

# **TOWN OF NORTH CASTLE OPEN SPACE STUDY COMMITTEE REPORT**

**Prepared by**

**Open Space Study Committee  
Town of North Castle**

**June 2003**

*MAP # 16 MISSING*



TOWN OF NORTH CASTLE  
CONSERVATION BOARD  
Armonk, New York 10504

July 9, 2003

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and Town Board Members  
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The Open Space Study Committee and the Conservation Board are pleased to submit this report on Open Space in the Town of North Castle. It represents 2 years of dedicated effort by the 10 member committee and Reese Berman attending as Town Board liaison. The Town received a grant from the New York State Hudson River Valley Greenway to partially fund the production of this report.

The recommendations in this report are based on evaluations determined by visits to 34 parcels and compilation of information available for a total of 131 parcels. Open space was evaluated using both the data collected from OSSC site visits and town-wide data using a Geographic Information System or GIS with technical assistance from Fordham University's Louis Calder Research Center. The GIS was also used for both analysis and graphical presentation of results. The Committee limited its scope of study to sites of 10 or more acres, while recognizing that there is a need to preserve all, or portions of smaller parcels, regardless of size.

The Committee felt that protecting water resources (groundwater, aquifers and reservoirs) is a most important goal for future open space preservation in the Town. This report will serve as a foundation for the continued preservation of land committed to the protection of our important natural resources.

Respectfully yours,

John F. Fava, LA  
Chairman

## EXECUTIVE SUMMARY

The quality of our lives depends largely on the quality and quantity of our natural resources and open space. During the past several decades, North Castle has witnessed changes in land use, increased development, and tremendous population growth that have reduced the quality and quantity of its natural resources and open space. Fortunately, the Town has considerable open space remaining. However, much is unprotected, has the potential to be lost, and is in need of preservation.

The Town is 16,776 acres in size, of which 3,307 acres are important water supply/water company lands. An additional 640 acres are Town and County parklands, with semi-public lands such as school district properties, golf courses, and institutions making up an additional 703 acres. The remaining undeveloped, privately owned parcels of 10 acres or more in size comprise 2,442 acres, approximately 29% of the Town's open space and 15% of its area.

Recognizing the importance of natural resources and open space, the Town Board formed the Open Space Study Committee (OSSC) on January 24, 2001, and directed it to inventory and prioritize (i.e., rank) open space, and report its findings to the Town Board. The Open Space Study Committee, as charged by the Town Board, has reviewed the land characteristics in the Town of North Castle, and is part of an on-going, long-term effort to acquire, preserve, and protect the most important remaining open spaces in the Town. The committee defined and limited its scope of study to sites of 10 or more acres, while recognizing that there is a need to preserve all, or portions of other parcels, regardless of size. The OSSC used data from site-visits, past local studies, and county, state, and federal sources to fulfill its charge of inventorying and prioritizing the Town's remaining open space.

Analysis of data from both site-visits and town-wide sources emphasized water features, because the OSSC felt that protecting water resources was the most important goal of open space preservation for the Town. The OSSC recommends the continued review of all sites by the Town to assure some level of protection, beginning with the most highly ranked. In many cases, only a portion of a site may warrant protection.

The town-wide data analysis also illustrated those areas in the Town that have the most important open space features and corridor linkages. The OSSC recommends that all of these areas be designated as Environmentally Sensitive Areas, and that any parcel, regardless of size, in one of these areas receive Conservation Board review prior to further development.

Work to protect the Town's rapidly diminishing open space must be continuously pursued by the Town Board and public. Protection of open space can be accomplished using a variety of techniques that are discussed in this report. The OSSC recommends that future preservation efforts be split between the Conservation Board and a new committee, the North Castle Open Space Committee; with both groups reporting semi-annually to the Town Board.

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## INTRODUCTION

The quality of our lives depends largely on the quality and quantity of our natural resources and open space. The existence of streams, ponds, wetlands, aquifers, reservoirs for drinking water, recreation facilities, scenic views, and historic places contribute greatly to the sense of place that we call North Castle. North Castle has an extremely attractive physical setting with many natural features. The numerous hills, ridges, and valleys that lie in a general north-south orientation help mold the rivers, water bodies, and open spaces that are first impressions of the Town.

In 1996, the *North Castle Comprehensive Plan Update* identified these natural resources and open spaces as vital to our community because they protect environmental functions, provide recreational diversity, maintain the natural character of the Town, provide pleasant views, enhance the value of property, and facilitate balanced planning and environmentally sensitive growth. In addition, the *Plan* recognized that the planning process requires a continued effort.

Thus, a 10 member volunteer Open Space Study Committee (OSSC) was named by the Town Board in January 2001 and reorganized under the Conservation Board in June 2001. The committee members represent the various hamlets of the Town, and bring varied expertise and valued points of view to its discussions. This current report discusses the mission of the Open Space Study Committee, how the committee inventoried and prioritized open space within the Town, discusses methods available for open space preservation, and makes recommendations for future preservation efforts.

## THE OPEN SPACE STUDY COMMITTEE

### History of Land Conservation

The community of North Castle has a long history of working to conserve the Town's natural resources. In response to intensive development pressures following World War II, concerned citizens formed an action group called the North Castle Citizens' Council. This group, together with the League of Women Voters and the Green Acres Garden Club, urged the Town to develop its first master plan, which was completed in 1957. North Castle acquired its first open space in the 1950's with the purchase of land along Wampus Brook. And in 1962, the Town Board appointed a Green Spaces Committee of volunteers to recommend open land suitable for acquisition.

As a result of their work, considerable amounts of open space were acquired by the Town from 1965 through 1969. For example, in Quarry Heights, Nathan Straus gave the Town almost 8 acres for a softball field and playground; in the Eastern District, 90 acres were acquired from various landowners and named Cat Rocks Park; and in the Armonk area, the Tesei and Cunningham parcels were acquired for athletic use. Additionally, New England Industries sold 68 acres of land on Whipoorwill Ridge to the Town, and the estate of the late Joseph Johnston donated an additional 10 acres of land along North Greenwich Road.

In 1970, the Town Board created the Conservation Advisory Council (CAC) with a mandate to produce an open space index, natural resources inventory, and wetland survey. The Open Space Index identified all undeveloped parcels of land that were ten acres or more; the Natural Resources Inventory provided descriptions of the land forms in North Castle's three major drainage basins; and the Wetlands Survey identified wetland soils within the Town. In 1975, the CAC was elevated to a Conservation Board, an advisory group to the Town Board. All proposed development on land listed in the Open Space Index or having streams, water bodies, or wetlands are referred to the Conservation Board for comment. Since its inception, the Conservation Board has reviewed hundreds of subdivisions and site plans, supported and promoted conservation legislation, and worked to identify and preserve the remaining open space within the Town.

On January 24, 2001, the Town Board formed the Open Space Study Committee, and in June 2001 made it a sub-committee of the Conservation Board. The Open Space Study Committee was directed to inventory and prioritize open space (see Appendix B), and report its findings to the Town Board. This Open Space Study Committee Report:

1. Discusses the reasons open space is important.
2. Defines open space and the objectives of its protection.
3. Reviews trends affecting open space including demographics and land development.
4. Evaluates existing open space of 10 or more acres.
5. Provides recommendations and discusses techniques for open space preservation.
6. Suggests actions for the Town to undertake for the preservation of its open space.

### **Mission and Objectives of the Open Space Study Committee**

To fulfill its mission of inventorying and prioritizing all of the open space in North Castle, the Open Space Study Committee identified and evaluated lands having conservation, historical, recreational, and/or scenic significance, and is recommending practical methods for conservation of additional open space. The preservation of open space is important because it protects surface and subsurface water resources; preserves vegetation, natural corridors, biological habitat and scenic vistas; provides active and passive recreation; safeguards cultural, historic, and archaeological sites; and enhances overall community character.

## BACKGROUND

### Open Space

#### Definition of Open Space

Open space is generally defined as land and/or water resources in their natural states. A more comprehensive definition of “open space,” according to the New York State General Municipal Law (Section 239-y.1.(a)) is:

*Any area characterized by natural scenic beauty, or existing openness, natural condition or present state of use, which, if preserved, would enhance the value of surrounding development or would establish a desirable pattern of development or would offer substantial conformance with the planning objectives of the municipality or would maintain or enhance the conservation of natural, historic, or scenic resources.*

Expanding upon this definition, the Open Space Study Committee also defines open space as natural corridors created by steep slopes, wetlands, water bodies, or woodlands that serve as natural habitat for wildlife as well as hiking, biking, or horseback riding trails for the residents of the Town. For the purpose of developing the Open Space Index, the OSSC further determined open space to be:

*Any undeveloped parcels of land which are ten acres or more that have unique recreational, environmental, and visual qualities that would be difficult to replace if degraded or lost.*

However, the OSSC believes smaller parcels should also be considered worthy of protection because they are important to surrounding, dense development in certain areas of the Town or serve as corridors connecting larger parcels, wildlife habitat, and trails.

#### Purpose and Benefits of Open Space

Decreasing the amount of open space degrades the quality of North Castle’s water resources, ecosystems, recreational opportunities, and overall character. The protection of groundwater resources is particularly necessary to North Castle, since the Town draws approximately 95 percent of its water supply from wells. While the Town receives an average annual precipitation of 48 inches, only 10 percent reaches the groundwater system, with the rest running off impervious surfaces into drainage basins (Assessment of Hydrogeologic Conditions Town of North Castle 1990). North Castle also has over 3,300 acres of surface water supply lands owned by the Village of Mount Kisco, the Connecticut American/Aquarion Water Company, and the City of New York. Thus, the preservation of open space is necessary to protect recharge areas that help maintain groundwater and surface water quality and quantity.

The preservation of open space also serves to protect other environmental resources, such as steep slopes, wetlands, and woodlands, as well as wildlife and their habitat. In addition, open space can provide recreational opportunities in the form of golf courses, playing fields, fishing spots, and horseback riding, hiking, and biking trails. Lastly, as undeveloped land becomes increasingly scarce, open space improves the scenic quality of the Town by providing relief from man-made structures and impervious surfaces, and its preservation can coincide with the protection of cultural, historic, and archaeological sites. Overall, these benefits of open space preservation improve the quality of life in the Town.

The preservation of open space may also provide fiscal advantages to the Town. The costs of acquiring and maintaining open space must be weighed against the costs of providing additional municipal services to newly developed land, especially residentially zoned areas. As early as 1955, the Westchester County Department of Planning recognized the costs associated with new residential development. In their publication *Changes in Westchester*, the County Planning Department cautioned that “new residents require more schools, more roads, and more services of all kinds. These expenses mean a rising tax rate even when the houses pay higher than average taxes. Residential areas rarely pay their own way and the deficiency must be made up by tax income from non-residential property.” In general, acquiring and maintaining open space is less costly for municipalities than allowing development. In addition, open space sustains and, in some cases, enhances the value of adjacent properties, thereby providing additional property tax revenue.

## **The Town of North Castle**

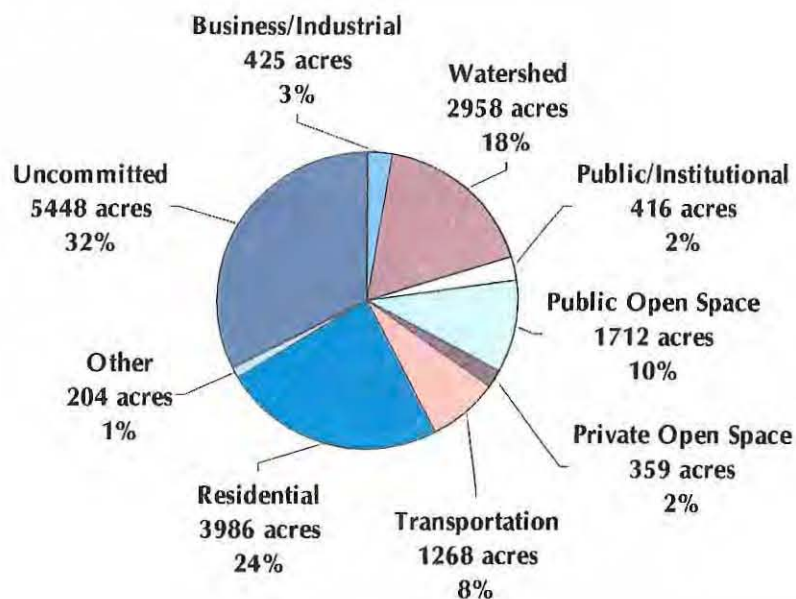
### *Land Use*

The Town of North Castle encompasses approximately 16,776 acres. According to the *1996 Town Comprehensive Plan Update*, approximately two thirds of the Town (11,328 acres) was developed land in 1990; 3,986 acres (23 percent of the Town’s area) was residential land, 1,268 acres was used for transportation (i.e., roads, highways, railroads, and the airport), and 425 acres was devoted to business and industrial uses (Figure 1). Approximately 2,958 acres of North Castle were watershed/water supply lands, and comprised 18 percent of the Town’s total land. While these lands are not commonly considered “developed”, they have been set aside for a specific purpose and are considered land in use.

The *1996 Town Comprehensive Plan Update* estimated that approximately one third (5,233 acres) of the area of Town, or about half of the Town’s developed land, was non-intensively developed. These lands included cemeteries; nurseries, horse farms and stables; public schools; watershed/water supply lands; and public and private recreational lands. These lands can technically be considered existing open space, but they still have the potential to be further developed.

Another one third (5,448 acres) of the Town was not committed to a particular use in 1990 according to the 1996 report. In addition to undeveloped lands, uncommitted lands include "underdeveloped" land, land that has the potential for future subdivision, and "undevelopable" land, land that may not be suitable for development owing to environmental limitations. Approximately two thirds (3,632 acres) of the uncommitted land of the Town was considered undevelopable.

**Figure 1. Town of North Castle Land Use (1990).**

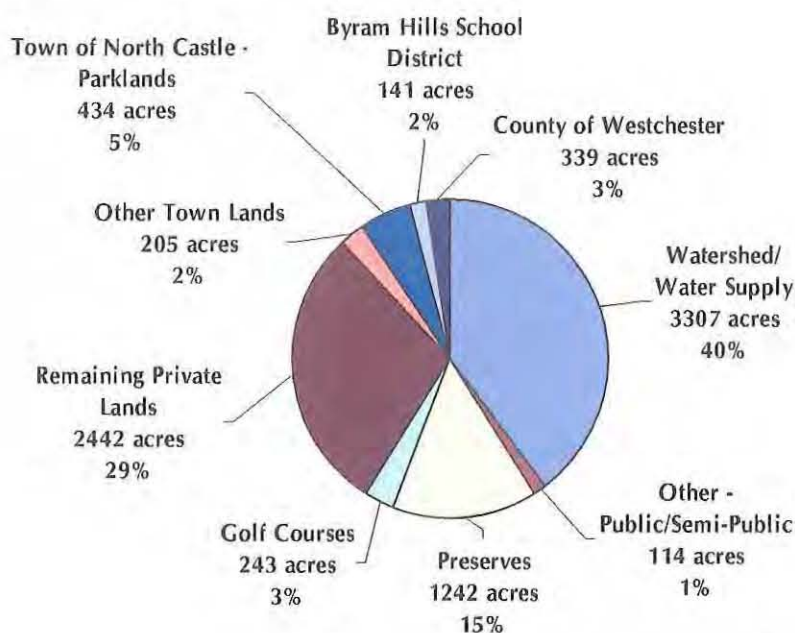


### Open Space

As of 2001, the Town of North Castle had approximately 8,334 acres of land that can be considered open space. However, only 1,882 acres were lands specifically committed to open space. Of these 1,882 acres, 1,242 acres were nature preserves such as the Westmoreland Sanctuary, Mianus River Gorge, Eugene and Agnes Meyer Preserve, Nichols Sanctuary, and several large parcels belonging to The Nature Conservancy. The remaining 640 acres of the Town's open space are County or Town Parks, which represent only 3.8 percent of the total land of the Town (Figure 2).

