

Section 4 – Environmental Inventory and Analysis

Geology, Soils and Topography

Geology and Soils

Glacial movement left Wakefield's landscape scattered with small pockets of variegated soil types. However, two main soil groups predominate. The first soil group consists of sand and gravel soils, principally Merrimac and Hinckley, which vary from fertile soil to almost pure sand or gravel, sometimes with boulders. The second soil group includes the upland soils of medium texture, largely the Gloucester series, which are often shallow and may have bedrock outcrops.

The soils are generally porous sandy loams, but the varied topography allows for areas containing organic soils often associated with lowlands and wetlands. There are small pockets of wetlands as well as numerous rock outcrops reflecting areas with shallow soils. There are few soils of great value for agriculture. The only form of agriculture that is much practiced in Wakefield is greenhouse horticulture. The sandy soils of the lowlands are excellent media for such seedbeds and nurseries.

Topography

Wakefield has a sufficiently varied topography to make it an interesting and highly individual Town. The topography is comprised of several hills with rock outcrops, low hummocks of gravely deposits, green fields, and swamp and marshlands. The highest points are Harts Hill, which is 230 feet above mean sea level (MSL); Greenwood Hill, which is about 250 feet above MSL; and "Rattlesnake Rock", which is 220 feet above MSL. Naturally, the two lakes, Lake Quannapowitt and Crystal Lake, are also significant features of the landscape.

Lower elevation topographical features are found at Lake Quannapowitt, Crystal Lake, the Saugus River, the Mill River, and Reedy Meadow. There are numerous pockets of small wetlands dispersed throughout Wakefield. Heavy rain during the June 1998 storm led to flooding along the Mill River and in a number of additional lowlands and wetlands areas. This flooding renewed attention to new construction near the rivers and wetlands.

Landscape Character

Wakefield has a diversity of land use types within its 5,112 acres. Principal land use designations have been summarized in the table below. Based on the MacConnell Land Use Study from 1999, approximately 47.8% of Wakefield land areas are categorized as single family

or multi-family residential areas. The industrial/commercial sector encompasses 11.4% of the total Town acreage. The remaining lands fall into a number of land use types associated with open space, forestry, wetlands, or agricultural areas and make up 40.7% of the Town's acreage. Of special note is that almost 7% of Wakefield is comprised of Lake Quannapowitt and Crystal Lake.

Table 11: Land Use in Wakefield

	1991 Acres	1999 Acres	Change	% of Wakefield Land 1999
Forestry	1,124	1,045	-7.0%	20.4%
Agricultural	14	18	28.2%	0.4%
Open Lands	372	389	4.4%	7.6%
Wetlands	631	628	-0.5%	12.3%
Single-Family	2,366	2,425	2.5%	47.4%
Multi-Family	18	18	0.0%	0.4%
Commercial	363	366	0.9%	7.2%
Industrial	217	217	0.0%	4.2%

Data Source: MassGIS and The MacConnell Land Use Survey

Water Resources

Wakefield contains two lakes and several rivers and streams within its boundaries. The most significant from a local and regional recreational standpoint is the 247-acre Lake Quannapowitt, which is the subject of a separate section of this report. The Saugus River originates at Lake Quannapowitt, then flows to the east into Reedy Meadow, then southerly through the eastern portion of Town into Saugus, and eventually to the Atlantic Ocean. The Mill River is a small tributary stream to the Saugus River that originates at Crystal Lake. The Mill River flows through the industrial core of Wakefield and near the Water Street residential area. During the severe rainstorms of 1996, 1997, and 1998, many residents rediscovered the Mill River flood plain as flooding caused significant property damage.

Crystal Lake is located at the south end of the center of Town and is 78 acres in area. This was Wakefield's original and principal supply of domestic water for drinking and industry for many years. The pond outlet is the Mill River, flowing east to join the Saugus River at the Wakefield-Lynnfield-Saugus Town lines. In the early years, the Boston Ice Company operated a large icehouse on its northerly shores.

