# V. NATURAL RESOURCES AND CONSERVATION

## A. Introduction

Like other communities in New Hampshire, Salem was part of a national environmental awakening that led to federal and state legislation and regulation in the 1960's and 1970's. However, as a town which encountered rapid and extensive growth and development during that same time frame, Salem also became concerned about the loss of open space as a quality of life issue. Conservation and open space were issues addressed in the master planning efforts of the Town. Maps were prepared of environmental features, and regulations were adopted to assist in protecting them. A Conservation Commission was created and the Town began to set aside land for open space. The most recent update of the Master Plan in 1992 contained a number of recommendations related to conservation and open space, and they are reviewed herein.

Since the last Master Plan in 1992, several serious flood events led to the preparation of a special flood mitigation study for the Town. This study contains a broad range of recommendations for flood hazard mitigation, and those related to floodplain regulation, natural resource protection, and open space acquisition are further explored in this chapter.

At a regional level, during the past few years the Rockingham Planning Commission has published an inventory of important natural and cultural resources for the communities in its region, and prepared a Regional Open Space Plan. On the State level, the NH Shoreland Protection Act has taken effect since the last Master Plan. With goals of protecting and improving water quality, aquatic habitat, and scenic beauty, the act imposes standards for activities adjacent to the State=s public waters.

A review is also made of the effectiveness of current use assessment in Salem as a means of retaining open space, and of the impact of the allocation of a portion of the transfer tax to open space acquisition.

## B. Review of Past Master Planning for Conservation and Open Space in Salem

### 1. The 1962 Master Plan

Salem=s first Master Plan in 1962 contained the following recommendations related to the acquisition of land for open space and recreation purposes:

- X An area at the north end of Millville Lake for a public beach, boat landing, and waterfront park
- X Land at Captain=s Pond for a recreation area
- X Easements along all brooks and natural drainage ways, and around swamps

2. The 1972 Master Plan

In the decade following the adoption of the 1962 plan, no major actions were taken pursuant to the conservation-related recommendations, and the succeeding Master Plan of 1972 expanded upon the list of recommended open space and recreation areas for public acquisition, as follows:

- X 600 acres of land in the North Salem area
- X Property on the south side of Veteran=s Parkway
- X 68 acres on Bridge Street
- X The Spicket Hill Ski Area
- X The lake bottoms and shorefront property on Arlington, Millville, and Canobie Lakes *(NB: as these are public waters of the State, it is unclear why the lake bottoms were targeted in this Plan)*
- X Easements along the Spicket River

Subsequent to the 1972 plan, some open space lands were acquired adjacent to water resources and in the area of North Salem.

3. The 1986 Master Plan

In the years leading up to the preparation of the 1986 Master Plan, federally prepared maps of soils, topography, and groundwater availability were used to create a Development Opportunities and Limitations Plan and a Natural Resources Plan which noted the general locations of wet soils, steep slopes, groundwater recharge areas, agricultural land, and floodplains. These plans were published as part of the 1986 Master Plan. The first mapping of floodplains under the National Flood Insurance Program was also completed in 1979. Key recommendations of the 1986 Master Plan were as follows:

- X Development of new regulations to better protect wetlands, floodplains, and groundwater recharge areas
- X Initiation of a health code program to facilitate repair of faulty septic systems, especially around the lakes and ponds
- X Mapping of the Town=s prime wetlands
- X Establishment of greenbelts along drainage ways through regulation, and acquisition
- X Undertaking of a clean-up effort for the Spicket River
- X Development of regulations to protect against leaking underground storage tanks
- X Education of the public about natural resources
- X Implementation of the recommendations of recent water quality plans and studies
- X Acquisition of access to lakes and ponds for recreational use

Following the adoption of the 1986 plan, prime wetlands were mapped and officially designated as such pursuant to RSA 482-A:15, and a wetland ordinance was adopted and subsequently revised. In addition, the Town Forest Management Plan was prepared, more land was acquired

for open space and conservation purposes, and the Open Space Preservation Ordinance was adopted.