Approximately 41 percent of the Town's open space is watershed/water supply lands (3,307 acres), which are primarily owned by the Connecticut American/Aquarion Water Company and the New York City Department of Environmental Protection. Another 703 acres includes land owned by the Byram Hills School District, golf courses, and other public/semi-public lands, such as the Town Hall, water and sewer districts, and the Anita L. Ehrman Recreation Center (Figure 2). While these lands are likely to be kept open, there is no guarantee that they will not be developed in the future.

**Figure 2. Town of North Castle Open Space (2001).**



The remaining open spaces of the Town are in the hands of private landowners. Undeveloped, privately owned parcels of land which are ten acres or more comprise 2,442 acres, which is 29 percent of the Town's open space and 15 percent of its total area. These private lands, representing almost one-third of the Town's open space, are unprotected and may be developed.

### Demographic Trends

Similar to many neighboring Northern Westchester towns, North Castle's population has grown at a greater rate than the rest of the County. From 1950 to 2000, the population of North Castle nearly tripled, growing from 3,855 to 10,849 (Table 1). The population of the other towns in Northern Westchester also increased nearly threefold. However, the total population of the County only increased at half that rate (Figures 3, 4, and 5). The Town experienced its largest decade of population growth between 1950 and 1960, when the population increased 76.3 percent from 3,855 to 6,797 (Table 2). Growth was also greatest (61.3 percent) for other towns in Northern Westchester over that period. However, the County population grew by only 29.3 percent during this time. The population of North Castle increased 41.1 percent from 1960 to 1970 and then decreased by 1.3 percent from 1970 to 1980. Since then, the rate of population growth has risen. It was 6.3 percent in the 1980s, and 7.8 percent in the 1990s. The 1996 *Town Comprehensive Plan Update* predicted growth from 2000 to 2010 to be from 0 to 5.6 percent, or an average of 2.8 percent, which yields a population

of 11,152 in 2010. However, the actual population size may be considerably higher. Overall, growth has increased the population density of North Castle from about 148 persons per square mile in 1950 to 417 persons per square mile in 2000.

**Table 1. Population Sizes of North Castle, Northern Westchester, and Westchester County (1950 - 2010).**

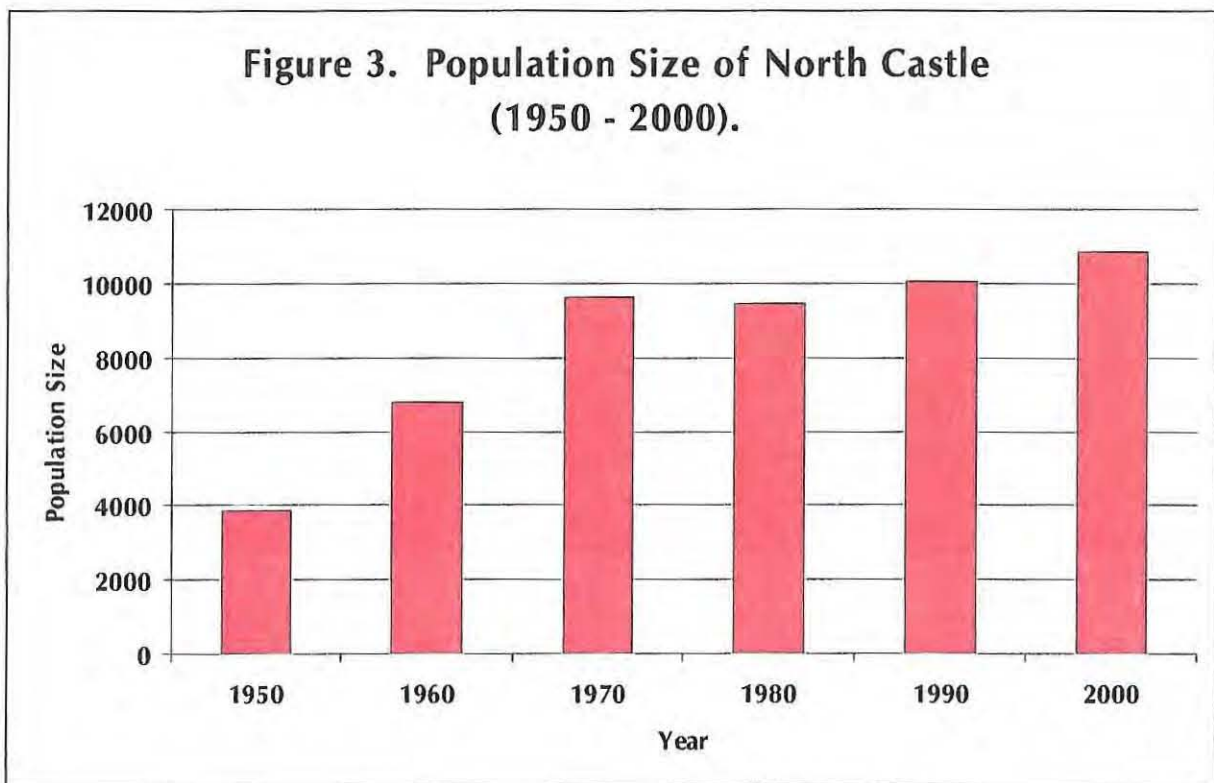
|                             | 1950    | 1960    | 1970    | 1980    | 1990    | 2000    | 2010<br>(projected) |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------------------|
| <b>North Castle</b>         | 3,855   | 6,797   | 9,591   | 9,467   | 10,061  | 10,849  | 11,152*             |
| <b>Northern Westchester</b> | 72,010  | 116,143 | 153,086 | 164,565 | 179,887 | 194,251 |                     |
| <b>Westchester</b>          | 625,816 | 808,891 | 894,104 | 866,599 | 874,866 | 923,459 | 926,798**           |

Sources: 2000 Census, U.S. Census Bureau.

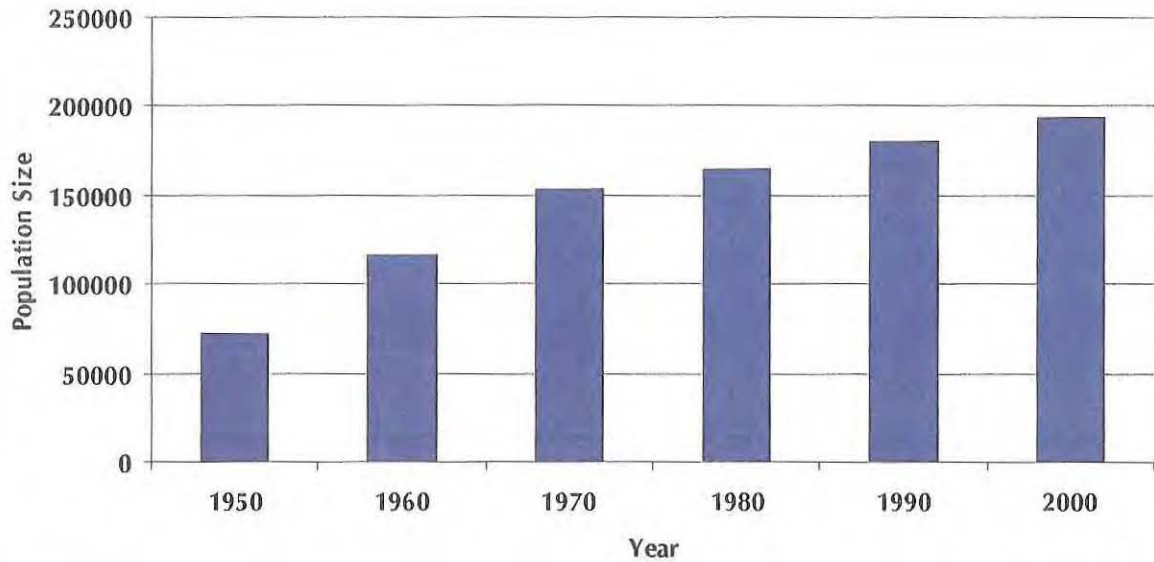
\* 1996 North Castle Comprehensive Plan Update.

\*\* 2002 New York Statistical Information System, Cornell Institute for Social and Economic Research.

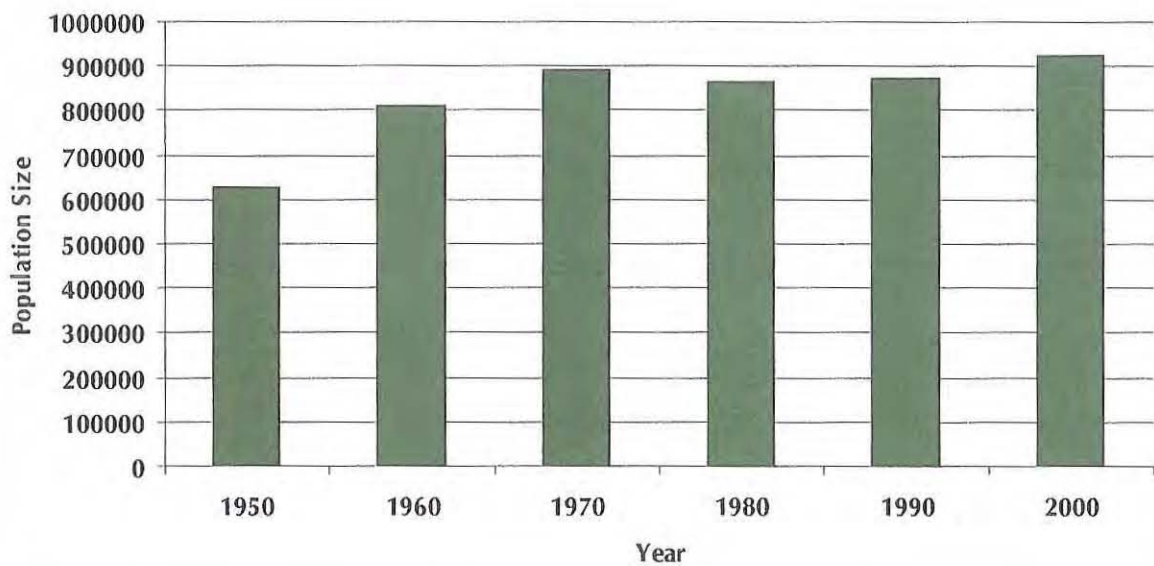
Note: Population projections for Northern Westchester communities were unavailable.



**Figure 4. Population Size of Northern Westchester  
(1950 - 2000).**



**Figure 5. Population Size of Westchester County  
(1950 - 2000).**



**Table 2. Percent Change in Population Size in North Castle, Northern Westchester, and Westchester County (1950 - 2010).**

|                             | 1950-60 | 1960-70 | 1970-80 | 1980-90 | 1990-2000 | 2000-2010<br>(projected) |
|-----------------------------|---------|---------|---------|---------|-----------|--------------------------|
| <b>North Castle</b>         | 76.3    | 41.1    | -1.3    | 6.3     | 7.8       | 2.8*                     |
| <b>Northern Westchester</b> | 61.3    | 31.8    | 7.5     | 9.3     | 8.0       |                          |
| <b>Westchester</b>          | 29.3    | 10.5    | -3.1    | 1       | 5.6       | 0.4**                    |

Sources: 2000 Census, U.S. Census Bureau, \* 1996 North Castle Comprehensive Plan Update.

\*\* 2002 New York Statistical Information System, Cornell Institute for Social and Economic Research.

Note: Population projections for Northern Westchester communities were unavailable.

### Development Trends

Since 1945, many large estates in the Town were subdivided for both residential and commercial development, and new businesses began moving to the Town. From 1965 to 1971, the compound annual rate of land consumption by development was 3.5 percent. Since then, land has been developing at an annual rate of approximately 0.5 percent, primarily as a result of residential development. Between 1971 and 1990, the number of acres devoted to residential uses increased by 37 percent, from 2,908 acres to 3,986 acres.

The number of housing units in the Town of North Castle has increased at a higher rate (4.5%) than Westchester County as a whole (2.4%) for the past five decades (Table 3). Even though the rate of new housing development for the town has surpassed the County rate, the overall trend in housing development was actually decreasing from decade to decade for the County, as well as the Town, until the 1990's.

**Table 3. Number of Housing Units in North Castle and Westchester County (1950 - 2000).**

| North Castle | Cumulative Totals | 1950    | 1960    | 1970    | 1980    | 1990      | 2000  |
|--------------|-------------------|---------|---------|---------|---------|-----------|-------|
|              |                   | 810     | 1,600   | 2,352   | 2,770   | 3,146     | 3,706 |
|              | Percent Increase  | 1950-60 | 1960-70 | 1970-80 | 1980-90 | 1990-2000 |       |
|              |                   | 97.5    | 47      | 17.8    | 13.6    | 17.8      |       |

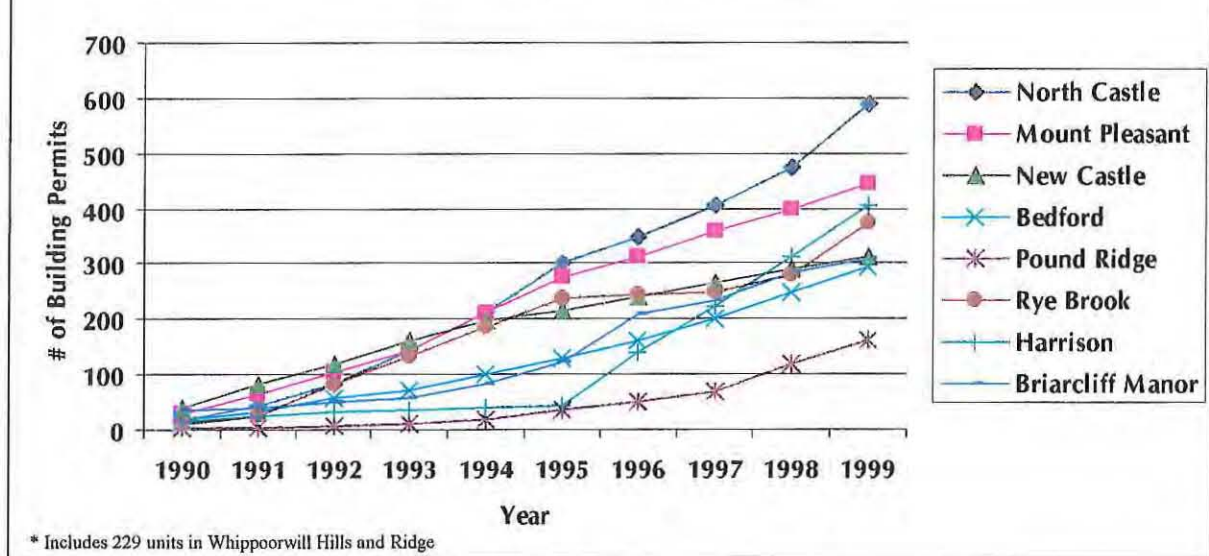
  

| Westchester | Cumulative Totals | 1950    | 1960    | 1970    | 1980    | 1990      | 2000    |
|-------------|-------------------|---------|---------|---------|---------|-----------|---------|
|             |                   | 147,384 | 216,717 | 269,082 | 304,436 | 330,511   | 349,445 |
|             | Percent Increase  | 1950-60 | 1960-70 | 1970-80 | 1980-90 | 1990-2000 |         |
|             |                   | 47      | 24.2    | 13.1    | 8.6     | 5.7       |         |

Source: 2000 Census, U.S. Census Bureau.

Since 1990, the number of single family residence building permits has increased alarmingly, well beyond what was predicted in the *1996 Town Comprehensive Plan Update*. The *Comprehensive Plan* assumed that new home construction would continue at a rate of 35 units per year, and that approximately 2,400 additional residential units could be developed in the Town of North Castle under current zoning. However, from 1996 to 1999 building permits for single family residences averaged about 70 per year. North Castle has surpassed seven surrounding towns in the total number of building permits it has issued since 1990 (Figure 6).

