

The 2010 Plan of Conservation is comprised of  
 20 pages Text (goals of the plan)  
 6 pages Actions Steps (policies and actions)  
 NOTE: *documents are on the city planning website: middletownplanning.com*

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## PLAN OF CONSERVATION 2010

Middletown contains a wide diversity of environments, including wooded uplands, traprock ridges, riverfronts, and inland wetlands, meadows and conservation areas, in addition to some highly urbanized areas. Uplands provide walking, hiking, and wildlife habitat for a variety of species. Traprock ridges represent a unique and localized geologic formation that adds to the local identity. The Connecticut River offers recreational opportunities, scenic views, and an undeveloped riverine corridor for wildlife. The abundant opportunities available to Middletown residents within a small geographic area enable residents to interact with and enjoy the natural assets the City has to offer. **MAP Middletown geology, border faults**

The Plan of Conservation and Development goals for protecting the natural environment are:

- protecting the city's life support system, its green infrastructure.
- creating a strategically planned and managed network of parks, greenways, conservation easements, and working lands with conservation value that supports native species, maintains natural ecological processes, sustains air and water resources, and contributes to the health and quality of life for Middletown's communities and people.

### **OPEN SPACE**

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Open spaces are undeveloped lands, environmentally sensitive lands, and natural features that protect and enhance the city's natural diversity.

The Plan of Conservation goals for open space are:

- *acquiring land identified in the Open Space Plan (Map of Eligible Parcels).*
- *creating a system of open space corridors throughout the city.*
- *maintaining carefully selected undeveloped land, especially farmland to preserve Middletown's countryside.*

The Open Space Plan (map of eligible parcels) was developed by the Conservation Commission and the Midstate Regional Planning Agency **MAP**. This plan considered natural watercourses, environmentally sensitive areas, agricultural lands, wildlife habitats, existing open space, and prime areas that the City should target when acquiring new lands. The Plan of Conservation was adopted in 1993, as the Open Space chapter, an addition to the 1991 Plan of Development.

Rather than identifying individual properties with unique features, the open space plan aims to connect forests, brooks, steep slopes, and wetlands into linear corridors throughout the city. The plan also calls for a systematic approach to coordinate open space land purchases, subdivision review, and environmental protection.

### **MAP open space purchases: early and recent ILLUSTRATION Corridor principle**

#### **SIDEBAR**

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Open space parcels represent land that is undeveloped because of legal restrictions placed on the property. These lands are intended to remain undeveloped, thereby preserving the city's countryside and protecting the natural resources on the site. They may be owned by the city, state, or by private conservation organizations, such as the Northern Middlesex County Land Trust, Mattabeseck Audubon Society, or the CT Forest & Park Association.

Middletown residents have been strong proponents of acquiring open space parcels. In 1989 city residents approved a referendum to establish a \$5 million Open Space Trust Fund. Since 1991, over 1,000 acres have been set aside for open space purposes. Recent large properties acquired by the City include Guida Farms (100 acres), Long Hill Estate (106 acres), and the Schwartzkopf property (53 acres) and Daniels (60 acres) properties. Other open space acquisitions, such as the Tynan Park parcel, have expanded existing protected and recreational areas. The city has leveraged \$8 million dollars since 1991 to acquire open space land.

**Amt of land purchased since 2000: \_\_\_\_\_ (acreage).**

**TABLE: 2010 Open Space**

city, state, private homeowners assoc's land, water district; school property, cemeteries (FYI)

*The city figure does not include cemeteries or schools, though it may include institutional property.*

By approving a \$5 million referendum and adopting its Open Space Plan in 1993, Middletown established itself as one of the pioneers in open space planning in Connecticut. It wasn't until 1998 when the State established a committee to study the state's process for acquiring open space lands.

**DEFINITION Open Space**

"any area of land, including forest land, land designated as wetland under Section 22a-30, and not excluding farmland, the preservation or restriction of the use of which would 1) maintain and enhance the conservation of natural or scenic resources, 2) protect natural streams or water supply, 3) promote conservation of soils, wetlands, beaches, or tidal marshes, 4) enhance the value to the public of abutting or neighboring parks, forests, wildlife preserves, nature reservations or sanctuaries or other open spaces, 5) enhance public recreation opportunities, 6) preserve historic sites, or 7) promote orderly urban or suburban development."

- CT General Statutes (CGS) Section 12-107b

Connecticut has established a goal of acquiring 21% of the state's land area for open space purposes. It is not anticipated to meet this goal before 2023. To provide assistance to municipalities, the state has made funds available for acquisition purposes and recently created a new fund called the Charter Oak Open Space Trust Account to further open space purchases.

The above definition is particularly important when it concerns open space acquisitions

and obtaining state grants for open space lands. The Open Space and Watershed Land Acquisition Grant Program (CGS Section 7-131d to k) provides financial assistance to municipalities to acquire open spaces. Criteria include, but are not limited to, the land's value for recreation, forestry, or natural resources, outstanding example of native ecological community, and value for preserving local agricultural heritage. Emphasis will also be given to those areas that comply with local and regional open space or conservation and development plans. Middletown has benefited from these state programs. The State Department of Environmental Protection examine local plans and seeks concurrence between the plan and acquisition, it is important that Middletown's Plan of Conservation & Development identifies all the potential open space needs areas in its proposed land use maps.