4. The 1992 Master Plan

An update of the 1986 Master Plan was adopted in 1992, and the conservation-related recommendations echoed those of the 1986 plan, as follows:

- X Development of buffer requirements to better protect water resources
- X Implementation of the recommendations of the 1986 Water Quality Study
- X Development of a Spicket River clean up program
- X Implementation of the Town Forest Management Plan
- X Encourage alternative development options that preserve open space
- X Dedication of Town land sales receipts and Land Use Change Tax to purchase additional open space
- X Education of the public about the benefits of open space
- X Establishment of greenbelts along water bodies and water courses
- X Encouragement of the donation of land and easements
- X Development of an easement monitoring program

Since the adoption of the 1992 plan, the wetlands ordinance and the Open Space Preservation Ordinance have both been revised, and a buffer requirement has been added around prime wetlands. More open space was acquired including more land for the Town Forest, for which a parking lot and pedestrian bridge were constructed and a trails map prepared. Finally, a conservation fund was established from proceeds of the Land Use Change Tax.

## C. Review of the Resource-related Recommendations of the Flood Hazard Mitigation Plan

Flooding of the Spicket River has been a problem since at least 1936 when spring rain combined with snowmelt caused extensive flood damage. Other major flood events and related damages occurred in March of 1968, May/June of 1984, March/April of 1987, October of 1996, and June of 1998. When the National Flood Insurance Program was initiated in the 1970's Salem took steps to participate, and adopted an ordinance in accordance with the standards of the Program for the regulation of development of the floodplains. As previously noted, the Town=s master planning efforts had consistently recommended regulatory protection and open space acquisition of the floodplains of the Spicket River as well as other drainage ways in the community. In 1990, the U.S. Army Corps of Engineers released a General Investigation Study of the Spicket River which called for the preservation of the natural flood storage areas along the Spicket River and adjacent to World=s End Pond. In 1998, the Federal Emergency Management Agency (FEMA) revised and reissued the Flood Insurance Rate Map (FIRM), upon which the Town=s Floodplain Development Regulations are based. The limits of the 100-year floodplain are displayed on Exhibit 1 of Salem's Water Resources.

The flooding in the latter half of the 1990's led the Town to seek funding to prepare a Flood Hazard Mitigation Plan, which was published in September of 1999. While much of the report is devoted to emergency management issues such as warnings, operations, and evacuation, it also addresses mitigation measures including prevention of flood damage, protection of property, and protection of natural resources.

Under prevention of flood damage, a recommended approach is the adoption of zoning regulations that restrict development to uses that cannot be damaged by flooding. The Plan contains a table in which all relevant sections of the current zoning ordinance and subdivision regulations are cited and summarized. It is specifically recommended that the Town=s land use regulations be amended to Afurther protect open space@ and to restrict Athe placement of debris and hazardous materials within the floodplains@. Prevention of flood damage can also be accomplished through the acquisition of open space or of easements that will prohibit development and thereby prevent flood damage from occurring.

Property protection includes a variety of approaches where the floodplains are already developed, and two are of interest for conservation purposes. One option is to relocate existing buildings to a site outside of the floodplain, and another alternative is to acquire a building in a floodprone area, and demolish it, returning the site to a more natural condition. These are more costly options but funding is becoming available at the federal level to assist in such actions.

While natural resource protection is similar to open space preservation, the focus is shifted from damage prevention to the retention of flood storage capacity and water treatment capabilities of wetlands in particular. Erosion and sedimentation control are also advocated as a means of preserving storage capacity and water quality.

Under the heading of emergency management measures is a discussion of the need to prevent contamination of water resources, including potable water sources, from the release and spread of pollutants by floodwaters. Related recommendations include inspection of above and below ground storage tanks to insure proper anchoring and freedom from leaks, and the removal of hazardous materials from the floodplain.