**Figure 6. Cumulative Single Family Residence  
Building Permits for North Castle\* and Adjacent  
Towns (1990 - 1999).**



### Prior Studies of Open Space and Recommendations

#### *1987 Open Space Study*

Since 1974, the North Castle Conservation Board has maintained an Open Space Index. The Index identifies all parcels of land which are ten acres or more. Frederick P. Clark Associates analyzed the Index in the *1987 Open Space Study*, and ranked parcels based on whether they have unique recreational, environmental, and visual qualities that would be difficult to replace if lost. The *1987 Open Space Study* provided the Town with the following recommendations, which were later incorporated into the *1996 Town Comprehensive Plan Update*:

1. Preserve areas adjacent to Mianus River Gorge Nature Conservancy Land.
2. Preserve the Piping Brook Corridor.
3. Preserve all golf courses; obtain "right-of-first refusal," encourage clustering if development is proposed so that a golf course can be retained for at least a portion of the property.
4. Preserve the Red Brook Corridor.
5. Visually link certain parcels to the Wampus Brook Corridor.
6. Preserve Bear Gutter Creek Corridor.
7. Preserve areas around aquifer recharge areas.
8. Preserve open areas adjacent to the larger office developments in the Town.
9. Acquire land adjacent to Town Hall.

More specifically, the *1987 Open Space Study* recommended the following parcels for preservation:

1. Goelet Property.
2. Daniel Gray Fishing Club.
3. Nierenberg Property.
4. Windmill Club.
5. Armonk Tennis Club.
6. Walter Property.
7. Rockefeller University Preserve and Conference Center.
8. Fordham University Calder Research Center.
9. Rettini Property.
10. IBM Property.
11. Sochurek and Colinda Properties.

#### *1996 Town Comprehensive Plan Update*

With regard to the environment and open space, the *1996 Town Comprehensive Plan Update* recommended the following:

##### Environment

1. Develop general and specific regulations to protect environmentally sensitive lands as identified by the Town environmental maps.
2. Develop a scenic resource protection ordinance.
3. Add tree and forest protection regulations to site plan and subdivision regulations.
4. Consider Transfer of Development Rights Policy for limited use in specific circumstances (e.g., to protect environmentally sensitive lands) as a supplement to cluster conservation development.
5. Reevaluate wetland and watercourse regulations for wetlands and streams located in the drinking supply watersheds.
6. Consider development of an aquifer protection ordinance, develop special groundwater protection districts, and reevaluate enforcement of regulations to ensure protection of the Town's groundwater resources.
7. Develop policy to enforce conformance of future development to the NYS DEC Stormwater Management Guidelines and Erosion and Sediment Control Guidelines.
8. Revise and update the Town Environmental Quality Review Law.
9. Update open space and environmental ordinance maps to encourage priority for the types of lands to be set aside in conservation developments and subdivisions.

##### Open Space and Recreation

1. Develop a multi-purpose building for recreational uses in the Armonk Hamlet for Town-wide usage.
2. Preserve open space and recreational uses identified in *1987 Open Space Study* and make them barrier-free and accessible to all segments of the population.

3. Identify suitable land for additional athletic fields, ball fields, and grounds for informal play.
4. Evaluate and maintain existing recreational facilities (including School District outdoor recreational facilities) and improve those in need of repair as part of a long-term capital improvement plan.
5. Enhance and expand the Town's system of pedestrian and equestrian trails and bikeways.

### *1985 Westchester County Open Space Study*

The *1985 Westchester County Open Space Study* listed parcels in the Town of North Castle that are vital for open space preservation. They include:

1. Hussar Property.
2. Vacation Properties.
3. Labriola Streambed.
4. Canyon Club.
5. Whippoorwill Country Club.
6. North Castle Golf Course.
7. Roundhouse Golf Course.
8. Winkler/Henker Farm.
9. Fordham University Calder Research Center.
10. Rockefeller University Preserve and Conference Center.
11. Troy Nursery.

Most of the recommendations in these reports and studies have yet to be acted on, while several properties identified for preservation have already been developed.

Of the properties listed in the *1987 Open Space Study*, two have been developed, the Rettini property and part of the IBM property; and of the 11 properties referenced in the *1985 Westchester County Open Space Study*, 6 have become residential developments. The Hussar and Vacation properties were developed into Whippoorwill Hills, the Labriola Property became Deerfield Estates, and the Roundhouse Golf Course was converted into Northbrook Knoll. The Winkler and Henker Farms also became residential developments, along with 75 percent of the Troy Nursery. In addition, Donald Trump has proposed developing the Rockefeller University Preserve into the "Mansion at Seven Springs" Golf Course.

### *Hydrologic Studies*

Since 1991, the Town of North Castle has commissioned several studies assessing the hydrologic conditions of the Town of North Castle (see Appendix C). All studies found that the protection of surface and subsurface water is necessary to ensure safe drinking water supplies for the Town and region. Therefore, preserving open space for the protection of the Town's water resources has been the highest priority for the Open Space Study Committee.

## EVALUATION OF OPEN SPACE

### Methods

#### OSSC Field Work, Data Acquisition, and Evaluation

During the past year, the Open Space Study Committee evaluated numerous open space parcels of 10 or more acres through site-visits. Typically, at least three Committee members traversed a site in a grid pattern. During the site visit, members completed a site report work sheet while consulting open space rating guidelines (see Appendix D). The survey team recorded the ownership, size, zoning, and surrounding land use. They primarily noted natural resources; features of historical, educational, and cultural significance; and the potential for active or passive recreation. In evaluating the value of the parcel as open space, natural features were rated using a zero to three scoring system; zero indicating that the feature did not exist or was not significant for preservation, three indicating that the feature had the highest value for preservation. The following features were rated:

1. Streams
2. Lakes/Ponds
3. Wetlands
4. Aquifers
5. Vistas and Scenic Character/Ridgelines/Hilltops
6. Steep Slopes ( $\geq 25\%$ )
7. Grasslands/Meadows/Transitional Fields
8. Woodlands
9. Trees/Vegetation
10. Trails
11. Connections/Linkages
12. Wildlife Habitat
13. Biotic Corridor

The score for each feature of a parcel was determined by the consensus of the members conducting the field visit. At monthly meetings of the OSSC, members discussed the properties surveyed and studied them on maps showing topography, aquifers, and undeveloped spaces. The locations of parcels were compared with existing trails, wildlife corridors, and surface and subsurface water resources.

Because the OSSC could not visit all open space within the Town, data gathered by various other sources (e.g., Westchester County; see Appendix G) on many of the open space features described above were obtained and used to evaluate open space (hereafter referred to as town-wide data). Town-wide data were obtained on the following features:

1. Aquifers
2. Critical Environmental Areas
3. State and Federal Wetlands
4. Hydric Soil Wetlands
5. National Historic Register Sites
6. Open Space
7. Parks
8. Steep Slopes ( $\geq 25\%$ )
9. Streams
10. Water Bodies

Town-wide data were used to evaluate all open space parcels of 10 acres or more and determine Environmentally Sensitive Areas (see below) within the Town. To evaluate open space parcels, including those visited by the OSSC, open space features were rated using a zero or one scoring system; zero indicating that the feature did not exist on the parcel, and one indicating that the feature was present.

Additionally, by using a composite of the town-wide data, Environmentally Sensitive Areas were delineated for the town. This composite was created by overlaying all the maps of open space features and dissolving the boundaries, creating 1 layer. These areas include all features considered important to preserving open space by the OSSC, regardless of parcel location or size.

### Analyses

Using a Geographic Information System or GIS (Arc/Info; Environmental Systems Research, Inc.), open space was evaluated using both the data collected from OSSC site-visits and town-wide data. The GIS was used for both analysis and graphical presentation of results.

For the parcels visited by the OSSC, scores for each feature were summed to create a total score. This total score was then used to rank parcels as to their relative open space value (hereafter referred to as Total Score; in this analysis, parcels with a higher score have more valuable open space). The OSSC considered water resources more important than other open space features. Open space parcels located over aquifers were considered most important because they protect the Town's drinking water supply; streams and wetlands were considered important for their ability to retain, filter, and transport surface water. Additionally, in prioritizing open space, the OSSC consulted experts from the Mianus River Gorge Preserve, Westchester Land Trust, Dr. Bill Giuliano, a biologist with the Louis Calder Center of Fordham University, and from surrounding towns, including Stamford and Greenwich, Connecticut. Parcels were also examined by considering only water resources (hereafter referred to as Water Only Score), and all resources but doubling water resource scores (hereafter referred to as Total Score with Weighted Water).

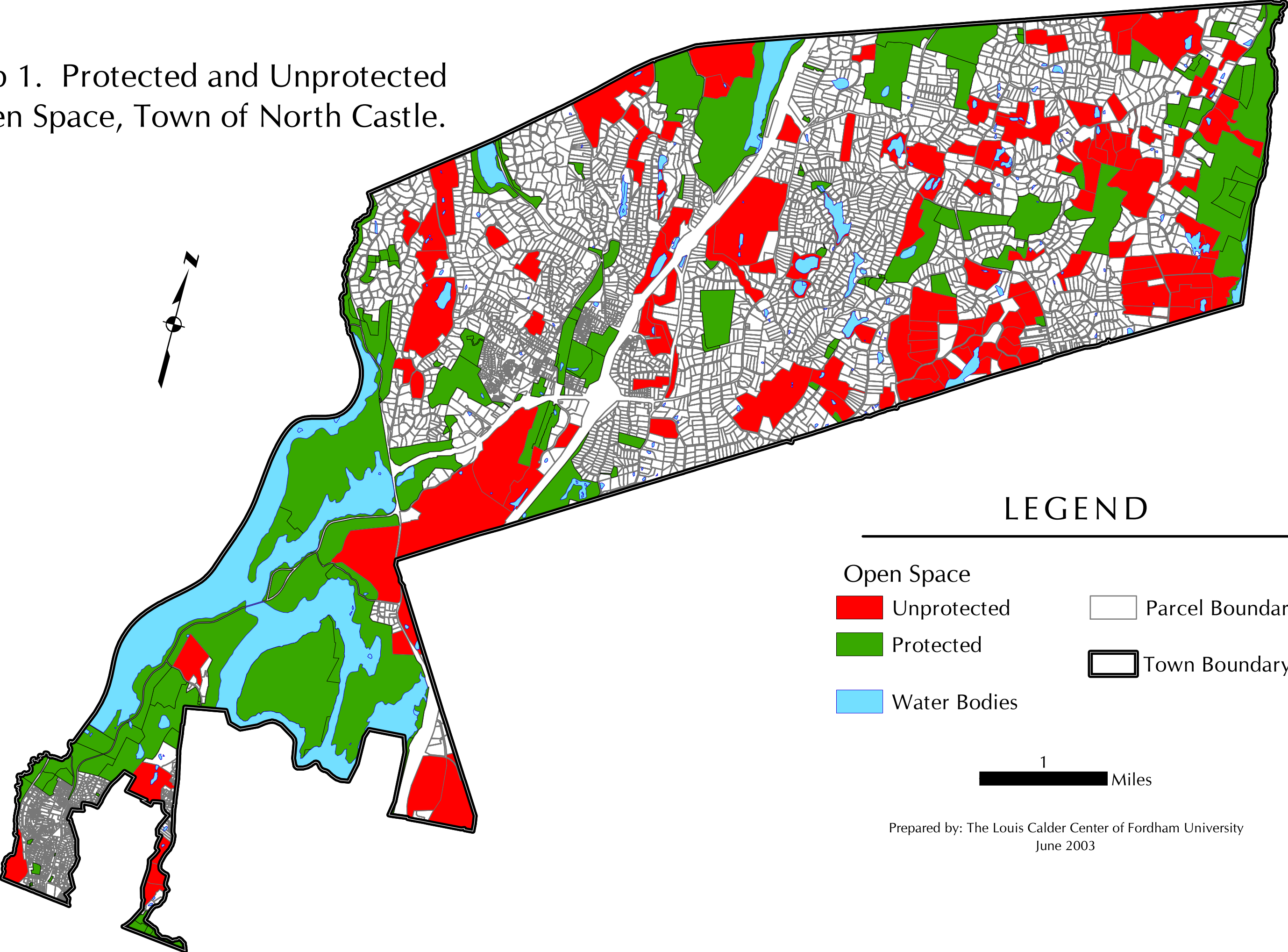
Acreage was calculated for all the parcels in the Town based on the shape of the parcel in the Town Tax Maps, prepared by Weiler Mapping Inc. for the North Castle Tax Assessor's Office. Acreage calculated in this manner is an accurate estimation of area. However, it may differ slightly from previously stated open space acreage numbers since the area estimates were collected from different sources. From this calculation, all parcels greater than 10 acres were identified and selected for study. Existing open space parcels were identified using the 2002 Open Space Inventory Map created by Kellard Engineering and Consulting. These parcels were considered protected open spaces and not used in any analyses. Maps of open space features were overlayed on the parcel map of the Town, and parcels greater than 10 acres were queried for the previously mentioned open space features. Scores for each feature were summed to create a total score for each parcel as described for OSSC-visited parcels.

## Results

The OSSC considers all open space within the Town important and in need of review for preservation, regardless of score or rank. Detailed evaluations, scores, and rankings for all parcels can be found in the Appendices. For simplicity, results presented here are a summary of the complete evaluations, scores, and rankings. Examples of high priority sites are provided and discussed. For the purposes of this discussion, the OSSC considered high priority sites to be those with Total Scores with Weighted Water that fell within the top quintile of possible scores. The top quintile represents parcels whose total score fell within the highest 20% of the total range of scores (i.e., scaled scores). While these sites should be considered first, all parcels should be reviewed and preserved.

As a whole, the Town contains 146 protected open space parcels (10 acres or more in size) totaling 4976.65 acres, and 131 unprotected parcels (10 acres or more in size) totaling 3574.8. Thus, the Town contains a total of 277 open space parcels, totaling 8551.45 acres (Map 1).

Map 1. Protected and Unprotected Open Space, Town of North Castle.



Prepared by: The Louis Calder Center of Fordham University  
June 2003

### Town-wide

Eighteen parcels totaling 1015.67 acres of unprotected open space had scores in the top 20 percent of scaled scores for the 131 open space parcels in the Town (Table 4; Map 2). These parcels accounted for nearly 28 percent of the total unprotected open space (i.e., for parcels greater than 10 acres).

**Table 4. Scaled Scores for Parcels of 10 Acres or More that Contained Unprotected Open Space.**

| <b>Scaled Scores*</b><br><b>(0 = lowest possible score - 100 = highest possible score)</b> | <b>Number of<br/>Parcels</b> | <b>Total<br/>Acreage</b> |
|--------------------------------------------------------------------------------------------|------------------------------|--------------------------|
| 81 - 100%                                                                                  | 18                           | 1015.67                  |
| 61 - 80%                                                                                   | 19                           | 464.97                   |
| 41 - 60%                                                                                   | 26                           | 686.93                   |
| 21 - 40%                                                                                   | 33                           | 752.53                   |
| 0 - 20%                                                                                    | 35                           | 654.70                   |

\* Total scores, with water features receiving twice the weight of other features, of the 131 open space parcels in the Town scaled between 0 and 100%.