The open space map builds on the work that was adopted in 1993. The new plan continues to support the goals and strategies of the previous plan. In one sense, the Open Space plan seeks to support the natural environment and to provide meaningful linkages between dedicated parcels to create open space corridors that have high recreational and environmental value. **MAP Eligible parcels**

### **WHY SET ASIDE OPEN SPACE**

Open space provides buffers between developed and undeveloped land and helps to define the edges of cities and neighborhoods from the countryside. Rather than simply being "vacant" land, open space is important to identity and provides visual separation to distinguish different areas of the city. \_\_\_\_\_

Open space also protects view sheds and vistas. View sheds are particularly sensitive where the scenic corridor may be affected by land use changes that are highly visible. **ILLUSTRATION What's a view shed?** Open space areas that preserve the banks and riverfront of the Connecticut River and steep slopes, for example, should be encouraged. Ridgelines are another prominent landscape area that is highly susceptible to alterations. Scenery can be destroyed. Traprock ridges represent a local geologic characteristic that should be preserved through open space protection. Valley floors, such as through which the Sumner Brook flows, often present vistas through farms, distinguishing town from country.

In large measure, the Open Space Plan seeks to promote a new framework for future development, where principles of land conservation through sensitive design are emphasized. Rather than accept the commonplace in land development, where the land is consumed by spreading out across its length and breadth, this Open Space Plan asserts that conservation- and design-driven development should become the dominant design type. Development regulations should mandate design principles that conserve land rather than promote large individual lawns.

Since 1990, Middletown has permanently preserved 2,186 acres of land from 1990 to 2006. The city focused on land acquisition to accomplish both environmental protection and growth control goals. Open space acquisition efforts have focused on acquiring corridors with unique natural resources.

**Open Space Today: 22% of the city's total land area** **(CONFIRM)**  
**Total 6,067 acres**

In 1985, 21.8 % of Middletown's land was developed. (source UCONN)  
In 2002, 25.2% of Middletown's land was developed.

In 1990 the City owned 967 acres of parks & open space (3.5 % of the city land area).

Between 1990 and 2006, the city acquired 1,317 acres of land: (CONFIRM)

2,284 acres of publicly owned parks and open space.

851 acres were donated to land trusts, homeowners' associations

Open space: 3,134 acres (CONFIRM)

City, private undeveloped land (schools, Wesleyan, utility land, CVH watershed land):

\_\_\_\_\_acres

FYI: Inland Wetlands 2,933 ac. (Note: not actually Open Space. Can't walk on water)

## **MAPS**

Open Space/community (redo Figure 7.3)

Critical areas of natural resources (get this map)

## **CRITERIA FOR ELIGIBILITY OF PARCELS TO BE ON OPEN SPACE MAP**

**OPEN SPACE parcels are on map because** they are

- contiguous with existing open space
- parcel is vacant land
- size of parcel is 10 acres or larger
- parcel is not zoned industrial (*except I-3 parcels*)

Exceptions: smaller parcels which fit into a corridor of surrounding open space included

**TOTAL GOAL:** 2347 acres (51 parcels ranging in size from 2-acre to 550-acre parcels)

### **FARM parcels are on map because:**

Parcels were identified in the 2008 Farm Viability Study

TOTAL: 584 acres (36 parcels)

Average parcel size is 16 acres, ranging from 4.3 to 39.4 acres;

6 parcels are less than 10 acres

### **Some techniques to conserve land** (with illustrations)

- Down-zoning (eg: require more land to build a house)
- Purchasing development rights: we already do this (farms, open space)
- Clustering: development of same # of units for parcel, same density for the whole parcel, but a portion of land remains natural
- Problem with clustering for nature: when land is split into smaller pieces, it compromises the habitat for animals; no critical mass where a range of wildlife can make a go of it.
- Problem of clustering for humans: still sprawl, just rearranged; does not support transit
- Transfer-of-development rights

### **Illustration of Transfer of Development Rights (TDR)**

- Sending zones: places where we want to keep natural or as agriculture
- Receiving zones: places where we want to put more people and dev't)

## **GREENWAYS**

Greenways are open space corridors. As part of a comprehensive open space plan, greenways can link farmland, wildlife habitats, important natural features and various types of open space parcels. An important principle in assembling a new greenway is respecting and protecting the existing local ecosystem and topography, rather than simply a parcel-by-parcel approach that ignores impacts outside of the property lines. The interrelated nature of highlands, lowlands, wetlands, and settlement patterns need to be considered when planning for greenways.

Planning for greenways also means planning for development. Identifying important natural features and connections between them also shows areas where development can go. Greenways often include hiking or bicycle trails. The scale of corridors varies from small local systems to larger regional corridors. Greenways connect places and it is important that greenways have distinctive destinations. **Get professional feedback on this point.**

DEFINITION "corridor"

...avenues along which wide-ranging animals can travel, plants can propagate, genetic interchange can occur, populations can move in response to environmental changes and natural disasters, and threatened species can be replenished from other areas.

- Ninth U.S. Circuit Court of Appeals, 1990

The rapid spread of development has resulted in the fragmentation of the major open space areas within Middletown. **TABLE comparison acres of developed land 1965 to 2000.** Development not only reduces the total acreage available for flora and fauna, but it can also isolate or make movement difficult for various species. Isolation may have many deleterious effects, including a lack of genetic diversity and a reduction in the size of the local animal population.

The city's topography, geology, hydrology suggest fingers of green (corridors) radiating out from downtown rather than a greenbelt that would surround town entirely. Within these corridors, farming, agriculture, forest, anything that happens in the natural landscape will still take place. But establishing a greenway or corridor does not prevent people from living within it. The Silvio O. Conte National Fish and Wildlife refuge (water shed initiative) is an attempt to preserve CT River Valley from Canada to Long Island, is an example of a regional scaled greenway.