## D. Regional Open Space Planning Efforts

### 1. The Regional Environmental Planning Program

In 1998, the Rockingham Planning Commission (RPC) published the Local Inventory of Important Natural and Cultural Resources as part of a Year One Report of the Regional Environmental Planning Program (REPP), co-sponsored and funded by the New Hampshire Department of Environmental Services (NHDES). The REPP was intended to identify important natural and cultural resources for each community in the region including Salem. In addition to mapping the water resources, wetlands, farmlands, steep slopes, and existing conservation lands,

the communities were also provided with the sites included in the New Hampshire Natural Heritage Inventory (NHNHI) database for rare plants, wildlife, and natural communities. A list of Salem=s rare species and exemplary natural communities contained in Table V-1.

**TABLE V-1**
**Rare Species and Exemplary Natural Communities in Salem**

| Species or Community Name | Listing | | # of Locations in Past 20 Years | | NH Natural Heritage Inventory Priority |
|---|---|---|---|---|---|
| | Federal | State | Salem | State | |
| **Natural Communities - Terrestrial** | | | | | |
| 1. SNE Dry Rich Forest on Acidic/Circumneutral bedrock or till | - | - | 1 | 11 | Extremely high importance |
| 2. SNE Floodplain Forest | - | - | 2 | 48 | Very high importance |
| **Natural Communities - Palustrine** | | | | | |
| 1. SNE Acidic Level Fen | - | - | 1 | 14 | High importance |
| **Plants** | | | | | |
| 1. Downy Arrow-wood (Viburnum rafinesquianum) | - | Endangered | 1 | 6 | Very high importance |
| 2. Hairy Stargrass (Hypoxis hirsuta) | - | Threatened | Historical | 13 | - |
| 3. River Birch (Betula nigra) | - | Threatened | 2 | 12 | Very high importance |
| 4. Skydrop Aster (aster patens var patens) | - | Threatened | 1 | 10 | High importance |
| 5. Swamp Azelea (Rhododendron viscosum) | - | Threatened | 8 | 42 | Very high importance |
| 6. Wild Garlic (Allium canadense) | - | Endangered | 1 | 5 | Very high importance |
| 7. Wild Lupine (Lupinus perennis) | - | Threatened | 1 | 38 | Very high importance |
| **Vertebrates - Fish** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 1. Banded Sunfish (Enneacanthus obesus) | - | - | Historical | 8 | |

*Source: NH Natural Heritage Inventory, July 5, 2000.*

Each town was then asked to identify important natural and cultural resources that would be of the highest priority for acquisition through potential funding that could be available from the Land and Community Heritage Investment Program (LCHIP), which was in its formative stages at that time. In Salem, 13 of the 15 sites identified by the Town Planning Office were related to conservation and natural resources, as follows:

- X 15 acres south of Lowell Road, close to the Pelham townline for open space and recreation
- X 50 acres north of Pelham Road near the Windham townline for Porcupine Brook watershed protection
- X 20 acres south of Lowell Road for Porcupine Brook watershed protection
- X 100 acres east of Lawrence Road in the Spicket River floodplain
- X 100 acres north of Town Farm Road in the Spicket River floodplain
- X 20 acres adjacent to Providence Hill in the Spicket River floodplain
- X 20 acres west of Zion Hill Road for Hittytitty Brook watershed protection
- X 40 acres west of Zion Hill Road that is prime farmland
- X 80 acres east of Haverhill Road which includes Mystery Hill
- X 50 acres west of Shannon Road for trails and recreation
- X 100 acres east of Lawrence Road around World End Pond
- X 30 acres adjacent to Veteran=s Parkway for open space protection
- X 100 acres south of Cluff Road in the Spicket River floodplain

2. The Regional Open Space Plan

The Regional Open Space Plan, published in March 2000, was also developed as part of the REPP and with the support of NHDES. The inventories that were developed in the early stages of the REPP were used to map large, unfragmented areas of undeveloped land that had been identified as on a piecemeal basis by the communities as the important resources which were of high priority for acquisition. Linkages were identified to establish connections between these unfragmented areas of undeveloped land, and these interconnected lands were portrayed as greenways, which formed the primary structure of the open space plan. The text of the plan examined land development trends and the complementary changes in open space in general, and current use parcels in particular. Not surprisingly, in Salem and in the region, land in development has increased dramatically since 1953, while open lands such as farmland and forest have declined by an equally dramatic amount.

