

SALEM HUNT SITE DEVELOPMENT PLAN
DRAFT ENVIRONMENTAL IMPACT STATEMENT

June Road and Starlea Road
Town of North Salem, Westchester County, New York

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Draft Environmental Impact Statement

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1.0 EXECUTIVE SUMMARY

1.1 Description of Action

The applicant, Wilder Balter Partners, LLC proposes to construct 65 residential units on an approximately 40 acre property located on the west side of June Road, in the Town of North Salem, Westchester County, New York. The project is known as the Salem Hunt residential project. The subject property is located in an R-MF/4 Multi-Family Zoning District, and is designated on the Town of North Salem Tax Maps as Sheet 5, Block 1735, Lot 19. The northerly boundary of the subject property is coincident with the municipal boundary shared by the Town of North Salem, Westchester County and the Town of Southeast, Putnam County. The proposed project will include 24 residential buildings with either two or three condominium units in each building and a separate community building.

SEQRA Background

The DEIS has been prepared to present and evaluate the potential environmental impacts associated with development of the proposed residential project. This DEIS has been prepared in accordance with the State Environmental Quality Review Act (SEQRA) and Part 617 of the implementing regulations. The Town of North Salem Planning Board or the applicant have taken the appropriate actions in accordance with SEQR outline in subsection 2.1 with reference to the related appendices.

This DEIS considers current physical and environmental conditions on the property and in the Town of North Salem and the adjoining Town of Southeast, including; natural resources, land use and zoning, transportation and traffic, historic and archaeological resources, community facilities and resources, fiscal impacts, noise and air resources, and visual resources.

Zoning Amendments

The Town of North Salem adopted zoning amendments in 2000 which resulted in the rezoning of four specific properties to address a New York State Supreme Court decision known as Continental Building Company, Inc. versus the Town of North Salem. According to the Comprehensive Plan Update (CPU), the “primary objective of the adopted zoning was to create the opportunity for the creation of affordable housing and to provide for the development of a variety of housing types in the Town of North Salem”. The Salem Hunt property was specifically rezoned to R-MF/4 Multifamily Zoning District, and is described in the CPU as: “Site 3, formerly referred to as the Kingsley property”.

The Salem Hunt project directly addresses the need for affordable housing in both the Town of North Salem and Westchester County. The project will result in 13 residential units of affordable housing, which are 20 percent of the total project unit count consistent with the R-MF/4 Zoning District requirements.

Site Location and Description

The subject property contains approximately 40 acres of mostly wooded land in the northeastern portion of the Town of North Salem. The property is located on the municipal boundary between the Towns of North Salem and Southeast; and also the boundary between Westchester County and Putnam County.

The property consists of a single tax lot that is rectangular in shape and extends towards the west from its frontage on June Road, which becomes North Salem Road (and Putnam County Route 55) north of the municipal and county boundary (see Site Location Map, Figure 2-1).

Environmental Setting

The project site is located in an area of rolling topography on the western side of the Hudson River, and is part of the Hudson Highlands geologic province. The site slopes gradually from west to east and topography varies approximately 100 feet across the site. The majority of the property contains mature second-growth hardwood forest. The eastern, level portion of the site contains a mapped New York State Department of Environmental Conservation (NYSDEC) designated wetland (L-32), which surrounds a drainage corridor for an unnamed stream that exits the property under June Road.

Wetlands are present along the eastern property boundary and in the northwestern and southwestern portions of the site. The existing conditions on the property are shown in Figure 2-2 - Existing Conditions Plan.

The property is located in an area of mostly low density residential development. Also located near the site are the following: a horse farm; undeveloped land; a deli; the Town of North Salem Highway Department facility; a Town park; and the North Salem Middle/High School. Development in the vicinity of the project site is shown in Figure 2-3 Aerial Photo.

Current Site Usage

The property contains no structures or utilities. Stone walls are located in the northern portion of the property and along the edges of the property. There are several marked horse riding trails on the property.

The proposed driveway for the project crosses the New York State Electric & Gas Corporation (NYSEG) utility easement for overhead electrical lines on the northeast corner of the site.

Description of the Proposed Action

The applicant, Wilder Balter Partners, LLC proposes to construct a residential development consisting of:

- 65 condominium units in twenty-four (24) buildings (see proposed design and layout in Figure 2-4 Proposed Site Plan). Each building will contain either two or three, two-bedroom units. Thirteen of the 65 units (20%) will be designated Moderate Income Housing units, subject to affordability limitations, per the Town Zoning Ordinance;
- A community center with an outdoor pool;
- Access from a single entrance on June Road;
- Private community water supply and subsurface sanitary treatment systems (SSTS);
- Stormwater management facilities; and
- The proposed condominium association for the Salem Hunt community will be responsible for the long-term maintenance of the community water supply system, community SSTS, internal roads and stormwater management facilities.

Site Plan and Layout

The development will include twenty-four two story buildings with town-house style units, each with a two car garage. Seven of the 24 buildings will contain two residential units and the remainder of the buildings (17 buildings), will contain three residential units.

Access to the development will be from a single entrance onto June Road across from Starlea Road. The internal driveways in the development will remain private and will be maintained by the project's condominium association.

The buildings will have traditional early American architecture and design, intended to be compatible with surrounding and nearby residential development. Elevations of the buildings are provided as Figures 2-5 to 2-8 after Chapter 2.0.

The residential buildings are located along an approximately 1900 foot long internal road and are mostly located in the central and southern portion of the site. The project layout has been designed around the natural site conditions such as wetlands, steeper slopes and concentrate the development in areas of the site with optimal soils and topography. No development, with the exception of the required site access driveway is proposed for the eastern portion of the site, which contains NYSDEC designated wetlands. Only limited development and disturbance related to stormwater management basins have been proposed in the western portion of the site, within the buffer of the Town of North Salem and NYSDEC wetlands. In preserving the on-site wetlands and buffers, natural open space will be retained on the property.

The development will include a 3,250 square foot, single story clubhouse building located at the northeast portion of the development, intended for the Salem Hunt residents and their guests and with a separate parking area with 12 spaces. The recreation building will contain:

- A lounge, space for community gatherings and a fitness center;
- Restrooms, a kitchenette, storage space and possibly a game room; and
- A 25 foot by 50 foot heated outdoor swimming pool with a fenced common area.

As shown in the Proposed Site Plan (Figure 2-4), the proposed development includes:

- Primary and expansion Subsurface Sanitary Treatment System (SSTS) areas; and
- Two stormwater management basins.

An extensive and detailed Landscaping Plan is provided in the attached set of drawings as Drawings SP-2.1 and SP-2.2 Layout and Landscaping Plan. Drawing LP-1 shows the locations of proposed lighting on the site.

Condominium Association

A condominium association will be formed as a Limited Liability Corporation (LLC) by the applicant to manage operation and maintenance of all commonly held property, facilities and infrastructure for the Salem Hunt residential development. The condominium association will be responsible for the operation and maintenance of all common areas and infrastructure, including internal roadways, landscaping, the recreation facility and pool, community water and

sanitary systems, and stormwater management facilities.

Purpose, Need and Public Benefit

The applicant proposes a residential development to meet the growing demand for quality housing in the Town of North Salem and in Westchester County. The project is proposed as an attractive residential community for persons and families interested in residing in the Town. The project is proposed to meet needs and objectives, 1) within the Region, 2) in the Town of North Salem, 3) in the local community, as well as 4) on the project site, as discussed in the DEIS.

Construction Phasing

Construction is expected to occur over a three year period. A construction phasing plan will allow for the sequential development of the site to minimize the impacts from construction (see Drawing SP-4.1 Overall Phasing Plan). A preliminary schedule is provided in Section 2.0 of this DEIS.

Approvals, Reviews and Permits

The proposed action will require the following approvals by the listed agencies:

Table 1-1 Project Approvals, Reviews and Permits		
<i>Agency</i>	<i>Permit or Review</i>	<i>Regulatory Status</i>
New York City Department of Environmental Protection (NYCDEP)	Review for septic system Stormwater Pollution Prevention Plan	Pending
New York State Department of Environmental Conservation (NYSDEC)	Wetlands Permit. Water Supply Permit GP 02-01 Permit - Required for site disturbance exceeding one (1) acre	Pending
New York State Department of Health (NYSDOH)	Review of water supply plans	Pending
New York State Department of State	Transportation Corporation	Pending
Westchester and Putnam County Department of Public Works	Permit for improvements within County right-of-way *	Pending
Westchester County Department of Health	Review of water and septic systems	Pending
Town of North Salem Planning Board	Wetlands Permit	Pending
Town of North Salem Planning Board	SEQR and Site Plan Review	DEIS under review for completeness
Town of North Salem Town Board	Transportation Corporation	Pending
Town of North Salem Architectural Review Board	Review of plans and elevations	Pending
Town of North Salem Zoning Board of Appeals	Variances for setback requirements related to recreational building. Variance for building separation distance.	Pending
Putnam and Westchester County	Review pursuant to GML 239	Pending
US Army Corps of Engineers (ACOE)	Jurisdictional Determination	Pending
Town of Southeast Planning Board	Review of site access and Site Plan	Pending
Town of Southeast Highway Department	Review of site access	Pending
* Note: Improvements will be made in the right-of-way in both Westchester and Putnam Counties. Putnam County will review only the adjacent residential driveway relocation; all other aspects will be subject to Westchester County's jurisdiction.		

The project will require review and approval of project plans and operations; and compliance with the applicable requirements and regulations related to the reviews and permits above.

Potential Impact Issues

This section of the Executive Summary provides a summary of the potential impacts and proposed mitigation measures by the major subject category.

1.2 Land Use and Zoning

This chapter of the Salem Hunt DEIS describes existing conditions and anticipated impacts of the development related to the proposed action's compatibility with the character and development trends in the nearby area, as well as with surrounding land uses, community resources and public policies.

The land use and zoning study area includes the project site and areas within a one-mile radius of the boundaries of the project site. The study area is located partially in the Town of North Salem, Westchester County and partially in the Town of Southeast, Putnam County. This section reviews consistency of the project with relevant regional and local policies.

The Salem Hunt property was specifically rezoned as R-MF/4 Multifamily Zoning District by the Town of North Salem in 2000, along with three other sites in the Town, was the response to a New York State Supreme Court decision known as the Continental Decision (Continental Building Company, Inc. versus the Town of North Salem).

Potential Impacts

Compatibility of Proposed Land Use on the Surrounding Neighborhood

The Salem Hunt development consists of 65 two-bedroom condominium units in twenty-four (24) separate residential buildings. A total of 157 parking spaces will be provided (117 spaces proposed in garages and 40 spaces proposed for visitors and recreation area).

The proposed residential buildings, which are intended to include sensitive building architectural designs, varied roof lines, earth tone colors and textures, would be located in the central portion of the site. Approximately one half of the project site would be left as open space with either preserved wetland and wetland buffer areas, stormwater basins or proposed SSTS area that would be planted. Existing stone walls would be preserved.

Due to the location of the proposed development (the central portion of the site), the project is not expected to cause significant adverse effects on the natural buffers bordering the site. The existing natural buffering, beyond the area of disturbance, is expected to remain. See subsection 3.2 of this DEIS under the pertinent heading and Figure 2.4 Proposed Site Plan.

As depicted on the Layout and Landscape Plan, proposed buffer planting and screening is intended to create an effective visual buffer and would conform with the Zoning Code. Lighting on individual condominium units (interior and exterior) and roadway lights will create new visibility of portions of the project from a limited number of nearby properties. Due to the dense vegetation and distance that will separate these areas from the new light source, this change is not expected to cause significant adverse effects on the local rural community.

Overall, the proposed action is compatible with surrounding land use pattern in the vicinity of the project site. As described above, the study area is consists of a mixture of land uses including open space, residential (single and multifamily), commercial and vacant land uses.

The construction of the proposed development would increase the variety of housing opportunities in Town of North Salem and study area. No significant adverse land use impacts are expected from the proposed action.

Conformance with Policies

The proposed action generally conforms with relevant local, regional and State policies. Below is a discussion of the conformance of the proposed action with pertinent policies. Because the proposed action would provide a new residential development consistent with underlying zoning that would enhance the variety and quality of housing opportunities, including affordable housing units, within the Town of North Salem, no significant adverse impacts to public policy are anticipated.

Town of North Salem Comprehensive Plan Update

The Comprehensive Plan Update was created as a guide for the growth and development with the Town of North Salem for the years ahead. The Plan was adopted by the Town on December 12, 2006. The Comprehensive Plan Update was intended to be an update to the Town of North Salem Master Plan (hereinafter referred to as the 1985 Plan), adopted in 1985.

As of February 12, 2008, the Comprehensive Plan Update was recalled (Resolution #59). The proposed Salem Hunt development has been before the Town of North Salem Planning Board, since early 2006. The Final Scoping Document was approved by the Planning Board on June 7, 2006, which included a conformance analysis with Town of North Salem Master Plan and the draft Comprehensive Plan Update. Therefore, the draft DEIS submitted to the Town on February 7, 2007 included a conformance analysis of the proposed action to the previously adopted Comprehensive Plan Update.

Since the Plan has been recalled by the Town, a conformance analysis to the 1985 Plan may be appropriate. The Final Environmental Impact Statement (FEIS) will discuss and clarify any inconsistencies of the proposed action to the applicable 1985 Master Plan.

The DEIS Land Use and Zoning Chapter provides a discussion of the proposed action's conformance with the following Town, regional and State policies:

- Town of North Salem Freshwater Wetlands
- Patterns for Westchester
- Westchester County Affordable Housing Allocation Plan, 2000-2015
- NYCDEP Watershed Regulations (including Phosphorus restrictions)
- Croton Plan
- Land Acquisition Plan
- Community Facilities and Services

Conformance Analysis

Zoning and Site Regulations

The project site is located in a R-MF/4 zoning district, which permits medium density single family attached and multi-family dwellings as of right. The maximum density for such units, as

The Planning Board determined that the project may have a significant impact upon the environment and therefore, issued a Positive Declaration on April 5, 2006

per the Town Code, is four units per acre with a breakdown of 3.2 market-rate units per acre and 0.8 affordable units per acre. Refer to Table 3-4, for bulk and area requirements in the R-MF/4 Zoning District and what is provided by the proposed action. Also, refer to Drawing SP-1, attached to this DEIS, the Overall Preliminary Site Development Plan.

The total site area (in acres) is used to determine the maximum number of dwelling units permitted. At an allowable density of four units per acre, the approximately 40-acre (actual 39.995-acre) site could permit up to 159 units. Refer to Table 3-4, below, for the bulk and area requirements for uses within a R-MF/4 Zoning District and for the areas and distances provided by the proposed action.

According to the Zoning Code, the minimum distance between multifamily structures is required to be 1-1/2 times the building height, per Section 250-19.1. Therefore, the proposed action will require 17 variances from the Zoning Board of Appeals (ZBA) for the minimum separation distances required between the multifamily buildings proposed (See DEIS Subsection 3.2, Table 3-3 [therein and below] and Appendix Q). Similarly, variances will be required for the proposed distances between the swimming pool and recreation building; and between the recreation building and its associated parking area. The project includes 7 single family attached units, which comply with the minimum required yard and separation distances between structures.

The project will have 13 units (20 percent) of affordable housing, which will be administered by the North Salem Housing Board. The affordable units will be designated Moderate Income Housing (MIH) units pursuant to Article XXII of the Zoning Ordinance and subject to income eligibility and sales price restrictions. Income eligibility for the proposed 13 MIH units of Salem Hunt was calculated using the guidelines listed in Article XXII. The maximum allowable moderate family income for the proposed MIH units would be \$91,136. The maximum sales price for the MIH units shall not exceed 2 1/2 times the maximum family income allowed for eligibility for a moderate-income family, which would be \$227,840.

A private community water supply and private subsurface sanitary treatment system (SSTS) are proposed for the project. There are two aboveground structures associated with the proposed project's water and sewer facilities. The distance of these structures from the external boundaries of the project site, exceed the minimum required 100 feet set forth in the Town's Code.

The proposed clubhouse (recreation building) is a single building, modest in scale and by design would be subordinate to the residential character of the larger residential structures proposed. All recreational facilities, including the proposed clubhouse and pool, are intended for the residents of the development and their guests. Nearly twenty acres will remain undeveloped open space after completion of the proposed condominiums.

All proposed buildings, by design, will be located a minimum of 25 feet from the parking areas, with the exception of the parking area associated with the recreation building, which for purposes of accessibility, has been located at a distance closer than 25 feet from the recreation building. The applicant will seek a variance for the proposed parking area distance from the recreation building.

Maximum income eligibility was calculated using the mean (average) annual salary paid to Town of North Salem full-time employees as set forth in the Town's 2007 adopted budget, which was \$60,757.28 multiplied by the appropriate income factor of 1.5 for two bedroom MIH units. As noted, two bedroom units are proposed for the Salem Hunt development.

All proposed buildings would be located a minimum of 25 feet from the refuse collection areas. For parking proposed for this project, refer to Table 3-4, and the notes on Drawing SP-1, attached to this DEIS.

The proposed development would provide proper and adequate access for fire-fighting equipment and personnel. A plan has been provided to demonstrate adequate turning radii for emergency vehicles and other large trucks accessing the site (see Drawing TR-1). Sufficient water supply and facilities would be provided for fire fighting purposes.

Open Space and Recreational Issues

The Town's supplementary regulations for high and medium density residential development, including R-MF/4 requires that "Within the common open space areas, suitably equipped and adequately maintained recreational ... may be provided for use by residents of the premises and their guests." All recreational facilities for the Salem Hunt development, including the proposed clubhouse and pool, are intended for the residents of the development and their guests. The applicant is currently working with a local land trust to permanently preserve portions of the site (nearly 20 acres) which are not proposed for development. In regards to open space and recreational uses, the proposed project complies with the supplementary regulations.

Construction Activities

The project includes five (5) construction phases to minimize the impact to the environment and the surrounding area (see Drawing SP-4.1, Overall Phasing Plan, and subsection 3.2). Construction traffic will consist primarily of construction equipment arriving at the beginning of the construction period, trucks periodically delivering materials, and daily trips of construction workers. Additional aspects of construction vehicle and truck traffic are described in the body of the DEIS.

Local daytime ambient noise levels in the immediate vicinity of the site will increase during construction of the proposed development, which is an expected impact of any new construction project and cannot be avoided. The construction activity will be limited to between 8:00 am and sunset to adhere to the related zoning regulation and to limit noise impacts to the area.

Potential short-term adverse air quality impacts that may result from the construction of the proposed project include fugitive dust and particulate matter from the clearing of the site and movement of equipment and vehicles across the site and emissions from the operation of the construction equipment and vehicles. These are discussed in detail in DEIS Section 3.2.

Construction impacts are described in detail on the site development plan drawings and within Chapter 3.0, Landuse and Zoning, Chapter 7.0 Geology, Soils, and Topography, and Chapter 9.0 Traffic and Transportation.

Mitigation Measures

Land use mitigation measures are incorporated into the design and layout of the proposed

Source: Town of North Salem, Chapter 250, Zoning Code

development. The proposed buildings would be clustered in the central portion of the site to avoid sensitive natural areas such as wetlands and steep slopes, as well as to minimize exposure to off-site views of the project. The architecture of the residential two and three unit buildings includes varied roof lines, the use of stone, and earth tone colors and textures.

The project design includes the preservation of existing trees and natural buffers around the perimeter of the property, particularly the preservation of vegetation along June Road. Landscaping would be provided throughout the development and includes street trees and buffer plantings. The majority of stone walls would be retained on the site and the low retaining walls proposed will have stone facing. The applicant is currently working with a local land trust to permanently preserve nearly twenty acres of the site as open space.

As no significant impacts to the land use, zoning and public policies are anticipated as a result of the Salem Hunt development as proposed, no additional mitigation measures are proposed.

1.4 Vegetation and Wildlife

Potential Impacts

Potential adverse impacts due to loss of vegetation

To construct the proposed development, the loss of 20.2 acres (50.5 percent of the project area) of existing vegetation is an unavoidable impact. It would reduce the available wildlife habitat on the site by approximately the same acreage and require the need for erosion controls until full stabilization is achieved. As described in DEIS Subsection 3.5, the project requires the implementation of a comprehensive state approved Storm Water Pollution Prevention Plan (SWPPP), including an Erosion and Sediment Control Plan, throughout construction.

Of the Area of Disturbance (AOD) estimated for the development of the proposed project (20.2 acres), 14.3 acres (35.8 percent of the total site acreage) would ultimately be revegetated and 5.9 acres (14.7 percent of the total site acreage) would become impervious surfaces. Table 4-27 provides the existing and proposed land cover acreages and the percent change, by specific categories.

Site disturbance by habitat type

All of the disturbance impact would be to the upland wooded portions of the site, the largest cover type found on the project site. The species, size, and condition of all trees to be removed are shown in Appendix D, the Tree Survey Plan.

Off-site impacts to Wetland D and its adjacent area/buffer would result from the need to discharge stormwater from catch basins at the project entrance. For details regarding this impact refer to Chapter 6.0, Wetlands.

The existing vegetative cover and habitat on the remaining 20.2 acres of the site, primarily consisting of wetlands and upland wetland buffer areas, would not be disturbed by the project. The Proposed Action will result in the loss of and/or change in forested habitat that connects similar habitat to the west and southeast. Existing habitat along the edges of the property within the required property boundary setbacks and within the wetlands and wetland buffers would remain undisturbed. These areas, in conjunction with the adjacent hedgerows and open and

successional fields, would continue to provide resident and local wildlife populations the opportunity, albeit modified, to move around the development to access other undisturbed forest lands in the vicinity.

Successional Northern Hardwood Forest

An indirect and unavoidable impact of wildlife dispersal could be increased competitive interactions with other individuals of the same species on adjacent properties. However, it is not anticipated that there would be a loss of species from the area or significant impacts to existing populations, as the communities reduced by this development are not unique in the area.

Red Maple-hardwood Swamps

Regulated wetland buffers would be disturbed in limited peripheral sections to accommodate the installation of portions of the proposed entrance road, stormwater management basins and discharge structures. The combined impact of these activities in totals approximately 0.79 acres of grading disturbance within the wetland buffers. These activities can be authorized by issuance of a Town of North Salem Planning Board Wetlands Permit and a NYSDEC Article 24 freshwater wetland permit.

As a result of the unavoidable creation of impervious surfaces (e.g., roads, parking areas and buildings), more surface runoff would occur from the developed site. Peak rates of surface runoff would increase as would pollutant loadings found in storm water runoff. If these effects are not mitigated, long-term impacts to downstream hydrology and surface water quality can result once the development is complete and operational.

Marsh Headwater Stream

Impacts to this ecological community would not result from the Proposed Action.

Stone Walls

One existing ~430 foot long stone wall in the interior northern portion of the project site would be completely removed for the development of roads, parking areas and condominium units in that area. Elsewhere, sections of walls would be removed in order to locate other project features (a building and storm water basins).

Additional discussion of site disturbance for each habitat type is provided in DEIS section 4.2 under the corresponding heading.

Protected Plant or Wildlife Species

No species of plants or wildlife identified on the project site is listed as endangered or threatened by Federal, State or County government. However, thirteen species of plants found on the project site are State-listed as exploitably vulnerable under 6 NYCRR New Part 193.3 (Protected Native Plant). Protected native plants may not be picked, destroyed or removed from a property without the consent of the owner.

Mitigation Measures

The project is committed to reducing impacts attributed to construction and development within the upland deciduous forested plant community by protecting wetlands and wetland buffer areas on the site. The proposed development plan has been designed to minimize wetland and buffer impacts and by doing so would preserve substantial wooded buffer areas around the development. As impacts to vegetation and wildlife on the project site are not considered to rise to the significant level and as none of the species identified on the project site are protected under a law that requires mitigation for their disturbance or loss, mitigation is not being proposed.

Clearing limit lines would be marked on the site prior to commencing the construction activity, which is an effective way to contain impacts to the approved areas. Other proposed measures to reduce or minimize ecological impacts are summarized in the paragraphs below. More detail is provided in subsection 4.3 under the corresponding heading.

Preservation of Vegetated Wetland and Watercourse Buffers

Wetlands protection would comply with Chapter 107, Freshwater Wetlands, of the Town code. The existing wetlands and stream on the site are outside of the AOD and would remain undisturbed. Refer to Chapter 6.0 Wetlands/Watercourses and Buffers for details on the impacts and mitigation related to the wetland buffers.

The proposed storm water basins include water quality mitigation measures engineered in accordance with NYSDEC requirements. With the implementation of the proposed stormwater and erosion control measures, the proposed project would not be expected to adversely impact the quantity or quality of on-site or off-site surface water resources.

Methods of tree removal/disposal

Tree clearing would occur following the establishment of a delineated "limits of disturbance" line in the field.

Proposed Measures to Protect Trees to Remain

No trees in healthy condition beyond the field-identified limits of disturbance would be disturbed. Trees near working areas may be wrapped at the base or fenced in to avoid accidental damage to trunks and roots. Trees would be protected by tree wells in fill areas, and retaining walls in cut areas.

Stone Walls

Walls that are located outside of the proposed areas of disturbance would be left undisturbed. A total of approximately 1,920 lineal feet of stone walls in the interior of the site and all of the perimeter walls at the property line would be preserved. The stones and boulders from removed walls would be reused for construction of functional and esthetic landscape features.

Protected Plant or Wildlife Species

Two individuals of long-bract green orchis will be relocated, as described in Section 4.3

Mitigation Measures.

Since the proposed development would maintain blocks of the potential box turtle habitat within the wetlands and wetland buffer around all of the wetlands areas, it is expected that this species' habitat requirements can continue to be met.

Wildlife may currently use the project site to access and travel between undeveloped forested areas to the west and southeast of the site but is not likely a significant wildlife corridor to off-site habitat areas due to the surrounding developed properties and roadways. Therefore, no mitigation plans for wildlife movement are proposed.

While portions of the site provide habitat for species of ground nesting birds, mitigation to offset the potential impact to these species is not proposed, as much of the habitat is within the wetlands and wetland buffers that will not be disturbed by the project. As the Proposed Action would not result in significant adverse impacts to the local populations of these or any other birds species on or in the vicinity of the project site, related mitigation is not proposed.

Landscaping Utilizing Native Vegetation

Native species would be used for landscaping purposes and for revegetating the proposed water quality and stormwater detention basins where possible. Typical landscape plantings that may be chosen are listed in DEIS subsection 4.3, in Table 4-30. The landscaping plan for the project (Drawings Sheets SP-2.1 and 2.2 Layout and Landscape Plan) schematically presents the major evergreen, deciduous and shrub plantings to be installed throughout the project site.

1.5 Groundwater

Potential Impacts

Project Water Demand

The project engineer, Insite Engineering and Surveying, P.C. has prepared an estimate of water demand for the Salem Hunt project. Water demand estimates are provided in the *Preliminary Water System Report* (August 31, 2007) (see Appendix L). The Preliminary Water System Report provides a total average daily design flow for the project as 20,500 gallons per day (gpd) or 14.2 gallons per minute (gpm).

Post-Development Groundwater Recharge

The Wappinger Creek Watershed Groundwater Recharge and Stream Baseflow Evaluation Assessment (*The Chazen Companies, March, 2006*), provides factors for different land uses. The Salem Hunt development will result in the conversion of 5.9 acres or approximately 15 percent of the property to impervious surface. If current recharge rates 34,149 gpd or 23.7 gpm were reduced by 10 percent for drought conditions, post-development recharge would be 30,734 gpd or 21.3 gpm.

Water Demand And Water Budget

The total estimated average daily design flow for the Salem Hunt project is 20,500 gpd or 14.2 gpm. The project water supply wells were tested based on the water demand of 90 residential

units.

The total current groundwater usage for all areas within the Salem Hunt drainage area (upgradient, undeveloped project site, downgradient) is an estimated 31,350 gpd. Adding the estimated 20,500 gpd for the project, the post-development water usage would be 51,850 gpd for the drainage area. Again, much of the water withdrawn from the local aquifers would be returned to the ground via septic systems, while a portion would be lost to evapotranspiration and runoff.

The aquifer drainage area analyzed in this DEIS consists of approximately 372.8 acres including: the project site (approximately 40 acres), the upgradient area (266.2 acres) and the downgradient area (66.6 acres). The groundwater recharge for the entire site aquifer drainage area following development is conservatively estimated to be 205,502 gpd.

Therefore, substantially greater water is being recharged to the local aquifer, than is currently being withdrawn. Following the development of the Salem Hunt project, the volume of water recharged to the local aquifers will far exceed groundwater usage.

Well Pumping Test

Four bedrock wells were installed on the Salem Hunt Property in October, 2006. The depths of the wells varied from 650 feet to 833 feet below ground surface. A 72-hour pump test was completed in December, 2006 on three proposed water supply wells for the project. A well testing protocol was prepared by Tim Miller Associates, Inc., provided in Appendix G, provides the procedures for the pump test, which was reviewed by the Westchester County Department of Health (WCDOH) as well as the Town of North Salem and its consultants, prior to the test.

The purpose of the pumping test was to determine if sufficient groundwater was available to support the project and to determine if future operation of the project wells would have any adverse impact on existing nearby private wells. The procedure, on- and off-site monitoring and pumping tests are described in detail in subsection 5.2, under the corresponding heading.

Pumping Test Results

During the first test involving three wells and pumping at a combined pumping rate of 82 gpm, eight off-site wells were monitored. The off-site well data is shown in Table 5-6, below. Four of the eight off-site wells showed an influence from the pumping test. These wells were the Town well, Seeley well, Red Horse Farm well and the Havell well. The locations and level influence of the pumping test is provided in Figure 5-4.

The Salem Hunt wells were pumped at 82 gpm, or approximately 5.7 times the average project water demand. The monitoring well most influenced by the first pumping test was the Havell well which is the closest to the test wells. The Red Horse farm, the Town Highway facility and the Seeley wells were all impacted to a lesser degree.

The use of the Salem Hunt wells is not expected to impact the long term use of off-site wells. Additional detail is provided in the corresponding DEIS text. The Project's long term impact to the Red Horse Farm well usage is expected to be minimal. The Havell well has a range of usage of approximately 50 feet and the pumping test had an influence of 25 feet during the first test and 13 feet during the second. The depth of this well is unknown. Given the observed

influence and proximity of the Havell well to the Salem Hunt Property, mitigation measures for the well are proposed, as described below.

Water Quality

Water was collected from each test well just before the pumping test was shut down. The quality of the water sampled on the property meets the New York State Drinking Water Standards, with the exception of coliform bacteria. Disinfectant treatment of wells typically removes the coliform. The laboratory analytical results are provided in the Water Supply Report (see Appendix H).

Septic System Impacts

A hydrogeological investigation/mounding analysis (Appendix J) was performed by GeoDesign on the site to assess the soils and groundwater in relation to the proposed SSTS using a 16,000 gpd sewage flow rate applied to the area of the proposed SSTS.

The GeoDesign investigation is for the prediction of groundwater flow conditions under the proposed sanitary disposal system (mounding analysis) and also provided estimated effluent travel time, and a contaminant (nitrate) transport model. The proposed septic system, mounding analysis and nitrate modeling results are further discussed in subsection 5.2 under the heading Septic System Impacts and in Chapter 10.0 Utilities.

Mitigation Measures

Existing water supply systems in this part of North Salem and Southeast rely on groundwater. The Salem Hunt development will be served by a community water system and is not expected to result in significant adverse impacts on groundwater resources.

The recharge analysis for the project demonstrates that substantially more water is recharged to the aquifer, on the site, than will be used by the project and that reducing the recharge area by 5.9 acres will not result in an imbalance in water taking versus recharge.

Monitoring of private off-site test wells carried out by Tim Miller Associates, Inc. showed an influence in 4 off-site wells during the 72-hour pump test of the proposed water supply wells. The greatest interference was observed in the Havell well located close to the southern property border with a drawdown of 25 feet. The proposed development of 65 units has an average daily water demand of 20,500 gpd or 14.2 gpm. The initial pump test was run at 118,080 gpd or 82 gpm, or more than five times the proposed average pumping rate. Any future well influence during operation of the development is expected to be less than recorded during the pump test and is not expected to affect the long term use, well yields or viability of those wells.

Monitoring

While no long term impacts to existing private wells are anticipated, the applicant would offer a monitoring program for the Havell well. The need for and utility of a long term water level monitoring program should be determined by the Lead Agency in consultation with a professional hydrogeologist.

A well monitoring program would provide the Town and the homeowner, with data to document whether the project could potentially affect existing off-site wells.

The hydrogeologic consultant retained by the Town, will determine if the well impact is the result of project pumping or other factors, not related to the project. Appropriate mitigation, such as well deepening or well replacement will be provided by the applicant should it be determined that the project well pumping resulted in loss of function of an off-site well.

Wastewater Treatment

To mitigate any potential concerns regarding the nitrate effluent concentrations from the proposed community SSTS, a recirculating filter treatment will be added to the septic system treatment train between the septic tanks and the absorption trenches. This filter system will provide treatment beyond that provided by the SSTS and will minimize potential impacts from nitrate concentrations resulting from the project. Refer to subsection 6.3 herein.

Other Mitigation Measures

Undeveloped and landscaped portions of the site will allow continued recharge of the aquifer. The project has been designed to minimize impervious surface and will result in 5.9 acres or approximately 15 percent of the site converted to impervious surface. The remainder of the site (85 percent) will remain available to recharge the local aquifer. The majority of stormwater collected from parking lots and driveways will be treated in stormwater management facilities, in which water will infiltrate into the ground thereby contributing to the recharge of the groundwater on-site. Approximately 19.8 acres or close to one-half of the property will remain undisturbed, allowing existing soils to contribute to recharge.

Water conservation for the project will be achieved through the use of low-flow, water efficient plumbing fixtures and appliances.

Groundwater quality for the proposed community supply wells will be maintained by the design of the wells and the project layout, maintaining required wellhead radius protection areas and separation distances. The wastewater treatment system is located 450 feet east of the nearest proposed water supply well (TW-4), providing adequate separation distance.

1.6 Wetlands/Watercourses and Buffers

Potential Impacts

The Salem Hunt project has been designed to comply with all applicable federal, New York State, New York City, Putnam and Westchester County, and local standards required for the issuance of the noted approvals and permits. No approvals are required from the ACOE since, during their on-site investigation, ACOE staff confirmed that only Wetland D and C are subject to its jurisdiction and no disturbance of these wetlands is proposed. The Jurisdictional Determination from the Corps dated March 28, 2008 is provided in Appendix B Correspondence.

Potential Impacts to Wetlands, Watercourses, and Buffers

The proposed action does not include any direct encroachment into, or disturbance of, any

wetland, watercourse, or water body on, or off, the property. Therefore, no direct impacts on these surface water resources are anticipated from the proposed action.

However, without the mitigation measures that are incorporated into the design, the project could result in sedimentation during construction, post-development increases in pollutant loading in stormwater, flooding from increased peak rates of stormwater discharge, and bed and bank erosion in receiving watercourses resulting from increased stormwater discharge velocities. Wetland and watercourse buffers protect surface water resources from increased pollutant loading associated with stormwater and help to maintain any functions that the wetlands proper perform.

Direct Impacts on Wetland, Water Resource, and Buffers

The Proposed Action does not include the disturbance of any wetlands, watercourse, or other surface water resources on or off the project site. The Proposed Action has been designed to limit wetland buffer disturbance to the fullest extent practicable. Through careful site planning, only 0.26 acres of Wetland D adjacent area, and only 0.06 acres of Wetland A adjacent area (both State regulated Wetland L-32), would be disturbed. The project would disturb at total of 0.54 acres of Town regulated buffer associated with Wetlands B and C for the construction of stormwater facilities and residences. The proposed disturbances of the wetland buffers are summarized below and in Table 6-5 and detailed in subsection 6.2 herein. Wetland buffer mitigation is further discussed in Section 6.3 Mitigation Measures, below.

Wetland A Buffer

As noted, the project would result in 0.06 acres (2,426 square feet) of disturbance to the NYSDEC, and Town of North Salem, regulated Wetland A buffer, which totals 1.37 acre (59,677 square feet) in size. The buffer disturbance would result from clearing and grading necessary to facilitate construction of the residences and establishment of lawns.

Wetland B and C Buffer

The proposed action will result in the clearing and grading of 0.48 acres of the overlapping Wetland B and C buffers, which would result in the conversion of 0.48 acres of buffer vegetation, which is Successional Hardwood Forest Habitat, into lawn. For areas of buffer converted to lawn, the limited wildlife habitat function would be lost and some function would be restored or enhanced by wetland plantings in the stormwater basins, as described herein.

Wetland D Buffer

The project will result in 0.26 acres of clearing and grading in the NYSDEC, ACOE, and Town regulated Wetland D's extensive buffer. Off-site, in the right of way for June Road, an additional 0.13 acres of wetland buffer will be disturbed for the access road. Plantings will include native trees and shrubs, as shown in Drawing SP-2.1 Layout and Landscaping Plan.

The project is not expected to result in any significant adverse impacts on the transitional wetland function, wildlife habitat, semi aquatic animals, or their habitats that the buffer supports. Less than 10 percent of the 2.92 acres of the on-site buffer would be disturbed and the majority of the buffer associated with Wetland D, which extends some 3,000 feet south of the site, would remain undisturbed by the proposed project.

Off-Site Wetlands, Watercourses, and Buffers

No direct, or indirect, disturbance of any off-site wetland or watercourse is proposed as part of the project. Construction of the access road, and installation of drainage pipe on the northern side of, and adjacent to, June Road will, however, disturb a total of 0.21 acres of the off-site portion of the Wetland L-32 adjacent area. No alternative locations for the access exist and that the portion of the adjacent area to be disturbed is in the road shoulder immediately adjacent to June Road.

Potential Indirect Impacts

Sedimentation During Construction

Without the appropriate mitigation which has been incorporated into the Proposed Action, the Project could have the potential to increase the volume and velocity of stormwater through land clearing and conversion of existing land forms into impervious surfaces and landscaped areas. If not controlled, these activities may lead to accelerated erosion and sedimentation both during and after construction. The project includes adequate erosion and sediment control practices to mitigate these potential impacts. Accordingly, an Erosion and Sediment Control Plan, with construction sequencing, has been included in the SWPPP (Appendix F).

Post-Development Runoff Quantity and Quality

The Proposed Action involves the temporary disturbance of some 19.2 acres of the approximately 40-acre site, and the construction of residential buildings, parking lots and stormwater management facilities, and the discharge of stormwater following construction. It is anticipated that approximately 6.3 acres of impervious areas would be created.

Potential indirect impacts that the Proposed Action may have on wetlands and receiving waters result from post development increases in pollutant loading in stormwater, post development flooding from increases in the volume of stormwater discharged, and bed and bank erosion in receiving watercourses resulting from increased stormwater discharge velocities.

Runoff Quantity

Following construction, the site would be divided into two distinct drainage areas. Stormwater from the site would be collected and discharged to treatment basins in series that would control post-development increases in the rate and volume of discharge and increases in pollutant loads. The proposed stormwater basins would reduce post construction peak stormwater discharge rates, and control increases in the volume of stormwater discharged from the site to near pre-construction levels.

Runoff Quality

Conversion of existing vegetated areas into impervious, and landscaped areas, as a result of the project could, without the mitigation measures that are incorporated into the SWPPP, increase levels of certain pollutants in stormwater following development of the site. These post-construction increases in pollutants could potentially have adverse impacts on water quality in receiving waters.

To further avoid adverse impacts on wetlands, and other surface water resources on and off the project site, the proposed project does not include the use of chemicals, dyes, fertilizers, herbicides or similar materials in amounts which may cause pollution of waters in any controlled area regulated by the Town of North Salem, and for which a permit from the Town would be necessary. In addition, as outlined in *Recommendations for Winter Traction Materials Management on Roadways Adjacent to Bodies of Water* (Western Transportation Institute College of Engineering, Montana State University, December 2004) specific structural and nonstructural management practices are incorporated into the project to reduce the amount of deicing materials applied, and to capture and recover traction materials.

To further ensure the effectiveness of the proposed stormwater management ponds in preventing the off-site discharge of deicing sands, the Applicant has committed to monthly monitoring of accumulations of these materials during the winter months and appropriate removal.

Potential Flooding and Flood Plain Impacts

Flood Insurance Rate Map Panel 36119C0076F (September 28, 2007), which includes the Salem Hunt Property was not published, indicating that no Flood Plains or Flood Hazard Areas are mapped on the site or adjoining the site.

The project will not result in any modification or flow restriction to the unnamed watercourse which flows through NYSDEC Wetland L-32. Therefore, no flooding impacts are anticipated for off-site upstream locations. As concluded in the SWPPP, post construction peak rates and volumes of stormwater discharge would be similar to existing conditions, after treatment by the proposed detention ponds. Therefore, no downstream flooding impacts are anticipated to result from the project.

Bed and Bank Erosion in Receiving Watercourses

Post construction peak rates and volumes of stormwater discharge would be reduced for the each of the storm events analyzed, which would be accomplished with the proposed SMPs included in the SWPPP. Therefore, no impacts to stream bed or stream banks are anticipated.

Phosphorous Loading to the Muscoot Reservoir

As discussed above, the Phase II Report indicates that the Muscoot Reservoir phosphorous TMDL is being exceeded as a consequence of existing point and non-point phosphorous inputs of kg/yr from its watershed.

The most conservative estimate indicates that the annual phosphorus loads from the proposed Salem Hunt Project, would be increase by only 1.05 lbs/yr (2.31 kg). The 2.31 kg/yr represents only 0.019% of the total existing phosphorous load of 11,560 kg/yr from the watershed to the reservoir and only 0.08% of the urban runoff load to the reservoir. Compared to the total existing reservoir loading of 11,560 and the 2853 kg/yr urban the 3.96 kg/yr increase does not represent the potential for a significant impact on any on- or off-site water resources, including the Muscoot Reservoir.

Pesticides, Fertilizers

To mitigate potential impacts associated with pesticides and fertilizers in stormwater runoff, applications of these materials would meet the same State, County and local regulations as must be met by other developments in the community. The application of pesticides and fertilizers in a Town Controlled Area (wetlands, watercourses and their associated buffer) requires a permit from the Town for the proposed buffer disturbance. Based upon the anticipated low levels of pesticides and fertilizers and the proposed stormwater treatment, no significant adverse impacts on wetlands, water bodies, or watercourses is expected.

Fecal Coliform Bacteria

Potential impacts associated with fecal coliform bacteria (FCB) in stormwater runoff are not anticipated to result from the development of the project because of the low density of development, and the disposal of wastewater by a sewer system approved by the County Health Department.

Potential for Thermal Impacts

Thermal impacts on receiving waters, through the elimination of vegetation shade trees along stream banks and addition of impervious surfaces in upstream drainage areas, are an important concern in areas where there is a known natural population, or annual stocking, of cold water fish species (i.e., trout). Increases to average annual water temperature may constrain a cold water fishery.

Stormwater management techniques which may be used to limit the temperature rise of runoff water include decreasing retention time and the exposure of stormwater to the sun.

Mitigation Measures

Avoidance, Minimization and Mitigation

The Proposed Action has been designed to avoid any, and all, encroachment into on- or off-site wetlands, watercourses, or other surface water resources. Potential impacts associated with the proposed minor encroachments into the wetland buffers have been avoided, minimized and mitigated. Further, mitigation of indirect impacts on water resources associated with stormwater has been provided in the form of the SWPPP, which has been carefully designed to comply with applicable NYSDEC and NYCDEP regulations and is incorporated into the Proposed Action.

Based upon the absence of wetland and watercourse encroachment, and the measures that have been incorporated into the proposed action to avoid impacts, no additional mitigation measures beyond those incorporated into the project design are proposed. The project will result in no significant impacts to identified wetland functions. Since no disturbance of any wetland is proposed and no authorization from the ACOE is required to implement the project, compensatory mitigation of wetland impacts is not likely to be required.

The creation of stormwater basins, graded and planted in a manner that is consistent with the open marsh portions of the existing wetlands, would mitigate potential impacts on the controlled area. The basins would provide wetland habitat as well as control of stormwater quality and quantity. While no direct credit is being taken for these basins as wetland creation areas, they

would in fact perform several wetland functions and result in a net increase of wetland function and benefits on the site following construction.

Town Buffer and State Adjacent Area Impacts

The Proposed Action includes no encroachment into any wetland or other surface water resource, and only minimal, encroachments into the buffer of Town regulated Wetlands B, and C, and the buffer of NYSDEC and Town regulated Wetlands A and D, with incidental grading, SMPs, water supply facilities and access road.

Potential adverse impacts associated with wetland buffer encroachment will be mitigated by the replanting of trees, shrubs and herbaceous vegetation, where feasible, such as in the proposed stormwater basins. These native species indigenous to the existing wetland buffers would be utilized, and a maintenance and monitoring plan would be prepared to ensure long term success of the plantings.

In addition, undeveloped portions of the site, including all wetlands and wetland buffers, will be permanently preserved by the Applicant through a conservation easement.

Integrated Pest Management

Integrated Pest Management (IPM) techniques will be employed at Salem Hunt in accordance with the IPM Plan included with this DEIS (see Appendix O) to reduce environmental impacts, and to optimize, and diversify, pest control measures. The Salem Hunt Condominium Association will be established to maintain the integrity of the buildings and grounds, to protect the health and safety of the residents and general public, to maintain a viable living environment, and to reduce impacts on the natural resources. The goals of the IPM techniques are described in subsection 6.3.

Stormwater Pollution Prevention Plan

The project specific SWPPP been developed to mitigate potential adverse impacts on surface water resources, including wetlands, from post development changes in stormwater discharges (see Appendix F). The SWPPP also includes a Stormwater Management Plan that provides measures to mitigate potential impacts from post construction changes in the volume, rate of discharge, as well as increased pollutant loading in stormwater.

The stormwater management component of the SWPPP mitigates potential adverse impacts to watercourses and wetlands by attenuating post-development increases in the peak rates of stormwater discharges, and by reducing post construction increases in pollutant loading.

The proposed Erosion and Sediment Control Plan component of the SWPPP will provide both temporary controls during construction and permanent controls to remain in place following construction. These measures will adequately mitigate potential impacts to water resources resulting from erosion and sedimentation.

1.7 Geology, Soils and Topography

Potential Impacts

Slopes Impacts

Impacts to slopes are directly related to the potential for soil erosion during construction. A Slopes Disturbance Map is shown in Figure 7-4. The majority of grading for the proposed project will occur on the most level portion of the subject site, in the southern and central portion of the property. Due to steeper slopes bordering the eastern edge of the site above the wetland, impacts to steeper slopes will be required for the site entrance, as shown in Figure 7-5. Impacts to steep slopes of 25 percent or greater will occur for the entrance drive. The remainder of the steep slopes disturbance (15 to 25 percent slopes) is very limited, and will mostly occur in the area of the proposed septic system.

The project was designed to minimize impacts to steep slopes and the development is located on the most level portions of the property. Exposing soils on steep slopes during construction increases the potential for erosion in the short term. Following construction, soil erosion from the property is expected to be minimal since developed areas will be stabilized with lawn and landscaping, and storm water management features will be fully functional.

Engineered slopes are described in the construction sequencing plan provided with the Site Plan drawings (see Drawing SP-4.1 Overall Sequencing Plan). There are no slopes proposed to be greater than 2 on 1. No rip-rap stabilization is proposed for the project.

Soils Impacts

Grading and recontouring of soils is required for the construction of roads, home sites, and the four (4) storm water detention basins. Areas of proposed grade changes for the project development are shown in the grading plans attached (see Drawings SP-3.1 and SP-3.2). The total area of grading or site disturbance is estimated to be 20.2 acres, or 50.5 percent of the site. Therefore, 19.8 acres of the site, or 49.5 percent will remain undisturbed.

The impacts to soils associated with this work are temporary in nature, relating to erosion hazards. Soils that will be covered with impervious surfaces (totaling 5.9 acres) will be permanently disturbed. The remainder of the disturbed area that does not become impervious will be graded, seeded and landscaped, including the storm water management basins.

As stated above, in Section 7.1, extensive testing was completed in the area of the proposed SSTS or septic area (see Appendix J). The report concludes that the proposed SSTS area would be able to support an estimated wastewater flow of 16,000 gpd. Further information regarding the SSTS area is discussed with in Section 10.0 Utilities.

Landscaping is proposed to stabilize all disturbed soils that are not covered with impervious surface such as buildings, roads, and parking areas. A landscaping plan is attached to this DEIS as Drawings 2.1 and 2.2. Some site soils have a severe limitation due to wetness for lawns and landscaping, which can be managed by the selection of wetness tolerant plants.

An estimate of the project earthwork has been completed by the project engineer. The areas to be disturbed are shown in Figure 7-6. The grading would result in approximately 21,507 cubic

yards of excess material that will require transportation and disposal off-site.

Geology Impacts

Based upon the test pits and monitoring wells installed on the property, no blasting or rock removal expected for the proposed residential development. Therefore, no impact to geology is anticipated.

Mitigation Measures

Soil Erosion and Sediment Control Plan

Erosion and sedimentation will be controlled during the construction period in accordance with a Soil Erosion and Sediment Control Plan developed specifically for this site and this project (see Drawings SP-4.1, 4.2, 4.3 and D-2 attached to this DEIS). The plan has been developed by the project engineer Insite. The plan addresses erosion control and slope stabilization. The plan includes limitations on the area of disturbance, limitations of the duration of soil exposure, criteria and specifications for placement and installation of erosion control devices, and a maintenance schedule.

Temporary or short-term sedimentation and erosion control facilities will be installed and maintained during the construction phase of the proposed project. Temporary methods include a stabilized construction entrance, silt fencing barriers, storm drain inlet protection, and sediment basins.

Permanent or long-term erosion and sediment control facilities will be installed and maintained after the completion of the construction phase of the proposed project. These facilities are relatively maintenance free and will only require periodic inspections. Permanent methods are accomplished by diverting stormwater runoff from steep slopes, controlling and reducing stormwater runoff velocities as well as volumes, and surficial stabilization.

Following construction, sediment and debris will be removed from the temporary sediment basins. These basin will then be excavated to their final grade and dimension and stabilized with stormwater vegetation as shown on the plans. Landscaping will be the primary method of permanent stabilization and stormwater runoff control. The vegetation will control the volume and velocity of the runoff by providing a filter medium.

1.8 Cultural Resources

Visual Resources and Community Character

Potential Impacts

It is noted that mere visibility of a facility/development, even startling visibility, does not automatically mean it has an adverse visual or aesthetic impact. Visual impact occurs when mitigation measures, or the mitigating effects of distance or perspective, do not adequately reduce the visibility of a facility to an insignificant level.

"Assessing and Mitigating Visual Impacts", Program Policy issued by the New York State Department of Environmental Conservation, July 31, 2000.

Given the position of the site in relation to locations of potential public viewpoints from the surrounding area, no off-site vantage point was identified from which more than a portion of the project development would be visible. The following descriptions assess the effects of changes in views from the particular locations of concern identified above.

Altered Views from Area Roads

Construction of the Salem Hunt development would change the existing visual character of the project site by removing existing woodland and introducing a residential neighborhood. These changes may be visible from portions of area roads and an assessment of the potential impacts to each road is detailed in subsection 8.1.2.

Lighting Impacts on Surrounding Residential Uses

The lighting in this project (street lighting as well as lights at individual residential units -- interior lights and exterior area lights) is expected to create minimal nighttime visibility of portions of the project from a limited number of nearby properties. Due to the dense vegetation and distance that will separate these areas from the new light source, this change is not expected to cause significant adverse effects on the surrounding residential uses.

Impacts from the Character and Design of Proposed Improvements

The buildings will reflect traditional architecture, design and materials that are intended to complement the existing residential development in the area (see typical elevation, Figure 2-5).

The project layout has been designed around the natural site conditions to minimize impacts to sensitive environmental elements (wetlands and sloped terrain) and includes a fully landscaped site plan (including street trees, shade and evergreen trees, ornamental flowering trees, shrubs, foundation plantings, and lawns) intended to provide an attractive, modern living environment in a rural setting at a density not unlike existing development at nearby Peach Lake. The development area is centered within the interior of the project site. There will be no adverse visual impacts associated with the character and design of the proposed buildings and other structures, parking areas or landscaping in Salem Hunt.

Stone Walls

Portions of the existing stone walls in the northern area of the project site will be removed for development of the roads, parking areas and condominium units. Following development, approximately 1,920 feet of original stone walls will remain. The stones and boulders from walls that are disturbed by the project will be used in the construction of landscape features to preserve and enhance the character of the site. There will be no adverse visual impacts associated with the extent and type of proposed retaining walls in this project.

Preservation of Natural Features and Open Space Character

No significant visual change has been identified from any location or critical vantage point in the site vicinity. No off-site vantage point was identified from which more than a small portion of the project site could be viewed. The wooded, rural character of the Salem Hunt area will be maintained by the preservation of wooded land that will limit views to the site. This proposed residential development has been designed to be visually compatible with the surrounding rural

setting.

Proposed Mitigation Measures

Measures to mitigate potential visual impacts of the proposed Salem Hunt development have been incorporated into the design of the project and are discussed in detail in subsection 8.1.3 and summarized below.

Minimized visibility of the project

The project layout is designed to minimize the visibility of the proposed improvements from surrounding area roads by avoiding removal of trees and vegetation where possible, utilizing native plant species in landscaping/restoration plans, and siting of structures/improvements to avoid or minimize visibility.

While all existing vegetation is likely to be removed within the limits of disturbance, the project avoids removal of any other trees or vegetation by incorporating the strict provisions for the protection of trees that need not be removed for the development of the site plan. Tree clearing would commence only after the establishment of a "limits of disturbance" line in the field. No trees in healthy condition beyond the field-identified limits of disturbance would be disturbed. Trees to be preserved near work areas would be protected by fencing or other highly visible means of marking to avoid accidental damage to trunks and roots.

Landscaping and lighting plans

The landscape plan for the project (Drawing SP-2.1 and 2.2 Layout and Landscape Plans) schematically presents the major evergreen and deciduous tree and shrub plantings to be installed on the project site at the conclusion of building construction. The plant list includes native or regionally adaptable species to be used, which is based on the greater plant adaptability to local climatic conditions ("hardiness").

A lighting plan has been fully developed and detailed for the proposed Salem Hunt development (Drawing LP-1 Lighting Plan). No light "spillage" would occur onto adjacent properties.

Architectural design

The proposed buildings, in addition to their placement away from the perimeter of the project site, have been designed to complement the locale and thus minimize potential adverse visual impacts. The *architectural design* includes varied roof lines, shuttered windows and columned porches provide architectural interest in a style not unlike the traditional style of area homes. The muted earth-tone colors proposed for the buildings will harmonize the site construction with the surrounding setting. The proposed landscaping will also soften the building features and create transitions to the natural environment.

Stabilization of created slopes

Where grading is proposed, various measures are proposed to create smooth transitions in sloped areas thereby providing a "naturalized look" to the finished development. Created lawn terraces, or, in some areas, low decorative retaining walls are proposed that will have an attractive stone-faced appearance. All areas of grading within the site and not otherwise

stabilized will receive grass seeding or other permanent vegetative cover to protect the created slopes.

No significant adverse impacts to the visual conditions of the project area are anticipated as a result of the development given the specific mitigation measures as an integral part of the project.

1.8 Historic and Archaeological Resources

Potential Impacts

Historic Resources

North Salem that are listed on the National Register of Historic Places, because of their distance from the project site, will not be impacted by the proposed Salem Hunt development.

Archaeological Resources

The Phase IA Literature Review and Sensitivity Analysis was conducted on the project parcel in July 2006. Based upon the recommendations of the Phase IA Literature Review and Sensitivity Analysis, a Phase 1B Archaeological Field Reconnaissance survey was completed in June, 2007. The studies are summarized in subsection 8.2.2 under the corresponding heading.

Based on the map research indicating the presence of residential structures on the project site, there is also a potential for historical cultural resources to be present. Based upon the findings of the Phase 1B Archaeological Field Reconnaissance Survey, the project historic resource consultant (CITY/SCAPE Cultural Resource Consultants) recommended that no further archaeological investigations be undertaken in the project area.

The results of the Phase 1A and Phase 1B studies have been forwarded to the NYS Office of Parks Recreation and Historic Preservation (OPRHP) for review and concurrence with the project historic resource consultant recommendations. In addition, a copy of the report was forwarded to the North Salem Historic Preservation Commission, and discussed the findings with Mr. Francis Touti, President of the North Salem Historic Preservation Commission.

Based upon the findings of the archeological studies, the development of the Salem Hunt project will have no impact to historic or archaeological resources.

Stone Walls

As described above, portions of the existing stone walls in the northern portion of the project site will be removed for project development. Following development, approximately 1,920 feet of original stone walls will remain.

Proposed Mitigation Measures

Historic Resources

As no impacts to historical resources are anticipated, no mitigation measures are proposed.

Archaeological Resources

The Phase 1B Archaeological Field Reconnaissance Survey found no prehistoric or significant historic cultural resources on the Salem Hunt site. Therefore, no avoidance or mitigation measures are proposed for archaeological resources.

Stone Walls

The existing stone walls on the site and at the site's property boundaries have been avoided to the extent possible. Approximately 1,920 feet of original stone walls will remain following development. A long wall located in the eastern portion of the site, above the wetland will remain undisturbed. The majority of the walls in the northwest corner of the site, surrounding a wetland will be preserved. All existing walls along the property boundaries will be preserved.

The stones and boulders from walls that are disturbed by the project development are proposed to be used in the construction of landscape features, including tree wells and low retaining walls, to preserve and enhance the character of the site and its environs.

1.9 Traffic and Transportation

Potential Impacts - Build Condition Traffic

Site Access

The proposed Action will have one access located on June Road in the which will create a four way intersection with the existing intersection of Starlea Road. As discussed in the Land Use and Zoning section, parking requirements for multifamily dwelling units is 1 space for each dwelling unit, plus 1/3 of a space per bedroom. The proposed 65 unit two bedroom complex would require 109 parking spaces. Based upon the two garage spaces in each unit and 40 spaces of visitor parking, a total of 170 parking spaces are provided in the proposed project. The 40 spaces of visitor parking are distributed throughout the site, in addition to the 12 spaces in the vicinity of the proposed Recreation Building.

Project Trip Generation and Distribution

Traffic analysis for the proposed Salem Hunt project, for up to 90 units is anticipated to generate 47 trips during the a.m. peak hour and 55 trips during the p.m. peak hour. Tables 9-8 and 9-9 show the projected trip generation rates and total trips generated by the proposed townhouse development using the Institute of Transportation Engineers' Trip Generation.

The traffic analysis projects traffic conditions for up to 90 townhouse units, but the current site plan proposes 65 units. Trip generation was calculated to determine the traffic to be generated by the 65 units shown on the site plan. Trip generation rates for 65 units are also shown in Table 9-8. The total trips to be generated by 65 units and the reduction in trips compared to the trip generation for up to 90 units is shown in Table 9-9. Traffic operating levels of service can be expected to be better than those stated in the traffic analysis as a result of the reduction to 65 units.

Build Condition Traffic Volumes

Total a.m. and p.m. peak hour site generated trips, for up to 90 units are added to the No Build Condition traffic to obtain Build Condition traffic, as shown in Figure 9-10.

Build Condition Level of Service

For the 2009 Build Condition, for up to 90 units, there is minimal change in level of service for any lane groups. During the p.m. peak hour the minor road approaches of the site access and Starlea Road will change from a level of service A to a level of service B, still one of the most efficient levels of service. The Salem Hunt project will result in no other changes to the level of service at any of the approaches for the intersections studied. The eastbound and westbound approaches of Bloomer Road will continue to experience delays, as previously discussed, whether or not the Salem Hunt project is constructed.

The traffic analysis indicates that the project generated traffic will result in a further increase in the waiting queues under the Build condition at certain locations as described in subsection 9.4 under the corresponding heading.

Sight Distance at the proposed Site Access

Stopping sight distance is the distance a vehicle would require to be able to stop on wet pavement to avoid a collision with a vehicle entering the traffic stream. Intersection sight distance provides an additional margin of safety above stopping sight distance.

In subsection 9.4, Table 9-11 shows the Intersection Sight Distances recommended by the American Association of State Highway and Transportation Officials (AASHTO). As shown in Drawing EP-1, the available sight distance measurements for each approach at the proposed site access is more than 555 looking to the north and to the south. There is sufficient intersection sight distance in both directions at the proposed site access for the prevailing operating speed of 50 miles per hour.

Traffic from Construction Activity

The proposed project will result in on-site construction activity, and the addition of construction traffic to local roads via a stabilized rough grade of the site access from June Road. The construction entrance will have the same site distance as the final project access.

Construction Sequencing and Time Line

Construction is expected to occur over a three year period. A construction phasing plan has been developed to allow for the sequential development of the site to minimize the impacts from construction (see Drawing SP-4.1 Overall Phasing Plan).

Number and Type of Construction Vehicles

Construction traffic will consist primarily of construction equipment arriving at the beginning of the construction period, trucks periodically delivering materials, and daily trips of construction workers. Construction workers typically arrive and depart the work site prior to peak hours of traffic as will the initial construction equipment. Projects of this nature would be likely visited by

an assortment of construction and earth-moving vehicles for intermittent periods of time over the course of construction. Based on the preliminary grading plan provided with this document and assuming that each tri-axle dump truck will hold approximately 25 tons of material, 1,118 trucks would be needed to remove the excess material from the project site.

Access to the Site for Construction Vehicles

All construction vehicles will use the stabilized construction entrance shown on the Erosion and Sediment Control Plan - East, SP-4.2, which is installed to prevent the tracking of any soil onto area roads. No construction vehicle parking will occur on public roads. Construction staging and material stockpiling will occur totally on the project site and within the designated construction limits.

Construction Routes and Local Roads

Routes for construction traffic to and from the site will vary depending upon the source location of construction materials. It is anticipated that the primary construction traffic route from the site will be North Salem Road north to Fields Lane, west to Hardscrabble Road and west to I-684 ramps. An alternate construction traffic route would include Starlea Road east to Starr Ridge Road north to Route 6/202, Interstate 84 and Route 22.

Given that project construction is scheduled to occur over a period of three years, construction truck traffic on any given day is expected to be less than 20 vehicles, which would occur over the entire work day and would not be concentrated during the peak traffic hours. Passengers vehicles transporting workers to and from the site would add to existing traffic and would occur during peak traffic hours. It is anticipated that less than 50 workers would be at the site, on any given day.

The primary construction route as well as the secondary routes appear to have adequate pavement to support the anticipated project construction traffic, which is not expected to result in damage or negative impacts to local roads. Given this expected traffic volume, no specific plan to maintain traffic flow along primary and secondary traffic routes is necessary or proposed.

Construction Entrance

The single construction entrance is located at the intersection of June Road and Starlea Road. The stabilized construction entrance will consist of crushed stone and will be installed prior to any clearing or grading on the property.

School Bus Stops and Student Safety

As detailed in the Community Services section, the project is located in the North Salem Central School District. It is anticipated that up to 9 school age children will reside at Salem Hunt. Transportation for 9 students, one mile or less, is anticipated to be accommodated by the existing bus transportation routes.

The current site plan will be submitted to the North Salem Central School District to locate a school bus stop, which will most likely be the site entrance at June Road and Starlea Road.

Phone conversation with the Director of Bus Operations, On December 19, 2006.

During normal site operations, adequate site distance will minimize any potential safety issues for buses stopping at the Salem Hunt site entrance.

Due to the low estimated volume of construction traffic, project construction traffic is not anticipated to affect school bus safety.

Mitigation Measures

The Salem Hunt project is not expected to result in significant impacts to the surrounding roadway network or result in a decline in traffic operations. The project is expected to generate 47 vehicular trips in the a.m. peak hour and 55 trips in the p.m. peak hour.

Peak hour delays were calculated to establish the quality of operation (level of service) of the intersections studied under the existing condition, future condition without the project and the future condition with the project. The project will result in a minor change to an existing level of service. During the p.m. peak hour the minor road approaches of the Site Access and Starlea Road will operate at level of service B (instead of A), one of the most efficient levels of service. The traffic study determined that there would be no other changes to the operating level of service as a result of the Project. No mitigation measures are warranted or proposed.

Construction Traffic Mitigation Measures

The construction entrance will be well maintained to minimize the potential for sediment and dust to be tracked onto June Road. As indicated on the proposed construction maintenance schedule (see Drawing SP 4-1), the construction entrance is to be inspected on a daily basis and following rainfall.

1.10 Utilities

Potential Impacts - Sanitary System

Subsurface Sewage Treatment System Description

The primary SSTS, described in subsection 10.2 and shown on the project plans, is proposed on 3.25 acres in the southeastern portion of the site, which was evaluated during the planning stage and deemed the most feasible area for wastewater treatment based on the field investigations. The absorption fields will consist of conventional two foot wide absorption trenches. The trenches will be alternately dosed with floating outlet dosing tanks to several absorption trench sub-systems.

Well Locations

Four water supply wells were drilled on the property to support a community water supply system for the Salem Hunt site. Water supply for the project is described in subsection 10.2 and in Section 5.0 Groundwater. Based upon pump testing, three of the wells will be utilized: wells TW-2, TW-3 and TW-4. The three production wells draw water from considerable depth (over 71' to 101') and separation distance from the ground surface. The proposed wells have substantial vertical and horizontal separation distance from the proposed SSTS. Therefore, no impact to on-site water supply wells from the wastewater treatment system is anticipated.

The closest off-site potable well to the wastewater system is located approximately 300 feet north of the sanitary system, which is well beyond the 100 foot separation distance required New York State Department of Health (NYSDOH) separation distance between wells and sanitary systems.

Groundwater Impacts - GeoDesign Study

The Applicant conducted extensive investigations and analyses of hydrogeologic conditions in the proposed SSTS area, which are provided in the GeoDesign Hydrogeology Investigation (Appendix J). The GeoDesign investigation included a three-dimensional computer model, for the prediction of groundwater flow conditions under the proposed sanitary disposal system (mounding analysis). The investigation also provided estimated effluent travel time, and a contaminant (nitrate) transport model.

Simulated Flow Patterns

A discussion of the groundwater model and the parameters and assumptions used in the model is provided in Section 5.2 Groundwater - Potential Impacts. Based on the simulation results, a limited area of the septic area will require filling to achieve sufficient cover to prevent breakout and maintain the trenches above the shallow groundwater levels. The project engineer will design the primary and reserve areas to achieve the modeled results.

Estimated Effluent Travel Time

The groundwater flow model predicted that the minimum estimated travel time for effluent from the proposed septic field to the closest stream, a distance of approximately 105 feet at its closest point, is 35 days (see Table 5-6 - Appendix J Hydrogeology Investigation Report).

Nitrate Transport Model

According to the GeoDesign report, septic effluent contains ammonia (NH₃) which is converted to nitrate as effluent is discharged to absorption trenches. Nitrate concentrations are typically 40 mg/l (parts per million) approximately one foot below absorption trenches. The fate and concentration of nitrate in groundwater can be modeled using a transport model, which is described in subsection 10.2 under the corresponding heading. The Geodesign study of the proposed sanitary system concluded that the project site would be able to support the project daily design wastewater flow of 16, 000 gpd.

Odors

The proposed wastewater treatment system is a conventional septic tank and absorption field subsurface sewage treatment system (SSTS). A properly functioning septic tank/absorption field treatment system does not produce odors. Any short term odors during pumping of the tanks are not expected to affect off-site residences.

Mitigation Measures -Sanitary System

The applicant has demonstrated through extensive field investigations, the capacity of the site to support an SSTS that will accommodate project generated wastewater. A properly designed, constructed, maintained SSTS, will adequately treat wastewater and mitigate the potential for

the adverse impacts. Groundwater simulations predict that the proposed sanitary system can adequately treat project wastewater and that nitrate levels from the system will be at acceptable concentrations at the property boundaries.

The system will be designed and constructed in accordance with applicable State, County, and NYCDEP requirements, and recommendations from GeoDesign. The proposed SSTS is not expected to result in point source discharges, odors or any adverse environmental impacts.

In order to mitigate any potential concerns regarding the nitrate effluent concentrations from the proposed community SSTS, a recirculating filter treatment system will be added to the septic system treatment train. The filter system will be located between the septic tanks and the absorption trenches. Specifications for the system are discussed in subsection 10.3.

Potential Impacts - Water Supply

Groundwater Quantity

A 72-hour pump test was completed in December, 2006 on three proposed water supply wells for the Salem Hunt project. The pumping test results are described in Section 5.0, Groundwater, and in Appendix H, Water Supply Report. The pumping test included the monitoring of off-site wells surrounding project site and indicated that there is sufficient groundwater on the property and well yields to provide the estimated water demands for the project. The Pumping Test was based on the water demand of 90 residential units.

The development will result in the conversion of 5.9 acres or approximately 15 percent of the property to impervious surface. If current recharge rates, 36,010 gpd or 25 gpm were reduced by 10 percent for drought conditions, the post-development recharge rates would be 32,409 gpd or 22.5 gpm. The post development recharge rates exceed the estimated daily water demand of 20,500 gpd or 14.2 gpm.

Groundwater Quality

The proposed stormwater management system and the proposed subsurface sanitary treatment system (SSTS) are not anticipated to impact the groundwater quality, both on-site and downgradient from the site. Section 6.0 Wetlands, Watercourses and Buffers describes stormwater management and related treatment of stormwater quality. The water quality impacts of the proposed SSTS are described in Section 5.0 Groundwater.

The final designs for the wastewater treatment system will be in accordance with applicable State, County, and NYCDEP requirements. The proposed SSTS is not expected to result in point source discharges, or any adverse environmental impacts.

The quality of the water sampled on the property meets the New York State Drinking Water Standards, with the exception of coliform bacteria. Disinfectant treatment of wells typically removes the coliform. No impacts to groundwater or the local aquifer are anticipated from deicing materials.

No irrigation is proposed for the Salem Hunt property. An Integrated Pest Management plan has been prepared for the development. The careful and minimal use of fertilizers and pesticides for site landscaping will minimize the potential impact of fertilizers and pesticides to

groundwater quality.

Mitigation Measures - Water Supply

The proposed development will be served by a community water system, which is not expected to result in significant adverse impacts on groundwater resources.

Monitoring

While no long term impacts to existing private wells are anticipated, the applicant would offer a monitoring program for the Havell well (see subsection 5.3 Groundwater Mitigation). Appropriate mitigation, such as well deepening or well replacement will be provided by the applicant should it be determined that the project well pumping resulted in loss of function of an off-site well.

Other Water-Supply Mitigation Measures

While no adverse impacts to groundwater resources are expected, several mitigation measures are proposed by the applicant. Undeveloped and landscaped portions of the site and stormwater management facilities will allow continued recharge of the aquifer. The four mapped wetlands will be undisturbed and will continue to contribute to the shallow and bedrock aquifers underlying the project site. Water conservation for the project will be achieved through the use of low-flow, water efficient plumbing fixtures and appliances.

Groundwater quality for the proposed community supply wells will be maintained by the design of the wells and the project layout. The project will maintain all required wellhead radius protection areas and separation distances.

Other Site Utilities

Potential Impacts

The existing utility services, including electrical, telephone and cable are expected to be capable of servicing the Salem Hunt project site. Where possible, joint trenches will be used for underground utilities, such as electric, cable and telephone service.

Mitigation Measures

Since the project is utilizing existing utility infrastructure, and no underground or above ground fuel oil storage tanks are proposed, no mitigation measures related to utilities are proposed. All utility lines will be installed underground, as required by the Town of North Salem Code.

1.11 COMMUNITY FACILITIES AND SERVICES

Demography

Potential Impacts

The total population and number of public school-aged children that would be expected from the proposed development has been estimated. The most commonly used multipliers are those

prepared by Robert W. Burchell, David Listokin, and William R. Dolphin of Rutgers University's Center for Urban Policy Research (CUPR). These multipliers are published in the Urban Land Institute's Development Assessment Handbook (1994) (ULI Handbook).

The multiplier for two bedroom condominiums in the northeast, is 2.0685 persons per unit and the school-aged children multiplier is 0.1393 children per unit. Based on these multipliers, the development is projected to add 135 persons including 9 school age children to the Town. The 135 new residents added to the Town population would represent approximately 2.5 percent of the projected 2010 total Town population, estimated to be 5,300.

The proposed Salem Hunt development is not expected to have an adverse effect on the Town's population, its population density, or the existing household character of the community. In rezoning the property to a medium density residential zoning district, the Town anticipated higher than typical density and developments which would add to the Town's population.

Mitigation Measures

As no significant impacts on population are anticipated, no mitigation measures are proposed.

Fiscal

Potential Impacts

All units would be in condominium ownership with two bedroom units anticipated to be approximately 1,700 to 2,400 square feet in size. The proposed Salem Hunt condominium units will be taxed based on the developed assessed value. This will result in an increase in tax revenues to each of the taxing jurisdictions, as compared to existing tax revenues.

Based upon information provided by the developer and using the income approach, the average market value of the 52 market-rate townhouse units would be \$850,000 per unit, while the 13 affordable units would have a market value of \$225,000 per unit, for a total market value of \$24,146,087.

As discussed in subsection 11.2, and shown in Table 11-3 therein, the proposed project would generate a total of approximately \$504,246 in property tax revenues annually to the representative taxing jurisdictions. The increase in tax revenues reflects the change in land use from vacant land lots to residential use for 65 condominiums.

Town of North Salem Fiscal Impact

The proposed 65-unit development is projected to increase the population of North Salem by 135 persons. The estimated annual per capita property tax levy for municipal services is \$797. The additional costs payable through the property tax, which are induced by the project, are projected to total \$107,595. The proposed units will generate \$62,217, in annual tax revenue to the Town, which may be used to offset costs to the Town that may be incurred as a result of the development.