The final configuration of conservation land will take in Middletown will depends on, frankly, who dies when and what they or their family wants to do with their land. Even when the property owner has a clear idea about he would like his property treated in the future, the transfer from property owner to the city (or private land trust, etc) can take years.

In order to allow development to continue while still providing territory for animals and plants, wildlife corridors should be encouraged. Wildlife corridors frequently follow environmentally sensitive lands, such as streams, rivers, or woodlands, which provide benefits such as food, security, and homes to a wide assortment of plants and animals, in addition to movement. The areas recommended for future acquisitions take into account the need to preserve corridors for wildlife habitat and mobility.

### **Assuring land is useful to critters**

- Areas that are contiguous are most valuable to foster habitats
- Image of a forest patch: even though we have forested area, only area in black is significant enough to support a habitat at a certain area.
- Definition "forested" based on how close together, how many trees touch

### **ILLUSTRATION How to avoid fragmentation**

Although there was significant progress in adding to the city's open space inventory between 1991 and 2000, early open space lands were still often "islands" lacking a network of preserved open space connections.

In order to connect this open space into corridors, the Plan of Conservation recommends future acquisitions to CREATE CORRIDORS in these areas (west to east):

#### **MAP detailing each corridor**

#### **1. Mt Higby, Highland Pond, Lamentation Mt, Sawmill Brook**

This corridor along Middletown's western boundary contains steep slopes and forested wildlife habitat. Much of Highland Park and Lamentation Mt have already been protected. The Metacomet Trail runs through a portion of this area. Sawmill Brook and Richard's Brook wetland systems lie east of Lamentation Mt and contain diverse wetland environments including wet meadows, swamps, marshes, and pond habitats. The diversity of flora and the extensive area make this a highly rated wetland ecosystem.

#### **2. Smith Park, Moody School, Camp property along Mile Lane**

This corridor provides active recreation and hiking trails. The area is a good example of a diverse corridor of forested and open uplands as well as an extensive and diverse wetland system. The old trolley right of way serves as a buffer for the Mattabeset River while offering passive recreational opportunities.

#### **3. Coginchaug and Mattabeset Rivers** between Veterans Memorial Park and the North End. This corridor is home to a wide variety of wildlife, including deer, bear, beaver and herons and contains important biological resources such as the unique floating meadows at the Middletown/Cromwell border. Creating would provide important outdoor recreational opportunities for citizens in the heart of downtown.

Establishing this corridor would protect water quality and riparian habitat from development in perpetuity, thus protecting the Coginchaug River for future generations of Middletown residents. Any recreational development such as trail construction should be done in a manner that does not impair water quality or the value of the corridor for wildlife habitat. Recreation can include canoe/kayak access along the river, hiking trails,

The corridor could be created through acquisition of open space land purchases or conservation easements of interested property owners along the river.

#### **4. Spiderweed, CVH watershed**

This corridor includes agricultural or forested lands that are known to contain rare species with high aesthetic value. A significant portion of the land in this corridor is owned by a Northeast Utility holding company.

5. **The Laurel and Hubbard Brook** wetland systems represent outstanding wetland examples and serve as wildlife corridors in a largely undeveloped portion of the city.
6. **Sumner Brook** flows north from Durham. There is abundant wildlife in the southern section and the Brook flows through picturesque farmland. The corridor contains significant amounts of floodplains and wetlands.
7. **The Connecticut River** wetlands and marshes along the riverbank are also environmentally significant regions.

#### 8. **Maromas**

The natural change in geology, dividing Maromas from downtown and South Farms could serve as the boundary defining the Maromas area. The Maromas serve an important role as Middletown's green infrastructure. Its forests filter carbon, produce topsoil, reduce nitrogen loading of the waterways discharging to the CT River and ultimately Long Island Sound, provide rest areas for migrating birds and habitat for a diverse array of species including imperiled species, cleanse the air, and provide areas to recreate, thereby improving the quality of life. 2000-3000 acres corridor adjacent to Cockaponsett State forest.

### **ECOSYSTEMS**

Preserving open space is an important part of preserving local riverine, wetland, meadow, forest, and ridgetop ecosystems. Each of these identifiable systems supports a variety of flora and fauna. Riverine systems contain many plants that require significant amounts of water and animals, such as beavers, that depend on the aquatic areas for food and shelter. Ridgetops will have unique plant communities that enjoy the cooler air and less fertile soil than found in the low areas in the valleys. Meadows support a number of plant communities that require more sunlight than would be found in forests, for instance. Many bird species, however, need the safety and security that forests provide. These systems are also dependent on one another.

Vernal pools represent an example of a small ecosystem within a larger ecosystem. Vernal pools form in topographic depressions found in deciduous woodlands. These depressions are typically wet in the spring from rain and snow melting, but often dry up during the summer and fall. These areas provide extremely important breeding habitats for many amphibians including salamanders, the wood frog, and several invertebrates (e.g. fairy shrimps). The city's Inland Wetland and Watercourses Regulations protect vernal pools. **ILLUSTRATION Vernal pools (seasonal photos)**

Open space lands offer more than just a refuge or home to many varieties of animals and plants; they also provide opportunities for the interaction between the various species. It is this interaction that makes open space important as an ecological area. Fragmentation of these areas has the effect of altering the interaction between various groups that existed prior to development. By preserving a variety of environments (ridgetop, meadow, forest, and riverine), open spaces preserve areas for plants, animals, and people to interact together, providing social, cultural, and educational benefits.