In the early 1900s, there was a move to build camps and bungalows on the west shore of Crystal Lake. At one time, the Town had an opportunity to purchase a 13-acre tract around the lake for \$9,000, but it was rejected by Town meeting. However, strict building restrictions were established in an attempt to discourage prospective buyers. Boating, bathing and fishing have long been prohibited.

Historical Background

The Quannapowitt Water Company, later known as the Wakefield Water Company, was empowered by a legislative act of 1872 to furnish water to the inhabitants of Stoneham and Wakefield, and was authorized to take water from both Crystal Lake and Lake Quannapowitt. However, it was not until 1883 that a pumping station was constructed and the company began laying pipes with Crystal Lake as the supply. The Crystal Lake Waterworks on Broadway is still standing and in use. The structure was considered for an individual nomination to the National Register of Historic Places.

In 1902, the Town of Wakefield purchased the properties and rights of the Wakefield Water Company, including the Green Street pipeline and the standpipe in Stoneham. The Town of Stoneham had by then entered the Metropolitan Water System.

In 1910, the Wakefield Water District was consolidated with the Wakefield Sewer Department. At present, the Department of Public Works (established in 1950) operates both systems. The main source of water supply was Crystal Lake until the Town entered the Metropolitan Water System in September 1958. Lake Quannapowitt was used briefly as a source of water during the 1957 drought. An emergency treatment plant was constructed near the southeasterly end of the lake. Wells at Sexton Avenue and Bay State Road supplemented the Town's water supply from the 1930's, but are no longer used.

Present Uses

Wakefield's average daily consumption of water is about 3 million gallons. Approximately 85% of the Town's water supply comes from the Massachusetts Water Resource Authority, and 10 to 15-percent comes from Crystal Lake. The MWRA's connection is through Melrose, along Greenwood Street to the pumping station on Linden Street. In the 1990s the MWRA completed construction of an additional connection on Bear Hill in the Middlesex Fells Reservation in Stoneham, coming into Wakefield via Albion Street. This will serve to meet the drinking water supply needs of the Town for the foreseeable future.

About 95% of the residences, commercial establishments, and industries in the Town are connected to the municipal sewer collection system, and most of the sewage from these sources flows through a main interceptor sewer into the MWRA's sewer system at the Wakefield-Melrose Town line. The main interceptor receives sewage from later sewers and services connected directly to it, and from trunk sewers in North Avenue, Main Street, and Nahant Street. The Farm Street Pumping Station services approximately one-third of the Town, and discharges into the main interceptor at the Melrose line.

Water Quality Assessment

A comprehensive assessment of water quality in the Saugus River drainage basin can be found on the Department of Environmental Protection's website. Click [here](#) to go to the DEP website. You will need to scroll down to the North Coastal Watershed 1998 Water Quality Assessment Report and choose section III. The water quality information in Table 12 is taken from that report.

The Department of Environmental Protection assigns a classification to all surface waters. In Wakefield, the rivers and lakes all carry the classification of "B", except for Crystal Lake, which is a drinking water supply lake and is classified as "A". Class "B" waters are designated as a habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. Some waters may also be designated for water supply with appropriate treatment. Class B waters should also be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters should also have consistently good aesthetic value. For each designated use, the river or stream is assessed as being in support, partially in support, or non-supportive of that use.

The use designations relevant to Wakefield waters are as follows:

Aquatic Life – The water shall provide suitable habitat for sustaining a native, naturally diverse community of aquatic flora and fauna.

Fish Consumption – Pollutants shall not result in unacceptable concentrations in edible portions of marketable fish or shellfish or for the recreational use of fish, shellfish, other aquatic life or wildlife for human consumption.

Primary Contact Recreation – Suitable for any recreation or other water use in which there is prolonged and intimate contact with the water with a significant risk of ingestion of water. These include, but are not limited to, wading, swimming, diving, surfing, and water skiing.