School aged child: the household members of elementary and secondary school age, defined as children 5 to 17 years of age. Source: Burchell, Robert W., David Listokin and William Dolphin, et al. Residential Demographic Multipliers - Estimates of the Occupants of New Housing. 2006.

North Salem Central School District Fiscal Impact

According to the NYS Department of Education, the School District's budget for the 2005-2006 school year totaled \$32,738,040 with \$30,236,570 being raised by the tax levy. The School District's enrollment for the 2005-2006 school year was 1,386 students, resulting in a per student cost from the tax levy of \$21,816.

Based on that figure, School District costs to educate the additional nine students introduced by the Salem Hunt development would be approximately \$196,344. By comparison, the property tax revenues to be generated to the School District would total \$356,519 annually, which is \$343,985 more than currently generated. The fiscal impact associated with the proposed project, after considering the costs to the school, would be an annual tax surplus of \$147,641.

The proposed use of the site for a single-family residential community, a use considered compatible with surrounding residential and institutional uses, would be expected to have a positive effect on the property values of neighboring and nearby residential properties. In addition to direct fiscal benefit to the local taxing districts, there are expected to be secondary benefits to the local economy from spending by the new residents of this project.

Mitigation Measures

No significant impacts to the North Salem School District are anticipated by the proposed Salem Hunt development, thus no mitigation measures are proposed.

Schools

Potential Impacts

The project area will be served by the North Salem School District. The Pequenakonck Elementary School and the North Salem Middle and High School would serve the project site and are all located on June Road in close proximity to the site.

Based on the ULI multiplier of 0.1393 school-aged children per each two bedroom townhouse, the proposed 65 unit development is projected to introduce nine new students to the North Salem Central School District when fully occupied. A portion of those children would be expected to attend private schools, however to provide a conservative estimate, this analysis included all nine children that could attend the North Central School District.

The introduction of these students into various grade levels over a multi-year period would ameliorate the effect of the increase in school district enrollment associated with this project. The approval and construction period of this project provides time to allow the North Salem Central School District to implement measures for the introduction of new students from this and other area projects.

The North Salem Central School district was contacted to determine whether the District's school facilities have capacity to handle the increase in the number of students generated by the proposed project. The district currently has no plans for expanding the school facilities.

Mitigation Measures

The introduction of nine school-age children over grades K through 12, is not expected to have a significant impact to the North Salem Central School District or to student transportation to and from District Schools. The increase in student population would be offset by the tax revenues generated by the proposed project to the District and result in a net annual increase in revenues of \$147,641. No mitigation measures are proposed.

Police Protection

Potential Impacts

Based on standards contained in the Development Impact Assessment Handbook (Urban Land Institute, 1994), two police officers and 0.6 police vehicles are required per 1,000 population. The service ratio for the North Salem Police Department currently exceeds this standard. With the addition of one new officer, as anticipated by the Department, the existing ratio of police officers to the population will be maintained.

Mitigation Measures

According to the Town's Police Department, no significant demands would be placed on police services as a result of the proposed project. As no significant adverse impacts have been identified, no specific mitigation measures relating to police protection services are proposed.

Fire Protection

Potential Impacts

The proposed project would be supplied water from a private water system with wells. The proposed internal roads are designed to accommodate fire engines and truck traffic. Emergency access is provided around all residential buildings on the project site.

The buildings would be required to meet applicable standards of the New York State Uniform Fire Prevention and Building Code, and would also adhere to applicable regulations of Chapter, 108, Building Construction and Fire Prevention, of the Code of the Town of North Salem.

Based on planning standards contained in the ULI's Handbook, it is estimated that 1.65 fire personnel per 1,000 population is required to serve a new population. The anticipated increase in population of 135 persons would generate a demand for 0.3 additional fire personnel. The Department's current personnel level of 50 fire personnel exceeds this standard even after the proposed Salem Hunt population increase. Salem Hunt would generate property tax revenues to the Croton Falls Fire Department of approximately \$11,665 annually. This additional revenue can be used to augment the Department's capabilities as necessary.

Mitigation Measures

Based on the foregoing, no mitigation measures are proposed.

Emergency Services: Ambulance and Health Care Facilities

Potential Impacts

Based on the standard for Emergency Medical Services, according to the ULI's Handbook, the introduction of 135 persons in North Salem results in potential added demand for 0.02 full-time health care personnel and less than one hundredth of a vehicle. Based on the ULI multipliers, the proposed project would not have a measurable impact on emergency services.

Additionally, the ULI standard indicates that the project has a potential to increase the need for beds in hospitals serving North Salem by less than one bed (0.54 beds, actually). As the project will be developed and occupied over a period of years, there is expected to be a gradual increase in population that would not create significant demands on health care resources.

Mitigation Measures

No mitigation measures specific to Health Care Facilities are proposed.

Solid Waste

Potential Impacts

According to the per household rate for solid waste generation from the ULI's Handbook, the Salem Hunt development will result in an estimated solid waste generation of less than 0.3 tons per day, or 7.1 tons per month. The solid waste collection points at the proposed development meet all the requirements of §250-19.1 and will be properly screened.

Mitigation Measures

As no significant adverse impacts regarding solid waste collection are anticipated as a result of the proposed project, no mitigation measures are proposed.

Recreation and Open Space

Potential Impacts

Future residents of the proposed Salem Hunt development would add a projected 135 persons to the Town of North Salem's population and increase the local demand for recreation facilities and open space. Based on projected population of 135 persons for this project, a total of 0.7 to 1.1 acres of parks would meet the recreational demand for this project according to the NPRA standards, while the ULI standard would require 1.0 to 1.6 acres.

The proposed development will include a 3,250 square foot, single story recreation building (clubhouse) intended for the Salem Hunt residents and their guests. The clubhouse will contain a large lounge with meeting space, a fitness center and other amenities. The recreation building will include a 25-foot by 50-foot heated outdoor swimming pool with a fenced common area.

Additionally, approximately 20 acres or one-half of the site will remain undeveloped open space after completion of the proposed condominiums.

Mitigation Measures

The provision of on-site recreational facilities will minimize the demand for off site recreation facilities. The wetland and open space system would afford passive recreation opportunities. Since the proposed plan provides adequate open space and recreation areas for the residents of Salem Hunt, the requirement for parkland has been satisfied.

No significant demand is anticipated to be placed on Town of North Salem recreation facilities as a result of the proposed Salem Hunt development, therefore no mitigation measures are proposed.

1.12 EFFECTS ON THE USE AND CONSERVATION OF ENERGY RESOURCES

Both short-term and long-term energy consumption effects are associated with all residential construction projects. Short-term energy consumption impacts would occur during construction of the proposed development. New construction, such as the Salem Hunt project, is much more energy efficient compared to older homes, due to technological improvements in construction, such as wall insulation and thermal windows.

Energy conservation in New York is regulated at the state level for new residential and commercial construction. Compliance with provisions of these state energy conservation programs would reduce the overall long-term energy consumption of the project. The Salem Hunt project will be designed to be LEED for Homes certified.

The Salem Hunt project, with 65 new condominium residences, is not expected to have a significant effect on local or County wide energy use.

1.13 GROWTH INDUCING IMPACTS OF THE PROPOSED ACTION

The future residents of Salem Hunt will utilize existing retail and service businesses in the local community, such as Peach Lake and Brewster, as well as regional shopping centers such as Sears Corners in Southeast and the Danbury Mall in Danbury. The Salem Hunt project and 135 new residents are unlikely to trigger the demand for new retail and commercial development in the local area.

The project will promote increased construction employment in the short term and, on a cumulative basis, an increased long term demand for residential goods and services that will have a steady multiplier effect in the project area's retail markets.

No significant adverse effects on the area's utilities, community services, or facilities are expected. No adverse effects on area commercial services are expected as a result of the proposed development.

1.14 ALTERNATIVES

The New York State Environmental Quality Review Act (SEQRA) calls for a description and evaluation of reasonable alternatives to the proposed action that are feasible, considering the objectives and capabilities of the project sponsor.

During the preparation of the Site Plan and DEIS the proposed action was revised and the

number of units and scale of the project was reduced. As described in this document, the current proposed action and Site Plan involves 65 condominium units in 24 buildings containing two or three, two-bedroom residences. A previously designed and engineered project layout envisioned 75 units in fifteen buildings, each containing 5 units. Although a comparison of these two project designs was not specified in the Scoping Document, comparisons of the proposed action and the previous project are discussed in DEIS chapter 14.0.

The adopted scoping document includes seven alternatives, as addressed herein. The changes to the Site Plan resulted in a reassessment of the alternatives set in the adopted Scope. The applicant met with the Planning Board on March 5, 2008 to discuss the alternatives. The Planning Board agreed that the currently proposed project meets the objectives of Alternative 2 - Structural Design and Layout Alternative. The details of this alternative and a comparison of it to previous design and layout proposals are discussed in subsection 14.2.

The Board agreed that the currently proposed Site Plan, with additional measures to reduce impervious surfaces, meets the objectives of Alternative 4 Reduced Impervious Surface Alternative - Decreased Unit Count. Alternative 5 - Reduced Impervious Surface Alternative - Same Unit Count no longer applies since the applicant is no longer proposing 75 units as contemplated by the Scope. The following alternatives were reviewed and described in the DEIS:

- No Action Alternative
- Structure Design and Layout Alternative
- Increased Unit Count Alternative
- Reduced Impervious Surface Alternative - Decreased Unit Count
- Reduced Impervious Surface Alternative - Same Unit Count as Proposed Action
- Walkable Community
- Fee Simple Alternative

A summary of impacts of the Proposed Action compared to the other alternatives listed in the Scoping Document are provided in Table 14-1.

1.15 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The proposed plan will commit the project site to residential use. Once committed to this use, the site will be unavailable for other uses for the foreseeable future. The finite resources that will be irretrievably committed by implementation of the proposed action are the materials and energy required for construction and for maintenance of the development afterward.

When completed, the new residences will require the consumption of fossil fuels either directly as heating fuel or indirectly as electricity.

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 Introduction

The applicant, Wilder Balter Partners, LLC proposes to construct 65 residential units on an approximately 40 acre property located on the west side of June Road, in the Town of North Salem, Westchester County, New York. The project is known as the Salem Hunt residential project. The subject property is located in an R-MF/4 Multi-Family Zoning District, and is designated on the Town of North Salem Tax Maps as Sheet 5, Block 1735, Lot 19. The northerly boundary of the subject property is coincident with the municipal boundary shared by the Town of North Salem, Westchester County and the Town of Southeast, Putnam County. The proposed project will include 24 residential buildings with either two or three condominium units in each building and a separate community building.

SEQRA Background

The DEIS has been prepared to present and evaluate the potential environmental impacts associated with development of the proposed residential project. This DEIS has been prepared in accordance with the State Environmental Quality Review Act (SEQRA) and Part 617 of the implementing regulations.

The Town of North Salem Planning Board, declared itself to be Lead Agency for a residential project on the site on March 9, 2006, pursuant to the State Environmental Quality Review Act (SEQR). The Planning Board determined that the project may have a significant impact upon the environment and therefore, issued a Positive Declaration on April 5, 2006. The applicant submitted a Draft Scoping Document to the Planning Board on March 3, 2006. The scoping document was circulated to all involved and interested agencies, and was made available for public review. A public scoping session was held on May 3, 2006, to receive input from the Planning Board, the public and involved and interested agencies on issues to be addressed by the DEIS. The Final Scoping Document was approved by the Planning Board on June 7, 2006. The Scoping Document and SEQRA documents are provided in Appendix A.

This DEIS considers current physical and environmental conditions on the property and in the Town of North Salem and the adjoining Town of Southeast, including; soils and topography, surface water resources, terrestrial and aquatic ecology and wetlands, land use and zoning, including consideration of the Town's Comprehensive Plan, transportation and traffic, historic and archaeological resources, community facilities and resources, fiscal impacts, noise and air resources, and visual resources.

Zoning Amendments

The Town of North Salem adopted zoning amendments in 2000 which resulted in the rezoning of four specific properties to address a New York State Supreme Court decision known as Continental Building Company, Inc. versus the Town of North Salem. According to the Comprehensive Plan Update (CPU), the "primary objective of the adopted zoning was to create the opportunity for the creation of affordable housing and to provide for the development of a variety of housing types in the Town of North Salem". The Salem Hunt property was specifically rezoned to R-MF/4 Multifamily Zoning District, and is described in the CPU as: "Site 3, formerly referred to as the Kingsley property".

Description of the Proposed Action

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It should be noted that as of February 12, 2008, the Comprehensive Plan Update was recalled (Resolution #59). The proposed Salem Hunt development has been before the Town of North Salem Planning Board, since early 2006. The Final Scoping Document was approved by the Planning Board on June 7, 2006, which included a conformance analysis with Town of North Salem Master Plan and the draft Comprehensive Plan Update. The Comprehensive Plan Update was adopted by the Town on December 12, 2006. Therefore, the draft DEIS submitted to the Town on February 7, 2007 and this present submittal (April 18, 2008) include a conformance analysis of the proposed action to the previously adopted Comprehensive Plan Update. Since the Plan has been recalled by the Town, a conformance analysis to the 1985 Plan may be appropriate. The Final Environmental Impact Statement (FEIS) will discuss and clarify any inconsistencies of the proposed action to the applicable 1985 Master Plan.

According to the CPU, the creation of the higher density zoning will result in potentially beneficial effects on the Town of North Salem, including:

- “Expanded and increased variety of residential development density,
- Enhanced variety of types of residential development, and
- Distribution of medium to high density development”.

The Comprehensive Plan Update acknowledges that higher residential development density “will result in long-term impacts such as an increased number of potential dwelling units, potentially significant increases in the population of the Town of North Salem and related increased demands on the schools and other public services”.

The four sites, including the Salem Hunt site were rezoned for future medium to high density development since they were located near established hamlet area, and in the case of Salem Hunt, for its proximity to the Peach Lake neighborhood. Other factors were considered in the selection of properties subject to rezoning including proximity to transportation corridors. The Salem Hunt Property is relatively close to Route 22 as well as Interstates 84 and 684.

The Salem Hunt project directly addresses the need for affordable housing in both the Town of North Salem and Westchester County. The project will result in 13 residential units of affordable housing pursuant to the requirements of the Town Zoning Ordinance. The thirteen units are 20 percent of the total project unit count consistent with the R-MF/4 Zoning District requirements. The thirteen affordable units address the long term need in the Town and region for below market-rate housing. The *Affordable Housing Allocation Plan* (Allocation Plan), prepared by the Westchester County Housing Opportunity Commission (WCHOC) in November 2005, provides “to each municipality the share of the County’s total affordable housing need that can reasonably be expected of it”. According to the 2005 Allocation Plan, North Salem’s new affordable housing allocation, including unmet obligations from the 1990 to 1999 plan, is a total of 152 affordable units. The thirteen affordable units provided by the Salem Hunt project are approximately 8 percent of the Town’s affordable allocation for the period 2000 to 2015.

2.2 Site Location and Description

The subject property contains approximately 40 acres of mostly wooded land in the northeastern portion of the Town of North Salem, and Westchester County. The property is located on the municipal boundary between the Towns of North Salem and Southeast. The

The Planning Board determined that the project may have a significant impact upon the environment and therefore, issued a Positive Declaration on April 5, 2006

municipal boundary is also the boundary between Westchester County and Putnam County.

The property consists of a single tax lot listed in the Town of North Salem records as: Section 5, Block 1735, Lot 19. The property is rectangular in shape and extends towards the west from its approximately 759 foot frontage on North Salem Road. June Road becomes North Salem Road (and Putnam County Route 55) north of the municipal and county boundary. A Site Location Map is provided as Figure 2-1. The property is located in the R-MF/4 Multi-Family Zoning District.

Environmental Setting

The project site is located in an area of rolling topography on the western side of the Hudson River, and is part of the Hudson Highlands geologic province. The site slopes gradually from west to east and topography varies approximately 100 feet across the site. The highest elevations on the property are approximately 580 feet, in the southwestern corner. The lowest elevations are in the northeast portion of the site, along June Road. Steeper slopes are found in the eastern portion of the property above a wetland which occupies a majority of the property's frontage along June Road.

The majority of the property contains moderate slopes and topographic variations and contains mature second-growth hardwood forest, including sugar maple, red maple, oak, black birch and black locust. The eastern, level portion of the site contains mature trees, saplings and brush as well as a mapped NYSDEC designated wetland (L-32), which surrounds a drainage corridor for an unnamed stream. The perennial watercourse runs south to northeast through the property, and exits the property under June Road. The watercourse is a sub-tributary to the East Branch Croton River and is also regulated by the State (Waters Index Number H-31-P-44-24-1-9).

Wetlands are present along the eastern property boundary and in the northwestern and southwestern portions of the site. Terrestrial and aquatic ecology and wetlands are described in detail in Section 6.0 Wetlands/Watercourses and Buffers. The existing conditions on the property are shown in Figure 2-2 - Existing Conditions Plan.

The property is located in an area of low density residential development. Residential properties are located to the north and south of the subject site. A horse farm is located to the west of the site. The property has approximately 759 feet of frontage along June Road and undeveloped land lies to the east of June Road, along the properties frontage. Southeast of the site is: a residential property, a deli, the Town of North Salem Highway Department facility, a Town park and further to the southeast, the North Salem Middle School/ High School. Development in the vicinity of the project site is shown in Figure 2-3 Aerial Photo.

Current Site Usage

As described above, the property is largely covered with mature woods and contains no structures or utilities. Stone walls are located in the northern portion of the property as well as along the edges of the property. These walls marked the property boundary and the edges of former farm fields, according to the Phase 1A archeological report, prepared by CitiScape (See Appendix M). There are several marked horse riding trails on the property. The main trail crosses the property from northeast to southwest, and is in the approximate location of the proposed access road for the Salem Hunt development.

New York State Electric & Gas Corporation (NYSG&E) has a 100 foot utility easement for overhead electrical lines which crosses the northeast corner of the site (see Drawing SP-1 Overall Preliminary Site Development Plan). The proposed access driveway for the project crosses the utility easement.

There are no standing structures on the project site. However, as part of the Phase 1A cultural resources survey, historic maps were consulted. Although the maps indicate the majority of the project site remained undeveloped, the maps dating to 1893 and 1894/1916 suggest that four or five dwellings were located along a roadway in what appears to be wetlands located on the Salem Hunt project area. However, no evidence of these structures were observed during a site visit and it is possible that they have been destroyed by the construction of the electrical transmission towers owned by New York State Electric and Gas Corporation. Based upon the historical maps and the age of the vegetation on the property, the site has been undeveloped for most of the last century and only limited disturbance to the site has occurred, related to trails.

2.3 Description of the Proposed Action

The applicant, Wilder Balter Partners, LLC proposes to construct a residential development consisting of 65 condominium units in twenty-four (24) buildings, as well as a community center with an outdoor pool. The proposed design and layout of the project is provided in Figure 2-4 Proposed Site Plan. Each of the buildings will contain either two or three, two-bedroom units. Thirteen of the 65 units (20%) will be designated Moderate Income Housing units pursuant to requirements of the North Salem Zoning Ordinance and will be subject to affordability limitations, per the Town Zoning Ordinance.

Access will be provided from a single entrance on June Road. A pool and clubhouse for use by the development residents is also planned. A private community water supply and community subsurface sanitary treatment system (SSTS) are proposed for the project. Stormwater management facilities will be provided for the treatment of stormwater from paved areas and portions of the site covered with buildings. The proposed condominium association for the Salem Hunt community will be responsible for the long-term maintenance of the community water supply system, community SSTS, internal roads and stormwater management facilities.

Site Plan and Layout

The proposed development will include twenty-four two story buildings, each with either two or three town-house style condominium units and a two car garage. Seven of the 24 buildings will contain two residential units and the remainder of the buildings (17 buildings), will contain three residential units. Buildings will be a maximum of 35 feet in height, in conformance with the Zoning Code. The layout of the buildings on the site is provided in Figure 2-4, Proposed Site Plan.

Access to the development will be from a single entrance onto June Road across from Starlea Road. June Road becomes North Salem Road (Putnam County Route 55) north of the municipal and County boundary. The internal driveways in the development will remain private and will be maintained by the project's condominium association.

The buildings will have traditional early American architecture and design, intended to be compatible with surrounding and nearby residential development. The proposed buildings will

use make use of wood, architectural details, as well as earth-tone colors to ensure that the buildings are compatible with the wooded setting of the property and its adjoining properties. Elevations of the buildings are provided as follows:

- Figure 2-5, Proposed Building Elevation - Two Unit Front Garage
- Figure 2-6: Proposed Building Elevation - Two Unit Front and Side Garages;
- Figure 2-7: Proposed Building Elevation - Three Unit Front Garages;
- Figure 2-8: Proposed Building Elevation - Three Unit Side Garages.

The residential buildings are located along an approximately 1900 foot long internal road and are mostly located in the central and southern portion of the site (See Figure 2-4 Proposed Site Plan). The project layout and residential design has been designed around the natural site conditions such as wetlands, steeper slopes and concentrate the development in areas of the site with optimal soils and topography. As shown on the Proposed Site Plan, no development, with the exception of the required site access driveway is proposed for the eastern portion of the site, which contains NYSDEC designated wetlands. Only limited development and site disturbance related to stormwater management basins have been proposed in the western portion of the site, within the 100 foot buffer of the Town of North Salem regulated wetlands and in the 100 foot buffer of a NYSDEC regulated wetland (Wetland A). The majority of the existing rock walls on the property will be preserved. In preserving the on-site wetlands and much of the wetland buffer, natural open space will be retained on the property, particularly along the eastern and western edges of the site. Open space will also be provided between building groupings west of the entrance road, upon entering the developed portion of the property.

Residential buildings will be located along the main roadway (Road "A") and a shorter internal road (Road "B") which provides a looped road access through the center of the development. Small turnaround circles are provided at the end of Road "A" and for a building cluster near the recreation buildings (Road "C").

The development will include a 3,250 square foot, single story clubhouse building located at the northeast portion of the development, visible as residents and visitors enter the developed portion of the site. The recreation building is intended for the Salem Hunt residents and their guests and will include a separate parking area with 12 spaces. The recreation building will contain a large lounge with meeting space for community gatherings and a fitness center complete with exercise equipment and space for aerobic or pilates and yoga exercise. The building will possibly have space for billiards or a gaming room, plus restrooms, kitchenette and storage space. The recreation building will include a 25 foot by 50 foot heated outdoor swimming pool with a fenced common area.

The Salem Hunt development will be served by a private community water supply, and a private Subsurface Sanitary Treatment System (SSTS). Four water production wells have been drilled on the property and three wells will be utilized for the community water system; Wells 2, 3 and 4. The project water demand, well drilling, pump testing, and potential groundwater impacts are discussed in detail in Section 5.0 Groundwater.

As shown in the Proposed Site Plan (Figure 2-4), the proposed primary and expansion Subsurface Sanitary Treatment System (SSTS) areas are located on the eastern side of the project access driveway, in the east-central portion of the site. The proposed Sanitary System was located in the portion of the property with soils, drainage and topography best suited for the treatment of sanitary discharge from the development. Two stormwater management basins

are located near the project entrance and will treat stormwater from the eastern portion of the site. Two additional basins located in the western portion of the property will treat stormwater from the western drainage area.

A Landscaping Plan is provided in the attached set of drawings as Drawings SP-2.1 and SP-2.2 Layout and Landscaping Plan. A schematic planting schedule is provided in the Plan. The proposed condominium association for the Salem Hunt community will be responsible for the long-term maintenance of the proposed landscaping. The Lighting Plan shows the locations of proposed lighting on the site (see Drawing LP-1). Project lighting and measures to reduce the potential impacts of lighting upon neighbors to the site are described in Section 8.0 Cultural Resources.

Condominium Association

A condominium association will be formed as a Limited Liability Corporation (LLC) by the applicant to manage operation and maintenance of all common areas, facilities and infrastructure for the Salem Hunt residential development. The association would be declared effective when 15 percent or more of the units are under contract. This must occur before the project sponsor closes and transfers title on the first home.

When approximately 75 percent of the homes have been sold, the applicant, as the condominium association sponsor would establish a board of directors maintaining one seat for the unsold units. When all of the homes have been sold, the sponsor would remove itself from the condominium association board and the condominium homeowners would manage all applicable land, facilities and operations.

The condominium association will be responsible for the operation and maintenance of all common areas and infrastructure for the development, including internal roadways, landscaping, the recreation facility and pool, community water system, community sanitary system, and stormwater management facilities.

Purpose, Need and Public Benefit

The applicant proposes a residential development to meet the growing demand for quality housing in the Town of North Salem and in Westchester County. The project is proposed as an attractive residential community for persons and families interested in residing in the Town of North Salem.

The project is proposed to meet needs and objectives, 1) within the Region, 2) in the Town of North Salem, 3) in the local community, as well as 4) on the project site, as follows:

- 1) The project provides a quality residential condominium community in the desirable area in northern Westchester County, southern Putnam County and the Towns of North Salem and Southeast, that is convenient to transportation corridors, local schools and shopping opportunities in the nearby business districts of Croton Falls, Brewster, and the Town of Southeast. Thirteen of the 65 units (20%) will be designated Moderate Income Housing units pursuant to requirements of the North Salem Zoning Ordinance and will be subject to affordability limitations, per the Town Zoning Ordinance. The project would provide needed affordable housing for the County, as further described below.

- 2) The Salem Hunt project is intended to meet the objectives and needs of the Town of North Salem. The project is consistent with the objectives of the Comprehensive Plan Update (CPU), as adopted by the Town Board on December 12, 2006. Specifically the project is consistent with the medium to high density R/MF-4 Zoning District, designed to encourage higher density development in or near existing neighborhoods or hamlet areas. The recently adopted zoning amendments, which specifically apply to the project area, were adopted to address a court decision. The amendments allow medium to high density development and inclusionary measures to encourage the development of affordable (moderate income) housing. As described above, thirteen of the 65 units (20%) will be designated Moderate Income Housing units pursuant to requirements of the North Salem Zoning Ordinance.
- 3) The project is designed to be compatible with the surrounding and nearby neighborhood, as encouraged by the recently adopted Comprehensive Plan Update. The project is located in an area of the Town with an existing higher density development, specifically the Peach Lake community, located west of the project site off of Bloomer Road. The design of the residential buildings, the preservation of vegetative buffers and setback from June Road minimizes the visual impact of the project from adjoining roads and the neighborhood.
- 4) The project is designed around the natural conditions of the approximately 40 acre property, and avoids areas of steep slopes and wetlands to the greatest extent practicable. The clustered design with residential buildings also conforms to the intent of the R-MF/4 Zoning District, and meets all of the zoning requirements of the District. Impacts to wetlands and steep slopes have been minimized and the development site on the most suitable portions of the project site. Buffers of existing vegetation and trees have been maintained along the edges of the property. The project is designed to meet the objective of development that is appropriate for the project site.

2.4 Construction Phasing

Construction is expected to occur over a three year period. A construction phasing plan has been developed to allow for the sequential development of the site to minimize the impacts from construction (see Drawing SP-4.1 Overall Phasing Plan). The first phase will include site preparation and the installation of soil erosion control features. Erosion control features such as protective snow fencing to establish disturbance limits, silt fencing and hay bales, and a stabilized construction entrance will be installed prior to any excavation or grading on the site.

A preliminary schedule is as follows:

- 1) Site preparation and installation of erosion control devices: weeks one and two;
- 2) Tree clearing and grubbing for site entrance and internal access roads: months one to two;
- 3) Excavation and grading for access road and driveways, and installation of stormwater management systems including temporary stormwater basins, permanent stormwater control devices and catch basins and drainage lines: months one to six;
- 4) Excavation and grading for building pads and parking areas: months six to nine;
- 5) Residential Construction: months nine to thirty.

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In the final phase, the individual residential buildings will be constructed in phases, over an approximately two year period. Residences will be constructed based, in part, on market demand. Full occupancy is expected to occur within three years of groundbreaking.

Further discussion of construction phasing, potential construction impacts, and proposed mitigation are described in Section 3.0 Land Use and Zoning.

2.5 Approvals, Reviews and Permits

The proposed action will require the following approvals by the listed agencies (involved agencies):

Table 2-1 Project Approvals, Reviews and Permits		
<i>Agency</i>	<i>Permit or Review</i>	<i>Regulatory Status</i>
New York City Department of Environmental Protection (NYCDEP)	Review for septic system Stormwater Pollution Prevention Plan	Pending
New York State Department of Environmental Conservation (NYSDEC)	Wetlands Permit. Water Supply Permit GP 02-01 Permit - Required for site disturbance exceeding one (1) acre	Pending
New York State Department of Health (NYSDOH)	Review of water supply plans	Pending
New York State Department of State	Transportation Corporation	Pending
Westchester and Putnam County Department of Public Works	Permit for improvements within County right-of-way *	Pending
Westchester County Department of Health	Review of water and septic systems	Pending
Town of North Salem Planning Board	Wetlands Permit	Pending
Town of North Salem Planning Board	SEQR and Site Plan Review	DEIS under review for completeness
Town of North Salem Town Board	Transportation Corporation	Pending
Town of North Salem Architectural Review Board	Review of plans and elevations	Pending
Town of North Salem Zoning Board of Appeals	Variances for setback requirements related to recreational building. Variance for building separation distance.	Pending
Town of North Salem Planning Board	Approval of a Stormwater Pollution Prevention Plan pursuant to the Town of North Salem Code Chapter 193	Pending
Putnam and Westchester County	Review pursuant to GML 239	Pending
US Army Corps of Engineers (ACOE)	Jurisdictional Determination	Pending
Town of Southeast Planning Board	Review of site access and Site Plan	Pending
Town of Southeast Highway Department	Review of site access	Pending
* Note: Improvements will be made in the right-of-way in both Westchester and Putnam Counties. Putnam County will review only the adjacent residential driveway relocation; all other aspects will be subject to Westchester County's jurisdiction.		

The project will require review and approval of project plans and operations. The project will

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require compliance with the applicable requirements and regulations related to the above listed reviews and permits.

3.0 LAND USE AND ZONING

Introduction

This chapter of the Salem Hunt DEIS describes existing conditions and anticipated impacts of the Salem Hunt development related to the proposed action's compatibility with the character and development trends in the nearby area, as well as with surrounding land uses, community resources and public policies.

The project site is located in the northeastern section of the Town of North Salem and the greater Westchester County. The northern boundary of the project site is coterminous with the municipal boundary line of the Town of Southeast and Putnam County. The project site is approximately four miles east of the Connecticut/New York State border. The land use and zoning study area includes the project site and areas within a one-mile radius of the boundaries of the project site, or the area most likely to be affected by construction and operation of the proposed residential development. The study area for the proposed project is located approximately one-half in the Town of North Salem, Westchester County and one-half in the Town of Southeast, Putnam County. With respect to public policy, this section reviews the consistency of the proposed project with relevant regional and local policies.

The Salem Hunt property was specifically rezoned as R-MF/4 Multifamily Zoning District by the Town of North Salem in 2000. The rezoning of the site, along with three other sites in the Town, was the response to a New York State Supreme Court decision known as the Continental Decision (Continental Building Company, Inc. versus the Town of North Salem). The "primary objective of the adopted zoning was to create the opportunity for the creation of affordable housing and to provide for the development of a variety of housing types in the Town of North Salem¹".

3.1 Environmental Setting

Existing Conditions - Land Use

This section describes existing and proposed land use conditions of the Salem Hunt property and areas in the vicinity of the site. The study area for the land use survey includes the project site and areas within a one-mile radius of the project site (see Figure 3-1, Land Use Map).

Project Site

The approximately 40-acre project site is currently vacant and contains moderate slopes and topographic variations, second growth forest, wetlands and watercourses. The site slopes gradually from west to east and topography varies approximately 100 feet across the property. The highest elevations on the property are approximately 580 feet, in the southwestern corner.

The eastern, level portion of the site contains mature trees, saplings and brush as well as a mapped NYSDEC designated wetland (L-32), which surrounds a drainage corridor for an unnamed stream. The perennial watercourse runs south to northeast through the property, and exits the property under June Road. The watercourse is a sub-tributary to the East Branch Croton River and is also regulated by the State. Wetlands are present along the eastern property boundary and in the northwestern and southwestern portions of the site. Refer to the

¹ Source: Town of North Salem, Comprehensive Plan Update, 12.12.06

Plan Set attached to this document for site wetlands locations. Stone walls associated with past agricultural use of the site delineate former pasture limits and property lines. There are no structures present on the site.

Study Area

As stated above, the land use study area surveyed for the purpose of this DEIS includes areas within a one-mile radius of the boundaries of the project site. Land uses within that radius, which crosses over the county line between Westchester and Putnam County, are mixed, and include residential, institutional, industrial, vacant, undeveloped, commercial, open space and utility land uses. Refer to Figure 3-1, Land Use Map.

The majority of study area located within the Town of North Salem consists of open space land uses (county, state and local parks, public and private institutions, nature preserves, private recreation, etc). The open space land uses within the North Salem portion of the study area include: farms, stables, nurseries, vineyards, private recreation, nature preserves, public - non park lands, local parks and open space, and public institutional uses. Other land uses in the North Salem portion of the study area include residential (low to high density), institutional (North Salem Middle and High Schools and Pequenaconck Elementary School), commercial, utility and vacant land uses. Please note that open space land use category for the Town of North Salem includes private and public institutional uses.

A fairly large portion of the Peach Lake Hamlet, which is located in the proximity of the Peach Lake Road and Bloomer Road intersection in the Town of North Salem, is located within the study area. "The Peach Lake hamlet includes a medium to high density residential area where two sizable neighborhoods are located on the southwestern and southeastern sides of the waterbody known as Peach Lake. The densities in these neighborhoods are generally four to six dwelling units per acre (4-6 du's/acre) with densities as high as eight to twelve dwelling units per acre (8-12 du's/acre) in certain sections.²" The Peach Lake Hamlet area also includes a small area of commercial uses near the eastern boundary of the study area. The Country Farmer, Salem Saddlery, 121 Restaurant, The Meccanic Shop (auto body shop), and the Witt - Style Hair Salon are among the commercial uses located at the above mentioned intersection.

As noted on Figure 3-1, a transportation utility land use, which consists of the New York State Electric and Gas, Corp. easement, cuts through the northeast corner of the Salem Hunt property. The easement continues off the project site and crosses over to the eastern side of June Road to where it extends in southern and eastern direction throughout the Town of North Salem. Beyond the utility easement, in the Town of North Salem, are low to high density residential uses and open space uses (including farms and nurseries). The development surrounding Peach Lake, which is east of the project site in the Peach Lake Hamlet, is high density single family residential.

The Town of North Salem Highway Department Winter Facility (Winter Facility, open space - non park) and single family residences border the southeast portion of the project site. Kingsley Deli and Pizzeria, a nonconforming commercial use with underlying residential zoning, is located west of June Road, east of the Winter Facility and south of the proposed access for the Salem Hunt development. Beyond the Winter Facility and bordering a portion of the southern boundary of the site is Volunteer Park, a public open space use. The park includes a small parking area, baseball/softball field, basketball court and playground. Darlington Hall, a single

² Source: Town of North Salem, Comprehensive Plan Update, 12.12.06

family residence located on over 80 acres of land, is adjacent to the southern border of the project site. Immediately west of the project site is Red Horse Farm. Refer to Figure 3-2 for an aerial photo of the project site and study area.

The majority of study area within the Town of Southeast consists residential (single and multifamily) and vacant land uses. Much of the residential development within the portion of the study area located in Southeast, including both the multifamily and single family development, is located along North Salem Road whereas the commercial and industrial uses are primarily located along Fields Lane. Note that June Road changes to North Salem Road once in Putnam County.

Commercial, industrial, residential, vacant and open space land uses are located along and in the vicinity of Fields Lane. The land uses within this area are mixed in use as well as in the intensity of the use. Baltec Associates (an international environmental consulting firm), Arborscape, Inc. (residential and commercial landscaping firm), and Collins Brothers Moving are just some of the commercial uses located on Fields Lane in the Town of Southeast. Brewster Transit Mix, an industrial use, is also located along Fields Lane. The Brewster Sports Center, the Brewster Arena, Powerhouse Gym and Players Restaurant and Bar are located along Sutton Place, a local road north of Fields Lane. Field Farmstead Preserve and Trail entrance, a public open space uses, are also located on Sutton Place. Seasons Too (an outdoor furniture warehouse/retail store) and Touchtone Applied Sciences Inc. (a consulting firm), are located along Hardscrabble Heights, a local road south of Fields Lane.

The land uses located adjacent to the northern boundary of the project site within the Town of Southeast include Our Lady of Rosary Chapel and several single family residences. The Chapel is currently used for weekly services and occasional funeral services.

Proposed Conditions - Land Use

Project Site

The implementation of the proposed action would develop the approximately 40 acre vacant land parcel into a residential use consisting of 65 attached condominium units in twenty four (24) buildings, as well as a community center with an outdoor pool. The proposed residential development, as designed, includes seven single family attached units and 17 multifamily dwelling units. The proposed design and layout of the project is provided in Figure 2-3, Proposed Site Plan, located at the end of Section 2.0 Project Description. Twenty percent (13 units of the 65 proposed units) will be designated Moderate Income Housing units pursuant to Moderate Income Housing, Chapter XXII of the North Salem Zoning Ordinance and will be subject to income eligibility and sales price restrictions, per the Town Zoning Ordinance.

Access will be provided from a single entrance on June Road. A private community water supply and community subsurface sanitary treatment system (SSTS) are proposed for the project. Stormwater management facilities will be provided for the treatment of stormwater from paved areas and portions of the site covered with buildings.

Study Area

Known approved or pending projects in the study area and greater vicinity of the project site are summarized in Table 3-1 below.

Table 3-1 Approved or Pending Projects in Site Vicinity		
Project Name, Description,	Proposed Land Use	Location
Peach Lake Commons, Retail Facility	Commercial	Bloomer Road & Peach Lake Road, North Salem
Westen Chase - 12 homes	Residential	Deans Corner Road, Southeast
Starr Ridge Farm Equestrian Center - 50 horse barn	Agricultural	Starr Ridge Road, Southeast
Sutton Corporate Park	Commercial	Fields Lane, Southeast
Alcon -9,600 square feet warehouse	Commercial	Fields Lane, Southeast
Northwater Group - 40,000 square feet warehouse/office	Commercial	Fields Lane, Southeast
Barnes - Warehouse/Office 10,000 square feet	Commercial	Fields Lane, Southeast
Palazetti - Warehouse/Office 8,000 square feet	Commercial	Fields Lane, Southeast
The Woodlands at North Salem	Residential (Active Adult Community)	Reed and Hardscabble Roads, North Salem
* Source: Town of North Salem, Westchester County and Town of Southeast, Putnam County		

Little, if any, change to the land use pattern of the study area is expected from the proposed action (Table 3-1). The overall character of the area surrounding the site is eclectic in nature. Historically, commercial and industrial land uses have been located along Fields Lane and this land use pattern will continue with the development of the proposed projects listed in Table 3-1. The anticipated change in land use as a result of the proposed projects would be generally consistent with the mixed-use character of study area.

Existing Conditions - Zoning

Project Site

The Salem Hunt project site is currently zoned R-MF/4 Multifamily Residential. The project site was selected by the Town of North Salem to allow (change in zoning) future development of medium density multifamily and single family homes because the site met with most of the list of criteria created by the Continental Decision. The Continental Decision (approved in 2000), which included zoning amendments and the rezoning of four properties in the Town of North Salem, was a response to the Opinion and Order of the Supreme Court of the State of New York, affirmed by the Third Judicial Department of the Appellate Division of the State of New York in the case of Continental Building Company, Inc. versus the Town of North Salem. This set of adopted zoning actions dealt solely with the residential aspects of the Town's Zoning Ordinance³.

³ Source: Town of North Salem, Comprehensive Plan Update, 12.12.06

The objective of the Continental Decision was to provide the opportunity for feasible development of affordable housing and for the development of a range of housing types in Town of North Salem including areas in the vicinity of the established hamlet areas such as Croton Falls, Purdys and Peach Lake. The project site is in proximity to the Peach Lake Hamlet. The rezoning was subject to the SEQR review process for the amendments to the zoning code. As a result of the evaluation and rezoning, the Salem Hunt property was zoned R-MF/4 Multifamily Zoning District, which permits the development of medium density single family attached and detached dwellings and multifamily dwelling units.

Salem Hunt is proposed as a medium density single family attached development, which is permitted as of right in a R-MF/4 zoning district. The maximum density for such units, as per the Table of Uses and Density for the R-MF/4 in the Town Code, is four units per acre with a breakdown of 3.2 market-rate units per acre and 0.8 affordable units per acre, or 20 percent of the total. Community pools and clubhouses are permitted accessory uses within the R-MF/4 zoning district.

Development in a R-MF/4 zoning district, according to the Town of North Salem's Code, is subject to site development plan review in accordance with Article X of Chapter 250, Zoning, and the supplementary requirements set forth in Section 250-19.1 of the Code. The supplementary requirements pertaining to high and medium density residential development within a R-MF/4 zoning district, which includes regulations relevant to water, sewer, open space and set backs, are detailed and numerous. Please refer to Subsection 3.2, Potential Impacts, Conformance Analysis, Zoning and Site Regulations, below, for a detailed discussion of these regulations and project's conformance to these regulations.

Table 3-2 - Use Group 'r' Bulk and Area Requirements for Uses in the R-MF/4 zoning district	
Features	Minimum Required
Lot Area	5 acres
Lot Width	400 feet
Front Yard	50 feet
Side Yard	50 feet/100 feet
Rear Yard	50 feet
Features	Maximum Permitted
Lot Area	50 acres
Building Height	35 feet
Development Coverage	40%
Building Coverage	20 %
Floor Area Ratio	0.30
Street Frontage	50 feet
Supplemental Requirements	
Distance b/w Multifamily Structure: 1.5 X Building Height	1.5 X 26.08 feet = 39.12 feet (Minimum)*
Distance from Building Front to Street	20 feet (Minimum)
Distance from Side of Attached Single Family Structure to Adjacent Structures	20 feet (Minimum)
Distance from Rear of Attached Single Family Structure to Adjacent Structures	30 feet (Minimum)
Distance from Multifamily Structure to Parking	25 feet (Minimum)
Distance from Aboveground Water and Sewer Structures to External Boundaries	100 feet (Minimum)
Distance from Parking Areas to Buildings	25 feet (Minimum)
Distance from Parking Areas to Property Lines	25 feet (Minimum)
Distance from Refuse Collection Areas to Buildings	25 feet (Minimum)
Distance from Refuse Collection Areas to Property Lines	25 feet (Minimum)
Distance from Recreation Areas to Buildings	25 feet (Minimum)
Distance from Recreation Areas to Property Lines	25 feet (Minimum)
Distance from Swimming Pool to Buildings	30 feet (Minimum)
Distance from Swimming Pool to Property Lines	50 feet (Minimum)
Affordable Units Requirements	20 percent/13 units
Parking Requirements	
Single Family Units	2 spaces per dwelling unit; 7 proposed units = 14 spaces
Multifamily Units	1 space per dwelling unit, 1/3 space per unit; 58 proposed units = 97 spaces
Source: Town of North Salem Zoning Code - Chapter 250; Supplemental Requirements - Chapter 250, Section 250-19.1 *Worst case scenario presented by proposed action	

The text related to the proposed action's conformance with the applicable supplemental requirements has been expanded to provide discussion relative to each requirement.

Study Area

Due to the location of the project site, the one mile study area included the Towns of North Salem and Southeast. As noted above, the project site is zoned R-MF/4 Multifamily Zoning District. The areas immediately north, south, east, and west of the project site are also zoned for residential use. The residential zoning districts (R-1, R-2 and R-4) adjacent to the site within the Town of North Salem permit the following uses as of right: single family detached dwellings, Town and Government uses; public schools and other institutional uses.

Residential R-1 Zoning Districts, within North Salem, are located immediately southeast of the project site along June Road and within the Peach Lake Hamlet, which is east of the project surrounding Peach Lake. Refer to Figure 3-3. R-1 and R-MF/4 (project site) zoning designations permit medium to high density residential development. Whereas R-2 and R-4 residential zoning districts, which are low-density and rural districts, permit farming (vineyards, garden crops, orchards, breeding and raising of animal) and help maintain the Town of North Salem's desire to remain rural and retain as much open space as possible⁴. Adjacent to the north boundary of the project site is a R-60 residential district within the Town of Southeast. R - 60 Zoning District permits low to medium density residential development.

A Neighborhood Business District (NB) is located in the southeastern portion of the study area in the Town of North Salem. As mentioned above, the Country Farmer, Salem Saddlery, 121 Restaurant are located within this zoning district. Residential Zoning Districts of various density restrictions (R-40, R-60 and R-160) occupy the majority of the study area located in the Town of Southeast. Office Park (OP- 1) District is located in the northwestern portion of the study area in the Town of Southeast. Refer to 3.1.2 Environmental Setting, Existing Conditions - Land Use, for the existing uses located within this zoning district. See to Figure 3-3, Zoning Map, for the zoning districts located in the one mile study area of the project site.

Existing Conditions - Regulations

Local Laws and Regulations

The following local laws and regulations from the Town of North Salem Code relating to land use development for the proposed Salem Hunt condominium development were reviewed:

- Chapter 107, Freshwater Wetlands
- Chapter 250, Zoning
- Chapter A267, Site Development Plans Rules and Regulations.

Compliance of the proposed action to Chapter 107, Freshwater Wetlands is briefly discussed below in subsection 3.1 Potential Impacts and in detail in Section 6.0 Wetlands, Watercourse and Buffers. Compliance of the proposed action to Chapter 250 and A267 are discussed below in subsection 3.1 Potential Impacts.

⁴ Source: Town of North Salem, Comprehensive Plan Update, 12.12.06

NYCDEP Watershed Regulations

According to the Town of North Salem Comprehensive Plan Update, ninety - eight percent of the Town's land area is located in the New York City Watershed. This classification includes "all land that drains into any drainage way, watercourse or waterbody that drains into a tributary that leads into"⁵ specifically identified reservoirs. The project site is located within the New York City Watershed. Therefore, the proposed land development activities for the Salem Hunt development are subjected to the Rules and Regulations for the Protection from Contamination, Degradation and Pollution of the New York City Water Supply and its Sources (Watershed Regulations). Refer below for a brief discussion of the proposed actions compliance to the required Watershed Regulations in subsection 6.2 Potential Impacts and in detail in Section 6.0 Wetlands, Watercourse and Buffers.

Comprehensive Plan Update

The Comprehensive Plan Update was created as a guide for the growth and development with the Town of North Salem for the years ahead. The Plan was adopted by the Town on December 12, 2006. The Comprehensive Plan Update was intended to be an update to the Town of North Salem Master Plan (hereinafter referred to as the 1985 Plan), adopted in 1985.

As of February 12, 2008, the Comprehensive Plan Update was recalled (Resolution #59). The proposed Salem Hunt development has been before the Town of North Salem Planning Board, since early 2006⁶. The Final Scoping Document was approved by the Planning Board on June 7, 2006, which included a conformance analysis with Town of North Salem Master Plan and the draft Comprehensive Plan Update. The Comprehensive Plan Update, as noted above, was adopted by the Town on December 12, 2006. Therefore, the draft DEIS submitted to the Town on February 7, 2007 include a conformance analysis of the proposed action to the previously adopted Comprehensive Plan Update.

Since the Plan has been recalled by the Town, a conformance analysis to the 1985 Plan may be appropriate. The Final Environmental Impact Statement (FEIS) will discuss and clarify any inconsistencies of the proposed action to the applicable 1985 Master Plan.

This DEIS considers current physical and environmental conditions on the property and in the Town of North Salem and the adjoining Town of Southeast, including; soils and topography, surface water resources, terrestrial and aquatic ecology and wetlands, land use and zoning, transportation and traffic, historic and archaeological resources, community facilities and resources, fiscal impacts, noise and air resources, and visual resources.

If any new land use studies are completed by the Town or a revised Comprehensive Plan is adopted by the Town, the conformance analysis will be updated in the FEIS.

Designated Scenic Resources

Westchester County's Executive Open Space Policy addresses the protection and preservation of properties having scenic significance. Scenic resource preservation is included in two of the six policy statements, Open Space Character and Environmental Resources. The protection of

⁵ Source: Town of North Salem, Comprehensive Plan Update, 12.12.06

⁶ The Planning Board determined that the project may have a significant impact upon the environment and therefore, issued a Positive Declaration on April 5, 2006

scenic views is a element of open space that is identified as a high priority for the County in regard to open space preservation.

Patterns for Westchester, 1996, is the County-developed document that sets forth the long-term goals and policies for Westchester County. This document recognizes the value of scenic corridors and need for protection of natural aesthetic resources, however no specific scenic resources are identified. Patterns does identify some major roads that serve a scenic function. Interstate 684 is the only road identified as a Principal Corridor (for transportation, development and scenic significance) in the Town of North Salem.

The Town of North Salem Comprehensive Master Plan, dated January 23, 2006, states the following as a goal:

“The historical features and sites of North Salem, as well as the open space areas and the visual and cultural resources, should be preserved and protected. These features and resources contribute significantly to the pleasant rural setting which servers to enhance the appearance of the Town and the quality of life for residents and visitors.”

The Plan identifies the Town’s objective of protecting scenic topographic features such as ridgelines, hilltops, open fields and meadow, and other features or areas in key viewsheds. The Salem Hunt project parcel does not fall under any of these protected areas. Furthermore, the Plan specifically identifies some areas of particular visual importance. These areas are the Titicus Reservoir, Titus Road area, Turkey Hill area, Titicus River, Crook Brook Wetlands, Mills and Cat Ridge Roads, Grant Road, Nash Road, Baxter Road, Dingle Ridge Road and Hawthorne Lake. The project area is not included in, nor within the viewshed of, any of these identified areas.

3.2 Potential Impacts

Compatibility of Proposed Land Use on the Surrounding Neighborhood

The Salem Hunt development consists of 65 condominium units in twenty-four (24) separate residential buildings as well as a community center with an outdoor pool. Each of the buildings will contain either two or three units in each building. All units are proposed as two-bedroom units. Twenty percent of proposed units (13 units of the proposed 65 units) will be designated Moderate Income Housing units pursuant to requirements of the North Salem Zoning Ordinance and will be subject to income eligibility and sales price restrictions, per the Town Zoning Ordinance. A total of 157 parking spaces will be provided (117 spaces proposed in garages and 40 spaces proposed for visitors and recreation area). No parking is proposed below grade. A private community water supply and community subsurface sanitary treatment system (SSTS) are proposed for the project. Stormwater management facilities will be provided for the treatment of stormwater from paved areas and portions of the site covered with buildings.

The proposed residential buildings, which are intended to include sensitive building architectural designs, varied roof lines, earth tone colors and textures, would be located in the central portion of the site. Access will be provided from a single entrance on June Road. Approximately one half of the project site would be left as open space with either preserved wetland and wetland buffer areas, stormwater basins or proposed SSTS area that would be planted. See below for

discussion of proposed landscaping. Development of the proposed action would include the removal of portions the stone walls located in the northern area of the project site for development of the roads, parking areas and condominium units. A total of approximately 1,920 lineal feet of existing stone walls would be preserved.

A landscape and lighting plan, attached to this document (Layout and Landscape Plan, Sheet No SP - 2.1 and 2.2), shows concepts for the access roads, parking areas, trees and buffer plantings and typical foundation plantings for residential development. Due to the location of the proposed development (the central portion of the site), the proposed action is not expected to cause significant adverse effects on the natural buffers bordering the project site. The existing natural buffering, beyond the area of disturbance, is expected to remain post development.

Natural buffering consisting of mature forest with moderately dense vegetation will be retained along June Road and the eastern edge of the site. The project entrance at the intersection of June and Starlea Roads would result in a single break in the natural vegetation along the site's frontage along June Road. This natural buffer varies from approximately 150 feet wide to more than 700 feet wide along the property's June Road frontage. This wooded buffer would visually screen the project from drivers and pedestrians traveling along June Road. Natural vegetation would be retained along the southern edge of the site between the limits of disturbance and the property's boundary line and would vary in width from 50 feet to 160 feet. Due to the clearing that is required for the proposed stormwater treatment basins, only minimal natural vegetation would be retained along the northern developed portion of the property. The western half of the northern border would remain undisturbed since two wetlands exist in this area. The majority of existing vegetation would be retained along the western property border, since two wetlands and their respective buffers are located in the western portion of the site (see Figure 2.4 Proposed Site Plan). A stormwater basin located between the wetlands will require clearing close to the western property border, and therefore no natural buffering will be preserved in this area.

As depicted on the Layout and Landscape Plan, buffer planting would be provided along the proposed access road for the Salem Hunt development as well for the internal roadway system and proposed parking areas. Landscaping and screening (evergreens) would also be provided along the southern border of the property, which is adjacent to a single family residential use. The proposed screening is intended to create an effective visual buffer and would conform with the recommendations set forth in the Town of North Salem, Zoning Code.

Lighting on individual condominium units (interior lights and exterior area lights) will create new visibility of portions of the project from a limited number of nearby properties, including adjacent residential properties. Due to the dense vegetation and distance that will separate these areas from the new light source, this change is not expected to cause significant adverse effects on the local rural community. Road way lights will be pole-mounted down-lighting used to illuminate the travel ways. All lights will be directed to site surfaces as necessary to provide safe conditions for pedestrians and motorists. Pole-mounted lights will be located along interior roads and will conform to all applicable regulations. Refer to the Plan Set attached to this document for lighting details.

Local daytime ambient noise levels in the immediate vicinity of the site will increase during construction of the proposed development. Construction activities and the operation of construction equipment are an expected impact of any new construction project and cannot be

avoided. Therefore, some noise impacts would be expected from the construction of the proposed action.

The level of impact from construction noise sources depends upon the type and number of pieces of construction equipment being operated, the duration of the construction activities, as well as the distance from the construction sites. During construction of the proposed action, residences of nearby properties may potentially experience construction related impacts including increased vehicular and truck movements and associated elevated noise during occasional periods. These are temporary, unavoidable impacts resulting from project construction and will cease upon completion of the project. Refer below, to the subsection, Construction Activities, for further discussion regarding site construction and for the Construction Process and Subsequent Maintenance schedule.

In regards to the potential impacts on views and community character issues, please refer to subsection, 8.1, Visual Resources and Community Character in Section, 8.0, Cultural Resources.

Overall, the proposed action is compatible with surrounding land use pattern in the vicinity of the project site. As described above, the study area is consists of a mixture of land uses including open space, residential (single and multifamily), commercial and vacant land uses. The site is appropriately located in a residential district adjacent to residential uses to the north, east and south and in the vicinity of scattered concentrations of commercial and industrial development.

The construction of the proposed development would increase the variety of housing opportunities in Town of North Salem and study area. The Salem Hunt development would increase the density in which the site is located, however, the building height proposed is consistent with the low scale of development in the surrounding area and requirements of the R- MF/4 District. No significant adverse land use impacts are expected from the proposed action.

Conformance with Policies

The proposed action generally conforms with relevant local, regional and State policies. Below is a discussion of the conformance of the proposed action with pertinent policies. Because the proposed action would provide a new residential development consistent with underlying zoning that would enhance the variety and quality of housing opportunities, including affordable housing units, within the Town of North Salem and for the specific reasons described below, no significant adverse impacts to public policy are anticipated.

Town of North Salem Comprehensive Plan Update

As noted above, the Comprehensive Plan Update was recalled by the Town as of February 12, 2008, (Resolution #59). Since the Plan has been recalled by the Town, a conformance analysis to the 1985 Plan may be appropriate. The Final Environmental Impact Statement (FEIS) will discuss and clarify any inconsistencies of the proposed action to the applicable 1985 Master Plan. If any new land use studies are completed by the Town or a revised Comprehensive Plan is adopted by the Town, the conformance analysis will be updated in the FEIS.

Town of North Salem Freshwater Wetlands

The on-site wetland boundaries were delineated by Richard B. Jacobson on December 14, 2004, and confirmed by Tim Miller Associates, Inc. (TMA) in November 2005. The field delineation, and confirmation, were conducted in accordance with Town of North Salem criteria set forth in Section 107.3 of the Code of the Town of North Salem, New York, updated 10-25-06, as well as with NYSDEC protocol, and the three-parameter methodology set forth in the Corps Wetland Delineation Manual.⁷ The field delineations confirmed the presence of four wetlands (Wetlands A, B, C, and D) meeting the aforementioned criteria on the project site. Subsequent to the delineation and TMA confirmation, NYSDEC confirmed the accuracy of the delineated boundary of NYSDEC Wetland L-32 and the Town of North Salem verified the town regulated wetland boundaries.

The proposed action involves the temporary disturbance of some 20.0 acres of the approximately forty acre Salem Hunt site, and the discharge of stormwater into federal, State and municipally regulated wetland buffers on the project site following construction. The proposed action does not include any physical encroachment into any wetland, watercourse, or water body on, or off, the Property, and as such is not expected to directly impact any of these resources. The proposed action has been designed to limit disturbance of NYSDEC regulated wetland adjacent areas, and Town regulated buffers, to the fullest extent practicable. Through careful site planning, and a reduction in the scope of the project as initially designed, disturbance of Wetland D's adjacent area (State regulated Wetland-32) would be limited to 0.26 acres for the construction of the project's entrance, while disturbance of the Wetland A (which NYSDEC has determined to be hydrologically connected to Wetland D) adjacent area would be limited to 0.06 acres for the development of the residential units.

The project would disturb a total of 0.54 acres of Town regulated buffer associated with Wetlands A, B and C for the construction of stormwater facilities, the access road, and the residences. The proposed disturbance of the wetland adjacent areas and buffers are discussed in detail in Section 6.0, Wetlands/Watercourses and Buffers, of this document.

Based upon the determination that the wetlands currently provide limited functions, the absence of any proposed encroachments into the wetland, or any potential significant impact on the identified wetland functions anticipated from the proposed action, no mitigation beyond that incorporated into the project design is proposed. Potential impacts associated with wetland buffer encroachment will be mitigated by the replanting of trees, shrubs and herbaceous vegetation, where feasible, such as in the proposed stormwater basins. Wetland mitigation is further described in subsection 6.3, Mitigation Measures of Section 6.0, Wetland/Watercourses and Buffers.

Patterns for Westchester

Patterns for Westchester "is dedicated to sustainable development which balances economic and environmental concerns and serves the needs of the changing population⁸". The project site is located in the portion of the Town of North Salem that is classified as a Low Density Rural Area (LDR 0-2), which is described as having the fewest made structures. LDR areas include hamlets, however, the primary use is single family residential and the majority of Westchester's undeveloped land and its remaining farms are located here. The recommended

⁷ United States Army Corps of Engineers, 1987. Wetlands Delineation Manual, Technical Report Y-87-1.

⁸ Patterns for Westchester, Westchester County Planning Board, NY, 1996

gross residential density (dwelling units per acre) for LDR 0-2, according to Patterns, is 0.2-1.5 dwelling units per acre.

The density of the proposed action would be about 1.625 dwelling units per acre, which exceeds the upper limit of the recommended density for LDR 0-2 designation. Salem Hunt is proposed at a higher density than the recommend density due the recent rezoning of the project site. The project site was rezoned to MF/4 Multifamily Zoning District in 2000 as a result of the Continental Decision. Refer above and to the Section 2.0, Project Description for additional discussion on the Continental Decision. Patterns recommends that development occur near existing centers. No centers were identified by Patterns in the vicinity of the project site. However, according the Town of North Salem's Comprehensive Plan Update, the Town identifies smaller centers including Peach Lake, Salem Center, and North Salem. Patterns recognizes that a variety of housing is important to a local economy.

The proposed action, when completed, would add to the variety of housing available within the Town of North Salem and in the vicinity of the smaller centers (specifically the Peach Lake Hamlet) identified above. Additionally, 20 percent of the proposed dwelling units would be Moderate Income Housing units pursuant to requirements of the North Salem Zoning Ordinance. Therefore, the Salem Hunt condominium development would comply to the goals and recommendations set forth by Patterns by constructing new development that adds to the variety of housing to the smaller centers and within the Town of North Salem.

Westchester County Affordable Housing Allocation Plan, 2000-2015

Under the heading "Municipal Responsibilities" the 2004 Affordable Housing Action Plan prepared by the Westchester County Housing Opportunity Commission with the assistance of the Westchester County Department of Planning noted that Patterns for Westchester recognizes that all of the County's municipalities, including the Town of North Salem, need "guidance including recommended allocations, to assist the municipalities in meeting a share of the need for affordable housing" Building on its more than a decade of experience, the Commission undertook a study of an allocation plan for the period 2000-2015 based on the five sub-regions delineated in Patterns for Westchester. Refer to Appendix C for the Affordable Housing Allocation Plan 2000-2015.

One hundred and fifty two (152) affordable housing units have been allocated to the Town of North Salem, which is located within the North County Sub-region, as noted in the Affordable Housing Subregional Allocation Plan. According to the Allocation Plan, four affordable housing unit have been completed or are under construction as of July 2005. The Town of North Salem has an obligation of 148 affordable housing units remaining.

The proposed action is expected to conform with the Westchester Affordable Housing Allocation Plan for 20 percent of the units for Salem Hunt will be affordable housing units. The affordable housing units (13 units of the 65 proposed units) will be designated Moderate Income Housing units pursuant to Moderate Income Housing, Chapter XXII of the North Salem Zoning Ordinance and will be subject to income eligibility and sales price restrictions, per the Town Zoning Ordinance. Therefore, the proposed action is contributing 13 affordable housing units toward the affordable housing goal for the Town of North Salem.

Putnam County Master Plan

According to Putnam County Division of Planning, Putnam County have not developed a Master Plan. This was confirmed with Director John Lynch of Putnam County Division of Planning⁹.

NYCDEP Watershed Regulations (including Phosphorus restrictions)

As noted above, the project site is located within the New York City Watershed and therefore, the proposed land development activities are subjected to the NYCDEP Watershed Regulations. On-site watercourse determination, conducted by TMA and NYCDEP, did not reveal the presence of any regulated watercourses other than the perennial stream associated with State Wetland L-32. This perennial stream, a tributary to Holly Brook and a sub-tributary to the East Branch Croton River, has been assigned a Class C designation by NYSDEC. This watercourse is regulated by the Corps, NYSDEC, the Town of North Salem, and NYCDEP.

The applicant notes that only State mapped Wetland L-32 (a State designated Class II wetland) is subject to New York City's Regulations for the Protection from Contamination, Degradation and Pollution of the New York City Water Supply and its Sources (WR&Rs). The WR&Rs establish a 100 foot "limiting distance" around Wetland L-32, and the watercourse, within which the construction of impervious surfaces and subsurface sewage disposal systems are prohibited. The proposed project complies with the limiting distance.

The proposed action is also subject to the phosphorus restrictions, which in this case are specific to the NYCDEP Watershed Regulations. The restrictions themselves are imposed by the New York State Department of Conservation (NYSDEC) in the adopted Total Maximum Daily Load (TMDL) limitations. Please refer to Section 6.0 Wetlands, Watercourse and Buffers regarding the conformance of the proposed action to the NYCDEP watershed regulations including Phosphorus restriction.

Croton Plan

"Since the Town is located in the New York City Watershed, it participates in the Comprehensive Croton Watershed Water Quality Protection Plan for Westchester County, NY (the Croton Plan) along with the other municipalities in the Croton Watershed...The Croton Plan identifies sources of pollution, and recommends measures to improve water quality and prevent degradation of the watershed, and to protect the character and the individual needs of the communities in the Croton Watershed¹⁰".

The Croton Plan identifies seven strategies to improve water quality protection in the Croton Watershed in Westchester County:

- Restrict development in sensitive areas
- Effectively manage stormwater collection and treatment;
- Restore critical natural areas;
- Limit pollutant discharge;
- Educate residents, business owners and decision makers;
- Require environmentally sound site design; and
- Improve government coordination.

⁹ Source: Phone call confirmation - TMA staff and Director John Lynch - 1.22.07

¹⁰ Source: Town of North Salem, Comprehensive Plan Update, 12.12.06

Please refer to Section 6.0 Wetlands, Watercourse and Buffers regarding the conformance of the proposed action to the Croton Plan.

Land Acquisition Plan

“The Land Acquisition Program (LAP) is a key component of New York City’s comprehensive efforts to protect and enhance the quality of its water supply, ensuring clean and safe water for future generations as well as current consumers. Land acquisition and proper stewardship can protect natural resources that filter pollutants before they reach reservoirs. Acquisition of sensitive areas near watercourses, whether through outright purchase or through conservation easements, can prevent the introduction of new sources of pollution...The City has committed \$250 million to acquire vacant land or conservation easements in the watershed that contain streams, wetlands, floodplains and other areas that are critical to maintaining high water quality. The entire watershed has been divided into a number of Priority Areas, based on proximity to reservoirs, reservoir intakes, and the City’s distribution system. The Priority Areas in the combined Catskill/Delaware system – which includes land both east and west of the Hudson River – are 1A (highest priority), 1B, 2, 3 and 4. In the Croton watershed, there are three Priority Areas: A (the highest), B and C¹¹”.

The 40 acre Salem Hunt project site lies entirely within, and occupies 0.076% of, New York City’s 76 square mile Muscoot Reservoir Watershed, which is part of the City’s Croton Drinking Water Supply Watershed. However, the project site is not located within the Priority Areas identified in the Land Acquisition Plan.

Community Facilities and Services

Section 11.0, Community Facilities and Services, addresses existing conditions, potential impacts and proposed mitigation measures for the community facilities and services in the Town of North Salem from the proposed action, including to: schools, police, fire, emergency services, solid waste disposal, open space resources and recreational facilities. Each of these Facilities and Services were contacted by TMA Staff for the purpose of this DEIS. Please refer to Section 11.0 of this DEIS for additional discussion on Community Facilities and Services.

Conformance Analysis

Zoning and Site Regulations

As noted above, the project site is located in a R-MF/4 zoning district, which permits medium density single family attached dwellings as of right. The maximum density for such units, as per the Town Code, is four units per acre with a breakdown of 3.2 market-rate units per acre and 0.8 affordable units per acre, or 20 percent of the total. Community pools and clubhouses are permitted accessory uses within the R-MF/4 zoning district. Refer to Table 3-4, below, for bulk and area requirements in a R-MF/4 Zoning District and provided by the proposed action.

Section 250-19.1 of the Town of North Salem Code sets forth supplementary regulations for high and medium density residential development, including R-MF/4. The regulations pertinent to the proposed action are listed below in italics¹². Relative to compliance with the supplemental requirements set forth in §250-19.1, we offer the following:

¹¹ Source: Official New York City Site, Land Acquisition, Watershed Land Acquisition Program, www.nyc.gov, 1.25.07

¹² Source of supplemental regulations list: Town of North Salem Zoning Code.

- A. *The permitted uses, the maximum permitted density and the required proportion of moderate-income housing dwelling units shall be in accordance with the Table of General Use Requirements and the Table of Uses and Density for the R-MF/6 and R-MF/4 Zoning Districts contained herein. The total site area (in acres) shall be used to calculate the maximum number of dwelling units permitted in the R-MF/6, R-MF/4, R-1/4 and GB Zoning Districts. The lot area and dimensions of sites and lots on which the development of single or multifamily use will occur shall be in accordance with the Table of Bulk Requirements contained herein for the a corresponding use group indicated in the Table of General Use Requirements. These a bulk requirements shall pertain to the overall development within the entire site and the lot dimensions such as width, front, side and rear yards and street frontage shall define the external boundaries of the development.*

The total site area (in acres) is used to determine the maximum number of dwelling units permitted. At an allowable density of four units per acre, the approximately 40 (actual - 39.995 acre) site could permit up to 159 units. Sixty-five units are proposed for the Salem Hunt development, where each unit would have individual access from an exterior door. Refer to Table 3-4, below, for the bulk and area requirements for uses within a R-MF/4 Zoning District and for the areas and distances provided by the proposed action. Also, refer to Drawing SP-1, attached to this document, for the Overall Preliminary Site Development Plan, which includes bulk and area requirements tables and areas provided for the proposed action.

As noted on these tables, the applicant is seeking variances for the proposed development. Seventeen variances pertain to the minimum separation distance required between the multifamily dwellings (See Table 3-3). The development, as a worst case scenario, proposes 25.70 feet between two multifamily structures, where 39.12 feet would be required, a difference of 13.42 feet. Refer to Figure 3-4, Multifamily Variance Figure.

Variances will be necessary for the minimum distances required between the proposed swimming pool and recreation building and the proposed recreation building and associated parking. Refer to the Conformance Analysis - Zoning and Site Regulations and Table 3-4, below, for further discussion pertaining to the proposed swimming pool and recreation building.

- B. *The minimum required yards or separation distances between structures that are detached single-family dwellings, including single-family units with one-bedroom apartments and structures with no more than two attached single-family dwellings, except for any type of single-family dwelling in the R-1/4 district, shall be as follows:*

- 1. Structures on individual lots shall have yard setbacks of 10 feet from the corresponding lot line for the front, side and rear yards.*
- 2. Structures that are developed on commonly or cooperatively held land (not on individual lots) shall be separated by minimum distances of 20 feet on the side and 30 feet in the rear of adjacent structures. The front of each such structure shall be separated from the edge of the traveled way of the street by a minimum distance of 15 feet.*

As noted above, the proposed action includes seven single family attached units. The proposed development, as designed, complies with the minimum required yard and separation distances between structures requirements set forth within

the supplemental regulations. Refer to Drawing SP-1, Overall Preliminary Site Development Plan, attached to this DEIS.

- C. *The minimum distance between multifamily structures (three or more dwelling units in a structure) shall be 1 1/2 times the taller building. The front of each multifamily structure shall be separated from the edge of the traveled way of the street by a minimum distance of 20 feet.*

The multifamily buildings of the proposed development do not meet the required minimum separation distance set for in the Town's supplemental requirements. Average building height, which is defined as the distance from average elevation along the building wall to midpoint to eave to ridge, was used to calculate the minimum required distance. A explanation and graphic of the determination of minimum separation distance for multifamily buildings is provided in Figure 3-4 Multifamily Variance Figure. The applicant is seeking variances for the 17 multifamily buildings proposed. Refer to Table 3-3, below and Appendix Q for the minimum separation distances required between each multifamily building proposed and the distances provided by the proposed action. The front of each multifamily structure would be separated from the edge of the traveled way of the street by a minimum distance of 20 feet.

Table 3-3 Variances Required for the Minimum Distance Required between Multifamily Buildings			
Multifamily Building Number (Next to Building Number)	Distance to Nearest Multifamily Building		Variance Required
	Required*	Provided	
2(3)	35.37	30.80	4.57
3(4)	35.75	25.00	10.75
4(3)	36.87	25.00	11.87
5(4)	35.37	25.00	10.37
6(5)	35.37	25.00	10.37
7(8)	35.75	25.00	10.75
8(7)	35.75	25.00	10.75
9(8)	36.50	25.00	11.50
10(11)	37.25	26.00	11.25
11(12)	38.75	27.70	11.05
12(13)	39.12	25.70	13.42
13(12)	38.62	25.70	11.92
18(19)	36.12	29.80	6.32
19(18)	35.00	29.80	5.20
20(19)	41.00	33.10	7.90
21(22)	35.00	30.00	5.00
22(21)	35.00	30.00	5.00

* Required distance to nearest multifamily building = average building height X 1.5

D. All dwelling units created to address specific housing needs of the community, such as moderate-income housing, senior citizen or disabled person housing, as a required proportion of total units for the use category, shall be administered by the Town of North Salem Housing Board in accordance with all pertinent regulations. A minimum of 20% of the total number of proposed dwelling units shall be provided as affordable units. For the purpose of this section, an "unit" shall be defined as a moderate-income housing (MIH) unit in accordance with moderate-income housing regulations of the Town of North Salem found in the Zoning Ordinance, Article XXII.

The project will have 13 units (20 percent) of affordable housing, which will be administered by the Town of North Salem Housing Board. The affordable housing units will be designated Moderate Income Housing (MIH) units pursuant to Moderate Income Housing, Article XXII of the North Salem Zoning Ordinance and will be subject to income eligibility and sales price restrictions, per the Town Zoning Ordinance.

Income eligibility for the proposed 13 MIH units of Salem Hunt was calculated using the guidelines listed in Article XXII, Moderate Income Housing, of the Town

Code. The maximum allowable moderate family income for the proposed MIH units would be \$91,136¹³. According to the Town Code, the maximum sales price for the MIH units shall not exceed 2 1/2 times the maximum family income allowed for eligibility for a moderate-income family, which would be \$227,840. The proposed selling price for the 13 affordable units of the Salem Hunt development is \$225,000. Refer to Section 11, Community Services.

E. For single-family dwelling units with attached one-bedroom dwellings, the following requirements must be met:

- 1. The owner of the property shall occupy at least one of the dwelling units, and the one-bedroom dwelling shall be attached to the single-family dwelling.*
- 2. A one-bedroom apartment shall contain a minimum floor area of 400 square feet. The maximum floor area shall not exceed 750 square feet.*
- 3. The entry to a one-bedroom apartment and its design shall be such that, to the degree feasible, the structure containing the single-family dwelling and the apartment will have the appearance of a single-family residence*

Requirements for single family dwelling units with attached one-bedroom units are not applicable to the proposed action.