### **STEEP SLOPES & RIDGELINES**

Mt Higby, at approximately 900 feet above sea level, is Middletown's highest point. Along with Lamentation Mt, parts of the Maromas and a few other hills, these elevated ridges provide a visual contrast to the lowlands of the Connecticut River Valley. In addition, the traprock ridges are habitats of threatened species as recognized the state DEP. These habitats must be protected.

Much of Mount Higby has already been preserved due to its inclusion within the public watershed. Large tracts of Lamentation Mt. have also been preserved recently, and efforts to expand dedicated open space areas within the Maromas area continue. These efforts will continue to protect Middletown's slopes from development. While difficult to develop, they are valued for their scenic quality and for native flora and fauna.

Because these ridgelines can be seen from long distances, aesthetic qualities are perhaps their most important asset. Development should not be allowed above elevations that would interfere with the ridgelines' scenic qualities. Building heights should be lowered in these areas to stay below the tree line. Towers, clear-cutting, and other visually obtrusive elements should be prohibited.

### **MAP OF PROTECTED LAND, Mt Higby and Lamentation Mt**

#### SIDEBAR

Clear-cutting regulations

Other regulations in this overlay district (roof materials)

A unique subset of ridgeline protection should address Traprock Ridges. At 300 to 900 feet, the traprock ridges run north from Long Island Sound to the New Hampshire border. The ridges, which were formed by an ancient volcanic lava flow, have dramatic, precipitous cliffs to the west and soft gradual slopes to the east. Glacial action and eons of weathering have produced a fragile, windswept environment with thin soil and plants not found elsewhere in the valley, such as yellow corydalis and lyre leaf rockcress.

These relatively pristine ridges provide an essential corridor for birds, animals and insects. Vernal pools on the eastern slopes provide breeding grounds for some rare salamanders, amphibians, and invertebrates. The western face of the ridges, footed by talus slopes, have unique micro-environments supporting relic plants from colder eras, sustained by cold-water seeps from above.

**TECHNIQUES** to protect ridgetops

### **MATTABESSET TRAIL SYSTEM**

Benefits and features: Scenic mountains, Historic new England villages, Geologic resources, Endangered species and natural communities, Blue-blazed hiking trails are a state greenway.

### **MAPS**

#### **MMM national trail**

**Location of Blue-blazed trail in both I-3 zone and Higby**

### **MEADOWS**

Protecting meadows for grassland bird habitat **Text needed**

## **FARMS**

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While there has been significant investment in open space since 1990, the majority of properties purchased in the first decade have been woodlands. As the Conservation Commission reviewed each area of town, it became apparent that there were farms and land adjacent to farms that face significant development pressure. These prime agricultural soils, with gentle slopes and well-drained soils, are also ideal for development, so purchase of development rights of these lands is important.

### **MAP Farms listed in the state's Chapter 490 preferential tax program (Fig 7.4)**

Understanding that Middletown's farm corridors contribute greatly to the city's diversity, the city should begin a dialogue with local farmers to better understand their current situation and their willingness to sell the development rights. In 2008 the city received a Farm Viability Grant from the state Department of Agriculture to develop a comprehensive farmland preservation strategy.

The acquisition of development rights is among the best strategies to preserve working farms. In this way, farmers can continue to own and farm their properties and the city can be assured the farms are permanently protected. Since the farm viability study is complete, the city should pursue purchases of farmland. The State of CT is also very interested in farmland preservation. The state program can be used to leverage additional funding. The Department of Environmental Protection's program provides a 65% matching grant for the purchase of open space or development rights.

As farmers have an absolute right to develop their land in accordance with underlying zoning, new development threatens the future of farmland in Middletown. It is unlikely Middletown could preserve all of these areas by purchasing all the development rights of every farm. Farms contribute to the quality of life in a community by maintained undeveloped land, watershed protection, a reduced burden on town services, locally food and agricultural products and potential agri-tourism.

### **Farm Viability Study (completed April 2008)**

Purpose to understand Middletown farms' historic roles, what are their current states, what farmers need, what can we do to make them more economically viable

- UCONN interviewed city residents: people like farms!
- Prime farmland soils: almost 10,000 acres in Middletown.
- Maromos is almost left out of the picture: only a few inches of soil there
- Sad facts: from 1970 to 2002, we lost 2 sq. miles of farmland
- not all these places are farms, they include grasslands and hay fields.

### **Interesting Facts**

- Middletown has nothing zoned agricultural: farming permitted in all commercial and residential zones (CT Right to Farm legislation)
- 60% of CT is forested, 9% is farmland

## **PRESERVING COUNTRYSIDE AND RURAL CHARACTER**

### **New Rural Road Standards**

As rural areas are developed, new development and roads should fold in seamlessly

with the existing rural natural and manmade landscape.

Middletown's existing road standards specify wide roads, with 110-foot diameter cul-de-sacs, complete drainage systems, concrete sidewalks, street lights and concrete curbs do not help preserve rural character. In areas of low-density, developing such road designs do not make sense environmentally or economically. It makes no sense to require 200 feet of paved road, concrete curbs and concrete sidewalks along every lot in the city's rural and undeveloped areas. This is true particularly when new roads come off of 18 to 20 foot existing roads with no sidewalks, curbs or drainage systems.

A rural road standard with narrower, curbless roads with drainage swales along the side, will go a long way towards preserving rural character. The preservation of stonewalls and the placement of homes into the tree lines rather than in the middle of fields will also be encouraged. New rural road standards would also reduce the amount of impervious area; slow traffic; increase infiltration into the groundwater; require pollutants to be filtered naturally through the grass and soil before reaching waterbodies; require simple drainage systems, and eliminate detention ponds. This change to mimicking traditional streets and roads will not only provide continuity in rural areas, it will greatly reduce maintenance costs and save money over the life of the road.

