maintained linkages between open space parcels, creating important wildlife corridors.

The Town should continue to take an active role in developing vegetative management plans for utility corridors in Town. Areas that are close to wetlands, sensitive areas, and/or adjacent to or linking public open space should be of highest concern.

### **3. Landfill (Closed/Capped)**

The former municipal landfill, located on E. Belcher Road, has been closed since 1997 and has been capped since 2001. In 2000, the town received a grant from the state to help to permanently "close" the landfill. Phase I and II construction of an impermeable surface liner over the top of the landfill, with gas venting, was completed and the final State approval given to the Town in 2001. No further action is contemplated or required to stem any environmental pollution problems. This

site has some potential for recreational; however, recreational use would need to be compatible with the primary purpose of the site. The site's periphery has recently been issued a state permit to be used as the town's composting area.

#### 4. **Erosion**

Use of transmission lines by off-road vehicles and dirt bikes continues to cause erosion, soil compaction and negative impacts to adjoining public and private property. The banks of the Town's rivers and streams must be monitored for erosion. Runoff from impervious surfaces including buildings, roads and parking lots can contribute to erosion far downstream from their location.

#### 5. **Chronic Flooding**

The town's location at the headwaters of the Taunton and Neponset river basins limits flood flows, and its extensive wetlands offer significant storm water storage areas. Nevertheless, Foxborough has experienced serious local flooding during major storms. This has led to proposals to developing solutions which either pass flows through enlarged culverts or hold it in impoundments and natural retention areas. Chronic flooding problems occur in several areas of town, particularly along the length of the Rumford River, with the hardest hit area located on Morse Street, between the Bleachery Ponds (aka Glue Factory Ponds, *photo, right*).

Some of the Town's small local culverts and narrow pipes cause local problems but have the benefit of providing unintended detention that governs the rate of downstream flow. It is important that such storage be provided in areas which can tolerate short-term inundation. Ponds provide little storage if they are filled at the beginning of a storm. To guard against flooding of key roads during major storms it would make sense to take advantage of natural storage by:

1. Acquiring open space for safe flood storage and recreational use;
2. Managing dams and spillways to keep normal pond levels low enough to supply a useful amount of storage during a storm; and
3. Empowering town personnel to raise and then lower spillway flashboards before and after storms in order to take advantage of the ponds' flood storage potential.

#### 6. **Dams**

In 2002, revisions to the Dam Safety Statute were enacted by the Massachusetts legislature requiring dam owners to register their dam(s) with the Office of Dam Safety, inspect and evaluate the current conditions and to maintain their dam(s) in good operating condition. Revised Dam Safety Regulations (302 CMR 10.00-10.16) became effective November 4, 2005 and are reflective of the statutory changes.

Although the town of Foxborough is proactively undertaking dam safety initiatives, town officials should consider additional dam management strategies to reduce the risk to public safety. Dams are rated as to their potential risk, should catastrophic failure occur, however, this hazard classification could increase if development downstream of the dam within the breach inundation zone increases in density. This could lead to increased risk to life and property as well as increased costs to upgrade and maintain the dam. To avoid increased costs and hazards, the approval of development in downstream inundation areas should be carefully considered by town authorities. Downstream areas might best serve the town as open space for the protection of water quality, recreation and wildlife corridors.

- a. Town Owned Dams - In October 2006, Foxborough contracted with an environmental engineering firm to inspect and evaluate six of these dams (in 2006, the Neponset Reservoir



Dam was privately owned). Four dams received a Hazard Rating of “Significant,” defined as “dams located where failure may cause loss of life and damage home(s), industrial or commercial facilities, secondary high-way(s) or railroad(s) or cause interruption of use or service of relatively important facilities.”

The Town currently owns seven dams, as follows:

- Neponset Reservoir Dam,
- Upper Reservoir Dam (Carpenter Pond Upper Dam #1),
- Carpenter Pond Dam (Lakeview, Carpenter Pond Dam #2),
- Gavin’s Pond Dam (Foxborough and Sharon share ownership of this dam),
- Glue Factory Ponds East and West (aka Bleachery Ponds),
- West Street Dam, and
- Foundry Pond Dam.