F. Water and sewage

- 1. Development of dwelling units at the densities permitted in the R-MF/6 and R-MF/4 Zoning Districts are contingent upon the provision of common or central facilities for the transmission, storage and/or treatment of water and sewage. Such facilities shall be designed, approved and constructed in accordance with the requirements of the Town Engineer, the Westchester County Department of Health and the New York City Department of Environmental Protection and any other agency or office having jurisdiction over development and operation of water supply and sewage treatment facilities.*
- 2. The setback for the aboveground structures associated with water and sewer facilities shall be a minimum of 100 feet from all external boundaries of the development site. The Planning Board may increase or decrease such setback requirements on individual properties by up to 50% based upon consideration of topographic conditions, the nature of adjoining land, existing vegetation and other screening. Suitable buffer screening shall be provided.*

A private community water supply and private subsurface sanitary treatment system (SSTS) are proposed for the project. All proposed water and sewer facilities will be designed, approved and constructed in accordance with applicable requirements of the Town of North Salem Engineer, the Westchester County Department of Health and the New York City Department of Environmental Protection and any other agency or office having jurisdiction over development and operation of water supply and sewage treatment facilities.

¹³Maximum income eligibility was calculated using the mean (average) annual salary paid to Town of North Salem full-time employees as set forth in the Town's 2007 adopted budget, which was \$60,757.28 multiplied by the appropriate income factor of 1.5 for two bedroom MIH units. As noted, two bedroom units are proposed for the Salem Hunt development.

Specifically, there are two aboveground structures associated with the proposed project's water and sewer facilities. The distance of these structures from the external boundaries of the project site, exceed the minimum required 100 feet set forth in the Town's Code. The proposed water control building in the western portion of the project site is approximately 260 feet from the closest external (western) boundary of the project site. The proposed sewer pump station control building proposed in the northeastern portion of the project site is approximately 170 feet from the closest external (northern) boundary of the project site.

- G. *Certain related ancillary facilities may be permitted with development in the R-MF/6 and R-MF/4 Zoning Districts, either in a separate building or in combination with dwelling units, such as a community room, an administrative office, only to the extent that they meet the needs of the occupants of the multiple dwellings. Such facilities shall be subordinate to the residential character of the site and shall be located out of public view with no outside advertising.*

The proposed clubhouse (recreation building) is a single building, modest in scale and by design would be subordinate to the residential character of the larger residential structures proposed. This building, along with the residential buildings proposed, would be subject to review by the Town's Architectural Review Board.

- H. *Recreational facilities or open space.*

1. *Within the common open space areas, suitably equipped and adequately maintained recreational facilities, such as swimming pools, tennis and basketball courts, playground equipment, etc., may be provided for use by residents of the premises and their guests.*

2. *In the alternative, the applicant may offer, and the Planning Board may approve, the provision of a suitable park or parks on a parcel of land located on the development site or on an alternative site for use by the Town's residents.*

3. *In the event that the Planning Board determines that suitable recreational facilities cannot be located within the common open space areas or that a suitable park or parks of adequate size cannot be located on the development site or are otherwise not suitable, the Board may require that the applicant make a payment to the Town of North Salem in lieu of all or part of the park requirements, all in accordance with § 200-32 of Chapter 200 of the Town Code and irrespective of whether the applicant is proposing a development involving a subdivision or a site development plan approval.*

All recreational facilities, including the proposed clubhouse and pool, are intended for the residents of the development and their guests. Nearly twenty acres will remain undeveloped open space after completion of the proposed condominiums.

- I. *There shall be provided a safe and convenient system of streets, driveways, service access roads and walks, with due consideration given in planning such facilities to the needs of the physically handicapped and aged; such facilities shall be adequately lighted, and said lighting shall not be directed on adjacent streets or properties.*

The Site Plan provides for a safe and convenient system of streets, driveways and service access roads, with due consideration to the needs of the physically

handicapped and aged. An appropriate lighting plan has been provided that avoids light being directed onto adjoining streets and properties. For additional details pertaining to site lighting, refer to the plan set attached to this document (See drawings: LP-1 - Lighting Plan and SP-2.1 and SP-2.2).

- J. Facilities for refuse disposal shall be provided for all dwelling units. Central collection areas shall be maintained and conveniently located for all groups of units. The collection areas shall be properly screened and supplied with all covered receptacles required for tenant use.*

Central refuse collection areas have been provided for all units. These collection areas would be properly screened and covered.

- K. All parking areas, recreation areas and refuse collection areas shall be no closer than 25 feet to any building or lot line, and any swimming pool shall be no closer than 30 feet to any building and 50 feet to any lot line. Such areas between said facilities and lot lines shall be landscaped with suitable screening. Parking areas shall be developed in accordance with Article VIII of this chapter, except that the setback for such parking shall adhere to the twenty-five-foot requirement stated above.*

All proposed buildings will be located a minimum of 25 feet from the parking areas, with the exception of the parking areas associated with the recreation building, which for purposes of accessibility, has been located at a distance closer than 25 feet from the recreation building. The applicant will seek a variance for the proposed parking area distance from the recreation building.

All proposed buildings would be located a minimum of 25 feet from the refuse collection areas.

The proposed swimming pool has been located closer than 30 feet to the recreation building for it is an integral part of this building. Although the applicant believes the intent of the 30 foot minimum separation distance is for residential uses, the applicant will seek a variance for the distance between the proposed recreation building and swimming pool.

Refer to Drawing SP-1, Overall Preliminary Site Development Plan, attached to this DEIS, for the table listing the required and provide distances associated with proposed development.

Regarding the parking proposed for this project, refer to Table 3-4, above and the notes on Drawing SP-1, attached to this DEIS.

- L. All land and facilities held in common ownership shall be governed by an approved homeowners' association or other acceptable form of organization, such as a condominium, cooperative or maintenance agreement acceptable to the Town or Attorney*

A condominium association will be established for the long term maintenance of the property and common facilities in the development. The condominium association would be responsible for the operation and maintenance of internal roadways, stormwater management facilities, water supply system, sewer disposal system, and the property's landscaping. The HOA agreement will require review and approval by the NYS Attorney General's office and approval by the Town Attorney as required by the Supplemental zoning requirements (Chapter 250-19.1).

M. All signs shall be in conformance with Article IX of this chapter regarding sign regulations.

No signs are proposed as part of the Salem Hunt development.

N. Development shall conform to the landscaping and environmental requirements and performance standards in Article XI of this chapter.

The Site Plan drawings include a detailed landscaping plan. The Site Plan, as designed, conforms to the environmental requirements and performance standards set forth in Article XI of the Town's Zoning Code. The Site Plan requires review and approval by the Planning Board.

O. Underground utilities. All utilities within any multifamily development, including electric, telephone and cable television service, shall be placed underground.

All utilities will be placed underground

P. Fire protection. All site plans for multifamily development shall provide proper access for fire-fighting equipment and personnel and shall provide facilities and water supply for fire-fighting purposes as may be determined adequate and approved by the Planning Board, based upon the recommendation of the Town's Consulting Engineer and the Fire Department having jurisdiction.

The proposed development would provide proper and adequate access for fire-fighting equipment and personnel. A plan has been provided to demonstrate adequate turning radii for emergency vehicles and other large trucks accessing the site (see Drawing TR-1). Sufficient water supply and facilities would be provided for fire fighting purposes.

Site Plans were provided to Croton Falls Fire Commission on February 13, 2007 for review and comment (see Appendix B - Correspondence) and on March 13, 2008, the applicant requested a meeting with the Fire Commission to review the Site Plan. To date, the applicant has not received comments from the Fire Commission. The applicant will continue to pursue input from the Fire Commission on the proposed fire protection plan for this project. Any comments received from the Fire Commission will be incorporated into the SEQRA process prior to the completion of Findings.

The Site Plans have been provided to the Town's engineering consultant for review as part of the SEQR and Site Plan review process.

Q. Individual unit access. In general, each individual dwelling unit within any multifamily development shall have its own separate entrance/exit leading directly to the outside.

Each dwelling unit will have a separate entrance/ exit leading directly outside.

R. Central antenna systems. If cable television service is not available to serve a proposed multifamily development, a central exterior radio/television antenna system or earth station may be provided in accordance with plans approved by the Planning Board. Exterior antennas for individual multifamily buildings or dwelling units shall not be otherwise permitted.

No exterior satellite dishes or television antennas are proposed. Underground cable television service will be provided.

Table 3-4
Bulk and Area Requirements for Uses in the R-MF/4 Zoning District
and Provided by the proposed action
Use Group 'r'

Features	Minimum Required	Provided by the proposed action
Lot Area	5 acres	40 acres
Lot Width	400 feet	949 +/- feet
Front Yard	50 feet	243 +/- feet
Side Yard	50 feet/100 feet	64 +/- feet/164.5 +/- feet
Rear Yard	50 feet	129 feet
Features	Maximum Permitted	
Lot Area	50 acres	40 acres
Building Height	35 feet	27.33 feet
Development Coverage	40%	15%
Building Coverage	20%	7.1%
Floor Area Ratio	0.30	0.14 +/-
Features		
Street Frontage	50 feet	888 +/- feet
Supplemental Requirements		
Distance b/w Multifamily Structure: 1.5 X Building Height	1.5 X 26.08 feet inches = 39.12 feet (Minimum)	26.08 +/- feet *
Distance from Side of Attached Single Family Structure to Adjacent Structures	20 feet (Minimum)	25 +/- feet
Distance from Rear of Attached Single Family Structure to Adjacent Structures	30 feet (Minimum)	47 +/- feet
Distance from Building Front to Street	20 feet (Minimum)	25 feet +/-
Distance from Multifamily Structure to Parking	25 feet (Minimum)	25 feet +/-
Distance from Aboveground Water and Sewer Facility Structures to External Boundaries	100 feet (Minimum)	170 feet +/-
Distance from Parking Areas to Buildings (Recreation Building)	25 feet (Minimum)	15 feet +/-**
Distance from Parking Areas to Property Lines	25 feet (Minimum)	120 feet +/-
Distance from Refuse Collection Areas to Buildings	25 feet (Minimum)	30 feet +/-
Distance from Refuse Collection Areas to Property Lines	25 feet (Minimum)	210 feet +/-
Distance from Recreation Areas to Buildings	25 feet (Minimum)	40 feet +/-
Distance from Recreation Areas to Property Lines	25 feet (Minimum)	150 feet +/-
Distance from Swimming Pool to Buildings	30 feet (Minimum)	10 feet +/-***
Distance from Swimming Pool to Property Lines	50 feet (Minimum)	215 feet +/-

Affordable Units Requirements	20%/13 units	20%/13 units
Parking Requirements General		
Single Family Units	2 spaces per unit; Seven units proposed = 14 spaces	157 spaces****
Multifamily Units	1 space per dwelling unit, 1/3 space per unit ; 58 units proposed = 97 spaces	
<p>*Variances required for all multifamily buildings proposed. **A variance is required for the minimum distance required between the recreation building and associated parking ***A variance is required for the minimum distance required between the pool and the recreation building. . ****117 spaces will be provided in garages and 40 additional spaces will be provided for visitors and the recreation area</p> <p>Sources: Town of North Salem, Chapter 250, Zoning Code Supplemental Requirements - Chapter 250, Section 250-19.1; Insite Engineering; Tim Miller Associates. Notes: Refer to Drawing SP-1 for the Overall Preliminary Site Development Plan and associated zoning conformance tables.</p>		

In reviewing the proposed action's compliance with the supplemental requirements for high- and medium-density residential development, there appears to be an inconsistency between the definition of a Dwelling-Single-Family Attached (Chapter 250-5. Definitions) and the Supplemental Requirements set forth in Chapter 250-19-1. In summary, by definition "single-family attached" dwellings consist of two dwelling units "attached or connected...at their common property line". While there are no common lot lines in the current Salem Hunt proposal, the shared wall between two units can be a common property line. An alternative proposal which includes fee simple lots would provide common property lines between single family attached dwellings (see Section 14.7 Fee Simple Alternative).

The supplemental requirements include setbacks which pertain to structures "on commonly or cooperatively held land" (Chapter 250-19.1). The discussion of setbacks specifically includes "detached single-family dwellings, including single family units with one-bedroom apartments and structures with no more than two attached single-family dwellings". Therefore, the supplemental requirements contemplate single-family attached dwellings on commonly or cooperatively held land, as proposed for the Salem Hunt project. This inconsistency with regard to definitions in the Town Zoning Code will be reviewed by the Town, and any clarifications or interpretations pertaining to the proposed action will be described in the FEIS.

Rationale for Proposed Requested Variances

The general and specific "tests" for variances are contained in the New York State Consolidated Laws, Town Law, Article 16, Zoning and Planning, Section 267. Zoning Board of Appeals, Subsection 267-b., 3, which is provided in the excerpt below:

"3. Area variances.

(a) The zoning board of appeals shall have the power, upon an appeal from a decision or determination of the administrative official charged with the enforcement of such ordinance or local law, to grant area variances as defined herein.

(b) In making its determination, the zoning board of appeals shall take into consideration the benefit to the applicant if the variance is granted, as weighed against the detriment to the health, safety and welfare of

the neighborhood or community by such grant. In making such determination the board shall also consider:

- (1) whether an undesirable change will be produced in the character of the neighborhood or a detriment to nearby properties will be created by the granting of the area variance;*
- (2) whether the benefit sought by the applicant can be achieved by some method, feasible for the applicant to pursue, other than an area variance;*
- (3) whether the requested area variance is substantial;*
- (4) whether the proposed variance will have an adverse effect or impact on the physical or environmental conditions in the neighborhood or district; and*
- (5) whether the alleged difficulty was self-created, which consideration shall be relevant to the decision of the board of appeals, but shall not necessarily preclude the granting of the area variance."*

The Salem Hunt project site is currently zoned R-MF/4 Multifamily Residential which permits development of medium density multifamily and single family homes in response to the Continental Decision. The Town of North Salem amended its zoning law in response to the Continental Decision to promote the development of affordable housing and a range of housing types in the Town, including areas in the vicinity of the established hamlet areas such as Peach Lake. It was initially anticipated that the aforementioned amendment applied to the Salem Hunt site would allow 159 units of new housing.

Given closer evaluation of the subject site, the proposed development will have 65 homes consisting of single family attached and multifamily dwelling units. Twenty percent of the proposed units (13 of 65 proposed) will be designated Moderate Income Housing, which would increase the variety and quantity of housing opportunities in North Salem.

The proposed action complies with Chapter A267 of the Town's Code, Site Development Plan Regulations and generally in complies with the Zoning Ordinance. However, a total of nineteen (19) variances will be required from the Zoning Board of Appeals (ZBA) for the proposed development per Section 250-19.1 of the Zoning Code.

The need for these variances pertain to the minimum distances required between: 1) multifamily buildings (See Table 3-3, above and Appendix Q); 2) the proposed swimming pool and its surrounding buildings (See Table 3-4 and Drawing SP-1 - attached to this document); and, 3) the proposed recreation building and associated parking areas (See Table 3-4 and Drawing SP-1 - attached to this document). The need for the variances is detailed in DEIS subsection 3.2, under the heading Conformance Analysis - Zoning and Site Regulations.

In consideration of the variances, the benefit to the applicant must be weighed against the detriment to the neighborhood or community (see 267-b. 3., [b], above) in accordance with the five points outline in the Town Law, Section 267-b. A discussion is provided below that addresses these point with appropriate references.

The following aspects of the project address 267-b. 3., (b), points (1) and (4), as these points in the Town Law are similar and related to character of the neighborhood and effects on the environment: *"(1) whether an undesirable change will be produced in the character of the neighborhood or a detriment to nearby properties will be created by the granting of the area variance; and (4) whether the proposed variance will have an adverse effect or impact on the physical or environmental conditions in the neighborhood or district";*

- The granting of the variances would not produce an undesirable change in the character of the neighborhood or a detriment to nearby properties. The project structures would be

no closer to any neighborhood property as a result of the variances sought. In fact, the granting of the variances allows a more compact development than a could be achieved were the variances not to be granted.

- Due to the location of the proposed development (in the central portion of the site), and its compact nature, the proposed action respects and retains the natural buffers bordering the project site. The required outer perimeter setbacks and buffering will minimize the effect of the proposed development on community character.
- The applicant has provided a 100 foot buffer between the southern property line and project residences. This area is twice the 50 foot setback required by the Zoning Code. As depicted on the Layout and Landscape Plan, landscaping and screening (evergreens) would be provided along the southern border of the property, which is adjacent to a single family residential use. The proposed screening is intended to create an effective visual buffer and would conform with the recommendations set forth in the Zoning Code. In addition, buffer planting would be provided along the proposed access road as well for the internal roadway system and proposed parking areas.
- The proposed development involves compact development design to reduce disturbance generally and specifically to natural resources (woods/trees, soil, controlled areas/wetlands and streams). The project layout specifically reduces impervious surface by limiting road surface area and excessive parking areas. Approximately one half of the project site would be undisturbed by development and existing vegetation would be preserved. Wetland impacts have been avoided.
- The project plan has been modified to include either two or three unit residential buildings, instead of larger five unit buildings. These smaller buildings are more compatible with the surrounding residential development and community character. A larger total area is necessary to provide separation distance between the 24 two or three unit buildings than would be required for fifteen larger buildings. The area needed to provide zoning compliant separation distances is limited by natural constraints including wetlands and regulated wetland buffers, as well as the SSTS area, and stormwater management facilities.
- The likely rationale for the minimum separation distance between buildings may include emergency access, as well as character of the proposed neighborhood which includes factors such as the privacy between units, allowing natural light between units, as well as the massing of buildings. The proposed development provides adequate distance between the buildings for emergency access, since a minimum of 25 feet will be provided between the multifamily buildings. This distance is five feet more than the 20 feet minimum required between single-family attached buildings. The 25 feet separation distance provided will allow for natural light and adequate separation to avoid excessive massing of buildings.

The following aspects of the project address 267-b. 3., (b), (2), as this point in the Town Law is related to whether the benefit sought by the applicant can be achieved by some method other than an area variance: "*(2) whether the benefit sought by the applicant can be achieved by some method, feasible for the applicant to pursue, other than an area variance*";

- The applicant could propose a site layout that did not require area variances. This plan could be achieved by providing more two unit buildings (single family attached) and

reconfiguring the layout, since the "1.5 times the building height" standard does not apply to single family attached structures. The separation distance requirement for which the variances are sought applies to multi-family buildings which are defined in the Code as having three or more units. This zoning compliant plan would result in at least two more buildings and would reduce the contiguous green space on the site.

- Providing the building separation distances required by the Code would involve a larger project footprint, resulting in more grading, clearing of vegetation and potentially greater disturbance to controlled areas (areas adjacent to site wetlands).
- There is a benefit to the applicant and to the Town in retaining the number of units proposed. In retaining the 65 units, the proposed action would contribute 13 affordable housing units toward the Town's affordable housing goal. In accordance with the 2004 Affordable Housing Action Plan prepared by the Westchester County Housing Opportunity Commission, one hundred and fifty two (152) affordable housing units have been allocated to the Town of North Salem. The construction of the proposed development would increase the variety of housing opportunities in Town, which is an additional benefit to the community.

The following aspects of the project address 267-b. 3., (b), (3), as this point in the Town Law is related to: "*(3) whether the requested area variance is substantial*";

- Table 3-3 above, illustrates that the proposed separation distances meet the requirements by significant proportions (66% to 87% of the requirement) and in all cases provided at least 25 feet of separation distance. As shown, the variances requested range from approximately 5 to 13 feet (4.57' to 13.42'), which are not substantial given the setbacks required.

Open Space and Recreational Issues

Town of North Salem Zoning Code (Chapter 250, Section 250-19.1), sets forth supplementary regulations for high and medium density residential development, including R-MF/4. "Within the common open space areas, suitably equipped and adequately maintained recreational facilities, such as swimming pools, tennis and basketball courts, playground equipment, etc., may be provided for use by residents of the premises and their guests¹⁴."

All recreational facilities for the Salem Hunt development, including the proposed clubhouse and pool, are intended for the residents of the development and their guests. The applicant is currently working with the North Salem Land Trust to permanently preserve portions of the site which are not proposed for development. Nearly twenty acres are proposed as open space. An agreement for the dedication of open space to a conservation organization will be reached during the Site Plan review process. In regards to open space and recreational uses, the proposed project complies with the with provisions of Section 250-19.1 of the Town Code.

The North Salem Bridal Trail Association (NSBTA) currently utilizes a riding trail through the Salem Hunt property. The applicant has met with the NSBTA to discuss the existing trail and the possibility of relocating a trail on the property.

Volunteer Park, a Town park, is located southeast of the project site. A portion of the Park is adjacent to the southern border of the project site. The park includes a small parking area,

¹⁴Source: Town of North Salem, Chapter 250, Zoning Code

baseball/softball field, basketball court and playground. Given the general topographic setting of the site and its location within a rural residential landscape, only portions of the project development will be visible through the existing tree cover from Volunteer Park. From a land use perspective, the proposed action is not expected to create adverse impacts on the Park. Potential visual impacts resulting from the proposed action are addressed in more detail in the Cultural Resources, Section 8.0, of this document. The Salem Hunt development does not propose any trail connections to the Volunteer Park.

Construction Activities

The proposed action includes five (5) construction phases to minimize the impact to the environment and the surrounding area. The different construction phases are summarized on Drawing SP-4.1, Overall Phasing Plan, and below:

- **Area 1a (2.37 acres)** - Construction of Proposed Road "A" platform to subgrade and installation of stabilized construction entrance will begin. Construct and stabilize temporary sediment basins (TSB) 2.1 and 2.2. Outlet structures, drainage piping and temporary outlets will be installed. Continue Proposed Road "A" construction to the staging area. All underground utilities, drainage structures, curbing and subbase will be installed in the area. All stormwater runoff in the area will be directed to TSB 2.1 and 2.2.
- **Area 1b (3.21 acres)** - Temporary sediment basins 1.1 and 1.2 will be constructed as well as all outlet structures, drainage piping, and temporary outlets. Construction on Proposed Road "A" continues to the water control building. All underground utilities, drainage structures, and subbase will be installed in the area. The proposed staging area will be developed. All stormwater runoff in the area will be directed to TSB 1.1, 1.2, 2.1 and 2.2.
- **Area 2 (4.76 acres)** - Construction of Proposed Road "A" continues to station 17+82. Construction of Proposed Road "C" begins. All underground utilities, drainage structures, curbing, and subbase will installed in the area. All stormwater runoff in the area will be directed to TSB 1.1, 1.2, 2.1, and 2.2. Construction of the building pads, recreational facilities, and parking areas to subgrade will begin. All underground utilities, drainage, curbing and subbase will be installed in the area. All stormwater runoff in the area will be directed to TSB 1.1, 1.2, 2.1, and 2.2.
- **Area 3 (4.56 acres)** - Construction of Proposed Road "B" and parking areas to subgrade will begin. Construction of the building pads in the area to subgrade will begin. All underground utilities, drainage structures, curbing and subbase in the area will be installed. Proposed staging area will be developed. All stormwater runoff in the area will be directed to TSB 1.1, 1.2, 2.1, and 2.2.
- **Area 4 (4.26 acres)** - The proposed subsurface wastewater treatment system will be constructed and stabilized.

Construction traffic will consist primarily of construction equipment arriving at the beginning of the construction period, trucks periodically delivering materials, and daily trips of construction workers. Construction workers typically arrive and depart the work site prior to peak hours of traffic as will the initial construction equipment. Projects of this nature would be likely visited by excavators, bulldozers, dump and cement trucks, backhoes, rollers, graders, pavers, material

delivery trucks and an assortment of smaller pieces of equipment for residential home construction for intermittent periods of time over the course of construction.

The preliminary grading plan provided with this document would result in approximately 48,684 cubic yards (cy) of earthwork cut and approximately 27,176 cy of earthwork fill resulting in approximately 21,507 cy of excess earth material. The construction earthwork is shown in Figure 7-5 Earthwork Map and in Drawing SP-3.1 and SP-3.2 Grading and Utilities Plan.

To assess the impact of construction vehicles, an estimate of the number of trucks was calculated by multiplying 1.3 tons/cy by 21,507 cy determining the quantity of material tonnage as 27,959 tons. Assuming that each tri-axle dump truck will hold approximately 25 tons of material, 1,118 trucks would be needed to remove the excess material from the project site.

These trucks, and all other construction related vehicles, will use the stabilized construction entrance shown on the Erosion and Sediment Control Plan - East, SP-4.2, and shown in detail on the Site Details Plan, D-2. A construction entrance is installed to prevent the tracking of any soil onto area roads. In dryer periods, the entrance and any exposed areas will be wet with water trucks to prevent the transport of dust to adjoining areas. Once these construction vehicles enter the site they will be parked in areas within the limit of disturbance lines. As stated on the Erosion and Sediment Control Plan notes, "All construction vehicles shall be kept clear of the areas outside the limit of disturbance lines".

The construction staging and soil stock piling areas area also proposed within the limits of disturbance area. The construction staging area is located within the southern portion of the proposed development, this area is away from the construction access to the site and any area roads. The soil stock piling areas are proposed in four locations on the property. Two are located on the northeastern corner, southwest of the site entrance and adjacent to Proposed Stormwater Basin 2.2. The other two soil stock piling areas are proposed along the northern portion of the property west of Proposed Stormwater Basin 2.1.

Air and Noise Construction Impacts

Other construction related impacts are air quality impacts as well as noise impacts. Local daytime ambient noise levels in the immediate vicinity of the site will increase during construction of the proposed development. Construction activities and the operation of construction equipment are an expected impact of any new construction project and cannot be avoided. Therefore, some noise impacts would be expected from the construction of the proposed project. Chapter 250, Zoning, for the Town of North Salem states that there is a noise level regulation for noise emitted from any property boundaries. However, the code states that "noise emanating from construction and maintenance activities is exempt between 8:00 am and sunset". The construction activity will be limited to between 8:00 am and sunset to adhere to this zoning regulation and to limit noise impacts to the surrounding area.

Potential short-term adverse air quality impacts that may result from the construction of the proposed project include fugitive dust and particulate matter from the clearing of the site and movement of equipment and vehicles across the site and emissions from the operation of the construction equipment and vehicles.

Fugitive and Airborne Dust

Construction activities on the project site could have a potentially impact local air quality through generation of fugitive or airborne dust. Fugitive dust is generated during ground clearing and excavation activities, and generally when soils are exposed during dry periods. Throughout the construction period, passage of delivery trucks and other vehicles over temporary dirt roads and other exposed soil surfaces may also generate fugitive dust.

With proper site maintenance and careful attention to construction activities, impacts from fugitive dust can be minimized. Standard construction dust control methods would be employed to ensure that construction generated dust does not impact off-site residents. These methods include:

- Minimizing the area of grading at any one time and stabilizing exposed areas with mulch and seed as soon as practicable;
- Minimizing vehicle movement over areas of exposed soil, and covering all trucks transporting soil; and
- Unpaved areas subject to traffic would be sprayed with water to reduce dust generation.
- Truck vehicle washing pads would be constructed at all construction entrances to avoid the tracking of soil onto paved surfaces.

Following project construction, unvegetated areas on the site currently exposed to wind would be either developed or landscaped, thereby reducing the potential for dust generation from the project area long-term.

Equipment and Vehicle Emissions

Construction-related air emissions will result from the use of diesel fuel as a source of energy for construction vehicles and equipment. On-site mitigation measures are proposed as a part of the project during construction to limit dispersal of particulate matter. Well maintained diesel engines are more fuel efficient than gasoline engines, however, they are a source of some air pollutants. Pollution from these engines comes from the combustion process in the form of exhaust. Although exhaust emissions from construction equipment is not as significant as fugitive dust generation, particulate matter from diesel exhaust emission will be controlled through proper tuning of the vehicle engines and maintenance of the air pollution controls. This will minimize additional contribution to site-generated particulate emissions during construction.

Through the incorporation of dust control measures and construction vehicle measures to control emissions, no short- or long-term significant air quality impacts as a result of construction operations are anticipated.

Soil Erosion and Sediment Control Plan

The above construction impacts are further described in detail on the Overall Phasing plan attached as drawing SP-4.1, the Erosion and Sediment Control Plan attached as drawing SP-4.2 and SP-4.3, the site details drawings D-1 and D-2, and within Section 6.0 Wetlands and Water Courses and Section 7.0 Geology, Soils, and Topography. All erosion and sedimentation

will be controlled during the construction period in accordance with these plan as well as the General Permit for Stormwater Discharges from Construction Activities (GP-02-01).

3.3 Mitigation Measures

Land use mitigation measures are incorporated into the design and layout of the proposed Salem Hunt development. The proposed buildings would be clustered in the central portion of the site in order to avoid sensitive natural areas such as wetlands and steep slopes, as well as to minimize exposure to off-site views of the proposed development. The architecture of the residential two and three unit buildings includes varied roof lines, the use of stone, and earth tone colors and textures.

The project design includes the , preservation of existing trees and natural buffers around the perimeter of the property, particularly the preservation of vegetation along June Road. Landscaping would be provided throughout the development and includes street trees and buffer plantings. Please refer to the attached Landscape Plan, (Drawings SP-2.1 and SP2.2 Layout and Landscape Plans). The majority of stone walls would be retained on the project site and the low retaining walls proposed will have stone facing.

As noted above, the applicant is currently working with the North Salem Land Trust to permanently preserve nearly twenty acres of the site as open space. An agreement for the dedication of open space to a conservation organization will be reached during the Site Plan review process.

As no significant impacts to the land use, zoning and public policies are anticipated as a result of the Salem Hunt development as proposed, no additional mitigation measures are proposed. Please refer to the above subsection, Construction Activities, for type, operation, and maintenance of construction and site maintenance equipment.

4.0 VEGETATION AND WILDLIFE

4.1 Existing Conditions

4.1.1 Introduction and Project Setting

The Town of North Salem and the Lower Hudson Valley lies within the extensive North American Northern Hardwood Forest Zone defined by Kuchler.¹ Forests across this zone are dominated by sugar maple, birch, beech and hemlock. On the project property, mature second-growth hardwood forest predominates, consisting primarily of red maple, black birch, white ash, sugar maple and black locust.

The project site is located in an area of Westchester County that has experienced developments dating to at least the late 18th century, but there is no evidence of development in the immediate vicinity of the project area until possibly the later part of the 19th century. At that time four or five dwellings were located along a roadway in the extreme northeastern corner of the site, although the majority of the project area has remained vacant land and no remains of any dwellings are present today. Stone walls are located in the northern portion of the property as well as along the edges of the property. These walls marked the property boundary and the edges of former farm fields, according to the Phase 1A archeological report, prepared by CitiScape (Appendix M). Based upon historical maps and the age of the vegetation on the property, the site has remained undeveloped for most of the last century with the exception of a right-of-way (ROW) portion that currently supports a New York State Electric and Gas utility line. In this area the forested community has been altered and is presently maintained as meadowland with low shrubs and sapling trees. The existing conditions on the property are depicted in an aerial photograph in Chapter 2 (Figure 2-2).

The eastern, lower lying portion of the site contains other scrub/shrub land as well as a wetlands that surrounds a drainage corridor for an unnamed stream. Both of these waterbodies are regulated by the New York State Department of Environmental Conservation (NYSDEC). Historical maps suggest that this portion of the NYSDEC wetland along June Road is a recent development on the site. Three other smaller wetlands exist on the western portions of the property as shown on Figure 6-5. Two of the site wetlands are not isolated and therefore are regulated by the United States Army Corp of Engineers (USACE). The hydrology and functional characteristics of these wetlands and the stream are discussed in detail in Chapter 3.4.

The perennial watercourse (NYSDEC Waters Index Number H-31-P-44-24-1-9) through the NYSDEC wetlands runs south to northeast through the property, and exits the property by crossing underneath June Road. The watercourse is a tributary of Holly Stream and ultimately discharges to the East Branch Croton River within the Muscoot Reservoir Basin of the New York City's Croton Water Supply Watershed, part of the City's Public Drinking Water Supply System.

The majority of the property is level to moderately sloped land, at elevations that vary approximately 100 feet across the site. The highest elevations on-site are approximately 600 feet above sea level and are found in the southwestern corner of the property. The lowest elevations on the site are present in the northeastern corner of the site in NYSDEC wetland L-32, with elevations of approximately 500 feet.

¹ Kuchler, A.W. 1964. Potential Natural Vegetation of the Conterminous United States, American Geographical Society, Special Publication No. 36.

The approximately 40-acre property is located in an area of low density residential development, with residential properties located to the north and south of the subject site and a horse farm located to the west. To the north and east of June Road, along the site's eastern frontage is an undeveloped NYSDEC wetland. The nearest NYSDEC Significant Biodiversity Area is the 4,700 acre Ward Pound Ridge County Park located in Lewisboro and Pound Ridge at a distance of approximately six miles. The property represents undisturbed forested habitat that connects similar habitats to the west and southeast. Undeveloped land including open and successional fields and hedgerows comprise the remainder of this connection.

4.1.2 Methodology

Tim Miller Associates, Inc. (TMA) staff conducted multiple day biological surveys of the Salem Hunt project site during April (for vernal pool breeding amphibians) and May, 2006. Investigations during May focused on determining the presence/absence of other species of concern, including non-vernal pool breeding amphibians, nesting raptors, other birds and spring blooming herbaceous plants as specified in the scoping outline. A list of plant species observed during the surveys is included in Tables 4-10, 4-12, 4-14, 4-16, 4-18 and 4-21 that is representative of the ecological communities on the site. A comprehensive list of all flora observed on the project site can be found in Table 4-26 at the end of this chapter. A list of animal species observed or potentially present on the site is included in Tables 4-11, 4-13, 4-15, 4-17 and 4-22 with Table 4-27 (at the end of the chapter) including a comprehensive list of all fauna observed and expected to use the project site. The full report for the May 2006 biological surveys is included in this document as Appendix D. Additional observations were made during subsequent site visits. These observations along with those made during the May 2006 survey are noted in the following text and tables.

New York State Department of Environmental Conservation and Westchester County provide lists of threatened and endangered plants and animals that are afforded protection statewide and countywide.^{2 3 4} During field investigations no endangered or threatened plant species, habitats or communities were observed within the project area. None of the existing plant and animal communities or habitat types found on the site are unique within the neighboring towns or the wider region and therefore none of these features of the site are unusual, locally rare or significant, or constitute an exemplary local resource.

To characterize the woods on the site, a tree survey was conducted by East-West Forestry Associates, Inc., during 2006. This survey generally included the upland areas of the site outside of the wetlands and their 100-foot buffer setbacks. Trees with a diameter of 8 inches or greater diameter at breast height (dbh), approximately 4½ feet above the ground) were identified by species, location and condition. Smaller diameter trees of unusual inclusions were also included in the survey. These included any smaller specimens of flowering dogwoods, shadbush and apple. This inventory of site trees is provided on Drawing TP-1, attached.

Tree canopy coverage was estimated using a three inch diameter tube, four inches long, as a densitometer. The tube was held vertically and viewed through by the observer, who then visually estimated the percent coverage of the overstory within the tube's field of view at each

² Young, Stephen M. and Troy W. Weldy. 2006. New York Rare Plant Status List. New York Natural Heritage Program, Albany, NY. May 2006.

³ NYSDEC. 2006. Endangered, Threatened and Special Concern Fish and Wildlife Species of New York State.

⁴ Westchester County Endangered Species List . Revision 3/23/2005. Website:
<http://www.westchestergov.com/PARKS/NatureCenters05/EndangeredSpecies.htm>

location along the transect. Several one hundred foot transverses were delineated within the existing vegetative communities on the site. At each of these transverses, vertical observations estimating percent canopy cover were recorded. Initial observations of the height of the tree canopy determined that making observations at 20 foot increments along each transverse line would result in only minimal overlap of canopy cover observations while ensuring that no canopy areas along the transverses were missed.

4.1.3 Existing Site Ecological Communities and Typical Associated Wildlife

The project site includes three principal habitat/ecosystems which correspond with the following broadly described “Ecological Communities of New York State”⁵:

1. Successional northern hardwood forest;
2. Red maple-hardwood swamp, and;
3. Marsh headwater stream.

Table 4-1 present the site acreage associated with each ecological community. The location of ecological community types and other habitat features of the site are shown on Figure 4-1 and described in this chapter.

Table 4-1 Existing On-site Habitat Coverage	
Habitat Type	Approximate Extent
Successional northern hardwood forest	31.9 acres
Red maple-hardwood swamp	8.1 acres
Marsh headwater stream	950 lf
* - lf = Lineal feet	
Sources: Insite Engineering P.C. and Tim Miller Associates, Inc., 2007	

4.1.3.1 Successional Northern Hardwood Forest

The majority of the project site currently supports second growth upland hardwood forest vegetation. This community type occupies approximately 31.9 acres (79.9 percent) of the project site. Tree canopy coverage is nearly complete and provides shade that moderates temperature fluctuations at the ground level but restricts the development of well-vegetated understory canopies or groundlayer vegetation.

The New York State Natural Heritage Program (NYSNHP) describes successional northern hardwood forest as forested uplands, which are loosely defined as “upland communities with more than 60% canopy cover of trees; these communities typically occur on substrates with less than 50% rock outcrop or shallow soil over bedrock”⁶. The successional northern hardwood forest is an ecological community “...that occurs on sites that have been cleared or otherwise disturbed.”⁶ According to the NYSNHP, “This is a broadly defined community and several seral and regional variants are known.” *Successional Northern Hardwood Forests* are ranked G5 (demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery) and S5 (demonstrably secure in New York State).⁶

⁵ Edinger, G.J. et al (Eds.) 2002. *Ecological Communities of New York State*. Second Edition. NYSNHP, NYSDEC. Albany, NY. 136 pp.

⁶ Edinger, G.J. et al (Eds.) 2002. *Ecological Communities of New York State*. Second Edition. NYSNHP, NYSDEC. Albany, NY. 136 pp.

The composition of the forest includes a variety of deciduous hardwood trees, dominated by maples, birches, oak, black cherry, ashes and black locusts. Table 4-4 presents the list of trees and shrubs observed on the property. A total of 1,827 trees representing 27 species were located on the site within the proposed limit of disturbance according to the Tree Survey (see Drawing TP-1, attached). Table 4-2 shows the composition of the forest by tree species. Of these, 46.8 percent were red maple and 12.0 percent were black birch, with all other species each representing fewer than 10 percent of the forest composition. Evergreen tree species are generally absent from the site with the exception of a single, dead, 18 inch dbh Norway spruce. The average tree measurement taken was 14 inches dbh and the majority of the trees in the survey were in the 8 to 20 inch diameter range. Only approximately 10 percent of the surveyed trees were greater than 20 inches dbh, including a few “wolf tree” or other larger specimens of up to 44 inches dbh that are either red maples, white ash or red oak. Based on this survey information, there are approximately 90 trees per acre within the areas of disturbance.

Table 4- 2 Tree Survey Results		
Species Identified On Site	Number	Percent
Red maple	855	46.8%
Black birch	219	12.0%
White ash	168	9.2 %
Sugar maple	127	7.0 %
Black locust	119	6.5 %
Northern red oak	59	3.2 %
Black cherry	58	3.2 %
Shagbark hickory	46	2.5 %
Bitternut hickory	36	2.0 %
American elm	30	1.6 %
Yellow Birch	20	1.1 %
Swamp white oak	16	0.9 %
White oak	16	0.9 %
Apple	13	0.7 %
Black oak	11	0.6 %
American Beech	8	0.4 %
Shadblow	7	0.4 %
Flowering Dogwood	5	0.3 %
Norway maple	5	0.3 %
Pin oak	3	0.2 %
Ailanthus	1	0.1 %
Sassafras	1	0.1 %
Norway spruce	1	0.1 %
American basswood	1	0.1 %
Butternut	1	0.1 %
Yellow poplar	1	0.1 %
TOTAL=	1827	100%
Source: East-West Forestry Associates, 2006 Prepared by: Tim Miller Associates, 2008		

The overstory layer within the northern successional hardwood forest is well developed with a nearly continuous tree canopy. Two transects were recorded within this community type. Observations made along these transects are shown below in Tables 4-3 and 4-4.

Table 4-3	
Location of Transect: Northern Hardwood Forest, Tree # 855 to # 826 (North to South)	
Location #	Estimated % Cover
1	100
2	100
3	100
4	100
5	100
6	100
Average	100

Table 4-4	
Location of Transect: Northern Hardwood Forest, Tree # 710 to #566 (North to South)	
Location #	Estimated % Cover
1	100
2	100
3	100
4	90
5	100
6	90
Average	97

The dense canopy cover along the transects is representative of the entire northern hardwood forest community on this site. The thick canopy prevents large amounts of light from penetrating to the forest floor, resulting in sparse sub-canopy and herbaceous layer species coverage. Unlike the tree canopy coverage, which is bimodal (i.e roughly 0% in the winter and nearly 100% in the summer) on this site, the understory "coverage," and especially the ground story "coverage" varies widely month by month and as such a percent coverage was not established.

The condition of all the trees surveyed was assessed. This information is presented on Drawing TP-1 along with the common and scientific name of each tree, the number of trunks and its diameter. Condition was assigned a number between one and three representing good condition, poor condition or dead respectively. Roughly six percent of the trees to be removed are dead, nineteen percent are in poor condition with the remaining seventy five percent assigned a good health rating. Trees in all three condition classes are distributed across the proposed area of disturbance.

During the initial tree survey, under leaf-off conditions, a few trees were misidentified as swamp white oak. Later examination during the leaf-on season has confirmed that several other swamp white oak identified during the survey do exist, within a limited upland area of the site. A site visit by TMA staff on August 13, 2007 found no evidence of poor drainage or wet conditions in the locations of the swamp white oak trees.

The site woods include mature trees of species that provide mast (fruit and nut sources) for deer and other mammals and that supply cover in a well developed upper canopy and in standing dead trees for arboreal species. Lack of significant understory and thickets limits its

use as cover for some smaller ground-based fauna. A number of trees that are either standing dead or damaged provide habitat for cavity dwellers such as owls and chipmunks.

The understory vegetation consists primarily of saplings of the overstory trees as well as spicebush, arrowwood, Japanese barberry and multiflora rose. The understory vegetation is generally sparse due to the limited amount of solar penetration through the tree canopy and continuous browsing by deer. Seasonally prominent ground layer vegetation includes garlic mustard, skunk cabbage, jack-in-the-pulpit, wood anemone, leek, trout lily, stickseed, enchanter’s nightshade, jumpseed and ferns.

Additional Plot Analysis

Additional trees outside of the proposed limits of disturbance were identified on March 6, 2008. Five 100 foot by 100 foot quadrates were established and trees were measured and identified by Tim Miller Associates staff. The approximate locations of these quadrats are depicted in Figure 4-2. Four of the five additional plots were performed to provide a typical representation of the forest composition structure after the project is built out. One additional quadrate, Plot C, was established within the area of disturbance for the proposed primary and expansion subsurface treatment system (SSTS) area. The vegetation within quadrate Plot C will be disturbed during construction activity. The tree species, composition and size/density, etc. within each quadrate is discussed below.

Plot A

The first quadrate, Plot A, is located in the combined wetland buffers of Wetlands B and C. The vegetation within this plot will remain undisturbed during construction of the project.

Predominant vegetation in Plot A includes red maple and red oak with average dbh of 14 inches which provide a denseform tree canopy ranging in height from 40 to 60 feet. Spicebush, ironwood and saplings beneath the overstory dominate the shrub layer with an approximate 60 percent cover during the growing-season. A sparse ground layer dominated by Christmas fern and Japanese barberry exhibits a growing-season groundcover of approximately 15 percent.

A complete inventory of tree species observed within the quadrate is provided in Table 4-5 below.

Table 4-5 Plot A		
Species Identified in Plot	Number	Percent
Red oak	7	38.9%
Red maple	6	33.4%
White ash	2	11.1 %
White oak	2	11.1 %
Black Birch	1	5.5 %
TOTAL=	18	100%
Source: Tim Miller Associates, 2008		

Plot B

Plot B is located along the southern property line, approximately 400 feet west of Wetland D (NYSDEC Wetland L-32). The dominant trees in this quadrat which are recorded in the tree survey and dominant species are black cherry and red maple with an average dbh of 16 inches. Trees ranged in height from 30 to 55 feet and provided dense canopy coverage. The dense shrub layer includes spicebush and barberry with lesser inclusions of ironwood with growing-season coverage being approximately 90 percent. The herbaceous layer is sparse with few Christmas ferns and sedges forming an estimated 10 percent growing-season cover.

A complete inventory of tree species observed within the quadrat can be seen in Table 4-6 below. The location of Plot B will not be disturbed during construction of the project.

Table 4-6 Plot B		
Species Identified in Plot	Number	Percent
Black cherry	4	28.6%
Red maple	3	21.5%
White ash	2	14.3 %
Sugar maple	2	14.3 %
Yellow Birch	1	7.1 %
Bitternut hickory	1	7.1 %
American elm	1	7.1 %
TOTAL=	14	100%
Source: Tim Miller Associates, 2008		

Plot C

The Plot C quadrat was established within the area proposed for the primary and expansion SSTS. All trees and other vegetation within the primary and expansion SSTS area will be removed during construction. Plot C provides a representation of what will be removed from this area.

Red maple and yellow birch with average dbh of 14 inches dominate the tree layer, which forms a dense tree canopy ranging in height from 40 to 60 feet. The sparse understory is composed of spicebush and beech saplings, creating a growing-season coverage of approximately 20 percent. A few winged euonymous shrubs are located in this area. The herbaceous layer contains roughly 70 percent coverage of various upland sedges, including *Carex laxiflora*, *C. platyphylla* and *C. pennsylvanica*.

A complete inventory of tree species observed within the quadrat is provided in Table 4-7 below.

Table 4-7 Plot C		
Species Identified in Plot	Number	Percent
Red maple	11	47.9%
Yellow birch	5	21.7 %
Red oak	3	13.0 %
White ash	2	8.7 %
Black birch	2	8.7 %
TOTAL=	23	100%
Source: Tim Miller Associates, 2008		

Plot D

Plot D is located approximately 150 feet east of Plot C within the buffer of Wetland D (NYSDEC Wetland L-32). This portion of Wetland D's extensive buffer will not be disturbed by construction.

Predominant species in Plot D include yellow birch and black birch, with average dbh of 13 inches, which provide a denseform tree canopy ranging in height from 30 to 60 feet. Saplings of the overstory species and to a lesser extent Japanese barberry dominate the shrub layer with an approximate 60 percent cover during the growing-season. A sparse undergrowth of garlic mustard, Christmas fern and grasses exhibits a growing-season groundcover of approximately 10 percent.

A complete inventory of tree species observed within the quadrat is provided in Table 4-8 below.

Table 4-8 Plot D		
Species Identified in Plot	Number	Percent
Yellow birch	13	59.2 %
Black birch	7	31.8 %
White oak	1	4.5 %
Bitternut hickory	1	4.5 %
TOTAL=	22	100%
Source: Tim Miller Associates, 2008		

Plot E

Plot E is located within Wetland D (NYSDEC L-32), between the marsh headwater stream and June Road. As no encroachment to any wetland or watercourse is proposed for this project, the area containing Plot E will not be disturbed by construction activity.

Red maple trees ranging in height from 30 to 60 feet completely dominate the tree layer in Plot E. The dense shrub layer of spicebush and red maple saplings exhibits a growing-season coverage of roughly 70 percent. An estimated 95 percent growing-season coverage of skunk cabbage, sphagnum moss, and cinnamon fern comprise the groundlayer.

A complete inventory of tree species observed within the quadrat is provided in Table 4-9 below.

Table 4-9 Plot E		
Species Identified in Plot	Number	Percent
Red maple	24	77.4 %
White ash	5	16.1 %
Yellow birch	2	6.5 %
TOTAL=	31	100%
Source: Tim Miller Associates, 2008		

A total of 108 trees were identified within these five plots, for an average of 93 trees per acre. This is consistent with the 90 trees per acre that were surveyed within the limits of disturbance, and is expected to be consistent with, and representative of, the entire site.

Trees in Plots A, B and E were in excellent condition, with only three trees receiving a condition rating of poor; no dead trees were observed. The remaining 15 trees in the plot were given a health rating of one, meaning overall good condition.

Plot D contained 11 trees rated in poor condition, with one dead tree noted. Trees in declining health provide habitat for insects and cavity nesting species such as woodpeckers.

A summary of all tree and shrub species that were observed on the Salem Hunt site is presented below as Table 4-10.

Table 4-10 Trees and Shrubs - Observed Species (Northern Hardwood Successional Forest)	
Common name (<i>Scientific name</i>)	
Trees	
American basswood (<i>Tilia americana</i>)	Norway maple (<i>Acer platanoides</i>)
American beech (<i>Fagus grandifolia</i>)	Pin oak (<i>Quercus palustris</i>)
American elm (<i>Ulmus americana</i>)	Red maple (<i>Acer rubrum</i>)
Apple (<i>Malus</i> spp.)	Red oak (<i>Quercus rubra</i>)
Bitternut hickory (<i>Carya cordiformis</i>)	Sassafras (<i>Sassafras albidum</i>)
Black cherry (<i>Prunus serotina</i>)	Shadblow (<i>Amelanchier</i> spp.)
Black locust (<i>Robinia pseudoacacia</i>)	Shagbark hickory (<i>Carya ovata</i>)
Black maple (<i>Acer nigrum</i>)	Sugar maple (<i>Acer saccharum</i>)
Black oak (<i>Quercus velutina</i>)	Swamp white oak (<i>Quercus bicolor</i>)
Black willow (<i>Salix nigra</i>)	Sweet (black) birch (<i>Betula lenta</i>)
Butternut (<i>Juglans cinerea</i>)*	Tree-of-Heaven (<i>Ailanthus altissima</i>)
European alder (<i>Alnus glutinosa</i>)	Tulip poplar (<i>Liriodendron tulipifera</i>)
Flowering dogwood (<i>Cornus florida</i>)*	White ash (<i>Fraxinus americana</i>)
Gray birch (<i>Betula populifolia</i>)	White oak (<i>Quercus alba</i>)
Hazel alder (<i>Alnus serrulata</i>)	Yellow birch (<i>Betula alleghaniensis</i>)
Shrubs and Vines	
Northern arrowwood (<i>Viburnum recognitum</i>)	Upland pinkster flower (<i>Rhododendron periclymenoides</i>)*
Autumn olive (<i>Elaeagnus umbellata</i>)	Poison ivy (<i>Toxicodendron radicans</i>)
Bristly dewberry (<i>Rubus hispidus</i>)	Siebold's arrowwood (<i>Viburnum sieboldii</i>)
Common elderberry (<i>Sambucus nigra</i>)	Spicebush (<i>Lindera benzoin</i>)
Common greenbriar (<i>Smilax rotundifolia</i>)	Swamp azalea (<i>Rhododendron viscosum</i>)*
Japanese honeysuckle (<i>Lonicera japonica</i>)	Winterberry (<i>Ilex verticillata</i>)*
Japanese barberry (<i>Berberis thunbergii</i>)	Winged euonymus (<i>Euonymus alata</i>)
Meadowsweet (<i>Spiraea alba</i>)	Wisteria (<i>Wisteria</i> spp.)
Multiflora rose (<i>Rosa multiflora</i>)	Witchhazel (<i>Hamamelis virginiana</i>)
Nannyberry (<i>Viburnum lentago</i>)	
Notes: This list represents the species observed during project surveys of this site during 2006 and 2007. The list is not, however, represented to be an exhaustive list of all plant species on the site.	
* NYS exploitably vulnerable species.	
Species in bold type are not native to this region.	
None of these tree and shrub species are Westchester County-listed species.	
Prepared by: Tim Miller Associates, Inc., 2007	
For a comprehensive list of all flora observed on the project site, refer to Table 4-26 at the end of this chapter	

4.1.3.2 Red Maple-Hardwood Swamp

The NYSNHP broadly identifies the site wetlands as Forested Mineral Soil Wetlands. This subsystem includes seasonally flooded forests, and permanently flooded or saturated swamps. These forests and swamps typically have at least 50% canopy cover of trees. For the purposes of this classification, a tree is a woody plant usually having one principal stem, a definite crown shape, and characteristically reaching a mature height of at least 16 ft (5 m). The Red Maple-Hardwood Swamp is an ecological community "...that occurs in poorly drained depressions, usually on inorganic soils." According to the NYSNHP, "This is a broadly defined community with many regional and edaphic variants. Red Maple-Hardwood Swamps are ranked

G5 (demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery) and S4S5 (apparently/demonstrably secure in New York State).⁷

Wetland A

Wetland A is a forested wetland with seasonally saturated and locally inundated soil. Groundwater discharge and overland runoff are the primary sources of hydrology in the wetland that has formed at a topographical depression. The principal function of Wetland A appears to be the detention of stormwater flowing to it from limited on- and off-site drainage areas. According to NYSNHP's "Ecological Communities of New York State", this wetland is classified as a Red Maple-Hardwood Swamp. Based on a site visit by DEC representatives in March of 2008, this wetland was determined to be part of the larger Wetland L-32 system which exists off site to the south. This wetland area forms the headwaters for a small tributary to Wetland L-32.

The vegetative structure of Wetland A includes red maple and American elm, which form a closed growing-season tree canopy over the entire wetland. Most trees of the canopy layer range from 13 to 16 inches dbh. A shrub layer to six feet in height consisting of winterberry and spicebush is uniform throughout the wetland and exhibits an estimated growing-season cover of 60 percent. Common greenbrier, skunk cabbage, spotted jewelweed and tussock sedge dominate the herbaceous ground layer forming a growing-season cover of roughly 60 percent. Substantial portions of the forest floor within the wetland are areas of either embedded rock substrate or bare forest leaf litter. A comprehensive list of all plant species recorded in Wetland A is provided in Table 4-12.

Based on site surveys and observations, Wetland A has relatively low wetland functional value in providing significant wildlife habitat for wetland dependent species. Those species that have been observed (spring peepers, green frog, pickerel frog and others) are common in this area of northern Westchester and generally opportunistic. The low wildlife value is due to the limited diversity of vegetation and a lack of surface waters during most of the year. These characteristics also limit the potential for vernal pool habitat to be present, and spring surveys conducted for pool breeding amphibians did not observe any such species. The wetland may support some small populations of wetland dependent species, and provide a seasonal water source for mammal and reptile species. Wetland A is part of a narrow wet corridor that connects to the large off-site wetland (Wetland D), and may provide a habitat connection to this wetland. Fauna observed or likely to utilize Wetland A for nesting, breeding, foraging or cover on a seasonal or year-round basis is provided in Table 4-11 below.

⁷ Edinger, G.J. et al (Eds.) 2002. *Ecological Communities of New York State*. Second Edition. NYSNHP, NYSDEC. Albany, NY. 136 pp.

Table 4-11 Fauna Observed or Expected to Utilize Wetland A					
Common Name	Scientific Name	Use			
		N	B	F	C
Birds					
American Woodcock	<i>Philohela minor</i>	X		X	X
Barred Owl	<i>Strix varia</i>			X	X
Black-capped Chickadee	<i>Parus atricapillus</i>	X	X	X	X
Blue Jay	<i>Cyanocitta cristata</i>	X	X	X	X
Broad-winged Hawk	<i>Buteo platypterus</i>	X		X	
Common Yellowthroat	<i>Geothlypis trichas</i>	X	X	X	X
Downy Woodpecker	<i>Picoides pubescens</i>	X			
Hairy Woodpecker	<i>Picoides villosus</i>	X			
Kentucky Warbler	<i>Oporornis formosus</i>	X	X	X	X
Northern Cardinal	<i>Cardinalis cardinalis</i>			X	X
Northern Flicker	<i>Colaptes auratus</i>			X	X
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	X	X	X	X
Red-eyed Vireo	<i>Vireo olivaceus</i>	X		X	
Warbler Species	<i>Dendroica/Vermivora spp.</i>	X	X	X	X
Warbling Vireo	<i>Vireo gilvus</i>				
White-breasted Nuthatch	<i>Sitta carolinensis</i>	X		X	X
White-throated Sparrow	<i>Zonotrichia albicollis</i>	X		X	X
Wood Thrush	<i>Hylocichla mustelina</i>	X		X	
Yellow Warbler	<i>Dendroica petechia</i>	X		X	
Amphibians					
American Bullfrog*	<i>Rana catesbeiana</i>	X	X	X	X
American toad*	<i>Bufo americanus</i>	X	X	X	X
Four-toed salamander	<i>Hemidactylium scutatum</i>	X	X	X	X
Green frog*	<i>Rana clamitans</i>	X	X	X	X
Pickerel frog*	<i>Rana palustris</i>	X	X	X	X
Red-backed salamander*	<i>Plethodon cinereus</i>	X	X	X	X
Red-spotted newt*	<i>Notophthalmus viridescens</i>	X	X	X	X
Spring peeper*	<i>Pseudocris crucifer</i>	X	X	X	X
Two-lined salamander*	<i>Eurycea bislineata</i>	X	X	X	X
Wood frog*	<i>Rana sylvatica</i>	X	X	X	X
Reptiles					
Eastern Box turtle	<i>Terrapene carolina</i>			X	X
Wood turtle	<i>Clemmys insculpta</i>			X	X
Ribbon snake	<i>Thamnophis sauritis</i>			X	X
Mammals					
Raccoon	<i>Procyon lotor</i>			X	
Eastern chipmunk*	<i>Tamias striatus</i>			X	X
Gray squirrel*	<i>Sciurus carolinensis</i>	X		X	X
Red fox	<i>Vulpes vulpes</i>			X	
Striped skunk	<i>Mephitis mephitis</i>			X	
Whitetail deer*	<i>Odocoileus virginianus</i>			X	X
<p>Use: N - Nesting, B - Breeding, F - Feeding/Foraging, C - Cover Source: Tim Miller Associates, 2007, 2008 *Species that were observed during formal surveys. For a comprehensive list of all fauna observed or potentially using the project site, refer to Table 4-27 at the end of this chapter.</p>					

Table 4-12	
Spring- and Summer-flowering Plants - Observed Species in Wetland A	
Spring-flowering plants	
Common Name	Species
Canada Mayflower	<i>Maianthemum canadense</i>
Garlic mustard	<i>Alliaria petiolata</i>
Jack-in-the-pulpit	<i>Arisaema triphyllum</i>
Littleleaf butter-cup	<i>Ranunculus abortivus</i>
Red trillium*	<i>Trillium erectum</i>
Skunk cabbage	<i>Symplocarpus foetidus</i>
Spotted jewelweed	<i>Impatiens capensis</i>
Trout lily	<i>Erythronium americanum</i>
Violet	<i>Viola spp.</i>
Wild crane's-bill	<i>Geranium maculatum</i>
Summer-flowering plants	
Clearweed	<i>Pilea pumila</i>
Jumpseed	<i>Polygonum virginianum</i>
Virginia creeper	<i>Parthenocissus quinquefolia</i>
Source: Tim Miller Associates, Inc., 2006.	
* NYS exploitably vulnerable species.	
Species in bold type are not native to this region.	
None of the above observed species are Westchester County-listed species.	
Prepared by: Tim Miller Associates, Inc., 2007	
For a comprehensive list of all flora observed on the project site, refer to Table 4-26 at the end of this chapter	

Wetland B

Wetland B is an isolated 0.32 acre wetland located in a topographical depression in the northwest corner of the project site. Wetland B is similar in size, hydrology and vegetation to Wetland A, described above. This wetland also has the characteristics of a Red Maple-Hardwood Swamp ecological community as described above.

Similar to Wetland A, the vegetative structure of Wetland B includes red maple and American elm, which form a closed growing-season tree canopy over the entire wetland. Most trees of the canopy layer range from nine to twenty inches dbh. A shrub layer to six feet in height consisting of winterberry and spicebush is uniform throughout the wetland and exhibits an estimated growing-season cover of 40 percent. Common greenbrier, skunk cabbage, spotted jewelweed and tussock sedge are dominant the herbaceous ground layer, forming a growing-season cover of roughly 60 percent. A comprehensive list of all plant species recorded in Wetland B is provided in Table 4-14.

Wetland B provides only limited wetland functions, primarily related to stormwater detention. Wetland B has relatively low wildlife functions due to the limited diversity of vegetation and a lack of surface waters during most of the year. Although this wetland may support some small populations of wetland dependent species, and provide a seasonal water source for mammal, reptile, and avian species, it generally provides only incidental wetland functions for anything other than stormwater detention. Fauna observed or likely to utilize Wetland B for nesting, breeding, foraging or cover on a seasonal or year-round basis is provided in Table 4-13 below.

Table 4-13 Fauna Observed or Expected to Utilize Wetland B					
Common Name	Scientific Name	Use			
		N	B	F	C
Birds					
American Woodcock	<i>Philohela minor</i>	X		X	X
Barred Owl	<i>Strix varia</i>			X	X
Black-capped Chickadee	<i>Parus atricapillus</i>	X	X	X	X
Blue Jay	<i>Cyanocitta cristata</i>	X	X	X	X
Broad-winged Hawk	<i>Buteo platypterus</i>	X		X	
Common Yellowthroat	<i>Geothlypis trichas</i>	X	X	X	X
Downy Woodpecker	<i>Picoides pubescens</i>	X			
Hairy Woodpecker	<i>Picoides villosus</i>	X			
Kentucky Warbler	<i>Oporornis formosus</i>	X	X	X	X
Northern Cardinal	<i>Cardinalis cardinalis</i>			X	X
Northern Flicker	<i>Colaptes auratus</i>			X	X
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	X	X	X	X
Red-eyed Vireo	<i>Vireo olivaceus</i>	X		X	
Warbler Species	<i>Dendroica/Vermivora spp.</i>	X	X	X	X
Warbling Vireo	<i>Vireo gilvus</i>				
White-breasted Nuthatch	<i>Sitta carolinensis</i>	X		X	X
White-throated Sparrow	<i>Zonotrichia albicollis</i>	X		X	X
Wood Thrush	<i>Hylocichla mustelina</i>	X		X	
Yellow Warbler	<i>Dendroica petechia</i>	X		X	
Amphibians					
American Bullfrog	<i>Rana catesbeiana</i>	X	X	X	X
American toad	<i>Bufo americanus</i>	X	X	X	X
Four-toed salamander	<i>Hemidactylium scutatum</i>	X	X	X	X
Green frog*	<i>Rana clamitans</i>	X	X	X	X
Pickereel frog*	<i>Rana palustris</i>	X	X	X	X
Red-backed salamander*	<i>Plethodon cinereus</i>	X	X	X	X
Red-spotted newt*	<i>Notophthalmus viridescens</i>	X	X	X	X
Spring peeper	<i>Pseudocris crucifer</i>	X	X	X	X
Two-lined salamander*	<i>Eurycea bislineata</i>	X	X	X	X
Wood frog	<i>Rana sylvatica</i>	X	X	X	X
Reptiles					
Eastern Box turtle*	<i>Terrapene carolina</i>			X	X
Wood turtle	<i>Clemmys insculpta</i>			X	X
Ribbon snake	<i>Thamnophis sauritis</i>			X	X
Mammals					
Raccoon	<i>Procyon lotor</i>			X	
Eastern chipmunk*	<i>Tamias striatus</i>			X	X
Gray squirrel	<i>Sciurus carolinensis</i>	X		X	X
Red fox	<i>Vulpes vulpes</i>			X	
Striped skunk	<i>Mephitis mephitis</i>			X	
White tail deer*	<i>Odocoileus virginianus</i>			X	X
<p>Use: N - Nesting, B - Breeding, F - Feeding/Foraging, C - Cover Source: Tim Miller Associates, 2007, 2008 *Species that were observed during formal surveys on the site. For a comprehensive list of all fauna observed or potentially using the project site, refer to Table 4-27 at the end of this chapter.</p>					

Table 4-14	
Spring- and Summer-flowering Plants - Observed Species in Wetland B	
Spring-flowering plants	
Common Name	Species
Garlic mustard	<i>Alliaria petiolata</i>
Germander speedwell	<i>Veronica chamaedrys</i>
Jack-in-the-pulpit	<i>Arisaema triphyllum</i>
Pennsylvania bittercress	<i>Cardamine pennsylvanica</i>
Skunk cabbage	<i>Symplocarpus foetidus</i>
Small white leek	<i>Allium tricoccum</i>
Spotted jewelweed	<i>Impatiens capensis</i>
Trout lily	<i>Erythronium americanum</i>
Violet	<i>Viola spp.</i>
Wild crane's-bill	<i>Geranium maculatum</i>
Summer-flowering plants	
Canada goldenrod	<i>Solidago canadensis</i>
Clearweed	<i>Pilea pumila</i>
Enchanter's nightshade	<i>Circaea lutetiana</i>
Grassleaved goldenrod	<i>Euthamia graminifolia</i>
Giant chickweed	<i>Myosoton aquaticum</i>
Hog peanut	<i>Amphicarpaea bracteata</i>
Jumpseed	<i>Polygonum virginianum</i>
Mad-dog skullcap	<i>Scutellaria lateriflora</i>
Squarestem monkeyflower	<i>Mimulus ringens</i>
Stickseed	<i>Hackelia virginiana</i>
Virginia creeper	<i>Parthenocissus quinquefolia</i>
Wrinkled-leaved goldenrod	<i>Solidago rugosa</i>
Source: Tim Miller Associates, Inc., 2006.	
*NYS exploitably vulnerable species.	
Species in bold type are not native to this region.	
None of the above observed species are Westchester County-listed species.	
Prepared by: Tim Miller Associates, Inc., 2007	
For a comprehensive list of all flora observed on the project site, refer to Table 4-26 at the end of this chapter	

Wetland C

Wetland C is a larger pocket of wetland that is located immediately east of Wetland B, however, they are not hydrologically connected. It encompasses 1.22 acres, and is isolated from all other wetlands on the property. Wetland C receives surface water from areas adjacent to it and has a significant intermittent surface outlet overflowing during large storm events through a poorly developed surface feature that drains onto the property to the north. This off-site overland drainage pattern is directed towards the watershed of the New York City Department of Environmental Protection (NYCDEP) Diverting Reservoir which is located approximately two miles to the northwest of the project site.

The predominant tree species in Wetland C include red maple and American elm which provide a denseform tree canopy ranging in height from 40 to 60 feet. Along the edges of this wetland, cinnamon fern, sensitive fern, Christmas fern, tussock sedge and poison ivy are dominant in the

groundlayer, consisting of a growing-season groundcover of approximately 80 percent. A comprehensive list of all plant species recorded in Wetland C is provided in Table 4-15.

Table 4-15	
Spring- and Summer-flowering Plants - Observed Species in Wetland C	
Spring-flowering plants	
Common Name	Species
Garlic mustard	<i>Alliaria petiolata</i>
Germander speedwell	<i>Veronica chamaedrys</i>
Jack-in-the-pulpit	<i>Arisaema triphyllum</i>
Pennsylvania bittercress	<i>Cardamine pennsylvanica</i>
Upland pinkster flower	Rhododendron periclymenoides
Skunk cabbage	<i>Symplocarpus foetidus</i>
Small white leek	<i>Allium tricoccum</i>
Spotted jewelweed	<i>Impatiens capensis</i>
Trout lily	<i>Erythronium americanum</i>
Violet	<i>Viola spp.</i>
Wild crane's-bill	<i>Geranium maculatum</i>
Summer-flowering plants	
Canada goldenrod	<i>Solidago canadensis</i>
Clearweed	<i>Pilea pumila</i>
Enchanter's nightshade	<i>Circaea lutetiana</i>
Grassleaved goldenrod	<i>Euthamia graminifolia</i>
Giant chickweed	<i>Myosoton aquaticum</i>
Hog peanut	<i>Amphicarpaea bracteata</i>
Jumpseed	<i>Polygonum virginianum</i>
Mad-dog skullcap	<i>Scutellaria lateriflora</i>
Squarestem monkeyflower	<i>Mimulus ringens</i>
Stickseed	<i>Hackelia virginiana</i>
Virginia creeper	<i>Parthenocissus quinquefolia</i>
Wrinkled-leaved goldenrod	<i>Solidago rugosa</i>
Source: Tim Miller Associates, Inc., 2006.	
* NYS exploitably vulnerable species.	
Species in bold type are not native to this region.	
None of the above observed species are Westchester County-listed species.	
Prepared by: Tim Miller Associates, Inc., 2007	
For a comprehensive list of all flora observed on the project site, refer to Table 4-26 at the end of this chapter	

The center of this wetland has only a partial tree canopy which allows for the presence of a more complex herbaceous community. Spicebush and multiflora rose dominate the shrub layer with an approximate 40 percent cover during the growing-season. A thick undergrowth dominated by grasses, sedges and a wide variety of seasonally flowering forbs exhibits a growing-season groundcover of roughly 85 percent.

Fauna observed or likely to utilize Wetland C for nesting, breeding, foraging or cover on a seasonal or year-round basis is provided in Table 4-16 below.

Table 4-16 Fauna Observed or Expected to Utilize Wetland C					
Common Name	Scientific Name	Use			
		N	B	F	C
Birds					
American Woodcock *	<i>Philohela minor</i>	X		X	X
Barred Owl *	<i>Strix varia</i>			X	X
Black-capped Chickadee	<i>Parus atricapillus</i>	X	X	X	X
Blue Jay	<i>Cyanocitta cristata</i>	X	X	X	X
Broad-winged Hawk *	<i>Buteo platypterus</i>	X		X	
Common Yellowthroat	<i>Geothlypis trichas</i>	X	X	X	X
Downy Woodpecker	<i>Picoides pubescens</i>	X			
Hairy Woodpecker	<i>Picoides villosus</i>	X			
Kentucky Warbler *	<i>Oporornis formosus</i>	X	X	X	X
Northern Cardinal	<i>Cardinalis cardinalis</i>			X	X
Northern Flicker	<i>Colaptes auratus</i>			X	X
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	X	X	X	X
Red-eyed Vireo	<i>Vireo olivaceus</i>	X		X	
Warbler Species *	<i>Dendroica/Vermivora spp.</i>	X	X	X	X
Warbling Vireo *	<i>Vireo gilvus</i>				
White-breasted Nuthatch	<i>Sitta carolinensis</i>	X		X	X
White-throated Sparrow	<i>Zonotrichia albicollis</i>	X		X	X
Wood Thrush	<i>Hylocichla mustelina</i>	X		X	
Yellow Warbler	<i>Dendroica petechia</i>	X		X	
Amphibians					
American Bullfrog*	<i>Rana catesbeiana</i>	X	X	X	X
American toad*	<i>Bufo americanus</i>	X	X	X	X
Four-toed salamander*	<i>Hemidactylum scutatum</i>	X	X	X	X
Green frog*	<i>Rana clamitans</i>	X	X	X	X
Pickerel frog*	<i>Rana palustris</i>	X	X	X	X
Red-backed salamander*	<i>Plethodon cinereus</i>	X	X	X	X
Red-spotted newt*	<i>Notophthalmus viridescens</i>	X	X	X	X
Spring peeper*	<i>Pseudocris crucifer</i>	X	X	X	X
Two-lined salamander*	<i>Eurycea bislineata</i>	X	X	X	X
Wood frog*	<i>Rana sylvatica</i>	X	X	X	X
Reptiles					
Eastern Box turtle*	<i>Terrapene carolina</i>			X	X
Wood turtle*	<i>Clemmys insculpta</i>			X	X
Ribbon snake*	<i>Thamnophis sauritis</i>			X	X
Mammals					
Raccoon*	<i>Procyon lotor</i>			X	
Red fox	<i>Vulpes vulpes</i>			X	
Striped skunk*	<i>Mephitis mephitis</i>			X	
White tail deer*	<i>Odocoileus virginianus</i>			X	X
<p>Use: N - Nesting, B - Breeding, F - Feeding/Foraging, C - Cover Source: Tim Miller Associates, 2007, 2008 *Species that were not observed during formal surveys but use habitat similar to that on the site. For a comprehensive list of all fauna observed or potentially using the project site, refer to Table 4-31 at the end of this chapter.</p>					

Wetland C functions to provide some stormwater storage and conveyance benefits and wildlife forage and nesting habitat but in a limited way because of its topographic setting and limited size.

Wetland D

Wetland D is a mid-section portion of NYSDEC mapped Freshwater Wetland L-32. The full extent of this NYSDEC Class 2 wetland includes larger offsite portions both upstream and downstream of the site. The on site portion of this wetlands occupies 6.31 acres that includes the marsh headwater stream and red maple-hardwood swamp along the eastern-most limits of the project site. Wetland A, as described above, forms the headwaters of a small tributary that enters Wetland D from the north. Wetland D is characterized by these two community types and the stream within the wetland makes a direct hydrologic connection between Wetland D and offsite portions of this NYSDEC wetland. Vegetation in this wetland includes red maple, gray birch, hazel alder, spicebush and arrowwood in the overstories with skunk cabbage, spotted jewelweed and green false hellebore being dominant in the dense groundlayer. At least 44 species of flowering plants are present throughout this wetland.

Shallow groundwater discharge and stream inflow from offsite portions of this small watershed are the primary sources of hydrology in this wetland. Sheetflow from adjacent steep sloped uplands likely provides additional overland inflow during storm events.

Wetland D is dominated by red maple and American elm, which form a closed growing-season tree canopy layer ranging in height from 30 to 60 feet. Most trees of the canopy layer range from 10 to 15 inches. A shrub layer to eight feet in height with an estimated growing-season cover of 70 percent is uniformly distributed throughout the forested sections of the wetland and is comprised of saplings of spicebush, brookside alder, arrow-wood viburnum, and gray birch. The growing-season herbaceous groundcover is nearly continuous, exhibiting 95 percent cover throughout the wetland. Dominant species within the herbaceous ground layer include skunk cabbage, ostrich fern, spotted jewelweed, and false hellebore. A comprehensive list of all plant species recorded in Wetland D is provided in Table 4-18.

Small portions of Wetland D along the perennial, NYSDEC watercourse consist of open wet meadow vegetation with seasonally saturated soils. The dominant persistent vegetation in these streamside open areas consists of grasses, sedges, smartweeds and skunk cabbage, exhibiting an estimated 90 percent growing-season cover. Similarly, the connection to Wetland A along the tributary corridor provides a wet corridor with dense vegetation for animals that may want to move from the subject site to the more well-developed Wetland D complex.