The plan resulted in a set of general policies and recommendations for land protection, and a series of graphics at the regional level, as well as a map of conservation lands for each community. The general policies and recommendations for land protection are as follows:

X Protect critical natural resources
X Promote interconnections of protected open space
X Promote compact development through Aconservation development@
X Promote inter-municipal cooperation in land protection
X Concentrate public infrastructure investment in developed areas
X Promote public awareness
X Establish consistent funding for open space protection
X Increase appropriate public access to water bodies and land resources
X Strategize for large and contiguous tracts of land

In additional to these general recommendations, several specific recommendations were directed to the communities within the region, as follows:
X Review and update local inventories and master plans
X Review and reform planning and zoning regulations
X Develop a local open space plan
X Work with the large landowners

The regional graphics indicate the Salem Town Forest at the easterly extreme of a Apreliminary greenway@ that connects to other open lands to the west in Windham, and, perhaps, others to the north in Derry which lies outside of the RPC=s jurisdiction. The map of local conservation lands is entitled, ALands Restricted from Development and Town or State Owned Lands, Salem, New Hampshire, August, 2000", and it is included herein as Exhibit 2. The lands displayed on Exhibit 2 are all of the state and town owned lands, as well as all known parcels that are subject to conservation easements. The identified conservation easements amount to 737.9 acres.

**E. Applicability of the New Hampshire Comprehensive Shoreland Protection Act**

While first passed by the Legislature in 1991, the Comprehensive Shoreland Protection Act (RSA 483-B) did not take effect until July of 1994 due to a lack of funding to administer and enforce the provisions of the act. The condition of the shorelands of public waters, and more particularly, the types of activities that occurred thereon, were seen as critical to the quality of these waters. In addition to water quality, the Act is intended to protect aquatic habitat, prevent erosion, promote scenic beauty, conserve wetlands, preserve recreational opportunities, and control development. The provisions of the Shoreland Protection Act apply to all lands within 250 feet of public waters which include great ponds or artificial impoundments of 10 acres or more, and those rivers that are year-round flowing waters of fourth order or higher. Surface waters in Salem which are subject to the Shoreland Protection Act are displayed on Exhibit 1 and are identified as follows:

X Great Ponds or Artificial Impoundments
Arlington Mills Reservoir
Canobie Lake

Captain Pond
Hawkins Pond
Millville Lake
Shadow Lake
Taylor Reservoir
Wilson Pond
World End Pond

X Rivers - Spicket River

The Shoreland Protection Act provides standards and restrictions for uses within the protected shoreland, establishes a natural woodland buffer within 150 feet of a shoreline, and sets forth certain lot size standards adjacent to public waters.

Prohibited uses include the establishment or expansion of salt storage yards, automobile junkyards, and solid or hazardous waste facilities. Limitations are placed on certain types of fertilizers that may be used within 25 feet of the shoreline. Permitted uses are subject to rules for erosion and siltation control, and the threshold for a permit for alteration of terrain pursuant to RSA 485-A:17 has been lowered to 50,000 square feet in protected shoreland.

The woodland buffer places limitations on the extent of tree and vegetation removal within 150 feet of the shoreline, with more rigorous standards applied within the 50 feet directly adjacent to the water.

Special lots size and width standards are set forth for parcels not served by a public sewer system, and a series of setbacks for septic systems are linked to the soil characteristics in the protected shoreland.

Municipalities may adopt more stringent standards and may extend the same to other surface waters that are not considered public waters. Exemptions to the shoreland requirements may be requested by cities and towns upon submittal of certain evidence to the Commissioner of NHDES. Penalties may be assessed for violations of the Act and rules promulgated pursuant to it.