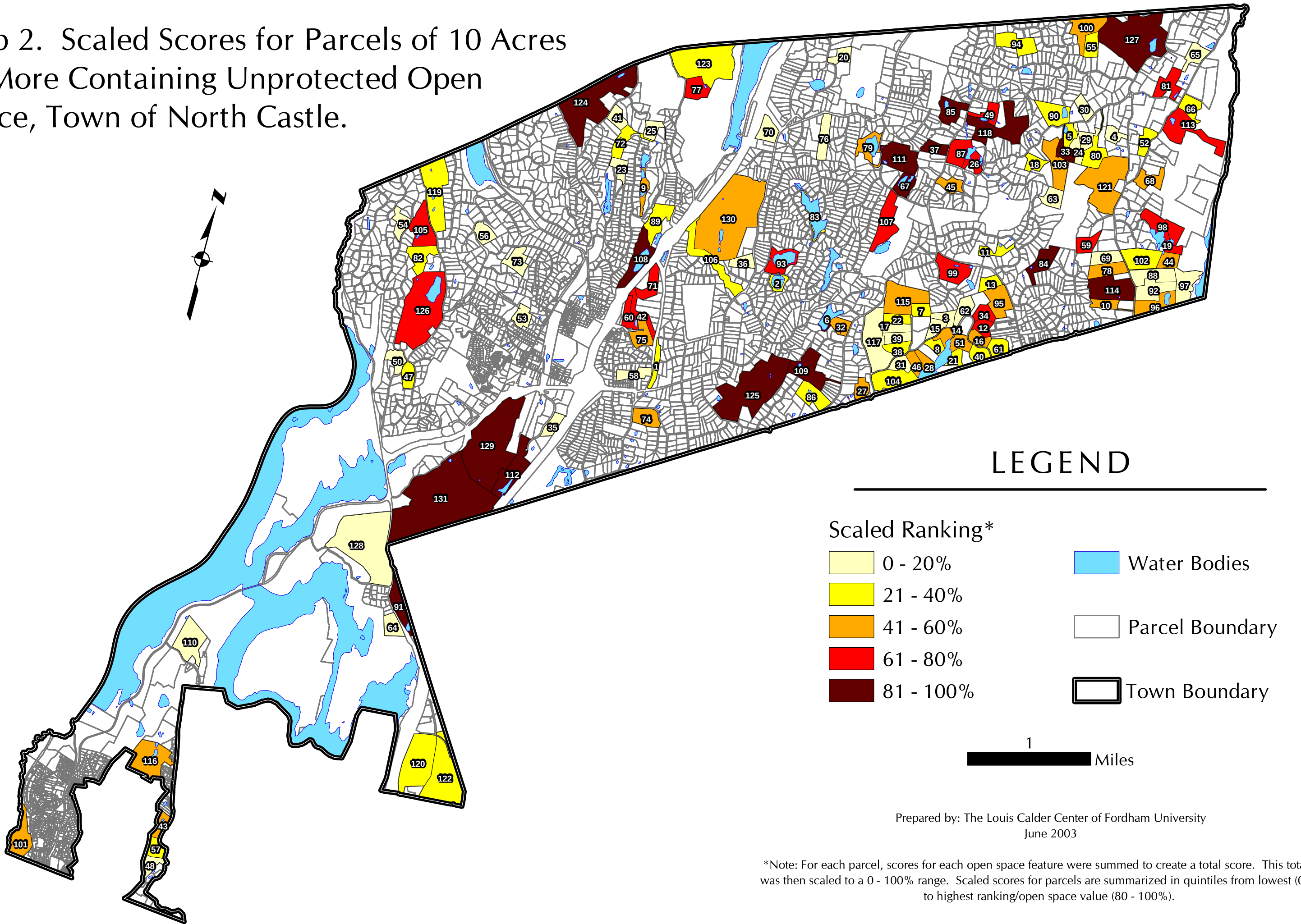
Of the 18 parcels in the top 20 percent of the scores (Table 5), 4 (Parcels 112, 85, 131 and 118) possessed all of the water characteristics measured: aquifers, Department of Environmental Conservation (DEC) wetlands, hydric soil wetlands, National Wetland Inventory (NWI) wetlands, streams, and water bodies. The remaining 14 parcels possessed 5 of the 6 water features (note: parcels are referenced with an arbitrary ID number for comparison to maps).

**Table 5. Number of Different Water Features in Highest Scoring (i.e., Top 20%) Parcels of 10 Acres or More that Contained Unprotected Open Space.**

| Parcel ID | Acreage | Number of Water Features |
|-----------|---------|--------------------------|
| 112       | 38.33   | 6                        |
| 85        | 21.53   | 6                        |
| 131       | 213.70  | 6                        |
| 118       | 52.84   | 6                        |
| 127       | 110     | 5                        |
| 6         | 10.15   | 5                        |
| 33        | 11.32   | 5                        |
| 67        | 15.03   | 5                        |
| 84        | 21.31   | 5                        |
| 109       | 35.29   | 5                        |
| 111       | 36.95   | 5                        |
| 125       | 107.46  | 5                        |
| 37        | 11.55   | 5                        |
| 91        | 24.61   | 5                        |
| 108       | 32.86   | 5                        |
| 114       | 40.96   | 5                        |
| 124       | 99.72   | 5                        |
| 129       | 132.06  | 5                        |

Several parcels in the top 20 percent were found to be adjacent to each other and formed large tracts of contiguous open space. Parcels 112, 129, and 131 comprise 384.09 acres; Parcels 111 and 67 total 51.98 acres; and Parcels 125 and 109 total 142.75 acres. These 7 parcels account for 15.8% of the unprotected open space on parcels greater than 10 acres, and would provide an excellent opportunity to preserve large, contiguous areas of open space (Map 2).

Map 2. Scaled Scores for Parcels of 10 Acres or More Containing Unprotected Open Space, Town of North Castle.



### OSSC-visited Sites

Four parcels totaling 187.18 acres of unprotected open space had scores in the top 20 percent of the range of scores for the 34 open space parcels surveyed by the OSSC in the Town (Table 6; Map 3). These parcels accounted for nearly 5 percent of the total unprotected open space on parcels greater than 10 acres.

**Table 6. Scaled Scores for Parcels of 10 Acres or More Visited by the Open Space Study Committee that Contained Unprotected Open Space.**

| <b>Scaled Scores*</b><br><b>(0 = lowest possible score - 100 = highest possible score)</b> | <b>Number of<br/>Parcels</b> | <b>Total<br/>Acreage</b> |
|--------------------------------------------------------------------------------------------|------------------------------|--------------------------|
| 81 - 100%                                                                                  | 4                            | 187.18                   |
| 61 - 80%                                                                                   | 7                            | 140.09                   |
| 41 - 60%                                                                                   | 9                            | 392.37                   |
| 21 - 40%                                                                                   | 7                            | 125.21                   |
| 0 - 20%                                                                                    | 7                            | 89.68                    |

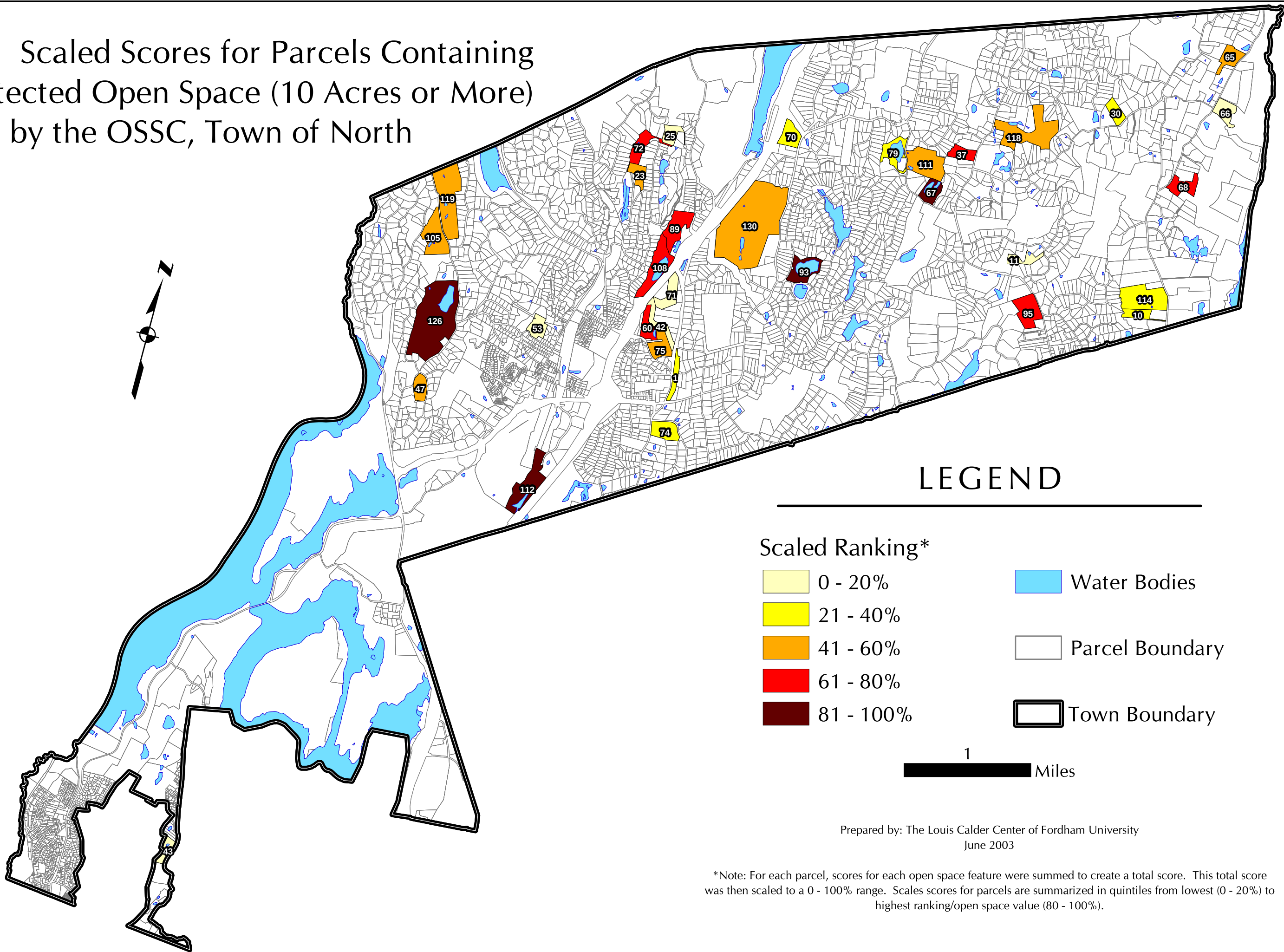
\* Total scores, with water features receiving twice the weight of other features, of the 34 open space parcels in the Town scaled between 0 and 100%.

Of the 4 parcels in the top 20%, 2 (Parcels 112 and 67) possessed all of the OSSC water features measured: aquifers, lakes, streams, and wetlands (Table 7).

**Table 7. Number of Different Water Features in Highest Scoring (i.e., Top 20%) Parcels Visited by the Open Space Study Committee that Contained Unprotected Open Space.**

| <b>Parcel ID</b> | <b>Acreage</b> | <b>Number of Water Features</b> |
|------------------|----------------|---------------------------------|
| 112              | 38.33          | 11                              |
| 67               | 15.03          | 11                              |
| 93               | 25.10          | 9                               |
| 126              | 108.72         | 7                               |

Map 3. Scaled Scores for Parcels Containing Unprotected Open Space (10 Acres or More) Visited by the OSSC, Town of North Castle.



Prepared by: The Louis Calder Center of Fordham University  
June 2003

\*Note: For each parcel, scores for each open space feature were summed to create a total score. This total score was then scaled to a 0 - 100% range. Scales scores for parcels are summarized in quintiles from lowest (0 - 20%) to highest ranking/open space value (80 - 100%).

### Combined Analysis of Town-wide and OSSC-visitation Data

Using town-wide data, the parcels listed in Table 5 should be considered for priority protection, with parcels listed in Table 7 considered for priority protection based on OSSC-visits. Each of these methods was designed to measure environmental characteristics and open space in different ways, and both were employed to take advantage of the strengths of each.

The town-wide analysis used for this study identified parcels greater than 10 acres that possessed specific open space features, many of which may not have been obvious to observers during site visits: aquifers, critical environmental areas, DEC wetlands, hydric soil wetlands, national historic register sites, national wetlands inventory, open space, parks, steep slopes, streams, and water bodies. While OSSC survey criteria were used as a guideline, the features analyzed were limited by the availability of data.

The OSSC site-surveys measured similar characteristics, including aquifers, lakes, steep slopes, streams, wetlands, biotic corridors, connections and linkages, historic value, grasslands, scenic character, trails, vegetation, wildlife habitat, and woodlands. However, OSSC site-surveys recorded information based on visual observation of a feature for parcels the committee visited. Descriptive information detailing the quality of each visited parcel was recorded. While some of this qualitative data, was not available for use in the town-wide analysis, it provided valuable descriptive information about the importance of a given parcel. Therefore, combining the OSSC site-survey and town-wide data provided a comprehensive analysis of each individual parcel's contribution to open space.

The results of the town-wide analysis and OSSC site-surveys were compared to more fully evaluate each site and determine overlap between the two investigation methods. Seven parcels surveyed by the OSSC were in the top 20 percent of the town-wide analysis. Parcel 112 possessed all 6 of the water features from the town-wide analysis as well as 8 of the 9 OSSC descriptive characteristics. Parcel 118 also possessed all of the water features from the town-wide analysis and 7 of the OSSC descriptive characteristics. The remaining 5 parcels had 5 water features; 8 OSSC descriptive characteristics were found on Parcels 37, 67, and 114; Parcels 108 and 111 had 7 OSSC criteria; and no parcel had all 9 of the OSSC qualitative characteristics. Thus, while there was much overlap between methods, there were some minor differences.

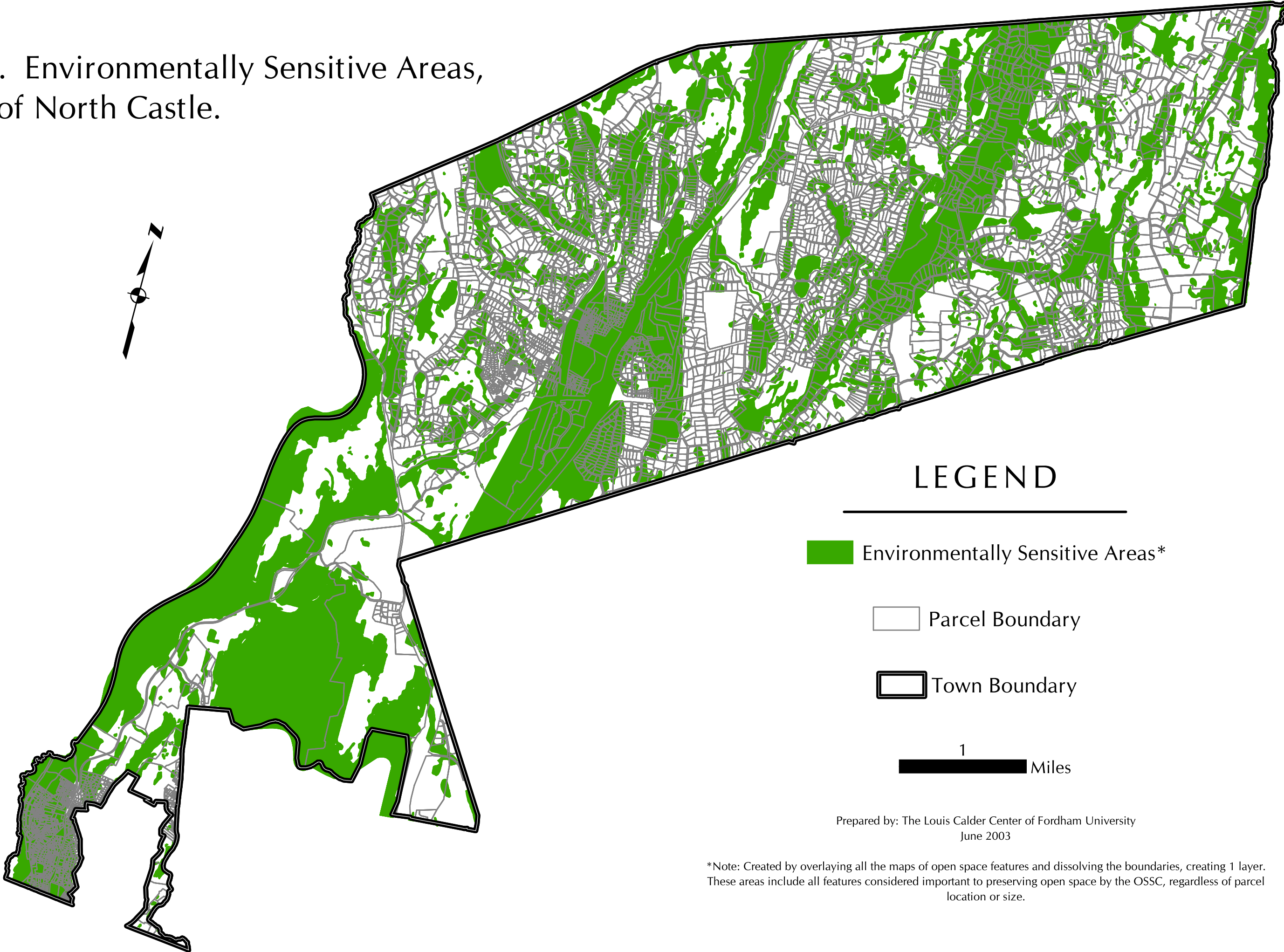
Two parcels (112 and 67) were found in the top 20 percent of both investigation methods. Parcel 112 possessed all water features from the town-wide analysis: aquifer, DEC wetlands, hydric soil wetlands, NWI wetlands, streams, and water bodies as well as all of the water features from the OSSC survey: aquifer, lakes, streams, and wetlands. Parcel 112 ranked highest in both analyses. Parcel 67 ranked eighth in the town-wide analysis possessing 5 of the 6 water features. It did not have an aquifer. However, the same parcel ranked second in the OSSC survey, possessing all of the water features including an aquifer.