Wetland D provides a complex of habitat and cover types, with transitions between upland and wetlands, pockets of open areas created by windthrows and interspersion of wooded wetland and marshy floodplain vegetation. Standing dead trees provide cavities for nesting birds, tussocks and overturned root masses provide basking opportunities for amphibians and reptiles, and soft soils provide an opportunity for burrowing animals. Fauna observed or likely to utilize Wetland D for nesting, breeding, foraging or cover on a seasonal or year-round basis is provided in Table 4-17 below.

**Table 4-17
Fauna Observed or Expected to Utilize Wetland D**

Common Name	Scientific Name	Use			
		N	B	F	C
Birds					
American Woodcock	<i>Philohela minor</i>				
Barred Owl *	<i>Strix varia</i>			X	X
Black-capped Chickadee*	<i>Parus atricapillus</i>	X	X	X	X
Blue Jay*	<i>Cyanocitta cristata</i>	X	X	X	X
Broad-winged Hawk	<i>Buteo platypterus</i>	X		X	
Common Yellowthroat*	<i>Geothlypis trichas</i>	X	X	X	X
Downy Woodpecker*	<i>Picoides pubescens</i>	X			
Hairy Woodpecker	<i>Picoides villosus</i>	X			
Kentucky Warbler	<i>Oporornis formosus</i>	X	X	X	X
Mallard*	<i>Anas platyrhynchos</i>	X	X	X	X
Northern Cardinal	<i>Cardinalis cardinalis</i>			X	X
Northern Flicker*	<i>Colaptes auratus</i>			X	X
Ovenbird	<i>Seiurus aurocapillus</i>				
Red-bellied Woodpecker*	<i>Melanerpes carolinus</i>	X	X	X	X
Red-eyed Vireo*	<i>Vireo olivaceus</i>	X		X	
Warbler Species*	<i>Dendroica/Vermivora spp.</i>	X	X	X	X
Warbling Vireo	<i>Vireo gilvus</i>				
White-breasted Nuthatch*	<i>Sitta carolinensis</i>	X		X	X
White-throated Sparrow*	<i>Zonotrichia albicollis</i>	X		X	X
Wood Duck	<i>Aix sponsa</i>		X	X	X
Wood Thrush*	<i>Hylocichla mustelina</i>	X		X	
Yellow Warbler*	<i>Dendroica petechia</i>	X		X	
Amphibians					
American Bullfrog*	<i>Rana catesbeiana</i>	X	X	X	X
American toad*	<i>Bufo americanus</i>	X	X	X	X
Four-toed salamander	<i>Hemidactylum scutatum</i>	X	X	X	X
Green frog*	<i>Rana clamitans</i>	X	X	X	X
Pickerel frog	<i>Rana palustris</i>	X	X	X	X
Red-backed salamander*	<i>Plethodon cinereus</i>	X	X	X	X
Red-spotted newt	<i>Notophthalmus viridescens</i>	X	X	X	X
Spring peeper	<i>Pseudocris crucifer</i>	X	X	X	X
Two-lined salamander	<i>Eurycea bislineata</i>	X	X	X	X
Wood frog	<i>Rana sylvatica</i>	X	X	X	X
Reptiles					
Eastern Box turtle	<i>Terrapene carolina</i>			X	X
Wood turtle	<i>Clemmys insculpta</i>			X	X
Ribbon snake	<i>Thamnophis sauritis</i>			X	X
Garter snake*	<i>Thamnophis sirtalis</i>				X
Mammals					
Raccoon*	<i>Procyon lotor</i>			X	
Eastern chipmunk*	<i>Tamias striatus</i>			X	X
Gray squirrel*	<i>Sciurus carolinensis</i>	X		X	X
Red fox	<i>Vulpes vulpes</i>			X	
Striped skunk	<i>Mephitis mephitis</i>			X	
White tail deer*	<i>Odocoileus virginianus</i>			X	X
Fish					
Cyprinidae minnows	<i>Unknown minnow species</i>	X	X	X	X
Use: N - Nesting, B - Breeding, F - Feeding/Foraging, C - Cover					
Source: Tim Miller Associates, 2007, 2008					
*Species that were observed during formal surveys.					
For a comprehensive list of all fauna observed or potentially using the project site, refer to Table 4-27 at the end of this chapter.					

Table 4-18	
Spring- and Summer-flowering Plants - Observed Species in Wetland D	
Spring-flowering plants	
Common Name	Species
Bittersweet nightshade	<i>Solanum dulcamara</i>
Canada Mayflower	<i>Maianthemum canadense</i>
Dwarf ginseng	<i>Panax trifolium</i>
Garlic mustard	<i>Alliaria petiolata</i>
Golden ragwort	<i>Packera aurea</i>
Golden zizia	<i>Zizia aurea</i>
Green false hellebore	<i>Veratrum viride</i>
Gypsy-weed	<i>Veronica officinalis</i>
Jack-in-the-pulpit	<i>Arisaema triphyllum</i>
Littleleaf butter-cup	<i>Ranunculus abortivus</i>
Marsh marigold	<i>Caltha palustris</i>
Mouse ear chickweed	<i>Cerastium vulgatum</i>
Partridgeberry	<i>Mitchella repaens</i>
Pennsylvania bittercress	<i>Cardamine pennsylvanica</i>
Ragged robin	<i>Lychnis flos-cuculi</i>
Red trillium*	<i>Trillium erectum</i>
Rue anemone	<i>Thalictrum thalictroides</i>
Skunk cabbage	<i>Symplocarpus foetidus</i>
Spotted jewelweed	<i>Impatiens capensis</i>
Strict blue-eyed grass	<i>Sisyrinchium montanum</i>
Swamp saxifrage	<i>Saxifraga pensylvanica</i>
Trout lily	<i>Erythronium americanum</i>
True forget-me-not	<i>Myosotis scorpioides</i>
Two-leaf toothwort	<i>Cardamine diphylla</i>
Violet	<i>Viola spp.</i>
Wild crane's-bill	<i>Geranium maculatum</i>
Wood anemone	<i>Anemone quinquefolia</i>
Summer-flowering plants	
Arrowleaf tearthumb	<i>Polygonum sagittatum</i>
Devil's beggarticks	<i>Bidens frondosa</i>
Ditch-stonecrop	<i>Penthorum sedoides</i>
Gypsy weed	<i>Veronica officinalis</i>
Halberdleaf tearthumb	<i>Polygonum arifolium</i>
Hog peanut	<i>Amphicarpaea bracteata</i>
Jumpseed	<i>Polygonum virginianum</i>
Mad-dog skullcap	<i>Scutellaria lateriflora</i>
Marsh pennywort	<i>Hydrocotyle americana</i>
Northern bugleweed	<i>Lycopus uniflorus</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Selfheal	<i>Prunella vulgaris</i>
Spotted Joepyeweed	<i>Eupatorium maculatum</i>
Stinging nettle	<i>Urtica dioica</i>
Virginia creeper	<i>Parthenocissus quinquefolia</i>
White avens	<i>Geum canadense</i>
White wood aster	<i>Eurybia divaricata</i>
Source: Tim Miller Associates, Inc., 2006.	
* NYS exploitably vulnerable species.	
Species in bold type are not native to this region.	
None of the above observed species are Westchester County-listed species.	
Prepared by: Tim Miller Associates, Inc., 2007	
For a comprehensive list of all flora observed on the project site, refer to Table 4-26 at the end of this chapter	

4.1.3.3 Marsh Headwater Stream

One NYSDEC mapped stream corridor drains this property, through Wetland D. A small tributary of this stream enters from the north, with its headwaters in Wetland A as described above. This mapped stream most closely resembles the habitat description provided by Edinger et al (2002) for a *marsh headwater stream*. The corridor provides perennial flow when not frozen, and varies in width from a few feet to approximately ten feet, in meandering channels. The stream channel changes from a stony to a sandy substrate as the property is crossed and has created some steep cut earthen banks on outer portions of some meanders. Small reptiles and amphibians living within the stream corridors (red-backed salamanders and American toads have been observed) offer additional food source to some of the larger omnivorous mammals that may be present (e.g., raccoons, fox, skunk), and the largely undeveloped nature of the offsite watershed draining to Wetland D ensures good water quality both for the aquatic species and the larger mammals that feed on them. Tree coverage provides shade for the watercourse and moderates summer temperature fluctuations which is important to survival of the blacknose dace and other unidentified minnows observed on site as well as other fish species downstream of the site.

This perennial stream is assigned a Class C designation by NYSDEC. The NYSDEC identifies Class C waters as suitable for fish propagation and survival. Water quality in Class C waters supports a best usage of “fishing” and is suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes. This watercourse is regulated by the USACE, the NYSDEC, the Town of North Salem, and the NYSDEP.

The NYSNHP identifies this stream type as a “natural stream” subsystem. This NHP subsystem type includes streams in which the stream flow, morphometry, and water chemistry have not been substantially modified by human activities, or where the native biota are dominant. The biota may include some introduced species (for example, stocked or accidentally introduced fishes), however the introduced species are not usually dominant in the stream community as a whole. The Marsh Headwater Stream is an ecological community “...of a small, marshy perennial brook with very low gradient, slow rate, and cool to warm water that flows through a marsh, fen, or swamp where a stream system originates.” These streams usually have clearly distinguished meanders (i.e. high sinuosity), are in unconfined landscapes, are typically dominated by runs with interspersed pool sections and are shallow, narrow with relatively small low flow discharge. *Marsh Headwater Streams* are ranked G4 (apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery) and S4 (apparently secure in New York State).⁸

4.1.3.4 Tree Canopy in Wetland Areas

Canopy transverse were recorded in the two larger wetlands, Wetland C and NYSDEC Wetland L-32 (Wetland D). Observations made along these transects are shown in Tables 4-19 and 4-20.

⁸ Edinger, G.J. et al (Eds.) 2002. Ecological Communities of New York State. Second Edition. NYSNHP, NYSDEC. Albany, NY. 136 pp.

Table 4-19	
Wetland C Transect, North to South	
Location #	Estimated % Cover
1	10
2	5
3	5
4	30
5	100
6	100
Average	42

Table 4-20	
Wetland D Transect, West to East	
Location #	Estimated % Cover
1	90
2	100
3	80
4	40
5	100
6	90
Average	83

Of the four wetlands on the project site, Wetland D performs the greatest variety of wetland functions. This most diverse of the on-site wetlands, receives and detains stormwater runoff from hillside sections of the property, includes a diversity of wooded and herbaceous wetland vegetation which provides wildlife forage and nesting habitat and provides a significant benefit to water quality by reducing pollutant concentrations that may occur in runoff. A survey for vernal pool habitat and species was conducted on the site in April of 2006, and no evidence for any vernal pool breeding amphibians was identified during this survey (see below). The wildlife value of this area is expected to be in the moderate to high range due to the diversity of vegetation and the proximity to other nearby habitat types (i.e. wooded uplands and a perennial stream that extend offsite). The stream supports year round populations of minnows (Cyprinidae) and of most of the aquatic and terrestrial amphibians observed on the site.

Small portions of the larger Wetlands C and D consist of open wet meadow vegetation with seasonally saturated soils. The canopy transect data presented in Table 4-20 above for NYSDEC Wetland L-32 (Wetland D) depicts the open nature of the overhead tree canopy in a representative portion of these wet meadow areas. The areas of opened canopy allows for the development of a more complex vegetative community beneath. The dominant persistent vegetation in these streamside open areas consists of grasses, sedges, smartweeds and skunk cabbage.

Each of the vegetation associations noted above represents a different type of wildlife habitat. The "edge habitats" that are present between each different vegetative communities increases the complexity of the habitat structure and the related diversity of niches that wildlife species may exploit.

4.1.3.5 Town, State and Federal Regulated Wetlands

Wetland delineations conducted on the project site by Richard B. Jacobson on December 14, 2004, and verified by Tim Miller Associates, Inc. (TMA) during November 2005, confirmed the presence of the four wetlands on the site. These wetlands, and a one hundred foot controlled area around them, are each subject to the Town of North Salem's Local Wetlands Law. The boundaries of these on-site wetlands are shown on Figure 6-5 Existing Conditions Map.

The US Army Corps of Engineers (Corps) has determined that the two smaller wetlands (Wetlands A and B), are isolated from any other waters of the United States for jurisdictional purposes as defined in Section 404 of the Clean Waters Act. As such, these wetlands are not regulated by that agency. The Corps also confirmed that it will exercise jurisdiction over Wetlands C and D. Written confirmation of this jurisdictional determination is expected from the agency in April 2008.

On March 17, 2008, NYSDEC determined that Wetland B and C do not meet NYSDEC Article 24 freshwater wetland criteria, and that Wetland A is hydrologically connected to, and therefore part of, Wetland D (NYSDEC Wetland L-32) which is the largest of the wetlands on the site. For more detailed information on site wetlands, please see Section 6 of this DEIS.

4.1.4 Vegetation

4.1.4.1 Flowering Plants

Site-wide, a large number of Summer and Spring-flowering plants were observed, of which three, the common elderberry, swamp azalea and nannyberry were flowering shrubs. Table 4-26 at the end of this section presents the identification and locations throughout the site of each of the species. Additional survey activity on the site during July and August, 2007, allowed for incidental observation of some of the Summer flowering plants on the property to be recorded. The common names of the flowering plants in the tables below are taken from the NY State Flora Atlas and the scientific names are referenced to the online United States Department of Agriculture's "PLANTS" database.

4.1.4.2 Grasses, Grasslike and Non-flowering Plants

These plants are not a prominent component of the plant communities, reflecting the overall forested nature of the project site. Most grasses were observed in the disturbed roadside area bordering June Road. Some sedges and grasses are present within the wetlands, and some fern species are present within either the wetlands or the upland areas of the site. Table 4-26 lists the species recorded for the site during the spring and summer survey periods.

4.1.4.3 Endangered, Threatened Rare or Exploitably Vulnerable Plant Species

None of the Spring or Summer flowering plants identified on the site are listed by the Federal government or by New York State or Westchester County as a species that is endangered or threatened. Thirteen species of plants on the project site are State-listed exploitably vulnerable (refer to Section 4.1.4.4, Identified Exploitably Vulnerable Species). Plants that are "exploitably vulnerable" are listed as protected species under 6NYCRR New Part 193, Protected Native Plants, and are defined in the state listing as, "...native plants likely to become threatened in the near future throughout all or a significant portion of their ranges within the state if casual factors

continue unchecked [e.g, all orchids, most ferns].” New York State law protects state-listed plants existing on public lands. Right of protection of exploitably vulnerable species are conveyed by the State to the private land owner on which the species are present. With the consent of the land owner, it is not a violation “for any person, anywhere in the state, to pick, pluck, sever, remove, damage by the application of herbicides or defoliant, or carry away...any protected plant.”

4.1.4.4 Identified Exploitably Vulnerable Species

Long-bract Green Orchis (Coeloglossum viride)

The long bract green orchis is a widespread North American terrestrial orchid that is endemic to all regions of New York State, from Long Island to the Adirondacks through the western Appalachian plateau. This orchid is relatively non-selective in its habitat requirements and may be found established in a wide variety of soils, from moist, organic soils to dry soils of low fertility and may establish itself in disturbed soils of second growth woodlands as well as on lawns. On the project site, two individual specimens of the plant have been observed growing in the middle of a dirt ATV trail located on the higher wooded slopes to the west of Wetland D.

Red Trillium (Trillium erectum)

Red trillium, also known as wake-robin, is a spring flowering perennial native to the northeast. The plant produces dark reddish-purple flowers from April to June. The species grows in a variety of rich woods. On the project site, few individuals in good condition were observed along the edges of Wetlands A and D.

Spotted Wintergreen (Chimaphila maculata)

The spotted wintergreen is a widespread, if somewhat depauperate, woodland groundcover plant within New York State. Several sparse patches of the plant were identified on the eastern hillside within the 100 foot NYSDEC regulated wetland adjacent area associated with Wetland D.

Few scattered individuals are located outside of the 100 foot NYSDEC regulated adjacent area within the portion of the project site that is designated to become the subsurface septic treatment system.

Pink Azalea - Rhododendron periclymenoides (Rhododendron nudiflorum)

Pink azalea, also known as pinxter-flower, with lightly fragrant inch-wide blooms, is a fairly common wild azalea in the eastern U.S. A stoloniferous shrub that may reach up to four feet tall, but is usually smaller, prefers to grow in habitats with sun to partial shade and moist, well-drained soil; it will, however, grow in sandy soils. One individual specimen was identified within Wetland D, just off the shoulder of June Road.

Butternut (Juglans cinera)

Butternut trees, also called white walnut or oilnut, grow rapidly on well-drained soils of hillsides and streambanks in mixed hardwood forests. A small- to medium-sized tree, it is typically short lived, seldom reaching the age of 75. Butternut is found with many other tree species in several

hardwood types in the mixed mesophytic forests. Forest stands seldom contain more than an occasional butternut tree, although in local areas it may be abundant.

A single individual of this species is located along the southern property line, west of Wetland D. This individual is in poor condition with substantial portions of its branches dead and much of its bark stripped.

Flowering Dogwood (Cornus florida)

Flowering dogwood, a small deciduous tree also known as boxwood, grows on soils varying from deep and moist along minor streams to light textured and well drained in uplands. The species grows well on flats and on lower or middle slopes, but not very well on upper slopes and ridges. The inability to grow on extremely dry sites is attributed to its relatively shallow root system. Flowering dogwood is usually an understory component in mixed hardwood forests or at the edges of pine forests.

Five individuals were identified on the project site by the tree survey. Of these five specimens, four are located within the area of disturbance and will be removed during construction. Two of the four specimens to be removed were noted to be in poor health. Many saplings of this species were identified on site by TMA biologists and are located throughout the site both inside and out of the area of disturbance.

As noted, of the plants meeting this designation and observed on the site, the red trillium and the swamp azalea are located within the wetlands and are thus to remain undisturbed. The spotted wintergreen is a widespread, if somewhat depauperate, woodland groundcover plant within New York State. It would be eradicated from the developed areas but expected to remain present in the undisturbed wooded areas of the site. The long bracted orchid is a widespread North American terrestrial orchid that is endemic to all regions of New York State, from Long Island to the Adirondacks through the western Appalachian plateau. This orchid is relatively non-selective in its habitat requirements and may be found established in a wide variety of soils, from moist, organic soils to dry soils of low fertility and may establish itself in disturbed soils of second growth woodlands as well as on lawns. On the project site, a few specimens of the plant have been observed on the higher wooded slopes to the west of Wetland D. This plant may be expected to persist within both the undisturbed woodlands and the new landscaped habitats to be created on this site.

Christmas Fern (Polystichum acrostichoides)

Christmas fern occurs on both dry and moist wooded slopes, moist banks and ravines. The fern prefers partial shade, but will tolerate a fair amount of direct sunlight, as long as the soil is moist to prevent the plant from drying out. Christmas ferns were identified in multiple locations throughout the site, including larger, healthy populations within Wetlands A, B and D and their associated buffers.

Cinnamon fern (Osmunda cinnamomea)

Cinnamon fern is a common fern that grows naturally in moist habitats such as wet woods, the shores of lakes and rivers, and in bogs and swamps. A thriving population of cinnamon ferns were observed within Wetland D.

Evergreen wood fern (Dryopteris intermedia)

Evergreen wood fern is native to northeastern North America where it prefers to grow in moist, rich woods, especially in limestone areas, and swamp margins. Small populations were identified on the edges of Wetlands B and C and their adjoining buffers. The upslope, southern portion of Wetlands B and C combined buffer supports significant populations of fern species, including evergreen wood fern.

Interrupted fern (Osmunda claytoniana)

Interrupted fern is found in humid zones, mostly damp fields or woods, in rich, often fine-grained, neutral or somewhat acidic soils. A population of this fern species thrives within Wetland D.

Lady fern (Athyrium filix-femina)

Lady ferns can be found growing in meadows, open thickets, moist woods, and along stream beds, preferring shaded areas. Lady ferns will grow in a group in the shape of a circle. As they grow farther and farther outwards, the centers die away, leaving a ring of ferns. A healthy population of the species was observed in the combined buffer of Wetlands B and C. This buffer area, as discussed above, provides habitat for several species of ferns.

New York fern (Thelypteris noveboracensis)

New York Fern grows in moist woods, especially near swamps, streams, and in vernal seeps of ravines, often in slightly disturbed secondary forests. It frequently forms large colonies preferring deep shade. Healthy populations were identified within the combined buffers of Wetlands B and C.

Spinulose wood fern (Dryopteris carthusiana)

Spinulose wood fern is commonly found growing in wet woods, stream banks or swampy areas. A small, healthy population was observed within the combined buffers of Wetlands B and C.

4.1.4.5 Invasive Plant Species

The northern successional hardwood forest on site contains several alien invasive species and has been minimally encroached upon by other invasive species which may become established and alter the present species composition and forest structure. One of the exotic species on the site, the Asiatic plume poppy (*Macleaya cordata*), is a relatively recent introduction into New York State natural communities. It is a garden perennial that has escaped from cultivation widely throughout the Eastern United States and has become a successful invader of deciduous woods, thickets and wetland adjacent wetlands.

However, the tree community is dominated by native species as shown in Table 4-2, but three aggressively invasive species, Norway maple, black locust and tree-of-heaven are present and may become further established on the site.

Similarly, the limited brushy understory within the existing woods is presently dominated by the native spicebush and invasive, Japanese barberry. The presence of a few winged euonymus,

plume poppies, Autumn olive and Siebold's arrowwood throughout the site may eventually result in their further spread to the detriment of the existing native vegetation. Garlic mustard, an aggressive early Spring competitor on shaded forest floors, has already invaded and now dominates the upland ground cover.

Many of these on-site invasive plants possess allelopathic properties, releasing anti-metabolic chemicals into the soil that inhibit both the growth of other plants within their root zone. This competitive property, common to garlic mustard as well as Norway maple, black locust and tree-of-heaven, makes these plants aggressive invaders of local forests.

The online database resource of the New York State Flora Association was used to identify non-native species. In each of the tables of site vegetation presented in this section, the non-native plants are presented in bold typeface.

Within the utility ROW that crosses the site, a younger successional woodlands is being maintained that promotes a more dense shrub and herb layer. This has allowed the development of thickets, which are valuable to smaller mammal species and many species of birds, particularly songbirds. These thickets are made up of brambles and invasive species such as multiflora rose and Autumn olive that provide cover and a food source for a variety of smaller woodland species.

While some common invasive, non-native plants such as garlic mustard and Japanese barberry are widespread across the site, most of the observed invasive species were located along the shoulder of June Road or the utility line ROW. Along the southern boundary of the site, wisteria vines (*Wisteria* spp.) and plume poppy (*Macleaya cordata*) were commonly established in the proximity of adjoining estate gardens. Table 4-21 below shows aggressive invasive plants observed on site and their locations.

Table 4-21 Aggressive Exotic Invasive Plants - Observed Species							
Common Name	Species	Where Identified					
		Utility ROW	June Road	Wetland D	Wetland A	Wetlands B and C	Forested Uplands
Autumn olive	<i>Elaeagnus umbellata</i>	X					
Black locust	<i>Robinia pseudoacacia</i>	X					X
Common reed	<i>Phragmites australis</i>			X			
Garlic mustard	<i>Alliaria petiolata</i>	X	X	X	X	X	X
Japanese stilt grass	<i>Microstegium vimineum</i>	X					X
Japanese honeysuckle	<i>Lonicera japonica</i>						X
Japanese barberry	<i>Berberis thunbergii</i>	X	X	X	X	X	X
Multiflora rose	<i>Rosa multiflora</i>	X	X				X
Norway maple	<i>Acer platanoides</i>	X					X
Plume poppy	<i>Macleaya cordata</i>						X
Purple loosestrife	<i>Lythrum salicaria</i>		X	X			
Siebold's arrowwood	<i>Viburnum sieboldii</i>	X					
Tree-of-Heaven	<i>Ailanthus altissima</i>	X					
Winged euonymus	<i>Euonymus alata</i>			X			
Wisteria vine	<i>Wisteria spp.</i>						X

Source: Tim Miller Associates, Inc., 2007, 2008.
Prepared by: Tim Miller Associates, Inc., 2008.
For a comprehensive list of all flora observed on the project site, refer to Table 4-26 at the end of this chapter

4.1.5 Site Wildlife (non-avian)

Given the plant community structure and diversity of plants species across the site its wildlife habitat value is considered to be moderate. A higher overall value to wildlife would be expected if the site were more extensive or connected to significant offset resources that were more readily available to support more types and numbers of wildlife species in an unfragmented environment.

4.1.5.1 Methodology

During April of 2006, a three-night survey was conducted to locate and identify any species of vernal pool breeding amphibians that might utilize the site wetlands. No evidence (e.g. direct observation of adults, egg masses, spermatophores or frog breeding calls) for any Spring breeding vernal pool amphibians was identified during this survey. Without winter-persistent pool habitat, the project site can not support critical habitat for spring breeding mole salamanders, such as the spotted and Jefferson salamander, or the marbled salamander, a vernal pool mole salamander that breeds in the fall. Surveys were also conducted by staff from TMA on May 5, 16 and 30, 2006, to locate non-vernal pool breeding amphibian, reptile and mammal species present on the project site. No vernal pool dependent salamander species (i.e., those listed as State species of special concern) were observed during these site visits. Additional site surveys were conducted in July and August of 2007.

Signs of deer and raccoon were observed throughout the habitat type. The project site where it abuts surrounding developed properties creates forest "edge habitat" of a kind that is exploited by feeding deer, especially during early morning and evening hours. Indicators of higher

predatory species (e.g., coyote, fox) have not been found on the site, although habitat does exist that could potentially be used by such species, and food sources are readily available.

A variety of wildlife species were observed or could be expected to occur on the property. Wildlife on the site is comprised of species typically encountered in the woodlands and wetlands of upper Westchester and lower Putnam County. Table 4-27 at the end of this section provides a detailed list of actual observations and expected occurrences of wildlife species on the project site. The United States Fish and Wildlife Service list of threatened and endangered species includes none of the wildlife species observed on the site in their list of animals afforded protection at the federal level.

Mammals observed directly or indirectly (by track or scat) included species that are relatively common and active during daylight such as white tail deer, raccoon, gray squirrel, Eastern cottontail, and Eastern chipmunk. Other less common or primarily nocturnal species such as coyote, mice, skunks and raccoons could be expected to use the property also. Small reptiles and amphibians that may be present would offer food sources to some of the larger omnivorous mammals that are expected (e.g., raccoons, fox).

Correspondence from the NYSDEC Natural Heritage Program (NHP) received February 13, 2006, indicated that it had no records of endangered or threatened plant or animal species or significant habitats occurring on or near the project site. A copy of the letter is included in Appendix B.

Several reptiles and amphibians were observed on the project site, including Eastern garter snake, Eastern box turtle, American toad, red-backed salamander, green frog, bullfrog and pickerel frog. Of the amphibians and reptiles identified on the site, the Eastern box turtle is listed as a Species of Special Concern by the NYSDEC. The Eastern Box turtle is described in greater detail below.

4.1.5.2 Federally Listed Endangered or Threatened Species

No federally listed endangered or threatened species were observed or expected to utilize the subject site.

4.1.5.3 State or County Listed Species - Unusual or locally rare wildlife (non-avian)

As noted above, several species of animals were identified on the site that are listed either by the State or County as being locally rare or being of special conservation concern.

Eastern Box Turtle (Terrapene carolina)

Of the amphibians and reptiles identified on the site, the Eastern box turtle is listed as a Species of Special Concern by the NYSDEC. In addition, this is a Westchester County-listed threatened species. Two individuals were observed adjacent to the west side of Wetland C, in the northwest portion of the site.

A Species of Special Concern is defined by NYSDEC as “any native species for which a welfare concern or risk of endangerment has been documented in New York State.”⁹

⁹ New York State Department of Environmental Conservation. 2006. List of Endangered, Threatened and Special Concern Fish & Wildlife Species of New York State.

The major threats to box turtles appear to be pesticide poisoning and collection as pets. Special Concern species are not afforded any specific protection under State Law and are listed for informational purposes only. The Eastern box turtle is also listed as a “threatened species” on the Westchester County Endangered Species List (Revision 3/23/2005). This list is compiled specifically for the preservation of wildlife on County owned properties, but is often used as a guideline for review of projects within the County.

Eastern box turtles are versatile animals and inhabit a wide variety of habitats from wooded swamps to dry, grassy fields. Although these turtles can live in a variety of habitats, they are most abundant and healthy in moist forested areas with plenty of underbrush. While not aquatic, box turtles will often venture into shallow water at the edge of ponds or streams or in puddles. Box turtles typically have small home ranges and may be sustained within areas of appropriate habitat as small as one acre.

The two box turtles were observed between Wetlands C and D. This part of the site is enclosed within existing stone walls, which could serve to limit the range of the turtles on the property. One narrow opening in the stone wall was observed in the southwest portion of this area, which could provide access to Wetland A if the turtles were moving in that direction. The proposed development would maintain blocks of habitat around all of the wetlands areas that meet this criteria.

Slimy Salamander (Plethodon glutinosus)

The northern slimy salamander is a fully terrestrial woodland salamander that inhabits upland mixed forests with dense canopies and many rocks and logs on the forest floor. Slimy salamanders are common on heavily forested slopes dominated by hardwoods and extensive rock outcrops. Outcroppings of shale or talus on these forested slopes can serve as critical overwintering habitat.

Adult and juvenile slimy salamanders spend much of the day underground in crevices or in talus slopes. During spring and fall days, individuals can often be found underneath stones or logs. At night, individuals can be seen at the mouths of crevices or on the forest floor searching for food such as arthropods, earthworms, and terrestrial mollusks.

Northern slimy salamanders typically mate terrestrially during the spring and fall. Eggs are laid in underground cavities or within rotting logs and stumps during the early period of summer.

Suitable habitat for the slimy salamander exists throughout portions of the successional northern hardwood forest that composes 80 percent (31.9 acres) of the site. No slimy salamanders were observed during site surveys.

Four-toed Salamander (Hemidactylium scutatum)

Four-toed salamanders, a Westchester County listed species of special concern, are small salamanders that inhabit woodlands and swamps. They are found in moist forests that contain small ponds, seepages, bogs, or swamps, typically associated with *Sphagnum* moss.

Four-toed salamanders mate in the fall beneath leaves, roots, and logs located on the forest floor. In mid-spring, female individuals will move to edges of ponds, swamps, or slow-moving creeks to lay eggs in a nest site, typically a secluded crevice hidden beneath a mat of moss or

plant roots near the water's edge. Occasionally, up to five females will lay eggs in a communal nest.

Suitable habitat for the four-toed salamander exists on-site within the 8.08 acres wetlands. Potential breeding habitat exists in the 9.18 acres of wetland buffer. No four-toed salamanders were observed during site surveys.

Black Ratsnake (Elaphe alleghaniensis)

The black ratsnake or eastern ratsnake is a large, mostly black snake that inhabits rocky outcrops in forested regions. Individuals can be found in woodlands or the edges of forest-fields, especially those with exposed rocky outcrops. Black ratsnakes are excellent climbers, spending much of their time in trees.

Black ratsnakes hibernate in south-facing openings of rocky outcrops and talus slopes. Some individuals will hibernate in unused wells or in basements of homes and buildings, anywhere to escape freezing temperatures. Lack of suitable overwintering habitat may be the influencing factor that limits the distribution of this species.

Open fields on adjacent properties bordering the project site to the southwest in combination with the successional northern hardwood forest community located on the site provide potential habitat for the species.

The project site is not likely to host any hibernating individuals due to the lack of rock outcrops or talus slopes with southerly exposure. No black ratsnakes were observed during site surveys.

Eastern Ribbon Snake (Thamnophis sauritis)

The Eastern ribbon snake is a medium-sized snake with three light stripes contrasting against a dark background that are often mistaken for garter snakes. Ribbon snakes are typically found in grassy or shrubby vegetation in or near wet habitats and are seldom found far from ponds or swamps as they readily take to water.

Ribbon snakes are active from late March through October and are mostly diurnal. Hibernation takes place in abandoned rodent tunnels or among upturned tree roots near a water's edge. During periods of hot and dry weather, ribbon snakes may become inactive for short periods of time.

Potential habitat for the Eastern ribbon snake exists on site within all on site wetlands and their associated 100 foot buffers. No eastern ribbon snakes were observed during site surveys.

4.1.6 Birds

4.1.6.1 Methodology

A total of 41 bird species were identified either on, adjacent to, or "flying by" the project site during the formal bird surveys (Table 4-22). Species were identified by their calls and/or by visual observation. This typically results in the recording of a higher proportion of birds that are more vocal and/or have a loud call (e.g. red-eyed vireo and ovenbird) and a lower proportion of those that are not as vocal and/or have softer or high pitched call (e.g. black and white warbler).

Vocal birds may also be counted in habitats they do not typically use because their calls can carry for long distances making it difficult to accurately place their location. During the surveys, there were occasions on which calling birds were not identified due to similarities in the calls of different species, duration of the call or song, distance from the calling or singing bird, etc.

An owl was observed in flight during the formal vernal pool breeding survey on March 14, 2006. Although unidentified, based on its size, it is likely that the owl was either a barred or great horned owl. Bird species that were not observed but use habitat similar to that present on the project site are included in Table 4-22 and are marked with an asterisk.

A pair of red-tailed hawks were observed on and around a nest in the central eastern portion of the site. Young were not observed but an adult would circle the area and call repeatedly when surveyors were in the vicinity of the nest site. The nest tree was revisited on August 13, 2007 and observed to be in poor condition (sticks hanging from it) showing no signs of recent usage. The nest tree will likely be felled during development of the site. Mitigation is not proposed for loss of the nest tree as this species is not a threatened or endangered species at either the state or federal level.

Of the birds identified during the survey, the sharp-shinned hawk is listed by the NYSDEC as protected (Species of Special Concern) and the wood thrush is listed by Westchester County as of Special Concern. The sharp-shinned hawk was observed flying by the site. This bird likely uses habitat in the vicinity of the project site to forage. No sharp-shinned hawk nest was observed on the property.

The wood thrush, was identified both audibly and visually in the wooded portions of the site. This bird is generally considered a forest interior species whose breeding range extends over most of the eastern half of the United States. While it is on the Westchester County list as a special concern species, this bird species can be and has been observed within appropriate habitat throughout Westchester and surrounding counties. Impacts to habitat on the site would cause individuals of this species to find other appropriate habitat nearby. As such, significant adverse impacts to the wood thrush population in the County would not be expected.

Other County listed species not observed on-site are the Cooper's Hawk (endangered), cerulean warbler (endangered), Kentucky warbler (endangered), American woodcock (threatened), worm-eating warbler (special concern) and Canada warbler (special concern). As with the wood thrush, while impacts to individuals that use the project site and possibly the areas immediately adjacent would result, significant adverse impacts to the local population are not expected. Wetlands within the project site and their appropriate buffers will also remain undisturbed, providing habitat for Kentucky warbler, worm-eating warbler, and American woodcock.

One State-listed bird that was not identified during the survey or site visits but may use habitat on the site is the Cooper's hawk (special concern). This bird is listed as endangered by Westchester County. While some habitat for this bird species does exist on the project site, loss of the same would not be expected to result in significant adverse impacts to the local population because adjacent lands provide adequate habitat for the species to utilize.

The United States Fish and Wildlife Service list of threatened and endangered species includes none of the avian species observed on the site in their list of animals afforded protection at the federal level.

4.1.6.2 Breeding Bird Atlas

The NYS Breeding Bird Atlas (BBA) is a comprehensive, statewide bird survey that documents the breeding birds identified by trained volunteers in three-mile square blocks. The most recent surveys (2000 through 2004) have been completed and data is being compiled for inclusion in the final report to be released in 2008. The listings include data on the breeding behavior observed, the year the bird(s) was observed and the state protection status of the species.

The Salem Hunt project site falls within the BBA Block number 6157A.¹⁰ The breeding bird list for this block is available from the recent 2000 to 2004 surveys but is considered “interim data” until released officially as part of the final report as well as from the 1980 to 1985 survey. Both are included as Appendix D of this report. It is important to note that birds would choose to breed in the habitat most suitable to their species. Therefore, the listing of a particular bird in a block does not mean that species would breed everywhere in that block. The list for each block would include a greater number of breeding birds than would utilize any given site within that block. These BBA lists were used to assist in determining the species expected to use the site. These species are included in Table 4-26.

Of the birds identified as potential users of the project site, the Cooper’s hawk and cerulean warbler are listed by the NYSDEC as Species of Special Concern. None of the species expected to use the property are protected at the federal level under the Endangered Species Act.

The regionally rare Louisiana waterthrush (*Seiurus motacilla*) has been identified in the Breeding Bird Atlas Block that covers the site. Breeding habitat for this locally scarce species consists of wet woodlands near running water. A nest is typically built in early April among tree roots or near a rock or crevice. While this species was not observed on site, potential breeding habitat for this avian species may exist. However, if present, this habitat would be located in the protected NYSDEC Wetland L-32 (Wetland D). As the stream within the wetland, the wetland and the wetland buffer will remain undisturbed, potential breeding habitat for Louisiana waterthrush will continue to be available after construction of the project; mitigation is therefore not proposed.

4.1.6.3 Partners in Flight

Partners in Flight was launched in 1990 in response to growing concerns about declines in the populations of many land bird species and in order to emphasize the conservation of birds not covered by existing conservation Initiatives.¹¹ The organization has released conservation plans by region; the project site is located in the Southern New England Region (physiographic area 9). The priority species pool included in the conservation plan is a list that represents priorities for conservation action within the physiographic area. Species on the list may be considered a priority for several reasons, including global threatening of the species, high concern for regional populations, or responsibility for conserving large or important populations. Bird species of high continental priority are species that are typically of conservation concern throughout their range and those classified as high regional priority are those that are of moderate continental priority, but are important to consider for conservation within a region due

¹⁰New York State Department of Environmental Conservation. 2006. NYS Breeding Bird Atlas. Website: <http://www.dec.state.ny.us/apps/bba/>.

¹¹Ruth, J. M. 2006. Partners in Flight - U.S. Website. Served by the USGS Patuxent Wildlife Research Center, Laurel, Maryland, USA. <http://www.partnersinflight.org>

to a number of concerns. Species of high continental priority and high regional priority have been identified in Table 4-22 below.

Table 4-22
Birds - Observed and Expected Species

Common Name	Scientific Name	Habitat Type				
		RMHS	MHS SC	ED	FB	SNHF
<i>Birds</i>						
American Crow*	<i>Corvus brachyrhynchos</i>				X	
American Goldfinch*	<i>Carduelis tristis</i>				X	
American Redstart	<i>Setophaga ruticella</i>			X		
American Robin*	<i>Turdus migratorius</i>			X		
American Woodcock* ²	<i>Philohela minor</i>			X		X
Baltimore Oriole ²	<i>Icterus galbula</i>			X		
Barred Owl ²	<i>Strix varia</i>	X				
Black-and-white Warbler* ²	<i>Mniotilta varia</i>					X
Black-capped Chickadee*	<i>Parus atricapillus</i>	X				X
Black-throated Blue Warbler ²	<i>Dendroica caerulescens</i>					X
Blue Jay*	<i>Cyanocitta cristata</i>	X	X	X		X
Blue-winged Warbler ²	<i>Vermivora pinus</i>			X		
Broad-winged Hawk	<i>Buteo platypterus</i>					X
Brown-headed Cowbird*	<i>Molothrus ater</i>			X		
Canada Goose*	<i>Branta canadensis</i>				X	
Canada Warbler ²	<i>Wilsonia canadensis</i>					X
Cerulean Warbler ²	<i>Dendroica cerulea</i>					X
Chimney Swift*	<i>Chaetura pelagica</i>				X	
Chipping Sparrow*	<i>Spizella passerina</i>			X		
Common Grackle*	<i>Quiscalus quiscula</i>				X	
Common Yellowthroat*	<i>Geothlypis trichas</i>	X		X		
Cooper's Hawk ²	<i>Accipiter cooperii</i>			X		
Downy Woodpecker*	<i>Picoides pubescens</i>	X				X
Eastern Phoebe*	<i>Sayornis phoebe</i>					
Eastern Screech Owl	<i>Otus asio</i>			X		X
Eastern Towhee*	<i>Pipilo erythrophthalmus</i>			X		X
Eastern Wood Peewee* ²	<i>Contopus virens</i>					X
Finch Species	<i>Carpodacus spp.</i>			X		X
Gray Catbird*	<i>Dumetella carolinensis</i>			X		X
Great-crested Flycatcher	<i>Myiarchus crinitus</i>			X		X
Great-horned Owl	<i>Bubo virginianus</i>					X
Hairy Woodpecker* ²	<i>Picoides villosus</i>					X
Indigo Bunting	<i>Passerina cyanea</i>			X		
Kentucky Warbler ²	<i>Oporornis formosus</i>					X
Mallard*	<i>Anas platyrhynchos</i>				X	
Mourning Dove*	<i>Zenaida macroura</i>			X		
Northern Cardinal*	<i>Cardinalis cardinalis</i>		X	X		X
Northern Flicker*	<i>Colaptes auratus</i>	X		X	X	X
Ovenbird*	<i>Seiurus aurocapillus</i>		X			X
Pileated Woodpecker*	<i>Dryocopus pileatus</i>					X
Red-bellied Woodpecker*	<i>Melanerpes carolinus</i>	X	X			X
Red-eyed Vireo*	<i>Vireo olivaceus</i>	X				X
Red-tailed Hawk*	<i>Buteo jamaicensis</i>					X

Table 4-11 is continued on the following page.

Table 4-22 Birds - Observed and Expected Species (Continued)						
Common Name	Scientific Name	Habitat Type				
		RMHS	MHS	ED	FB	SNHF
Birds						
Rose-breasted Grosbeak ²	<i>Pheucticus ludovicianus</i>			X		
Scarlet Tanager ²	<i>Piranga olivacea</i>					X
Sharp-shinned Hawk ²	<i>Accipiter striatus</i>				X	
Song Sparrow*	<i>Melospiza melodia</i>			X		
Tufted Titmouse*	<i>Parus bicolor</i>			X		X
Turkey Vulture*	<i>Cathartes aura</i>				X	
Veery*	<i>Catharus fuscescens</i>					X
Warbler Species	<i>Dendroica/Vermivora spp.</i>	X	X	X		X
Warbling Vireo	<i>Vireo gilvus</i>					X
White-breasted Nuthatch*	<i>Sitta carolinensis</i>	X				X
White-throated Sparrow*	<i>Zonotrichia albicollis</i>	X				X
Wild Turkey*	<i>Meleagris gallopavo</i>					X
Wood Duck*	<i>Aix sponsa</i>		X			
Wood Thrush*	<i>Hylocichla mustelina</i>	X		X		X
Worm-eating Warbler	<i>Helmitheros vermivorus</i>					X
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>			X		X
Yellow Warbler*	<i>Dendroica petechia</i>	X		X		
Habitat type: RMHS-Red Maple-Hardwood Swamp, MHS-Marsh Headwater Stream, ED-Edge Habitat, FB-Flyby, SNHF-Successional Northern Hardwood Forest						
*Species that were observed during formal bird surveys on the site.						
² Species identified by Partners in Flight as High Continental Priority or High Regional Priority Sources: Tim Miller Associates, Inc., 2006., NYS BBA data, 1980-1985 and 2000-2004. Partners in Flight., 2008. For a comprehensive list of all fauna observed or potentially using the project site, refer to Table 4-27 at the end of this chapter.						

4.1.6.4 Federally Listed Endangered or Threatened Bird Species

No federally listed species of birds were observed or are expected to use the site.

4.1.6.5 State and County Listed Species - Unusual or Locally Rare Birds

American Woodcock (Philohela minor)

The American woodcock, a Westchester County threatened species, prefers a mix of open fields and wet thickets, moist woods and brushy swamps. Individuals spend the day in wet wooded areas, but then move to open fields and other clearings during the evening hours. In the spring, these open areas serve as the stage for males' mating display.

Nests are scrapes on the ground, lined with dead leaves, and are placed either in open woods or in an overgrown field

Potential habitat for woodcocks exists in the 8.08 acres of wetlands and 9.18 acres of wetland buffer on the project site. A woodcock was observed on the site on March 6, 2008.

Cooper's Hawk (Accipiter cooperii)

During the breeding season, Cooper's hawks, a *Westchester County endangered species*, inhabit deciduous, coniferous, and mixed riparian or wetland forests. An individual's territory often contains edge habitat and small openings along streams or roads, which can be utilized for hunting.

Nest sites are often located within closed canopy forests that provide, moderate to heavy shrub cover, and trees more than 30 years old. As more land is developed, nests have been observed increasingly closer to human activity.

Potential Cooper's hawk habitat exists throughout the successional northern hardwood forest and red maple-hardwood swamp that comprise the entire 40 acre project site. The 950 linear feet of marsh headwater stream associated with NYSDEC, Corps, and Town regulated Wetland D provides potential hunting habitat as portions of the wetland are categorized as red maple-hardwood swamp and it's buffer is categorized as successional northern hardwood forest. Potential nesting habitat is provided throughout the successional northern hardwood forest.

Sharp-shinned Hawk (Accipiter striatus)

The sharp-shinned hawk, a *Westchester County endangered species*, occupies woodland areas including coniferous and mixed deciduous forests, bushy and riparian areas, and even urban areas.

The females may nest in woodlots, conifer plantations, riparian forests, or forest patches in a matrix of farmlands. The nest is often found near forest openings or edges, and near a stream, lake, or other body of water. Like the Cooper's Hawk, the sharp-shinned may be nesting with increasing frequency near sources of human disturbance.

Potential sharp-shinned hawk habitat exists throughout the successional northern hardwood forest and red maple-hardwood swamp that comprise the entire 40 acre project site. The 950 linear feet of marsh headwater stream associated with NYSDEC, Corps, and Town regulated Wetland D provides potential hunting habitat as portions of the wetland are categorized as red maple-hardwood swamp and it's buffer is categorized as successional northern hardwood forest. Potential nesting habitat is provided in the riparian corridor of the marsh headwater stream associated with Wetland D.

Cerulean Warbler (Dendroica cerulea)

The cerulean warbler, a *Westchester County endangered species*, is typically found in mature forested areas with large and tall trees of broad-leaved, deciduous species and an open understory, but may also inhabit wet bottomlands, some second-growth forests, and mesic upland slopes. This warbler forages for insects high in the tree canopy.

This species of warbler nests high in the tree canopy on a lateral limb of a deciduous tree, typically above an open area.

The 6.31 acres of red maple-hardwood swamp within Wetland D that surrounds 950 linear feet of marsh headwater stream provides signature riparian habitat for cerulean warblers. Other

potential habitat located on the project site is the 31.9 acres of successional northern hardwood forest located on site, particularly the 2.92 acres included within the regulated buffer of Wetland D.

Nesting opportunities are not expected to be present for the cerulean warbler due to the lack of open areas on the forest floor in which they typically nest above.

Kentucky Warbler (Oporornis formosus)

Deep, moist deciduous woodlands with plenty of understory is the Kentucky warbler's, a Westchester County endangered species, preferred habitat where it forages in the leaf litter for insects and berries. Males sing from thickets or saplings and occasionally in the forest canopy.

In May or June the female builds her well-concealed open cup nest with coarse grasses and oak leaves in dense understory just above the ground and often on a slope. The nest is typically anchored to a small shrub. Nesting locations are often in deep, deciduous, moist woodlands with well-developed ground cover.

Potential habitat for the Kentucky warbler exists in the 8.08 acres of wetland area and 9.18 acres of wetland buffer area on the project site.

Wood Thrush (Hylocichla mustelina)

The wood thrush, a Westchester County species of special concern, inhabits late-successional, upland mesic forests with a moderately-dense shrub layer favoring areas with running water, moist ground, and high understory cover. It prefers deciduous and mixed forests for breeding. The breeding habitat generally includes trees taller than 50 feet, a fairly open forest floor, moist soil, and leaf litter, with substrate moisture more important than either canopy cover or access to running water. The wood thrush can breed in habitat patches as small as one acre, but it runs the risk of higher predation and nest parasitism.

Potential habitat for the wood thrush occurs throughout the successional northern hardwood forest and red maple-hardwood swamp that comprise the entire 40 acre project site. Nesting opportunities are present throughout the site as well.

Worm-eating Warbler (Helmitheros vermivorus)

Found mainly in large deciduous forests, the worm-eating warbler, a Westchester County species of special concern, is a rather inconspicuous ground-nesting warbler that prefers steep hillsides.

This species of warbler nests on the ground in leaf litter, on a steep slope or hillside or along a ravine, in deciduous or mixed woodlands with dense understory. It typically breeds in a region with a combination of oak, beech, maple, hickory, chestnut oak, magnolia, hemlock, and pine.

The hillside area west of Wetland D presents potential nesting habitat for the worm-eating warbler as it contains some of the typical tree species and a slope associated with nesting activity.

Canada warbler (Wilsonia canadensis)

The Canada Warbler, a Westchester County Species of Special Concern, will inhabit many types of forest during the breeding season, primarily coniferous and mixed northern hardwood forests with dense, often wet, undergrowth. They prefer limited ground cover and high foliage density in the shrub layer. Important stopover habitats when leaving their wintering grounds include bushes and vine tangles near the edge of parks, villages, and cities, and thickets of stream and woodland edges, swamps and willow trees.

The female builds a nest on or just above the ground among ferns, stumps, fallen logs, or in rhododendron thickets.

Potential habitat for the Canada warbler exists on site within all on site wetlands and their associated 100 foot buffers.

Louisiana waterthrush (Seiurus motacilla)

The Louisiana waterthrush, a regionally rare species, inhabits mature deciduous or mixed forests with moderate to sparse undergrowth, near rapid flowing streams. It is therefore often found in hilly terrain or in ravines; occasionally in mixed floodplain and swamp forests in flatter terrain. The key component of this species' habitat is clear flowing water.

Breeding habitat for this locally scarce species consists of wet woodlands near running water. A nest is typically built in early April among tree roots or near a rock or crevice.

Potential habitat for the Louisiana waterthrush exists on site within Wetland D and it's associated 100 foot buffer.

4.1.7 Stone Walls

As described in Chapter 8.0 (Cultural Resources) the site stone walls were used to mark the past boundaries of open fields and pastures and have alignments that bear little relation to the topography or other current features of the site. Figure 2-2 Existing Conditions shows the surveyed locations of the approximately 2,800 lineal feet of existing stone walls within the project site. The walls are in various stages of disrepair but are generally intact in sections that appear on the project plans and on Figure 2-2 Existing Conditions. The walls consist of stones and boulders collected from the site environs and generally follow the northern, western and southern property boundaries of the project site. Several stone walls occur within the property perimeter. A stone wall approximately separates the area of the stream and DEC wetlands on the eastern side of the parcel from the rest of the parcel and two other of the interior stone walls delimit a generally rectangular area in the northwestern corner of the parcel that encompasses Wetlands B and C.

These stone walls offer nesting and cover area for a variety of species, including snakes, small mammals (chipmunks, mice, rabbits, voles, etc.) and various amphibian species. Newts and salamanders are particularly likely to find suitable habitat within the stone walls within or near wetlands and watercourses. Insect and worm populations that are likely to live within the walls provide a food base for many of these creatures.

4.2 Potential Impacts

4.2.1 Overview of Potential Adverse Impacts

To construct the proposed development, the loss of 20.2 acres (50.5 percent of the project area) of existing vegetation is an unavoidable impact. The loss of this vegetation would be mitigated as described below, and is not anticipated to result in significant adverse impacts. It would reduce the available wildlife habitat on the site by approximately the same acreage and require the need for erosion controls until full stabilization is achieved. As described in Chapter 3.5, the project requires the implementation of a comprehensive state approved Storm Water Pollution Prevention Plan, including an Erosion and Sediment Control Plan, throughout construction. These plans would meet NYSDEC technical requirements designed to prevent adverse erosion-related impacts from construction activities to downstream wetlands and streams.

4.2.1.1 Future "Build" Condition

The Area of Disturbance (AOD) estimated for the development of the proposed project indicates that 20.2 acres (50.5 percent of the total site acreage) of existing wooded habitat would be disturbed by grading activities during construction. Of this amount, 14.3 acres (35.8 percent of the total site acreage) would ultimately be revegetated and 5.9 acres (14.7 percent of the total site acreage) would become impervious surfaces. Table 4-23 provides the existing and proposed land cover acreages and the percent change, by specific categories.

Table 4-23			
Existing and Proposed Approximate Land Coverage			
Habitat Type	Existing Extent	Proposed Extent	Change
Successional northern hardwood forest	31.9 acres	11.7 acres	-20.2 acres
Red maple-hardwood swamp	8.1 acres	8.1 acres	0.0 acres
Impervious surface	0.0 acres	5.9 acres	+5.9 acres
Landscaping/Stormwater facilities	0.0 acres	14.3 acres	+14.3 acres
Marsh headwater stream	950 lf*	950 lf	0.0 lf
TOTAL =	40.0 acres	40.0 acres	
* - lf = Lineal feet			
Sources: Insite Engineering P.C. and Tim Miller Associates, Inc., 2007			

4.2.2 Site Disturbance by Ecological Community

Based upon the current proposed site plan the project proposes to permanently disturb approximately 20.2 acres (50.5 percent) of the project area. All of the impact would be to the upland wooded portions of the site, the largest cover type found on the project site. The species, size, and condition of all trees to be removed are shown in Appendix D, the Tree Survey Plan.

Off-site impacts to Wetland D and its adjacent area/buffer would result from the need to discharge stormwater from catch basins at the project entrance. For details regarding this impact refer to Chapter 6.0, Wetlands.

The existing vegetative cover and habitat on the remaining 20.2 acres (50.5 percent) of the site, primarily consisting of wetlands and upland wetland buffer areas, would not be disturbed by the project. Wetlands protection is provided by Section 107 of the Town code.

The Proposed Action will result in the loss of and/or change in forested habitat that connects similar habitat to the west and southeast. The loss of the on site forested uplands will alter the movement of most of the wildlife that may use this property to access the adjacent forested areas. It will also result in the loss of habitat for those individuals that currently use the site. Existing habitat along the edges of the property within the required property boundary setbacks and within the wetlands and wetland buffers would remain undisturbed. These areas, in conjunction with the adjacent hedgerows and open and successional fields, would continue to provide resident and local wildlife populations the opportunity, albeit modified, to move around the development to access other undisturbed forest lands in the vicinity.

4.2.2.1 Successional Northern Hardwood Forest

There would be loss of upland wooded wildlife habitat at the site. In general, as a project site is developed, some species would temporarily relocate to similar habitats off-site. Due to the presence of similar habitat on nearby properties, wildlife dispersal is expected to mitigate this impact. In the long term, the composition of the wildlife population would be altered immediately adjacent to the developed areas, as species able to adapt to a more suburbanized environment (such as raccoons, opossum, woodchucks, mice, songbirds, etc.) would have a greater ecological advantage over species that are less tolerant of human activity and this effect is unavoidable.

An indirect and unavoidable impact of wildlife dispersal could be increased competitive interactions with other individuals of the same species on adjacent properties. However, it is not anticipated that there would be a loss of species from the area or significant impacts to existing populations, as the communities reduced by this development are not unique in the area.

Trees within the limit of disturbance were surveyed. Details including common name, diameter, number of trunks and condition class were included in the data collected. Table 4-28 lists the identified trees within the limits of disturbance, all of which are likely to be removed during construction. The extent of impacts to trees and other vegetation in this habitat type would be limited to the area of disturbance depicted on the tree survey. While the plan currently calls for all trees and vegetation in this area to be removed, wherever possible, trees will be protected. Just over 14.5 acres within the limit of disturbance would be covered with lawn and landscaping. While the majority of the upland forested vegetation will be lost, similar vegetation exists to the west and southeast in areas that support this habitat type.

Table 4-24 Trees to be Removed	
Species Identified On Site	Number
Red maple	855
Black birch	219
White ash	168
Sugar maple	127
Black locust	119
Northern red oak	59
Black cherry	58
Shagbark hickory	46
Bitternut hickory	36
American elm	30
Yellow Birch	20
Swamp white oak	16
White oak	16
Apple	13
Black oak	11
American Beech	8
Shadblow	7
Flowering Dogwood	5
Norway maple	5
Pin oak	3
Ailanthus	1
Sassafras	1
Norway spruce	1
American basswood	1
Butternut	1
Yellow poplar	1
TOTAL=	1827
Source: East-West Forestry Associates, 2006 Prepared by: Tim Miller Associates, 2008	

As described above in Section 4.1, tree plots were surveyed outside of the limits of disturbance in order to better evaluate the trees that will remain on the site following construction. Five plots were analyzed and a total of 108 trees counted greater than seven dbh. This resulted in an average tree density of 93 trees per acre, which is consistent with the 90 trees per acre found in the detailed tree survey conducted within the limits of disturbance. Since 20 acres of the site will remain undisturbed during and after construction, it is expected that approximately 1,800 existing trees will remain following development.

4.2.2.2 Red Maple-hardwood Swamps

Regulated wetland buffers would be disturbed in limited peripheral sections to accommodate the installation of portions of the proposed entrance road, stormwater management basins and discharge structures. Access to the site from June Road requires the transit of the buffer zone of Wetlands D, and 0.26 acres of this buffer are proposed to be disturbed for this portion of the entrance road and for grading activities for the installation of a stormwater basin discharge and level spreader. Wetland buffer disturbance is proposed for Wetlands B and C where the buffer zone would be impacted by grading activities associated with the installation of the western

stormwater ponds. Approximately 0.48 acres of grading activities are proposed in the perimeter of this conjoined buffer zone. Finally, 0.06 acres at the eastern edge of wetland buffer A will be disturbed for the grading at the rear of proposed residences.

The combined impact of these activities totals approximately 0.79 acres of grading disturbance within the wetland buffers. These activities can be authorized by issuance of a Town of North Salem Planning Board Wetlands Permit and a NYSDEC Article 24 freshwater wetland permit.

Off-site impacts to the Wetland D adjacent area/buffer of approximately 5,960 s.f. (0.14 ac. +/-) would result from the need to discharge stormwater from catch basins at the project entrance. For details regarding this impact refer to Chapter 6.0, Wetlands.

Construction activities would result in unavoidable short term disturbances due to noise and temporary erosion and sedimentation on the site. During construction activities potential short-term impacts from regrading and stockpiling of soil materials can impact surface water quality on site. If not confined to the site by mitigative measures, erosion and sedimentation are potential indirect impacts to adjacent wetland areas as well as downstream resources.

As a result of the unavoidable creation of impervious surfaces (e.g., roads, parking areas and buildings), more surface runoff would occur from the developed site. Peak rates of surface runoff would increase as would pollutant loadings found in storm water runoff. If these effects are not mitigated, long-term impacts to downstream hydrology and surface water quality can result once the development is complete and operational.

4.2.2.3 Marsh Headwater Stream

Impacts to this ecological community would not result from the Proposed Action.

4.2.3 Protected Plant Species

No species of plants or wildlife identified on the project site is listed as endangered or threatened by Federal, State or County government. While thirteen plant species identified on the project site are listed as exploitably vulnerable. All plant species listed as exploitably vulnerable by the NYSDEC are protected under 6 NYCRR, New Part 193.3, Protected Native Plants. It is unlawful to pick, destroy or remove protected native plants from a property without the consent of the owner.

4.2.3.1 Identified Exploitably Vulnerable Species - Tree, Shrub and Flowering Herbaceous Species

Long-bract green orchis (Coeloglossum viride)

On the project site, two individual specimens of the plant have been observed growing in the middle of a dirt ATV trail located on the higher wooded slopes to the west of Wetland D. These two individuals will be carefully relocated to a similar habitat outside of the area of disturbance by TMA biologists in the spring of 2008. By relocating the plants, the species will not be impacted by construction of the project.

Red Trillium (Trillium erectum)

Few individuals of red trillium in good condition were observed along the edges of Wetlands A and D. Wetlands would not be disturbed by land clearing or grading, or any other proposed activity. Mitigation measures described in Chapter 6 have been incorporated into the project to prevent impacts that could result from sedimentation during construction, post-development increases in pollutant loading in stormwater, post-development flooding from increased peak rates of stormwater discharge, and bed and bank erosion in receiving watercourses resulting from increased stormwater discharge velocities. Minimal disturbances are proposed to the fringe of wetland buffers to construct the homes and entrance road. Due to the fact that the wetlands will be permanently preserved in their existing conditions and encroachment of wetland buffers will be on the outside edges, the red trillium population along the edges of Wetlands A and D will not be impacted.

Spotted Wintergreen (Chimaphila maculata)

Several sparse patches of the plant were identified on the eastern hillside within the 100 foot NYSDEC regulated wetland adjacent area associated with Wetland D. These individuals will remain after construction as no disturbance is proposed within this section of the regulated buffer.

Few scattered individuals are located outside of the 100 foot NYSDEC regulated wetland adjacent area within the portion of the project site designated for the SSTS. These few specimens will be removed from the area during construction of the SSTS. The loss of a few individuals will slightly impact the spotted wintergreen population on the project site, but is not expected to significantly impact the regional population of the species.

Pink Azalea - Rhododendron periclymenoides (Rhododendron nudiflorum)

One individual specimen was identified within Wetland D, just off the shoulder of June Road. This individual shrub will not be disturbed during construction as it is well outside of the area of development. Mitigation measures described in Chapter 6 have been incorporated into the project to prevent impacts that could result from sedimentation during construction, post-development increases in pollutant loading in stormwater, post-development flooding from increased peak rates of stormwater discharge, and bed and bank erosion in receiving watercourses resulting from increased stormwater discharge velocities. The single specimen is not expected to be impacted by the project.

Butternut (Juglans cinera)

A single individual is located along the southern property line, west of Wetland D. This individual is in poor condition with substantial portions of its branches dead and much of its bark stripped. The lone specimen is outside of the area of disturbance and will not be disturbed during construction of the project.

Flowering Dogwood (Cornus florida)

Five individuals were identified on the project site during the tree survey. Of these five specimen, four are located within the area of disturbance and will be removed during construction. Two of the four specimen to be removed were noted to be in poor health. Many

saplings of this species were identified on site by TMA biologists and are located throughout the site both inside and out of the area of disturbance. While the population of flowering dogwoods located on the project site will be impacted due to the removal of a majority of the mature specimens, the population will not be completely removed from the site and no significant impact to the local population would result. Flowering dogwood is a commercially available species, and if so directed by the Planning Board the applicant will add this species to the list of trees to be planted as part of the overall site landscaping and mitigation plan.

4.2.3.2 Identified Exploitably Vulnerable Fern Species

Christmas Fern (Polystichum acrostichoides)

Christmas ferns were identified in multiple locations throughout the site, including larger, healthy populations within Wetlands B, C and D and their associated buffers. A total of approximately 0.79 acres of on site grading disturbance will occur within the buffers of Wetlands B, C and D. This disturbance will remove potential habitat for Christmas fern. The project is not expected to result in any significant adverse impacts on the transitional wetland function. Less than 10 percent of the 7.81 acres of Wetlands B, C and D's buffers would be disturbed, leaving a vast majority of the existing Christmas fern habitat in place.

Several patches of Christmas fern were also observed throughout the forested uplands on site. Of the 31.9 acres of successional northern hardwood forest on site, 20.2 acres (50.5 percent) will be disturbed by construction activity. This area will be lost as potential Christmas fern habitat and any individuals located within this area will be eradicated by construction.

While some Christmas ferns will be lost as a result of the proposed development, numerous healthy populations will remain undisturbed within wetlands, wetland buffers, and forested uplands outside of the area of disturbance. Impacts to the on-site population will be minimal and impacts to regional populations are not expected.

Cinnamon fern (Osmunda cinnamomea)

Cinnamon ferns were observed only within Wetland D. Wetland D would not be affected by any proposed construction. The Proposed Action includes the construction of an access road in a portion of Wetland D's regulated 2.72 acre buffer on the site. However, the wetland would not be disturbed by land clearing or grading, or any other proposed activity. Mitigation measures described in Chapter 6 have been incorporated into the project to prevent impacts that could result from sedimentation during construction, post-development increases in pollutant loading in stormwater, post-development flooding from increased peak rates of stormwater discharge, and bed and bank erosion in receiving watercourses resulting from increased stormwater discharge velocities. Wetland D will be permanently preserved in its existing condition, therefore any populations of cinnamon fern on site and in the region will not be impacted.

Evergreen wood fern (Dryopteris intermedia)

Small populations of evergreen wood fern were identified on the edges of Wetlands B and C and their adjoining buffers. The upslope, southern portion of Wetlands B and C combined buffer houses a significant population of numerous fern species, including evergreen wood fern. Of the 4.89 acres that is the combined Wetland B and C buffer area, 0.48 acres will be disturbed for construction of homes and stormwater facilities. The project is not expected to result in any

significant adverse impacts on the transitional wetland function. Less than ten percent of potential habitat for the evergreen wood fern would be disturbed. With this minor loss of habitat, along with the fact that the species were observed on the immediate edges of wetlands, no significant impacts to the evergreen wood fern populations, on site or regionally, are expected.

Interrupted fern (Osmunda claytoniana)

A population of interrupted fern thrives within Wetland D. While the Proposed Action includes the construction of a access road in a portion of Wetland D's regulated 2.72 acre buffer on the site, the wetland would not be disturbed by land clearing or grading, or any other proposed activity. Wetland D will be permanently preserved in its existing condition, therefore any populations of interrupted fern on site will not be impacted.

Lady fern (Athyrium filix-femina)

A healthy population of lady fern was observed in the combined buffer of Wetlands B and C. This buffer area, as previously discussed, provides habitat for several species of ferns. Of the 4.89 acres that is the combined Wetland B and C buffer area, 0.48 acres will be disturbed for construction of homes and stormwater facilities. The project is not expected to result in any significant adverse impacts on the transitional wetland function. Since less than ten percent of potential habitat for lady fern would be disturbed, no significant impacts to the lady fern populations, on site or regionally, are expected.

New York fern (Thelypteris noveboracensis)

Healthy populations of New York fern were identified within the combined buffers of Wetlands B and C. Of the 4.89 acres that is the combined Wetland B and C buffer area, 0.48 acres will be disturbed for construction of homes and stormwater facilities. The project is not expected to result in any significant adverse impacts on the transitional wetland function. Since less than ten percent of habitat for New York fern would be disturbed, no significant impacts to the fern populations, on site or regionally, are expected.

Spinulose wood fern (Dryopteris carthusiana)

A small, healthy population of spinulose wood fern was observed within the combined buffers of Wetlands B and C. Of the 4.89 acres that is the combined Wetland B and C buffer area, 0.48 acres will be disturbed for construction of homes and stormwater facilities. The project is not expected to result in any significant adverse impacts on the transitional wetland function. Since less than ten percent of potential habitat for the spinulose wood fern would be disturbed, no significant impacts to the spinulose wood fern populations, on site or regionally, are expected.

4.2.4 Invasive Species

Several invasive species were identified throughout the site, with concentrations of invasives within the utility ROW that crosses the site, along the shoulder of June Road and along the southern property boundary. Any invasive species within the area of disturbance would be eradicated by construction of the project.

The intent of the current plan is to limit the area of disturbance and therefore future maintenance for invasives to the extent practicable. The Home Owner's Association will

implement a monitoring and maintenance plan that will ensure all landscaped areas of the development are free of invasive species. The maintenance plan for the proposed detention basins and transitional areas along the perimeter of the site development will include the removal of common reed, purple loosestrife and barberry. Other species were encountered in much smaller numbers and do not appear to be a threat long term.

4.2.5 Protected Wildlife Species

Neither the Federal, State nor County government lists any of the wildlife observed during the site surveys as threatened or endangered. As noted previously, none of the observed wildlife or vegetation is afforded protection under the Endangered Species Act nor did the NYSDEC NHP list any threatened or endangered plant or wildlife species as being present on or in the vicinity of the site.

4.2.5.1 Impacts to Locally Uncommon Fauna

Based on the surveys conducted, the Salem Hunt project site has suitable habitat for several bird species (cerulean warbler, Cooper's hawk, sharp-shinned hawk, wood thrush, worm-eating warbler, Canada warbler) that are listed as Species of Special Concern by NYS or Westchester County and a County-listed threatened species (American woodcock).

American Woodcock (Philohela minor) - Westchester County Threatened Species

Potential habitat for woodcocks exists in the 8.08 acres of wetland area and 9.18 acres of wetland buffer area on the project site. The Proposed Action does not include the disturbance of any wetlands, watercourse, or other surface water resources on or off the project site and has been designed to limit wetland buffer disturbance to the fullest extent practicable. Through careful site planning, and a reduction in the scope of the project as initially designed, only 0.26 acres of Wetland D (State regulated Wetland L-32) buffer would be disturbed by the construction of the project entrance. The project would disturb 0.54 acres of Town regulated buffer associated with Wetlands A, B and C for the construction of stormwater facilities and residences. All existing vegetation in the area of the Wetland A buffer to be disturbed would be removed and replaced with lawn. The proposed action will result in the clearing and grading of 0.48 acres of the overlapping Wetland B and C buffers. This would result in the conversion of 0.48 acres of buffer vegetation, which is Successional Hardwood Forest Habitat, into lawn and landscaped stormwater basins.

Less than nine percent of signature woodcock habitat would be disturbed, but there is the potential for individuals to be found throughout the entire 40 acre project site, of which 20.2 acres (50.5 percent) will be disturbed by grading activities during construction. Since disturbances to woodcock habitat are minimal and nesting opportunities do not exist on site, impacts to the American woodcock population are not expected.

Cooper's Hawk (Accipiter cooperii) - Westchester County Endangered Species

Potential Cooper's hawk habitat exists throughout the successional northern hardwood forest and red maple-hardwood swamp that comprise the entire 40 acre project site. The 950 linear feet of marsh headwater stream associated with NYSDEC, Corps, and Town regulated Wetland D provides potential hunting habitat as portions of the wetland are categorized as red maple-hardwood swamp and it's buffer is categorized as successional northern hardwood

forest. Potential nesting habitat is provided throughout the successional northern hardwood forest.

The Proposed Action includes the construction of an access road in a portion of Wetland D's regulated 2.72 acre buffer on the site, however, the wetland and marsh headwater stream habitat would not be disturbed by land clearing or grading, or any other proposed activity. Mitigation measures described in Chapter 6 have been incorporated into the project to prevent impacts to the marsh headwater stream habitat that could result from sedimentation during construction, post-development increases in pollutant loading in stormwater, post-development flooding from increased peak rates of stormwater discharge, and bed and bank erosion in receiving watercourses resulting from increased stormwater discharge velocities. Wetland D and the associated marsh headwater stream habitat will be permanently preserved in its existing condition, thereby not impacting potential hunting habitat for the Cooper's hawk.

Of the 40.0 acre project site, 20.2 acres of clearing and grading would occur for the Proposed Action. This area would be lost as potential habitat for Cooper's hawks and would impact any individuals using the site for nesting habitat. It should be noted that Cooper's hawks were not observed during site surveys. Regionally, the removal of 20.2 acres of successional northern hardwood forest would be a minimal impact to habitat potentially utilized by the Cooper's hawk.

Sharp-shinned Hawk (Accipiter striatus) - Westchester County Endangered Species

Potential sharp-shinned hawk habitat exists throughout the successional northern hardwood forest and red maple-hardwood swamp that comprise the entire 40 acre project site. The 950 linear feet of marsh headwater stream associated with NYSDEC, Corps, and Town regulated Wetland D provides potential hunting habitat as portions of the wetland are categorized as red maple-hardwood swamp and it's buffer is categorized as successional northern hardwood forest. Potential nesting habitat is provided in the riparian corridor of the marsh headwater stream associated with Wetland D.

The project will result in 0.26 acres of clearing and grading in the extensive buffer of regulated Wetland D. The buffer disturbance is required to construct the access road, for which no alternative location is available. Less than nine percent of the 2.92 acres of the on-site buffer would be disturbed and the majority of the buffer associated with Wetland D, which extends some 3,000 feet south of the site, would remain undisturbed by the proposed project. The remaining buffer will continue to providing suitable nesting habitat.

Cerulean Warbler (Dendroica cerulea) - Westchester County Endangered Species

The 6.31 acres of red maple-hardwood swamp within Wetland D that surrounds 950 linear feet of marsh headwater stream provides signature riparian habitat for cerulean warblers. Other potential habitat located on the project site is the 31.9 acres of successional northern hardwood forest located on site, particularly the 2.92 acres included within the regulated buffer of Wetland D.

The proposed action does not include any direct encroachment into, or disturbance of the red maple-hardwood swamp habitat or marsh headwater stream habitat associated with Wetland D. The project will result in 0.26 acres of clearing and grading in the NYSDEC, and Town regulated buffer. The buffer disturbance is required to construct the access road, for which no alternative location is available. Less than 10 percent of the 2.92 acres of the on-site buffer

would be disturbed and the majority of the buffer associated with Wetland D, which extends some 3,000 feet south of the site, would remain undisturbed by the proposed project. As such this area will continue to provide habitat suitable to the cerulean warbler.

Of the 31.9 acres of successional northern hardwood forest on site, 20.2 acres (50.5 percent) will be disturbed by construction activity. This area will be lost as potential feeding and nesting habitat for the cerulean warbler. It is noted that the disturbance area for the proposed action has been minimized to the greatest extent practical to reduce impacts to the environment while still achieving the goals set by the Project Sponsor and the Town.

Nesting opportunities are not expected to be present for the cerulean warbler due to the lack of open areas on the forest floor in which they typically nest above.