**SIDEBAR** Wide roads and suburban type developments:

- Increase vehicular speed and the amount of impervious area
- Decrease infiltration into the groundwater, which filters stormwater
- Directly inject urban pollutants, oils, gas, and pet waste directly into nearby water bodies
- Increase the costs associated with land development and decrease housing affordability;
- Require elaborate drainage systems, including large detention ponds
- Are often out of character with surroundings
- Unnecessarily increase maintenance costs for snow plowing, streetlights and repaving.

**SIDEBAR** Measurements of rural roads

Atkins St	18 -20 feet	Bear Hill Rd	18 feet
Ballfall Rd	20 feet	Arbutus St	18-20 feet
East St	22 feet	Margarite Rd	18 feet
Maromas Rd	18-20 feet		

**Guiding New Development to Fit in with Rural Middletown**

Regulations need to be developed which allow the type of development that will preserve the city's rural character. It is a common misconception that larger lots will preserve rural character. **(list other misconceptions.)** Larger lots result in a less efficient pattern of development, including a greater fragmentation of the landscape, a requirement for more road frontage and longer runs of utility lines.

To avoid the negative effects of large lot development, regulations need to be created which follows the traditional pattern of development, allows for perhaps higher density in some cases and at the same time preserves more land as open space.

It is important that the development using the -rural design-standards-be-an outright-permitted use in-rural areas -This will send a strong message to the development

community by promoting the desired pattern of development and discouraging the standard cookie cutter type subdivision.

Because of Middletown's diverse landscape, Middletown needs two different sets of development regulations and street standards:

RPZ, R-15 zones: existing subdivision regulations  
R-30, R-45 and R-60 zones: new rural subdivision regulations

## **Funding Open Space**

Funding for open space acquisition and maintenance is identified on a parcel-by-parcel basis. The Middletown Park and Recreation Department maintains the land acquired by open space funds, yet neither the Department size or budget has grown with the increase in open space acquisitions. It is essential that the city recognize the importance and benefits of open space preservation and maintenance. Specific line items should be established in the city budget and funded annually for both open space matching funds and maintenance.

The Plan of Conservation continues to implement the following strategies:

- Acquiring open space parcels through purchase, gifts, easements or other strategies
- Educating the public about open space benefits
- Improving management strategies
- Coordinating future open space provision with subdivision applications
- Working with all levels of government to meet goals

## **WATER**

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The Connecticut River defines Middletown's entire eastern boundary. This eight-mile section of the river offers Middletown residents a diverse range of passive and active recreational opportunities, as well as occasions to view wildlife and to learn about the local ecology. Only a small portion of the river's edge, between the confluences of the Mattabeset River and Sumner Brook (the Central Business District area) has been heavily developed. The rest of the river has remained relatively free from development pressure.

The Connecticut River has been the focus of numerous local, regional, and national conservation efforts. In 1991, the Silvio O. Conte National Fish and Wildlife Refuge was created, which encompasses the entire Connecticut River watershed. In fact, one of the Refuge's special focus areas is in Middletown (Round and Boggy Meadows, the Mattabeset, Coginchaug River, and Wilcox Island). This area has been given a high priority rank due to its special biological values. **GATEWAY CONSERVATION MAP**

The Tidelands of the lower Connecticut River have also been designated one of the hemisphere's "Last Great Places" by The Nature Conservancy (TNC), and the tidal marshes of the Mattabeset are within one of TNC's key conservation areas in the Tidelands Region. Most recently, the Connecticut River was named one of the

American Heritage Rivers, in large part due to its undeveloped nature.

Much of the lowland area has been developed as the downtown and surrounding residential neighborhoods. The river and its banks hold tremendous potential for fishing, boating, hiking, and bird watching, but access to the riverfront remains a significant hurdle to better enjoy the river's amenities. The City has created Harbor Park as a means to make the river more accessible to residents, though Route 9 creates a barrier to reconnecting downtown with its riverfront.

The topography changes gradually downstream of the Sumner Brook area, and abruptly south of Silver Street, resulting in limited development along the Maromas section of the riverfront. Rising quickly to elevations of 400 feet south of Silver Street result in beautiful vistas of the Connecticut River Valley from heights hundreds of feet above the river. The rocky soil, limited access, and difficult terrain have kept development away from the area, allowing the local environment to thrive. The entire length of the river and many interior points have been designated as "areas of special concern" by the CT Department of Environmental Protection and the "Open Spaces" chapter from the previous plan identifies the area as having a diverse habitat consisting of upland and wetland areas, many rare species, and valuable wetland and tidal wetland areas. The heavily vegetated banks and shoreline represent a wildlife travel corridor, offering protection and food for migrating animals and birds. The river itself is home to fish species including the Atlantic salmon, striped bass, shad, and shortnose sturgeon, which is a federally listed endangered fish that is found in the river and near Middletown.

### **Rivers and Inland Wetlands**

In Middletown, the principal tributaries to the Connecticut River are the Coginchaug, the Mattabesset, and Sumner Brook. **WATERSHEDS MAP** These smaller rivers traverse rural and highly urbanized areas. Due to extensive development within the tributaries' watersheds, these waterways have deteriorated over the years due to stormwater runoff, erosion, and the loss of habitat along the rivers' edge. Recreational possibilities that exist on the river, such as fishing on the Coginchaug and Mattabesset or canoeing on the Mattabesset, have been adversely affected over the years. Development along the rivers has also encroached into the natural floodplain, endangering property and impacting flooding conditions downstream. As the 1999 survey indicates, people are looking for ways to protect the natural environment and seek more recreational opportunities.