Differences in the scores and ranks of parcels were probably the result of inherent error associated with each data collection method. For OSSC-visit data, weather conditions preceding the site visit may have affected the results (e.g., prolonged drought would make normally ephemeral wetlands and hydric soils appear as if they were upland habitats). Additionally, while the OSSC attempted to evaluate all of each property, small areas may have been inaccessible or missed that contained open space features (e.g., a small wetland or piece of wetland from an adjoining property) that the town-wide analysis recorded. The town-wide data also had error associated with it, primarily with the precision at which data was collected and recorded. Positional error associated with the location of open space features may have been as high as several yards. Thus, open space features close to the boundary of parcels may have been misclassified (e.g., a stream running through a small corner of a property may be recorded as being on the adjacent property).

### *Environmentally Sensitive Areas*

Using a composite of the town-wide data, Environmentally Sensitive Areas were delineated for the town. These areas include all features considered important to preserving open space by the OSSC, and should receive special attention by the Town prior to any discussion of development. For comparative purposes, these Environmentally Sensitive Areas are presented in conjunction with all parcels in the Town (Map 4), all existing/protected open space (Map 5), all unprotected parcels 10 acres or more (i.e., town-wide data; Map 6), and OSSC-visited parcels (Map 7).

Map 4. Environmentally Sensitive Areas,  
Town of North Castle.



LEGEND

 Environmentally Sensitive Areas\*

 Parcel Boundary

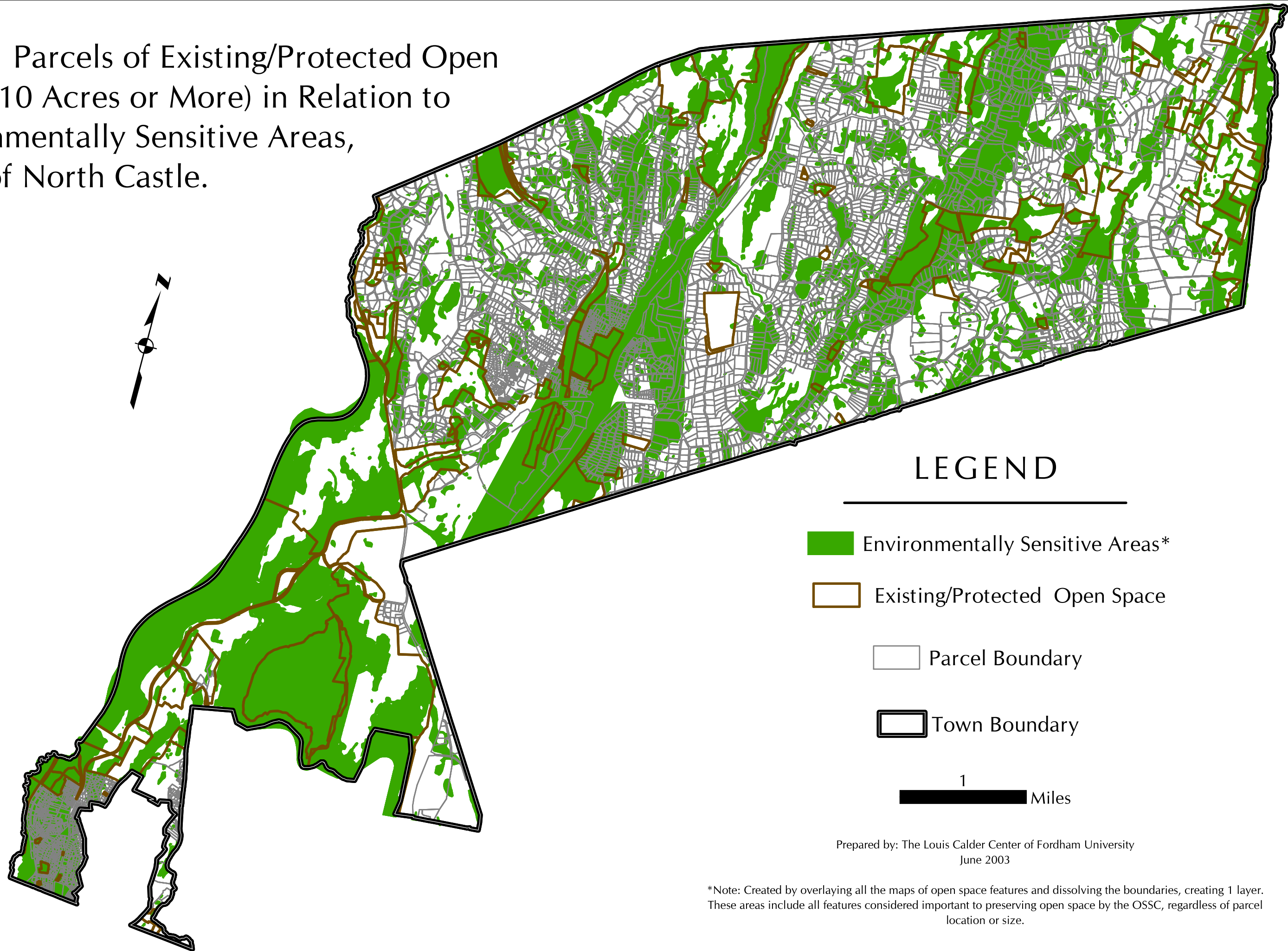
 Town Boundary

 1 Miles

Prepared by: The Louis Calder Center of Fordham University  
June 2003

\*Note: Created by overlaying all the maps of open space features and dissolving the boundaries, creating 1 layer. These areas include all features considered important to preserving open space by the OSSC, regardless of parcel location or size.

Map 5. Parcels of Existing/Protected Open Space (10 Acres or More) in Relation to Environmentally Sensitive Areas, Town of North Castle.



LEGEND

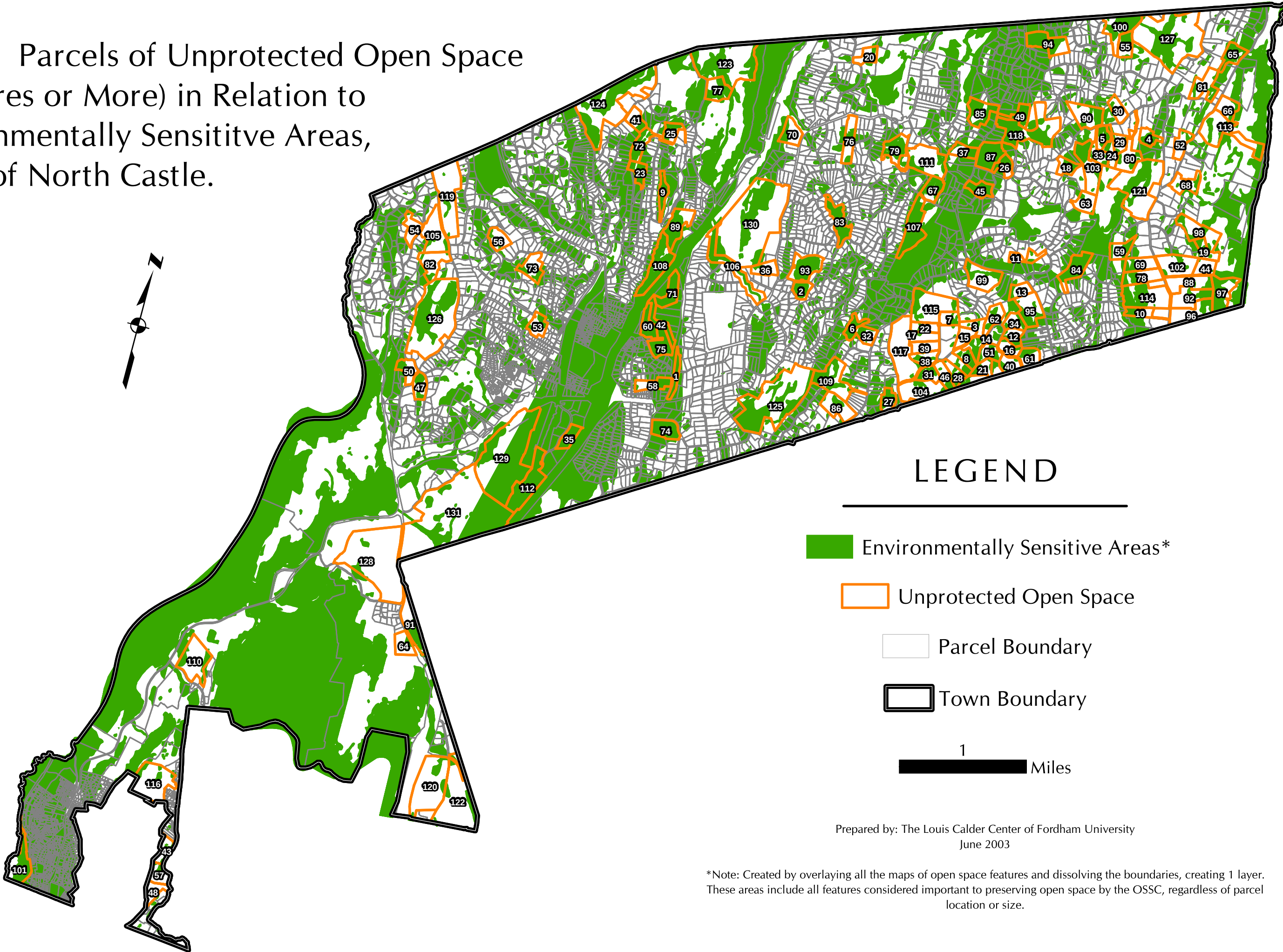
-  Environmentally Sensitive Areas\*
-  Existing/Protected Open Space
-  Parcel Boundary
-  Town Boundary

1 Miles

Prepared by: The Louis Calder Center of Fordham University  
June 2003

\*Note: Created by overlaying all the maps of open space features and dissolving the boundaries, creating 1 layer. These areas include all features considered important to preserving open space by the OSSC, regardless of parcel location or size.

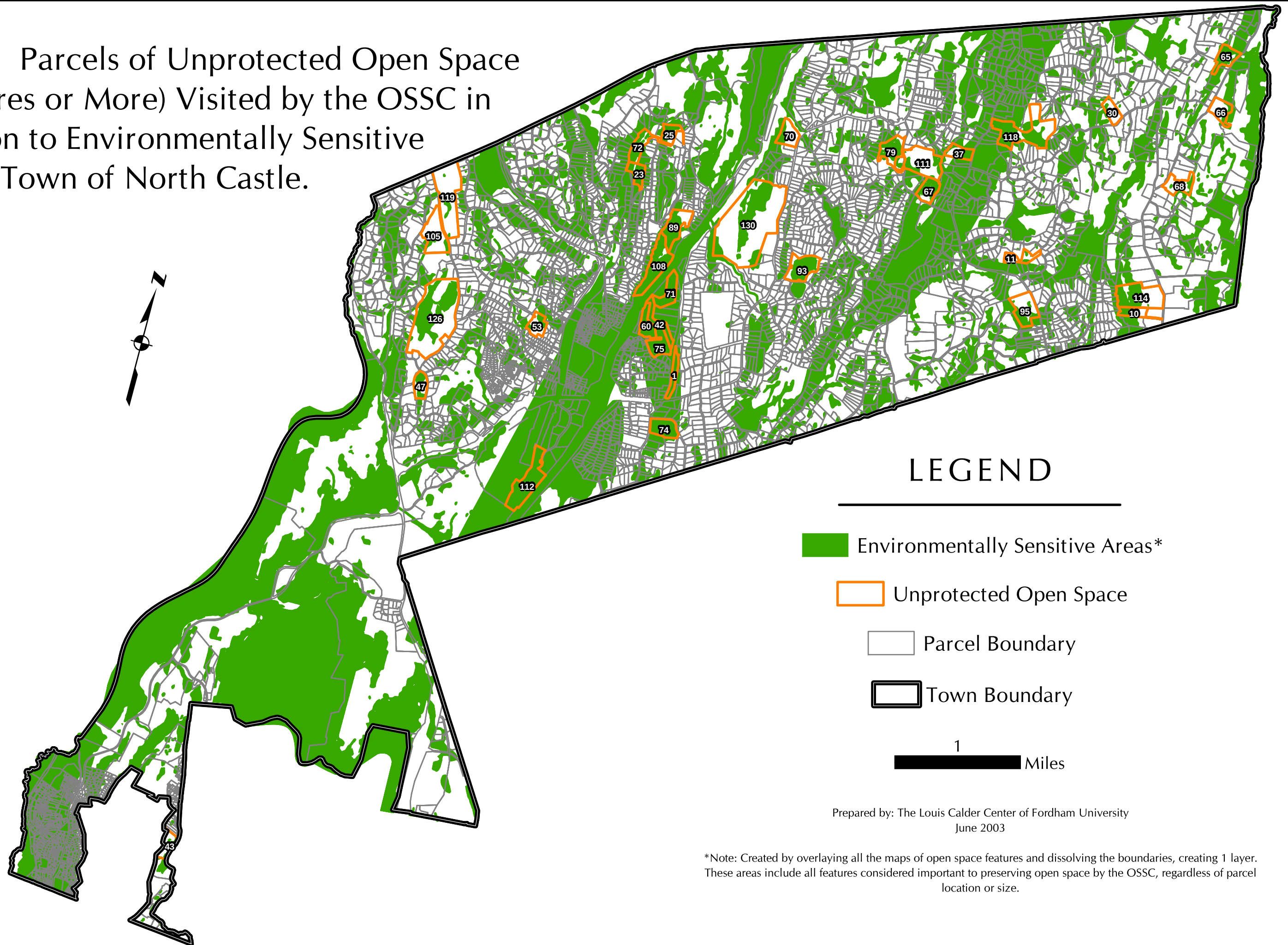
Map 6. Parcels of Unprotected Open Space  
(10 Acres or More) in Relation to  
Environmentally Sensitive Areas,  
Town of North Castle.



Prepared by: The Louis Calder Center of Fordham University  
June 2003

\*Note: Created by overlaying all the maps of open space features and dissolving the boundaries, creating 1 layer. These areas include all features considered important to preserving open space by the OSSC, regardless of parcel location or size.

Map 7. Parcels of Unprotected Open Space  
(10 Acres or More) Visited by the OSSC in  
Relation to Environmentally Sensitive  
Areas, Town of North Castle.



## LEGEND

Environmentally Sensitive Areas\*

Unprotected Open Space

Parcel Boundary

Town Boundary

1  
Miles

Prepared by: The Louis Calder Center of Fordham University  
June 2003

\*Note: Created by overlaying all the maps of open space features and dissolving the boundaries, creating 1 layer. These areas include all features considered important to preserving open space by the OSSC, regardless of parcel location or size.

## TECHNIQUES FOR OPEN SPACE PRESERVATION

Numerous techniques, each with pros and cons, are available to the Town and other organizations interested in preserving open space. The following possible techniques can be applied to protect the open space described in the preceding sections.

### **Government and Nonprofit Acquisition**

#### *Outright Purchase*

A land management agency, whether government or non-profit, receives full title to a parcel of land and all of the rights associated with that land through a fee simple purchase, or what is more commonly known as outright purchase. It allows for full control of the land, permanent protection, and public access. However, outright purchase removes land from the tax rolls, may result in additional responsibilities, and requires the expenditure of funds. Funding for the purchase of land may be obtained through State and Federal grants, as well as from non-profits, such as Scenic Hudson.

#### *Fair Market Value*

Purchasing land at fair market value can be limited by the availability of funds on the part of the purchaser. The highest sale price is provided to the seller, but capital gains taxes can significantly affect profits. Public parkland is frequently acquired at fair market value.

#### *Bargain Sale*

A bargain sale occurs when land is purchased at less than the fair market value. The difference between fair market value and the sale price can be considered a charitable contribution. As a result, the seller incurs a smaller capital gains tax and receives a tax deduction. It may be difficult, however, to find a seller willing to reduce the profit to be made selling property at fair market value.