Secondary Contact Recreation – Suitable for any recreation or other water use in which contact with the water is either incidental or accidental. These include, but are not limited to, fishing, boating, and limited contact incident to shoreline activities.

Aesthetics – All surface waters shall be free from pollutants in concentrations or combinations that settle to form objectionable deposits; float as debris, scum, or other matter to form nuisances; produce objectionable odor, color, taste, or turbidity; or produce undesirable or nuisance species of aquatic life.

DEP is responsible for identifying waters of the Commonwealth that are impaired and for developing a plan to bring them into compliance. The list of impaired waters is known as the “303d” list. Once a waterbody is identified as impaired, DEP is required to develop a pollution budget known as a TMDL (Total Maximum Daily Load).

Table 12: Summary of Water Quality Information

Water Body	Class	Aquatic Life	Fish Consumption (for rivers and streams) OR trophic state (for ponds and lakes)	Primary Contact	Secondary Contact	Aesthetics	DEP 1998 303(d) list
Saugus River (from Quannapowitt outlet to Lynn Water Sewer Commission canal diversion)	B	Partial Support	Not assessed	Not assessed	Not assessed	Non-support	Pathogens, low dissolved oxygen, nutrients
Saugus River (from Lynn Water Sewer Commission diversion to Saugus Iron Works)	B	Non-support	Not assessed	Non-Support	Partial Support	Partial Support	
Mill River	B	Non-support	Not assessed	Non-Support	Partial Support	Partial Support	pH
Lake Quannapowitt	B	Partial Support	Eutrophic	Partial Support	Partial Support	Partial Support	Noxious aquatic, exotic species, turbidity, contaminated sediment, phosphorus, nitrogen, fecal bacteria
Crystal Lake	A	Not Assessed	Mesotrophic	Partial Support	Partial Support	Partial Support	Noxious plants

Source: DEP Water Quality Assessment, 2000

Water Supply Protection

The Town of Wakefield has acquired 35.26 acres of land in five parcels for the purpose of protecting Crystal Lake. Almost all other parcels in the watershed of the reservoir have been

developed for residential use. A large portion of the reservoir's watershed lies in the Town of Stoneham. As a result, inter-municipal cooperation and continued public education efforts are necessary for continued protection of the water supply, as is suggested in the North Suburban Water Supply Protection Plan done by MAPC in 1992. In that plan it was recommended that Wakefield encourage Stoneham to develop a watershed protection district for the portion of the Crystal Lake watershed located in Stoneham. In addition, the plan suggested that Wakefield create a Watershed Protection District Bylaw. The Town of Wakefield did upgrade its treatment facilities on Broadway to ensure continued compliance with state and federal safe drinking water regulations.

Aquifer Recharge Areas

As is noted above, the focus of Wakefield's drinking water protection efforts has been on its surface water supply coming from Crystal Lake. At one time, Wakefield obtained drinking water through groundwater wells. However, there are no permitted drinking water wells in Wakefield and the wells are no longer in operation. As a result, wellhead protection and aquifer recharge for individual wells are no longer an issue. The location of the aquifers within Wakefield can be seen on Map 4: Water Resources.

Vernal Pools

[Vernal pools](#) are small, shallow ponds that do not support fish and that have annual or semi-annual periods of dryness. Vernal pools are very important to a variety of wildlife species. Some amphibians breed exclusively in vernal pools while others spend their entire life cycles in such pools. The Massachusetts Natural Heritage and Endangered Species Program has a program by which vernal pools can be certified. Certified vernal pools are protected if they fall under the jurisdiction of the [Massachusetts Wetlands Protection Act Regulations](#). They are also protected under other state programs. There are currently no certified vernal pools in Wakefield. However, the state maintains a computerized database of potential vernal pools. There are 24 such sites in Wakefield. Although this is not a comprehensive listing, these would be good locations to investigate, along with other sites identified by the conservation agent.