**F. A Review of Current Use Assessment in Salem**

First enabled by the State in the early 1970's, the current use taxation statute (RSA 79-A) permitted lower assessments and therefore lower property taxes due on open space lands such as farmland, forested lands, and wetlands. The intent of this system was to retain open space by alleviating the burden of market level assessments and the concomitant high tax burden, which would cause the sale, development, and loss of open space. The law also provided for a change of use tax which penalized the conversion of open land that had benefited from the lower assessment and taxes. The current use program has slowed the loss of open space but not

prevented it, and while the change of use tax acts as a disincentive to remove land from the program, it has not stopped the attrition. Another feature added to the program was the allowance for retention of the change of use tax as a conservation fund for the purposes of open space acquisition.

Salem has availed itself of the benefits of current use assessment and has established a conservation fund based on 50% of the receipts of the change of use tax up to a maximum of $100,000 annually. As of January 1, 2001, the fund totaled $222,610. While it is desirable to have this fund available to assist in the acquisition of open space, the addition of receipts from the change of use tax means that land previously held as open space is being lost. Table V-2 depicts the changes in current use acreage over the preceding decade and reveals a 17% decline in the total acreage, and a 31% decline in acres of farmland.

**TABLE V-2**

| CHANGES IN CURRENT USE ACREAGE - 1990-1999<br>Salem, NH | | | | | |
|---|---|---|---|---|---|
| **Year** | **Farmland** | **Forest** | **Wetland** | **Total** | **Removed from CU** |
| | acres | acres | acres | acres | net acres |
| 1990 | 529 | 1628 | 339 | 2496 | |
| 1991 | 527 | 1633 | 334 | 2494 | 2 |
| 1992 | 510 | 1653 | 324 | 2487 | 7 |
| 1993 | 394 | 1630 | 300 | 2324 | 163 |
| 1994 | 393 | 1594 | 297 | 2284 | 40 |
| 1995 | 380 | 1555 | 296 | 2231 | 53 |
| 1996 | 376 | 1494 | 292 | 2162 | 69 |
| 1997 | 373 | 1488 | 292 | 2153 | 9 |
| 1998 | 373 | 1463 | 292 | 2128 | 25 |
| 1999 | 364 | 1429 | 285 | 2078 | 50 |
| Net Acreage Removed for Decade | 165 | 199 | 54 | 418 | 418 |

## G. Natural Resources and Conservation Recommendations

XImplement the natural resource and conservation-related recommendations of the Flood Hazard Mitigation Plan, as follows:

i. Adopt more restrictive floodplain zoning to prohibit uses that can be damaged by flooding, and to restrict the placement of debris and hazardous materials in the floodplain.

ii. Acquire land, easements, or development rights in the floodplain to prevent flood damage and preserve flood storage capacity.

iii. Acquire and relocate or demolish existing structures in floodprone areas.

XReview and update the priority open space acquisition list prepared for the REPP with a focus on environmentally sensitive and visually important areas.

X Initiate an acquisition program for the open space parcels identified in the updated REPP list, using the conservation fund from the change of use tax, as well as funding

available through LCHIP, augmented as necessary by annual appropriations.

XIncrease the allocation of the change of use tax to the conservation fund.

XAmend the Town=s land use regulations to recognize the provisions of RSA 483-B, the NH Comprehensive Shoreland Protection Act, and require applicants for developments that are subject to the provisions of the act to present evidence of review and approval from the NHDES.

XContinue the Spicket River Clean-up Program.

XRevise the Open Space Preservation Ordinance to create better incentives and create higher standards for private protection of open space and natural resources.

XMake use of the Open Space Preservation Ordinance mandatory on high-priority sites.

XContinue to encourage the donation of land and easements in fragile areas such as wetlands and floodplains and adjacent existing protected parcels.

XDevelop a program to monitor existing conservation easements.

**Supporting Studies and References**

X*Local Inventory of Important Natural Resources, Year One Report of the Regional Environmental Planning Program (REPP)*; Rockingham Planning Commission; June, 1998.

X*Regional Open Space Plan*; Rockingham Planning Commission; March 2000.

X*Town of Salem, New Hampshire Flood Hazard Mitigation Plan*; SFC Engineering Partnership, Inc.; September 1999.

XE-mail communication with Sara Cairns, Data Manager/Biologist for the NH Natural Heritage Inventory, February 16, 2001.