The Foundry Pond Dam received a Hazard Rating of “Low,” defined as “dams located where failure may cause minimal property damage to others. Loss of life is not expected.”

In 2003, while owned by Neponset Reservoir Company, the state-mandated inspection rated Neponset Reservoir Dam (*photo, right*) as a “Significant Hazard.” In 2010, the Neponset Reservoir Company reconstructed the dam and transferred ownership of the rebuilt dam to the Conservation Commission, at no cost to the Town.



- b. Privately Owned Dams - Five privately or county-owned dams are located in town; the owners of these dams are responsible for inspection and maintenance of the dams.
- Crackrock Pond Dam (owned by Neponset Reservoir Company),
  - Beaumont’s Pond Dam (owned by Beaumont Pond Home Owners Association),
  - Cocasset Lake Dam (owned by Cocasset Lake Association),
  - Greeley’s Pond Dam (owned by Norfolk County Commissioners), and
  - Varney Pond Dam (privately owned).

## 7. Sedimentation

An aspect of sedimentation that perhaps needs a greater focus is that of street sanding for winter traffic safety. The older parts of town drain directly to water courses without the benefit of retention/detention basins (with their sedimentation control capabilities). In the more severe winters, some of these street catch basins become overloaded with sand, to drainage pipes and then to water resource areas, resulting in point source pollution issues.

## 8. Ground and Surface Water Issues

Due to the Town's unique location at the summit of the hydrological divide of two major river basins (the Neponset and Taunton Rivers), groundwater originating within Town boundaries is either recycled into its aquifers after use, or flows out of Town via brooks and streams. Little, if any, groundwater flows into the Town from surrounding Towns.

- (a) Stormwater Issues - Application of chemicals, such as pesticides, herbicides or fertilizers to lawns, gardens or fields, as well as salt on icy roads, will usually result in contaminated stormwater. This stormwater, which usually drains into wetlands or water bodies and/ or filters into the ground, poses a threat to surface and ground water. The EPA’s NPDES Phase II stormwater requirements were created to help control the negative effects of erosion and treat stormwater before it is released into wetlands or water bodies. The Town should review and comply with these requirements.

- (b) Board of Health Issues - With no sewage system and a limited public water supply, Foxborough residents face the dual-sided issue of having groundwater threatened by malfunctioning septic systems, as well as having no sewage system alternative to replace such malfunctioning systems. The costs of replacing or repairing such systems can be substantial. Foxborough's Board of Health's groundwater separation requirements are stricter than the State's Environmental Code, Title V, requiring an additional foot of separation and two feet in any Zone II. The Board of Health also has private well regulations.

In 2004 the US Environmental Protection Agency released a report to Congress showing that 47% of all sewer overflows nationwide were caused by Fats, Oils, and Grease, or FOG. FOG is a byproduct of cooking, food preparation, and clean-up. Foxborough's Board of Health has established a FOG Control Program to promote environmental protection, ensure the protection of public health, and support a proactive approach to manage FOG in Foxborough, reducing costs associated with FOG and promoting economic growth. With approximately 6,400 residential kitchens and over 150 commercial kitchens, if all Town residents kept only one tablespoon of FOG from going down the drain, it would equal 25 gallons of FOG per day.

The Board of Health adopted Floor Drain Regulations in 1995, prohibiting the installation of floor drains in order to preserve and protect Foxborough's drinking water resources from discharges of pollutants to the ground via floor drains. To maintain its water self-sufficiency, the Town must vigilantly protect its water supply and minimize its impacts upon the groundwater supply.