#### *Conservation Easement*

A conservation easement is a recorded deed restriction on the future use of property. The right to enforce the restriction is given to a tax-exempt charitable organization, generally in the conservation field, or a government agency. A conservation easement protects land against future real estate development, while allowing property owners to continue current uses, such as residential and recreational use. A property owner can receive substantial tax benefits for granting a conservation easement. These benefits consist of IRS income tax deductions as well as future estate tax deductions.

### Purchase and Leaseback

Governments and non-profits can purchase a property outright and lease it back to the previous or another owner, subject to development restrictions. This allows for the purchasing entity to obtain some income through the leaseback, while still protecting the unique open space characteristics of the property. Purchase and leaseback can be used to create a program of land banking. Agricultural lands are appropriate for leaseback. A government or nonprofit may purchase farmland and lease it back to a farmer with a restriction that the land can only be used for agricultural purposes.

### Lease and Lease with Purchase Option

A municipality or nonprofit may rent property to ensure open space preservation. The management agency has unrestricted use of the property and may be exempt from property taxes depending on local laws. The low cost of securing the property is a benefit to the agency. While the lease only provides temporary protection, it allows time for the agency to obtain funds for outright purchase. A lease agreement can be written with an option that the lease payments be credited toward the purchase price.

### Option Agreement

Management agencies can pay a consideration to a landowner giving them the option to purchase property in the future. The landowner agrees to sell the land according to specific terms within an agreed period of time. This provides the buyer with time to obtain funding or consider other properties for purchase. Even if the property is not purchased, the consideration is retained by the landowner.

### Right of First Refusal

Securing the right of first refusal ensures that a management agency has the first opportunity to purchase property if and when the current owner decides to sell. The agency may have to match any legitimate offer made to the landowner within an agreed period of time. Obtaining the right of first refusal is a useful preservation technique for properties where it is certain that the current owners will not develop. It is typically used on agricultural lands and historic sites. Although it is usually granted free of charge, the right of first refusal can be exchanged for financial considerations (e.g., White Plains has frozen property taxes for two country clubs in exchange for the right of first refusal on the properties).

### Land Exchange

Municipalities and non-profits can exchange land with little conservation value but high development potential with land that has high conservation value. Properties need to be of comparable value for the exchange to be equitable and cost free. While this preservation technique reduces capital gains tax for the landowner, it is complicated and time-consuming, which makes it difficult to find a willing seller.

## *Donation and Gifts*

Landowners may wish to see their properties preserved in perpetuity without direct financial compensation, whether out of a sense of altruism or as a result of broad community support. Donating property may be done in several ways. Property can be donated outright, releasing donors from property taxes and entitling them to tax deductions for their charitable contribution. Property can also be donated with reserved life estate, allowing landowners to retain the use of all or part of the donated land during their lifetime, but still qualifying them for a tax deduction. In this case, the management agency does not immediately accept the responsibility of ownership. Donation in a will is another preservation technique used by conservation minded landowners, with the management agency receiving ownership of the property at the demise of the landowner. Landowners can also make a gift of a conservation easement. There are several additional techniques for donating and gift giving, each having different tax advantages. For the donation of land to become a viable option, both the management agency and potential donor need to develop the most suitable arrangement.

## **Regulatory Techniques**

### *Zoning*

Zoning is the principle tool used to regulate land use. New York State Town Law Sections 261 and 262 enable Towns, such as North Castle, to enact zoning regulations for the protection of the health, safety, and general welfare of their residents. Zoning allows North Castle to plan for growth while protecting the character of the Town. Thus, North Castle can pass zoning regulations to lessen the impacts of development on open space.

### *Lot Size*

Large lot zoning is one simple way of protecting open space. Larger minimum lot sizes decrease the density of development. For example, residential areas requiring 2 acres for development could be increased to 4 acres. While increasing minimum lot sizes is a straightforward means of limiting residential density, it fosters sprawl, which in turn can increase infrastructure costs. For example, the extension of utility lines to new homes developed in less populated areas typically costs individual homeowners more than extending services to new construction near more densely populated areas.

### *Clustering*

Cluster zoning is an innovative land use regulation that protects specific natural resources or open spaces. A standard subdivision requires that a parcel be subdivided into lots that conform to minimum lot size, dimensional requirements, and deductions for environmental conditions. Given no extreme environmental conditions on the site, the entire parcel is uniformly divided into equal lots. In contrast, cluster development allows development to be concentrated on just a portion of a parcel, while leaving the rest of

the land undeveloped. A cluster subdivision has the same number of lots as a standard subdivision, but reduces the size of the lots, setbacks, yards, and other requirements.

Cluster development allows landowners to develop their land at the same density that would otherwise be allowed, while, at the same time, protecting significant natural areas within a development site. Cluster developments also provide economic advantages by reducing construction and infrastructure costs. In some cases, however, the lands that are preserved are small, isolated pieces of property that are difficult to link to the Town's existing open space system.

### *Special Districts*

The Town of North Castle can establish special zoning districts to protect natural resources, scenic views, and community character. Special districts have regulations that are specific to the needs of an area. The Town of North Castle already has some experience in creating special districts. The Landmarks District #1 protects historically significant sites on a portion of Bedford Road. It is important that the language in a special district be specific enough so that it is not open to varying interpretation.

### *Permitted Uses*

The Town can limit the uses permitted in a zoning district or special district to those that do not degrade the important natural resources of an area. For example, heavy industrial uses can be prohibited in aquifer protection districts because of their potential to contaminate surface and subsurface water resources. Instead, passive recreational uses can be permitted.

### *Floor Area Ratio Limitations*

As recommended in the *1996 Town Comprehensive Plan Update*, the Town can preserve open space by adopting a zoning ordinance amendment implementing floor area ratio (FAR) limitations. FAR limitations can control land disturbance and building size by limiting the floor area of a building based on the area of the parcel. This preservation technique is a common land use regulation in several Westchester municipalities.

### *Environmental Ordinances*

Ordinances that protect environmentally sensitive areas such as wetlands, watersheds, floodplains, steep slopes, and ridgelines are often mandated by Federal and State legislation. Environmental ordinances can require permits for developing in protected areas and/or compliance with specific development criteria.

## *Wetland/Watershed Protection*

Wetlands and watersheds are valuable natural resources that recharge surface and groundwater resources. Wetland and watershed ordinances regulate activities that can degrade these resources, such as dredging and spoil disposal, construction of roads and parking lots, grading and soil removal, and clearcutting natural vegetation. A simple wetland ordinance will require lot area deductions for wetlands. A more effective ordinance will require a permit for uses and activities being undertaken in or adjacent to a wetland. It will specify procedures for obtaining the permit, application requirements, public hearing notice procedures, and performance standards. Wetlands and watershed ordinances often require monitoring and enforcement to ensure compliance.

## *Critical Environmental Areas*

The Town of North Castle is authorized under the New York State Environmental Quality Act (SEQRA) to designate sensitive natural areas as Critical Environmental Areas (CEA). Any development proposed in a CEA is subject to a Type I environmental review and requires an environmental assessment or environmental impact statement. While CEA designation does not assure preservation, it does require the developer to mitigate potential impacts to environmentally sensitive areas. It also requires the Town to scrutinize development proposed in a CEA before granting its approval.

## *Development Restrictions*

Developmental restrictions attempt to delay a particular land use or growth. A municipality can postpone or limit growth to gain time to prepare for additional development.

## *Phased Growth*

Phased growth permits limited growth over time. Not often used, phased growth was pioneered by the Town of Ramapo in the 1950s. Ramapo awarded points to proposed developments that meet certain infrastructure criteria, such as having access to public water or sewers. Only those developments that had an appropriate number of infrastructure points were allowed to develop, preventing development from leapfrogging into undeveloped areas not yet served by infrastructure. An equitable system for approving developments is necessary for phased growth to work.

## *Moratorium*

The Town can place a moratorium on a particular use until it develops an ordinance or plan for regulating the use. This prevents landowners from rushing to develop their property before the new regulations come into effect. The Town of North Castle, for example, could place a moratorium on residential development while it drafts one of the regulatory techniques listed here.

### Transfer of Development Rights

The Transfer of Development Rights (TDR) separates the right to develop a property from the property itself in a specific zone. In TDR zones, the right to develop becomes an entity that can be bought and sold as an individual commodity apart from the land. A TDR program provides a framework for landowners to preserve their property by selling their development rights to landowners whose property can support increased density. This allows the seller to receive an economic benefit while preserving the land and its resources. However, for a TDR program to work there needs to be areas of demand that benefit from receiving the development rights. Development pressure in high-density areas must be strong enough to encourage landowners to purchase the development rights. This preservation technique is recommended in the *1996 Town Comprehensive Plan Update* as a means of protecting important open space.

### **CONCLUSIONS**

The Open Space Study Committee, as charged by the Town Board, has reviewed the land characteristics in the Town of North Castle, and is part of an on-going, long-term effort to acquire, preserve, and protect the remaining open spaces in the Town. The committee defined and limited its scope of study to sites of 10 or more acres, while recognizing that there is a need to preserve all, or portions of other parcels, regardless of size. The OSSC used data from site-visits, past local studies, and county, state, and federal sources to fulfill its charge of inventorying and prioritizing the Town's remaining open space.

The Town is 16,776 acres in size, of which 3,307 acres are important water supply/water company lands. An additional 640 acres are Town and County parklands, with semi-public lands such as school district properties, golf courses, and institutions making up an additional 703 acres. The remaining undeveloped, privately owned parcels of 10 acres or more in size comprise 2,442 acres, approximately 29% of the Town's open space and 15% of its area.

All of the unprotected, 10 acre or larger sites, totaling 3,649 acres (43% of the Town's open space and 21% of its area), are listed in the results section and Appendices in rank order, based on their open space features. Analysis of data from both site-visits and town-wide sources emphasized water features, because the OSSC felt that protecting water resources was the most important goal of open space preservation for the Town. The OSSC visited 34 sites, in some cases with the owner's participation. The Committee was very impressed by the beauty of these sites and the interesting features, both natural and historic. While most of the 131 unprotected sites in the Town cannot be acquired, no or low cost protective techniques are available and should be vigorously pursued before the most important sites are lost.

## **RECOMMENDATIONS**

1. The OSSC recommends the continuous review of all open space sites by the Town to assure some level of protection, beginning with the most highly ranked. In many cases only a portion of a site may warrant protection.

2. The town-wide data analysis illustrates those areas in the town that have the most important open space features and corridor linkages. The OSSC recommends that all of these areas be designated as Environmentally Sensitive Areas, and that any parcel, regardless of size, in one of these areas receive Conservation Board review prior to further development.

3. The work to protect the Town's rapidly diminishing open space needs to be continuously monitored by the Town government and public. The OSSC recommends that these efforts be split between the Conservation Board (CB) and a new committee, the North Castle Open Space Committee (NCOSC); with both groups reporting semi-annually to the Town Board on their efforts.

The CB should continue efforts to inventory open space parcels and existing conservation easements, and maintain a file for each parcel. It should also recommend changes in Town regulations, such as designating Environmentally Sensitive Areas that promote the protection of open space.

The NCOSC should be established to work with town officials on: 1) initiating public education and support activities; 2) developing Town funding sources for the acquisition and protection of open space parcels; 3) exploring other possible sources of public and private funds; 4) maintaining contact with the state, county, and local organizations promoting land conservation; 5) developing procedures for applying the protective techniques for open space preservation identified in this report and work with Town officials to apply these techniques to each parcel.

## **ACKNOWLEDGEMENTS**

The OSSC would like to thank the Town of North Castle, those charged with its administration and its citizens, for establishing the OSSC, mandating and partially funding this report, and recognizing the importance of open space preservation. We also thank the many landowners who participated in this study, and other towns and organizations that provided valuable information and suggestions.

In August 2002, the Town of North Castle became a "Greenway Community", and received a \$5,000 matching grant from the New York State Hudson River Valley Greenway to partially fund this study and the production of this report. The report was prepared with technical assistance from Erin McHugh and Jose Simoes of Fordham University's Louis Calder Research Center, and information from Kellard Engineering and the Town Tax Assessor.

## **APPENDICES**

- A. MEMBERS OF THE OPEN SPACE STUDY COMMITTEE**
- B. TOWN RESOLUTIONS REGARDING THE OPEN SPACE STUDY COMMITTEE**
- C. HYDROLOGIC STUDIES COMMISSIONED BY THE TOWN**
- D. NORTH CASTLE OPEN SPACE STUDY COMMITTEE SITE REPORT WORK SHEET**
- E. SCORES OF SITES FROM OSSC-VISITS**
- F. SCORES OF SITES FROM TOWN-WIDE ANALYSIS**
- G. TOWN-WIDE DATA SOURCES**

## **APPENDIX A MEMBERS OF THE OPEN SPACE STUDY COMMITTEE**

Larry Nokes, Chair  
Jeff Brown  
Kevin Eccleston  
John Fava  
Anthony Futia  
William Giuliano  
Robert Greer  
Connie Quarrie  
Jay Rosenfield  
John Tiernan  
Sharon Tomback

Reese Berman, Liaison with the Town Board

## **APPENDIX B**

### **TOWN RESOLUTIONS REGARDING THE OPEN SPACE STUDY COMMITTEE**

**January 24, 2001**

Supervisor Lombardi moved, seconded by Councilman Weaver, formation of the Open Space Study Committee whose purpose will be to make an inventory of all open spaces in North Castle to date and to prioritize any properties to be acquired either by easement, out right gifts, or acquisition. The members of the committee are: John Fava and Gene Matusow, Co-Chairman, Jeff Brown, Kevin Eccelston, Anthony Futia, Robert Greer, Connie Quarrie, Jay Rosenfield, Betsey Sluder, John Tiernan, Sharon Tomback, and Councilman Geist and Councilman Weaver, ex officio.

**June 27, 2001**

Supervisor Lombardi moved, seconded by Councilman Weaver, the appointment of John Fava, effective August 1, 2001, as a member and Chairman of the North Castle Conservation Board for a term to expire April 8, 2002, and further moved that the Open Space Study Committee be designated a sub-committee of the Conservation Board, also under the Chairmanship of Mr. Fava.

**April 24, 2002**

Upon the recommendation of Conservation Board Chairman, John Fava, Councilman Geist, moved, seconded by Councilman Kittredge, the appointment of William M. Giuliano, Ph.D. to the Open Space Study Committee, to serve at the pleasure of the Board.

## **APPENDIX C**

### **HYDROLOGIC STUDIES COMMISSIONED BY THE TOWN**

1. February 1981 - Town of North Castle Upper Mianus River Basin Study. Frederick P. Clark Associates.
2. March 1990 - Assessment of Hydrologic Conditions, Town of North Castle. Blasland & Bouck Engineers, P.C. and Blasland, Bouck, and Lee., Engineers & Geoscientists.
3. June 1993 - Groundwater Resources in the Town of North Castle. Report 1: Byram/Wampus Drainage Basin. C.A. Rich Consultants, Inc.
4. October 1994 - Groundwater Resource Analysis Kensico/Bronx River Drainage Basin. C.A. Rich Consultants, Inc.
5. December 1996 - Town of North Castle Town-wide Aquifer Map. Geraghty & Miller, Inc.
6. January 1996 - Groundwater Resource Study, Mianus River Basin, Town of North Castle, Westchester County. Geraghty & Miller, Inc.