Flood Hazard Areas

Wakefield's Zoning Bylaws contains a Floodplain Overlay Zoning District (Article V, Wakefield Zoning Bylaws) which defines floodplain districts as the areas designated as Zone A-1 through A-5 on the Town of Wakefield Flood Insurance Rate Map (FIRM) and the Flood Boundary and Floodway Map, both of which are on file with the Town Clerk and the Planning Board. These areas are depicted on Map 4: Water Resources. Building is allowed in these areas through approval by the Building Inspector who reviews applications to determine if they meet elevation

and floodproofing requirements of the State Building Code. Alternatively, building may be allowed through special permit if approved by the Board of Appeals.

Wetlands

Research and history have demonstrated that wetlands provide myriad functions including the protection of public and private water supplies; protection of groundwater supply; flood control; storm drainage prevention; prevention of pollution; protection of fisheries; and the protection of wildlife habitat. Additionally, wetlands may provide valuable open space that buffers and separates residential and commercial land uses.

Wakefield's major identified wetland areas are mapped on Map 4: Water Resources. As the map shows, many of the Town's wetlands are also zoned as 100-year floodplains, demonstrating the importance of wetlands for stormwater storage. The Water Resources Map does not include every wetland resource area in Wakefield. The map serves only as a guide to the more significant wetland areas in Town. Specific questions on a particular lot must be directed to the Conservation Commission. The Conservation Commission is empowered to regulate any activities which may impact wetlands locally under the Wetlands Protection Act (Section 40 of Chapter 131 M.G.L.), the Rivers Protection Act, and the Town of Wakefield Written Policies under the Conservation Commission.

Vegetation

An integral part of the establishment of breeding colonies of birds, as well as wildlife in general, is the available habitat.

General Inventory

In the Audubon Road area (by Reedy Meadow), a wide variety of plants, wildflowers, and shrubs exist. Of these, many provide food and/or shelter to birds and other wildlife. These include, but are not limited to, the following: purple loosestrife¹, cattails, Queen Anne's lace, several varieties of ferns, water lilies, skunk cabbage, and swamp azalea. It should also be noted that at least one rare plant was seen (whorled pegenia) as well as an unusual one (pipsissewa).

The forested wetland off Audubon Road is a red maple swamp. The trees are mostly deciduous, including maples, oaks, and some birch. There are very few evergreens. In addition, Reedy Meadow is one of only ten sites in Massachusetts designated as a [National Natural Landmark](#). It is also listed by Mass Audubon as an [Important Bird Area](#).

¹ It should be noted that [Purple Loosestrife](#) (*Lythrum Salicaria*), though a beautiful, purple, flowering plant, is a highly invasive and destructive wetland plant.

Rare, Threatened, and Endangered Plants

[Mass Wildlife](#)'s Natural Heritage Program lists on their March 1, 2003, inventory species that are considered rare or endangered that have been observed in Wakefield at one time. Only those species observed in the past 25 years are used in Natural Heritage project reviews in association with Massachusetts Wetlands Protection Regulations and Massachusetts Endangered Species Regulations. Though the species listed below have not been seen in recent years, it does not mean that they do not exist.

Table 13: Rare, Threatened, and Endangered Vascular Plants

Rare, Threatened, and Endangered Vascular Plants			
Element Name	Common Name	State Status	Most Recent Observation
Eriophorum gracile	Slender Cottongrass	Threatened	1913
Houstonia longifolia var longifolia	Long-Leaved Bluet	Endangered	1915

Source: Massachusetts Division of Fisheries and Wildlife, Natural Heritage Program

Fisheries and Wildlife

General Inventory

Wakefield is host to a wide variety of wildlife. In the Audubon Road area in the northeast portion of the Town (also known as Reedy Meadow or Lynnfield Marsh) rabbits, raccoons, skunks, muskrats, turtles, pheasants, ducks, Canada geese, and a variety of other bird species are commonly observed.