*The Management Plan for the Mattabesset River Watershed* demonstrates the spirit of cooperation that can exist between multiple towns and cities to accomplish a common goal. Working together, the Mattabesset River Stakeholder Group, funded in part by the CT Department of Environmental Protection (DEP) through an EPA Clean Water Section 319 non-point source grant, crafted a nine-point plan to restore the river's ecological integrity and to promote sustainable land use practices along the river. These goals included the expansion of recreational opportunities, limiting development, and safeguarding of preservation areas. A Coginchaug River Task Force was created several years ago to address the same issues along the Coginchaug.

Because of the importance of wetlands and watercourses for flood retention, wildlife habitat, and groundwater recharge, the Connecticut legislature passed Chapter 440 of the Connecticut General Statutes entitled "The Inland Wetlands and Watercourses

Act.” This act regulates any activity within wetland boundaries, but has also allowed the local municipality to adopt legislation to control the permitting process. Middletown originally adopted its Inland Wetland and Watercourses legislation in 1988 and implements protections of inland wetlands and waterways.

### **NATURAL ENV'T MAP (must show neighboring towns; illustrate flood area diff color)**

#### Recreational opportunities

CT River is a designated American Heritage River. Land abutting the river should be purchased not only for access the river, hiking and picnicking, but to prevent the river corridor from becoming too narrow, and to reflect the natural heritage and landscape of the riverfront.

The Mattabesset River is a tributary of the CT River, which is accessible for canoeing and flows into Cromwell meadows (floating meadows). This area should be designated as open space purchases. Efforts to improve the water quality continue.

Sumner Brook is a trout stream that passes thru rural farmland, some areas of which already have been preserved as open space. Preserving this corridor contributes to saving rural and agricultural tradition of Middletown as well as enhancing water quality. Native American artifacts have also been found in this area.

### **Public Watersheds and Groundwater**

Middletown has two sources for its public water supply – Mount Higby reservoir and the Connecticut River. Reservoirs are part of public watersheds and require special legislation to safeguard the uses that occur on the surface that might enter the reservoir when it rains, for instance. The Mt Higby reservoir represents a surface water reservoir, and is directly impacted by stormwater runoff.

Wells that are located alongside the Connecticut River, however, pump ground water into holding tanks before it is dispersed throughout the city. This groundwater is dependent on aquifers and “recharge areas” that allow water to slowly filter down into the ground where it can be pumped back to the surface. Like surface water reservoirs, groundwater is susceptible to contamination, but ground water does have the advantage of being filtered through many layers of soil before being recycled.

Both the City and the State recognize the need for safe drinking water and both have adopted legislation to safeguard the water supply.

#### SIDEBAR

The State of CT adopted Public Act 89-305, as amended by 90-275, “An Act Concerning the Aquifer Protection Areas.” Any existing hazardous materials and toxic chemicals in the aquifer recharge area or public watershed should be carefully managed and eliminated wherever possible. The city adopted Section 42 of the zoning code “Protection of Water Resources” to control the activities within watersheds and recharge areas.

As Middletown's population grows and new buildings are constructed, care must be taken to ensure that land uses do not adversely impact water supplies, including the City's reservoirs and the aquifers beneath the Connecticut River. This means that

chemicals and toxic substances should not be allowed near drinking water supplies, but also that groundwater recharge areas should be carefully regulated to protect their important function.

### **Protecting Water Quality**

The city currently has strong regulations to protect its public drinking water supply. But since the adoption of the 1991 Plan of Development, the elimination of non-point source pollution has become a significant issue. Further protection for all its water resources, beyond those that serve as a source of public drinking water, must be made. The goal is to reduce the amount of harmful nutrients, road salt and sand, construction sediment, organic matter, pesticides and other pollutants that reach water bodies and harm aquatic life or make the watercourse unsuitable for recreation.

The Inland Wetlands and Watercourses Agency has put a great deal of focus on stormwater quality when reviewing development applications. These diligent reviews should continue and should be focused on requiring best management practices to protect the water resources, including but not limited to bio-filters, grass swales and detention ponds with plant uptake in a treatment train approach, where applicable. Additionally, measures should be taken to improve infiltration and to encourage sheet flow by reducing the amount of impervious surfaces and increasing the use of pervious concrete and asphalt.

#### **SIDEBAR**

Non-point source pollution is stormwater runoff from impervious surfaces, such as roads and parking lots, into adjacent wetlands and water bodies. For Middletown, the most notable of these are the Connecticut River, the Coginchaug River, the Mattabasset River, Sumner Brook and their associated wetlands and tributaries.

While it is within the Inland Wetlands Agency's purview to regulate new development, by far the largest amount of degraded stormwater reaching the city's waterbodies comes from existing roads and parking areas which have been built without consideration of stormwater quality and watercourse preservation.

The state has adopted detailed regulations that require municipalities to address non-point source pollution concerns. The state's Phase 2 Non-point Source Regulations required the city's Public Works Department to develop a Stormwater Management Plan in 2004 and update the plan annually. The city should implement this plan by identifying and eliminating non-point source pollution from the city's drainage outfalls. New drainage systems should include best management practices for stormwater quality and existing drainage systems should be regularly maintained and retrofitted to include best management practices.

Enforcement is also critical. State inland wetlands' regulations allow municipalities to strictly enforce soil erosion and sediment controls and identify locations of extreme and documented sources of non-point source pollution and seek corrective measures.