Kentucky Warbler (Oporornis formosus) - Westchester County Endangered Species

Potential habitat for the Kentucky warbler exists in the 8.08 acres of wetland area and 9.18 acres of wetland buffer area on the project site. The Proposed Action does not include the disturbance of any wetlands, watercourse, or other surface water resources on or off the project site and has been designed to limit wetland buffer disturbance to the fullest extent practicable. Through careful site planning, and a reduction in the scope of the project as initially designed, only 0.26 acres of Wetland D (State regulated Wetland L-32) buffer would be disturbed by the construction of the project entrance. The project would disturb 0.54 acres of Town regulated buffer associated with Wetlands A, B and C for the construction of stormwater facilities and residences. All existing vegetation in the area of the Wetland A buffer to be disturbed would be removed and replaced with lawn. The proposed action will result in the clearing and grading of 0.48 acres of the overlapping Wetland B and C buffers. This would result in the conversion of 0.48 acres of buffer vegetation, which is Successional Hardwood Forest Habitat, into lawn and landscaped stormwater basins.

Wood Thrush (Hylocichla mustelina) - Westchester County Species of Special Concern

Potential habitat for the wood thrush occurs throughout the successional northern hardwood forest and red maple-hardwood swamp that comprise the entire 40 acre project site. Nesting opportunities are present throughout the site as well.

Of the 31.9 acres of successional northern hardwood forest on site, 20.2 acres (50.5 percent) will be disturbed by construction activity. This area will be lost as potential feeding and nesting habitat for the wood thrush. It is noted that the disturbance area for the proposed action has been minimized to the greatest extent practical to reduce impacts to the environment while still achieving the goals set by the Project Sponsor and the Town.

Worm-eating Warbler (Helmitheros vermivorus) - Westchester County Species of Special Concern

The hillside area west of Wetland D presents potential nesting habitat for the worm-eating warbler as it contains some of the typical tree species and a slope associated with nesting activity. This sloping area is contained within the regulated buffer of Wetland D and will not be disturbed during construction of the proposed action. Since no impacts to potential worm-eating warbler habitat are proposed, no significant impacts to the local population are expected.

Canada warbler (Wilsonia canadensis) - Westchester County Species of Special Concern

Potential habitat for the Canada warbler exists on site within all on site wetlands and their associated 100 foot buffers. The project will result in 0.79 acres of clearing and grading in the NYSDEC and Town regulated wetland buffers. Off-site, in the right of way for June Road, an additional 0.13 acres of wetland buffer will be disturbed for the access road. The buffer disturbances are required to construct the access road, for which no alternative location is available, and for the construction of condos. Graded areas within the buffer will be stabilized and seeded with low maintenance grass seed mix. Plantings will include native trees and shrubs, as shown in Drawing SP-2.1 Layout and Landscaping Plan.

The project is not expected to result in any significant adverse impacts on the transitional wetland function. Less than 10 percent of the 9.18 acres of the on-site buffer would be disturbed, leaving a vast majority of potential habitat still available for the Canada warbler.

Louisiana waterthrush (Seiurus motacilla) - Regionally Rare Species

Potential habitat for the Louisiana waterthrush exists on site within Wetland D and its associated 100 foot buffer. The project will result in 0.26 acres of clearing and grading in the NYSDEC and Town regulated buffer. Off-site, in the right of way for June Road, an additional 0.13 acres of wetland buffer will be disturbed for the access road. Existing vegetation to be removed includes mostly smaller trees and shrubs at the edge of June Road, including sugar maple and American elm. The buffer disturbance is required to construct the access road, for which no alternative location is available. Graded areas within the buffer, on the north and south sides of the new entrance road will be stabilized and seeded with low maintenance grass seed mix. Plantings will include native trees and shrubs, as shown in Drawing SP-2.1 Layout and Landscaping Plan.

The project is not expected to result in any significant adverse impacts on the transitional wetland function. Less than ten percent of the 2.92 acres of the on-site buffer would be disturbed and the majority of the buffer associated with Wetland D, which extends some 3,000 feet south of the site, would remain undisturbed by the proposed project, still serving as potential habitat for the Louisiana waterthrush.

Of the amphibians and reptiles observed, only the Eastern box turtle is listed by the State (Species of Special Concern) and by Westchester County (Threatened).

Eastern Box Turtle (Terrapene carolina)

Of the amphibians and reptiles identified on the site, the Eastern box turtle is listed as a Species of Special Concern by the NYSDEC. Two individuals were observed adjacent to the west side of Wetland C, in the northwest portion of the site.

The two box turtles were observed between Wetlands C and D. This part of the site is enclosed within existing stone walls, which could serve to limit the range of the turtles on the property. One narrow opening in the stone wall was observed in the southwest portion of this area, which could provide access to Wetland A if the turtles were moving in that direction.

The proposed development would maintain blocks of habitat around all of the wetlands areas that meet the habitat criteria for this turtle species. That part of the site where both turtles were observed, adjacent to Wetlands B and C, is outside of the limits of disturbance, with both wetlands and the majority of the buffer being preserved. This area is contiguous to undisturbed habitat to the west that could also support the pair of turtles observed on site. Significant impacts to the Eastern box turtle are not anticipated, but the mitigation plan for the encroachment into regulated wetland buffers, as described below, will also benefit the turtles.

Slimy Salamander (Plethodon glutinosus)

Suitable habitat for the slimy salamander exists throughout portions of the successional northern hardwood forest that composes 80 percent (31.9 acres) of the site. Of the 31.9 acres, 20.2 acres would be disturbed for the Proposed Action. This area would be lost as potential habitat for slimy salamanders and would impact any individuals inhabiting the site. It should be noted that the species was not observed during formal site surveys. Potential habitat would still exist on the remaining 11.7 acres of successional northern hardwood forest as rock crevices and downed trees would persist.

Four-toed Salamander (Hemidactylum scutatum) - Westchester County Species of Special Concern.

Suitable habitat for the four-toed salamander exists on-site within the 8.08 acres of wetland habitat. A total of approximately 0.79 acres of on site grading disturbance will occur within the buffers of Wetlands A, B, C and D. This disturbance will remove potential breeding habitat for the four-toed salamander, however, it will not impact potential nesting areas as the proposed action does not include any direct encroachment into, or the disturbance of any wetlands or watercourses on the property. Mitigation measures described in Chapter 6 have been incorporated into the project to prevent impacts to wetlands that could result from sedimentation during construction, post-development increases in pollutant loading in stormwater, post-development flooding from increased peak rates of stormwater discharge, and bed and bank erosion in receiving watercourses resulting from increased stormwater discharge velocities. The project is not expected to result in a significant adverse impacts on the transitional wetland function. Less than ten percent of the 9.18 acres of the on-site buffer would be disturbed, leaving a vast majority of potential breeding habitat still available for four-toed salamanders that may utilize the project site.

It should be noted that no four toed salamanders were observed during site surveys. Even if a population were to exist on site due to the presence of suitable habitat, significant impacts are not expected to any on site or regional populations.

Black Ratsnake (Elaphe alleghaniensis)

Open fields on adjacent properties bordering the project site to the southwest in combination with the successional northern hardwood forest community located on site provide potential habitat for the species. Wetland A, described as a red maple-hardwood swamp, and it's regulated 100 foot buffer area, which together comprise 0.23 acres of wetland and 1.37 acres of buffer, are located in the southwest corner of the project site, abutting the adjacent property with open field habitat. The project proposes no encroachment into Wetland A, but would result in 0.055 acres (2,426 square feet) of disturbance to the Wetland A buffer. The buffer disturbance would result from clearing and grading necessary to facilitate construction of the

residences. All existing vegetation in the area of the buffer to be disturbed would be removed and replaced with lawn.

The project site is not likely to host any hibernating individuals due to the lack of rock outcrops or talus slopes with southerly exposure.

Since development of the project will remove approximately three percent of potential habitat area that exists in the buffer of Wetland A and does not contain any potential hibernacula, significant impacts to any black ratsnake populations within the area are not expected. No black rat snakes were observed during site surveys.

Eastern Ribbon Snake (Thamnophis sauritis)

Potential habitat for the Eastern ribbon snake exists on site within all on site wetlands and their associated 100 foot buffers. The project will result in 0.79 acres of clearing and grading in the NYSDEC and Town regulated wetland buffers. Off-site, in the right of way for June Road, an additional 0.13 acres of wetland buffer will be disturbed for the access road. The buffer disturbances are required to construct the access road, for which no alternative location is available, and for the construction of the residences. Graded areas within the buffer will be stabilized and seeded with low maintenance grass seed mix. Plantings will include native trees and shrubs, as shown in Drawing SP-2.1 Layout and Landscaping Plan.

Mitigation measures described in Chapter 6 have been incorporated into the project to prevent impacts to wetlands that could result from sedimentation during construction, post-development increases in pollutant loading in stormwater, post-development flooding from increased peak rates of stormwater discharge, and bed and bank erosion in receiving watercourses resulting from increased stormwater discharge velocities. The project is not expected to result in any significant adverse impacts on the transitional wetland function. Less than ten percent of the 9.18 acres of the on-site buffer would be disturbed, leaving a vast majority of potential habitat still available for ribbon snakes. As such, no significant impact to on-site of local populations of this snake species would result for the development of the Proposed Action.

4.2.6 Forest Interior Birds

Removal of trees in the area of proposed development outside the breeding season, generally late summer through early spring, would cause the returning migrant forest interior bird species using the site to seek out other nearby woodland habitats. If construction were to take place during the breeding season, direct impacts to nesting pairs could result.

4.2.7 Wildlife Corridors

While not studied as part of the biodiversity assessment of the project site since wildlife movement and migration was not required by the adopted scope, the project site likely provides local wildlife the opportunity to move between undeveloped forested areas to the west and southeast. Its importance as a significant wildlife corridor to off-site habitat areas is believe to be limited due to the surrounding developed properties and roadways. The preservation of the wetlands, the majority of the wetland buffers and the setbacks along the property lines along with adjacent fields and hedgerows will provide wildlife, albeit modified from the existing conditions, the ability to move between other undisturbed forested areas in the vicinity of the project site.

The site is located roughly a mile, at its closest point, to the northwest of the *Eastern Westchester Biotic Corridor*, an ecologically contiguous feature that has been described by the Metropolitan Conservation Alliance (MCA) for the towns of Pound Ridge, Lewisboro and North Salem.¹² The MCA has also identified large areas within these three towns that include properties the surveyors were "...unable to survey...due to a lack of permission". These portions of the region have been identified as "areas that merit further investigation" to characterize their value as wildlife resources. A portion of the project site is included within one of these areas.

In compliance with the DEIS scope, surveys and site visits by TMA conducted to document the avian, reptilian, amphibian and mammalian species as well as the vegetation present on the project site also comply with the strong recommendations of the MCA in the *Eastern Westchester Biotic Corridor* that such assessments be conducted. While some species observed are considered habitat specialists that are sensitive to habitat disturbance others are habitat generalists most often affiliated with previously disturbed landscapes and capable of living in close proximity to human activity. This mix of species is typical of landscapes where relatively small tracks of forest are adjacent to developed/disturbed land.

It should be noted that the closest focal bird species have been recorded by MCA surveyors approximately one and a quarter miles east of the project site just south of Peach Lake and the closest focal amphibian species have been documented just over one mile southeast of the project site. The project would not be expected to fragment any known existing wildlife corridor between off-site habitat areas or wildlife hubs, particularly in consideration of the proposed preservation of the existing habitat and functioning of the stream corridor through Wetland D but would alter the movement of wildlife that travel through the area.

4.2.8 Stone Walls

One existing ~430 foot long stone wall in the interior northern portion of the project site would be completely removed for the development of roads, parking areas and condominium units in that area. Elsewhere, an ~60 foot length of wall at the proposed entrance to the site and ~310 feet of wall along Wetlands B and C would be removed in order to locate other project features (a building and storm water basins).

4.3 Mitigation Measures

The project is committed to reducing impacts attributed to construction and development within the upland deciduous forested plant community by protecting wetlands and wetland buffer areas on the site. The proposed development plan has been designed to minimize wetland and buffer impacts and by doing so would preserve substantial wooded buffer areas around the development. This land would be located primarily within the wooded wetlands buffer areas, wooded wetlands and wooded stream corridor. In consideration of the following mitigation actions that would be taken to offset the effects of the development, significant adverse impacts to natural resources are not anticipated to result from the completed project. As impacts to vegetation and wildlife on the project site are not considered to rise to the significant level and as none of the species identified on the project site are protected under a law that requires mitigation for their disturbance or loss, mitigation is not being proposed.

¹²Miller, N.A. And M.W. Klemens. 2002. Eastern Westchester Biotic Corridor. Metropolitan Conservation Alliance Tech. Paper No. 4. Wildlife Conservation Society, Bronx, NY. 29 pp.

Approximately 20.5 acres (50.5 percent) of the developed site would persist as undisturbed open space, primarily within the woods associated with the wetlands. The wooded, rural character of the Salem Hunt area would be preserved in these wooded wetlands areas along June Road and bordering adjacent developed and undeveloped properties abutting the southwestern and northwestern portions of the site.

Clearing limit lines would be marked on the site prior to commencing the construction activity. The establishment of disturbance limit lines is an effective way to contain impacts to the approved areas and keep other portions of a project site undisturbed.

Other proposed measures to reduce or minimized potential ecological impacts are described in the paragraphs that follow.

4.3.1 Preservation of Vegetated Wetland and Watercourse Buffers

Wetlands protections would comply with Section 107, Freshwater Wetlands, provisions of the Town code. The existing wetlands and stream on the site are outside of the AOD and would remain undisturbed. Specifically, no encroachment into Wetland A is proposed as part of the proposed action, and only 0.06 acres of the wetland's regulated buffer would be disturbed. As such, no potential impacts on Wetland A are anticipated from the proposed project, and as such, no additional mitigation measures are proposed. Other on-site wetlands and the single water course would also be permanently preserved in their existing condition, although minor buffer disturbance would result from construction of the stormwater basins and outfall creation in the Wetland B, C and D buffers. Because these clearing and grading activities would take place on the perimeter of the wetland adjacent area, no significant long term impacts are expected. While these site wetlands perform certain identifiable wetlands functions they have not been determined to provide significant irreplaceable functions. Refer to Chapter 6.0 Wetlands/Watercourses and Buffers for details on the impacts and mitigation related to the wetland buffers.

Erosion and sedimentation from construction and development are potential indirect impacts to adjacent wetland areas and downstream resources. A Soil Erosion and Sediment Control plan has been developed and provided in the site plans. All soil erosion and sedimentation controls on the perimeter of the site, such as silt fencing and an entrance tire tracking pad, would be installed prior to other construction activities.

To mitigate for increased surface runoff, stormwater facilities have been engineered to regulate discharge flow rates and thus prevent carryover impacts to on-site wetlands and downstream areas. Water detention basins and discharge structures are proposed that will reduce post-development peak flow rates to levels below existing peak rates.

To address adverse water quality impacts in the stream crossing the site, the proposed storm water basins include water quality mitigation measures engineered in accordance with NYSDEC requirements. Several water quality basins include a permanent pool. With the implementation of the proposed stormwater and erosion control measures, the proposed project would not be expected to adversely impact the quantity or quality of on-site or off-site surface water resources.

All disturbances within the buffer zones due to the installation of stormwater management features would be restored to a productive vegetative state by means of landscaping with native plants, thereby restoring wildlife habitat on the wetland edges.

4.3.2 Methods of tree removal/disposal

Tree clearing would occur following the establishment of a delineated "limits of disturbance" line in the field, created by tree flagging or some equivalent method. Tree clearing would begin along the access road and expand to the edge of the clearing line. Trees would be cut by logging machines or by handheld power equipment, as appropriate. Depending on the tree type, size and condition, the logged trees would either be loaded onto trucks for off-site processing as timber or shredded on-site for use as mulching ground cover.

4.3.3 Proposed Measures to Protect Trees to Remain

No trees in healthy condition beyond the field-identified limits of disturbance would be disturbed. These limits would be delineated by snow fencing or similar methods. Trees near working areas may be wrapped at the base by snow fencing to avoid accidental damage to trunks and roots.

There should be no disturbance of any kind within the projected root zone of these trees or within the drip line of the tree foliage. Snow fencing or other highly visible means of marking should be placed around the maximum area of the root system to prevent the destruction of roots by exposure or through the compaction of soils. Construction crews would be notified to exclude all equipment from these protected areas. If necessary, trees would be protected by tree wells in fill areas, and retaining walls in cut areas.

4.3.4 Protected Plant or Wildlife Species

No species of plants or wildlife identified on the project site is listed as endangered or threatened by Federal, State or County government. The NYSDEC NHP also indicated that it had no records of endangered or threatened plant or wildlife species occurring on or in the vicinity of the project site. However, thirteen plant species identified on the project site are listed as exploitably vulnerable. All plant species listed as exploitably vulnerable by the NYSDEC are protected under 6 NYCRR, New Part 193.3, Protected Native Plants. One of these State-listed exploitably vulnerable species, long-bract green orchis, will be relocated to an area of the project site to remain undisturbed.

The Eastern box turtle is listed as a NYS Species of Special Concern in the area. Clearing of vegetation will result in loss of potential box turtle habitat. Since the proposed development would maintain blocks of habitat within the wetlands and wetland buffer around all of the wetlands areas, it is expected that this species' habitat requirements can continue to be met. In the northwest corner of the site, where the two turtles were observed, much of the existing stone walls that serve to enclose this area will remain. Reconstruction of the stone walls in areas where wetland buffer encroachment is proposed could be used to reestablish this boundary, or the use of post and rail fences to minimize human activities in the area could be adequate. During construction, filter fabric fencing along the limits of disturbance will be used to keep turtles out of the work area to the extent possible. The construction manager and construction staff will be instructed by the environmental site manager to be observant for turtles. The fence line will be checked each morning by the work crew prior to commencement of earth work; this has worked well on past projects, and also allows for an ongoing tally of

turtles and snakes. Crews will report any findings to the site environmental monitor on a regular basis. Any turtles that make it through or around the fence over night will be placed back outside of the fence by construction workers.

Since there is no suitable breeding habitat for marbled salamander or other vernal pool breeding species present on the project site, no mitigation measures are proposed to offset impacts to these species.

Wildlife may currently use the project site to access and travel between undeveloped forested areas to the west and southeast of the site but is not likely a significant wildlife corridor to off-site habitat areas due to the surrounding developed properties and roadways. County Route 55 is a highly trafficked road and already impedes wildlife from traveling to and from the site. Therefore, no mitigation plans for wildlife movement are proposed.

While portions of the site provide habitat for species of ground nesting birds, mitigation to offset the potential impact to these species is not proposed. Much of the habitat provided for ground nesting birds lay within the wetlands and wetland buffers that will not be disturbed through development of the project. As the Proposed Action would not result in significant adverse impacts to the local populations of these or any other birds species on or in the vicinity of the project site, mitigation for the loss of their habitat is not proposed.

4.3.5 Landscaping Utilizing Native Vegetation

Native species would be used for landscaping purposes and for revegetating the proposed water quality and stormwater detention basins where possible. This preference is based on native plant adaptability to local climatic conditions, including temperature, precipitation and length of the growing season. Many native species selected for landscape use may also be beneficial to indigenous wildlife, especially birds, by providing wildlife benefits such as nesting, cover and food. Typical landscape plantings that may be chosen for their hardiness to the local climate and to the proposed settings on the site include the native or regionally adaptable landscaping species listed in Table 4-25.

The landscaping plan for the project (Drawings Sheets SP-2.1 and 2.2 Layout and Landscape Plan) schematically presents the major evergreen and deciduous and shrub plantings to be installed throughout the project site. This list would be supplemented with other minor shrubs and plants that would provide a variety of foraging, nesting and shelter benefits for the wildlife that repopulates the site. Plantings would be determined in consultation with the Planning Board and its consultants.

Table 4-25 Regional Upland Condition Landscaping Plantings	
Trees	Shrubs
Deciduous Trees - Major	Deciduous Shrubs
Horse chestnut (<i>Aesculus hippocastanum</i>)	Bottlebrush buckeye (<i>Aesculus parviflora</i>)
Red maple (<i>Acer rubrum</i>)	Oak leaf hydrangea (<i>Hydrangea quercifolia</i>)
American beech (<i>Fagus grandifolia</i>)	Common witchhazel (<i>Hamamelis virginiana</i>)
White oak (<i>Quercus alba</i>)	Staghorn sumac (<i>Rhus typhina</i>)
Red oak (<i>Quercus rubra</i>)	Red-osier dogwood (<i>Cornus stolonifera</i>)
Little leaf linden (<i>Tilia cordata</i>)	Sweetfern (<i>Comptonia peregrina</i>)
American elm (<i>Ulmus americana</i>)	Winterberry (<i>Ilex verticillata</i>)
Sugar maple (<i>Acer saccharum</i>)	Juneberry (<i>Amelanchier canadensis</i>)
Deciduous Trees - Minor	Beautybush (<i>Kolkwitzia amabilis</i>)
Mulberries (<i>Morus</i> spp.)	Northern bayberry (<i>Myrica pennsylvanica</i>)
Paperbark birch (<i>Betula papyrifera</i>)	Viburnums (<i>Viburnum</i> spp.)
Flowering dogwood (<i>Cornus florida</i>)	Elderberries (<i>Sambucus</i> spp.)
Crabapples (<i>Malus</i> spp.)	Eastern wahoo (<i>Euonymus atropurpureus</i>)
Cherries (<i>Prunus</i> spp.)	Snowberry (<i>Symphoricarpos alba</i>)
Plums (<i>Prunus</i> spp.)	Cotoneasters (<i>Cotoneaster</i> spp.)
Coniferous Trees	Evergreen shrubs/vines
White fir (<i>Abies concolor</i>)	Rosebay rhododendron (<i>Rhododendron maximum</i>)
Colorado spruce (<i>Picea pungens</i>)	White rhododendron (<i>Rhododendron album</i>)
Northern white cedar (<i>Thuja occidentalis</i>)	Virginia creeper (<i>Parthenocissus quinquefolia</i>)
Norway spruce (<i>Picea abies</i>)	Leatherleaf viburnum (<i>Viburnum rhytidophyllum</i>)
Douglas fir (<i>Pseudotsuga mensiesii</i>)	Inkberry (<i>Ilex glabra</i>)
White pine (<i>Pinus strobus</i>)	Eastern red cedar (<i>Juniperus virginiana</i>)
Red pine (<i>Pinus resinosa</i>)	Mountain laurel (<i>Kalmia latifolia</i>)
Source: Tim Miller Associates, Inc., 2007.	

While the existing woodland vegetation would be replaced by native ornamental plants, lawns, and landscaped plots within the developed areas, the introduced plantings could still be used as forage by deer and other wildlife and many of the shrub species chosen for landscaping would provide immediate habitat for songbirds and other avian species. Trees that are planted would mature in the long-term and would provide some roosting and nesting opportunities for birds that are adaptable to suburban conditions. Coniferous trees and shrubs such as pines, spruces, firs, arborvitae, and junipers provide spring and summer nest sites as well as year-around shelter. Unmown grasses, meadows and stormwater berm plantings provide cover for ground-nesting birds.

If the presence of white-tailed deer in a community is unwanted, measures can be incorporated into landscaping planning that will serve in a limited fashion to control the movement of deer onto a property. Deer can be discouraged from a property by utilizing plantings that are not extensively browsed by deer. Additionally, the use of deer repellents throughout a property can alter the use of a property by deer. Efforts made to discourage the movement of deer onto and through this property may act to limit the opportunities for deer-vehicle collisions on adjacent roads.

In addition to their value as hardy plantings, some of the native plant species in Table 4-25 are cited by the Cornell Lab of Ornithology as berry and seed-bearing trees and shrubs that would offer songbirds seasonal food sources incidental to their use as landscape plantings.

Summer-fruiting plants provide food during nesting season. Many native fruit-bearing plants which are adaptable to landscaping purposes are available for use, including various species of cherry, chokeberry, raspberry, serviceberry, blackberry, blueberry, mulberry, and elderberry.

Fall-fruiting plants are important for birds in building up or maintaining fat reserves during migration. Examples of these include dogwoods, cotoneasters, and buffalo-berries.

Winter-persistent plants provide season-long fruit sources for winter resident species. Adaptable members of this group include varieties of crabapple, snowberry, bittersweet, sumac, viburnums such as American highbush cranberry, eastern wahoo, and winterberry or other hollies. Oaks, hickories, buckeyes, chestnuts, butternuts, walnuts and hazels provide nutrient rich nuts and acorns as food for birds and mammals as well as providing good nesting habitat for many birds and arboreal mammals.

The following landscaping groups and plants develop seasonal fruiting characteristics that are useful as food for wildlife:

- | | |
|-------------------|---|
| Deciduous Trees: | Red maple (spring fruiting)
Sugar maple (summer fruiting)
Mulberries (summer fruiting)
Juneberries (summer fruiting)
Flowering dogwood (fall fruiting)
Crabapples (fall fruiting with winter-persistent fruit)
White oak (fall fruiting with winter-persistent fruit)
Sumacs (fall fruiting with winter-persistent fruit)
American mountain ash (fall fruiting) |
| Coniferous Trees: | Cedars (fall fruiting with winter-persistent fruit; nest sites)
Spruces (fall fruiting with winter-persistent fruit; nest sites) |
| Native Vines: | Virginia creeper (fall fruiting with winter-persistent fruit) |
| Shrubs: | Dogwoods (fall fruiting)
Viburnums (fall fruiting; some being winter-persistent)
Winterberry (fall fruiting with winter-persistent fruit)
White fringetree (summer fruiting)
Northern bayberry (fall fruiting with winter-persistent fruit)
Washington hawthorn (fall fruiting) |

The proper bedding and positioning of landscape plants is important, as each of the species used would not thrive in all of the soils or exposures presented by the developed site. Particular plant requirements regarding planting, soil, water and sun/shade preferences would be used in determining final plant positioning.

The replacement of invasive plants with native plants would be beneficial to most wildlife species that would repopulate the site. Certain of the invasive species present such as black locust, garlic mustard, multiflora rose and Japanese barberry would be eliminated on landscaped portions of the project site, as shown on the Landscaping Plan.

4.3.6 Stone Walls

Walls that are located outside of the proposed areas of disturbance would be left undisturbed. These include most stone walls that exist near Wetlands A, B and C as well as all those along Wetland D and those that nearly fully border the project property lines. A total of approximately 1,920 lineal feet of existing stone walls in the interior of the site would be preserved. All of the perimeter walls at the property line will be preserved. Walls between Wetland C and the proposed development will be replaced with post and rail fence, to allow the movement of small wildlife.

The stones and boulders from walls that are disturbed by the project development would be proposed to be reused for the construction of functional and esthetic landscape features, such as tree wells and low retaining walls that would preserve and enhance the character of the site.

**Table 4-26: Salem Hunt Flora
Observed Species**

Trees		Location				
Common name	Scientific name	June Road	Wetland D	Wetland A	Wetlands B and C	Forested Uplands
American basswood	<i>Tilia americana</i>					X
American beech	<i>Fagus grandifolia</i>					X
American elm	<i>Ulmus americana</i>		X	X	X	X
Apple	<i>Malus spp.</i>					X
Bitternut hickory	<i>Carya cordiformis</i>					X
Black cherry	<i>Prunus serotina</i>					X
Black locust	<i>Robinia pseudoacacia</i>					X
Black maple	<i>Acer nigrum</i>					X
Black oak	<i>Quercus velutina</i>					X
Black willow	<i>Salix nigra</i>		X			X
Butternut	<i>Juglans cinerea*</i>					X
European alder	<i>Alnus glutinosa</i>		X			X
Flowering dogwood	<i>Cornus florida*</i>					X
Gray birch	<i>Betula populifolia</i>					X
Hazel alder	<i>Alnus serrulata</i>		X			X
Norway maple	<i>Acer platanoides</i>				X	X
Pin oak	<i>Quercus palustris</i>		X	X	X	X
Red maple	<i>Acer rubrum</i>	X	X	X	X	X
Red oak	<i>Quercus rubra</i>					X
Sassafras	<i>Sassafras albidum</i>					X
Shadblow	<i>Amelanchier spp.</i>					X
Shagbark hickory	<i>Carya ovata</i>					X
Sugar maple	<i>Acer saccharum</i>					X
Swamp white oak	<i>Quercus bicolor</i>					X
Sweet (black) birch	<i>Betula lenta</i>					X
Tree- of- Heaven	<i>Ailanthus altissima</i>	X				X
Tulip poplar	<i>Liriodendron tulipifera</i>					X
White ash	<i>Fraxinus americana</i>					X

**Table 4-26: Salem Hunt Flora (Continued)
Observed Species**

Trees		Location				
Common name	Scientific name	June Road	Wetland D	Wetland A	Wetlands B and C	Forested Uplands
White oak	<i>Quercus alba</i>					X
Yellow birch	<i>Betula alleghaniensis</i>					X
Shrubs and Vines		Location				
Northern Arrowwood	<i>Viburnum recognitum</i>	X	X			X
Autumn olive	<i>Elaeagnus umbellata</i>					X
Bristly dewberry	<i>Rubus hispida</i>	X		X	X	X
Common elderberry	<i>Sambucus nigra</i>	X				X
Common greenbriar	<i>Smilax rotundifolia</i>	X				X
Japanese honeysuckle	<i>Lonicera japonica</i>	X				X
Japanese barberry	<i>Berberis thunbergii</i>	X	X	X	X	X
Meadowsweet	<i>Spiraea alba</i>	X				X
Multiflora rose	<i>Rosa multiflora</i>	X	X	X	X	X
Nannyberry	<i>Viburnum lentago</i>					X
Upland Pinkster flower	<i>Rhododendron perimclymenoides*</i>	X				X
Poison ivy	<i>Toxicodendron radicans</i>	X	X	X	X	X
Siebold's arrowwood	<i>Viburnum sieboldii</i>					X
Spicebush	<i>Lindera benzoin</i>		X	X	X	X
Swamp azalea	<i>Rhododendron viscosum*</i>	X				X
Winterberry	<i>Ilex verticillata*</i>		X	X	X	X
Winged euonymus	<i>Euonymus alata</i>					X
Wisteria	<i>Wisteria spp.</i>					X
Witchhazel	<i>Hamamelis virginiana</i>					X
Spring-flowering Plants - Observed Species		Location				
Bird's foot trefoil	<i>Lotus corniculatus</i>	X				
Bittersweet nightshade	<i>Solanum dulcamara</i>	X	X			

**Table 4-26: Salem Hunt Flora (Continued)
Observed Species**

Spring-flowering Plants - Observed Species		Location				
Common name	Scientific name	June Road	Wetland D	Wetland A	Wetlands B and C	Forested Uplands
Bulbous butter-cup	<i>Ranunculus bulbosus</i>	X				
Canada Mayflower	<i>Maianthemum canadense</i>		X	X		X
Cleavers	<i>Galium aparine</i>					X
Coltsfoot	<i>Tussilago farfara</i>	X				
Common cinquefoil	<i>Potentilla simplex</i>	X				
Common dandelion	<i>Taraxacum officinale</i>	X				
Common elderberry	<i>Sambucus nigra</i>	X				
Downy Solomon's seal	<i>Polygonatum pubescens</i>					X
Dwarf ginseng	<i>Panax trifolium</i>		X			
Garlic mustard	<i>Alliaria petiolata</i>		X	X	X	X
Germander speedwell	<i>Veronica chamaedrys</i>				X	
Golden ragwort	<i>Packera aurea</i>		X			
Golden zizia	<i>Zizia aurea</i>	X	X			
Green false hellebore	<i>Veratrum viride</i>		X			
Gypsy-weed	<i>Veronica officinalis</i>		X			
Hooked crowfoot	<i>Ranunculus recurvatus</i>	X				
Jack-in-the-pulpit	<i>Arisaema triphyllum</i>	X	X	X	X	X
Littleleaf butter-cup	<i>Ranunculus abortivus</i>		X	X		X
Long-bracted orchids	<i>Habenaria viridis</i>					X
Marsh marigold	<i>Caltha palustris</i>		X			
Mouse ear chickweed	<i>Cerastium vulgatum</i>		X			
Nannyberry	<i>Viburnum lentago</i>	X				
Partridgeberry	<i>Mitchella repens</i>		X			
Pennsylvania bittercress	<i>Cardamine pensylvanica</i>	X	X		X	

**Table 4-26: Salem Hunt Flora (Continued)
Observed Species**

Spring-flowering Plants - Observed Species		Location				
Common name	Scientific name	June Road	Wetland D	Wetland A	Wetlands B and C	Forested Uplands
Plume poppy	<i>Macleaya cordata</i>					X
Ragged robin	<i>Lychnis flos-cuculi</i>	X	X			
Red clover	<i>Trifolium pratense</i>	X				
Red trillium	<i>Trillium erectum*</i>	X	X	X		
Rue anemone	<i>Thalictrum thalictroides</i>		X			
Skunk cabbage	<i>Symplocarpus foetidus</i>	X	X	X	X	X
Small white leek	<i>Allium tricoccum</i>				X	X
Spotted jewelweed	<i>Impatiens capensis</i>	X	X	X	X	
Spotted wintergreen	<i>Chimaphila maculata</i>					X
Strict blue-eyed grass	<i>Sisyrinchium montanum</i>		X			
Swamp azalea	<i>Rhododendron viscosum*</i>	X				
Swamp saxifrage	<i>Saxifraga pensylvanica</i>		X			
Tall butter-cup	<i>Ranunculus acris</i>	X				
Trout lily	<i>Erythronium americanum</i>	X	X	X	X	
True forget-me-not	<i>Myosotis scorpioides</i>		X			
Two-leaf toothwort	<i>Cardamine diphylla</i>		X			
Violet	<i>Viola spp.</i>		X	X	X	
Wild chervil	<i>Anthriscus sylvestris</i>	X				
Wild crane's-bill	<i>Geranium maculatum</i>		X	X	X	X
Wild garlic	<i>Allium vineale</i>					X
Wild madder	<i>Galium mollugo</i>	X				
Wood anemone	<i>Anemone quinquefolia</i>		X			
Yellow rocket	<i>Barbarea vulgaris</i>	X				
Summer-flowering Plants		Location				
American burnweed	<i>Erechtites hieraciifolia</i>					X
Annual ragweed	<i>Ambrosia artemisiifolia</i>	X				

**Table 4-26: Salem Hunt Flora (Continued)
Observed Species**

Summer-flowering Plants		Location				
Common name	Scientific name	June Road	Wetland D	Wetland A	Wetlands B and C	Forested Uplands
Arrowleaf tearthumb	<i>Polygonum sagittatum</i>		X			
Black nightshade	<i>Solanum nigrum</i>					X
Boneset	<i>Eupatorium perfoliatum</i>					X
Canada goldenrod	<i>Solidago canadensis</i>				X	
Celandine	<i>Chelidonium majus</i>					X
Clearweed	<i>Pilea pumila</i>			X	X	X
Devil's beggarticks	<i>Bidens frondosa</i>		X			
Ditch-stonecrop	<i>Penthorum sedoides</i>		X			
Enchanter's nightshade	<i>Circaea lutetiana</i>				X	X
Grassleaved goldenrod	<i>Euthamia graminifolia</i>				X	
Giant chickweed	<i>Myosoton aquaticum</i>				X	
Giant ragweed	<i>Ambrosia trifida</i>	X				
Gypsy weed	<i>Veronica officinalis</i>		X			
Halberdleaf tearthumb	<i>Polygonum arifolium</i>		X			
Hog peanut	<i>Amphicarpaea bracteata</i>		X		X	
Indian tobacco	<i>Lobelia inflata</i>					X
Jumpseed	<i>Polygonum virginianum</i>		X	X	X	X
Mad-dog skullcap	<i>Scutellaria lateriflora</i>		X		X	
Marsh pennywort	<i>Hydrocotyle americana</i>		X			
Nippleseed plantain	<i>Plantago major</i>	X				X
Northern bugleweed	<i>Lycopus uniflorus</i>		X			
Pokeweed	<i>Phytolacca americana</i>					X
Purple loosestrife	<i>Lythrum salicaria</i>	X	X			
Queen Anne's lace	<i>Daucus carota</i>	X				
Selfheal	<i>Prunella vulgaris</i>		X			

**Table 4-26: Salem Hunt Flora (Continued)
Observed Species**

Summer-flowering Plants		Location				
Common name	Scientific name	June Road	Wetland D	Wetland A	Wetlands B and C	Forested Uplands
Spotted Joepeyweed	<i>Eupatorium maculatum</i>	X	X			
Stinging nettle	<i>Urtica dioica</i>		X			
Squarestem monkeyflower	<i>Mimulus ringens</i>				X	
Stickseed	<i>Hackelia virginiana</i>				X	X
Virginia creeper	<i>Parthenocissus quinquefolia</i>		X	X	X	X
White avens	<i>Geum canadense</i>		X			X
White clover	<i>Trifolium repens</i>	X				
White wood aster	<i>Eurybia divaricata</i>		X			X
Wrinkled-leaved goldenrod	<i>Solidago rugosa</i>				X	
Yarrow	<i>Achillea millefolium</i>	X				
Grasses, Grasslike and Non-flowering Plants, Grasses, Sedge		Location				
Barnyard grass	<i>Echinochloa crus-galli</i>	X	X			
Bluegrass	<i>Poa spp.</i>	X				
Broadleaf cattail	<i>Typha latifolia</i>	X				
Brownish beakrush	<i>Rhynchospora capitellata</i>		X		X	
Common reed	<i>Phragmites australis</i>	X				
Dark green bulrush	<i>Scirpus atrovirens</i>		X			
Deer-tongue	<i>Dichanthelium clandestinum</i>		X			X
Fall panicgrass	<i>Panicum dichotomiflora</i>	X				
Field horsetail	<i>Equisetum arvense</i>	X				
Green foxtail	<i>Setaria viridis</i>	X				
Japanese stilt grass	<i>Microstegium vimineum</i>		X			X
Laxiflora sedge	<i>Carex laxiflora</i>					X
Needle spikerush	<i>Eleocharis acicularis</i>	X	X			

**Table 4-26: Salem Hunt Flora (Continued)
Observed Species**

<u>Grasses, Grasslike and Non-flowering Plants, Grasses, Sedge</u>		<u>Location</u>				
<u>Common name</u>	<u>Scientific name</u>	<u>June Road</u>	<u>Wetland D</u>	<u>Wetland A</u>	<u>Wetlands B and C</u>	<u>Forested Uplands</u>
Panicgrass	<i>Panicum philadelphicum</i>	X				
Pennsylvania sedge	<i>Carex pensylvanica</i>					X
Rye brome	<i>Bromus secalinas</i>					X
Tussock sedge	<i>Carex stricta</i>		X		X	
Umbrella sedge	<i>Cyperus strigosus</i>					X
Wirestem muhly	<i>Muhlenbergia frondosa</i>					X
Broad-leaved sedge	<i>Carex platyphylla</i>					X
<u>Ferns</u>		<u>Location</u>				
Christmas fern	<i>Polystichum acrostichoides</i> *			X	X	X
Cinnamon fern	<i>Osmunda cinnamomea</i> *			X	X	
Evergreen wood fern	<i>Dryopteris intermedia</i> *					X
Hayscented fern	<i>Dennstaedtia punctilobula</i>					X
Interrupted fern	<i>Osmunda claytoniana</i> *				X	X
Lady fern	<i>Athyrium filix-femina</i> *					X
New York fern	<i>Thelypteris noveboracensis</i> *					X
Sensitive fern	<i>Onoclea sensibilis</i>	X	X	X	X	
Spinulose wood fern	<i>Dryopteris carthusiana</i> *					X
<u>Mosses</u>		<u>Location</u>				
Sphagnum moss	<i>Sphagnum spp.</i>		X	X	X	

* NYS exploitably vulnerable species.
Species in **bold** type are not native to this region.

Table 4-27: Salem Hunt Fauna Expected and Observed Species						
Mammals		Location				
Common Name	Scientific name	June Road	Wetland D	Wetland A	Wetlands B and C	Forested Uplands
Deer mouse	Peromyscus maniculatus					
Eastern chipmunk	Tamias striatus*	X	X	X	X	X
Eastern cottontail	Sylvilagus floridanus					
Eastern coyote	Canis latrans					
Eastern mole	Scalopus aquaticus					
Gray fox	Urocyon cinereoargenteus					
Gray squirrel	Sciurus carolinensis*	X	X	X	X	X
House mouse	Mus musculus					
Little brown bat	Myotis lucifugus					
Meadow vole	Microtus pennsylvanicus					
Opossum	Didelphis virginiana					
Raccoon	Procyon lotor*		X			
Red bat	Lasiurus borealis					
Red fox	Vulpes vulpes					
Short-tail shrew	Blarina brevicauda					
Southern flying squirrel	Glaucomys volans					
Striped skunk	Mephitis mephitis					
White-footed mouse	Peromyscus leucopus					
White tail deer	Odocoileus virginianus*	X	X	X	X	X
Woodchuck	Marmota monax					
Reptiles		Location				
Black racer	Coluber constrictor					
Black rat snake	Elaphe obsoleta					
Eastern Box turtle	Terrapene carolina* **(threatened)				X	X
Brown snake	Storeria dekayi					
Garter snake	Thamnophis sirtalis*	X	X			
Eastern Hognose snake	Heterodon pletyrhinos ¹ **(special concern)					
Milk snake	Lampropeltis triangulum					
Ribbon snake	Thamnophis sauritis					
Ringneck snake	Diadophis punctatus					
Wood turtle	Clemmys insculpta ¹ **(endangered)					
Amphibians		Location				
American toad	Bufo americanus*		X			
Bullfrog	Rana catesbeiana*		X			
Four-toed salamander	Hemidactylium scutatum					
Gray treefrog	Hyla versicolor	Direct or audible observation by Matthew D. Rudikoff Associates Inc.				

**Table 4-27: Salem Hunt Fauna CON'T
Expected and Observed Species**

Amphibians		Location				
Common Name	Scientific name	June Road	Wetland D	Wetland A	Wetlands B and C	Forested Uplands
Green frog	<i>Rana clamitans</i> *		X			
Two-lined salamander	<i>Eurycea bislineata</i> *	Direct or audible observation by Matthew D. Rudikoff Associates Inc.				
Pickerel frog	<i>Rana palustris</i> *	Direct or audible observation by Matthew D. Rudikoff Associates Inc.				
Red-backed salamander	<i>Plethodon cinereus</i> *		X			
Red-spotted newt	<i>Notophthalmus viridescens</i> *	Direct or audible observation by Matthew D. Rudikoff Associates Inc.				
Slimy salamander	<i>Plethodon glutinosus</i> ** (special concern)					
Spring peeper	<i>Pseudocris crucifer</i> *	Direct or audible observation by Matthew D. Rudikoff Associates Inc.				
Wood frog	<i>Rana sylvatica</i> *	Direct or audible observation by Matthew D. Rudikoff Associates Inc.				
* Indicates species observed directly or by signs (e.g. tracks or scat) during field surveys in 2006 and 2007.						
** (endangered) - Indicates Westchester County-listed species and their status.						
¹ Indicates New York State-listed species of special concern.						
Birds		Habitat Type				
Common Name	Scientific Name	RMHS	MHS	ED	FB	SNHF
American Crow	<i>Corvus brachyrhynchos</i>				X	
American Goldfinch	<i>Carduelis tristis</i>				X	
American Redstart*	<i>Setophaga ruticella</i>			X		
American Robin	<i>Turdus migratorius</i>			X		
American Woodcock	<i>Philohela minor</i>			X		X
Baltimore Oriole*	<i>Icterus galbula</i>			X		
Barred Owl*	<i>Strix varia</i>	X				
Black-and-white Warbler	<i>Mniotilta varia</i>					X
Black-capped Chickadee	<i>Parus atricapillus</i>	X				X
Black-throated Blue Warbler*	<i>Dendroica caerulescens</i>					X
Blue Jay	<i>Cyanocitta cristata</i>	X	X	X		X
Blue-winged Warbler	<i>Vermivora pinus</i>			X		
Broad-winged Hawk*	<i>Buteo platypterus</i>					X
Brown-headed Cowbird	<i>Molothrus ater</i>			X		
Canada Goose	<i>Branta canadensis</i>				X	
Canada Warbler*	<i>Wilsonia canadensis</i>					X
Cerulean Warbler*	<i>Dendroica cerulea</i>					X
Chimney Swift	<i>Chaetura pelagica</i>				X	

Chipping Sparrow	Spizella passerina			X		
Table 4-27: Salem Hunt Fauna CON'T Expected and Observed Species						
Birds		Habitat Type				
Common Name	Scientific Name	RMHS	MHS	ED	FB	SNHF
Common Grackle	Quiscalus quiscula				X	
Common Yellowthroat	Geothlypis trichas	X		X		
Cooper's Hawk*	Accipiter cooperii			X		
Downy Woodpecker	Picoides pubescens	X				X
Eastern Phoebe	Sayornis phoebe					
Eastern Screech Owl*	Otus asio			X		X
Eastern Towhee	Pipilo erythrophthalmus			X		X
Eastern Wood Peewee	Contopus virens					X
Finch Species*	Carpodacus spp.			X		X
Gray Catbird	Dumetella carolinensis			X		X
Great-crested Flycatcher*	Myiarchus crinitus			X		X
Great-horned Owl*	Bubo virginianus					X
Hairy Woodpecker	Picoides villosus					X
Indigo Bunting*	Passerina cyanea			X		
Kentucky Warbler*	Oporornis formosus					X
Mallard	Anas platyrhynchos				X	
Mourning Dove	Zenaida macroura			X		
Northern Cardinal	Cardinalis cardinalis		X	X		X
Northern Flicker	Colaptes auratus	X		X	X	X
Ovenbird	Seiurus aurocapillus		X			X
Pileated Woodpecker	Dryocopus pileatus					X
Red-bellied Woodpecker	Melanerpes carolinus	X	X			X
Red-eyed Vireo	Vireo olivaceus	X				X
Red-tailed Hawk	Buteo jamaicensis					X
Rose-breasted Grosbeak	Pheucticus ludovicianus			X		
Scarlet Tanager	Piranga olivacea					X
Sharp-shinned Hawk	Accipiter striatus				X	
Song Sparrow	Melospiza melodia			X		
Tufted Titmouse	Parus bicolor			X		X
Turkey Vulture	Cathartes aura				X	
Veery	Catharus fuscescens					X
Warbler Species*	Dendroica/Vermivora spp.	X	X	X		X
Warbling Vireo*	Vireo gilvus					X
White-breasted Nuthatch	Sitta carolinensis	X				X

Table 4-27: Salem Hunt Fauna CON'T Expected and Observed Species						
Birds		Habitat Type				
Common Name	Scientific Name	RMHS	MHS	ED	FB	SNHF
White-throated Sparrow	Zonotrichia albicollis	X				X
Wild Turkey	Meleagris gallopavo					X
Wood Duck	Aix sponsa		X			
Wood Thrush	Hylocichla mustelina	X		X		X
Worm-eating Warbler*	Helmitheros vermivorus					X
Yellow-billed Cuckoo*	Coccyzus americanus			X		X
Yellow Warbler	Dendroica petechia	X		X		

Habitat type: RMHS - Red maple-hardwood swamp, MHS-Marsh Headwater Stream, ED-Edge Habitat, FB-Flyby, SNHF-Successional Northern Hardwood Forest

*Species that were not observed during formal bird surveys but use habitat similar to that on the site.

Sources: Tim Miller Associates, Inc., 2006 and 2007, Matthew D. Rudikoff Associates Inc. and NYS BBA data, 1980-1985 and 2000-2004.

5.0 GROUNDWATER

5.1 Existing Conditions

Local Groundwater Resources

Groundwater in the vicinity of the Salem Hunt property is found in both shallow aquifers in unconsolidated glacial till material and in deeper bedrock aquifers. The local surficial and bedrock geology controls the capacity and recharge rates of groundwater, and therefore well yields.

The project site and much of the Town of North Salem is located in the northern portion of the Manhattan Prong Physiographic province. The site and environs are underlain by crystalline bedrock units of Precambrian to Ordovician, which consist of complexly folded and faulted metamorphic and igneous rocks. Site and local geology are further described in Section 7.0 - Geology, Soils and Topography.

The bedrock underlying the Salem Hunt site is mapped as the Manhattan formation, described as Ordovician age pelitic schist and amphibolite rock, according to the *Geologic Map of New York, Lower Hudson Sheet* (New York State Museum, 1970). An east-west trending band of Inwood marble is mapped south of the property and the Fordam gneiss is mapped further to the south, in the vicinity of the Titicus Reservoir. The bedrock structure forms hills and valleys that generally trend southwest to northeast in northern Westchester and southern Putnam counties.

The metamorphic bedrock found locally has little or no primary permeability, and therefore groundwater can only pass through the rock through fractures. Depths of bedrock wells and well yields can vary considerably, depending upon the size and quantity of fractures that are intercepted by any specific well. In areas of faults and regional fracture zones, well yields can be high. In locations with few or poor fractures, well yields will be poor, or wells need to be installed to considerable depth to intercept an adequate number of fractures.

Varying thickness of glacial till material overlies the bedrock in North Salem and throughout the Hudson Valley. The till consists of primarily fine grained silts and clays, with varying amount of sand and gravel. In most areas containing glacial till, the till thickness are too shallow above the bedrock or the silt and clay material does not provide adequate permeability to provide groundwater for potable wells. Sand and gravel deposits were deposited in higher velocity depositional environments, and are typically found in valleys in Northern Westchester and Putnam Counties. A sand and gravel deposit is mapped locally, approximately 3000 feet north of the site, in the Town of Southeast. Based upon topography and local drainage patterns sand and gravel deposits may underlie the level wetland area in the eastern portion of the site bordering June Road. No monitor wells or soil borings were completed in this area due to the wetland and its regulatory status. Sand and gravel deposits can provide high groundwater yields locally, but are more susceptible to drought and impact from surface contaminants such as road salts, and petroleum compounds.

Upgradient Aquifers

The area that contributes groundwater to the Salem Hunt site and local groundwater flow direction in the bedrock aquifer is somewhat influenced by surface topography, but is also influenced by major fracture systems in the rock, faults, and surface water bodies. A fracture

trace analysis was conducted for the Salem Hunt Property, and is described in Appendix H - Water Supply Report. The fracture trace study found that the property and vicinity have few bedrock fractures, and those fractures that underlie the site extend off-site to the north and south, as well as in a southeast to northwest direction. Bedrock fractures, especially major fracture zones can extend for a considerable distance. Therefore, groundwater in bedrock wells drilled on the Salem Hunt site may be drawn from large areas both south of and north of the subject site.

Typically, shallow groundwater is found at the interface of the bedrock and overlying unconsolidated material or in layers of sand, gravel or silt, in the surficial glacial till material. This shallow groundwater generally follows the surface topography. Since the surface water drainage in the vicinity of the Property generally flows from the south towards the north, shallow groundwater movement can be assumed to be consistent with surface water flow direction. Surface water drainage areas in the vicinity of the Salem Hunt site, both upgradient and downgradient were mapped, and are shown in Figure 5-1 Aquifer Drainage Areas.

As shown in Figure 5-1 Aquifer Drainage Areas, an area extending south of Hardscrabble road contributes surface water to the unnamed stream which flows through the eastern portion of the site. Given that this surface drainage area also contributes to the shallow aquifer as well as the deeper bedrock aquifer, this area is analyzed in this document as the "upgradient aquifer area".

The upgradient aquifer area is approximately 266.2 acres in size, based upon USGS topographic maps (Peach Lake Quadrangle). As shown in Figure 5-1 this upgradient contributing area contains no ponds or water bodies, but a wetland area is located south of the site. As described above, surface water drainage from this area flows to the unnamed stream, which flows through the eastern edge of the Salem Hunt site from south to north. The upgradient aquifer area contains mostly low density residential land uses.

Upgradient Recharge Rate

Groundwater recharge analyses were completed for the upgradient drainage area, the project site, and downgradient areas within on-quarter mile of the Salem Hunt property, as provided in the Scope for this DEIS. Recharge analysis for the project site and downgradient areas are further discussed below.

The primary source of groundwater is precipitation which infiltrates through the surface of the ground and percolates into the water table. The majority of rainfall is "lost" to surface water runoff, shallow subsurface flow and evapotranspiration. Depending on the physical characteristics of the recharge area, between 15 and 40 percent of the annual precipitation typically recharges the local aquifer.

Evaluation of groundwater recharge with respect to a specific project or land use is usually done by comparing the projected water demand and the ability of the local watershed to recharge the aquifer. Generally, the groundwater table in an unconfined aquifer will loosely follow the surface topography of the land. Groundwater would be expected to flow from drainage boundaries, such as ridges, toward points topographically lower in the watershed. Groundwater in storage and recharge "collected" within the natural drainage basin area would be available to replenish or recharge the aquifer. Due in part to the anisotropic (irregular) nature of the bedrock aquifer, however, only a portion of total basin recharge could transmit water to any given pumping area. As described above, heavily faulted and fractured bedrock zones are

capable of transmitting larger quantities of water to recharge the bedrock aquifer than are less fractured zones.

The project site is underlain by a system of subsurface fractures, and if tapped successfully, will potentially pick up recharge from a large area, including the upgradient drainage area located south of the site. The faults and fractures that form the valleys surrounding the project site may extend for miles and intercept additional fractures well beyond the property. As previously noted, between 15 and 40 percent of precipitation becomes groundwater through recharge and is potentially available to wells tapping these interconnected fractures.

Several studies have been completed to estimate groundwater recharge in the Hudson Valley and Putnam and Westchester Counties. The Putnam County Groundwater Protection and Utilization Plan (Chazen Companies, 2004) discusses these studies and provides estimates of groundwater recharge for Putnam County, which borders the property to the north. The Plan references the Wolcott and Snow USGS study (1995) conducted in conjunction with the NYCDEP in Westchester County. This study estimates that 8.45 inches of annual rainfall enter till and silty soils and that 19.91 inches of rainfall enter sand and gravel soils. Most soils in the vicinity of the Salem Hunt site are derived from glacial till and therefore limit recharge rates to the underlying bedrock aquifers.

The Putnam County Groundwater Plan indicates that, in general, aquifer recharge in much of Putnam County is approximately 7 inches per year for areas with glacial till soils, such as the vicinity of the Salem Hunt site. This estimate was derived from review of several County wide and Town wide studies, including studies by the USGS. Utilizing this 7 inches per year estimate, a recharge rate for the area upgradient of the Salem Hunt site can be estimated. This is a conservative estimate that does not analyze specific soil types upgradient of the subject property. A more detailed and site specific recharge analysis was completed for the approximately 40 acre Salem Hunt property, as described below. A summary of the recharge estimate is provided in Table 5-1, below.

Table 5-1 Upgradient Aquifer Recharge Calculations	
Acres	266.2
Square Feet	11,595,672
Average rainfall per year (inches) *	48
Average rainfall per year (feet)	4.0
Cubic feet of precipitation per year	47,194,385
Gallons of precipitation per year	353,014,000
Amount of rainfall available for recharge per year (feet) **	0.58
Cubic feet rainfall available for recharge per year	66,763,755.4
Amount, in gallons, available for recharge per year	50,592,890
Amount, in gallons, available for recharge per day	138,611
Amount, in gallons, available for recharge per minute	96.25
Source: Tim Miller Associates, Inc., * - 30 year average for 1951-1980 per <i>Mean Annual Runoff, Precipitation and Evapotranspiration in the Glaciated Northeast, 1951 - 1980, Allan D. Randall, USGS.</i> ** - Recharge estimate per <i>Putnam County Groundwater Protection and Utilization Plan, The Chazen Companies, 2004.</i>	

Based upon the recharge analysis for upgradient aquifer areas, a large volume of groundwater, an estimated 138,611 gallons per day (gpd) or 96.25 gallons per minute (gpm) is potentially available to recharge the area upgradient of the Salem Hunt property. This estimate is for recharge of the bedrock aquifer and does not include the project site itself or bedrock fractures which may extend to upgradient as well as downgradient areas.

Upgradient Groundwater Uses

Based upon the Town of North Salem tax map, the upgradient drainage area contains approximately 19 tax lots, or portions of lots (i.e. only a portion of a specific property lies within the drainage area boundaries)(see Figure 5-1 Aquifer Drainage Areas and Figure 5-2 Pumping Test Location Map). The majority (16 lots), contain low density residential uses or are vacant. The drainage area also includes a portion of the North Salem Middle School/ High School property, as well as the Town Highway Department facility, located directly southeast of the site. One commercial property, a deli is also located in the drainage area. The area contains no industrial or manufacturing uses or gasoline service stations.

Local residences in the upgradient drainage area are primarily older homes. A survey of residential wells in the vicinity of the site was completed as part of the request for permission to monitor wells for the pumping test. A single response from the Town Highway Department was received, out of the five well monitoring questionnaires sent to upgradient properties. The Town facility has a well 385 feet in depth with a yield of approximately 15 gpm. A copy of the well survey response is provided in Appendix H.

Using a conservative estimate, 18 individual septic systems and a single community septic system (North Salem Middle School/ High School) are located in the 266.2 acre upgradient

aquifer area. This is a density of one septic system for each 14.0 acres. This residential density, and the related septic field density is quite low.

An estimated water demand for the upgradient aquifer area can be developed based upon land uses mapped within the upgradient area. An average daily water demand was estimated based upon the hydraulic loading rates listed in the New York State Department of Environmental Conservation (NYSDEC) *Design Standard for Wastewater Treatment Works - Intermediate Sized Sewerage Facilities (1988)*. A three bedroom residence was assumed for each of the 16 residential lots mapped within the upgradient aquifer drainage area, although the individual wells for each of these lots may not fall within the drainage area. Each residence is estimated to have an average daily water demand of 450 gpd. Assuming the Town Highway Department facility and the Deli use a similar volume of water would add an additional 900 gpd of water usage. The North Salem Middle School/ High School is estimated to use approximately 15,500 gpd based upon the project engineer's estimates for school uses (20 gpd per student, assuming 780 students). Therefore, total water demand in the upgradient aquifer area is conservatively estimated to be 23,650 gpd. Septic systems will also return a majority of this water to the local aquifer.

In summary, a conservative estimate of upgradient groundwater recharge is approximately 138,611 gpd, utilizing an annual recharge rate of 7 inches per year. Local upgradient groundwater usage is estimated to be 23,650 gpd. Therefore, groundwater recharge is greater than groundwater usage in the drainage area upgradient from the Salem Hunt site.

Potential threats to groundwater quality are primarily limited to those typical of low density residential development, including individual septic systems, road salt, and biological waste from farm animals. The Town Highway Department facility was contacted regarding the operations and material storage on the Town property, located adjacent and southeast of the site. According to Town of North Salem Highway Department staff, no vehicle storage or maintenance occurs at the June Road facility. Salt and sand for winter road maintenance are stored in a covered building on the property. An aboveground diesel fuel storage tank is located on the Town property. The tanks and fuel storage pose no significant threat to groundwater resources if proper maintenance and operational procedures are followed at the Town facility.

On-site Groundwater Resources

As described above, the Salem Hunt property is underlain by fine-grained schist rocks of the Manhattan formation. The fracture trace analysis for the property indicates that several bedrock fracture systems cross the site, but that these are not major or regional fractures (see Appendix H, Water Supply Report). Based upon the on-site well drilling and pumping test program described in Section 5.3 Potential Impacts, below, adequate groundwater for the project is present in the bedrock aquifer.

Overlying bedrock on the project site is a layer of glacial till of varying thickness. Shallow groundwater is found in this unconsolidated material, overlying the less permeable bedrock. Groundwater in this shallow aquifer contributes to the deeper bedrock aquifer through any available fractures in the bedrock surface. Based upon the water supply wells and monitoring wells drilled on the property, the glacial till material ranges from 14 to 90 feet in depth. The Water Supply Report describes the thick till material in the western portion of the site as contact moraine or drumlin deposits. Glacial till material is thin or not present along the eastern slope of the site, where bedrock is exposed. Bedrock locations are outside of the proposed limits of

disturbance and are shown in Drawing EX-1 Existing Conditions Plan. The till material consists of stream channel deposits in the eastern portion of the site, underlying the wetlands and stream corridor.

GeoDesign installed 14 shallow monitoring wells for their investigation for the Subsurface Sanitary Treatment System (SSTS) (see Appendix J - *Hydrogeology Investigation, GeoDesign, August 2006*). Soil borings which were drilled to the top of the bedrock surface, found that glacial till varied between 14 and 26 feet in depth. In the four bedrock wells drilled in the western portion of the property, the till ranged from 35 to 90 feet in thickness.

Groundwater in the shallow glacial till aquifer varied from 2.0 feet to greater than 20 feet in depth in the 14 shallow monitoring wells on the property. Two wells were dry following installation. Shallow groundwater is seasonally found at surface grade in wetlands and where it contributes to surface water flow in the unnamed stream at the eastern edge of the site.

Groundwater in the shallow aquifer is expected to flow generally from south to north consistent with surface water flow patterns. As shown in Figure 5-1 Aquifer Drainage Areas, surface water drainage narrows in the vicinity of the Salem Hunt site, flowing within a south-north trending valley.

Four bedrock wells were installed at Salem Hunt in October, 2006 to provide a community water supply for the project. The wells were drilled by Boyd Artesian Well Drilling and the installation was supervised by Sergio Smiriglio of SSEC. The location of the wells was reviewed and approved by the Westchester County Department of Health, as part of the well permitting process. The well completion reports are provided in Appendix H, as part of the Water Supply Report. The depths of the wells varied from 650 feet to 833 feet. In each of the wells, steel casing was installed and grouted into the bedrock and the wells were then drilled as an open hole to completion.

A single well with six inch steel casing was found in the eastern portion of the site, above the wetland. No records or information regarding the well's installation were available and the well was present on the property prior to the property's purchase by the current owner. The well was used as a monitoring point for the pumping test, further described below.

On-site Recharge

As described above, several studies have been completed to estimate groundwater recharge to aquifers in the Hudson Valley as well as Westchester and Putnam Counties. In general, these studies indicate that between 15 and 40 percent of annual precipitation is available to recharge local aquifers. The balance of total precipitation is either lost to evapotranspiration or flows via overland surface flow or shallow interflow to streams and rivers. The most accurate predictors of groundwater recharge utilize local precipitation records and account for local soil conditions.

The Chazen Companies (Chazen) have developed a model for estimating groundwater recharge utilizing local soils and to estimate how changes in land use affect recharge (*Wappinger Creek Watershed Groundwater Recharge and Stream Baseflow Evaluation Assessment, The Chazen Companies, March, 2006*, and *Dutchess County Aquifer Recharge Rates and Sustainable Septic System Density Recommendations, The Chazen Companies, April, 2006*). While the model was developed for the watersheds, in Dutchess County, New

York, the model can be applied to other drainage areas and properties. The model is partially based upon the United States Department of Agriculture (USDA) Technical Release 55 (TR-55) *Urban Hydrology for Small Watersheds*, run-off model. The Chazen study indicates that rates of groundwater recharge are primarily constrained by rainfall and local specific soil types in a watershed or on a property.

In order to apply the Chazen model to the Salem Hunt site soil types on the property were evaluated using the Soil Survey of Westchester and Putnam Counties, New York (USDA, 1994). Hydrologic Soil Groups were identified for each of the soil types mapped on the property. Pre- and post-development land uses were assigned, based upon Land Use and Natural Resources (LUNR) inventory property class inventory. The LUNR category “vacant land (300’s)” was used for the undeveloped condition and the category “two and three family (220-230)” was used for the developed condition.

The rainfall rates for the Tenmile River Watershed are similar to the Salem Hunt property, according to USGS precipitation data collected from 1951 through 1980 (Mean Annual Runoff, Precipitation and Evapotranspiration in the Glaciated Northeastern United States, 1951 - 1980, Allan Randall, USGS). Mean annual rainfall in the Tenmile River watershed varies between 42 and 48 inches. The study described above shows mean annual precipitation of approximately 48 inches. Recharge rates developed in the Tenmile River Watershed were used in the estimation of Salem Hunt, below.

Table 5-2, Salem Hunt Property Soils Recharge Rates provides a summary of estimated recharge rates through on-site soils to the bedrock aquifer. This analysis considers the area of the project site only and does not consider the potential influence or recharge from off-site areas.

Table 5-2 Salem Hunt Property Recharge Rates				
On-site Soils Hydrogeologic Group	Acres of Soils per Group	Annual Groundwater Recharge (in) *	Correction Factor	Total Recharge (gallons/ day)
Group A	0	N/A	N/A	N/A
Group B	24.8	14.7	74.4	27,123.3
Group C	9.0	7.6	74.4	5,089
Group D	6.2	4.2	74.4	1,937
Total				34,149

Source: Tim Miller Associates, Inc., and Recharge formula from *Wappinger Creek Watershed Groundwater Recharge and Stream Baseflow Evaluation Assessment, The Chazen Companies, March 2006*
Recharge rates from Tenmile River Watershed per *Dutchess County Aquifer Recharge Rates & Sustainable Septic System Density Recommendations, The Chazen Companies, 2006.*

Table 5-3 On-site Aquifer Recharge Calculations provides a summary of available rainfall for the Salem Hunt site and an estimation of recharge to the aquifer, on a annual and daily basis.

Table 5-3 On-site Aquifer Recharge Calculations	
Acres (approximate)	40
Square Feet	1,741,964
Average rainfall per year (inches) *	48
Average rainfall per year (feet)	4
Cubic feet of precipitation per year	6,967,856
Gallons of precipitation per year	52,119,562
Amount of rainfall available for recharge per year (feet)	1.01
Cubic feet rainfall available for recharge per year	1,757,153
Amount, in gallons, available for recharge per year	13,143,504
Amount, in gallons, available for recharge per day (<i>Estimated per Table 5-2, above</i>)	34,149
Amount, in gallons, available for recharge per minute	23.7
Source: Tim Miller Associates, Inc. * 30 year average for 1951-1980 per <i>Mean Annual Runoff, Precipitation and Evapotranspiration in the Glaciated Northeast, 1951 - 1980, Allan D. Randall, USGS.</i>	

Based upon the Chazen model, current groundwater recharge rates to the bedrock aquifer are estimated to be 34,149 gpd or 23.7 gpm. The proposed average daily water demand is 20,500 gpd or 14.2 gpm.

Therefore, based upon the Chazen recharge model, adequate groundwater is available from precipitation on the project site to supply project water demands. Project groundwater impacts and groundwater balance are further described in Section 5.2 Potential Impacts, below.

The recharge estimates provided above do not account for groundwater contributions from upgradient groundwater areas, surface water contribution, or water added to the local aquifer from the wastewater system. Although the recharge estimates, above, show a balance or surplus of groundwater contributions to the site, off-site impacts may still occur due to the irregular distribution of fractures, both on and off-site.

Downgradient Groundwater Resources

Downgradient drainage areas were evaluated for aquifer characteristics, groundwater recharge areas and rates and current groundwater usage. Groundwater use in areas downgradient of the Salem Hunt property were evaluated using tax maps and survey information provided by homeowners in the vicinity of the project site. In this evaluation, the downgradient aquifer area is defined as that area located downgradient of the property based upon surface water drainage patterns and within one-quarter mile of the property, as identified in the Scoping Document.

The downgradient aquifer area is approximately 66.6 acres in size, within one-quarter mile of the subject property and according to the Town of North Salem Tax Map, contains 16 properties or portions of properties (i.e. only a portion of a specific property lies within the drainage area boundaries) (see Figure 5-1 Aquifer Drainage Areas).

Putnam County recently completed a Groundwater Protection and Utilization Plan, prepared by the Chazen Companies (September, 2004). The purpose of the plan was to provide an inventory of groundwater resources in the County, determine levels of groundwater usage, and to develop management approaches for future use and protection of groundwater. According to the Plan, the area directly north of the Salem Hunt property is located in a bedrock aquifer area categorized as a "higher yielding bedrock formation". According to the Plan, the Manhattan, Walloomsac and Stockbridge formations support the highest average well yields in Putnam County. Wells drilled in these formations are most likely encounter high-yield fractures. The Manhattan formation is mapped in a relatively large area north of the site, including all of the downgradient aquifer area. The Salem Hunt property is underlain by the Manhattan formation.

Downgradient Groundwater Use

Local residences in the downgradient aquifer area are a mixture of older homes and larger newer homes. A survey of residential wells in the vicinity was completed as part of the request for permission to monitor wells for the pumping test. A total of 5 residents located downgradient of the project site responded to the survey. The respondents indicated their wells ranged in depth from 90 to 155 feet and had well yields ranging from 6 gpm to 80 gpm. No problems with well yields were reported. A copy of the well survey responses is provided in Appendix H.

An estimated water demand for the downgradient aquifer area can be developed based upon local land uses. An average daily water demand was estimated based upon the hydraulic loading rates listed in the NYSDEC *Design Standard for Wastewater Treatment Works - Intermediate Sized Sewerage Facilities (1988)*. A three bedroom residence was assumed for each of the 16 residential lots mapped within the downgradient aquifer drainage area, although the individual wells for each of these lots may not fall within the drainage area. Each residence is estimated to have an average daily water demand of 450 gpd, multiplied by 16 residences results in a total water demand of 7,200 gpd for the 66.6 acre downgradient aquifer area. Septic systems will also return a majority of this water to the local aquifer.

There were no commercial or industrial uses identified in the downgradient drainage area. In addition, no public water supply wells are located within the downgradient drainage area. The closest public water supply system is the Peach Lake community water system. The Peach Lake water supply wells are located approximately 4000 feet southeast of the site. This public water system is not located in the upgradient or downgradient aquifer area and is located in a separate surface water drainage basin.

Downgradient Recharge

Consistent with the recharge estimate for the upgradient drainage area, a recharge rate of 7 inches year was used to estimate recharge for the area downgradient of the Salem Hunt site. This is a conservative estimate that does not analyze specific soil types downgradient of the subject property. This evaluation of downgradient aquifer areas considers the 66.6 acre downgradient area and does not consider the potential influence or recharge from off-site areas.

Table 5-4 Downgradient Aquifer Recharge Calculations	
Acres	66.6
Square Feet	2,901,096
Average rainfall per year (inches) *	48
Average rainfall per year (feet)	4.0
Cubic feet of precipitation per year	47,194,385
Gallons of precipitation per year	353,014,000
Amount of rainfall available for recharge per year (feet) **	0.58
Cubic feet rainfall available for recharge per year	1,682,636
Amount, in gallons, available for recharge per year	12,586,114
Amount, in gallons, available for recharge per day	34,482
Amount, in gallons, available for recharge per minute	23.9
Source: Tim Miller Associates, Inc., * 30 year average for 1951-1980 per <i>Mean Annual Runoff, Precipitation and Evapotranspiration in the Glaciated Northeast, 1951 - 1980, Allan D. Randall, USGS</i> ** - Recharge estimate per <i>Putnam County Groundwater Protection and Utilization Plan, The Chazen Companies, 2004.</i>	

As described above, a limited number of residential parcels (16) are located within a downgradient drainage area, one-quarter mile from the project site. The 16 residences are estimated to use 7,200 gpd. The estimated natural recharge for the 66.6 acre downgradient aquifer area is 34,482, gpd or 23.9 gpm, and greatly exceeds the current water usage. This recharge analysis does not consider the groundwater contribution of the entire 306.2 acre drainage area located south (upgradient) of this downgradient area. The estimated available daily recharge (34,482 gpd) exceeds the estimated water demand of 7,200 gpd.

5.2 Potential Impacts

Project Water Demand

The project engineer, Insite Engineering and Surveying, P.C. has prepared an estimate of water demand for the Salem Hunt project. Water demand estimates are provided in the *Preliminary Water System Report* (August 31, 2007) (see Appendix L). The Water System Report provides an average daily design flow of 20,500 gpd or 14.2 gpm. This estimate is based upon 65 two bedroom units utilizing 300 gpd, per unit. This amount equals 19,500 gpd for residential usage. An additional 400 gpd was estimated for the community building and 600 gpd estimated for pool usage, as described below. It should be noted that the majority of the users of the community building will be Salem Hunt residents and any daily water/sewer usage have been previously accounted for in the residential flow estimates.

The community pool would be filled once annually, and recirculated. Water would be used throughout the summer to replace water lost to evaporation. Based upon the proposed size of the pool 20 feet by 50 feet, the pool would require approximately 38,000 gpm. The pool can be filled over a period of days and would not adversely affect local groundwater supplies. An allowance of 600 gpd was estimated for pool needs such as topping off and cleaning.

No irrigation is planned for the project. The project engineer has included notes on the Plans that all lawn irrigation systems and lawn watering systems are prohibited after the site has been stabilized. The applicant has committed to utilize native and drought tolerant vegetation in the project landscaping which will eliminate the need for irrigation. Although individual residential units will have outdoor spigots, all lawn and landscape maintenance will be the responsibility of the condominium association, and association rules and regulations would prevent individual homeowners from watering lawns and landscaping.

Water would be required for firefighting, at rates exceeding typical daily usage. Water for firefighting would be an exceptional use and the volume and frequency of firefighting water demand cannot be predicted. Adequate water would be available on the property to address firefighting needs.

On April 9, 2008 the applicant met with the Croton Falls Fire Department at their firehouse on Titicus Road. At this meeting, the applicant reviewed the general layout of the proposed development and requested input from the Fire Department Chief, Captains and other Fire Company personnel who were present. Also in attendance was the North Salem Planning Board Chairwoman and the Building Inspector. The fire department requested the following, all of which the applicant agreed to:

- 1) that the applicant provide two subsurface 25,000 gallon storage tanks that would be located off of Road A, immediately after the intersection of Road A and Road B;
- 2) that if the applicant proposes any hydrants for draining the domestic water for the community that they be turned inward and cleared identified as not to be used for fire-fighting;
- 3) that the applicant provide information about what type of periodic maintenance and inspection the homeowners association would do to ensure that the water is available if it is ever needed;
- 4) that the homeowners association be responsible for this maintenance;
- 5) that an easement be granted to the Fire Company to allow them to utilize the water in the storage tanks to fight fire on other properties not related to the applicant's property. In this event, the Fire Company would refill the storage tanks.