## 9. Impaired Water Bodies

According to the Environmental Protection Agency's (EPA) 2010 data for Impaired Waters and TMDL Information and the Massachusetts Division of Watershed Management Watershed Planning Program's Final 2010 Integrated List of Waters dated November, 2011, Foxborough contains six impaired water bodies (see excerpts below): the Neponset River, Robinson Brook, Wading River, Rumford River, Gunawatte Farm Pond and Neponset Reservoir, (see Map 9). Waters were listed in Category 5 if they were identified as impaired (i.e., not supporting one or more intended use), the impairment was related to the presence of one or more "pollutants", and the source of those pollutants was not considered to be natural.

Name	Segment	Description	Size	Impairment Cause
Neponset River	MA73-01	Neponset Reservoir Outlet, Foxborough to confluence with East Branch, Canton	13.3 Miles	Total Suspended Solids (TSS) Sedimentation/Siltation Phosphorus (Total) PCB in Fish Tissue Oxygen, Dissolved Excess Algal Growth Turbidity
Neponset Reservoir	MA73034	Foxborough	310.9 Acres	(Non-Native Aquatic Plants*) Excess Algal Growth Turbidity
Ganawatte Farm Pond	MA73037	Walpole/Sharon/Foxborough	29.5 Acres	Oxygen, Dissolved Aquatic Plants (Macrophytes) Secchi disk transparency
Robinson Brook	MA62-14	Outlet Hersey Pond, Foxborough to confluence with Rumford River, Mansfield.	1.9 Miles	Aquatic Macroinvertebrate Bioassessments (Physical substrate habitat alterations*)
Wading River	MA62-47	Source in wetland north of West Street, Foxborough to Balcolm Street, Mansfield (due to error on 1987 Wrentham quad it appears segment includes part of Cocasset River)	4.2 Miles	Fecal Coliform Oxygen, Dissolved

The Neponset Reservoir is contaminated by noxious aquatic plants, excess algal growth and turbidity. Approximately 320 acres in size, the Reservoir was originally created in the 1800s, when an earthen dam and outlet structure was built to create hydropower and an industrial water source. The Reservoir was contaminated during a 20 year period (1960s and 1970s) by industrial

discharge containing heavy metals and phosphates; the discharge had been permitted by the EPA and the Mass Department of Environmental Protection (DEP).

The Reservoir was listed by the DEP as a Tier 1A site (see Section G.1, above) according to M.G.L. Chapter 21E (the state Superfund Law). An Order of Responsibility was issued to the responsible party (the Foxborough Company) so that the financial liability for the contamination is clearly established. The resolution of cadmium contamination through the completion of the MPC process is still on-going.

A settlement for the discharge of phosphorus into the Reservoir (over a 20-year period) was completed in 2006 when a 2.5 million dollar fund was set up and the NRRC, Inc., a citizen's group, was organized to administer the funds for cleanup efforts. Studies of the Reservoir's water, wildlife, plants and sediments have been conducted over the last twenty years.

A Final Draft Phase III Remedial Action Plan, prepared by the consultants Woodard and Curran for Invensys Systems, Inc., regarding remediation of industrial contamination of the Neponset Reservoir and the downstream Crack Rock Pond was recently completed (dated June 17, 2010). The Public Comment period for the Draft Final Phase III Remedial Action Plan ended in September 2010. The DEP is still considering public comments, so the final disposition of the Draft Final Phase III Remedial Action Plan is still pending.

#### Vegetation Management, Neponset Reservoir

In the mid-2000s, the NRRC commissioned a feasibility study to identify appropriate and effective aquatic vegetation and algal control methods. The NRRC has also worked cooperatively with the Neponset Reservoir Company and the Conservation Commission over the last decade to perform annual flushing of the Reservoir. The nutrient rich conditions in the Neponset Reservoir (*photo, right*) are evidenced by the prolific growth of rooted aquatic vegetation and nuisance algal blooms. Water column conditions include low transparency and seasonally low dissolved oxygen levels. The combined effect of these conditions has severely degraded water quality, wildlife habitat, recreational opportunities, and general aesthetic appeal of the Neponset Reservoir.