An environmental study of the avian population of Reedy Meadow was conducted by Interdisciplinary Environmental Planning (IEP from 1973 to 1981). It reported a variety of bird species as either resident migrant, transient, or rare. Species of birds sighted at Reedy Meadow and in surrounding habitat and believed to be permanent residents (indicated by an asterisk *), or usually present throughout the year, are as follows:

American Bittern	Canada Goose *	Mallard
American Kestrel *	Red-Shouldered Hawk *	Osprey *
Red-Tailed Hawk *	Ring-Necked Pheasant *	Virginia Rail
Red-Headed Woodpecker	Great Horned Owl *	Killdeer
Common Flicker *	Common Crow *	Fish Crow *
Long-Billed Marsh Wren	Grey Catbird	Brown Thrasher
Eastern Bluebird	Cedar Waxwing	Starling *
Yellow-Rumped Warbler *	Common Yellow Throat	Redwinged Blackbird
Common Grackle	Brown Headed Cowbird	American Goldfinch *
Rufous-sided Towhee	Cark-Eyed Junco *	Swamp Sparrow
White-Throated Sparrow	Song Sparrow *	Black Duck *
Sora Rail	Field Sparrow	

According to Mass Wildlife, the following mammals are believed to exist in Wakefield or to have been present at one time: otter, muskrat, mink, red and possibly gray fox, bat, cottontail rabbit, raccoon, opossum, gray and red squirrel, weasel, and woodchuck, as well as mice, rats and moles. In addition, the white-tailed deer is believed to be a transient species.

It should be noted that not all species of mammals and birds would inhabit the same areas. For instance, otter, mink, and muskrat would be found around brooks, streams, and marshes; rabbits in brush land; raccoons and opossums would be found in woodland areas; and fox in pastures and marsh. Beaver would also be found in the areas where there are bodies of water.

Finally, because of Wakefield's large water bodies, the Town's wildlife resources also include fish and amphibians. Fish and amphibians that are indigenous to Lake Quannapowitt are: largemouth bass, pickerel, brown bullhead, yellow and white perch, pumpkinseed, bluegill, common carp, golden shiner, and various species of "minnow". Some species of frogs and toads as well as the painted turtle, the snapping turtle, and the box turtle could also be present.

Rare, Threatened, and Endangered Animals

According to the Massachusetts Natural Heritage Program, the following animals have been observed in Wakefield and are listed by the state as rare, endangered, or of special concern.

Table 14: Rare, Threatened, and Endangered Animals

Rare, Threatened, and Endangered Animals				
Taxonomic Group	Scientific Name	Common Name	State Status	Most Recently Observed
Amphibian	Ambystoma laterale	Blue-Spotted Salamander	Special Concern	1989
Amphibian	Ambystoma opacum	Marbled Salamander	Threatened	1974
Bird	Gallinula chloropus	Common Moorhen	Special Concern	1990
Bird	Ixobrychus exilis	Least Bittern	Endangered	197-
Bird	Rallus elegans	King Rail	Threatened	1988
Beetle	Cicindela rufiventris hentzii	Hentz's Redbelly Tiger Beetle	Threatened	1909

Source: Massachusetts Division of Fish and Wildlife, Natural Heritage Program

Scenic Resources and Unique Environments

Major Characteristics or Unusual Geologic Features

Lake Quannapowitt: Wakefield's Outstanding Natural Resource

Wakefield's most important natural feature is Lake Quannapowitt, the southern end of which touches the Town Common and Veteran's Field. The lake is a 'Great Pond' under

Massachusetts' law and is considered the focal point of the community. The lake encompasses 247 surface acres with sandy beaches at either end. It forms the headwaters of the Saugus River, contributing to the water supply of the City of Lynn along its course.