The applicant agreed that the FEIS will address all of the items above. It was discussed that the it would be appropriate for the approvals to require compliance with 4 and 5 above.

The Preliminary Water System Report provides a total average daily design flow for the project as 20,500 gpd or 14.2 gpm. This estimate includes the residential usage of 19,500, community building usage of 400 gpd and pool usage of 600 gpd.

Post-Development Groundwater Recharge

The Wappinger Creek Watershed Groundwater Recharge and Stream Baseflow Evaluation Assessment (*The Chazen Companies, March, 2006*), provides factors for different land uses, which can be used to compare pre-development and post-development recharge rates. These factors are referred to as Land Use and Natural Resources (LUNR) inventory property class inventory. The LUNR category "vacant land (300's)" most directly applies to the Salem Hunt site in current conditions and the category "two and three family (220-230)" most closely applies to

the post development condition. These run-off and recharge factors show an approximate 10 percent reduction in recharge when comparing undeveloped land uses to multi-family development.

As described above, the Salem Hunt development will result in the conversion of 5.9 acres or approximately 15 percent of the property to impervious surface. A portion of stormwater from roadways will be directed to stormwater management facilities where it can enter soils and contribute to groundwater recharge. In addition, much of the water withdrawn from the local aquifer for residential use will be returned to the subsurface via the community septic system. Therefore, a 10 percent reduction in on-site recharge rates, following site development, appears to be reasonable.

If current recharge rates 34,149 gpd or 23.7 gpm were reduced by 10 percent, the post-development recharge rates would be 30,734 gpd or 21.3 gpm.

Water Demand And Water Budget

The total estimated average daily design flow for the Salem Hunt project is 20,500 gpd or 14.2 gpm. This estimate is based upon 65 two bedroom units utilizing 300 gpd, per unit. The project water supply wells were tested based on the water demand of 90 residential units.

The total current groundwater usage for all areas within the Salem Hunt drainage area (upgradient, undeveloped project site, downgradient) is an estimated 31,350 gpd. Adding the estimated 20,500 gpd for the project, the post-development water usage would be 51,850 gpd for the drainage area. Again, much of the water withdrawn from the local aquifers would be returned to the ground via septic systems, while a portion would be lost to evapotranspiration and runoff.

The Salem Hunt aquifer drainage area analyzed in this DEIS consists of approximately 372.8 acres including: the project site (approximately 40 acres), the upgradient area (266.2 acres) and the downgradient area (66.6 acres). The groundwater recharge for the entire Salem Hunt aquifer drainage area following development is conservatively estimated to be 205,502 pgd.

Therefore, substantially greater water is being recharged to the local aquifer, than is currently being withdrawn. Following the development of the Salem Hunt project, the volume of water recharged to the local aquifers will far exceed groundwater usage.

Well Pumping Test

Four bedrock wells were installed on the Salem Hunt Property in October, 2006. The depths of the wells varied from 650 feet to 833 feet below ground surface. In each of the wells, steel casing was installed and grouted into the bedrock and the wells were then drilled as an open hole to completion. Well logs for the wells are provided in the Salem Hunt Water Supply Report (see Appendix H). The locations of the wells on the property are provided in Figure 5-2 Pumping Test Location Map and Figure 5-4 Well Location Map.

A 72-hour pump test was completed in December, 2006 on three proposed water supply wells for the Salem Hunt project. A well testing protocol was prepared by Tim Miller Associates, Inc. and is provided in Appendix G. The protocol provides the procedures for the pump test and was

reviewed by the WCDOH as well as the Town of North Salem and its consultants, prior to the initiation of the test.

Objective

The purpose of the pumping test was to determine if sufficient groundwater was available to support the project and to determine if future operation of the project wells would have any adverse impact on existing private wells near the site.

Procedure

Based upon current engineering estimates, the Salem Hunt project would require 20,500 gpd or 14.2 gpm. This estimate is based upon 65 two bedroom units utilizing 300 gpd, per unit, as well as community building usage of 400 gpd and pool usage of 600 gpd. The Pumping Test was based on the water demand of 90 residential units. A total of 90 residential units would require 27,000 gpd or 18.8 gpm (average daily demand). The New York State and Westchester County Departments of Health require that the developed wells produce twice the average daily demand [or peak daily demand] with the best well out of service. Therefore, the three wells tested for this project were required to produce a total minimum of 109,440 gpd, or 38 gpm for the primary well and a combined 38 gpm for the remaining two wells. The three test wells were setup with pumps capable of pumping in excess of 40 gpm.

Off-site Monitoring

In order to monitor the effects of pumping, the on-site wells and selected off-site private wells were monitored during the 72 hour pump test. The monitoring involved the installation of electronic data loggers to monitor water levels in the wells, before during and after the pumping test to determine the potential influence of the Salem Hunt wells on existing off-site wells. All off-site properties within a minimum 1,000-foot radius of the test wells were asked to allow the monitoring of their wells. A plan showing the 1000-foot radius and potential monitoring locations is provided in Figure 5-2 Pumping Test Location Map. The Figure shows those residents who provided a positive response.

Requests for permission to monitor were sent to 23 residences, a single business (a deli on June Road), the Town of North Salem Highway Department, and the North Salem Central School District. A copy of the well monitoring request, the well survey and a list of residents involved in the well monitoring, are included in the Salem Hunt Water Supply Report (Appendix H). Eleven positive responses were received. At two of the thirteen off-site locations, the North Salem High School and a private residence, the wells were inaccessible and therefore not monitored.

Eight (8) off-site wells were monitored for the pumping test, including six residential wells, a deli on June Road and the well for the Town Highway Department facility on June Road. The location and number of off-site well monitoring locations was reviewed and agreed upon by the Town of North Salem consulting hydrogeologist and engineer.

The data loggers were set to collect water level information from the neighboring wells and on-site wells for a minimum of 48 hours prior to the start of the pumping test and for a minimum period of 24 hours after the conclusion of the test. The sampling interval was 2 minutes between readings.

On-site Monitoring

Data loggers were installed in the three production test wells (Test Wells 2, 3 and 4), and in the one well not being utilized for water supply (Test Wells 1), as shown in Figure 5-2 Pumping Test Location Map and Figure 5-4 Well Location Map. An unused six-inch well installed by a previous property owner, was monitored during the test.

In addition, data-loggers were placed in stream bed piezometers to monitor water levels in the stream at the eastern edge of the site. Three stream bed piezometers were installed in the stream bed; one near the southern edge of the site as the stream enters the property, a second in the middle of the on-site stream channel, and a third near the northern edge of the site, as the stream exits the property. Piezometer locations are shown in Figure 5-3 Pumping Test Monitoring Locations. The Scoping document requested that if any standing water was available in the western wetland (Wetland C), that surface water be monitored in the wetland. During the pumping test period, no standing water was available in the wetland, and therefore a piezometer was not installed at this location, near Test Well 4.

Pumping Tests

Two separate pumping tests were completed for the project in December, 2006. The first was a combined test of wells TW-2, TW-3 and TW-4. This test confirmed that well TW-4 could independently sustain a peak daily discharge of 38 gpm. The second test focused only on wells TW-2 and TW-3, and confirmed that these wells together also meet the peak daily demand of 38 gpm. The first test of the three wells combined was started December 12, 2006 and the second test started on December 18, 2006. The tests were completed according to the pumping test protocol provided to the Town and consultants.

Pumping of the production wells, TW-4 and TW-3, started simultaneously at 11:45 PM on December 12, 2006 (see Charts 1, 2 and 3 for test wells and Chart 4 for combined monitoring well data). The pumping rates were started at 38 gpm and were to be maintained at that rate for the duration of the test. TW-2 was held in reserve if needed. The TW-3 pumping rate could not be maintained at the 38 gpm due to the drawdown of the well rapidly approaching the pump intake. Since TW-3 did not maintain the 38 gpm required, TW-2 was turned on at a rate of 22 gpm at 1200 minutes into the test. The pumping rate was monitored with an analog water meter and checked using a barrel and stop watch. The data loggers set in the production wells were programmed to collect data on a linear time schedule with a time interval of 2 minutes.

A second pumping test was started on December 18 at 4 PM. Wells TW-2 and TW-3 were retested. TW-4 was not retested since it was pumped at the required 38 gpm for 72 hours and had stabilized for the required 6 hours.

The second test was run with both wells pumping 20 gpm for the 72 hour test. Water level drawdown was less pronounced during this test. Two of the off-site monitoring wells, the two closest to the test wells (Havel and Red Horse Farm), were monitored during the second test. Only two wells were selected for off-site monitoring during the second test since the Havell and Red Horse Farm wells showed a drawdown during the first test and were closest to the pumping wells. The pumping test results are shown in Table 5-4, below.

Table 5-5 Pumping Test Results					
	First Test			Second Test	
Well	TW-4	TW-2	TW-3	TW-2	TW-3
Test Duration	72 hour	52 hours	72 hours	72 hours	72 hours
Total Drawdown	250 ft	140 ft	450 ft	70 ft	118 ft
Starting Pump Rate	40 gpm	20 gpm	38 gpm	20 gpm	20 gpm
End Pump Rate	40 gpm	20 gpm	22 gpm	20 gpm	20 gpm
Stabilization Period	14.5 hrs	na	na	9.9 hrs	12 hrs
Recovery 97 %	20 hrs	na	na	35 hrs	27.5 hrs
Source: SSEC, 2007					

There was no significant rain during the week preceding the start of the pumping test program as measured with an on-site tipping rain gauge; however there was a small amount of rain [less than 3/10 of an inch] the morning before the first test started. The next rain event was on the evening of December 22 and the morning of December 23, after the pumping tests were completed, which totaled about 8/10 inches of rain. Temperatures remained mild during the test period.

Pumping Test Results

During the first test involving three wells and pumping at a combined pumping rate of 82 gpm, eight off-site wells were monitored. The off-site well data is shown in Table 5-6, below. Four of the eight off-site wells showed an influence from the pumping test. These wells were the Town well, Seeley well, Red Horse Farm well and the Havell well. The locations and level influence of the pumping test is provided in Figure 5-4. As shown in the Figure, wells on each side of the project site were influenced to some degree.

Table 5-6 Off-site Well Monitoring Results						
Well Owner	Monitoring Period	Range of Well Usage	Range of Interference Test 1	Range of Interference Test 2	Static Water Level	Location
Town Well	12-4 to 12-18	35 ft	5 ft	not monitored	9 ft	southeast
Deli Well	12-4 to 12-18	5 ft	none	not monitored	6 ft	southeast
Seeley	12-4 to 12-18	5 ft	5 ft	not monitored	8 ft	northeast
Havell	12-4 to 12-26	50 ft	25 ft	13 ft	44 ft	south
DePaoli	12-4 to 12-18	5 ft	none	not monitored	16 ft	northeast
Miras	12-4 to 12-18	2 ft	None	not monitored	4 ft	north
Red Horse Farm	12-4 to 12-26	2 ft	2 ft	1.5 ft	47 ft	west
Vassak	12-4 to 12-18	3 ft	none	not monitored	24 ft	northeast
Source: SSEC, 2007						
Note: Range of well usage indicates the owners impact on their well through typical usage. Range of interference indicates the degree of observed impact to the well due to the pumping test. Location indicates direction from pumping test wells.						

As described above, the Salem Hunt wells were pumped at 82 gpm, or approximately 5.7 times the average project water demand. The monitoring well that was most influenced by the first pumping test was the Havel well which is the closest to the test wells. The Havel well had approximately 25 feet of water level interference during the first test and 13 feet during the second test. Routine use of the Havel well caused approximately 50 feet of water level fluctuation. The Red Horse farm, the Town Highway facility and the Seely wells were all impacted to a lesser degree, by approximately 2 feet, 5 feet and 5 feet respectively. The first pumping test was conducted at approximately 5.7 times the average daily demand.

The second pumping test was conducted on two wells (TW-2 and TW-3) pumped at a combined total of 40 gpm or 2.8 times the project average daily demand. The two wells closest to the pumping wells were monitored during this test, the Havell well and the Red Horse Farm well. During this second pumping test, the Red Horse Farm well showed 1.5 feet of influence and the Havell well showed 13 feet of influence.

As described above, use of the Salem Hunt wells is not expected to impact the long term use of off-site wells. Based upon owner provided information, the Town well is 385 feet deep and the Seeley well is 90 feet deep and both wells have static water levels at approximately 9 feet below grade (see Table 2 Private Well Monitoring Locations, Appendix H). Therefore, the five feet of influence observed in both the Town well and Seeley well is a relatively small proportion of available water in each well (2 percent and 6 percent, respectively). The relative impact on the Red Horse Farm well and Havell well is not known since the total depth of these wells is unknown. The Project's long term impact to the Red Horse Farm well usage is expected to be minimal, given that the range of well usage and well interference is two feet or less in the Red Horse Farm well.

As described above, the Havell well has a range of usage of approximately 50 feet and the pumping test had an influence of 25 feet during the first test and 13 feet during the second. The depth of this well is unknown. Given the observed influence and proximity of the Havell well to the Salem Hunt Property, mitigation measures for the well are proposed, as described in Section 5.3, below.

Water Quality

Water was collected from each test well just before the pumping test was shut down. The samples were transported (same day) in iced coolers to a New York State certified laboratory for analysis using the parameters specified by the WCDOH, which included New York State Department of Health Subpart 5.1 parameters for public water supplies.

The quality of the water sampled on the property meets the New York State Drinking Water Standards, with the exception of coliform bacteria. Coliform bacteria is common found in newly installed wells and can be introduced to wells during the drilling and pump testing process, by the introduction of material and equipment into the wells from the surface. Disinfectant treatment of wells typically removes the coliform.

It should be noted that results were indicated in the laboratory analytical report for several compounds, including Chloroflourobenzene and Tetrachloro-meta-xylene. These results were for quality control samples in the laboratory and do not reflect the results from groundwater samples. In order to calibrate the laboratory instruments the laboratory introduces specific compounds, such as Chloroflourobenzene described above, to the series of analyzed samples.

These results are indicated in the report as QC, or Quality Control. Since the compounds are introduced in laboratory, they are unrelated to the samples collected at Salem Hunt. The note TB indicates that the trip blank was not analyzed since the sample results did not exceed the detection limit for the appropriate method. A trip blank is a container of purified water that is sent with the sample containers, both to and from the sampler's office. If the trip blank contains any compounds this is an indication that the compounds in question may have been introduced during the shipping or sample handling process, and are unrelated to the samples collected.

The laboratory analytical results are provided in the Water Supply Report (see Appendix H).

Septic System Impacts

A hydrogeological investigation/mounding analysis (Appendix J) was performed by GeoDesign on the project site to assess the soils and groundwater in relation to the proposed SSTS. The analysis was based on field investigations, review of existing data and preparation of a three-dimensional computer model using a 16,000 gallon per day sewage flow rate applied to the area of the proposed SSTS. The proposed SSTS is located in the southeastern portion of the project site, directly east of the entrance road (see Figure 5-4 Well Location Map).

The applicant conducted extensive investigations and analyses of hydrogeologic conditions in the proposed SSTS area, which are provided in the GeoDesign Hydrogeology Investigation (Appendix J). The GeoDesign investigation included a three-dimensional computer model, for the prediction of groundwater flow conditions under the proposed sanitary disposal system (mounding analysis). The investigation also provided estimated effluent travel time, and a contaminant (nitrate) transport model. The proposed septic system, mounding analysis and nitrate modeling results are further discussed in Section 10.0 Utilities.

Simulated Flow Patterns

A groundwater simulation was performed using a proposed 16,000 gpd sewage flow rate in the area of the proposed subsurface disposal systems. The groundwater model is based upon an assumption that the upper 10 feet of bedrock carries significant shallow groundwater flow. This shallow groundwater regime is most directly influenced by precipitation, changes in surface water conditions and the contributions of septic systems. This assumption was made by GeoDesign based upon experience in similar geologic settings. This value, added to the saturated thickness (determined by 14 shallow monitoring wells) provides the maximum aquifer thickness for the model. This thickness is used in the model with hydraulic conductivity to calculate shallow aquifer transmissivity. These values are used to construct a representative model to conservatively predict mounding and nitrate transport behavior in the vicinity of the SSTS area.

An adjusted base flow estimate of 16 inches of recharge was used in the model for the mounding analysis. This estimated 16 inches of groundwater recharge is the precipitation available locally to the shallow aquifer (saturated thickness and upper fractured portion of the bedrock) and differs from the recharge estimate for the deeper bedrock aquifer, discussed in Section 5.1, above. The base flow estimate was determined during the spring when precipitation and shallow groundwater levels are higher than typical, therefore providing a conservative basis for the groundwater model and predicting mounding and septic breakout.

Based on the simulation results, a limited area of the septic area will require filling to achieve sufficient cover to prevent breakout and maintain the trenches above the shallow groundwater levels. The report indicates that if the recommended fill thickness are placed, the simulation does not predict breakout of the leachate above the proposed ground surface or flooding of the leaching trenches. The project engineer will design the primary and reserve areas to achieve the modeled results.

Estimated Effluent Travel Time

The groundwater flow model predicted the estimated travel times for effluent from the proposed septic field to the closest wetland boundary adjacent to the stream, a distance of approximately 170 feet. According to the model, which incorporates, soil permeability, soil porosity, and hydraulic gradient, the minimum estimated travel time is 35 days.

Nitrate Transport Model

According to the GeoDesign report, the fate and concentration of nitrate in groundwater can be modeled using a transport model. The model used was developed for the US Army Corps of Engineers, known as MT3DMS. The purpose of the transport model was to predict nitrate concentrations at the property line closest to the proposed SSTS field. The model for the Salem Hunt site was simplified by conservatively assuming that no chemical reaction or natural breakdown of nitrate occurs. Therefore, the model used only considers dilution over the transport distance.

To address the flow condition during drier periods when dilution is less than during typical flow or high flow conditions, Geodesign used a lower base flow rate than was used in the model to predict mounding. This flow rate was termed the Mean Flow Condition in the Addendum Hydrogeology Investigation (Appendix J) and is based upon a recharge rate of 8.4 inches per year, compared to the 16 inches per year used for the High Flow rate condition.

Two separate flow estimates were used in the modeling of two separate potential wastewater impacts. The average daily design flow (High Flow) of 16,000 gpd was used to model for the ability of the proposed septic field to support that volume of wastewater without breakout. This modeling assesses the capacity of the septic field for the project's design flows. A lower flow rate (Mean Flow) was used as a "worst case" to model nitrate concentrations. A lower flow rate would result in less dilution of the wastewater and potentially higher levels of nitrate in the shallow groundwater. This lower rate provides a more conservative analysis of potential nitrate concentrations.

Since a conservatively low recharge rate was used for Mean Flow Condition Analysis, the average daily wastewater flow estimate was based upon expected or typical wastewater flow rates. Typical average residential wastewater flows are best estimated from survey data of indoor water usage. The Onsite Wastewater Treatment Systems Manual (US Environmental Protection Agency, EPA/625/R-00/008, February 2002), provides the results of several studies of indoor water usage. One of the most comprehensive studies is the Residential End Users Study, funded by the American Water Works Association Research Foundation (AWWARF) and 12 water supply utilities (Meyer et al., 2000). The study provided detailed indoor water use at 1,188 homes in 12 metropolitan areas. The median daily per capita flow ranged from 54 to 67 gallons/person/day. The mean daily indoor water usage was 69.3 gallons/person/day. Using the demographic population estimate for the project of 135 persons (see Chapter 11.0

Community Facilities and Services), average daily water usage would be 9,356 gpd. This estimate is approximately 40 percent less than the estimated daily average design flow of 16,000 gpd for the project.

The Salem Hunt project will utilize extra-low flow toilets that utilize 1.2 gallons per flush as compared to standard water saving toilets that use 1.6 gallons per flush, or a 25 percent reduction in water use. Based upon typical water usage and the use of extra-low flow toilets, the Salem Hunt project is anticipated to have lower average wastewater flow than the design flow. If the average design flow were reduced by 20 percent, the average daily flow would be 12,800 gpd. This 12,800 gpd average flow estimate was used to model nitrate transport under Mean Flow (low recharge rate) conditions. As described above, this more conservative rate was used to model nitrate dilution and transport. The 16,000 gallon per day sewage flow rate was used to model septic system mounding, capacity and the potential for breakout.

The results of the modeling are shown in the plots provided in the Addendum Hydrogeology Investigation (Appendix J), Case III - High Flow and Case III - Mean Flow. In the High Flow Condition (typical or high rainfall periods), the predicted nitrate concentration is approximately 6.5 mg/l at the northern property line.

In the Mean Flow Condition, the model predicts a nitrate concentration of less than 10 mg/l at both the northern and southern property lines (see Figure 10-1 Estimated nitrate Concentrations). The modeling predicts that nitrate levels will be reduced to 5 mg/l or less within approximately 100 feet of the property line, under Mean Flow Conditions (periods of low rainfall). East of the proposed SSTS area, the predicted nitrate concentrations are reduced to less than 1 mg/l within the property lines as the flow reaches the nearby wetlands.

The Geodesign study of the proposed sanitary system concluded that the project site would be able to support the project daily design wastewater flow of 16,000 gpd.

The proposed wastewater treatment system is not anticipated to have an impact on groundwater quality. The SSTS is located in the southeast portion of the property, approximately 260 feet from the eastern property line and June Road and 270 feet from the northern property line. The system is located 450 feet east of the closest water supply well (well TW-4) (see Figure 5-4 Well Location Map). According to onsite surface water flow patterns and the GeoDesign study, shallow groundwater flow direction in the vicinity of the SSTS is towards the northeast.

The Salem Hunt SSTS will be designed and constructed in accordance with applicable State, County, and New York City DEP regulations, and the recommendations of GeoDesign as set forth in Appendix J. Those areas downgradient of the subject site are not anticipated to be impacted by the wastewater treatment system. The applicant has proposed a recirculating filter treatment system, in order to mitigate potential concerns regarding the nitrate effluent concentrations from the proposed community SSTS. This filter system is described in Section 6.3 Utilities Mitigation Measures.

5.3 Mitigation Measures

Existing water supply systems in this part of North Salem and Southeast rely on groundwater for water supply, and the proposed Salem Hunt development will be served by a community

water system. As described above, future development is not expected to result in significant adverse impacts on groundwater resources.

The recharge analysis completed for the project demonstrates that substantially more water is recharged to the aquifer, on the subject property, than is proposed to be used by the project and that reducing the recharge area by 5.9 acres will not result in an imbalance in water taking versus recharge.

Monitoring of private off-site test wells carried out by Tim Miller Associates, Inc. showed an influence in 4 off-site wells during the 72-hour pump test of the proposed water supply wells. The level of influence varied from 2 to 25 feet, compared to typical well usage. The greatest interference was observed in the Havell well located close to the southern property border with a drawdown of 25 feet. The Red Horse farm well, the Town Highway facility well and the Seeley well were all influenced to a lesser degree, by approximately 2 feet, 5 feet and 5 feet respectively. The currently proposed site plan contains 6575 units and an average daily water demand of 20,500 gpd or 14.2 gpm. The initial pump test was run at 118,080 gpd or 82 gpm, or more than five times the proposed average pumping rate. Any future well influence during operation of the Salem Hunt facility is expected to be less than recorded during the pump test and is not expected to affect the long term use, well yields or viability of those wells.

Monitoring

While no long term impacts to existing private wells are anticipated, the applicant would offer a monitoring program for the Havell well. The need for and utility of a long term water level monitoring program should be determined by the Lead Agency in consultation with a professional hydrogeologist.

The selected well would be monitored with dedicated pressure transducer/data logger units of the type used during the pumping test. Permission for the long-term monitoring would need to be obtained from the respective homeowner. Monitoring of the well would be done for a period of at least two years following the completion and full occupancy of the Salem Hunt development. If such a monitoring program is implemented, the potential affects of the project upon an individual off-site well should be evaluated and determined by a professional hydrogeologist, retained by the Town of North Salem and paid for by the Applicant.

A well monitoring program, as described above, would provide the Town and the homeowner, with data to document whether the project could potentially affect existing off-site wells. Without such monitoring data, it would be difficult to document or substantiate whether the project wells were affecting an off-site well or whether other factors, not related to the project were affecting the capacity of the off-site well.

The hydrogeologic consultant retained by the Town, will determine if the well impact is the result of project pumping or other factors, not related to the project. Appropriate mitigation, such as well deepening or well replacement will be provided by the applicant should it be determined that the project well pumping resulted in loss of function of an off-site well.

Wastewater Treatment

In order to mitigate any potential concerns regarding the nitrate effluent concentrations from the proposed community SSTS, a recirculating filter treatment system will be added to the septic

system treatment train. The filter system will be located between the septic tanks and the absorption trenches. At this time, it is anticipated that the filter would be similar to Orenco's AdvanTex AX100 packed bed recirculating textile filter. This type of system can provide significant reductions in BOD (biochemical oxygen demand), TSS (total suspended solids), and TN (total nitrogen, including nitrates). The use of this filter treatment system will provide treatment beyond that provided by the SSTS system and will minimize potential impacts from nitrate concentrations resulting from the project. This filter system is described in Section 6.3 Utilities Mitigation Measures.

Other Mitigation Measures

Several other mitigation measures related to water supply are proposed by the applicant. Undeveloped and landscaped portions of the site will remain undeveloped and will allow continued recharge of the aquifer. The project has been designed to minimize impervious surface and the "foot-print" of the development. The project will result in 5.9 acres or approximately 15 percent of the site converted to impervious surface. The remainder of the site (85 percent) will remain available to recharge the local aquifer. As described above, the majority of stormwater collected from parking lots and driveways will be treated in stormwater management facilities. Two extended stormwater detention basins and grass swales are provided to detain and treat stormwater from the project. Water will infiltrate into the ground in these facilities thereby contributing to the recharge of the groundwater on-site.

Approximately 19.8 acres or close to one-half of the property will remain undisturbed, allowing existing soils to contribute to recharge. The four mapped wetlands, including the eastern wetland (wetland D) which surrounds a stream corridor, will be undisturbed and will continue to function as natural stormwater detention areas. Water collected in the on-site wetlands will continue to contribute to the shallow and bedrock aquifers underlying the project site.

Water conservation for the project will be achieved through the use of low-flow, water efficient plumbing fixtures and appliances. The use of such water conserving fixtures can reduce water consumption by more than to 20 percent, but only a 20 percent reduction has been utilized in all of the calculations for water and sewer flows applicable to the studies in the DEIS. In addition, the project will utilize extra-low flow toilets that use 1.2 gallons per flush as compared to standard water saving toilets that use 1.6 gallons per flush, or a further 25 percent reduction in water use from toilets.

Groundwater quality for the proposed community supply wells will be maintained by the design of the wells and the project layout. The project will maintain all required wellhead radius protection areas and separation distances, as required by the New York State Department of Health (NYSDOH). As described above, the three proposed supply wells have steel casings ranging from 71 to 101 feet in length. A substantial thickness of glacial till material separates the bedrock fractures contributing to water supply, from surface influences, including potential influences from the project wastewater treatment system. As described above, the wastewater treatment system is located 450 feet east of the nearest proposed water supply well (TW-4), providing adequate separation distance between the sanitary system and water supply wells.

6.0 WETLANDS/WATERCOURSES AND BUFFERS

6.1 Existing Conditions

The 40 acre Salem Hunt project site lies entirely within, and occupies only 0.076% of, New York City's 76 square mile Muscoot Reservoir Watershed, which is part of the City's Croton Drinking Water Supply Watershed. The boundaries of the Muscoot Reservoir Watershed and the general location of project site in relation to the watershed, are shown on Figure 6-1 to illustrate the limited size of the site in comparison to the size of the watershed. Surface water drainage patterns on the site, as well as, first and second order tributaries and their distance from the project site, stream flow directions, and United States Geologic Survey topography are depicted on Figure 6-2, Surface Water Drainage Patterns.

Following the review of available State and federal mapping, the Salem Hunt project site was surveyed by wetland specialists from Tim Miller Associates, Inc. (TMA). New York State Department of Environmental Conservation (NYSDEC) Freshwater Wetlands and United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps including the project site are shown on Figures 6-3 and 6-4 respectively.

As discussed below, the boundaries of all on-site wetlands regulated by NYSDEC, the Town of North Salem (Town), the United States Army Corps of Engineers (Corps), and the New York City Department of Environmental Protection (NYCDEP), as well as a perennial watercourse, and the NYSDEC regulated 100 foot "Adjacent Area" and 100 foot Town of North Salem "Controlled Area" (i.e, buffers), have been identified and are depicted on the accompanying Site Plan (Drawings EX-1) and on Figure 6-5, Existing Conditions. Existing drainage areas on the project site are depicted in Figure 6-6, Pre Development Drainage Area.

The on-site wetland boundaries were delineated by Richard B. Jacobson on December 14, 2004, and confirmed by Tim Miller Associates, Inc. (TMA) in November 2005. The field delineation, and confirmation, were conducted in accordance with Town criteria set forth in Section 107.3 of the Code of the Town of North Salem, New York, updated 10-25-06, as well as with NYSDEC protocol, and the three-parameter methodology set forth in the Corps Wetland Delineation Manual.¹ The field delineations confirmed the presence of four wetlands (Wetlands A, B, C, and D) meeting the aforementioned criteria on the project site. The wetlands occupy a total of 8.08 acres of the site, and the associated buffer areas total 9.18 acres within the property boundaries. The characteristics of these wetlands are summarized in Table 6-1 and are described in detail in Appendix E, *Wetland, Watercourse, and Buffer Inventory and Habitat Assessment Report, Salem Hunt Property*, January 25, 2007 (Resource Inventory). As noted above, and detailed on DEIS Figure 6-8 (Site Location Within the Muscoot Reservoir Watershed) the entire site, as well as the off-site portion of NYSDEC regulated Wetland L-32 south of the project site, are entirely within the Muscoot Reservoir Watershed.

The Final Scoping Outline (Scope) for this DEIS required a "comprehensive (wetland, watercourse, surface waters and buffer areas) resource inventory and habitat assessment". This Resource Inventory is provided in Appendix E. The Scope also specifically required that the report include a detailed assessment of "existing site water related resources and their associated buffers, including: location and type, including soils, vegetation, and hydrology; plant and animal resources; habitat classifications and conditions; functions; acreage and percent of

¹ United States Army Corps of Engineers, 1987. Wetlands Delineation Manual, Technical Report Y-87-1.

site occupied; pertinent jurisdiction; and drainage pattern.” This report is described herein as the “Water Resource Inventory”, provided in Appendix E. Subsequent to the wetland delineation and TMA boundary confirmation, NYSDEC confirmed the accuracy of the delineated boundary of NYSDEC Wetland L-32 and the Town of North Salem verified the town regulated wetland boundaries. The Corps is responsible for determining if a wetland is isolated (non-jurisdictional) or whether it is hydrologically connected to other waters of the United States and therefore regulated by the Corps. The Corps Jurisdictional Determination dated March 28, 2008, is provided in Appendix B Correspondence.

In December 12, 2006 TMA and Corps staff conducted an on-site investigation. During the site walk the Corps confirmed the accuracy of the delineated wetland boundaries, and confirmed that any activity proposed in Wetlands C and D would be regulated by the Corps since they are hydrologically connected to other waters of the United States. Corps staff also verified that the agency will not regulate Wetlands A and B since the Corps staff determined that they lack hydrologic connections to any other waters of the United States and are therefore considered isolated. The Jurisdictional Determination from the Corps, dated March 28, 2008, confirms the accuracy of the wetland boundaries, and the isolated status of Wetlands A and B (see Appendix B Correspondence). The Applicant notes that no activities are proposed in any wetland, and therefore no permits are required from the Corps.

An on-site watercourse determination, conducted by TMA and NYCDEP, did not reveal the presence of any regulated watercourses other than the perennial stream associated with State Wetland L-32. This perennial stream, a tributary to Holly Brook and a sub-tributary to the East Branch Croton River, has been assigned a Class C designation by NYSDEC. The NYSDEC Class C designation means that the State has identified the best usage of Class C waters as fishing. These waters are also suitable for fish propagation and survival. Water quality in Class C waters is suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes. This watercourse is regulated by the Corps, NYSDEC, the Town of North Salem, and NYCDEP. See Figure 6-2 for the locations of the tributary to Holly Stream, Holly Stream, and the East Branch Croton River into which Holly Stream flows.

The Applicant notes that only State mapped Wetland L-32 (a State designated Class II wetland) is subject to New York City’s *Regulations for the Protection from Contamination, Degradation and Pollution of the New York City Water Supply and its Sources (WR&Rs)*. The WR&Rs establish a 100 foot “limiting distance” around Wetland L-32, and the watercourse, within which the construction of impervious surfaces and subsurface sewage disposal systems are prohibited.

The results of the wetland delineation, and confirmation, are summarized below and in the *Water Resource Inventory (Appendix E)*, which was a requirement of the Final Scoping Outline for the Salem Hunt DEIS. Wetland flagging placed during the delineation was surveyed in the field by INSITE Engineering, Surveying and Landscaping, P.C. The actual surveyed limits of all on-site wetlands meeting NYSDEC, Corps, and Town delineation criteria, as well as the limits of the stream in Wetland L-32, are shown on Figure 6-5, Existing Conditions, and on the site development plans which have been stamped and signed by a New York State licensed land surveyor.

Off-site water resources within 100 feet of the property as mapped by NYSDEC, and their regulated 100 foot buffers, are also shown on Figure 6-5, Existing Conditions. The Applicant did not survey the limits of these off-site surface water resources since they are located on private

properties. Figure 6-3 also reflects NYSDEC’s C classification of the on-site perennial watercourse and NYSDEC’s Class II designation of Wetland L-32 (Wetland D). As discussed below, NYSDEC recently (March 2008) determined that Wetland A is hydrologically connected to NYSDEC Wetland L-32 (Wetland D), and as such, is considered to be part of Wetland L-32. Since Wetland A was not added to Wetland L-32 during NYSDEC’s 2005 wetland remapping program, and since NYSDEC only recently determined that Wetland A and L-32 are hydrologically connected, Wetland A is not shown on the NYS Freshwater Wetlands Map.

Table 6-1 On Site Wetlands					
Wetland ID	Wetland Area (acres)	Wetland Buffer Area	Wetland Type	Wetland Description	Regulatory Jurisdiction
A (NYSDEC L-32)	0.23	1.37	Slope Wetland	Forested Wetland	NYSDEC/Town of North Salem
B	0.32	4.89*	Pocket/Isolated	Forested Wetland	Town of North Salem
C	1.22		Pocket with surface water outlet	Forested Wetland	Town of North Salem/Corps
D (NYSDEC L-32)	6.31	2.92 (on-site)	Stream Corridor	Forested Stream Corridor	NYSDEC/Corps & Town of North Salem
Total	8.08	9.18			
Source: Wetland boundary evaluations performed by TMA. On-site State wetland boundary and hydrologic connection between Wetlands A and L-32 confirmed by NYSDEC. Town wetland boundary confirmed by Mathew D Rudikoff Associates, Inc. Corps regulated wetland boundaries (Wetlands C and D), and “isolated” status of Wetland A and B, verbally confirmed by Corps during its field inspection of on-site wetlands in February, 2008.					
Note: * Wetland B and C buffers overlap. A portion of the Wetland D buffer extends off the project site.					

The following is a summary of on-site wetland characteristics and functions. A detailed description of wetlands and wetland buffers is provided in the Water Resource Inventory attached to this DEIS as Appendix E.

The New York State Natural Heritage Program (NYSNHP) characterizes the wetlands found on the site as a Red Maple-Hardwood Swamp.² According to the NYSNHP, this is an ecological community “...that occurs in poorly drained depressions, usually on inorganic soils.” Red Maple-Hardwood Swamps are ranked G5 (demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery) and S4S5 (apparently/demonstrably secure in New York State).²

Wetland A (NYSDEC L-32)

Wetland A is a forested slope wetland 0.23 acres in size with seasonally saturated soils, The wetland buffer occupies 1.37 acres. According to NYSNHP, it is characterized as a Red Maple Swamp ecological community.² Overland flow and seasonal shallow groundwater are the primary sources of hydrology in the wetland. As described above, the Corps determined during a field visit in the fall of 2007 that Wetland A is isolated and not hydrologically connected to other surface waters. As noted, based upon discussions between Corps and TMA staff during

² Edinger, G.J. et al (Eds.) 2002. Ecological Communities of New York State. Second Edition. NYSNHP, NYSDEC. Albany, NY. 136 pp.

February 2008, written confirmation of this Jurisdictional Determination is expected from the Corps during the spring of 2008.

On March 6, 2008 wetland consultants for the Town of North Salem and the Applicant conducted an on-site inspection of Wetland A. That investigation revealed that following certain storm events, surface water flows out of the wetland, across an abandoned farm road located off the project site to the south, enters a drainage channel that conveys the surface water through two pipes, into an off-site pond, and ultimately into NYSDEC Wetland L-32, which is located in the Phosphorous Restricted Muscotoot Reservoir Watershed. See Figure 6-8, Site Location Within Muscotoot Reservoir Watershed, for the location of site and NYSDEC Wetland L-32 within the reservoir's watershed.

NYSDEC staff walked the project site in November 2005 with staff from TMA and verified the accuracy of delineated boundaries of NYSDEC Wetland L-32 on March 17, 2006. At the request of the Town of North Salem, NYSDEC staff revisited the site on March 17, 2008 and inspected Wetland A to determine if a hydrologic connection exists between the wetland and an off-site portion of NYSDEC Wetland L-32. During that site inspection, NYSDEC determined that an off-site wetland corridor that conveys surface water from Wetland A to Wetland L-32 does exist. As such, NYSDEC considers Wetland A to be part of part of Wetland L-32, and has determined that activities in both wetlands, and their one hundred foot adjacent area, are regulated by NYSDEC. The Applicant notes that the NYSDEC Article 24 permit application that will be filed with NYSDEC seeking authorization to construct the access road in the Wetland L-32 adjacent area will also seek authorization for the proposed disturbance of 0.06 acres of the Wetland A adjacent area.

The vegetation found in Wetland A includes red maple and American elm which provide a closed tree canopy over the wetland. Understory vegetation is dominated by Winterberry, spicebush, common greenbrier, skunk cabbage, spotted jewelweed, and tussock sedge. A comprehensive list of flora and fauna observed and expected in Wetland A is provided in Tables 5 and 6 of the Water Resource Inventory (Appendix E).

Due to its limited size, Wetland A primarily functions only to detain stormwater from limited on-site and off-site drainage areas. Its function as wildlife habitat is limited due to lack of surface water and limited diversity of vegetation.

Wetland B

Wetland B, consisting of 0.32 acres, is similar in size, characteristics and functions to Wetland A. This wetland is also characterized by NYSNHP as a Red Maple Swamp. The primary source of hydrology is overland flow and seasonal shallow groundwater and the wetland has no connection to any on-site or off-site watercourses.

The vegetation in Wetland B consist of mature trees including red maple and American elm and limited understory vegetation including Winterberry, spicebush, common greenbrier, skunk cabbage, spotted jewelweed, and tussock sedge. A comprehensive list of flora and fauna observed and expected in Wetland B is provided in Tables 5 and 6 of the Water Resource Inventory.

Similar to Wetland A, Wetland B primarily functions to detain stormwater from limited on-site and off-site drainage areas. Its function as wildlife habitat is limited due to lack of surface water and limited diversity of vegetation.

Wetland C

Wetland C is a pocket wetland 1.22 acres in size, located immediately east of Wetland B. The 100 foot buffers of Wetlands A and B overlap but the two wetlands are not hydrologically connected. This wetland is also characterized as a Red Maple Swamp ecological community. Wetland C receives surface water from areas adjacent to it, and during springtime or following heavier storms, it drains towards the north and into an intermittent off-site surface watercourse.

Predominant vegetation in Wetland C includes mature red maple and American elm which provide a dense tree canopy along the edges of this wetland. Dominant understory vegetation includes cinnamon fern, sensitive fern, Christmas fern, tussock sedge and poison ivy. The center of this wetland has a less dense tree canopy which allows for a more complex vegetative community in its center. Spicebush and multiflora rose are dominant shrubs in a dense undergrowth dominated by grasses, sedges and a wider variety of seasonally flowering plants than are present within Wetlands A and B. A comprehensive list of flora and fauna observed and expected in Wetland C is provided in Tables 5 and 6 of the Water Resource Inventory.

Wetland C provides some stormwater storage functions and modest wildlife forage and nesting habitat. Similar to Wetland A and B, the limited wildlife habitat value is due to the small size of this wetland and the lack of surface water during most of the year.

Wetland D

Wetland D is the largest wetland on the site consisting of 6.31 acres in the eastern portion of the site along June Road. This wetland occupies the mid-portion of NYSDEC Freshwater Wetland L-32. This NYSDEC Class II wetland includes larger off-site wetlands located both upstream and downstream of the site to the north and south, as well as, Wetland A which is hydrologically connected by a narrow wetland corridor that conveys surface water from the wetland to L-32. The on-site portion of this wetland contains two vegetative communities including a Marsh Headwater Stream and Red Maple-Hardwood Swamp. The unnamed perennial stream flowing through the site makes a direct hydrologic connection between Wetland D and off-site portions of this NYSDEC wetland. Vegetation in this wetland includes red maple, gray birch, hazel alder, spicebush and arrowwood in the overstories with skunk cabbage, spotted jewelweed and green false hellebore being dominant in the dense groundlayer. At least 44 species of flowering plants are present throughout this wetland (see Tables 5 and 6, Appendix E).

The primary sources of hydrology for Wetland D are stream inflow from off-site portions of the watershed and shallow groundwater discharge. Overland sheet flow from adjacent steep sloped uplands contributes additional hydrology during storm events.

Of the four wetlands that exist on-site, Wetland D performs the greatest variety of wetland functions. This wetland includes a diversity of wooded and herbaceous wetland vegetation which provides wildlife forage and nesting habitat. The wetland also performs a water quality function by reducing pollutant concentrations that may occur in runoff from overland sheet flow, as well as stream flow through the wetland. The wildlife value of this area is expected to be in the moderate to high range due to the diversity of vegetation and the proximity to other nearby habitat types (i.e. Successional Northern Hardwood Forest and a Marsh Headwater Stream that extend off-site).

Small portions of the larger Wetlands C and D consist of open wet meadow vegetation with seasonally saturated soils. The areas of opened canopy allowed for the development of the more complex vegetative community that exists beneath. The dominant vegetation in these stream side open areas consists of grasses, sedges, smartweeds and skunk cabbage. A comprehensive list of flora and fauna observed, and expected, in Wetland D is provided in Tables 5 and 6 and is detailed in Section 2.3, of the Water Resource Inventory that accompanies this DEIS as Appendix E. Certified Professional Wetlands Scientists (PWSs) with TMA have concluded that Wetlands A, B and C provide limited functions, including storm and floodwater storage and wildlife habitat. Wetland D performs the most significant functions including, but not limited to, storm and floodwater storage, wildlife habitat, and contribution to the abundance and diversity of wetland fauna. Further, as discussed below, the Salem Hunt project has been designed to avoid all direct encroachment into any wetlands, or the on-site watercourse. Rather, each of the wetlands on the site, which occupy a total of 8.08 acres, and the functions they do perform, will be permanently preserved.

The analysis of existing conditions conducted during preparation of this DEIS has revealed that no 100-year Flood plains, or Flood Hazard Areas, as depicted on the Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency (FEMA)(Community Panel Number 361240 0010 A, panel 10 of 10, effective July 3, 1986) for Westchester and Putnam Counties, are present on, or in the vicinity of, the project site. In addition, the Town of North Salem recently received newly published Flood Insurance Rate Maps dated September 28, 2007. Panel 36119C0076F, which includes the Salem Hunt Property was not published confirming that no Flood Plains or Flood Hazard Areas are mapped on, or adjacent to, the site.

Existing Surface Water Quantity and Quality Testing and Analysis

As part of the assessment of existing water resources conditions, and the analysis of impacts on those resources, a surface water quality sampling and analysis protocol has been developed for the project. The purpose of the sampling is to establish a baseline for water quality on the site. The protocol, which will be implemented in coordination with the Town of North Salem Consulting Engineer and Wetlands Inspector, includes the quarterly collection (grab samples) of surface water from the watercourse associated with Wetland L-32 that will indirectly receive post development stormwater from the project.

Surface water samples were collected from three locations in the watercourse, at the eastern edge of the site, associated with Wetland L-32. Samples were collected from: 1) a location where the watercourse enters the site, 2) the mid-point of the stream, and 3) the point where the watercourse exits the site near June Road. Sampling locations are provided in Figure 6-4 Existing Conditions Plan. The samples were analyzed for Total Phosphorous, Total Nitrogen, Biological Oxygen Demand, and Total Suspended Solids, the parameters subject to the provisions of NYCDEP stormwater regulations. In addition, the analysis included field measurements of pH, temperature, specific conductance and turbidity. The results of the analysis are provided in Table 6-2, below. The laboratory analytical results are provided in Appendix P - Surface Water Testing Results.

Table 6-2 Salem Hunt Existing Surface Water Quality			
Parameter	S-1	S-2	S-3
Total Phosphorus	0.08	<0.050	<0.050
Total Nitrogen (Nitrate + Nitrite)	0.43	0.41	0.25
Biological Oxygen Demand (BOD)	< 5.0	< 2.0	< 2.0
Total Suspended Solids	10.0	<4.0	<4.0
Field Measurement			
pH	8.21	7.53	8.21
Temperature	20.4 C	16.6 C	20.4 C
Specific Conductance	258 mS/cm	223 mS/cm	586 mS/cm
Turbidity	24 NTU	12 NTU	10 NTU
Source: Tim Miller Associates, Inc., Accutest Laboratories. 2007			
Note: All measurements for laboratory analysis in mg/L.. Field measurements in units as shown.			

Existing Stormwater Characteristics

The project site is a wooded hillside sloping gently from south to north. Elevations on the site range from 480 feet, near the point the watercourse discharges off the site along the northern property line, to 580 feet at the high point of a drainage divide on the southern property line. Untreated stormwater runoff currently sheets off the divide to the wetlands located to the east and west of the divide. See Figure 6-6, Pre Development Drainage Areas. The Town regulated wetlands to the west and watercourse and NYSDEC wetland to the east of the ridgeline drain off the site to the north. The on-site soils consist of Charlton Loam (ChB, ChD), Leicester Loam (LcB), Pompton Silt Loam (PwB), Ridgebury Loam (RdB)C, Sutton Loam (SuB), Sun Loam (Sh) and Udorthents (Ub).

Statistical model estimates of existing runoff quantity (peak discharge rates and volumes) generated by storm events up to, and including, the 100-year event were made using methodologies accepted by the NYSDEC and NYCDEP. These estimates, as well as estimates of existing pollutant loads, are included in the preliminary Stormwater Pollution Prevention Plan (SWPPP) prepared for the proposed Salem Hunt Project (Appendix F of this document). The SWPPP includes the analyses of the stormwater discharge rates and volumes for the 2, 10, 25, 50 and 100 year, 24 hour storm events pursuant to the Final Scoping Outline and New York State and City regulations. Peak pre-development flows, and pollutant loads, from the project site's two existing drainage areas were calculated at each of the design lines. These flows and volumes were based upon regional precipitation values obtained from the Westchester County Soil and Water Conservation District.

Existing Stormwater Quantity

The two points, shown on Figure 6-6, at which stormwater currently discharges from the Salem Hunt site (Design Line 1 and Design Line 2) were analyzed to determine the existing rates and volumes of stormwater discharge. These pre-development discharge rates and volumes are summarized in Tables 6-3 and 6-4, below. The HydroCAD Stormwater Modeling System," by HydroCAD Software Solutions LLC of Tamworth, New Hampshire, was used to model and assess the stormwater flows from the project site. HydroCAD is a computer-aided design program for modeling the hydrology and hydraulics of stormwater runoff. It is based primarily on

techniques developed by the United States Department of Agriculture, Soil Conservation Service (USDA, SCS) Technical Release 20 (TR-20) method combined with standard hydraulic calculations.

TR-20 is a computer-based program that is used to generate and route runoff hydrographs, such as those developed for the Salem Hunt Project. The TR-20 program provides a hydraulic analysis of a watershed under its present conditions. TR-20 is used in very complex watersheds, such as the Muscoot Reservoir Basin, where a higher degree of accuracy is required.

In contrast to TR-20 used in the Salem Hunt stormwater analysis, Technical Release 55 (TR-55) uses simplified procedures for estimating the stormwater runoff volume and peak discharge rates, hydrographs and storage volumes required for floodwater reservoirs. TR-55 gives special emphasis to small urban and urbanized watersheds. The program utilizes the United States Department of Agriculture Soil Conservation Service runoff equation to predict the peak rate of runoff as well as the total volume. It also provides a simplified "tabular method" for generating complete runoff hydrographs. That tabular method is a simplified technique that is based on calculations that are performed using TR-20. While both programs are based upon the same methodology. TR-55 was developed solely for manual use, while the calculations used in TR-20 are extremely complex and too numerous to be of practical use without the aid of a computer program.

Table 6-3 Salem Hunt Existing Peak Stormwater Discharge Summary					
Cubic Feet per Second (cfs) 24-Hour Design Storms					
Design Line	2-Year	10-Year	25-Year	50-Year	100-Year
DL-1	0.92	3.64	6.07	8.80	10.25
DL-2	4.51	13.81	21.48	29.88	34.29

Source: Insite Engineering, Surveying and Landscape Architecture, P.C., 2007

Table 6-4 Salem Hunt Existing Stormwater Volume Summary					
Acre Feet and Runoff Inches 24-Hour Design Storms					
Design Line	2-Year	10-Year	25-Year	50-Year	100-Year
DL-1	.144/.35"	.408/.98"	.632/1.52"	.885/2.12"	1.02/2.45"
DL-2	.775/1.53"	1.897/1.30"	2.802/1.92"	3.797/2.60"	4.321/2.96"

Source: Insite Engineering, Surveying and Landscape Architecture, P.C., 2006

Existing Stormwater Quality

There are no stormwater management facilities currently on the project site and no data is available concerning the quality of stormwater currently discharging from the project site into either of the two design lines. The quality of runoff leaving the site during storm events at present is dictated primarily by existing land use on the property, site specific soils and vegetation, and any erosion that may be occurring on the site. Estimates of existing annual

pollutant loads in runoff being discharged from the two design lines are included in the SWPPP (refer to Appendix F). These estimates were made considering the existing conditions on the property and are summarized in Table 6-5.

To aid in the assessment of potential stormwater related impacts, a mathematical pollutant loading analysis, included in the SWPPP, was performed to estimate pre- and post-development pollutant loads in stormwater. The analysis targeted Total Nitrogen (TN), Total Phosphorous (TP), Total Suspended Solids (TSS), and Biological Oxygen Demand (BOD) as required by NYSDEC State Pollution Discharge Elimination System General Permit for Stormwater Discharges GP-93-06, which is incorporated by reference into the WR&Rs. These constituents, and other stormwater related parameters of concern, including Fecal Coliform Bacteria (FCB), are discussed below.

Table 6-5 Salem Hunt Existing Annual Pollutant Load Summary (lbs/yr)				
Design Line	BOD	TP	TN	TSS
DL-1	35.0	0.5	9.0	335.0
DL-2	122.5	1.75	31.5	1347.5
Source: Insite Engineering, Surveying and Landscape Architecture, P.C., 2006				

Total Phosphorus - Total Maximum Daily Load

Phosphorus is typically identified as the limiting nutrient in freshwater ecosystems. Elevated levels of phosphorus may lead to mesotrophic or eutrophic conditions which encourage growth of aquatic vegetation, both rooted plants and suspended or attached algae species.

The Muscoot Reservoir Basin, into which stormwater from the site now discharges, and would discharge following construction, is classified as “phosphorus restricted” by NYCDEP. A phosphorus-restricted basin is defined in the WR&Rs as a *“drainage basin of a reservoir or controlled lake in which the total phosphorous (TP) load [the amount of phosphorous entering a reservoir from point and non-point sources in the reservoir’s watershed] results in phosphorus concentrations above those provided in the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1, Ambient Water Quality and Guidance Values (October 22, 1993).”*

Under the provisions of the Clean Water Act, the NYSDEC has established specific Phase II Total Maximum Daily Load (TMDL) limitations for phosphorus inputs into the Muscoot Reservoir. A phosphorous TMDL is a reservoir’s loading capacity for total phosphorous and is considered to be a watershed budget for the pollutant, representing the amount of total phosphorous (from point and non-point sources) that can be assimilated by a reservoir without causing impairment, or exceeding water quality standards, including the New York State TOGS guidance values. TMDLs represent the sum of the point source waste-load allocations (WLAs), or the amount of phosphorous being discharged to the reservoir from point sources such as wastewater treatment plants, the non-point source load allocations (LA), or the amount of phosphorous entering the reservoir from non-point sources such as urban stormwater runoff, and an added “margin of safety” to account for uncertainty in the loading calculations.

New York State Department of Environmental Conservation's *Phase II Phosphorus Total Maximum Daily Loads for the Reservoirs in the New York City Water Supply Watershed*, June 2000 (the Phase II Report)³, includes the following information concerning the Phase II TMDLs, and phosphorus, in the Muscoot Reservoir.

The Phase II Report notes that the Muscoot Reservoir is currently water quality limited based on existing conditions. The phosphorus TMDL of 9,397 kg/yr is based on a 20 micrograms per millimeter (ug/l) guidance value and includes a 10% margin of safety (MOS) of 940 kg/yr. Therefore, 8,457 kg/yr total phosphorus is available for allocation between point and non-point sources. A WLA of 1,405 kg/yr and a LA of 7,052 kg/yr has been set for Muscoot Reservoir. The current load of 11,560 kg/yr is greater than the available load. Even after upstream loading reductions and reductions in point source loadings due to the application of the WR&Rs, the available load will be exceeded by 2,058 kg/yr. Upstream phosphorus loads at 5,579 kg/yr and urban runoff loads at 2,853 kg/yr are the two largest contributors of phosphorus to the Muscoot Reservoir. Significant reductions of these two loading sources would be needed to mitigate the 2,058 kg/yr excess. The non-point source programs listed in Section VI of the Phase II Report (*Sewer Extension Design and Construction, Septic System Rehabilitation and Replacements, Stormwater Retrofits, Watershed Planning in the Croton System, East of Hudson Water Quality Investment Funds, and Future Stormwater Controls for Single Family Houses, Small Businesses, and Low Income Housing*) will be implemented throughout the Croton System to achieve the necessary phosphorus reductions. The five-year average of 1992-1996 annual geometric means of reservoir data indicates a phosphorus concentration of 24.6 ug/l can be expected as a growing season average in the Muscoot Reservoir.

Total Nitrogen

Nitrogen is often cited as the second limiting nutrient for plant growth in aquatic systems. Dissolved forms of nitrogen may be expressed as Total Nitrogen (TN). Dissolved nitrogen primarily occurs as ammonia (NH₃), nitrite (NO₂), or nitrate (NO₃) compounds, and both bacterial and plant metabolic processes act to convert these three classes of nitrogen compounds into biomass or atmospheric releases of nitrogen.

Total Suspended Solids

Suspended solids measurements, or Total Suspended Solids (TSS), for surface waters provide an indication of the amount of particulate matter carried in the water column, and also provide an indirect indication of levels of coloring and turbidity. Increased levels of TSS may result in brown or green colored waters, leading to reduced light penetration and increased fouling of sediments and rooted plant growth within a water body. Additionally, the public may perceive that water bodies with higher levels of TSS have impaired water quality.

Biological Oxygen Demand

In aquatic systems, most organic constituents may be degraded over time by bacterial metabolism. The amount of oxygen used in the metabolism of biodegradable organics is termed Biological Oxygen Demand (BOD). Therefore, the BOD loads measured for water samples are commonly used as an indirect indicator of the total organic load carried in water.

³ NYSDEC, Division of Water, Bureau of Watershed Management. June 2000. Phase II Phosphorus Total Maximum Daily Loads for Reservoirs in the New York City Water Supply Watershed (Delaware, Dutchess, Greene, Putnam, Schoharie, Sullivan, Ulster, and Westchester Counties).

6.2 Potential Impacts

Approval, Reviews and Permits

As the Lead Agency, the Town of North Salem Planning Board has primary responsibility for review of this application and for determining its conformance with the Town's requirements for the proposed Site Plan. The proposed action will require the following approvals by the listed Involved Agencies:

- NYCDEP review and approval of septic system and SWPPP;
- NYSDEC Article 24 Wetlands Permit, Water Supply Permit, and SWPPP;
- New York State Department of Health review of water supply plans;
- Westchester and/or Putnam County Department of Public Works permit for improvements within County right-of-way;
- Westchester County Department of Health for water supply and septic systems;
- Town of North Salem Planning Board for Wetlands Permit and Architectural Review Board;
- Putnam and Westchester County review pursuant to General Municipal Law 239;
- Town of North Salem Planning Board for Site Plan Approval; and
- Town of North Salem Highway Department, for construction of the access road.

The Salem Hunt project has been designed to comply with all applicable federal, New York State, New York City, Putnam and Westchester County, and Town of North Salem standards required for the issuance of the noted approvals and permits. The Applicant notes that no approvals are required from the Corps since, during the Corps' on-site investigation, Corps staff confirmed that only Wetland D and C are subject to its jurisdiction and no disturbance of these wetlands is proposed. Written confirmation of this Jurisdictional Determination has not yet been received by the Applicant.

Potential Impacts to Wetlands, Watercourses, and Buffers

The proposed action does not include any direct encroachment into, or disturbance of, any wetland, watercourse, or water body on, or off, the property. Therefore, no direct impacts on these surface water resources are anticipated from the proposed action. Refer to Appendix E, Water Resource Inventory, for a description of the characteristics and functions, of the on-site wetlands and watercourse.

As indicated above, the proposed project does not involve any encroachment into any wetland, or watercourse. However, without the mitigation measures that have been incorporated into the project design, the project could result in sedimentation during construction, post-development increases in pollutant loading in stormwater, post-development flooding from increased peak rates of stormwater discharge, and bed and bank erosion in receiving watercourses resulting from increased stormwater discharge velocities. The Applicant notes that the wetland and watercourse buffers help to protect surface water resources from increased pollutant loading associated with stormwater and help to maintain any functions that the wetlands proper perform.

Direct Impacts on Wetland, Water Resource, and Buffers

The Proposed Action does not include the disturbance of any wetlands, watercourse, or other surface water resources on or off the project site. The Proposed Action has been designed to limit wetland buffer disturbance to the fullest extent practicable. Through careful site planning, and a reduction in the scope of the project as initially designed, only 0.26 acres of Wetland D (State regulated Wetland L-32) adjacent area would be disturbed by the construction of the project entrance, and only 0.06 acres of Wetland A adjacent area, which NYSDEC has determined to be hydrologically connected to Wetland D. The project would disturb a total of 0.54 acres of Town regulated buffer associated with Wetlands A, B and C for the construction of stormwater facilities and residences. The proposed disturbances of the wetland buffers are summarized in Table 6-6 and described below.

Wetland A

The project does not involve any encroachment into Wetland A, which the Corps determined to be an isolated wetland, and which NYSDEC determined was part of State Wetland L-32. The project would result in only 0.06 acres of disturbance, or 4.0 percent, of Wetland A's 1.37 acre Town and NYSDEC regulated buffer on the project site (see discussion below).

The project will result in the redirection of stormwater from a small portion of the drainage area now contributing to Wetland A. The proposed low stone wall marking the limits of disturbance into the Wetland A buffer would be constructed on the approximate drainage divide separating the stormwater flowing towards Wetland A and the stormwater flowing northeast to Wetland B. The 0.03 acres of wetland buffer would be converted from natural vegetation to lawn. No impervious surface will be constructed in the Wetland A drainage area. Stormwater from that small portion of Wetland A drainage area converted to lawn is expected to continue to flow toward Wetland A, though no direct discharge of stormwater from the proposed development would enter the wetland. The minor modification to stormwater drainage is not expected to affect the stormwater detention function of Wetland A. Accordingly, no significant adverse impacts on Wetland A, or its buffer, are anticipated from the proposed action.

Wetland A Buffer

As noted, the project would result in 0.06 acres (2,426 square feet) of disturbance to the NYSDEC, and Town of North Salem, regulated Wetland A buffer, which totals 1.37 acre (59,677 square feet) in size. The buffer disturbance would result from clearing and grading necessary to facilitate construction of the residences. All existing vegetation in the area of the buffer to be disturbed would be removed and replaced with lawn. To prevent any encroachment into the buffer in the future, the limits of the buffer will be demarcated with a low retaining wall following construction. The wall is proposed to reduce the proposed grading behind residential buildings 7 and 8. Wetland buffer mitigation is further discussed in Section 6-3 Mitigation Measures, below.

The project would result in the conversion of 0.06 acres of Successional Hardwood Forest Habitat in the Wetland A buffer, into lawn. Trees lost in the buffer would include: red maple, northern red oak, black birch and white ash. Understory vegetation lost would include Winter-berry, spicebush, and common greenbrier. As discussed in Appendix E, the Wetland A buffer provides only limited wildlife habitat, and does not constitute an important transitional habitat for wetland, or semi aquatic animal species. The proposed 0.06 acre buffer disturbance is not

expected to have a significant adverse impact on those buffer functions. The Applicant notes that disturbance of the Wetland A buffer has been minimized to the fullest extent practicable through careful site planning, and that no practical alternatives to the current development plan, that would further reduce the encroachment, are available.

The minor encroachment into the Wetland A buffer results from the layout of the dwelling units, which has been dictated by several factors that have eliminated alternative configurations for the units. First, the development plan was designed to maintain the existing visual buffer around the perimeter of the site and to provide twice the fifty foot Town required buffer between the developed portions of the property and the adjacent Havel estate boundary. Second, the required stormwater treatment basins and subsurface sewage disposal system, which are sited on the only portions of the site where they will function properly, occupy a significant portion of the property. Lastly, the development plan was designed to avoid all encroachment into the important on-site Wetland L-32 buffer, except for that which is necessary to construct the access road to the site. As a result of dedicating extensive areas on the site to the increased buffer, the septic system and stormwater basin sites, and to avoiding Wetland L-32 buffer disturbance, no alternatives exist to the proposed siting of the dwelling units and disturbance of the Wetland A buffer. The Applicant notes that, in part, to avoid wetland buffer encroachments the proposed project, which initially proposed up to ninety dwelling units, has been reduced to sixty-five units.

Wetland B and C

The implementation of the proposed development plan would not result in any encroachment in Wetland B or C. Minor encroachment, consisting of 0.48 acres, into the combined 4.89 acre Town regulated wetland buffer is required to facilitate construction of the stormwater management facilities required by NYSDEC and NYCDEP. As discussed in the Water Resource Inventory that accompanies this DEIS, Wetland B and C, and their combined buffer, perform a limited stormwater detention function. Wetland B is an isolated wetland not connected to any other wetland or watercourse. Wetland C is associated with an intermittent watercourse which flows off-site to the north. The proposed 0.48 acre disturbance of the combined Wetland B and C buffer would result in the minor redirection of stormwater from Wetland B and C, consisting of 9.8 percent of the total buffer. The volume of stormwater flowing into Wetlands B and C would not change significantly, but stormwater may reach the wetlands at a somewhat slower rate, due to stormwater detention and treatment. This redirection of stormwater would not compromise the stormwater detention function of the wetland. Wetlands B and C would remain undisturbed and permanently preserved in their existing conditions.

Wetland B and C Buffer

As described above, the proposed action will result in the clearing and grading of 0.48 acres of the overlapping Wetland B and C buffers. This would result in the conversion of 0.48 acres of buffer vegetation, which is Successional Hardwood Forest Habitat, into lawn (behind buildings 12, 13, 14 and 15) and into landscaped stormwater basins. Trees lost in the buffer would primarily include sugar maple, red maple, northern red oak, and white ash, in the area of the stormwater basins. At the eastern edge of the buffer trees lost would include black birch, red maple and white ash. Understory vegetation is sparse in this portion of the buffer due to the extensive tree canopy. As discussed in Appendix E, the buffer of Wetland B and C provides limited wildlife habitat functions, and does not constitute an important transitional habitat for

wetland, or semi aquatic, animal species. The 0.47 acre disturbance is not expected to have a significant adverse impact on those buffer functions. For areas of buffer converted to lawn, the limited wildlife habitat function would be lost. Some wetlands buffer wildlife habitat function would be restored or enhanced by wetland plantings in the stormwater basins, as described below.

To prevent future encroachment, the limits of the encroachment into the wetland buffer will be established with a split rail fence that will be erected behind buildings 12, 13, 14 and 15 (see Drawing SP-2 Layout and Landscaping Plan). The existing stone walls will be preserved at the southern edge of the buffer. No clearing, vegetation removal, or landscaping activity will be allowed beyond the fence or the existing stone walls. Maintenance of property landscaping will be the responsibility of a future Condominium Association. Therefore, there is little potential for future disturbance of, or encroachment into, the Wetland B and C buffers. Further discussion of wetland mitigation is provided in Section 6-3 Mitigation Measures, below.

All existing vegetation in the area of the buffer to be disturbed would be removed. The stormwater basins constructed within the wetland buffer will be heavily planted with wetland vegetation (see Drawing D-3 - Site Details). The 0.47 acre disturbance is not expected to have a significant adverse impact on those buffer functions.

Wetland D

As noted, of the four wetlands associated with the proposed action, NYSDEC Wetland D performs the most significant functions. Wetland D will be permanently preserved in its existing condition. The Proposed Action includes the construction of a access road in a portion of Wetland D's regulated 2.72 acre buffer on the site. However, the wetland would not be disturbed by land clearing or grading, or any other proposed activity. In this case, 0.26 acres, or 8.8 percent of the Wetland D buffer on the project site would be impacted through limited clearing activities required for construction of the proposed access road and drainage features associated with the road, including drainage discharge, level spreader and associated grading from pond 2.2. The existing watercourse, around which the Wetland D corridor is formed would, like the wetland proper, will remain permanently undisturbed.

Wetland D would not be affected by any proposed construction. Because the clearing and grading activities would take place only on the perimeter of the wetland buffer no impacts to the wetland buffer functions are expected. As noted, only 0.26 acres of the State and Town regulated buffer would be modified during the development of the site, as described below.

Wetland D Buffer

The project will result in 0.26 acres of clearing and grading in the NYSDEC, Corps, and Town regulated Wetland D's extensive buffer. Off-site, in the right of way for June Road, an additional 0.13 acres of wetland buffer will be disturbed for the access road and associated drainage improvements. Existing vegetation to be removed includes mostly smaller trees and shrubs at the edge of June Road, including sugar maple and American elm. The buffer disturbance is required to construct the access road, for which no alternative location is available. Graded areas within the buffer, on the north and south sides of the new entrance road will be stabilized and seeded with low maintenance grass seed mix. Plantings will include native trees and shrubs, as shown in Drawing SP-2.1 Layout and Landscaping Plan.

The project is not expected to result in any significant adverse impacts on the transitional wetland function, wildlife habitat, semi aquatic animals, or their habitats that the buffer supports. Less than 10 percent of the 2.92 acres of the on-site buffer would be disturbed and the majority of the buffer associated with Wetland D, which extends some 3,000 feet south of the site, would remain undisturbed by the proposed project.

Off-Site Wetlands, Watercourses, and Buffers

No direct, or indirect, disturbance of any off-site wetland or watercourse is proposed as part of the Salem Hunt project. Construction of the access road to the site, and installation of some two hundred and twenty-five feet of drainage pipe on the northern side of, and adjacent to, June Road will, however, disturb a total of 0.21 acres of the off-site portion of the Wetland L-32 adjacent area. The Applicant notes that no alternative locations for the access to the site exist and that the portion of the adjacent area to be disturbed with the proposed drainage pipe is in the road shoulder immediately adjacent to the edge of the June Road pavement. Although all pipe installation work is proposed within the gravel road shoulder, a delineation of the off-site wetland is forthcoming and this assessment will confirm potential impacts to the adjacent area and avoidance of the wetland.

Table 6-6 Salem Hunt Wetland and Wetland Buffer Disturbances (acres)				
Wetland ID	Wetland Disturbance	Wetland Buffer Area	Wetland Buffer Disturbance	Percent of Buffer Disturbed
A (NYSDEC L-32)	No Disturbance	1.37	0.06	4.0 %
B/C*	No Disturbance	4.89	0.48*	9.8 %
C	No Disturbance			
D On-site (NYSDEC L-32)	No Disturbance	2.92	0.26	8.8 %
Total (On-Site)	0	9.18	0.80	8.7 %
D Off-site	No Disturbance	not determined	0.21	not determined
Notes: * Buffers B and C overlap on the site. Wetland D off-site is privately owned and was not field delineated to determine its areal extent. Source: INSITE Engineering, Surveying and Landscaping, P.C.				

Potential Indirect Impacts

Sedimentation During Construction

Without the appropriate mitigation which has been incorporated into the Proposed Action, the Project could have the potential to increase the volume and velocity of stormwater through land clearing and conversion of existing land forms into impervious surfaces and landscaped areas. If not controlled, these activities may lead to accelerated erosion and sedimentation both during and after construction. Sedimentation of the receiving wetlands, watercourse, and off-site water bodies could result in decreased light penetration and nutrient enrichment, increased turbidity, increased transport of pollutants that are adsorbed to the sediment particles, shielding of

pathogens from disinfection, and clogging of gills and filters in aquatic organisms. In order to reduce stormwater induced impacts from the project, the Applicant has designed, and will construct, adequate erosion and sediment control practices to mitigate these potential impacts. Accordingly, an Erosion and Sediment Control Plan, that includes construction sequencing, has been included in the Stormwater Pollution Prevention Plan (SWPPP) prepared for the Salem Hunt Project.

The purpose of the Salem Hunt Erosion and Sediment Control Plan is to minimize the erosion of disturbed soil and to prevent the migration of sediment into surface water resources and off site during construction, and until the site has received final stabilization. The Erosion and Sediment Control Plan included with the SWPPP (Appendix F) contains temporary and permanent erosion and sediment control practices, construction notes, soil erosion and sediment control notes, specifications for stabilization materials, a sequence of construction and phasing plan, and associated construction details and notes designed mitigate potential impacts associated with erosion and sedimentation.

The most effective means to mitigate potential impacts associated with sedimentation is to prevent the erosion that results in the sedimentation. Accordingly, a sequence of construction and phasing plan is included in the Salem Hunt Erosion and Sediment Control Plan. (See Drawing SP-4.1 Overall Sequencing Plan). Implementation of the plan, which will serve as the primary means of avoiding sedimentation of water resources during construction of the Salem Hunt project, will minimize the potential for soil erosion by limiting, and rapidly stabilizing, all areas disturbed during construction. By reducing the area of disturbed soil, the potential for erosion, and subsequent sedimentation that must be contained, will be dramatically reduced. During construction of the Salem Hunt project, areas of active disturbance would be limited to five acres at one time, and runoff from areas outside of disturbances would be diverted away from disturbed soils to further prevent erosion and subsequent sedimentation. This preventative approach will effectively control erosion and the sedimentation that results from it, and ensure that potential impacts on down-gradient receiving surface water resources, including the Muscote Reservoir, are fully mitigated.

As specified in the SWPPP, soil erosion and sedimentation control measures, such as silt fencing, would be installed following a pre-construction conference with appropriate agency staff, and prior to any construction activities. All soil erosion and sediment practices have been designed, and would be implemented, in accordance with NYSDEC specifications set forth in the *Standards and Specifications for Erosion and Sediment Control*. In addition, the Applicant would engage a Certified Professional in Stormwater Quality/Erosion and Sediment Control, or equally qualified professional, to oversee implementation of all elements of the SWPPP, including its site specific Erosion and Sediment Control Plan component. Refer to SWPPP in Appendix F of this DEIS, and accompanying Erosion and Sediment Control Plan sheets (SP-4.1, SP-4.2 and SP-4.3) for erosion and sediment control practices to be implemented.

Implemented, monitored, and enforceable erosion and sediment controls as specified in the SWPPP, would be utilized during the construction phase as a means of further controlling erosion and sedimentation. All soil erosion and sedimentation control practices would be installed in accordance with GP-02-01, the WR&Rs, and the Town of North Salem codes. Prior to the commencement of any phase of this Project that would result in the disturbance of soils, erosion and sediment control measures would be placed in accordance with the specifications on the construction drawings and in the SWPPP. These measures would be maintained in effective condition and left in place until permanent vegetative cover is established.

In addition to the potential direct and indirect impacts on the on-site wetland associated with the activities discussed above, as noted, the proposed project includes the installation of approximately two hundred and twenty-five feet of drainage pipe in the road shoulder on the east side of June Road, between the road and an off-site portion of NYSDEC Wetland L-32. The pipe, which will be located in the Wetland L-32 adjacent area, will convey treated stormwater from the developed site to the watercourse emanating from Wetland L-32. Although all pipe installation work is proposed within the gravel road shoulder, a delineation of the off-site wetland is forthcoming and this assessment will confirm potential impacts to the adjacent area and avoidance of the wetland. Silt fencing will be installed and maintained between the proposed pipe and the wetland adjacent area throughout the construction period.