In April of 2009, the NRRC began a three year program of aquatic vegetation management aimed at controlling excess populations of aquatic invasive plants, principally fanwort (*Cabomba caroliniana*), and less abundant populations of variable water milfoil (*Myriophyllum heterophyllum*) and curly leaf pondweed (*Potamogeton crispus*) through the use of the herbicide Floridone and/or other targeted herbicide treatments. In an attempt to correct the storm water runoff's nutrient loading, the NRRC is investigating run off control approaches such as street sweeping and pollutant trapping methods (including the use of water quality swales and detention basins). The NRRC's primary goal is to improve environmental conditions in the Neponset Reservoir; it plans to continue its campaign for environmentally friendly lakeside living.

#### **10. Invasive Species**

Non-native invasive species include both plants and animals that have been introduced into a new location by human activity that have the capability to flourish in the non-native environment through the lack of natural controls.

Invasive Plants have been introduced through a variety of means including horticultural activity (arboretums, gardening, etc.), land management activities (windbreaks, erosion control, etc.) and through accidental introductions (such as purple loosestrife which was brought to the U.S. via ship ballast water). As well, some species that are native to certain parts of the country (where they are not invasive) can become invasive when they are transported to other parts of the country for ornamental purposes (such as the black locust tree).

Although one-third of the 3,000 species listed in Seymour's (1969) *Flora of New England* are non-native, only a few species, when released from the natural controls present in their regions of origin, threaten to overwhelm our landscapes, alter our ecosystems, and change the face of New England. According to the North Carolina Botanical Gardens "Biota of North America" study, at least 4,000 species of non-native plants occur outside cultivation in the United States. Most of these escaped species cause few problems, but 79 species cost the U.S. economy more than 97 billion dollars annually in lost crops, failed recovery efforts for endangered species, and control efforts. Invasive plants are among the greatest threats to the integrity of natural areas. They disrupt the natural ecosystem by displacing more diverse and valuable plant communities often in large monocultures (single-species stands) reducing biodiversity and wildlife habitat value. Invasive species have contributed to the decline of 42% of U.S. endangered/threatened species and are the main cause for the decline of 18% of U.S. endangered/threatened species.

The decline of songbirds is also linked to the rise of non-native plants. Research has shown a higher incidence of nest predation for the robin and wood thrush in two invasive shrubs,



honeysuckle and buckthorn, as compared to native shrubs. Nest predation was attributed to lower nest height, the absence of sharp thorns and perhaps shrub architecture that facilitated easier predator movement. Invasive aquatic weeds restrict recreational use in lakes and results in the stunted growth of fish.

Many non-native invasive plant species have become established in the wetland and upland areas in Foxborough, including (but not limited to) trees such as tree-of-heaven and Norway maple; shrubs such as honeysuckle, winged euonymus, multiflora rose, buckthorn; herbs and upland vines such as knotweed and bittersweet, respectively; as well submerged aquatic weeds, such as fanwort and variable milfoil.

Purple loosestrife (*photo, above*), a colorful wetland emergent plant, is of particular concern because of its ability for prolific growth and rapid reproductive capabilities in exposed wet soils and shallow areas along the periphery of lakes.

Non-native invasive species are already well established and widespread throughout the region making eradication impossible. Therefore, the focus of management is to treat existing infestations and prevent further spread. Homeowners can prevent the spread of non-native invasive species by maintaining a healthy zone of native vegetation adjacent to wetlands, lakes and ponds adjacent to their properties, limiting disturbance to soils and native vegetation and avoiding the use of invasive plants in home gardens and landscaping.

Invasive Animals in Foxborough include Mute Swans (*photo, right*), which are currently found on the Neponset Reservoir and other Town water bodies. Although these birds are majestic in appearance, they aggressively out-compete our native water fowls' breeding, feeding and resting habitats.



#### 11. Environmental Equity

Foxborough is fortunate in that its open space and recreation resources extend throughout the community. However, accessibility to and within these resources could be improved, especially for elderly and handicapped residents.