The lake is readily accessible and widely used for recreational purposes by the general public. Access for swimming and wading is available at a public beach. A public boat ramp for sailboats and other small craft is available. A maximum outboard motor size limit of 10-horsepower was instituted in 1984 through Town petition to the State. The elimination of motorboats has contributed to the serene quality of the lake. Sailing and windsurfing have become particularly popular sports on the lake because of the steady crosswinds. The Quannapowitt Yacht Club, the oldest inland yacht club in the United States, is located on the western shore and moors approximately 100 boats.

The lake is the site of numerous other water-based activities including swimming, fishing, and canoeing. Ice skating, ice fishing, and ice sledding are popular in the winter months. The lake is a favorite spot for walkers, joggers, cyclists, and in-line skaters from Wakefield and the surrounding region. It is also enjoyed passively through the use of the park and picnic facilities on the shore.

The geological features of Lake Quannapowitt's watershed result from glacial erosion and deposition. The lake is a glacial kettle, and mainly glacial features and pre-glacial valleys control drainage. Surface deposits consist of a stratified and unstratified drift and a small amount of swamp deposits. These deposits are characterized as till: a poorly sorted mixture of sand, gravel, silt, and clay. Organic sediments are widespread in the area, which are underlain by leached sand and silt and may contain peat deposits.

Historically, the lake was known as the Great Pond or Reading Pond. In 1847, it was given the name Quannapowitt in honor of one of the signers of the 1686 Indian deed. For years, ice was harvested on the shores of the lake and shipped to Boston. A devastating fire in 1929 consumed the last of the ice warehouses, which had been built on Hartshorne Meadows, and is now Veteran's Field. After the fire, the Town purchased the property at the corner of Church Street and North Avenue, including the [Colonel James Hartshorne House](#).

Other Areas of Natural Scenic Beauty

Reedy Meadow, Breakheart Reservation and Crystal Lake also remain significant scenic resources for the Town.

Cultural and Historic Areas

In 2001, the Town of Wakefield commissioned a Preservation Plan for the Town to be completed by consultant Alfred J. Lima. The plan looks extensively at cultural and historic resources in the

Town and suggests goals and objectives as well as outlines an action plan for historic preservation. The subsections below highlight a few of Wakefield's historic and cultural properties and features but the Preservation Plan should be used as a resource for a much more comprehensive understanding of Wakefield's cultural and historic areas.

Hartshorne House

The Town purchased the property at the corner of Church Street and North Avenue in the 1920s, including the Colonel James Hartshorne House, which was built in 1681 and had been used as a boarding house for ice company employees. The Hartshorne House is now Wakefield's oldest structure and is maintained by the Hartshorne Family Trust and the [Wakefield Historical Society](#).

Town Center

Another important scenic resource of the Town is the Town center, which maintains a historical flavor yet remains an important economic base.

Elizabeth Boit House

Elizabeth Boit was a successful businesswoman who founded Harvard Knitting Mills in Wakefield in 1889. She built this home, which is listed on the [National Register of Historic Places: Where Women Made History](#), in 1910. Although the [Elizabeth Boit House](#) is not open to the public, it is a significant historical asset for the Town.

Historic Churches and Cemeteries

The historic churches include the First Parish Congregational Church, which had title to all common land until early in the 19th century. Four cemeteries are located on the west side of the lake: Lakeside Cemetery, established in 1846, and three Jewish cemeteries. Temple Israel Cemetery, established in 1859, was the first Jewish cemetery in the Boston area. Wakefield's first burying ground was located in the park where the bandstand now stands. When the first Town House was erected in 1834, the early graves were moved to a site on the north side of the present First Parish Congregational Church. A second burying ground had been laid out in 1688 along Church Street to the shore of the lake.

National Register Properties

In 1989, the Wakefield Historical Commission nominated 248 properties in Wakefield to be listed on the [National Register of Historic Places](#) for being architecturally, archeologically, or historically significant. They were accepted and the complete listing of properties can be seen at <http://www.wakefieldma.org/nationalregister.html> or in Appendix C of the Wakefield

Preservation Plan. All of the properties listed on the Town's "Cultural Resources of Wakefield" list that is stored at the Beebe Library are protected by the Town's [Demolition Delay bylaw](#).