### **Snow dumping and stormwater along the Coginchaug and Mattabasset Rivers**

Close attention to potential impacts of any proposed development projects along and over the Coginchaug River. Eliminating runoff from impervious surfaces, such as roads

and parking lots, is a primary step for protecting water quality and biological resources. Increased development and paved areas along the Washington Street corridor and around Palmer Field Stadium pose a significant risk to water quality here. Construction of bridges of any type across the river, including pedestrian bridges, also pose a risk because the placement of bridge supports destabilizes stream banks and leads to increased erosion.

A further need is to avoid the dumping of snow, road salt, and sand in any location where the runoff from the melting snow can enter a sensitive waterway such as the Coginchaug River. The addition of large amounts of salt and sand into the River permanently changes the stream bottom habitat and create conditions unsuitable for invertebrates and fishes. The City should designate a new location for dumping snow that avoids degrading aquatic resources, replacing the current location in Veterans park adjacent to the Coginchaug.

In the North End, runoff and seepage from the transfer station and landfill also have the potential to impact water quality in the Coginchaug and Mattabesset Rivers and the floating meadows. The floating meadows play a critical role in improving the water quality that enters the Connecticut River. They act to filter contaminants coming from the Coginchaug and Mattabesset Rivers. Runoff that could harm the habitat or functional value of the floating meadows must be minimized. Construction projects that could impact the Mattabesset River, such as a possible extension of sewage pipeline, should be carefully designed to minimize harm to sensitive habitats.

### **Low-impact development practices (LID)**

*Note: This section will be written from following outline*

#### **Why Impervious Surfaces are a Problem (storm water and water pollution)**

Current stormwater separation (used since the 1970's has caused unforeseen problems. We are not recharging our groundwater and are flushing away our water quality. Storm water does not penetrate into the ground. As stormwater runs over the surface, both nutrients and pollutants leave the site. All this surges into the CT and other rivers creates massive erosion, and high build-up of pollutants which is destructive to the river ecology.

The solution is to revert to our original treatment of stormwater, and attempt to keep more of the site stormwater on site, rather than funnel it into one large pipe leading to the river.

NOTE: We do not regulate the amount of impervious surface (missing from regulations).

- Impervious surface = pavement, driveways, roofs

#### Comparison

##### **Conventional development:**

Collect  
Convey  
Concentrate  
Centralized treatment

##### **Low-impact development**

Distributed  
Disconnected  
Decentralized

#### **How to correct the problem?**

Goal: preserve the pre-development hydrology. First, do no harm. Second, minimize additional disturbance.

The first 1" of rain: if you can capture it, you can deal with all the pollutants.  
One inch storms = 90% of all our storms.

Non-point source pollution: difficult type to deal with. Imperious cover model easier to talk about than "parts per billion". OK if <10% watershed as a whole; If >10% , you're in trouble.

All impervious surfaces are not created equal.

Example: roof, pavement, sidewalk, parking lot = 25% total

But what exactly is draining out? Calculate effective impervious surface instead.

Solutions: 1. Reduce impervious cover. 2. Disconnect from surface waterbody. 3. A treatment train: a number of treatments as rain is going down

## **GRAPH Rate of water flow: conventional development vs. low-impact development**

### **Recommendations**

Set a goal of ENCOURAGING alternative stormwater management

How to change the rules? It requires integrating stormwater into everything so a single ordinance isn't going to cut it!

(Madison CT Plan of Conservation & Development: road standards, zoning regulations, subdivision regulations) East Haddam Parking regulations: curbless reads are the default setting; curbed roads allowed by variance (warrant)

#### 1. More appropriate roads standards

For road with ADT <400 cars, 9 foot wide lanes adequate.

Classification in the ConnDOT Highway Manual: rural local road

#### 2. Reduce parking requirements (suburban zoning is current template)

- Put a cap (maximum) on parking spaces (parking lot size): permit a certain sq ft of impervious surface but cap it.
- Rest of parking etc would be pervious (able to allow water to penetrate).

Parking utilization study (Torrington) How much parking is actually used daily?

< 50% occupied (most lots) <24% occupied (Big Boxes) 85-95% occupancy is target rate

#### 3. Use engineered swales

IS = write it out! Promote infiltration. Most effective at sediment removal.

4. New manual: if it's well-designed, you may not have to worry about anything else.  
TSS Loadings: reduce to 80% after construction

#### 5. Treat rain as a resource instead of a waste product

Green roof. DPW paved system.

## **AIR QUALITY**

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Air quality in Middletown is a major concern. Middletown, as part of greater Hartford, has been labeled a serious ozone non-attainment area by the federal Environmental

Protection Agency. This means that the Hartford area exceeds federal limits. Since 1991, however, the state has worked to lower ozone in the air and filed air quality improvement plans with the federal government. The air quality in the region has improved because of measures such as cleaner gasoline, new automobile and power plant emission limits.

However, the state is still subject to pollution from windborne sources. Ozone can travel for hundreds of miles. Models indicate that CT's ozone levels are worse when the wind comes from the southwest, with pollution carried from metropolitan areas outside the state. Clearly, meeting the new standards will greatly depend upon improvements made in other states and federal legislation. **ILLUSTRATION vehicle miles traveled**

Air quality is a complex issue to address. Pollution comes from many sources, is difficult to measure, has numerous indirect effects and requires combinations of different types of programs to reduce. Many air pollutants fall as precipitation and contribute to ground water and surface water degradation. Thus, air pollution causes and/or exacerbates environmental damage as well as human illness. **CHART Air quality (region)**

#### SIDEBAR

Ozone is a byproduct of the chemical reaction between heat and sunlight and air pollutants such as volatile organic compounds (VOCs) and nitrogen oxides (NOX). Motor vehicles, paints, solvents, chemical plants, and gasoline stations all produce VOCs, while motor vehicles, power plants, and burning fossil fuels create NOX. Ozone is a prime ingredient in smog, which, when inhaled, can aggravate a number of health problems including acute respiratory problems and asthma. In fact, the incidence of asthma hospital stays and visits are greater for Middletown residents than for those of any other contiguous town except for Meriden.