## APPENDIX D

### NORTH CASTLE OPEN SPACE STUDY COMMITTEE SITE REPORT WORK SHEET

Survey Team \_\_\_\_\_ Date: \_\_\_\_\_

Location \_\_\_\_\_

Site # \_\_\_\_\_ Section Block/Lot# \_\_\_\_\_

Size \_\_\_\_\_ Zoning \_\_\_\_\_ Surrounding Land Use \_\_\_\_\_

Frontage \_\_\_\_\_

Structures:

Buildings \_\_\_\_\_

Dams \_\_\_\_\_

Bridges \_\_\_\_\_

Culverts \_\_\_\_\_

1. Natural Features

Hydrology:

Vegetation:

| Rating (Guidelines) |                                 |
|---------------------|---------------------------------|
|                     | Streams                         |
|                     | Lakes/Ponds                     |
|                     | Wetlands                        |
|                     | Aquifers                        |
|                     | Scenic Character                |
|                     | Steep Slopes                    |
|                     | Grasslands/Meadows/Trans.Fields |
|                     | Woodland                        |
|                     | Trees/ Vegetation               |
|                     | Trails                          |
|                     | Connection/ Linkages            |
|                     | Wildlife Habitat                |
|                     | Biotic Corridor                 |
|                     | <b>Total</b>                    |

Topography:

Other:

2. Historical/Educational/Cultural Significance

3. Active/Passive Recreational Significance

4. Special Characteristics

# **APPENDIX E** **SCORES OF SITES FROM OSSC - VISITS**

| Parcel ID | Acreage | Open Space Feature* |                     |                         |                       |          |       |                     |              |         |        |       |          |          |       | Total Score<br>with<br>Weighted<br>Water** | Total<br>Score | Water<br>Only<br>Score |
|-----------|---------|---------------------|---------------------|-------------------------|-----------------------|----------|-------|---------------------|--------------|---------|--------|-------|----------|----------|-------|--------------------------------------------|----------------|------------------------|
|           |         | Aquifers            | Biotic<br>Corridors | Connection/<br>Linkages | Grasslands/<br>Fields | Historic | Lakes | Scenic<br>Character | Steep Slopes | Streams | Trails | Trees | Wildlife | Wetlands | Woods |                                            |                |                        |
| 112       | 38.33   | 3                   | 3                   | 3                       | 1                     | 1        | 2     | 0                   | 0            | 3       | 3      | 2     | 3        | 3        | 3     | 52                                         | 30             | 11                     |
| 67        | 15.03   | 3                   | 1                   | 3                       | 0                     | 1        | 2     | 1                   | 3            | 3       | 1      | 2     | 3        | 3        | 3     | 51                                         | 29             | 11                     |
| 93        | 25.10   | 3                   | 3                   | 3                       | 0                     | 2        | 3     | 0                   | 3            | 3       | 2      | 3     | 3        | 0        | 3     | 49                                         | 31             | 9                      |
| 126       | 108.72  | 0                   | 3                   | 3                       | 3                     | 2        | 3     | 3                   | 3            | 2       | 1      | 3     | 3        | 2        | 3     | 48                                         | 34             | 7                      |
| 60        | 13.38   | 3                   | 3                   | 3                       | 0                     | 3        | 2     | 0                   | 0            | 3       | 1      | 0     | 2        | 3        | 1     | 46                                         | 24             | 11                     |
| 89        | 24.56   | 3                   | 0                   | 3                       | 2                     | 0        | 2     | 3                   | 3            | 1       | 1      | 1     | 3        | 3        | 3     | 46                                         | 28             | 9                      |
| 108       | 32.86   | 3                   | 0                   | 3                       | 2                     | 0        | 2     | 3                   | 3            | 1       | 1      | 1     | 3        | 3        | 3     | 46                                         | 28             | 9                      |
| 95        | 25.44   | 3                   | 3                   | 3                       | 0                     | 1        | 1     | 0                   | 0            | 3       | 0      | 3     | 2        | 3        | 3     | 45                                         | 25             | 10                     |
| 68        | 15.69   | 0                   | 3                   | 3                       | 3                     | 3        | 1     | 2                   | 3            | 2       | 2      | 2     | 3        | 2        | 3     | 42                                         | 32             | 5                      |
| 72        | 16.61   | 3                   | 3                   | 1                       | 1                     | 0        | 1     | 0                   | 2            | 2       | 2      | 2     | 2        | 3        | 2     | 42                                         | 24             | 9                      |
| 37        | 11.55   | 1                   | 3                   | 2                       | 0                     | 3        | 0     | 1                   | 3            | 3       | 1      | 1     | 1        | 3        | 3     | 39                                         | 25             | 7                      |
| 23        | 10.84   | 3                   | 3                   | 1                       | 0                     | 0        | 0     | 0                   | 3            | 2       | 1      | 1     | 2        | 3        | 2     | 37                                         | 21             | 8                      |
| 105       | 30.98   | 0                   | 3                   | 3                       | 3                     | 2        | 2     | 3                   | 3            | 1       | 1      | 2     | 3        | 1        | 2     | 37                                         | 29             | 4                      |
| 118       | 52.84   | 0                   | 3                   | 3                       | 2                     | 0        | 2     | 0                   | 0            | 3       | 1      | 1     | 3        | 2        | 3     | 37                                         | 23             | 7                      |
| 119       | 56.42   | 0                   | 3                   | 3                       | 3                     | 2        | 2     | 3                   | 3            | 1       | 1      | 2     | 3        | 1        | 2     | 37                                         | 29             | 4                      |
| 65        | 14.83   | 0                   | 0                   | 3                       | 0                     | 1        | 2     | 3                   | 3            | 2       | 1      | 1     | 2        | 2        | 3     | 35                                         | 23             | 6                      |
| 75        | 17.72   | 3                   | 3                   | 3                       | 2                     | 0        | 0     | 0                   | 1            | 1       | 0      | 1     | 3        | 3        | 1     | 35                                         | 21             | 7                      |
| 111       | 36.95   | 0                   | 0                   | 0                       | 3                     | 3        | 1     | 3                   | 0            | 2       | 1      | 3     | 3        | 2        | 3     | 34                                         | 24             | 5                      |
| 130       | 159.52  | 0                   | 3                   | 1                       | 3                     | 1        | 2     | 3                   | 3            | 2       | 1      | 2     | 3        | 0        | 2     | 34                                         | 26             | 4                      |
| 47        | 12.27   | 3                   | 1                   | 1                       | 0                     | 3        | 0     | 0                   | 1            | 2       | 0      | 1     | 2        | 2        | 3     | 33                                         | 19             | 7                      |
| 79        | 20.26   | 0                   | 1                   | 0                       | 0                     | 0        | 3     | 3                   | 3            | 2       | 1      | 2     | 1        | 1        | 3     | 32                                         | 20             | 6                      |
| 10        | 10.30   | 0                   | 3                   | 3                       | 3                     | 0        | 0     | 3                   | 2            | 0       | 3      | 1     | 3        | 2        | 3     | 30                                         | 26             | 2                      |
| 114       | 40.96   | 0                   | 3                   | 3                       | 3                     | 0        | 0     | 3                   | 2            | 0       | 3      | 1     | 3        | 2        | 3     | 30                                         | 26             | 2                      |
| 1         | 9.05    | 3                   | 0                   | 1                       | 0                     | 3        | 0     | 1                   | 3            | 2       | 0      | 2     | 0        | 0        | 3     | 28                                         | 18             | 5                      |
| 70        | 15.89   | 0                   | 0                   | 1                       | 2                     | 1        | 0     | 1                   | 1            | 2       | 1      | 1     | 2        | 2        | 3     | 25                                         | 17             | 4                      |
| 74        | 17.65   | 0                   | 1                   | 0                       | 0                     | 0        | 1     | 0                   | 1            | 2       | 0      | 0     | 1        | 3        | 1     | 22                                         | 10             | 6                      |

|           |         | Open Space Feature* |                  |                      |                    |          |       |                  |              |         |        |       |          |          |       |                                   |             |                  |
|-----------|---------|---------------------|------------------|----------------------|--------------------|----------|-------|------------------|--------------|---------|--------|-------|----------|----------|-------|-----------------------------------|-------------|------------------|
| Parcel ID | Acreage | Aquifers            | Biotic Corridors | Connection/ Linkages | Grasslands/ Fields | Historic | Lakes | Scenic Character | Steep Slopes | Streams | Trails | Trees | Wildlife | Wetlands | Woods | Total Score with Weighted Water** | Total Score | Water Only Score |
| 30        | 11.10   | 0                   | 2                | 1                    | 0                  | 0        | 1     | 1                | 3            | 1       | 1      | 1     | 2        | 0        | 3     | 20                                | 16          | 2                |
| 66        | 14.97   | 0                   | 0                | 3                    | 2                  | 2        | 0     | 2                | 0            | 0       | 1      | 1     | 3        | 1        | 2     | 19                                | 17          | 1                |
| 25        | 10.96   | 0                   | 2                | 3                    | 0                  | 1        | 0     | 1                | 2            | 0       | 2      | 2     | 2        | 0        | 3     | 18                                | 18          | 0                |
| 42        | 11.91   | 3                   | 0                | 1                    | 0                  | 0        | 0     | 0                | 1            | 2       | 0      | 0     | 1        | 0        | 0     | 18                                | 8           | 5                |
| 71        | 16.61   | 3                   | 0                | 1                    | 0                  | 0        | 0     | 0                | 1            | 2       | 0      | 0     | 1        | 0        | 0     | 18                                | 8           | 5                |
| 11        | 10.33   | 0                   | 0                | 3                    | 2                  | 0        | 0     | 3                | 3            | 0       | 0      | 0     | 1        | 0        | 1     | 13                                | 13          | 0                |
| 43        | 12.00   | 0                   | 1                | 3                    | 2                  | 1        | 0     | 0                | 3            | 0       | 0      | 0     | 1        | 0        | 1     | 12                                | 12          | 0                |
| 53        | 12.90   | 0                   | 0                | 0                    | 0                  | 2        | 0     | 1                | 3            | 0       | 0      | 2     | 0        | 0        | 2     | 10                                | 10          | 0                |

\* Features scored from 0 (indicating that the feature did not exist or was not significant for preservation) to 3 (the feature had the highest value for preservation).

\*\* Score based on summing scores of individual features. Parcels with higher number have more open space value. Parcels with the same score have equal open space value.

# **APPENDIX F** **SCORES OF SITES FROM TOWN-WIDE ANALYSIS**

| Parcel ID | Acreage | Open Space Feature* |                             |             |                     |                                 |                            |            |           |             |        |            | Total Score with Weighted Water** | Total Score | Water Only Score |
|-----------|---------|---------------------|-----------------------------|-------------|---------------------|---------------------------------|----------------------------|------------|-----------|-------------|--------|------------|-----------------------------------|-------------|------------------|
|           |         | Aquifer             | Critical Environmental Area | DEC Wetland | Hydric Soil Wetland | National Historic Register Site | National Wetland Inventory | Open Space | Park Land | Steep Slope | Stream | Water Body |                                   |             |                  |
| 112       | 38.33   | 1                   | 0                           | 1           | 1                   | 0                               | 1                          | 1          | 1         | 1           | 1      | 1          | 21                                | 9           | 6                |
| 85        | 21.53   | 1                   | 1                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 1          | 20                                | 8           | 6                |
| 131       | 213.70  | 1                   | 0                           | 1           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 1      | 1          | 20                                | 8           | 6                |
| 118       | 52.84   | 1                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 1          | 19                                | 7           | 6                |
| 127       | 110.00  | 0                   | 0                           | 1           | 1                   | 0                               | 1                          | 1          | 1         | 1           | 1      | 1          | 18                                | 8           | 5                |
| 6         | 10.15   | 1                   | 1                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 1          | 17                                | 7           | 5                |
| 33        | 11.32   | 0                   | 0                           | 1           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 1      | 1          | 17                                | 7           | 5                |
| 67        | 15.03   | 0                   | 1                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 1          | 17                                | 7           | 5                |
| 84        | 21.31   | 0                   | 0                           | 1           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 1      | 1          | 17                                | 7           | 5                |
| 109       | 35.29   | 0                   | 1                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 1          | 17                                | 7           | 5                |
| 111       | 36.95   | 0                   | 1                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 1          | 17                                | 7           | 5                |
| 125       | 107.46  | 0                   | 1                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 1          | 17                                | 7           | 5                |
| 37        | 11.55   | 1                   | 1                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 1      | 0          | 16                                | 6           | 5                |
| 91        | 24.61   | 1                   | 1                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 1      | 1          | 16                                | 6           | 5                |
| 108       | 32.86   | 1                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 1          | 16                                | 6           | 5                |
| 114       | 40.96   | 0                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 1          | 16                                | 6           | 5                |
| 124       | 99.72   | 0                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 1          | 16                                | 6           | 5                |
| 129       | 132.06  | 1                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 1          | 16                                | 6           | 5                |
| 19        | 10.71   | 0                   | 1                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 1      | 1          | 15                                | 7           | 4                |
| 26        | 11.02   | 1                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 1      | 1          | 15                                | 5           | 5                |
| 42        | 11.91   | 1                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 1      | 0          | 15                                | 5           | 5                |
| 49        | 12.41   | 1                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 1      | 1          | 15                                | 5           | 5                |
| 60        | 13.38   | 1                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 0      | 1          | 15                                | 5           | 5                |
| 71        | 16.61   | 1                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 1      | 0          | 15                                | 5           | 5                |
| 77        | 18.44   | 0                   | 1                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 1      | 1          | 15                                | 7           | 4                |

| Parcel ID | Acreage | Open Space Feature* |                             |             |                     |                                 |                            |            |           |             |        |            | Total Score with Weighted Water** | Total Score | Water Only Score |
|-----------|---------|---------------------|-----------------------------|-------------|---------------------|---------------------------------|----------------------------|------------|-----------|-------------|--------|------------|-----------------------------------|-------------|------------------|
|           |         | Aquifer             | Critical Environmental Area | DEC Wetland | Hydric Soil Wetland | National Historic Register Site | National Wetland Inventory | Open Space | Park Land | Steep Slope | Stream | Water Body |                                   |             |                  |
| 81        | 21.05   | 0                   | 1                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 1      | 1          | 15                                | 7           | 4                |
| 87        | 22.80   | 1                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 1      | 1          | 15                                | 5           | 5                |
| 98        | 27.34   | 0                   | 1                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 1      | 1          | 15                                | 7           | 4                |
| 99        | 27.76   | 0                   | 1                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 1      | 1          | 15                                | 7           | 4                |
| 107       | 31.61   | 1                   | 1                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 1      | 0          | 15                                | 7           | 4                |
| 113       | 40.08   | 0                   | 1                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 1      | 1          | 15                                | 7           | 4                |
| 12        | 10.36   | 0                   | 1                           | 1           | 1                   | 0                               | 1                          | 1          | 0         | 0           | 1      | 0          | 14                                | 6           | 4                |
| 34        | 11.33   | 0                   | 1                           | 1           | 1                   | 0                               | 1                          | 1          | 0         | 0           | 1      | 0          | 14                                | 6           | 4                |
| 59        | 13.36   | 0                   | 0                           | 1           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 1      | 0          | 14                                | 6           | 4                |
| 93        | 25.10   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 1      | 1          | 14                                | 6           | 4                |
| 105       | 30.98   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 1      | 1          | 14                                | 6           | 4                |
| 126       | 108.72  | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 1      | 1          | 14                                | 6           | 4                |
| 9         | 10.23   | 0                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 1          | 13                                | 5           | 4                |
| 10        | 10.30   | 0                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 0          | 13                                | 5           | 4                |
| 13        | 10.37   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 1          | 13                                | 5           | 4                |
| 16        | 10.46   | 0                   | 1                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 1      | 0          | 13                                | 5           | 4                |
| 28        | 11.08   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 1          | 13                                | 5           | 4                |
| 45        | 12.20   | 1                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 1          | 13                                | 5           | 4                |
| 46        | 12.24   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 1          | 13                                | 5           | 4                |
| 51        | 12.64   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 1          | 13                                | 5           | 4                |
| 78        | 19.62   | 0                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 0          | 13                                | 5           | 4                |
| 79        | 20.26   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 1          | 13                                | 5           | 4                |
| 96        | 25.52   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 1          | 13                                | 5           | 4                |
| 100       | 28.19   | 0                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 0          | 13                                | 5           | 4                |
| 101       | 28.57   | 1                   | 1                           | 0           | 1                   | 0                               | 0                          | 1          | 1         | 1           | 0      | 1          | 13                                | 7           | 3                |
| 115       | 43.86   | 1                   | 0                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 0           | 1      | 0          | 13                                | 5           | 4                |
| 116       | 46.36   | 0                   | 1                           | 0           | 1                   | 0                               | 1                          | 1          | 1         | 1           | 0      | 1          | 13                                | 7           | 3                |
| 27        | 11.03   | 0                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 1      | 0          | 12                                | 4           | 4                |