Historic Districts

Wakefield has four National Register Districts. The districts are the Church-Lafayette Streets Historic District (with 25 properties); the Common Historic District (48 properties); the Wakefield Park Historic District (27 properties); and the Yale Avenue Historic District (13 properties). These districts are designated on Map 3: Special Landscape Features. The Wakefield Preservation Plan proposes adding 8 new historic districts at various locations within the Town.

Areas of Critical Environmental Concern

An Area of Critical Environmental Concern ([ACEC](#)) is a state-designated critical resource area. The Department of Conservation and Recreation administers the ACEC program on behalf of the Secretary of Environmental Affairs. The objectives of the ACEC program are: to identify and designate critical resource areas, to ensure that actions by state agencies protect and enhance the resources, and to support local and regional actions for the long-term stewardship of ACECs. The state's definition of an ACEC is "an area containing concentrations of highly significant environmental resources that has been formally designated by the Commonwealth's Secretary of Environmental Affairs". ACECs may be nominated by citizens groups, municipal officials, regional or state agencies, or by a legislator.

Golden Hills

The Golden Hills ACEC is about 500 acres of land containing a unique blend of residential and ecological resources within the heavily urbanized Boston metropolitan area. At the time of designation, approximately 300 acres of this land was open space. The terrain is varied, with the majority of the area being hilly, but also consisting of low, flat areas, three ponds, and wetlands scattered throughout the area. Bedrock outcrops, or ledges, are prevalent throughout, especially in the hilly sections. The Town of Saugus owns the three ponds and several acres of land fall under the jurisdiction of the Saugus Conservation Commission. Wakefield owns about 50 acres, which are mostly Town Forest and are noted on Map 3: Special Landscape Features. The Golden Hills area contains a local historic landmark known as Castel Clare. The Department of Conservation and Recreation's Breakheart Reservation is just to the north of the Golden Hills ACEC.

Environmental Challenges

Wetlands Degradation, Flooding, and Drainage Problems

Many of the environmental problems in Wakefield result in part from poorly planned, executed, or maintained residential development. Residents frequently complain to local authorities about drainage and flooding issues. Development in and near wetlands and in the flood plains of the Saugus and Mill Rivers has resulted in the degradation of these water resources as well as the flooding of many properties during severe rainstorms. Development in poorly drained areas has resulted in down gradient flooding as well.

Soil Erosion

Soil erosion, as a result of hydrological and wind processes, requires monitoring for both acute and chronic effects. Implications of soil erosion may include the degradation of water quality, transportation of absorbed pollutants, reduction in nutrient availability, and the alteration of topography and stream channels. Acute soil erosion is typically associated with active construction sites. Construction activities occurring within the jurisdiction of the Conservation Commission are required to address and mitigate for potential erosion and sedimentation impacts to regulated resource areas. Chronic soil erosion can occur as a result of altered hydrology or topography, which may include the removal of physical wind barriers, etc.

Traffic Concerns

The relatively old road network has given rise to concerns about traffic impacts on residential areas and in the downtown district. Unlike many communities, part of Wakefield's industrial zone (including an active sand and gravel business) is located near the center of the Town. As a result, heavy trucks must pass through residential neighborhoods to reach this industrial area. The Town, with the help of the Town's Traffic Advisory Committee, is consistently looking for ways to better control traffic problems and address areas where there have been complaints. In addition, the Town is currently looking into doing a parking needs study for the downtown. Fortunately, the Town has no history of significant air, water, or soil pollution from industrial or municipal sources.

Concerns with Lake Quannapowitt

The land on the north and northwest side of the lake was originally a vast wetland area. The Reading Drainage Canal cut off the shoreline area from the watershed of the lake in the late 1930's. The filling and diverting of wetland waters has increased the lake's flushing time and reduced filtering capacity, which has contributed to water quality degradation. The construction