Construction Phasing and Sequencing

The draft construction phasing and sequencing plan has been prepared as part of the Erosion and Sediment Control Plan (see Drawing SP-4.1 Overall Phasing Plan). A total of five (5) phases are proposed in sequence, from initial construction of two temporary sediment basins to the completion of the proposed subsurface sanitary treatment system and building pads. Each phase includes specific erosion controls and site stabilization measures. The phasing plan incorporates both structural and operational provisions, including inspection and maintenance schedule for erosion control features. This plan meets the requirements of the GP-02-01, and the WR&Rs which incorporates GP-93-06 by reference.

In general, the following temporary measures would be employed to limit soil disturbance and prevent erosion on the project site:

- Stabilized construction entrances
- Construction sequencing
- Diversion swales and water bars
- Silt fence barriers
- Stone check dams
- Storm drain inlet protection
- Sediment basins

In accordance with New York State and City requirements, soil disturbance will be limited to five acres at any time and temporary, or permanent, stabilization would be provided no more than seven days after construction activities have temporarily or permanently ceased. The phased construction activities across the site would further minimize the requirements for maintenance of temporary facilities during construction.

Post-Development Runoff Quantity and Quality

The Proposed Action involves the temporary disturbance of some 19.2 acres of the approximately 40-acre Salem Hunt site, and the construction of residential buildings, parking lots and stormwater management facilities, and the discharge of stormwater following construction. It is anticipated that approximately 6.3 acres of impervious areas would be created.

Potential indirect impacts that the Proposed Action may have on wetlands and receiving waters result from post development increases in pollutant loading in stormwater, post development flooding from increases in the volume of stormwater discharged, and bed and bank erosion in receiving watercourses resulting from increased stormwater discharge velocities.

To mitigate potential impacts associated with stormwater runoff from the Salem Hunt project, the project specific SWPPP (Appendix F) was developed in accordance with all applicable NYSDEC, and NYCDEP regulations and guidelines, including those in the NYSDEC 2003 Stormwater Management Design Manual (the Manual). Specific attention has been paid to maintaining existing reservoir basin drainage divides, attenuating post- development increases in peak stormwater discharge rates and volumes, and to meeting NYSDEC and NYCDEP stormwater quality treatment criteria. The proposed treatment methods include only natural processes, no chemical treatment of the runoff is proposed or permitted.

The SWPPP for the Salem Hunt Project has been prepared in accordance with the following resources which were consulted, and are incorporated into the evaluation of impacts in this DEIS in the context of the Salem Hunt SWPPP, where appropriate: NYSDEC *Reducing the Impacts of Stormwater Runoff from New Development*, April 1992, NYSDEC TOGS Document (5.1.8); *New York Guidelines for Urban Erosion and Sediment Control and Standards and Specifications for Erosion and Sediment Control*; *New York State 2003 Stormwater Design Manual*, and Westchester County Best Management Practices.

As discussed in detail below, the proposed stormwater management practices included in the SWPPP satisfy NYSDEC and NYCDEP standards by including provisions for stormwater treatment to avoid potential impacts on receiving water resources and downstream properties.

Runoff Quantity

Following construction, the site would be divided into two distinct drainage areas. Stormwater from the site would be collected and discharged to treatment basins in series that would control post- development increases in the rate and volume of discharge and increases in pollutant loads. As seen in Figure 6-7, Post-Development Drainage Areas, the drainage patterns would remain generally the same between existing conditions and proposed conditions.

Stormwater management ponds would treat stormwater contributing to Design Line 1 and Design Line 2. Design Line 1 is located along the rock wall west of the natural drainage divide south of the Town regulated wetland. Design Line 2 is located along the southern property line from the natural drainage divide to the east and along the NYSDEC wetland buffer adjacent to the watercourse. Table 6-7 summarizes pre- and post- development stormwater discharge rates at the two design lines as determined by the calculations included in the SWPPP. Table 6-7 summarizes the calculated pre and post construction stormwater volumes at the two design lines. The two design lines are the two stormwater discharge locations on the project site, as determined by the project Engineer. Surface water from Wetland A discharges to NYSDEC Wetland L-32 off-site to the south.

As indicated in the tables, and in the SWPPP, the proposed stormwater basins would reduce post construction peak stormwater discharge rates, and control increases in the volume of stormwater discharged from the site to near pre-construction levels.

Table 6-7 Salem Hunt Pre- and Post- Construction Peak Stormwater Flow Summary Cubic Feet per Second (cfs)										
Design Line	2-Year		10-Year		25-Year		50-Year		100-Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
DL-1	0.92	0.59	3.64	3.61	6.07	5.57	8.80	8.24	10.25	9.51
DL-2	4.51	4.51	13.81	11.06	21.48	16.08	29.88	23.71	34.29	30.02

Source: INSITE Engineering, Surveying and Landscape Architecture, P.C., 2006

New York State stormwater sizing criteria, found in the Manual require the control of the peak of discharge from the 10-year storm to pre- development rates for Overbank Flood (Qp) control. The primary purpose of the overbank flood control sizing criterion is to prevent increases in the frequency and magnitude of out-of-bank flooding generated by urban development.

The criteria for Extreme Storm (Qf) require the control of the peak discharge from the 100-year storm to pre-development rates, and the safe passage of the flows generated by a 100-year storm event. The intent of the Qf is to prevent the increased risk of flood damage from large storm events, to maintain the boundaries of any pre- development 100-year floodplain, and to protect the physical integrity of stormwater management practices.

Attenuation of the 10-year and 100-year, 24-hour design storms has been provided for the project to meet the NYSDEC requirements for Overbank Flood Control (Qp) and Extreme Flood Control (Qf), respectively.

The first pond in each treatment train (1.1P and 2.1P) has been designed to meet the State water quality treatment requirements as either a pocket pond (Pond 1.1P) or a micropool extended detention pond (Pond 2.1P). To meet the NYSDEC Stream Channel Protection (Cpv) requirement, 24-hour center-of-mass detention has been provided for the 1-year, 24-hour storm through each of the two treatment trains prior to discharge at the respective design lines.

Table 6-8 Salem Hunt Pre- and Post- Construction Stormwater Volume Summary Acre Feet and Runoff Inches 24-Hour Design Storms					
Design Line	2-Year	10-Year	25-Year	50-Year	100-Year
DL-1 Pre	.144/.35"	.408/.98"	.632/1.52"	.885/2.12"	1.02/2.45"
DL-1 Post	.299/.92"	.995/2.44"	1.330/3.26"	1.679/4.11"	1.859/4.55"
DL-2 Pre	.775/.53"	1.897/1.30"	2.802/1.92"	3.797/2.60"	4.321/2.96"
DL-2 Post	1.891/1.21"	3.560/2.33"	4.812/3.14"	6.113/3.99"	6.779/4.42"

Source: Insite Engineering, Surveying and Landscape Architecture, P.C., 2006

The design and construction of the proposed stormwater management facilities must comply with the requirements of the GP-02-01, and the WR&Rs which incorporate by reference GP-93-06. To satisfy these requirements, the project engineer designed the proposed stormwater management facilities in accordance with NYSDEC's *Reducing the Impacts of Stormwater Runoff from New Development*, April 1992 and *Fundamentals of Urban Runoff Management: Technical and Institutional Issues*, produced by the Terrene Institute, and the *Manual*.

Runoff Quality

The proposed project is a multifamily residential development, including 65 residential units and associated, access roads and parking areas. Access to the site will be gained by a proposed 24' wide access road off June Road near the intersection of Starles Road. Conversion of existing vegetated areas into impervious, and landscaped areas, as a result of the proposed Project could, without the mitigation measures that are incorporated into the SWPPP, increase levels of certain pollutants in stormwater following development of the site. These post-construction increases in pollutants could potentially have a adverse impact on water quality in receiving waters. Accordingly, the project engineer has prepared a Stormwater Management Plan, included in the SWPPP, designed to treat post- construction increases in pollutants in stormwater. The components of the plan are described later in this report, and in the full text of the SWPPP included in this DEIS as Appendix F.

New York State Department of Environmental Conservation GP-02-01 requires that the post construction Water Quality Volume (WQv) be treated in order to provide pollutant removal. The water quality volume is directly related to the amount of impervious cover proposed on the project area. The treatment of the water quality volume for the proposed development discharging to Design Line 1 will be accomplished within the permanent pools of pond 1.1P, which has been designed as a pocket pond (P-5) pursuant to the Manual. Similarly, the treatment for the water quality volume for the proposed development discharging to Design Line 2 will be accomplished within pond 2.1P, which is designed as a micropool extended detention basin (P-1) The permanent pools of both ponds have been sized according to the NYSDEC design manual to contain the necessary volumes to treat the WQv. By meeting the WQv requirements for the entire development through employment of pocket ponds and micropool extended detention basins, the water quality objectives of the NYSDEC are met.

The primary SMPs designed by the project engineer as included in the Salem Hunt SWPPP (detention basins) were selected from the NYSDEC Design Manual and meet all State WQv requirements. These practices were designed to capture and treat 90% of the average annual stormwater runoff volume from the site. Potential impacts to surface water resources would be mitigated by treating the 90% volume. In addition, monitored outlets are proposed in the basins to discharge the 2-year, 24-hour storm over 24 hours, or more, as required by the NYCDEP regulations.

New York City Department of Environmental Protection standards for treatment of post development stormwater quality are set forth in GP-93-06 (Stormwater Management Guidelines for New Development). The guidelines specify that "to minimize the effects of development, ideally the quantity and quality of stormwater runoff that reaches surface waters during and after development should not be altered from pre-development conditions. A variety of structural and non structural measures for example, detention ponds, recharge basins, infiltration pits and trenches, diversion ditches, storage terraces and vegetative swales and

other vegetative measures including artificial wetlands, may be used to control and alleviate the adverse impacts of stormwater runoff.” As discussed, multiple detention ponds as noted in GP-93-06, are proposed as part of the Salem Hunt SWPPP.

The Manual provides standards for the selection of stormwater management practices (SMPs) to be included in project specific SWPPPs to protect the waters of the State of New York from the impacts of urban stormwater runoff. The Manual establishes specifications and uniform criteria for the practices that are to be part of a SWPPP. As noted, the primary treatment of stormwater discharging from the project would be accomplished with stormwater basins that have been selected and designed in accordance with the Manual.

The Manual also provides standards for the design of stormwater management practices (SMPs) to be included in project specific SWPPPs to protect the waters of the State of New York from the impacts of urban stormwater runoff. The WQv technique included in the Manual was designed to improve water quality sizing of SMPs to capture and treat 90% of the average annual stormwater runoff volume. The Manual states that by meeting the WQv requirements through the use of SMPs, such as those included in the Salem Hunt SWPPP, a SWPPP would, “by default”, meet water quality objectives.

Stormwater from the development of the western portion of the site will be collected and conveyed to a treatment train consisting of two stormwater basins in series (1.1P and 1.2P) before discharging to the Town regulated wetland to the north at Design Line 1. The stormwater runoff from the development to the east of the natural drainage divide will be collected and conveyed to a treatment train consisting of a swale and two stormwater ponds (2.1P and 2.2P) located near the entrance of the site. The stormwater runoff from this treatment train as well as the area to the east of the proposed road will discharge to Design Line 2. As noted, the first pond in each of the treatment trains (1.1P and 2.1P) has been designed per the NYSDEC standards. Pond 1.1P has been designed as a pocket pond (P-5) and Pond 2.1P has been designed as a micropool extended detention pond (P-1). The second pond in each train (1.2P and 2.2P) has been designed as an extended detention dry basin. Additionally a grass filter strip is proposed along the eastern boundary of the proposed SSTS area for treatment of the stormwater runoff. The overall drainage patterns present in the existing condition were generally maintained in the post development condition, with only a small area previously draining to the west draining to the east in the proposed condition. The pre- and post-development drainage areas are shown on Figures 6-6 (Pre Development Drainage Areas) and 6-7 (Post Development Drainage Areas), respectively.

Stormwater from a 300 foot section of the access road (Station 0+00 to Station 3+00) will not be directed to the eastern stormwater treatment detention basins due to differences in grades and elevations. Stormwater from this portion of the roadway, consisting of approximately 7,200 s.f. (0.17 acres) will be directed to two catch basins, to a StormFilter treatment unit, and then to a piped discharge to the wetland adjacent to June Road. The StormFilter has removal efficiencies of 40% for BOD, TP and TN and up to 80% for TSS. The StormFilter unit meets the NYSDEC criteria for an organic filter stormwater treatment practice. The quantitative stormwater analysis, described below, included an analysis of this portion of the stormwater treatment system.

In order to gain coverage under NYSDEC GP-02-01, and comply with the stormwater quality provisions of the WR&Rs, the SWPPP developed for the proposed development must comply with the conditions of GP-02-01 and GP-93-06. Since the project site is in New York City's

Muscoot Reservoir watershed, NYCDEP approval of the SWPPP is also required prior to construction.

A quantitative stormwater analysis was performed during development of the Salem Hunt SWPPP and used in the analysis of potential impacts on water resources on-site, and off, the site from post-construction changes in stormwater runoff. The analysis included an assessment of pre-construction and post-construction pollutant loads in stormwater at the two design lines shown on Figure 6-7 (Post-Development Drainage Areas). Table 6-9 compares the calculated pre-development and post-development loads for the parameters set forth in NYSDEC and NYCDEP regulations. As provided in Table 6-9, the calculated ranges of estimated post-development pollutant loads are generally in the range of the pre-development pollutants, as required by NYCDEP regulations, and do not represent the potential for adverse impacts on the receiving waters.

The projections of post- construction pollutant loads in stormwater included in the preliminary SWPPP apply to BOD, TN, TP, and TSS. Total estimated post construction annual loads (as lbs/yr) for each of these pollutants were calculated for Design Line 1 and Design Line 2 are compared to existing loads Table 6-9. Conservative loading coefficients were used for these calculations, in keeping with NYCDEP policy. Based upon the numerous and redundant stormwater management practices proposed as part of the SWPPP, it is expected that pollutant removal efficiencies would be on the higher end of the scale for each constituent, and that the actual post construction loads would be less than those estimated.

Table 6-9 Salem Hunt Annual Pollutant Load Summary (lbs/yr)								
Design Line	BOD		TP		TN		TSS	
	Pre	Post*	Pre	Post*	Pre	Post*	Pre	Post*
DL-1	41.3	60.2/28.1	0.59	0.91/0.45	10.6	14.3/8.4	454.0	119.0/0.0
DL-2	124.6	166.1/85.8	1.78	2.58/1.53	32.0	53.0/33.8	1370.6	2114.8/1486.0

Source: Insite Engineering, Surveying and Landscape Architecture, P.C., 2007
 * Range of expected loadings based on pollutant removal efficiencies cited in NYSDEC publications.

As Table 6-9 indicates, conservative estimates of post construction pollutant loads, expressed as a range, are similar to the pre-construction loads. The estimates suggest the possibility for only slight increases in the annual loads. Under the most conservative case, the total annual increase from both design lines would be only 1.12 lbs of TP. This annual increase in loading does not represent the potential to significantly impact any wetlands, watercourses, or the 4.9 billion gallon capacity Muscoot Reservoir.

To further avoid adverse impacts on wetlands, and other surface water resources on and off the project site, the proposed project does not include the use of chemicals, dyes, fertilizers, herbicides or similar materials in amounts which may cause pollution of waters in any controlled area regulated by the Town of North Salem, and for which a permit from the Town would be necessary. In addition, as outlined in *Recommendations for Winter Traction Materials Management on Roadways Adjacent to Bodies of Water* (Western Transportation Institute College of Engineering, Montana State University, December 2004) specific structural and nonstructural management practices are incorporated into the project to reduce the amount of deicing materials applied, and to capture and recover traction materials. Also consistent with the recommendations, the proposed wet extended detention basins, are designed to collect

roadway meltwater for treatment, have sufficient volume to handle maximum probable meltwater volumes, and have regulated releases and easy access for maintenance. The Applicant notes that Table 8 in the recommendations indicates that wet extended detention ponds, such as those proposed at Salem Hunt, have “high” removal of suspended sediments such as deicing sands. The recommendations further note that “despite the challenges of winter conditions, structural BMPs such as ponds, wetlands, and vegetated swales and filter strips, can still remove high levels of sediment from runoff if designed, sited, installed, and maintained properly.” The wet extended detention ponds proposed at Salem Hunt have been designed and sited to maximize their pollutant removal and particulate retention effectiveness. To ensure, as the recommendations indicate, that the basins are installed properly, the Applicant will engage a Certified Professional in Stormwater Quality (CPSWQ) to oversee construction of the basins.

To further ensure the effectiveness of the proposed stormwater management ponds in preventing the off-site discharge of deicing sands, the Applicant has committed to installing staff gauges in the proposed detention basins to measure accumulations of deicing sands, and to monthly monitoring of accumulations of these materials during the winter months. In the event the monthly monitoring reveals that accumulations of deicing sand in any of the proposed basins has reached 18 inches, or that any sands are likely to discharge off-site, all such sand in the basins would be removed immediately by vacuum truck. Site catch basins and the proposed storm filter at the site entrance will be included as part of this monitoring effort.

Potential Flooding and Flood Plain Impacts

The Applicant’s review of the Federal Emergency Management Agency Flood Insurance Rate Map, Town of North Salem, Westchester County (Community Panel Number 361240 0010 A, panel 10 of 10, effective July 3, 1986) has revealed that no portion of the project site falls within any area designated as a 100 year Flood Plain or Flood Hazard Area. In addition, the Town of North Salem recently received newly published Flood Insurance Rate Maps dated September 28, 2007. Panel 36119C0076F, which includes the Salem Hunt Property was not published indicating that no Flood Plains or Flood Hazard Areas are mapped on the site or adjoining the site.

The project will not result in any modification or flow restriction to the unnamed watercourse which flows through NYSDEC Wetland L-32. Therefore, no flooding impacts are anticipated for off-site upstream locations. As indicated above, no Flood Plains or Flood Hazard areas are mapped in the drainage area upstream of the site. This area, which extends to the south beyond Hardscrabble Road has limited residential development, and includes the North Salem Middle/High School. No major development is currently proposed for the upstream drainage area and this area is in the R-1 Zoning District, which limits development potential. Therefore, there is little potential for an increase in on-site flows resulting from upstream development.

As concluded in the SWPPP and summarized above, post construction peak rates and volumes of stormwater discharge would be similar to existing conditions, after treatment by the proposed detention ponds. Therefore, no downstream flooding impacts, or impacts on any flood plains, are anticipated to result from the proposed action.

Bed and Bank Erosion in Receiving Watercourses

Pre- and post- development stormwater discharge rates were determined at each design line, as indicated in Table 6-6 Salem Hunt Pre- and Post-Construction Peak Stormwater Flow

Summary. Post construction peak flow rates for the 2-, 10-, 25-, 50- and 100- year design storms have been attenuated to rates less than or equal to the pre-development peak flows. While the overall stormwater volume is expected to increase as a result of the project (see Table 6-7 Salem Hunt Pre- and Post- Construction Stormwater Volume Summary), the rate of flow will be maintained or reduced. The maintenance or reduction- of flow rates would be accomplished with the proposed stormwater management practices included in the project specific SWPPP. Therefore, no impacts to stream bed or stream banks are anticipated.

Deicing Compounds

Because the Muscoot Reservoir, which receives stormwater runoff from the project site, has been designated as phosphorus restricted by the NYCDEP, the applicant proposes the use of traction sand, which has a low phosphorus concentration, as the primary winter road safety agent. Due to varying and unpredictable snow and ice accumulations on the traveled surfaces, no specific abrasive sand application rates are proposed. Instead, sand application rates would be dictated by the need to provide safe traveling conditions for the public and emergency vehicles, and by road and parking lot conditions. Traction sand would be applied in accordance with the following specific guidelines excerpted from *Recommendations for Winter Traction Materials Management on Roadways Adjacent to Bodies of Water*, Western Transportation Institute, December 2004.

- The application of sand would be minimized to the extent necessary to ensure that public safety is not compromised;
- Abrasive sands applied to the roadway and parking areas would be recovered by street sweeping and snow storage;
- Structural components of the site specific stormwater management plan for the project would be employed to capture abrasive sands before they migrate off-site and into wetlands, watercourses and water bodies;
- The wet extended detention ponds proposed at Salem Hunt have been designed and sited to maximized their pollutant removal and particulate retention effectiveness. The catch basins within the roadway will be fitted with deep sumps for capture of heavier suspended sediments such as traction sand, and any overflow from these structures will be captured within the water quality basins well before discharge to the site wetlands.

Phosphorous Loading to the Muscoot Reservoir

Phosphorus is typically identified as the limiting nutrient in freshwater ecosystems in the glaciated northeastern United States. Elevated levels of phosphorus may lead to mesotrophic or eutrophic conditions which encourage growth of aquatic vegetation both rooted plants and suspended or attached algae species in receiving waters.

As discussed above, the Phase II Report indicates that the Muscoot Reservoir phosphorous TMDL is being exceeded as a consequence of existing point and non-point phosphorous inputs of kg/yr from its watershed. The Phase II report also indicates that significant reductions in existing point source load, the urban runoff load of 2,583 kg/yr, and the 7,052 kg/yr upstream loads, would have to be achieved to meet the target load.

The most conservative estimate indicates that the annual phosphorus loads from the proposed Salem Hunt Project, as shown in Table 6-9 would be increase by only 1.05 lbs/yr (2.31 kg). The 2.31 kg/yr represents only 0.019% of the total existing phosphorous load of 11,560 kg/yr from the watershed to the reservoir and only 0.08% of the urban runoff load to the reservoir. Compared to the total existing reservoir loading of 11,560 and the 2853 kg/yr urban the 3.96 kg/yr increase does not represent the potential for a significant impact on any on- or off-site water resources, including the Muscoot Reservoir. Further, a 3.96 kg/yr phosphorous load does not represent a significant load compared to the 9393 kg/yr phosphorus TMDL that could be assimilated in the 4.9 billion gallon capacity reservoir once the required phosphorous reductions are achieved through the implementation of State and City programs discussed in this DEIS.

The SWPPP for the Project has been prepared in accordance with the NYCDEP requirement to capture and treat the runoff (from disturbed areas) generated by the 2 year storm event. The SWPPP is designed to meet the New York State requirement to capture and treat the runoff from the 90th percentile rainfall event. Note that to comply with the WR&Rs, the SWPPP required for the Salem Hunt project, which is located in the phosphorous restricted Muscoot basin, also includes an analysis of pre- and post-construction phosphorus concentrations in stormwater runoff, and includes measures to capture and treat runoff from a 2-year, 24-hour storm event to further mitigate potential increases in phosphorous loading.

The Salem Hunt SWPPP complies with both NYSDEC and NYCDEP requirements and would control both erosion and sedimentation during construction and post construction increases in pollutant loading in stormwater, two potential sources of phosphorous loading in receiving waters. The implementation of the SWPPP is to be overseen by a Certified Professional Erosion and Sediment Control Specialist (CPESC)/Certified Professional in Stormwater Quality (CPSWQ). Based upon the proposed stormwater plans, no increase in phosphorous loading in the Muscoot Reservoir, or elsewhere, is anticipated.

The post-development discharge of phosphorous was determined, in part, by the application of the NYCDEP accepted methodology of calculating the high and low range of expected post-development loads based upon variable removal rates of the proposed stormwater practices as set forth in applicable State publications. The conclusions relative to pollutant loadings are based upon the NYCDEP accepted practice of comparing the calculated existing pollutant loading with the calculated high and low values of estimated post-development annual pollutant loads.

The SWPPP for the project is expected to achieve better than the calculated phosphorus removal due to the adjunct stormwater practices that have been incorporated into the project design, but not considered in the stormwater treatment calculations. These adjuncts include catch basin/drain inlet sumps, turf filter strips, and the addition of permanent pools in the stormwater basins. The stormwater basin permanent pools will include landscaping capable of removing dissolved phosphorous.

The burden for reducing current phosphorous loading to achieve the TMDL in the Muscoot Reservoir rests with the Town of North Salem and other Municipal Separate Storm Sewer System (MS4s) in the Muscoot Watershed. A program for achieving phosphorous reductions has been established in the NYSDEC draft document entitled New York City Watershed Croton Reservoir System Phase II Phosphorous TMDL Non-point Source Implementation Plan (TMDL Implementation Plan). This plan states that, for simplicity and ease of local government

administration, the plan is largely structured to use existing programs to achieve phosphorous reductions. Applicable to the Salem Hunt project, these programs include:

- NYSDEC SPDES General Permit for Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) Permit No. GP-02-02;
- Westchester County "Croton Plans";
- NYCDEP "Croton Strategy"; and,
- NYCDEP East of Hudson Water Quality Investment Funds.

The Salem Hunt Project is consistent, and complies, with the TMDL Implementation Plan and the applicable portions of the above-cited programs. Further, based on the proposed SWPPP, the Applicant believes the project will not impact the Town of North Salem's ability to achieve the established TMDL.

According to NYSDEC, a substantial part of the TMDL Implementation Plan relies on the Stormwater Management Plans (SWMPs) that MS4 operators are developing pursuant to State Pollutant Discharge Elimination System General Permit (GP-02-02). The permit now applies to each municipality within the East of Hudson portion of the New York City watershed, including the Town of North Salem, which have been designated as MS4s. The plan also relies on non-point source projects selected by Putnam and Westchester Counties and NYCDEP, and supported by NYCDEP East-of-Hudson Water Quality Investment Funds. To further help meet the TMDL, the plan also includes tasks to reduce phosphorus from agriculture, sanitary collection systems, fertilizer use and other phosphorus source controls.

In addition to the Implementation Plan, NYSDEC has developed heightened requirements for the MS4s in the East of Hudson Watershed that, if the MS4s implement as part of their SWMPs, they will be presumed to be in compliance with the TMDL strategy requirements in Part III.B.2 of GP-02-02. Part III.B.2 requires an MS4 with discharges to an approved TMDL waterbody, such as the Muscoot Reservoir, that is not meeting the TMDL stormwater (load) allocations to modify its SWMP to ensure that the reduction of the phosphorous pollutant of concern specified in the TMDL (phosphorous) is achieved. The MS4 permit requires that modifications to the SWMP be considered for each of the six minimum measures established in GP-02-02.

To assist in the development of the heightened requirements, the NYSDEC hired the nationally recognized experts in stormwater, the Center For Watershed Protection (CWP). The CWP assessed existing local programs to determine how stormwater runoff is being addressed within the East of Hudson Watershed, they evaluated the DEC's statewide Phase II MS4 Stormwater program, and provided recommendations to the NYSDEC on how it could further its Phase II program within the East of Hudson Watershed.

The NYSDEC also used recommendations provided in the "*Recommendations To The New York State Department of Environmental Conservation for The Development of its Phase II TMDL Implementation Plan*" report prepared by the Watershed Protection and Partnership Council Technical Advisory Committee, dated March 24, 2004, to develop the heightened MS4 permit requirements.

Discussions with NYSDEC during January, 2007, revealed that neither the Implementation Plan, nor the heightened MS4 requirements, which NYSDEC indicated will compliment each other in achieving the TMDL, have been issued.

Pesticides, Fertilizers

To mitigate potential impacts associated with pesticides and fertilizers in stormwater runoff, applications of these materials would meet the same State, County and local regulations as must be met by other developments in the community. The application of pesticides and fertilizers in a Town Controlled Area (wetlands, watercourses and their associated buffer) requires a permit from the Town of North Salem. A permit is required for the proposed buffer disturbance. Future pesticide and fertilizer use will be discussed in the permit. An Integrated Pest Management Plan (IPM) has been developed for the site to minimize the routine use of pesticides and fertilizers by the Condominium Association, which will have responsibility for Salem Hunt landscaping maintenance. The IPM is attached in Appendix O. Current data indicates that, if applied correctly, contemporary pesticides would not migrate to any great extent, and would break down shortly after application. Similarly, the future use of herbicides and insecticides at the site in the future is not expected to represent an adverse impact to surface water quality. Based upon the anticipated low levels of pesticides and fertilizers and the proposed stormwater treatment, no significant adverse impacts on wetlands, water bodies, or watercourses is expected.

Fecal Coliform Bacteria

Potential impacts associated with fecal coliform bacteria (FCB) in stormwater runoff are not anticipated to result from the development of the Salem Hunt Project. The low density of development, and the disposal of wastewater by a sewer system approved by the County Health Department would reduce the potential for increased coliform levels in runoff. Other possible FCB sources, including pets and waterfowl, would not be significantly greater than the existing wildlife population on site and therefore should not cause increased FCB loading.

Potential for Thermal Impacts

Thermal impacts on receiving waters, through the elimination of vegetation shade trees along stream banks and addition of impervious surfaces in upstream drainage areas, are an important concern in areas where there is a known natural population, or annual stocking, of cold water fish species (i.e., trout). Increases to average annual water temperature may constrain a cold water fishery.

Stormwater management techniques which may be used to limit the temperature rise of runoff water include decreasing retention time and the exposure of stormwater to the sun. Following construction stormwater discharged from the Salem Hunt site would be conveyed through sections of underground piping prior to discharge to the receiving wetlands through a level spreader. This would allow time for dissipation of collected heat in the water. Further, the stormwater management basins are located to minimize the potential for solar heating of detained stormwater, to the extent possible and are designed to limit detention times so that standing water has less of a chance to absorb surface heat.

Stormwater Basin 1.1, located at the western property line is surrounded by mature trees on three sides, including on the southern exposure. This is the primary stormwater detention basin

for the western drainage area. The secondary Basin 1.2, will be planted with trees and shrubs on the berm and sedges and grasses at the interior to shade the stormwater (see Drawing SP-2.1 and SP-2.2 Layout and Landscaping Plan). While there is less opportunity to save existing vegetation at the perimeter of Basins 2.1 and 2.2 at the eastern portion of the site, the basin berms will be planted with trees and shrubs and the interior planted with grasses to reduce solar heating. Stormwater in the basins would either percolate into soils or be conveyed through pipes and a level spreader to reduce water temperature.

By establishing vegetation in the stormwater management basins, as proposed, the basins would be shaded to reduce the exposure of stormwater to direct sunlight and the warming of the water (see Drawing SP-2.1 and SP-2.2 Layout and Landscaping Plan).

6.3 Mitigation Measures

Avoidance, Minimization and Mitigation

The Proposed Action has been designed to avoid any, and all, encroachment into on- or off-site wetlands, watercourses, or other surface water resources. Potential impacts associated with the proposed minor encroachments into the wetland buffers have been avoided, minimized and mitigated. Further, mitigation of indirect impacts on water resources associated with stormwater has been provided in the form of the Salem Hunt SWPPP, which has been carefully designed to comply with applicable NYSDEC and NYCDEP regulations and is incorporated into the Proposed Action.

Based upon the absence of wetland and watercourse encroachment, and the measures that have been incorporated into the proposed action to avoid impacts, no additional mitigation measures beyond those incorporated into the project design are proposed. The absence of additional mitigation measures is based upon the absence of encroachments into any wetland and the determination that the wetlands currently provide limited functions. The project will result in no significant impacts to identified wetland functions. Since no disturbance of any wetland is proposed and no authorization from the Corps is required to implement the project, the Applicant expects that further consultations with the Corps would not result in any requirement for any compensatory mitigation of wetland impacts.

The creation of stormwater basins, graded and planted in a manner that is consistent with the open marsh portions of the existing wetlands, would mitigate potential impacts on the controlled area. The stormwater basins would be planted with herbaceous wetland vegetation, and provide wetland habitat as well as control of stormwater quality and quantity. While no direct credit is being taken for these basins as wetland creation areas, they would in fact perform several wetland functions and result in a net increase of wetland function and benefits on the site following construction. A further discussion of buffer plantings is provided below.

Town Buffer and State Adjacent Area Impacts

The Proposed Action includes no encroachment into any wetland or other surface water resource, and only minimal, encroachments into the buffer of Town regulated Wetlands A, B, and C, and the buffer of NYSDEC regulated Wetland D, with incidental grading, SMPs, water supply facilities and access road.

As described herein, the project has been designed to avoid all encroachment into wetlands, and minimizes encroachments into regulated buffers to the fullest extent practical. Potential adverse impacts associated with wetland buffer encroachment will be mitigated by the replanting of trees, shrubs and herbaceous vegetation, where feasible, such as in the proposed stormwater basins. The stormwater basins which encroach into the buffer for Wetland B and C, will be planted with a variety of wetland trees and shrubs, as shown in Drawing D-3 Detail. The stormwater basin floors will be planted with a variety of wetland emergent rushes and grasses. These native species indigenous to the existing wetland buffers would be utilized, and a maintenance and monitoring plan would be prepared to ensure long term success of the plantings. Wetland mitigation planting will not be feasible in a 10 to 25 foot strip of lawn at the rear of Buildings 7, 8, 11, 12, 13 and 14. Wetland mitigation planting in the buffer area would enhance both the wetland and regulated buffers.

The limits of encroachment into the buffer for Wetland A will be demarcated with the installation of a low retaining wall behind Buildings 7 and 8. The limits of encroachment into the buffer for Wetlands B and C will be demarcated with a the split rail fence. The retaining wall and fence will indicate that no disturbance, vegetation removal or landscaping activity will occur beyond the wall and fence lines. Since future landscaping and property maintenance will be done by the established Condominium Association, there will be no future encroachment into the wetland buffers. In addition, undeveloped portions of the site, including all wetlands and wetland buffers, will be permanently preserved by the Applicant through a conservation easement.

The site development plans for Salem Hunt have been carefully designed to avoid and minimize impacts to wetland, the on-site watercourse, and off- site water resources. As provided in Table 6-6, no direct wetland impacts would result from the Proposed Action and only 0.80 acres of 8.89 acres of wetland buffer on the property would be disturbed. Wetland buffer mitigation plantings are described above.

Integrated Pest Management

Integrated Pest Management (IPM) techniques will be employed at Salem Hunt in accordance with the IPM Plan included with this DEIS (see Appendix O) to reduce environmental impacts, and to optimize, and diversify, pest control measures. The selection of optimal management strategies will vary depending on site requirements and will change as new practices and products become available.

The Salem Hunt Condominium Association will be established to maintain the integrity of the buildings and grounds, to protect the health and safety of the residents and general public, to maintain a viable living environment, and to reduce impacts on the natural resources. Following are the goals of the IPM techniques:

- minimize pesticide exposure to residents and the environment;
- manage pests and the environment so as to balance costs, benefits, public health, and environmental quality;
- reduce the use of pesticides through proactive application of non-chemical management practices; by maximizing spot treatments and eliminating broadcast treatments; by making applications only where development of a pest has exceeded an established tolerance threshold as determined by routine monitoring; by replacing the use of

conventional pesticides through favoring products that minimize risks to human health and safety and are least-toxic to the watershed and the environment in general;

- prohibit regularly scheduled broadcast applications of pesticides; and
- reduce phosphorus pollution caused by the excessive use of fertilizers and roadway deicers containing phosphorus.

Stormwater Pollution Prevention Plan

The project specific Stormwater Pollution Prevention Plan (SWPPP) for the Salem Hunt Project has been developed to mitigate potential adverse impacts on surface water resources, including wetlands, from post development changes in stormwater discharges. The SWPPP includes an Erosion and Sediment Control Plan designed to prevent sedimentation during construction (see Appendix F). The SWPPP also includes a Stormwater Management Plan that provides measures to mitigate potential impacts from post construction changes in the volume, rate of discharge, as well as increased pollutant loading in stormwater.

The project specific SWPPP has been prepared in consultation with the following resources, where appropriate: *NYSDEC Reducing the Impacts of Stormwater Runoff from New Development*, April 1992, *NYSDEC Technical Operation and Guidance Series Document (5.1.8) (Management Guidelines for New Development)*; *New York Guidelines for Urban Erosion and Sediment Control and Standards and Specifications for Erosion and Sediment Control*; *New York State 2003 Stormwater Design Manual*, and *Westchester County Best Management Practices*. As described above, the Salem Hunt SWPPP mitigates potential adverse impacts to water resources from the project, both during and after construction.

The stormwater management component of the SWPPP mitigates potential adverse impacts to watercourses and wetlands by attenuating post-development increases in the peak rates of stormwater discharges, and by reducing post construction increases in pollutant loading. Refer to Appendix F, Salem Hunt SWPPP for additional detail concerning proposed measures to mitigate stormwater related impacts.

The proposed Erosion and Sediment Control Plan component of the SWPPP was developed specifically for the Salem Hunt project and will provide both temporary controls during construction and permanent controls to remain in place following construction. These measures will adequately mitigate potential impacts to water resources resulting from erosion and sedimentation.

7.0 GEOLOGY, SOILS AND TOPOGRAPHY

7.1 Existing Conditions

Geology

The property lies on the border of the Hudson Highlands and the Manhattan Prong, which are part of the New England uplands physiographic province. In southern New York, these provinces are defined by a series of ridges and valleys with a large variety of rock types. The project site is underlain by complexly folded and faulted sequences of metamorphosed rock. The area of northeastern Westchester County in which the property is located is made up of Precambrian and Paleozoic sedimentary and igneous rock. Specifically, the project site is underlain by three specific bedrock types: the Manhattan formation, along the northern boundary, made up by pelitic schists and amphibolite, Inwood Marble, along the central portion of the property, made up of dolomite marble, calc-schist and quartzite, and Fordam Gneiss along the southern portion of the property.

The surficial geology consists of a relatively thin cover of glacial till, which overlies the bedrock. Due to areas of exposed bedrock, sporadically observed throughout the site, soil cover is expected to be relatively thin or 0 to 20 feet over much of the site. The depth of unconsolidated material is expected to be thicker in the wetland areas in the eastern portion of the site, and the northwestern and southwestern corners of the property.

Topography

The topography on the property is primarily rolling with the site generally sloping downward towards the northeastern corner and the eastern portion of the site. The topography of the site is dominated by a broad slope which slopes from higher elevations in the southwestern property corner to lower elevations in the northeastern corner of the property and the eastern portion of the property. The topography on the property is consistent with the rolling topography found on surrounding land. The topography surrounding the property is characterized by generally north and south trending hills with valleys and low lying areas between the hilltops. The local topography is shown in Figure 7-1, Local Topography.

Grades on the site rise from approximately 500 feet above sea level on the northeastern boundary along Route 121 or June Road to approximately 600 feet above sea level on the southwestern corner boundary. A small area of generally level topography is found in the northeastern corner of the site, within the New York State Department of Conservation (NYSDEC) wetland designated as L-32. The majority of the property consists of gently sloping topography which slopes from southwest towards the northeast.

As described above, the highest elevations on-site are found in the southwestern corner of the property, with an elevation of approximately 600 feet. The lowest elevations on the site are found in the northeastern corner of the site in NYSDEC wetland L-32, with an elevation of approximately 500 feet. Elevations vary approximately 100 feet across the site. On-site topography and slopes are shown in Figure 7-2 Existing Slopes Map. Existing slope categories are defined on the figure and shown in Table 7-1, below.

Table 7-1 Existing Slopes	
Slope Category	Acres
0% to 15%	36.3 acres
15% to 25%	2.6 acres
>25%	1.1 acres
Total Site	40.0 acres
Note: Approximate Total Site Acreage: 40.0 acres Source: Insite Engineering Surveying & Landscape Architecture, PC, 2006	

Soils

The soils on the Property were identified using the soil classifications of the United States Department of Agriculture (USDA) Soil Conservation Service (SCS), as described in the Soil Survey of Westchester and Putnam Counties. The Property is underlain by seven (7) soil types: Charlton loam (ChB & ChD), Ridgebury loam (RdB), Sutton loam (SuB), Sun loam (Sh), Pompton silt loam (Pw), Woodbridge loam (WdB), and Leicester loam (LcB). The distribution of the soil types on the property is shown on Figure 7-3, Soils Map.

The characteristics of each of the soil series identified on this property are described below generally in the order of their prevalence on the Property.

Charlton loam (ChB and ChD)

This soil unit is very deep and well drained and is located on hilltops and parts of hillsides. Slopes range from 2 to 8 percent (ChB) and 15 to 25 percent (ChD). The water table is generally found at a depth of more than 6 feet throughout most of the year and the available water capacity is moderate. The permeability is considered moderate or moderately rapid (0.6-6.0 inches/hour) throughout the soil profile.

The Charlton loam soil is characterized by a 2 to 8 percent slope range (ChB), a medium surface runoff rate and a slight erosion hazard. The Charlton loam soil with a 15 to 25 percent slope range has a rapid surface runoff rate and the erosion hazard is severe. Depth to bedrock is generally more than 60 inches below the ground surface. Charlton loam soil is not considered a hydric soil by the USDA National Resources Conservation Service (NRCS).

Charlton loam soils are mapped along the western boundary of the property and throughout the central portion of the property towards the southeastern property corner, as shown in Figure 7-3 Soils Map.

Ridgebury loam (RdB)

The Ridgebury soil unit is very deep and poorly drained as well as somewhat poorly drained. It can be found in the lower parts of hillsides in upland areas and along small drainage ways. Slopes in this soil range from 3 to 8 percent. The surface runoff rate is medium and the erosion hazard is slight. The water table is generally found within a depth of 1.5 feet from November

through May and the available water capacity is moderate. The permeability is moderate or moderately rapid (0.6-6.0 inches/hour) in the surface layer and subsoil and slow or very slow (<0.02 inches/hour) in the substratum. Ridgebury loam is not considered a hydric soil by the USDA NRCS. Depth to bedrock is generally more than 60 inches below the ground surface.

Ridgebury loam soils are mapped along the northern boundary of the property as well as a small portion of the southwestern corner of the site, as shown in Figure 7-3 Soils Map.

Sutton loam (SuB)

This soil unit is gently sloping, very deep and moderately well drained. It is found on concave foot slopes and along drainage ways in the uplands. Slopes in this soil range from 3 to 8 percent. The surface runoff is medium and the erosion hazard is considered moderate. The water table is found 1.5 to 2.5 feet below the ground surface from November to April and the available water capacity is high. The permeability is moderate or moderately rapid (0.6-6.0 inches/hour) through the entire profile. Sutton loam soils are not considered a hydric soil by the USDA NRCS. Depth to bedrock is generally more than 60 inches below the ground surface.

Sutton loam soils are mapped in the central portion of the property, as shown in Figure 7-3 Soils Map.

Sun loam (Sh)

This soil unit is very deep and poorly drained or very poorly drained. It can be found in small depressions and along drainage ways on till plains. Slopes range from 0 to 3 percent, making this soil unit nearly level. The surface runoff rate is very slow, and the erosion hazard none to slight. The water table is 1.0 foot above to 0.5 foot below the ground surface from November through April. The permeability is moderate (0.6-2.0 inches/hour) in the surface layer and slow or very slow (<2.0 inches/hour) in the subsoil and substratum. Sun loam soils are considered to be a hydric soil by the USDA NRCS. Depth to bedrock is generally more than 60 inches below the ground surface.

Sun loam soils are mapped along the entire eastern boundary of the property, as shown in Figure 7-3 Soil Map.

Pomptom silt loam, loamy substratum (Pw)

This soil unit is very deep, moderately well drained and somewhat poorly drained. It can be found in flat areas near streams and on small plains in lowlands. Slopes range from 0 to 3 percent, making this soil unit nearly level. The surface runoff rate is slow, and the erosion hazard slight. The water table 0.5 foot to 2.0 feet below the ground surface from October through May and the available water capacity is moderate. The permeability is moderate or moderately rapid (0.6-6.0 inches/hour) in the surface layer and subsoil, rapid or very rapid (>6.0 inches/hour) in the upper part of the substratum, and moderate or moderately rapid (0.6-6.0 inches/hour) in the lower part of the substratum. Pomptom silt loam soils are not considered to be a hydric soil by the USDA NRCS. Depth to bedrock is generally more than 60 inches below the ground surface.

Pomptom silt loam soils are mapped in the northeastern corner of the property, as shown in Figure 7-3 Soils Map.

Woodbridge loam (WdB)

This soil unit is very deep and moderately well drained. It can be found on the lower parts of hillsides in the uplands area. The slopes range from 3 to 8 percent, making this soil unit gently sloping. The surface runoff rate is medium, and the erosion hazard moderate. The water table is generally found 1.5 feet to 2.5 feet below the ground surface from November to May and the available water capacity is moderate. The permeability is moderate (0.6-2.0 inches/hour) in the surface layer and subsoil and slow or very slow (<0.02 inches/hour) in the substratum. Woodbridge loam soil is not considered a hydric soil by the USDA NRCS. Depth to bedrock is generally more than 60 inches below the ground surface.

Woodbridge loam soils are mapped in a small area within the southwestern corner of the property, as shown in Figure 7-3 Soils Map.

Leicester loam (LcB)

This soil unit is very deep, somewhat poorly drained and poorly drained. It can be found on the lower part of hillsides and along small drainage ways in bedrock-controlled areas. The slopes range from 3 to 8 percent, making this soil unit gently sloping. The surface runoff rate is medium, and the erosion hazard moderate. The water table is found at a depth of 1.5 feet below the ground surface from November through May and the available water capacity is moderate. The permeability is moderate or moderately rapid (0.6-6.0 inches/hour) in the surface layer and subsoil and moderate to rapid (0.6-20 inches/hour) in the substratum. Leicester loam soils are not considered to be a hydric soil by the USDA NRCS. The depth to bedrock is generally found more than 60 inches below the ground surface.

Leicester loam soils are mapped in a small area within the southeastern corner of the property, as shown in Figure 7-3 Soils Map.

The soils map, prepared by U.S. Department of Agriculture, Soil Conservation Service shows a symbol described as "very stoney spot" in the west-central portion of the site and a symbol designating a "gravely spot" in the southwest corner of the site.

The "very stoney spot" is mapped in the Ridgebury loam soils (RdB). These soils are described as a very deep and poorly drained as well as somewhat poorly drained soil, with bedrock generally found below 60 inches. Soil boring B-10 was drilled in the vicinity of the mapped "very stoney spot" and the boring log describes fine to medium sand and silt to a depth of 24 feet. Little fine to coarse gravel was described at a depth of 15 feet (see Appendix I - Soil Testing Results).

The "gravely spot" is mapped in an area of Charlton loam soils (ChB). These soils are described as very deep and well drained with bedrock generally found below 60 inches. Soil Boring B-6 was drilled in the vicinity of the mapped gravely spot. The boring log describes fine to medium sand and silt to a depth of 15 feet. A trace of fine gravel was described in the three soil samples collected (see Appendix I - Soil sampling results).

The Soil Conservation Service maps are assembled from several sources including field testing, observations regarding bedrock, vegetation and slopes, as well as aerial photographs. It is possible that the rocky and gravely spots described, were incorrectly mapped or identified. Recent site specific soil borings and test pits have not identified any very stoney spots or gravely spots on those portions of the site proposed for development.

Soil characteristics for individual soils mapped on the site are provided in Table 7-2, below. Also tabulated are the type and degree of soil limitations that may affect typical building site development. This information has been compiled from data in the SCS Soil Survey of Putnam and Westchester Counties. Development limitations are considered *slight* where soil properties are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties are less favorable for the indicated use and special planning, design or maintenance may be needed to overcome or minimize the limitations; and *severe* if soil properties require special design and will necessitate increased costs to construct and possibly increased maintenance.

Table 7-2 Soil Characteristics and Limitations						
Soil Series	Hydrologic Group ¹	Permeability (in./hr.)	Erosion Factor	Potential Limitations for:		
			K ²	Roads, Parking Lots	Buildings w/ basements	Shallow excavations
Charlton loam (ChB/ChD)	B	0.6-6.0 (0-60" deep)	0.24 (0-60" deep)	-----ChB----- Slight----- -----ChD----- Severe: slope.	-----ChB----- Slight----- -----ChD----- Severe: slope.	-----ChB----- Slight----- -----ChD----- Severe: slope.
Ridgebury loam (RdB)	C	0.6-6.0 (0-26" deep) <0.2 (26-60" deep)	0.20 (0-8" deep) 0.32 (8-26" deep) 0.24 (26-60" deep)	Severe: wetness, frost.	Severe: wetness.	Severe: wetness.
Sutton loam (SuB)	B	0.6-6.0 (0-60" deep)	0.24 (0-9" deep) 0.28 (9-26" deep) 0.24 (26-60" deep)	Severe: frost action.	Severe: wetness.	Severe: wetness.
Sun loam (Sh)	D	0.6-2.0 (0-9" deep) <2.0 (9-60" deep)	0.28 (0-9" deep) 0.20 (9-60" deep)	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness.
Pompton silt loam (Pw)	B	0.6-6.0 (0-28" deep) 0.2-2.0 (28-60" deep)	0.24 (0-60" deep)	Severe: frost action.	Severe: flooding, wetness.	Severe: cutbanks cave, wetness.
Woodbridge loam (WdB)	C	0.6-2.0 (0-29" deep) <0.2 (29-60" deep)	0.24 (0-12" deep) 0.32 (12-29" deep) 0.24 (29-60" deep)	Severe: frost action.	Severe: wetness.	Severe: wetness.
Leicester loam (LcB)	C	0.6-6.0 (0-26" deep) 0.6-2.0 (26-60" deep)	0.24 (0-8" deep) 0.28 (8-26" deep) 0.24 (26-60" deep)	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness.

¹ Hydrologic groups are used to estimate runoff from precipitation; they range from high infiltration (A) to low infiltration (D).
² Erosion Factor K indicates susceptibility to sheet and rill erosion (expressed in tons/acre/year). K values range from 0.05 to 0.69. (0.05 being least susceptible).
 Source: Soil Survey of Putnam and Westchester Counties, New York, USDA SCS

As noted in Table 7-2, the SCS identifies these soils as possessing potential limitations for development of roads, buildings with basements and shallow excavations due to their

characteristics. Such limitations require planning consideration prior to development. The presence of these constraints does not mean the land cannot be developed, nor are they a rating of construction potential. The ratings reflect the difficulty and relative costs of corrective measures that may be necessary (e.g. erosion controls, footing drains or other drainage improvements) for development. The limiting characteristics of these soils may be overcome by careful project planning, design and management.

As provided above, Charlton loam soils (ChB) are rated with slight limitation for the construction of pavements and local road, buildings with basements, and shallow excavations for utilities. These are optimal soil conditions for construction and this soil is located throughout the central portion of the property where much of the development is proposed. Charlton loam soils (ChD), which have a steep slope range have severe limitations for construction of pavements and local road, buildings with basements, and shallow excavations for utilities due to slopes. This construction limitation can be overcome with proper construction methods, but no construction is proposed in ChD Charlton loam soils.

Sun loam (Sh), Sutton loam (SuB), Ridgebury loam (RdB), Pompton silt loam (Pw), Woodbridge (WdB), and Leicester Loam (LcB) are rated with severe limitations for the construction of pavements and roads, buildings with basements, and shallow excavations for utilities, due to wetness in the soil profile. Construction in these soils may require provisions to address seasonal soil wetness, thus adding to engineering requirements and construction costs. Standard construction techniques and methodologies will be utilized such as underdrains, footing drains, and select and structural fill in order to offset any poor soils and wet conditions encountered during construction. The proposed action results in construction in only the Pompton silt loam (Pw), Ridgebury loam (RdB) and Sutton loam (SuB). The side slopes in the cut and fill areas within the proposed stormwater treatment system, proposed within these soil types, have been designed such that the seasonal groundwater will not adversely affect the slopes. The other soils discussed, Sun loam, Woodbridge, and Leicester soils, are not proposed for development.

The subsurface sewage treatment system (SSTS) area or septic area is proposed in a level area located west of the residential development (see Figure 2-4 Proposed Site Plan). Several borings and test pits were completed in this area as well as the proposed stormwater basins by both the project engineer, Insite Engineering Surveying and Landscaping Architecture, PC. (Insite) and by GeoDesign, Inc. (GeoDesign). Insite completed a subsurface investigation in July 2007, which were witnessed by the Westchester County Department of Health (WCDOH) and/or New York City Department of Environmental Protection (NYCDEP).

One investigation involved six (6) deep holes (SW-1 to SW-6) conducted in the proposed stormwater basins, shown on Figure 7-4 Soils Investigation Map as well as the Grading and Utility Plan (Drawing SP-3.1 and SP-3.2). These test holes were conducted by Insite and witnessed by NYCDEP. They were completed to depths of between 84 inches (7 feet) to 120 inches (10 feet). No bedrock was encountered in any of the test holes. Groundwater was observed in SW-2 at a depth of 8 feet below the ground surface and SW-4 at a depth of 6.5 feet below the ground surface. The deep hole testing data was used to locate the stormwater basins and avoid rock excavation for their construction. The logs for the deep holes are attached in Appendix I.

The other investigation involved thirty-one (31) deep holes/perc test holes (D-1 to D-31) conducted in the proposed SSTS area. These locations are shown on Figure 7-4 Soils Investigation Map. These holes were conducted by Insite and witnessed by both WCDOH and

NYCDEP. They were completed to depths between of 84 inches (7 feet) to 104 inches (8.7 feet). Bedrock and groundwater were not observed in the deep hole/perc test holes. The logs for these deep holes are attached in Appendix I.

GeoDesign used the deep test boring data completed by Insite to perform further test borings, install observation wells, and excavate test pits that were completed for their Hydrogeology Investigation (see Appendix J). GeoDesign completed fourteen (14) test borings identified as B-1 through B-14, in which 2-inch observation wells were installed. This work was completed in November, 2005. These borings were completed to refusal or bedrock. Auger refusal, or depth to bedrock ranged between 15 ft and 26 feet below the ground surface in B-6 and B-2, respectively. In November 2005, shallow groundwater depths ranged between 17.6 feet and 2.0 feet below the ground surface in B-5 and B4, respectively. Shallow groundwater was also measured in March, 2006 at depths ranging between 19.8 feet and 2.7 feet below the ground surface in B-5 and B-12 respectively.

7.2 Potential Impacts

Slopes Impacts

Impacts to slopes is directly related to the potential for soil erosion during construction. A Slopes Disturbance Map is shown in Figure 7-4. The majority of grading for the proposed project will occur on the most level portion of the subject site, in the southern and central portion of the property. Due to steeper slopes bordering the eastern edge of the site above the wetland, impacts to steeper slopes will be required for the site entrance, as shown in Figure 7-5. Impacts to steep slopes of 25 percent or greater will occur for the entrance drive. The remainder of the steep slopes disturbance (15 to 25 percent slopes) is very limited, and will mostly occur in the area of the proposed septic system.

A comparison of slopes disturbance is provided in Table 7-3 Slopes Disturbance Summary.

Table 7-3 Slopes Disturbance Summary	
Slope Category	Approximate Acres Disturbed
0% to 15%	19.1 acres
15% to 25%	1.0 acres
>25%	0.1 acres
Total Site Disturbance	20.2 acres
Note: Approximate Total Site Acreage: 40.0 acres Source: Insite Engineering Surveying & Landscape Architecture, PC, 2006	

As shown in Figure 7-4 and the table above, the project was designed to minimize impacts to steep slopes and the development is located on the most level portions of the property. Exposing soils on steep slopes during construction increases the potential for erosion in the short term. the potential for soil erosion on these limited areas of steep slopes will be mitigated by adherence to soil erosion and sedimentation control practices described below. Following construction, soil erosion from the property is expected to be minimal since developed areas will

be stabilized with lawn and landscaping, and storm water management features will be fully functional.

Engineered slopes are described in the construction sequencing plan provided with the Site Plan drawings (see Drawing SP-4.1 Overall Sequencing Plan). There are no slopes proposed to be greater than 2 on 1. No rip-rap stabilization is proposed for the project.

Soils Impacts

Grading and recontouring of soils is required for the construction of roads, home sites, and the four (4) storm water detention basins. Areas of proposed grade changes for the project development are shown in the grading plans attached (see Drawings SP-3.1 and SP-3.2). The total area of grading or site disturbance is estimated to be 20.2 acres, or 50.5 percent of the site. Therefore, 19.8 acres of the site, or 49.5 percent will remain undisturbed.

The impacts to soils associated with this work are temporary in nature, relating to erosion hazards. Soils that will be covered with impervious surfaces (totaling 5.9 acres) will be permanently disturbed. The remainder of the disturbed area that does not become impervious will be graded, seeded and landscaped, including the storm water management basins.

The soil types that will be seeded, landscaped and will include the storm water basins, are either Pompton silt loam (Pw), Charlton (ChB), Ridgebury (RdB), and Sutton loam (SuB). The storm water basins are primarily proposed to be located within Pompton soils (Pw), Ridgebury (RdB), and Charlton soils (ChB). These soils have been tested, as stated above in Section 7.1 and bedrock was not observed. Groundwater was observed in two of the test holes (SW-2 and SW-4, at 8 feet and 6.5 feet respectively). According to the project engineer, the proposed stormwater management basins have been located and designed to allow for the observed groundwater and seasonal variations in groundwater will not adversely affect the basins.

The majority of residential development including parking areas, road construction, utility lines and structures will occur within soils mapped as Charlton loam (ChB) and Sutton loam (SuB). Only limited grading for the access road will occur in Pompton loam, Ridgebury (RdB) and Charlton loam (ChD) and no grading will occur within the Woodbridge (WdB) and Liecester (LcB) soils. As stated above in Section 7.1 Existing Conditions, there are severe limitations for the development of roads, parking areas, buildings and utility trenches for all soils except the Charlton loam (ChB) soils. The limitations discussed in Table 7-2 can be overcome with proper engineering and construction methods that will remove subsurface water from excavations and sub-pavements to eliminate water damage or frost damage.

The wastewater report prepared by Insite indicates a projected wastewater design flow of 19,500 gallons per day (gpd) for the proposed residential development (see Appendix K). If the proposed project utilizes water saving fixtures, a 20 percent reduction to the estimated wastewater design flow can be projected, resulting in 16,000 gpd. As stated above, in Section 7.1, extensive testing was completed in the area of the proposed SSTS or septic area. This testing is described in the Hydrogeology Investigation completed by GeoDesign, (see Appendix J). The report concludes that the proposed SSTS area would be able to support an estimated wastewater flow of 16,000 gallons per day. Further information regarding the SSTS area is discussed with in Section 10.0 Utilities.

Landscaping is projected to stabilize all disturbed soils that are not covered with impervious surface such as buildings, roads, and parking areas. A landscaping plan is attached to this

document as Drawing 2.1 and 2.2. The soils projected to be disturbed and stabilized with landscaping are Charlton loam (ChB), Sutton loam (SuB) and a small portion of Ridgebury soils (RdB) and Pomptom loam (Pw). The limitations for these soils to support lawns and landscaping are slight for the Charlton loam (ChB) and moderate due to wetness for Sutton loam (SuB). The Ridgebury soils (RdB) and the Pomptom loam (Pw) soils also have a severe limitation due to wetness for lawns and landscaping. These limitations can be managed by the selection of wetness tolerant plants.

The proposed residential project does not intend on disturb existing on-site wetlands, and therefore wetland mitigation is not proposed. A more in-depth wetland discussion is provided in Section 6.0. The proposed project plan does not include the use of retaining walls. A discussion of the suitability of soils for both wetland mitigation and the use of retaining walls is not appropriate.

The suitability for soils to support wells is applicable to the Salem Hunt project since the water supply wells for the project are drawing from a bedrock aquifer. Further discussion of groundwater and the suitability of these wells is discussed in Section 5.0.

An estimate of the project earthwork has been completed by the project engineer. The areas anticipated to be disturbed are shown in Figure 7-6. The grading would involve approximately 48,684 cubic yards (cy) of earth cut and 27,176 cy of fill. This results in approximately 21,507 cubic yards of excess material that will required transportation and disposal off-site. The volume of excess material is primarily the result of cuts required for the construction of the access road and for the residential foundations on the property.

Geology Impacts

Based upon the test pits and monitoring wells installed on the property, no blasting or rock removal expected for the proposed residential development. Therefore, no impact to geology is anticipated.

7.3 Mitigation Measures

Soil Erosion and Sediment Control Plan

Erosion and sedimentation will be controlled during the construction period in accordance with a Soil Erosion and Sediment Control Plan developed specifically for this site and this project (see Drawings SP-4.1, 4.2, 4.3 and D-2 at the rear of this document). The plan has been developed by the project engineer Insite. The plan addresses erosion control and slope stabilization. This plan was developed in accordance with the Erosion and Sediment Control Guidelines in the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities (Permit No. GP-02-1), the *Westchester County Best Management Practices Manual for Erosion and Sediment Control (1991)* and *New York State Standards and Specification for Erosion and Sediment Control (2005)*. The plan includes limitations on the area of disturbance, limitations of the duration of soil exposure, criteria and specifications for placement and installation of erosion control devices, and a maintenance schedule.

Temporary or short-term sedimentation and erosion control facilities will be installed and maintained during the construction phase of the proposed project. Temporary methods include a stabilized construction entrance, silt fencing barriers, storm drain inlet protection, and sediment basins.

The construction entrance will be constructed at the entrance to the site, as shown on the plan. The details of the construction entrance are described on Drawing D-2. A construction entrance is installed to prevent the tracking of any on-site debris such as soil onto area roads. In dryer periods, the entrance and any exposed areas will be wet with sprinkler trucks to prevent the transport of dust to adjoining areas.

Silt fences or barriers will be installed at the toe of all disturbed slopes. They will also be installed around catch basins, drain inlets, and soil stock pile areas. These barriers will inhibit any silt and sediment from migrating with stormwater runoff as well as help reduce the rate of stormwater runoff by creating filters. The silt fences should prevent any silt or sedimentation from entering the stormwater collection system. The stormwater detention basins will also act as temporary sediment basins during the construction of the access road and the utilities. The stormwater will be directed towards these four (4) proposed basins. They will be sized in accordance with New York Guidelines for Urban Erosion and Sediment Control and the New York State Standards and Specifications for Erosion and Sediment Control (2005).

Permanent or long-term erosion and sediment control facilities will be installed and maintained after the completion of the construction phase of the proposed project. These facilities are relatively maintenance free and will only require periodic inspections. Permanent methods are accomplished by diverting stormwater runoff from steep slopes, controlling and reducing stormwater runoff velocities as well as volumes, and surficial stabilization.

Following construction, sediment and debris will be removed from the temporary sediment basins. These basin will then be excavated to their final grade and dimension and stabilized with stormwater vegetation as shown on the plans. Rip rap will be used at the discharge outlets to reduce runoff velocities to the receiving water bodies to minimize erosion potential. Landscaping will be the primary method of permanent stabilization and stormwater runoff control. The vegetation will control the volume and velocity of the runoff by providing a filter medium. Seeding is scheduled to occur April 1 through May 15 as well as August 15th through October 15th to maintain the proposed lawn area.

Best Management Practices (BMPs)

The principle objectives of the Soil Erosion and Sediment Control Plan are the following:

- divert clean surface water before it reaches the construction area;
- control erosion at its source with temporary and permanent soil protection measures;
- capture sediment-laden runoff from areas of disturbance and filter the runoff prior to discharge; and,
- decelerate and distribute storm water runoff through natural vegetative buffers or structural means before discharge to off-site areas.

These objectives will be achieved by utilizing a collective approach to managing runoff, i.e. Best Management Practices (BMPs).

Divert clean runoff - Diversion of runoff from off-site or stabilized areas will be accomplished through surface swales and erosion control barriers (silt fences) in order to keep clean water clean.

Time grading and construction to minimize soil exposure - To the extent practical, the development will be phased to limit the area of disturbed soil at any particular time, but in no case more than 14 days after the construction activity in that portion of the site has ceases. One phase of construction, for example, will remain undisturbed or temporarily stabilized until the preceding phase is substantially complete. The Overall Phasing Plan (Drawing SP-4.1) details the five (5) proposed construction phases and their sequence.

Retain existing vegetation wherever feasible - Silt fencing will be used to physically define the limits of work. Wooded and wetland areas not to be developed (regraded), will be retained in the existing condition until the developed areas are completed and stabilized. Substantial buffers of existing vegetation also will be provided along the perimeter of the site and near existing wetland areas.

Stabilize disturbed areas as soon as possible - In areas where work will not occur for periods longer than two weeks, soil stabilization by hydroseeding or mulching will be completed on those areas of exposed soil. Following completion of grading operations, level areas will be immediately seeded and mulched. Sloped areas, such as fill slopes may be seeded or stabilized depending upon weather conditions at the time of carrying out the work.

Maintain low runoff velocities - To protect disturbed areas from stormwater runoff, silt fencing and/or soil diversion berms and channels will be installed wherever runoff is likely to traverse newly exposed soil. Immediately following the clearing and stripping of topsoil, rough grading for the temporary and permanent swales and ponds will take place. The swales will direct runoff so that it can be checked or impounded.

Trap sediment on-site and prior to reaching critical areas such as wetlands - Silt fences, hay bale check dams, filter strips, ponds, sediment traps (in areas where no ponds are proposed), and catch basin filters will be used to either impound sediment-carrying runoff and or to filter the runoff as it flows through an area. Silt fencing, augmented by haybale barriers installed on the upgradient side of the silt fencing, will be used wherever land disturbance occurs within 50 feet of wetlands. A stabilized construction entrance will be installed at the single construction entrance to prevent construction vehicles from tracking soil onto public roadways. All temporary erosion control devices will be installed prior to the commencement of construction. The permanent storm water management systems will be installed in conjunction with the residential construction.

Establish a thorough maintenance and repair program - Erosion control measures will be inspected on a daily basis by the owner's field representative (OFR) particularly prior to and following storms, and repaired as needed to ensure that they function properly. In addition to inspections by Town of North Salem representatives, the OFR will be responsible for monitoring and maintaining the soil erosion and sedimentation controls.

Assign responsibility for the maintenance program - The responsibility for the monitoring and maintenance of the Erosion Control Plan is detailed in the project specifications and construction drawings.

8.0 CULTURAL RESOURCES

8.1 Visual Resources and Community Character

8.1.1 Existing Conditions

The project site is located in a setting of rolling topography and light development, where views of the landscape are limited by the nearby hills, vegetation and curving roadway corridors. The project site is generally not visible from areas surrounding the property to the west and southwest due to the existing topography. The project site is not located within any area of particular visual importance specifically identified in the Town of North Salem Comprehensive Master Plan.

A visual resources survey was conducted in the project area to identify locations in the vicinity where the project site may be visible from roads and public properties. The extent of the survey was determined by inspection of a US Geological Survey (USGS) topographic map, which reveals the potential visibility of the project site based on topography alone. Initial analysis of mapping identified the *potential viewshed*¹ of the proposed project, which is the study area depicted in Figure 8-1. The field surveys conducted on July 6, 2006, and January 16, 2007, refined this assessment based on existing factors that limit the actual visibility of the site, accounting for topography, vegetation, and buildings. The field survey identified the *actual viewshed* from specific locations in the site vicinity where the site and the proposed project would be visible. Since the vegetation was in full-leaf conditions at the time of the first survey, the second field survey during off-leaf conditions was also conducted for the visual analysis. Leaf conditions were determined to have very little impact on the ability to see the site from most of the surrounding locations due to the existing topography.

The field survey included identification of prominent land forms, land cover types, and the visual character of the site and local area. The survey also investigated potential views looking into the site from public roads and facilities, and photographs were taken from critical locations (see Figure 8-2, Key Map to the Visual Assessment).

Stone Walls

A pattern of old stone walls border the site, providing a taste of its agricultural past. The stone walls were built by farmers to delineate rectangular agricultural fields and appear to bear little relation to the site topography or other features. Figure 8-3 shows the location of existing stone walls on the property. These agricultural walls are in various stages of disrepair but are generally intact where they appear on the project plans and on Figure 8-3. The walls consist of stones and boulders collected from the site environs. The agricultural walls form generally rectangular areas, generally following the northern, western and southern property boundaries of the project site. The short portion of wall along the site's June Road frontage (near the proposed site entrance) can be seen in Figure 8-4. Several stone walls occur within the property perimeter. A stone wall roughly separates the area of the stream and wetlands in the eastern side of the parcel from the rest of the parcel and two interior stone walls define the area of wetlands in the northwestern corner of the parcel. A total of approximately 2,768 feet of existing stone walls were surveyed within the site.

¹ "Viewshed" is defined as the geographic area from which a "facility" or project may be seen.

According to the Applicant's cultural resources consultant, CityScape, these agricultural walls are not historically significant as they do not represent former patent boundaries or other notable historic demarcations, but are remnants of the past agricultural activities that were common in this region.

These walls were built for a land use unlike the proposed site use. The proposed development plan does not follow the pattern of the existing walls and portions of these walls will be removed. However, the stone walls along the southern, western and northern boundaries of the project site are proposed to remain.

Existing Local Character and Views into the Site

The local area consists of many rolling hills between Peach Lake to the northeast and the Titicus Reservoir to the southwest. On-site topography is part of a gently sloping knoll on a hillside that faces generally northeast. Lower elevations exist in the northeastern portion of the site and higher elevations occur in the southwestern portion. As a result, the project site has potential for being visible from area locations that are primarily within approximately three-quarters of a mile of the site, or less, with possible more distant views from higher vantage points on hilltops to the north and northeast. Hilltops in the areas surrounding the site, particularly to the south and east, occur at elevations higher than the site and block the site's visibility from any distant vantage point. The property is entirely wooded, with tree heights ranging from approximately 40 to 60 feet on the property.

Site Views from Area Roads

The site would be potentially visible from a number of publicly accessible locations, mostly roads. As noted in the subsection of Chapter 3.0 titled Designated Scenic Resources, the roads in the immediate project vicinity have not been designated by local, state or federal agencies as scenic byways or roads which afford scenic views.

Windshield and field surveys of views of the project site from area roads were conducted to ascertain existing visual conditions in order to compare existing views with potential views of the site after development is complete. The surveys determined that views of the site from public roads in the area surrounding the site are extremely limited, due to the topography and existing vegetation. This is based on the lack of visibility of the site from various locations along the public roads. Locations where the site was not visible were determined to have no potential visual impact and photographs from these locations are not included in the DEIS. Locations where potential views were identified are discussed below and are identified in Figure 8-2, Key Map to Visual Assessment.

No off-site vantage point was identified from which more than a portion of the project site could be viewed.

June Road

June Road runs generally north-south in the project area, bending in a northwestern direction as it passes the project site, and is designated Putnam County Route 55 after it crosses the Town/County line. It is located to the east and north of the project site and is at a lower elevation than the project site, with elevations of approximately 500 to 560 feet msl in the project vicinity. The evaluation of potential views entailed traveling the portion of June Road that

was previously identified in Figure 8-1 as having potential views of the project site based on analysis of a USGS topographic map (some 3,500 feet to the south and 1,800 feet to the north of the site) and observing whether or not such views exist. Given the higher elevations of the project site, there are potential views of the project site from June Road. However, as noted during the windshield survey, actual views from the road into the project site are very limited in either summer or winter due to the vegetation that exists along the June Road corridor. As shown in Figure 8-4, the corridor is largely enclosed by the tree canopy of existing vegetation including along frontage of the project site.

Starlea Road

Starlea Road is a short, local road located between June Road and Starr Ridge Road running in an east-west direction at the Westchester/Putnam County line, with its western end located immediately opposite the northeastern corner of the subject property. It is undeveloped at the western end, with a few residential parcels toward Starr Ridge Road. Starlea Road is at a lower elevation than the project site. Given the higher elevations of the project site, there are potential views of the project site from Starlea Road.

From the intersection of Starlea Road with June Road, existing vegetation on the project site along its frontage with June Road is visible, as shown in Figure 8-4. No other portion of Starlea Road provided any view of the project site during the field reconnaissance, given the density of existing tree cover bordering Starlea Road.

Bloomer Road

Bloomer Road is also located off June Road, south of Starlea Road and generally southeast of the project site. Bloomer Road extends to the east from its beginning at June Road. The elevation of Bloomer Road at its intersection with June Road is below that of the project site, and rises in elevation to the east. However, only areas closest to the intersection would have potential view of the site due to a crest in the topography.

As with other local roads, views of the project site from Bloomer Road were evaluated. Due to topography and vegetation, no views of the project site were identified from Bloomer Road.

Starr Ridge Road

Starr Ridge Road is located north of Bloomer Road and east of the project site. It travels in a north-south direction following a ridgeline and increases in elevation as the distance from the project site increases. As a result, the project site has the potential to be visible from points along approximately 1.5 miles of the road nearest the project site. Starr Ridge Road is primarily developed with single family residential sites.

The evaluation of potential views entailed traveling the portion of Starr Ridge Road that was previously identified in Figure 8-1 as having potential views of the project site based on analysis of a USGS topographic map (approximately 1.5 miles of road from its terminus with Bloomer Road) and observing whether or not such views exist. The Starr Ridge Road corridor is heavily wooded. Although tree clearings with views to the west were found at a few locations along the northern portion of the Starr Ridge Road study area, none of these locations provided a view of the project site due to the intervening existing vegetation and development along the road corridor.

Hardscrabble Road

Hardscrabble Road runs in an east-west direction just south of the project site and intersects with June Road. Its elevation varies as it runs over small hills and valleys. Based on the analysis of the USGS topographic map, the hilltop located just south of the project site (reaching about elevation 600 msl), combined with hilltops to the west and southwest would obscure visibility of most of the site from Hardscrabble Road. The higher southwestern portion of the project site has the potential to be visible from Hardscrabble Road in the vicinity of its intersection with Delancy Road, some 0.6 miles from the site.

During the infield surveys, locations along the eastern end of Hardscrabble Road (approximately 0.75 mile of road) were visited to assess the actual visibility of the project site. The evaluation of potential views entailed making actual observations as to whether or not such views exist. During the field observations, the existing large estate house located on the topographic knoll immediately south of the project site was used as a landmark. The field surveys indicated that the project site was not visible from the intersection of Hardscrabble Road and Delancy Road in either summer or winter due to the intervening tree cover. See the photograph in Figure 8-5 looking toward the project site from the Delancy/Hardscrabble Road intersection (the estate house is not visible in this view). However, it was noted that during off-leaf conditions, the tree canopy on the site could be seen from along a portion of Hardscrabble Road east of its intersection with Delancy Road. See the photograph in Figure 8-6 taken from a point on Hardscrabble Road east of Delancy Road, which includes view of the estate house. The locations of those viewpoints are identified on Key Map Figure 8-2.