| Parcel ID | Acreage | Open Space Feature* |                             |             |                     |                                 |                            |            |           |             |        |            | Total Score with Weighted Water** | Total Score | Water Only Score |
|-----------|---------|---------------------|-----------------------------|-------------|---------------------|---------------------------------|----------------------------|------------|-----------|-------------|--------|------------|-----------------------------------|-------------|------------------|
|           |         | Aquifer             | Critical Environmental Area | DEC Wetland | Hydric Soil Wetland | National Historic Register Site | National Wetland Inventory | Open Space | Park Land | Steep Slope | Stream | Water Body |                                   |             |                  |
| 44        | 12.14   | 0                   | 1                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 0      | 1          | 12                                | 6           | 3                |
| 74        | 17.65   | 1                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 0      | 0          | 12                                | 4           | 4                |
| 75        | 17.72   | 1                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 0      | 0          | 12                                | 4           | 4                |
| 103       | 30.14   | 0                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 1      | 0          | 12                                | 4           | 4                |
| 32        | 11.17   | 0                   | 1                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 1          | 11                                | 5           | 3                |
| 43        | 12.00   | 0                   | 1                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 1          | 11                                | 5           | 3                |
| 68        | 15.69   | 0                   | 1                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 0           | 1      | 0          | 11                                | 5           | 3                |
| 95        | 25.44   | 0                   | 1                           | 1           | 1                   | 0                               | 1                          | 1          | 0         | 0           | 0      | 0          | 11                                | 5           | 3                |
| 121       | 72.53   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 1      | 0          | 11                                | 5           | 3                |
| 130       | 159.52  | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 0      | 1          | 11                                | 5           | 3                |
| 1         | 9.05    | 1                   | 0                           | 0           | 1                   | 0                               | 0                          | 0          | 0         | 1           | 1      | 0          | 10                                | 4           | 3                |
| 2         | 10.01   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 1          | 10                                | 4           | 3                |
| 5         | 10.14   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 1          | 10                                | 4           | 3                |
| 7         | 10.20   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 0           | 1      | 0          | 10                                | 4           | 3                |
| 8         | 10.21   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 1          | 10                                | 4           | 3                |
| 14        | 10.37   | 0                   | 1                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 1      | 0          | 10                                | 4           | 3                |
| 21        | 10.74   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 1          | 10                                | 4           | 3                |
| 22        | 10.75   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 0           | 1      | 0          | 10                                | 4           | 3                |
| 55        | 13.16   | 0                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 0          | 10                                | 4           | 3                |
| 61        | 13.64   | 0                   | 1                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 0      | 0          | 10                                | 4           | 3                |
| 72        | 16.61   | 0                   | 0                           | 0           | 1                   | 0                               | 0                          | 0          | 0         | 1           | 1      | 1          | 10                                | 4           | 3                |
| 83        | 21.13   | 0                   | 0                           | 0           | 1                   | 0                               | 0                          | 0          | 0         | 1           | 1      | 1          | 10                                | 4           | 3                |
| 86        | 22.33   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 1          | 10                                | 4           | 3                |
| 89        | 24.56   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 1          | 10                                | 4           | 3                |
| 90        | 24.56   | 0                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 0          | 10                                | 4           | 3                |
| 94        | 25.15   | 1                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 0          | 10                                | 4           | 3                |
| 102       | 28.97   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 1          | 10                                | 4           | 3                |
| 106       | 31.45   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 0           | 1      | 0          | 10                                | 4           | 3                |

| Parcel ID | Acreage | Open Space Feature* |                             |             |                     |                                 |                            |            |           |             |        |            | Total Score with Weighted Water** | Total Score | Water Only Score |
|-----------|---------|---------------------|-----------------------------|-------------|---------------------|---------------------------------|----------------------------|------------|-----------|-------------|--------|------------|-----------------------------------|-------------|------------------|
|           |         | Aquifer             | Critical Environmental Area | DEC Wetland | Hydric Soil Wetland | National Historic Register Site | National Wetland Inventory | Open Space | Park Land | Steep Slope | Stream | Water Body |                                   |             |                  |
| 119       | 56.42   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 0           | 0      | 1          | 10                                | 4           | 3                |
| 11        | 10.33   | 0                   | 0                           | 0           | 0                   | 0                               | 1                          | 1          | 1         | 1           | 0      | 1          | 9                                 | 5           | 2                |
| 18        | 10.61   | 0                   | 0                           | 1           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 0      | 0          | 9                                 | 3           | 3                |
| 40        | 11.78   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 1      | 0          | 9                                 | 3           | 3                |
| 47        | 12.27   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 1      | 0          | 9                                 | 3           | 3                |
| 52        | 12.83   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 1      | 0          | 9                                 | 3           | 3                |
| 57        | 13.28   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 0           | 0      | 1          | 9                                 | 3           | 3                |
| 66        | 14.97   | 0                   | 1                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 0      | 0          | 9                                 | 5           | 2                |
| 123       | 83.97   | 0                   | 1                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 0      | 0          | 9                                 | 5           | 2                |
| 38        | 11.65   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 0      | 0          | 8                                 | 4           | 2                |
| 80        | 20.31   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 1           | 0      | 0          | 8                                 | 4           | 2                |
| 82        | 21.11   | 0                   | 0                           | 0           | 1                   | 0                               | 0                          | 1          | 0         | 1           | 1      | 0          | 8                                 | 4           | 2                |
| 104       | 30.78   | 0                   | 0                           | 0           | 1                   | 0                               | 0                          | 1          | 0         | 1           | 0      | 1          | 8                                 | 4           | 2                |
| 120       | 64.22   | 0                   | 1                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 0           | 0      | 0          | 8                                 | 4           | 2                |
| 122       | 74.97   | 0                   | 1                           | 0           | 1                   | 0                               | 0                          | 1          | 0         | 0           | 1      | 0          | 8                                 | 4           | 2                |
| 3         | 10.10   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 0          | 7                                 | 3           | 2                |
| 4         | 10.10   | 0                   | 0                           | 0           | 0                   | 0                               | 1                          | 0          | 0         | 1           | 1      | 0          | 7                                 | 3           | 2                |
| 17        | 10.48   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 0           | 0      | 0          | 7                                 | 3           | 2                |
| 23        | 10.84   | 0                   | 0                           | 0           | 1                   | 0                               | 0                          | 0          | 0         | 1           | 1      | 0          | 7                                 | 3           | 2                |
| 29        | 11.10   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 0          | 7                                 | 3           | 2                |
| 30        | 11.10   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 0          | 7                                 | 3           | 2                |
| 56        | 13.25   | 0                   | 0                           | 0           | 1                   | 0                               | 0                          | 0          | 0         | 1           | 1      | 0          | 7                                 | 3           | 2                |
| 65        | 14.83   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 0          | 7                                 | 3           | 2                |
| 76        | 17.86   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 0          | 7                                 | 3           | 2                |
| 117       | 50.89   | 0                   | 0                           | 0           | 1                   | 0                               | 1                          | 1          | 0         | 0           | 0      | 0          | 7                                 | 3           | 2                |
| 25        | 10.96   | 0                   | 1                           | 0           | 0                   | 0                               | 0                          | 1          | 0         | 1           | 1      | 0          | 6                                 | 4           | 1                |
| 35        | 11.48   | 1                   | 0                           | 0           | 1                   | 0                               | 0                          | 0          | 0         | 0           | 0      | 0          | 6                                 | 2           | 2                |
| 97        | 26.27   | 0                   | 1                           | 0           | 0                   | 0                               | 0                          | 1          | 0         | 1           | 1      | 0          | 6                                 | 4           | 1                |

| Parcel ID | Acreage | Open Space Feature* |                             |             |                     |                                 |                            |            |           |             |        |            | Total Score with Weighted Water** | Total Score | Water Only Score |
|-----------|---------|---------------------|-----------------------------|-------------|---------------------|---------------------------------|----------------------------|------------|-----------|-------------|--------|------------|-----------------------------------|-------------|------------------|
|           |         | Aquifer             | Critical Environmental Area | DEC Wetland | Hydric Soil Wetland | National Historic Register Site | National Wetland Inventory | Open Space | Park Land | Steep Slope | Stream | Water Body |                                   |             |                  |
| 24        | 10.85   | 0                   | 0                           | 0           | 1                   | 0                               | 0                          | 1          | 0         | 1           | 0      | 0          | 5                                 | 3           | 1                |
| 63        | 14.16   | 0                   | 0                           | 0           | 0                   | 0                               | 1                          | 1          | 0         | 1           | 0      | 0          | 5                                 | 3           | 1                |
| 64        | 14.65   | 1                   | 1                           | 0           | 0                   | 0                               | 0                          | 1          | 0         | 0           | 0      | 0          | 5                                 | 3           | 1                |
| 110       | 36.61   | 0                   | 0                           | 0           | 0                   | 0                               | 0                          | 1          | 0         | 1           | 0      | 1          | 5                                 | 3           | 1                |
| 15        | 10.43   | 0                   | 0                           | 0           | 0                   | 0                               | 0                          | 0          | 0         | 1           | 1      | 0          | 4                                 | 2           | 1                |
| 20        | 10.72   | 0                   | 0                           | 0           | 0                   | 0                               | 1                          | 0          | 0         | 1           | 0      | 0          | 4                                 | 2           | 1                |
| 31        | 11.14   | 0                   | 0                           | 0           | 1                   | 0                               | 0                          | 1          | 0         | 0           | 0      | 0          | 4                                 | 2           | 1                |
| 39        | 11.77   | 0                   | 0                           | 0           | 0                   | 0                               | 1                          | 1          | 0         | 0           | 0      | 0          | 4                                 | 2           | 1                |
| 48        | 12.35   | 0                   | 1                           | 0           | 0                   | 0                               | 1                          | 0          | 0         | 0           | 0      | 0          | 4                                 | 2           | 1                |
| 58        | 13.33   | 1                   | 0                           | 0           | 0                   | 0                               | 0                          | 0          | 0         | 1           | 0      | 0          | 4                                 | 2           | 1                |
| 69        | 15.72   | 0                   | 0                           | 0           | 1                   | 0                               | 0                          | 0          | 0         | 1           | 0      | 0          | 4                                 | 2           | 1                |
| 88        | 24.11   | 0                   | 0                           | 0           | 1                   | 0                               | 0                          | 0          | 0         | 1           | 0      | 0          | 4                                 | 2           | 1                |
| 92        | 25.04   | 0                   | 0                           | 0           | 1                   | 0                               | 0                          | 0          | 0         | 1           | 0      | 0          | 4                                 | 2           | 1                |
| 128       | 125.38  | 0                   | 1                           | 0           | 0                   | 0                               | 0                          | 1          | 0         | 1           | 0      | 0          | 3                                 | 3           | 0                |
| 36        | 11.53   | 0                   | 0                           | 0           | 0                   | 0                               | 0                          | 1          | 0         | 1           | 0      | 0          | 2                                 | 2           | 0                |
| 62        | 13.91   | 0                   | 1                           | 0           | 0                   | 0                               | 0                          | 0          | 0         | 1           | 0      | 0          | 2                                 | 2           | 0                |
| 70        | 15.89   | 0                   | 1                           | 0           | 0                   | 0                               | 0                          | 0          | 0         | 1           | 0      | 0          | 2                                 | 2           | 0                |
| 41        | 11.85   | 0                   | 0                           | 0           | 0                   | 0                               | 0                          | 0          | 0         | 1           | 0      | 0          | 1                                 | 1           | 0                |
| 50        | 12.57   | 0                   | 0                           | 0           | 0                   | 0                               | 0                          | 0          | 0         | 1           | 0      | 0          | 1                                 | 1           | 0                |
| 53        | 12.90   | 0                   | 0                           | 0           | 0                   | 0                               | 0                          | 0          | 0         | 1           | 0      | 0          | 1                                 | 1           | 0                |
| 54        | 13.13   | 0                   | 0                           | 0           | 0                   | 0                               | 0                          | 0          | 0         | 1           | 0      | 0          | 1                                 | 1           | 0                |
| 73        | 17.40   | 0                   | 0                           | 0           | 0                   | 0                               | 0                          | 0          | 0         | 1           | 0      | 0          | 1                                 | 1           | 0                |

\* Features scored 0 (indicating that the feature did not exist on the parcel) or 1 (indicating that the feature was present).

\*\* Score based on summing scores of individual features. Parcels with higher number have more open space value. Parcels with the same score have equal open space value.

## **APPENDIX G**

### **TOWN-WIDE DATA SOURCES**

All data is in shapefile format. Coordinate system New York State Plane, FIPS zone 3101 (Formerly East Zone 4801), Units: Feet, North American Datum 1983.

1. Town of North Castle Tax Parcels - Town of North Castle Tax Assessor maintained and prepared by Weiler Mapping Inc. in association with Chas H. Sells, Inc.
2. Town of North Castle Open Space - Existing open land was identified and digitized using the 2002 open space inventory map created by Kellard Engineering and Consulting.
3. Westchester County Streams and Rivers - Westchester County GIS obtained from the New York State Department of Environmental Conservation. Additional information of Streams added by Westchester County GIS.
4. Westchester County Hydric Soil Wetlands - Hydric Soils (Wetland Soils) were extracted from the county-wide soils coverage. Automated from uncontrolled manuscripts, rubber-sheeted to fit 1990 DOT road centerlines. Derived from the 1992 Westchester County Soil Survey, U.S. Department of Agriculture, Soil Conservation Service.
5. Westchester County Lakes, Reservoirs and Ponds - Westchester County GIS obtained from the New York State Department of Environmental Conservation. Additional information about lakes, reservoirs, and ponds added by Westchester County GIS.
6. Westchester County Steep Slopes - Generalized county-wide steep slope coverage. Data identifies slopes 15-25% and also slopes over 25% (slope = rise/run). Only steep sloped areas greater than or equal to 10 acres and a height differential of 100' or more were inventoried.
7. Westchester County Open Space - This coverage shows the location of major open space lands. These are identified as properties which, taken together contain at least 25 acres. Also featured, as an exception to the 25- acre threshold, are local parks over 10 acres, small selected local parks over 10 acres, and small selected local parks in urban or waterfront areas. Parcel information was derived from a variety of sources including municipal master plans and open space inventories, non profit environmental organizations, and discussions with municipal officials and their planning staffs or consultants. This map was digitally created using Arc/Info. Parcel Data was compiled on 1" = 1000' scale parcel based municipal tax maps and transferred to 1" = 1 mile scale quad manuscript base maps in preparation for digital automation. Map base utilizes digital data obtained from NYSDOT and USGS as well as information automated by Westchester County.

8. New York State Department of Environmental Conservation Wetlands - State designated wetlands as compiled by NYS Department of Environmental Conservation. This coverage provides a definitive inventory of state designated wetlands (greater than 12.4 acres) in Westchester County.
9. New York State Aquifers - NYS Department of Health, Center for Environmental Health, Bureau of Public Water Supply Protection. This data set consists of aquifer polygons or regions depicting unconsolidated aquifers in New York State, excluding Long Island. Aquifers are separated by and include attributes for potential yield ranges and confinement indicator.
10. U.S. Fish & Wildlife Service, National Wetlands Inventory (NWI). NWI digital data files are records of wetlands location and classification as developed by the U.S. Fish & Wildlife Service. The classification system was adopted as a national classification standard in 1996 by the Federal Geographic Data Committee. This dataset is one of a series available in 7.5 minute by 7.5 minute blocks containing ground planimetric coordinates of wetlands point, line, and polygon features and wetlands attributes. When completed, the series will provide coverage for all of the contiguous United States, Hawaii, Alaska, and U.S. protectorates in the Pacific and Caribbean. Coverage includes both digital data and hardcopy maps. The NWI maps do not show all wetlands since the maps are derived from aerial photo interpretation with varying limitations due to scale, photo quality, inventory techniques, and other factors. Consequently, the maps tend to show wetlands that are readily photointerpreted given consideration of photo and map scale. In general, the older NWI maps prepared from 1970s-era black and white photography (1:80,000 scale) tend to be very conservative, with many forested and drier-end emergent wetlands (e.g., wet meadows) not mapped. Maps derived from color infrared photography tend to yield more accurate results except when this photography was captured during a dry year, making wetland identification equally difficult.