In Middletown, the main source of air pollutants is from the combustion of fossil fuels from motor vehicles; it also is generated by heating and cooling systems in homes and businesses. Characteristics and patterns of development can influence transportation choices and therefore air quality. The problem of air pollution is greatly exacerbated by traffic congestion and idling, which not only increases emissions but reduces gas mileage as well.

Air pollution is also generated by yard maintenance activities such as mowing with a gas engine lawn mower. Running a gas mower for one hour emits the same quantity of air pollutants as eight new cars driving 55 mph for one hour. In addition, air pollution from mowing is generated on the ground level, where it will have the most impact health, especially for sensitive individuals such as those with asthma. Electric mowers reduce emissions from gasoline combustion, oil use, spills of oil and gas, and unburned emissions, and depending on the source of electricity, can have a smaller carbon footprint (EPA). Air pollution generated by the power plant is subject to regulation and control, while mower emissions have no controls. Application of lawn care chemicals is another source of yard-generated air pollution since pesticides can significantly volatilize for up to 72 hours after application.

There is no central authority within Middletown with a focused mandate to reduce air pollution in the city or to limit new sources. The health department is empowered to pass on resident complaints about air pollution to the state Department of Health for investigation. However, the health department does not typically comment on

development proposals. Some city activities may result in reductions of air pollution, but these activities are not part of a broader coordinated effort to improve air quality.

Air quality can be improved through a combination of reducing vehicle and stationary emissions, increasing efficiency of heating and cooling, and using alternative energy sources. As the last agency to review development applications, the Planning and Zoning Commission can play a powerful role in improving air quality by applying air quality standards and goals. However, many city departments (health, public works, planning) can improve air quality through best practices

The city health department should have an understanding of the extent of respiratory disease in Middletown. Particularly helpful would be a study to determine whether or not there are clusters of asthma/respiratory occurrences in certain areas of the city. It will be difficult to determine whether or not actions taken to reduce new sources of air pollution and to improve air quality have been successful without period monitoring of air quality and human health. This requires establishing a "baseline" against which future sampling is compared. Baseline measurements of air quality should be taken with the assistance of the state DEP at hotspots (city hall, Newfield Street, Washington Street, River Road, power plant).

Baseline and subsequent air quality monitoring for common vehicle pollutants should be required of developers for projects of significant size or type to impact air quality (drive-through, large residential complex).

### **Recommendations for improving air quality**

#### New Development, Public Projects and Building Codes

Require zoning applications, including publicly funded projects, to include an assessment of the proposed project's impact on local air quality and measures taken to reduce that impact (direct emissions, energy use, and transportation needs). Proposed activities should encourage shorter travel times from residences to businesses, work and recreation. These may include higher residential densities and mixed land use, and connections to transit and pedestrian links (bus stop shelter, sidewalks, bike path, etc.).

Strengthen the *Air Quality Performance Standards* in the zoning code in order to limit the number of point source emissions of air pollution. Amend the zoning code to allow for the incorporation of air quality impact criteria for proposed uses in order to better understand and mitigate the potential air pollution from the proposed development.

Publicly funded building or renovation activities should be viewed as demonstration projects for business, institutional and residential communities and should pursue the highest goals for energy efficiency and air quality. Only clean industries should be welcomed because of Middletown's poor air quality. The city should inform itself about large emission sources, such as power plants, and help ensure compliance with all air emission standards.

#### Increasing non-motorized travel

Review transportation policy and practices: traffic and development patterns, public and alternative transportation. Stoplights along Rt 9 require cars to idle, which in turn creates a local and steady source of air pollution. It is thought that this situation alone significantly contributes to the city's high ozone levels. There is potentially no greater single source of air pollution mitigation than addressing this issue.

Increase walking and cycling by providing the necessary infrastructure. Require new development including all publicly funded road, and building, and improvement projects to incorporate safe road crossings for pedestrians and bikes, sidewalks, bike racks and bus stop shelters. Interagency and city department communication and action must be ensured on these projects.

#### Prohibiting idling

“No Idling” signs should be required at all public facilities. Private businesses should be encouraged to post signs requesting that vehicles limit idling to under 3 minutes. In a process that includes public input, the presence of drive-through businesses in the city should be evaluated, and short and long term goals and decisions regarding new and existing drive through facilities, including a ban, should be established. Prohibit school bus parking facilities from being located adjacent to residential neighborhoods or schools. Educate city personnel about the state laws’ on idling requirements, regulations and enforcement.

#### Reducing air pollution generated by lawn care

Use only biodegradable or organic herbicides and pesticides on city property. Encourage residents to do the same on private property.

On private lawns, the use of electric mowers and manual push reel mowers can reduce local air pollution. Create a city incentive program for trading in gas-powered mowers. The EPA has information on model programs around the country.

#### Public policy

Determine what actions have been taken by other municipalities to address air quality. Adopt changes to reduce air pollution in Middletown (ordinances, regulations, etc.). Train city staff  
Educate commissioners about their power to request and make changes that will serve air quality needs. Educate developers and contractors) about air quality requirements. Monitor the success of air quality requirements.

**END OF DRAFT (20 pages)**

**MARCH 24, 2010**

**Please read Action Steps (6 pages)**