Views from Residential Areas

Much of the land in the immediate site vicinity is either vacant and wooded, or open pasture and hayfields with single family residential houses and accessory equestrian buildings on large lots in a rural setting. There are a few privately-owned single family house sites located adjacent to the subject site (one on the south side and about five on the north side) from which a portion of the site would be visible (based on analysis of the USGS topographic map). More dense residential development exists in the vicinity of Peach Lake, which lies to the northeast of the project site and at a lower elevation. Several hills eliminate potential views from the majority of the Peach Lake area, however *potential* views of the site were determined to be possible from the roads along the northeastern portion of the lake (Vails Lake Shore Drive and Peach Lake Road - NYS Route 121) over a distance of some 1.5 miles, based on analysis of the USGS topographic map (refer to Figure 8-1). No other residential developments were determined to have views of the site.

The infield assessment determined, however, that actual views toward the project site from public roads on the east side of Peach Lake were obscured by the intervening wooded ridgeline (Starr Ridge) west of Peach Lake, in both summer and winter. A representative wintertime view is shown in Figure 8-7.

Volunteer Park

Volunteer Park, a Town park, is located adjacent to the project parcel to the east, with access from June Road. The park includes a small parking area, baseball/softball field, basketball court and playground. A Town maintenance and storage facility consisting of a large, barn-type building and several outdoor materials storage areas are located next to the Town park.

The trees on the project site are visible from this park, as it is located on a small knoll directly to the west of the park property. A baseball field is at a higher elevation than the rest of the facilities and there are views beyond the maintenance building to the project parcel from this location. This view is shown in Figure 8-8.

8.1.2 Potential Impacts

Variables associated with the actual visual experience include but are not limited: atmospheric perspective (diminishing clarity and contrast of view due to atmospheric interference), and size perspective (reduction of apparent size of objects as distance increases). It is noted that mere visibility of a facility/development, even startling visibility, does not automatically mean it has an adverse visual or aesthetic impact.² Visual impact occurs when mitigation measures, or the mitigating effects of distance or perspective, do not adequately reduce the visibility of a facility to an insignificant level.

The proposed project would convert approximately 20.5 acres of undeveloped, wooded land to residential use. Clearing and grading activities to prepare the site would result in minor topographic alterations but would remove existing tree cover and thus alter some views of the site. The minor topographic changes would include the installation of new retaining walls in a few locations. Construction of residential buildings may become visible from certain local vantage points. Portions of the property may appear more open with the removal of the tree canopy as viewed from the nearby roads and residential areas that adjoin the site. This section describes these potential changes.

Given the position of the site in relation to locations of potential public viewpoints from the surrounding area, no off-site vantage point was identified from which more than a portion of the project development would be visible. The following descriptions assess the effects of changes in views from the particular locations of concern identified above.

Altered Views from Area Roads

Construction of the Salem Hunt development would change the existing visual character of the project site by removing existing woodland and introducing a residential neighborhood. These changes may be visible from portions of area roads and an assessment of the potential impacts to each road is discussed below.

June Road

The proposed Salem Hunt project will gain access from June Road, whose elevation is lower than the site. Clearing of existing vegetation will occur on the northeastern corner of the site at the intersection of June Road and Starlea Road to construct the project access road. The removal of trees will result in an entrance roadway corridor approximately 80 to 100 feet wide, which will be visible from the intersection. With the majority of the site development to be located in the interior of the project site (the closest building is some 460 feet from June Road), nearly 10 acres of land and over 700 feet of the site road frontage on June Road will remain in woodland cover that will obscure view of the project except from the project entrance.

² "Assessing and Mitigating Visual Impacts", Program Policy issued by the New York State Department of Environmental Conservation, July 31, 2000.

A visual profile through the project site was constructed to illustrate the potential impact associated with clearing of site trees and vegetation (see Figure 8-9). The profile was produced using USGS topographic mapping, aerial photography, and the engineer's proposed grading plan to depict the sight line into the project from June Road at Starlea Road, along the proposed entrance road. Figure 8-9 is drawn to scale, including existing vegetation that will remain, to illustrate this analysis. The impact area will occur within the "limit of clearing" shown in Figure 8-9, where the existing trees and vegetation are shown to be removed in the profile view of the site development. The proposed access road will rise into the site some 26 feet in elevation and curve as it extends into the site from June Road, limiting views from any stationary point on June Road to approximately 460 feet or less of the project entrance. Looking from June Road at Starlea Road intersection into the project entrance, portions of two new buildings within the project may be visible. Views of the clearing in the trees at the project entrance from vehicles traveling along June Road will be more limited by the tree canopy that will remain along June Road as it curves by the site. A low retaining wall in front of the proposed clubhouse building, two to four feet in height, would not be visible from June Road.

Starlea Road

The proposed project access will be located opposite Starlea Road at its intersection with June Road. As a result of the clearing of trees for the proposed access combined with the project parcel topography, approximately 450 feet of the access road, portions of the first cluster of buildings in the project, and lawn areas will be visible from the west end of Starlea Road after development of the Salem Hunt project. The impact area is shown in Figure 8-9, where the existing trees and vegetation are shown to be removed for the site development. A low retaining wall in front of the proposed clubhouse building, two to four feet in height, would not be visible from Starlea Road. Similar to the change in character described for June Road, views from the west end of Starlea Road into the site will be limited due to the curving access road and rise of topography.

Hardscrabble Road

As previously described and illustrated, views of the project site from Hardscrabble Road are limited. During the summer months the existing vegetation limits visibility of the site from most locations along Hardscrabble Road. During the second infield survey, conducted during off-leaf conditions, the tree canopy on the project site was visible from limited locations along Hardscrabble Road. Figure 8-10 provides a visual profile that shows the distant line of sight from Hardscrabble Road over an open field and lowland woods to the woods line at the southern property line of the project site. The placement of proposed buildings in the southern portion of the Salem Hunt project will occur at the highest elevations of the property but below the tree line that will remain after construction. It is anticipated that the roofs of the proposed residential buildings may be partially visible through the tree canopy from a few locations along Hardscrabble Road during off-leaf conditions during a portion of the year. No proposed retaining walls would be visible from these vantage points. The proposed project is approximately one half mile from Hardscrabble Road and its seasonal visibility would be further reduced due to the natural diminishing effects of atmospheric perspective. It is noted that the existing estate house located adjacent to the project parcel is seasonally visible from these locations along Hardscrabble Road (see Figure 8-6) and is both closer to Hardscrabble Road and is taller and broader than the proposed Salem Hunt buildings. Thus, the existing house would continue to be more visible than the proposed project.

Other Area Roads

As the project site was not visible from other local roads, including Starr Ridge Road (see Figure 8-10) and Bloomer Road, no visual impacts as a result of the proposed Salem Hunt development are anticipated.

Altered Views from Residential Areas

As previously indicated, the project site was not visible from the majority of surrounding areas, including the Peach Lake residential area, with the exception of a few private house sites immediately adjacent to the property to the north and south. The potential impacts associated with clearing of site trees and vegetation would result in a view of the developed site from the yards of adjacent privately owned residences to the north and south. The clearing and subsequent construction would reveal portions of the closest buildings and landscaped yards through the perimeter tree buffer, especially during off-leaf conditions. No proposed retaining walls would be visible from properties to the south, while one or two walls in the vicinity of the proposed clubhouse building may be visible from properties to the north. One wall will be two to four feet in height, the other up to eight feet high. These walls are proposed to be constructed with a natural fieldstone appearance, thereby minimizing any adverse impact of their visibility.

Volunteer Park

A portion of the proposed project is anticipated to be visible from the higher elevations in Volunteer Park, since the subject site is located close to the park site and at similar elevation. A visual profile was constructed using USGS topographic mapping, aerial photography, and the engineer's proposed grading plan to depict the sight line from Volunteer Park toward the site. Figure 8-11 is drawn to scale, including existing vegetation that will remain, to illustrate this analysis. Additionally, a photographic simulation was prepared to show the possible future view of the project from this vantage point (Figure 8-12). From the higher play field, removal of existing tree cover on the project site for buildings and the SSTS area will lower the tree line near the horizon and several of the proposed buildings will be evident as their rooftops appear against more distant trees that will remain on the horizon. This impact is shown in Figure 8-12. Intervening woodland that will remain on the project site will obscure the project improvements on the ground as well as the lower facades of the proposed buildings. No proposed retaining walls would be visible from this vantage point. The foreground in this view will include the existing improvements within Volunteer Park (basketball courts and parking), the large, barn-type storage structure at the Town maintenance facility, and the activities associated with these facilities, which reduce the impact of the buildings that would be partially visible in the background. It is noted that this view will not occur from June Road nearby since the road is lower than the park site and behind a berm.

The potential impact associated with clearing of site trees and vegetation would be minimized since the trees both in the foreground and in the distance will remain and the tree line on the horizon will not be significantly altered. Given the extent of existing trees that will remain in this scene and the improvements that are visible in the foreground, the change in view from the Town park would not result in a significant visual dissimilarity or "scar" on the landscape scene. The proposed building architecture in the Salem Hunt project will incorporate varied facades and rooflines, steep roof peaks, and earthtone colors that will complement the natural scene. As shown in Figures 8-11 and 8-12, the rooflines of the proposed buildings will appear below

the tops of the trees visible in the distance and will not significantly alter the visible horizon from this vantage point.

Lighting Impacts on Surrounding Residential Uses

Lighting is proposed in this project to illuminate the roadways. Proposed roadway lights will be 150 watt metal halide antique style street lamps, pole-mounted 14 feet in height, laid out in a pattern to provide adequate light to safely illuminate the travel ways for pedestrians and motorists. The light standard detail included on the engineer's detail sheet specifies that all lights will be fitted with shields to minimize glare and project light downward to ground surfaces. Proposed lighting will conform to all applicable regulations.

There is a potential for increased nighttime light emissions from new outdoor lighting. However, the lighting in this project (street lighting as well as lights at individual residential units -- interior lights and exterior area lights) is expected to create minimal nighttime visibility of portions of the project from a limited number of nearby properties. Due to the dense vegetation and distance that will separate these areas from the new light source, this change is not expected to cause significant adverse effects on the surrounding residential uses. The low intensity of the proposed street lighting is not expected to create nighttime "glow" from the site and thus no significant impact on the local rural community is anticipated.

Impacts from the Character and Design of Proposed Improvements

The proposed residential buildings will be two-story structures, each containing two or three dwelling units. A clubhouse is also proposed to serve some of the recreational needs of the project residents. The buildings will reflect traditional architecture and design that is intended to be complementary of the existing residential development in the area. The proposed building facades will make use of horizontal wood siding in earth-tone colors that will be compatible with the wooded setting of the property and its adjoining properties. A typical elevation of the proposed buildings is provided at the end of Chapter 2 (Figure 2-5).

The project layout has been designed around the natural site conditions to minimize impacts to sensitive environmental elements (wetlands and sloped terrain) and taking into account the topography to create a loop road concept with vehicular access and parking for individual units off of the main loop and resident access to green areas directly from the rear of the units. Off-street parking for individual units will be provided in garages and driveways, with some additional visitor parking provided in small pull-offs along the loop road. The development design includes a fully landscaped site plan (including street trees, shade trees and evergreen trees, ornamental flowering trees and shrubs, foundation plantings, and lawns) intended to provide an attractive, modern living environment in a rural setting at a density not unlike existing development at nearby Peach Lake.

The project design takes advantage of the wetland areas around its perimeter that provide significant natural vegetative buffering from adjacent properties to the east and west. By preservation of the perimeter vegetation, the development area is centered within the interior of the project site. Additionally, vehicular circulation is kept in the central loop road system thereby avoiding stray noise and lights from affecting neighbors. There will be no adverse visual impacts associated with the character and design of the proposed buildings and other structures, parking areas or landscaping in Salem Hunt.

Stone Walls

Portions of the existing stone walls in the northern area of the project site will be removed for development of the roads, parking areas and condominium units. Based upon engineering estimates, approximately 2,768 lineal feet of stone walls are currently present on the site. Following development, approximately 1,920 feet of original stone walls will remain.

Walls that are located outside of the proposed areas of disturbance are proposed to be left undisturbed. These include any stone walls that exist near the wetlands or at the project property line. The majority of the stone wall located above the slope in the eastern portion of the site will remain undisturbed, as well as much of the wall surrounding a wetland in the northwest corner of the site (see Figure 2-4 Proposed Site Plan).

The stones and boulders from walls that are disturbed by the project development are proposed to be used in the construction of landscape features, including tree wells and low retaining walls, to preserve and enhance the character of the site and its environs.

There will be no adverse visual impacts associated with the extent and type of proposed retaining walls in this project. As previously noted, visibility of the new retaining walls from off-site vantage points will be limited and, where visible, their natural fieldstone treatment and low profile will blend their appearance with the proposed buildings and with the existing character of the local area.

Preservation of Natural Features and Open Space Character

The proposed project has been designed to fit into the existing landscape while minimizing the necessary area of tree clearing and landform alteration to the maximum extent practicable.

No significant visual change has been identified from any location or critical vantage point in the site vicinity. Given the general topographic setting of the site and its location within a rural residential landscape, the proposed project is suited for its environment. While views of portions of the project development will be created through the existing tree cover from certain vantage points, the siting of new residential buildings proposed in the development are such that significant portions of existing woods can be preserved as buffers to the project. This design will mitigate the changes in existing views. No off-site vantage point was identified from which more than a small portion of the project site could be viewed.

The wooded, rural character of the Salem Hunt area will be maintained by the preservation of wooded land that will limit views to the site. This proposed residential development has been designed to be visually compatible with the surrounding rural setting.

8.1.3 Proposed Mitigation Measures

Measures to mitigate potential visual impacts of the proposed Salem Hunt development have been incorporated into the design of the project and are discussed in detail below.

Minimized visibility of the project

The project layout is designed to minimize the visibility of the proposed improvements from surrounding area roads by avoiding removal of trees and vegetation where possible, utilizing

native plant species in landscaping/restoration plans, and siting of structures/improvements to avoid or minimize visibility. The siting of the proposed buildings and associated improvements back from June Road while maintaining a narrow clearing for the entrance road preserves a natural vegetative buffer to potential views into the site from the majority of the site frontage on June Road. The preservation of the existing trees around the perimeter of the property and planting of new landscape plants within the project further allow for visual buffering of the development. The proposed landscape plan incorporates native species that will serve to blend the development into the surrounding area.

While all existing vegetation is likely to be removed within the limits of disturbance, the project avoids removal of any other trees or vegetation by incorporating the following strict provisions for the protection of trees that need not be removed for the development of the site plan. Tree clearing would commence only after the establishment of a "limits of disturbance" line in the field, created by tree flagging, snow fencing or similar method. No trees in healthy condition beyond the field-identified limits of disturbance would be disturbed. Trees to be preserved near work areas would be protected by snow fencing or other highly visible means of marking at the drip line to avoid accidental damage to trunks and roots. A tree protection detail is shown on the engineering drawings. Contractors will be informed that material stockpiling and equipment storage will not be allowed in these protected areas.

Landscaping and lighting plans

A landscape plan has been fully developed and detailed for the proposed Salem Hunt development. The landscape plan for the project (Drawing SP-2.1 and 2.2 Layout and Landscape Plans) schematically presents the major evergreen and deciduous tree and shrub plantings to be installed on the project site at the conclusion of building construction. The plant list includes native or regionally adaptable species to be used for general landscaped areas and for revegetating the proposed stormwater management basins. This preference for native plants is based on the greater plant adaptability to local climatic conditions ("hardiness").

A lighting plan has been fully developed and detailed for the proposed Salem Hunt development (Drawing LP-1 Lighting Plan). The plan shows that lighting levels from individual light poles would be less than 0.3 footcandles except immediately under a proposed light. No light "spillage" would occur onto adjacent properties.

Architectural design

The proposed buildings, in addition to their placement away from the perimeter of the project site, have been designed to complement the locale and thus minimize potential adverse visual impacts. The *architectural design* includes varied roof lines, shuttered windows and columned porches provide architectural interest in a style not unlike the traditional style of area homes. The buildings avoid large flat blank walls and reduce visual mass and bulk by incorporating varied facades with traditional fenestration and material selection and coloring to add visual interest. The muted earth-tone colors proposed for the buildings will harmonize the site construction with the surrounding setting. The proposed landscaping will also soften the building features and create transitions to the natural environment.

Stabilization of created slopes

Where grading of the site is proposed, various measures are proposed to create smooth transitions in sloped areas thereby providing a "naturalized look" to the finished development. Created lawn terraces are proposed within the project, separated by slopes of not more than 2:1 slope (horizontal:vertical) or, in some cases, by low decorative retaining walls that will have an attractive stone-faced appearance. All areas of grading within the project and not otherwise stabilized will receive grass seeding for slope stabilization by permanent vegetative cover to protect the created slopes.

No significant adverse impacts to the visual conditions of the project area are anticipated as a result of the Salem Hunt development given the design of specific mitigation measures as an integral part of the project.

8.2 Historic and Archaeological Resources

8.2.1 Existing Conditions

Historic Resources

National and State Registers of Historic Places

According to the OPRHP interactive website, there are several buildings listed on the National and State Registers of Historic Places located in the Town of North Salem. The Register includes the Joseph Purdy Homestead, North Salem Town Hall and Union Hall. None of these sites are located near, or have views of, the project site.

There are no buildings listed on, or eligible for listing on, the National or State Register located near the proposed project.

Westchester County

Westchester County maintains a County Inventory of Historic Places, which includes those sites that are listed on the State and National Registers of Historic Places, as well as County-identified historic resources. The County Inventory of Historic Places does not list any additional resources beyond those listed on the Register.

Town of North Salem Register of Historic Places

The Town of North Salem Comprehensive Plan Update, dated May 9, 2006, references that there are 19 historic landmarks located in the Town of North Salem that have been designated by the Town. These historic sites include the DeLancey House, the Old Methodist Church and the Keeler Homestead, among others.

Archaeological Resources

Section 14.09 of the New York State Historic Preservation Act of 1980 act establishes a review process for State agency activities affecting historic or cultural properties, requiring State agencies to consult with the Commissioner of the Office of Parks, Recreation and Historic Preservation (OPRHP) prior to approving a project. If a project requires any permits or is

receiving funding/grants or any other approvals from State agencies, review by OPRHP is required. This project is subject to New York State Department of Environmental Conservation review and approval and thus must follow the criteria determined by OPRHP for cultural resource management, as set forth in the "Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State". These standards were developed by the New York Archaeological Council and adopted by the Office of Parks, Recreation and Historical Preservation to ensure uniformity in the review of cultural material in New York State.

Cultural Resource Management investigations are divided into three levels of assessment, called Phase I, II and III. A project may receive OPRHP approval after the completion of any of these phases by a qualified archaeologist, based on the determination that the project site has undergone sufficient investigation to eliminate the probability of significant artifacts being recovered within the area of potential effect. A Phase I investigation is subdivided into a Phase IA and Phase IB. The Phase IA consists of a Literature Review and Sensitivity Assessment, which entails the following.

- 1) a review of pertinent published historic material pertaining to this portion of the Town;
- 2) a search of the historical or archeological site files of the New York Museum and the New York Historic Preservation Office to identify documented cultural resources located on or adjacent to the property, and;
- 3) a reconnaissance of the parcel to identify areas of greater and lesser potential for containing buried cultural remains, and to note areas where serious prior disturbance to upper soils may have eliminated such potential, and to photodocument any potentially affected standing structures over 50 years of age.

For any area that will potentially be disturbed by the proposed action, a Phase IB Field Investigation is conducted, which involves a systematic, on-site field inspection to verify the presence or absence of archaeological or historic artifacts. The most common method for conducting a Phase IB is systematic subsurface testing, which requires the excavation of small test pits at fixed intervals throughout the project site. The soil from these pits is examined for buried cultural remains. Significant findings can trigger the requirement of more extensive investigation via a Phase II or Phase III investigation. However, mitigation or avoidance of that portion of the site where remains are known or suspected may be accepted by OPRHP and allow the modified project to continue.

OPRHP guidelines do not require testing in areas with previously disturbed soils, steep slopes of 12% or greater, or poorly drained soils, as they are not considered to likely produce intact cultural resources.

Stone Walls

A full description of existing stone walls on the site are described in Section 8.1.1 Visual Resources and Community Character -Existing Conditions, above. The stone walls found on the site are shown in Figure 8-3 Stone Walls.

8.2.2 Potential Impacts to Historic and Archaeological Resources

Historic Resources

There are several structures in the Town of North Salem that are listed on the National Register of Historic Places, but due to their distance from the project site, will not be impacted by the proposed Salem Hunt development.

Archaeological Resources

The Phase IA Literature Review and Sensitivity Analysis was conducted on the project parcel in July 2006. Based upon the recommendations of the Phase IA Literature Review and Sensitivity Analysis, a Phase 1B Archaeological Field Reconnaissance survey was completed in June, 2007. The studies are summarized below.

The project site is characterized as relatively open woodland, with some on-site wetlands occurring in the southeastern portion of the site, the northwestern corner and the southwestern corner, as well as a perennial stream that crosses the site. Stone walls were observed throughout the property, which likely marked the property boundary or the edges of former farm fields. The soils on-site ranged from poorly drained to well drained. Slopes range from 2 to 25 percent, with the steepest slopes being associated with the stream corridor which drains from the wetlands to the south.

There are no standing structures on the project site. However, as part of the Phase 1A cultural resources survey, historic maps were consulted. Although the maps indicate the majority of the project site remained undeveloped, the maps dating to 1893 and 1894/1916 suggest that four or five dwellings were located along a roadway in what appears to be wetlands located on the Salem Hunt project area. However, no evidence of these structures were observed during the site visit and it is possible that they have been destroyed by the construction of the electrical transmission towers owned by New York State Electric and Gas Corporation.

There are no prehistoric archaeological sites reported located within one mile of the project site. Two prehistoric sites are located just more than one mile from the project site. These two sites are located in the Town of Southeast. The first site is located on level to gently sloping ground along a large ridge reportedly overlooking damp ground while the second site is located along the top of a ridge overlooking a stream and its ravine. These two sites were interpreted to be associated with seasonal hunting and game processing.

Due to the similarities of the project site to nearby reported prehistoric sites, as well as the on-site soils and gentle slopes, there exists an moderate high potential for the Salem Hunt site to contain intact prehistoric cultural resources.

Based on the map research indicating the presence of residential structures on the project site, there is also a potential for historical cultural resources to be present.

A Phase IB Archaeological Field Reconnaissance Survey was recommended for the undisturbed areas within the Area of Potential Effect to rule out the presence of prehistoric and/or historic cultural resources.

A Phase 1B Archaeological Field Reconnaissance Survey was completed in June, 2007. The Phase 1B testing strategy was structured with the knowledge that the property possessed moderate to high probability to yield prehistoric cultural remains. The site also had a high probability to yield historic cultural remains based on the presence of two Map Documented Structures (MDS) identified during the Phase 1A research. An initial field visit determined that the two MDA's were located within the New York State Gas and Electric right of way, which is located north of the Area of Potential Effect (APE). Significant ground disturbance was observed in the right of way, suggesting that had any foundations existed, they would have been significantly impacted. The testing strategy was also designed to identify any historical buried deposits within the APE, such as middens or dumps.

Areas selected for subsurface testing were identified during a comprehensive walkover of the property. The walkover allowed evaluation of the site, the identification of disturbed areas, ruled out areas of wetland and steep slope, assessed available raw materials and habitation resources, and determined former land usage. A total of three hundred and thirty five shovel tests were excavated on the Salem Hunt property in areas considered to have the potential to yield prehistoric cultural resources, within the APE. The shovel tests were completed in a series of 21 transects. Of the 335 shovel tests, none yielded prehistoric cultural material. One single shovel test location yielded historic materials dating from the mid-20th century, in the form of brick or redware.

Based upon the findings of the Phase 1B Archaeological Field Reconnaissance Survey, the project historic resource consultant (CITY/SCAPE Cultural Resource Consultants) recommended that no further archaeological investigations be undertaken in the project area.

The results of the Phase 1A and Phase 1B studies have been forwarded to the NYS Office of Parks Recreation and Historic Preservation (OPRHP) for review and concurrence with the project historic resource consultant recommendations. In addition, Ms. Gail Guillet, of CITY/SCAPE Cultural Resource Consultants, the project historic resource consultant has forwarded a copy of the report to the Town of North Salem Historic Preservation Commission, and discussed the findings with Mr. Francis Touti, President of the Town of North Salem Historic Preservation Commission.

Based upon the findings of the archeological studies, the development of the Salem Hunt project will have no impact to historic or archaeological resources.

Stone Walls

As described above, portions of the existing stone walls in the northern portion of the project site will be removed for project development. Approximately 2,768 lineal feet of stone walls are currently present on the site. Following development, approximately 1,920 feet of original stone walls will remain.

Walls that are located outside of the proposed areas of disturbance are proposed to be left undisturbed. The majority of the stone wall located above the slope in the eastern portion of the site will remain undisturbed, as well as much of the wall surrounding a wetland in the northwest corner of the site (see Figure 2-4 Proposed Site Plan).

The stones and boulders from walls that are disturbed by the project development are proposed to be used in the construction of landscape features, including tree wells and low retaining walls, to preserve and enhance the character of the site and its environs.

8.2.3 Proposed Mitigation Measures

Historic Resources

As no impacts to historical resources are anticipated, no mitigation measures are proposed.

Archaeological Resources

The Phase 1B Archaeological Field Reconnaissance Survey found no prehistoric or significant historic cultural resources on the Salem Hunt site. Therefore, no avoidance or mitigation measures are proposed for archaeological resources.

Stone Walls

The existing stone walls on the site and at the site's property boundaries have been avoided to the extent possible. *Of the* approximately 2,768 lineal feet of stone walls currently present on the site, approximately 1,920 feet of original stone walls will remain following development. A long wall located in the eastern portion of the site, above the wetland will remain undisturbed. The majority of the walls in the northwest corner of the site, surrounding a wetland will be preserved. All existing walls along the property boundaries will be preserved.

The stones and boulders from walls that are disturbed by the project development are proposed to be used in the construction of landscape features, including tree wells and low retaining walls, to preserve and enhance the character of the site and its environs.

9.0 TRAFFIC AND TRANSPORTATION

9.1 Existing Conditions

Regional Transportation Network

The Salem Hunt project site is situated just south of the county border between Westchester and Putnam County in the Town of North Salem, Westchester County. The project site is located on the county line between Westchester and Putnam counties. The primary transportation routes in the local region are Interstate 684 (I-684) and Interstate 84 (I-84). I-684 runs north-south through Westchester County connecting I-84 to the north with I-287 to the south. Interstate 84 runs in an east-west direction. To the east I-84 travels through Connecticut to Hartford. To the west, I-84 connects with the NYS Thruway and continues west to Scranton, Pennsylvania. Interstate 287, also known as the Cross Westchester Expressway, runs in an east-west direction and crosses the Hudson River at the Tappan Zee Bridge to the west of the junction with I-684.

The project site is five miles from the Brewster Railroad Station. Metro North's Harlem Line provides service from the Brewster station to New York City's Grand Central Station.

Local Transportation Network

Figure 9-1 depicts the local road network in the vicinity of the project site. The proposed development will have frontage on June Road.

This traffic study reviews the 2006 Existing Condition, based upon recent traffic counts. The existing data forms the basis of the 2009 No Build Condition (the future scenario without the proposed action) and the 2009 Build Condition (future scenario with the proposed action).

The following intersections were evaluated:

1. June Road and Fields Lane
2. June Road and Starlea Road
3. June Road and Bloomer Road
4. June Road and Hardscrabble Road
5. June Road and Titicus Road
6. Bloomer Road and Peach Lake Road

Key local roads are described below:

- June Road - June Road provides north south travel on a two lane roadway with a single travel lane in each direction. June Road is maintained by the Town of North Salem. The posted speed limit is 40 miles per hour (mph). June Road serves as a collector road for the residential areas and horse farms in the Town of North Salem. The posted speed limit is 40 mph. June Road provides access to the east-west roadways of Hardscrabble Road and Titcus Road.
- Fields Lane - Fields Lane provides east west travel on a two lane roadway with a single travel lane in each direction. Fields Lane is a town maintained roadway which traverses the boundary between the Town of North Salem in Westchester County and the Town of Southeast in Putnam County. Fields Lane provides access to I-684 for the adjacent

commercial, office, and residential land uses. Fields Lane connects June Road with access to I-684. The posted speed limit is 30 mph. Fields Lane is stop sign controlled at both Hardscrabble Road and June Road.

- Hardscrabble Road - Hardscrabble Road provides east-west travel on a two-lane roadway with a single travel lane in each direction. Hardscrabble Road is maintained by the Town of North Salem. Hardscrabble Road provides direct access to I-684 at Exit 8, and is the main access point for northeastern Westchester County. The posted speed limit is 35 mph. Hardscrabble Road connects June Road with access to I-684. Hardscrabble Road is stop sign controlled at June Road.

Titicus Road - Titicus Road provides regional east west access to northeastern Westchester County. Titicus Road parallels Hardscrabble Road to the north. Titicus Road is State Route 116, and as such is maintained by the New York State Department of Transportation (NYSDOT). Titicus Road (NYS Route 116) connects NYS Route 121 with NYS Route 100 in Somers. The posted speed limit is 45 mph. The intersection of Titicus Road and June Road is an all way stop sign controlled.

- Starlea Road - Starlea Road provides an east west connection between June Road and Star Ridge Road. Starlea Road has a single travel lane in each direction. Starlea Road is maintained by the Town of North Salem. The posted speed limit is 30 mph. Starlea Road is stop sign controlled at the intersection with June Road.
- Bloomer Road - Bloomer Road provides an east west connection between June Road and Peach Lake Road. Bloomer Road has a single travel lane in each direction. Bloomer Road is maintained by the Town of North Salem. The posted speed limit is 40 mph. Bloomer Road is stop sign controlled at the intersection with June Road. Bloomer is also stop sign controlled at the intersection with Peach Lake Road.
- Peach Lake Road - Peach Lake Road provides regional north south access to northeastern Westchester County. Peach Lake parallels June Road to the west and has a single travel lane in each direction. Peach Lake Road is maintained by the Town of North Salem. Peach Lake Road connects NYS Route 121 with I-684 to the north. The posted speed limit is 45 mph.

9.2 Existing Roadway Conditions

A survey was conducted of existing road conditions for roads likely to be used by traffic generated by the Salem Hunt project. Table 9-1 shows the lane width, shoulder width and surface condition of the roads within the project vicinity.

The local roads were rated for pavement condition on a scale of one to three with a "1" being poor condition (1 to 5 on the New York State rating system), a "2" being a fair to good rating (6 to 8 on the New York State rating system) and a "3" being excellent (9 to 10 on the New York State rating system). Thus, a rating of 1 indicates that work is needed, and a rating of three is typical of newly paved roads.

Table 9-1 Local Roadway Conditions					
Road	Speed Limit	Pavement Width	Number of Lanes	Shoulder Width	Pavement Condition
June Road	40 mph	22 feet	2	2 feet	2
Hardscrabble Road	35 mph	24 feet	2	1-2 feet	2
Bloomer Road	40 mph	22 feet	2	1-2 feet	2
Peach Lake Road	45 mph	22 feet	2	1-2 feet	2
Starlea Road	Not posted	20 feet	2	1 feet	2
Fields Lane	30 mph	30 feet	2	2 feet	2
Titicus Road CR 121	45 mph	24 feet	2	1-2 feet	2

Source: Tim Miller Associates 2006.

Existing Traffic

Traffic counts were taken on Tuesday, May 23, 2006, between 6:30 a.m. and 9:30 a.m., and between 2:00 p.m. and 7:00 p.m. Supplemental p.m. counts were taken on September 21, 2006 due to an accident which occurred in I-684, south of exit 8 on May 23, 2006, rendering the p.m. count data taken on that date not representative of typical conditions.

These counts identify weekday morning and afternoon peak hour levels of traffic. Commuter traffic is heaviest on the local roadway network during these time periods. The p.m. time period analyzed in this traffic studied is longer than the typical p.m. peak hour to account for the location of the Pequenenakonck (PQ) Elementary School and the North Salem Middle School/High School complex, both of which are located on June Road. Figures 9-2 and 3.7-3 show the existing a.m. and p.m. weekday peak hour traffic volumes at the studied intersections.

As shown in Table 9-2, peak morning traffic volumes occur between 7:00 a.m. and 8:45 a.m. at all the studied intersections. The p.m. peak hour for study intersections closest to the project site occurs primarily between 5:30 and 6:30 p.m. The Bloomer Road / Peach Lake Road peak occurs slightly later, between 6:00 and 7:00 p.m. The peak hour at the intersection of June Road and Hardscrabble Road occurs between 2:30 p.m. and 3:30 p.m. as result of the traffic generated by the PQ Elementary School and the North Salem Middle School/High School Complex. The peak hour at the intersection of June Road and Titicus Road occurs between 3:00 p.m. and 4:00 p.m. also as result of the traffic generated by the area schools.

Table 9-2 Peak Hour Periods		
Intersection Roads	A.M. Weekday Peak Hour	P.M. Weekday Peak Hour
June Road and Fields Lane	7:00 a.m. to 8:00 a.m	5:30 p.m. to 6:30 p.m
June Road and Starlea Road	7:00 a.m. to 8:00 a.m	5:30 p.m. to 6:30 p.m
June Road and Bloomer Road/School Driveway	7:15 a.m. to 8:15 a.m	2:45 p.m. to 3:45 p.m
June Road and Hardscrabble Road	7:45 a.m. to 8:45 a.m	2:30 p.m. to 3:30 p.m
June Road and Titicus Road	7:45 a.m. to 8:45 a.m	3:00 p.m. to 4:00 p.m
Bloomer Road and Peach Lake Road	7:15 a.m. to 8:15 a.m	6:00 p.m. to 7:00 p.m

Prevailing Speed on June Road

As part of this traffic analysis, a prevailing speed study was conducted on June Road, as this roadway provides primary access to the project site. The posted speed limit on June Road is 40 miles per hour (mph). A spot speed study was conducted to ascertain the 85th percentile of vehicle operating speeds on this roadway. The 85th percentile observed speed is the most frequently used measure of operating speeds associated with a location. The speed study was conducted on June Road at the location of the proposed site access.

Speed data were collected under dry pavement conditions between 3 p.m. and 5 p.m. On Friday July 7, 2006. Volumes during this period are typical of free flowing daylight traffic conditions. A radar gun was utilized to collect speed data. A survey size of 75 vehicles per direction was used to provide a 95 percent confidence level with an estimated error of ± 2 miles per hour. Based on the data collected, the 85th percentile speed for June Road is 49 mph for vehicles traveling northbound and 45 mph for vehicles traveling southbound. Vehicle speed graphs, including the percent of vehicles traveling above the posted speed limit, are provided in Appendix N.

Traffic Accident Data

The most recent complete data from the NYSDOT covering the three year period from January 1, 2000 to December 31, 2002 indicated 16 collisions on June Road between Fields Lane and Titicus Road (an average of 5.3 collisions per year). Six of those collisions occurred between Baxter Road and Hardscrabble Road. Additional information is contained in Table 9-3.

The State of New York has been implementing a new program for recording and transferring accident data. The TRaCSs system (Traffic and Criminal Software) permits police departments to electronically send collision data to the New York State Department of Motor Vehicles. This has expedited the availability of some but not all accident data. The accident data provided in the Table below from 2000 to 2002 will be supplemented with the most recently available incomplete accident data from the TRaCs system. This data has been requested from NYSDOT, but has not yet been received. The available updated accident data will be provided in the FEIS.

Table 9-3 June Road Collision Summary Table January 1, 2000 to December 31, 2002									
Road Section or Intersecting Street	Number of Collisions							Light Conditions *	
	June Road Intersection Collisions	Injuries	Property Damage Only **	Non-Reportable	Wet Road *	Fixed Object *	Day	Night	
							Day	Night	
Titicus Road to Deveau Street	5	2	3	0	1	0	2	3	
Deveau Street to Baxter Road	3	2	0	1	0	0	1	0	
Baxter Road to Hardscrabble Road	6	2	2	2	0	0	1	1	
Hardscrabble Road to County Line	2	1	1	3	0	1	2	0	
Total	16	7	6	3	1	1	6	4	
* Excludes non-reportable collisions.									
** No fatalities, no pedestrian or bicycle collisions, no truck collisions.									
Source: New York State Department of Transportation, May 1, 1999 to May 31, 2002.									

Level of Service Criteria

The Highway Capacity Manual (National Academy of Sciences, Transportation Research Board, National Research Council, Washington, DC, 2000) procedures document the methodologies used for modeling levels of service, and average vehicle delay at both signalized and unsignalized intersections. Level of service is a measure of the operational quality of an intersection; level of service A is the highest, most efficient level, and level of service F is the lowest level. The operational quality of an intersection is based on the average amount of time a vehicle is delayed. Levels of service are examined by lane group, the set of lanes allowing common movement(s) on an approach.

The NYSDOT policy (Highway Design Manual, NYSDOT, Section 5.2.2.3, Nov. 2003) requires capacity analysis methodologies consistent with Highway Capacity Manual. The Highway Capacity Manual serves as the basis for all level of service computations in the *Highway Capacity Software* (McTrans Center, University of Florida, Gainesville, Florida, 2005).

Table 9-4 presents the levels of service criteria for unsignalized intersections.

Table 9-4 Unsignalized Intersections Level of Service Criteria	
Level of Service	Average Control Delay (Seconds Per Vehicle)
A	less than or equal to 10
B	greater than 10 and less than or equal to 15
C	greater than 15 and less than or equal to 25
D	greater than 25 and less than or equal to 35
E	greater than 35 and less than or equal to 50
F	greater than 50

Source: Highway Capacity Manual, National Academy of Sciences, Transportation Research Board, National Research Council, Washington, DC, 2000.

The *Highway Capacity Software* model was used to review peak hour periods only and do not represent every minute of traffic operations. During off peak periods, which is the majority of the time, drivers typically will find operations better than the modeled peak hour results. During peak periods the experience of individual drivers can vary, because the model calculates average vehicle delay.

Peak 15 minute traffic flows typically do not all occur in the same 15 minute period in the peak hour. The traffic model does not always account for the ability of the traffic signal to compensate for shifting traffic volumes and thus may overestimate delay. For unsignalized intersections, the model conservatively assumes peak approach volumes occur simultaneously.

Existing Levels of Service

The results of the existing level of service analyses for the study area intersections are summarized in Table 9-5. Capacity analysis calculations are provided in Appendix N. All of the studied intersections operated at level of service D or better in the Existing Condition.

Table 9-5 Existing Conditions Level of Service Summary							
Intersection Roads	Lane Group (Approach Direction -Movement)	A.M. Weekday Peak Hour			P.M. Weekday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds/vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds/vehicle)	Level of Service
June Road and Fields Lane		7:00 a.m. to 8:00 a.m			5:30 p.m. to 6:30 p.m		
June Road	NB-L,T	0.09	8.3	A	0.04	7.6	A
Fields Lane	EB-L,R	0.11	12.3	B	0.20	10.9	B
June Road and Starlea Road		7:00 a.m. to 8:00 a.m			5:30 p.m. to 6:30 p.m		
June Road	SB-L,T	0.01	7.6	A	0.05	7.7	A
Starlea Road	WB-L,R	0.29	12.5	B	0.04	9.5	A
June Road and Bloomer Road/School Driveway		7:15 a.m. to 8:15 a.m			2:45 p.m. to 3:45 p.m		
June Road	NB-L,T,R	0.01	7.9	A	0.00	7.4	A
	SB-L,T,R	0.02	7.6	A	0.01	8.1	A
Bloomer Road	WB-L,T,R	0.75	29.7	D	0.27	13.5	B
School Driveway	EB-L,T,R	0.09	12.6	B	0.17	12.4	B
June Road and Hardscrabble Road		7:45 a.m. to 8:45 a.m			2:30 p.m. to 3:30 p.m		
June Road	NB-L,T	0.07	9.1	A	0.06	8.1	A
Hardscrabble Road	EB-L,R	0.56	25.5	D	0.33	16.4	C
June Road and Titicus Road		7:45 a.m. to 8:45 a.m			3:00 p.m. to 4:00 p.m		
Titicus Road	EB-L,T,R	0.04	7.8	A	0.06	7.6	A
	WB-L,T,R	0.01	7.5	A	0.01	7.7	A
June Road	NB-L,T,R	0.28	16.2	C	0.45	19.4	C
	SB-L,T,R	0.65	24.3	C	0.42	17.6	C
Bloomer Road and Peach Lake Road		7:15 a.m. to 8:15 a.m			6:00 p.m. to 7:00 p.m		
Peach Lake Road	NB-L,T	0.08	10.5	B	0.01	7.8	A
Bloomer Road	EB-L,R	0.45	30.9	D	0.39	15.7	C

Level of Service (see Table 9-4 for level of service criteria).
 NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.
 L = Left, R = Right, T = Through, TR = Through and right, (e.g., WB-L = Westbound Left).

Internal Traffic Circulation

The site is currently vacant. A new curvilinear road will be constructed to provide a single access from June Road which will form a four way intersection with Starlea Road. The first 500 feet of the access road will be constructed with a grass median providing separated 10 foot travel lanes for ingress and egress to and from the site. Internal circulation is provided by proposed Roads A and B which form a loop to provide residential access to the clusters of units throughout the site. Two turn arounds have been provided to facilitate emergency service vehicle access. The internal roadways will have a 24 foot width. The roadways will have stone curbs and no shoulders. Three internal signs are proposed: stop signs, handicapped parking and "van accessible signs", as shown in Drawing SP-2.1 and SP-2.2.

The project engineer has completed an analysis of turning radii, which evaluates the ability of trucks, including emergency vehicles, to access the site from June Road as well as access on internal roads. The Turning Radius Plan is provided as Drawing TR-1, attached. Adequate turning radii are provided at the site entrance on June Road and on internal road intersections and curves.

9.3 No Build Traffic Conditions

Typically a project's traffic impact is determined by comparing future traffic conditions without the project's traffic (2009 No Build Condition) to traffic conditions with project-generated traffic (2009 Build Condition).

The No Build traffic condition is an interim scenario that establishes a future baseline condition upon which the project generated traffic can be compared. No Build traffic conditions are ascertained based on a number of factors: (1) improvements in the local road network that are planned or underway; (2) traffic from general population growth in the local area; and (3) traffic from identified development projects in the project site vicinity.

The NYSDOT lists area projects in the draft Statewide Transportation Improvement Program (October 1, 2006 to September 30, 2010). There are no major projects planned by NYSDOT in the vicinity of the studied intersections.

Two pending development projects were added to the No Build Condition: Orchard Hill Conference Center and Golf Course and Peach Lake Commons, a proposed retail and office complex. The Orchard Hill Conference Center and Golf Course is to be located on Fields Lane west of June Road and north of Hardscrabble Road. Peach Lake Commons is proposed east of Peach Lake Road with direct access to the Bloomer Road Intersection. Traffic anticipated from these two projects is listed in Table 9-6.

Table 9-6 Other Area Development Projects Trips Generated						
Land Uses	Trips					
	A.M. Peak Hour			P.M. Peak Hour		
	IN (Trips)	OUT (Trips)	Total (Trips)	IN (Trips)	OUT (Trips)	Total (Trips)
Orchard Hill - Golf Course Conference Center (220 room Conference Center)	83	59	142	61	141	202
Peach Lake Commons (5,250 sq. ft retail and 6,740 sq. ft office)	35	13	48	58	119	177
Source: Buckhurst Fish & Jacquemart Inc., (BFJ Planning) Orchard Hill Conference Center ,TIS . Buckhurst Fish & Jacquemart Inc., (BFJ Planning) Peach Lake Commons ,TIS .						

The traffic assignment for the Orchard Hill, LLC Conference Lodge & Golf Course project on Fields Lane was based on the traffic analysis prepared by prepared by Buckhurst Fish & Jacquemart Inc., (BFJ Planning) as part of the Draft Environmental Impact Statement for this project.

The Peach Lake Commons Traffic Impact Analysis was also prepared by BFJ Planning dated June 20, 2005. Traffic assignment for this project is based upon this analysis.

Peak hour traffic volumes for the weekday a.m. and p.m. No-Build scenarios are provided in Figures 9-4 and 9-5. These figures reflect the existing traffic volumes plus a background traffic growth of two percent annually over three years for the study intersections, in addition to the projected traffic from the two proposed projects listed above.

No Build Level of Service

Table 9-7 represents level of service for the studied intersections in the No-Build Condition. During the a.m. peak hour the southbound June Road approach to Titicus Road declines to a level of service D, still an acceptable level of service. Also, during the a.m. peak hour the eastbound Bloomer Road approach to Peach Lake Road declines to a level of service E. The pending site plan application for Peach Lake Commons, including reconstruction of this intersection into a 4-way intersection, is currently under review by the Town of North Salem. A separate Traffic Impact study is being conducted in support of the Peach Lake Commons site plan application. Any necessary traffic mitigation measures for the Peach Lake Commons project will be identified prior to site plan approval.

This traffic study assessed future traffic conditions including the four way geometrics of the Peach Lake Road and Bloomer Road intersection. This analysis will be further refined as additional traffic data from the Peach Lake Commons study becomes available.

Delays are anticipated to occur at the intersection of June Road and Bloomer Road under future No-Build Conditions as a result of background growth and other pending area projects. These delays are primarily a result of the heavy left turn movement from Westbound Bloomer Road onto June Road, at the High School/Middle School Driveway, during the a.m. Peak hour. The vehicles making this left turn are vehicles enroute to I-684 via Hardscrabble Road, as a result of rush hour congestion on I-684 southbound during the a.m. traffic peak hours.

Table 9-7 No-Build Conditions Level of Service Summary							
Intersection Roads	Lane Group (Approach Direction -Movement)	A.M. Weekday Peak Hour			P.M. Weekday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds/vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds/vehicle)	Level of Service
June Road and Fields Lane							
June Road	NB-L,T	0.10	8.4	A	0.05	7.7	A
Fields Lane	EB-L,R	0.13	12.9	B	0.23	11.4	B
June Road and Starlea Road							
June Road	SB-L,T	0.01	7.6	A	0.05	7.7	A
Starlea Road	WB-L,R	0.33	13.2	B	0.05	9.5	A
June Road and Bloomer Road /School Driveway							
June Road	NB-L,T,R	0.01	7.9	A	0.00	7.4	A
	SB-L,T,R	0.02	7.7	A	0.01	8.2	A
Bloomer Road	WB-L,T,R	0.87	43.9	E*	0.32	14.5	B
School Driveway	EB-L,T,R	0.10	13.2	B	0.19	13.0	B
June Road and Hardscrabble Road							
June Road	NB-L,T	0.09	9.3	A	0.08	8.2	A
Hardscrabble Road	EB-L,R	0.63	30.8	D	0.40	18.6	C
June Road and Titicus Road							
Titicus Road	EB-L,T,R	0.04	7.8	A	0.07	7.6	A
	WB-L,T,R	0.01	7.5	A	0.01	7.7	A
June Road	NB-L,T,R	0.34	18.0	C	0.52	22.2	C
	SB-L,T,R	0.73	30.4	D*	0.49	20.1	C
Bloomer Road and Peach Lake Road							
Peach Lake Road	NB-L,T,R	0.08	10.5	B	0.02	7.9	A
	SB-L,T,R	0.01	7.5	A	0.02	8.1	A
Bloomer Road	WB-L,T,R	0.07	26.4	D	0.22	13.5	B
	EB-L,T,R	0.62	48.1	E*	0.65	32.8	D

Level of Service (see Table 9-4 for level of service criteria).
 NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.
 L = Left, R = Right, T = Through, TR = Through and Right, (e.g., WB-L = Westbound Left).
 * Denotes a change in operating conditions compared to Existing traffic conditions.

9.4 Potential Impacts - Build Condition Traffic

Site Access

The proposed Action would result in the potential construction of up to 90 townhouses with associated off-street parking. The site will have one access located on June Road in the which will create a four way intersection with the existing intersection of Starlea Road.

As discussed in the Land Use and Zoning section, parking requirements for multifamily dwelling units is 1 space for each dwelling unit, plus 1/3 of a space per bedroom. The proposed 65 unit two bedroom complex would require 109 parking spaces. Based upon the two garage spaces in each unit and 40 spaces of visitor parking a total of 170 parking spaces are provided in the proposed project. The 40 spaces of visitor parking are distributed throughout the site in groups of 2, 3, 4, and 9 adjacent to the roadway, in addition to the 12 spaces in the vicinity of the proposed Recreation Building.

Project Trip Generation and Distribution

Traffic analysis for the proposed Salem Hunt project, for up to 90 units is anticipated to generate 47 trips during the a.m. peak hour and 55 trips during the p.m. peak hour. Tables 9-8 and 9-9 show the projected trip generation rates and total trips generated by the proposed townhouse development using the Institute of Transportation Engineers' Trip Generation. The anticipated trip distribution of Salem Hunt is shown in Figure 9-6. Figures 9-7 and 9-8, show peak hour trips distributed to the roadway network resulting from the residential development of Salem Hunt. The trip distribution considers existing traffic flows, and access to I-684, and the Town of North Salem Road network.

The traffic analysis projects traffic conditions for up to 90 townhouse units, but the current site plan proposes 65 units. Trip generation was calculated to determine the traffic to be generated by the 65 units shown on the site plan. Trip generation rates for 65 units are also shown in Table 9-8. The total trips to be generated by 65 units and the reduction in trips compared to the trip generation for up to 90 units is shown in Table 9-9. Construction of 65 units will result in a reduction of 11 trips in the a.m. peak hour and 13 trips during the p.m. peak hour, compared to trip generation for 90 units. Traffic operating levels of service can be expected to be better than those stated in the traffic analysis as a result of this reduction.

Table 9-8				
Project Site Trip Generation Rates				
Land Uses {ITE Code}	Trips			
	A.M. Peak Hour		P.M. Peak Hour	
	IN (Trips/ Unit)	OUT (Trips/ Unit)	IN (Trips/ Unit)	OUT (Trips/ Unit)
Salem Hunt Project 90 residential units (230)	0.090	0.438	0.410	0.202
Salem Hunt Project 65 residential units (230)	0.096	0.467	0.436	0.215
Unit is in numbers of dwelling units Trip Generation, Institute of Transportation Engineers, 7th edition, Washington, DC, 2003.				

Table 9-9						
Project Site Total Trips Generated						
Land Uses	A.M. Peak Hour			P.M. Peak Hour		
	IN (Trips)	OUT (Trips)	Total (Trips)	IN (Trips)	OUT (Trips)	Total (Trips)
Salem Hunt Project 90 residential units	8	39	47	37	18	55
Salem Hunt Project 65 residential units	6	30	36	28	14	42
Reduction in Trips Generated	(2)	(9)	(11)	(9)	(4)	(13)
Trip Generation, Institute of Transportation Engineers, 7th edition, Washington, DC, 2003.						

Build Condition Traffic Volumes

Total a.m. and p.m. peak hour site generated trips, for up to 90 units, are shown in Figures 9-8 and 9-9. These trips are added to the No Build Condition (Figures 9-4 and 9-5) traffic to obtain Build Condition traffic, as shown in Figures 9-9 and 9-10.

Build Condition Level of Service

Table 9-10 presents levels of service for the 2009 Build Condition, for up to 90 units, for the studied intersections. There is minimal change in level of service for any lane groups. During the p.m. peak hour the minor road approaches of the site access and Starlea Road will change from a level of service A to a level of service B, still one of the most efficient levels of service. The Salem Hunt project will result in no other changes to the level of service at any of the approaches for the intersections studied. The eastbound and westbound approaches of Bloomer Road will continue to experience delays, as previously discussed, whether or not the Salem Hunt project is constructed.

The traffic analysis indicates that the project generated traffic will result in a further increase in the waiting queues under the Build condition at certain locations. For example during the PM Peak Hour on Bloomer Road, an increase in the waiting queue from 1.35 to 1.42 vehicles will occur on the westbound Bloomer Road approach to June Road. On the Bloomer Road eastbound approach to Peach Lake Road the queue increases from 4.38 vehicles to 4.44 vehicles. However, this increase in queues represents approximately 0.1 additional seconds of delay at the above intersections.

Table 9-10 Build Conditions (90 units) Level of Service Summary							
Intersection Roads	Lane Group (Approach Direction -Movement)	A.M. Weekday Peak Hour			P.M. Weekday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds/vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds/vehicle)	Level of Service
June Road and Fields Lane							
June Road	NB-L,T	0.12	8.5	A	0.05	7.7	A
Fields Lane	EB-L,R	0.14	13.2	B	0.25	11.6	B
June Road and Starlea Road							
June Road	NB-L,T,R	0.00	7.8	A	0.01	7.4	A
	SB-L,T,R	0.01	7.6	A	0.05	7.7	A
Starlea Road	WB-L,T,R	0.37	15.0	B	0.08	10.8	B*
Site Access	EB-L,T,R	0.08	12.5	B	0.03	11.6	B*
June Road and Bloomer Road/School Driveway							
June Road	NB-L,T,R	0.01	7.9	A	0.00	7.5	A
	SB-L,T,R	0.02	7.7	A	0.01	8.2	A
Bloomer Road	WB-L,T,R	0.89	48.4	E	0.33	14.9	B
School Driveway	EB-L,T,R	0.10	13.5	B	0.20	13.2	B
June Road and Hardscrabble Road							
June Road	NB-L,T	0.09	9.4	A	0.08	8.2	A
Hardscrabble Road	EB-L,R	0.64	32.1	D	0.43	19.4	C
June Road and Titicus Road							
Titicus Road	EB-L,T,R	0.04	7.8	A	0.07	7.6	A
	WB-L,T,R	0.01	7.5	A	0.01	7.7	A
June Road	NB-L,T,R	0.34	18.2	C	0.53	22.8	C
	SB-L,T,R	0.75	31.4	D	0.50	20.5	C
Bloomer Road and Peach Lake Road							
Peach Lake Road	NB-L,T,R	0.08	10.5	B	0.02	7.9	A
	SB-L,T,R	0.01	7.5	A	0.02	8.1	A
Bloomer Road	WB-L,T,R	0.07	26.4	D	0.23	13.6	B
	EB-L,T,R	0.62	48.6	E	0.66	33.2	D
Level of Service (see Table 9-4 for level of service criteria). NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound. L = left, R = right, T = through, TR = through and right, (e.g., WB-L = Westbound left). * Denotes a change in operating conditions compared to No-Build traffic conditions.							

Sight Distance at the proposed Site Access

Stopping sight distance is the distance a vehicle would require to be able to stop on wet pavement to avoid a collision with a vehicle entering the traffic stream. Intersection sight distance provides an additional margin of safety above stopping sight distance.

Intersection sight distance is defined as the sight distance that is necessary for a vehicle to safely enter the traffic stream requiring only minor speed adjustments by vehicles in the traffic stream. The posted speed limit on June Road is 45 miles per hour. As discussed earlier the prevailing 85th percentile of vehicle operating speed for vehicles on June Road in the vicinity of the site access is 50 mph for vehicles traveling northbound and 49 mph for vehicles traveling southbound.

Table 9-11 shows the Intersection Sight Distances recommended by the American Association of State Highway and Transportation Officials (AASHTO). As shown in Drawing EP-1, , the available sight distance measurements for each approach at the proposed site access is more than 555 looking to the north and more than 555 feet looking to the south (see attached drawing). There is sufficient intersection sight distance in both directions at the proposed site access to meet the AASHTO recommendations for the prevailing operating speed of 50 miles per hour.

Table 9-11 Sight Distance		
Speed (in miles/hour)	Stopping Sight Distance	Intersection Sight Distance
30	200 Feet	335 Feet
35	250 Feet	390 Feet
40	305 Feet	445 Feet
45	360 Feet	500 Feet
50	425 Feet	555 Feet
55	495 Feet	610 Feet

A Policy on Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials, 5th ed., 2004.

Traffic from Construction Activity

The proposed project will result in on-site construction activity, and the addition of construction traffic to local roads. It is anticipated that a stabilized rough grade of the proposed site access from June Road will serve as access for the project during construction. The construction entrance will have the same site distance as the final project access; greater than 555 feet in both directions. All construction vehicles will use this access for ingress and egress.

Construction Sequencing and Time Line

Construction is expected to occur over a three year period. A construction phasing plan has been developed to allow for the sequential development of the site to minimize the impacts from construction (see Drawing SP-4.1 Overall Phasing Plan). The first phase will include site preparation and the installation of soil erosion control features. Erosion control features such as protective snow fencing to establish disturbance limits, silt fencing and hay bales, and a stabilized construction entrance will be installed prior to any excavation or grading on the site.

A preliminary schedule is as follows:

- 1) Site preparation and installation of erosion control devices: weeks one and two;
- 2) Tree clearing and grubbing for site entrance and internal access roads: months one to two;
- 3) Excavation and grading for access road and driveways, and installation of stormwater management systems including temporary stormwater basins, permanent stormwater control devices and catch basins and drainage lines: months one to six;
- 4) Excavation and grading for building pads and parking areas: months six to nine;
- 5) Residential Construction: months nine to thirty.

In the final phase, the individual residential buildings will be constructed in phases, over an approximately two year period. Residences will be constructed based, in part, on market demand. Full occupancy is expected to occur within three years of groundbreaking.

Number and Type of Construction Vehicles

Construction traffic will consist primarily of construction equipment arriving at the beginning of the construction period, trucks periodically delivering materials, and daily trips of construction workers. Construction workers typically arrive and depart the work site prior to peak hours of traffic as will the initial construction equipment. Projects of this nature would be likely visited by excavators, bulldozers, dump and cement trucks, backhoes, rollers, graders, pavers, material delivery trucks and an assortment of smaller pieces of equipment for residential home construction for intermittent periods of time over the course of construction.

The preliminary grading plan provided with this document would result in approximately 48,684 cubic yards (cy) of earthwork cut and approximately 27,176 cy of earthwork fill resulting in approximately 21,507 cy of excess earth material. To assess the impact of construction vehicles, an estimate of the number of trucks was calculated by multiplying 1.3 tons/cy by 21,507 cy determining the quantity of material tonnage as 27,959 tons. Assuming that each tri-axle dump truck will hold approximately 25 tons of material, 1,118 trucks would be needed to remove the excess material from the project site.

Access to the Site for Construction Vehicles

All construction vehicles will use the stabilized construction entrance shown on the Erosion and Sediment Control Plan - East, SP-4.2, and shown in detail on the Site Details Plan, D-2. A construction entrance is installed to prevent the tracking of any soil onto area roads. Once these construction vehicles enter the site they will be parked in areas within the limit of disturbance lines. As stated on the Erosion and Sediment Control Plan notes, "All construction vehicles shall be kept clear of the areas outside the limit of disturbance lines". Construction workers will also park on-site, in designated areas in the project limits of disturbance. No construction vehicle parking will occur on public roads.

Construction staging and material stockpiling will occur totally on the project site and within the designated construction limits. Two construction staging areas and seven designated soil stockpile areas are identified on Drawing SP 4-1 Overall Phasing Plan.

Internal roadway erosion and sediment controls are shown in Drawing SP 4-1 Overall Phasing Plan. Erosion control features for the roadway include inlet protection for catch basins, staggered silt fencing and the stabilized construction entrance. If necessary, a flag-man will be provided to assist in the safe entrance and exiting of construction traffic during construction. Erosion and sediment control, dust control and traffic safety controls at the project entrance will be the responsibility of the construction manager. The Town Building Inspector has the ability to modify maintenance activities at the construction entrance.

Construction Routes and Local Roads

Routes for construction traffic to and from the site will vary depending upon the source location of construction materials. Interstate 684 to the west and I-84 to the north are the two regional transportation routes in close proximity to the project site. It is anticipated that the primary

construction traffic route from the site will be North Salem Road north to Fields Lane, west to Hardscrabble Road and west to I-684 ramps. Fields Lane currently has commercial and truck traffic due to existing commercial businesses on this road. An alternate construction traffic route would include Starlea Road east to Starr Ridge Road north to Route 6/202, Interstate 84 and Route 22. Lesser volumes of construction traffic are expected to include June Road south to Hardscrabble Road west and June Road south to Bloomer Road east.

Given that project construction is scheduled to occur over a period of three years, construction truck traffic on any given day is expected to be less than 20 vehicles. This estimate includes truck trips required to transport excess fill from the site. These truck trips would occur over the entire work day and would not be concentrated during the peak traffic hours. Passenger vehicles transporting workers to and from the site would add to existing traffic and this passenger vehicle traffic would occur during peak traffic hours. It is anticipated that less than 50 workers would be at the site, on any given day.

The primary construction traffic route (North Salem Road and Fields Lane) is in good condition and is relatively well maintained. Alternate construction routes including June Road, Starlea Road, Starr Ridge Road, Bloomer Road and Hardscrabble Road have relatively good pavement conditions but do not have well maintained or adequate shoulders in certain areas. No bridges with weight limitations have been identified on the primary and secondary construction routes between the site and major highways (I-684, I-84, Route 6/202). The primary construction route as well as the secondary routes appear to have adequate pavement to support the anticipated project construction traffic. Construction vehicles will not exceed the weight limitations of traveled roads and bridges, at the time of construction. Project construction traffic is not expected to result in damage or negative impacts to local roads.

As described above, less than 20 trucks per day spread throughout the day would involve less than three trucks per hour. Given this expected traffic volume, no specific plan to maintain traffic flow along primary and secondary traffic routes is necessary or proposed.

Construction Entrance

The single construction entrance proposed for the project is in the same location as the proposed boulevard entrance for the Salem Hunt project. The construction entrance is located at the intersection of June Road and Starlea Road and is shown in Drawing SP 4-1 Overall Phasing Plan. As shown in Drawing SP 4-1 the stabilized construction entrance will consist of crushed stone and will be installed prior to any clearing or grading on the property.

The construction entrance will have the same sight distance and stopping sight distance as the proposed entrance, or greater than 555 feet in both directions, as described above. The entrance will be 25 feet in width and is adequate to allow trucks to enter and exit the site. Maintenance of the construction entrance to minimize sediment and dust on existing roadways is discussed below under Mitigation Measures.

School Bus Stops and Student Safety

As detailed in the Community Services section, the Salem Hunt Project is located in the North Salem Central School District. It is anticipated that up to 9 school age children will reside at Salem Hunt. The Project is located approximately 1 mile north of the Pequenenack Elementary School and about one half mile north of the North Salem Junior High/High School

Campus. The school district policy is to bus all students regardless of the distance between the residence and the school. Transportation for 9 students, one mile or less, is anticipated to be accommodated by the existing bus transportation routes¹.

The current site plan will be submitted to the North Salem Central School District to locate a school bus stop to provide maximum safety for students during normal operations and construction periods. The specific location for school bus stops for the Salem Hunt project will be determined in consultation with the North Salem School District. It is anticipated that the site entrance at June Road and Starlea Road will be used as the single bus stop for all residents of Salem Hunt. As described above under Sight Distance at the Proposed Site Access, adequate site stopping distance is provided for both northbound and southbound traffic on June Road for the site entrance and a stopped school bus. During normal site operations, adequate site distance will minimize any potential safety issues for buses stopping at the Salem Hunt site entrance.

Due to the low estimated volume of construction traffic, project construction traffic is not anticipated to affect school bus safety. As described above, a flagman will be provided on June Road to allow safe traffic flow and to avoid any potential conflicts between a school bus and exiting construction vehicles, if it is necessary.

9.5 Mitigation Measures

Project Mitigation Measures

The Salem Hunt project is not expected to result in significant impacts to the surrounding roadway network or result in a decline in traffic operations. The project is expected to generate 47 vehicular trips in the a.m. peak hour and 55 trips in the p.m. peak hour.

Peak hour delays were calculated to establish the quality of operation (level of service) of the intersections studied under the existing condition, future condition without the project and the future condition with the project. The proposed project will result in a minor change to an existing level of service. During the p.m. peak hour the minor road approaches of the Site Access and Starlea Road will operate at level of service B (instead of A), one of the most efficient levels of service. The traffic study determined that there would be no other changes to the operating level of service as a result of the Salem Hunt Project. No mitigation measures are warranted or proposed.

Construction Traffic Mitigation Measures

The construction entrance will be well maintained to minimize the potential for sediment and dust to be tracked onto June Road. As indicated on the proposed construction maintenance schedule (see Drawing SP 4-1), the construction entrance is to be inspected on a daily basis and following rainfall. Maintenance would include cleaning the crushed stone entrance and replacing rock and filter fabric as necessary. In dryer periods, the entrance and any exposed areas will be wet with water trucks to prevent the transport of dust to adjoining areas.

¹ Phone conversation with the Director of Bus Operations, On December 19, 2006.

10.0 UTILITIES

10.1 Existing Conditions - Wastewater Disposal

Treatment Requirements

The project site is located in New York City's Croton Water Supply Watershed, a part of the City's Drinking Water Supply Watershed. Specifically, the site lies within the Muscoot Reservoir basin, a basin designated by the New York City Department of Environmental Protection (NYCDEP) as being *phosphorous restricted*. The construction of wastewater treatment plants with surface discharges is prohibited within phosphorus restricted basins, by the City's watershed regulations. Accordingly, a Subsurface Sewage Treatment System (SSTS) is required to treat wastewater generated by the Salem Hunt project.

The regulatory requirements for SSTS designs, as well as the construction and operation of such systems, in New York City's drinking water supply watershed are imposed by NYCDEP, the New York State Department of Environmental Conservation (NYSDEC), and in Westchester County, by the Westchester County Department of Health (WCDOH) as well. Both agencies must issue approvals of SSTS designs prior to construction and operation of such systems in the City's watershed.

The project engineer estimates that with the uses of low flow fixtures, 16,000 gallons per day (gpd) of wastewater will be generated by the Salem Hunt project. The details of wastewater treatment design are further discussed in the Preliminary Wastewater Report (Appendix K). The design flow is based upon 65 apartments and 300 gpd/unit. This flow equates to 19,500 gpd. Utilizing the 20% allowance for water saving fixtures yields a Residential Daily Design flow of 15,600 gpd. An allowance of 400 gpd will be included for the proposed community building. Therefore the total project daily wastewater flow is 16,000 gpd.

The NYSDEC and the WCDOH clearly and specifically allow a 20 percent reduction in published design flows if low flow water saving devices are utilized in the construction. The 20 percent reduction was included in the 1988 NYSDEC design standards with specific reference to water fixtures that were utilized prior to the implementation of water saving devices in the early 1970's. At this time, all new construction is required to utilize water saving devices. The project will utilize extra-low flow toilets that use 1.2 gallons per flush as compared to standard water saving toilets that use 1.6 gallons per flush, or a further 25 percent reduction in water use from toilets.

The wastewater will be disposed of with a SSTS designed in accordance with all applicable codes and regulations, including the WCDOH's Rules and Regulations for the Design and Construction of Residential Subsurface Sewage Treatment Systems, the NYSDEC's 1988 Design Standards for Wastewater Treatment Works - Intermediate Sized Sewerage Facilities, and the 2004 Recommended Standards for Wastewater Facilities (10-State Standards).

Pursuant to applicable New York State, WCDOH and NYCDEP regulations, the Applicant must demonstrate that the proposed SSTS for the Salem Hunt project is capable of treating wastewater from the project's residents under full buildout conditions, or a total of 16,000 gpd of effluent. In general however, neither WCDOH, NYSDEC, nor the NYCDEP, impose a requirement for pre-treatment of effluent prior to its discharge to the SSTS. Pre treatment may, however, allow for a reduction in the required area of the SSTS.

The design of the proposed SSTS, including its size, is based upon not only the gpd design flow, but upon the characteristics of the soils in the SSTS leaching area. These characteristics on the Salem Hunt site were determined through intensive soil investigations (including excavated deep test pits and percolation tests). Thirty-one deep test holes and thirteen percolation test holes have recently been completed for the proposed SSTS. These tests were witnessed by the WCDOH and the NYCDEP. The mounding analysis was also revised based upon the revised design flow of 16,000 gpd for 65 units (see Appendix H - Addendum Hydrogeology Investigation). Based upon the soil testing and mounding analysis, the site is not limited in its capacity to provide the wastewater disposal for the development in a SSTS. Pretreatment of the wastewater is not necessary or required. In order to mitigate any concerns regarding nitrate effluent concentrations from the proposed SSTS, a recirculating filter treatment system will be added to the septic system treatment train. This system is further described in Section 10.3 Sanitary System Mitigation Measures.

Soil and Slope Evaluations

During the project planning stage, subsurface and topographic conditions were evaluated in order to locate a feasible SSTS area. On-site soils were mapped by the United States Department of Agriculture, Natural Resources Conservation Service. The soils mapped in the proposed locations of the primary and reserve SSTS are described in the Soil Survey of Putnam and Westchester Counties (the Survey). The Survey provides general soil suitability information and notes that the information provided therein is best suited for general planning purposes and not intended as a substitute for on-site investigations.

Charlton loam soils are mapped in the proposed SSTS area and are described in the Survey as being well drained and imposing no significant limitations to the development of subsurface sanitary treatment systems. The characteristics of the soil mapped in the proposed septic areas are provided in Table 10-1, below. Development limitations are considered *slight* where soil properties are generally favorable for the indicated use and limitations are minor and easily overcome.

Table 10-1 Soil Characteristics and Limitations for SSTS			
Soil Series	Hydrologic Group¹	Permeability (in./hr.)	Potential Limitations for SSTS
Charlton loam 2% -8% (ChB)	B	0.6-6.0 (0-60" deep)	Slight
¹ Source: Soil Survey of Putnam and Westchester Counties, New York, USDA SCS			

As noted in Table 10-1, Charlton loam soils (ChB) are rated with slight limitation for the septic tank absorption fields. As discussed below, intensive investigations have confirmed the suitability of the soil for the SSTS. Further, slopes on Charlton loam soils range from 2% to 8% and are conducive for the development of subsurface sanitary treatment systems.

The Salem Hunt SSTS is proposed in a location east of the residential development on the property but west of Wetland D, the large wetland bordering June Road. Thirty-one deep test holes and percolation tests were completed in this area in August, 2007 by the project engineer, Insite Engineering Surveying and Landscape Architecture, P.C.. These tests were witnessed by the NYCDEP and the WCDOH. The results of soil testing are provided in Appendix I - Soil Testing Results. The results indicate that each deep test holes was completed to between 84-inches to 104 -inches below the ground surface. No groundwater was or bedrock was observed in any of the test locations.

GeoDesign used preliminary Insite test results to design further testing at the property. The results of this fieldwork are summarized in a Hydrogeology Investigation (February 2007) and an Addendum Hydrogeology Investigation (September 20, 2007), attached as Appendix J. The Hydrogeology Investigation provides the results of field investigations and a preliminary mounding analysis for a preliminary design with 75 residential units. The Addendum Hydrogeology Investigation utilizes the field information to conduct a mounding analysis for the wastewater generated by 65 residential units.

GeoDesign conducted fourteen (14) test borings, which were completed as 2-inch observation wells (B-1 through B-14). These borings were completed to refusal or bedrock. Auger refusal was encountered at between 15 ft below ground surface (bgs) and 26 feet bgs in B-6 and B-2, respectively. Groundwater was measured in November 2005 at depths of between 17.6 feet and 2.0 feet below the ground surface in B-5 and B-4, respectively. Groundwater was measured in March, 2006 at depths between 19.8 feet and 2.7 feet below the ground surface in B-5 and B-12 respectively.

Existing topography on the site also dictated the location and design of the proposed SSTS. As determined by field survey, topography in the area proposed for the SSTS contains slopes of less than 10 %, and is therefore, suitable for the installation and operation of the proposed SSTS. The applicant notes that New York State Department of Health (NYSDOH) and WCDOH Codes and New York City's Watershed Regulations identify slopes in excess of 15% as being unsuitable for SSTS's. The slopes disturbance map (Figure 7-5 Slopes Disturbance Map) shows a narrow band of steep slopes (15% to 25%) as mapped in within the proposed SSTS area. The design of the SSTS absorption trenches divides the trenches between east and west systems. Absorption trenches will not be installed in areas of steep slopes.

The GeoDesign investigation described above, determined that the project's design flows can be supported by the SSTS area's underlying soils.

10.2 Potential Impacts - Sanitary System

Subsurface Sewage Treatment System Description

The primary SSTS is proposed on 3.25 acres in the southeastern portion of the site. This portion of the site was evaluated during the planning stage and was deemed the most feasible area for wastewater treatment based on the field investigations noted above. Deep test pits, and the additional GeoDesign study, confirmed that soils in the proposed SSTS field generally consisted of a mixture of fine to medium sand and gravel. The absorption fields will consist of conventional two foot wide absorption trenches. The trenches will be alternately dosed with floating outlet dosing tanks to several absorption trench sub-systems.

With an anticipated flow of 16,000 gpd, which results from the use of low flow fixtures, it is estimated that approximately 11,250 linear feet of conventional two foot wide absorption trenches will be required for the primary SSTS area, and an equal amount for the 100% expansion area. The primary and secondary SSTS areas will each consist of approximately 3.25 acres, resulting in 6.5 acres for the entire SSTS area. The primary SSTS will be divided into 12 sub-systems of approximately 938 linear feet of conventional two foot wide absorption trenches each. These areas will be distributed over the entire SSTS area (6.5 acres) to evenly disperse the wastewater. Preliminary design calculations are included in the Preliminary Wastewater Report (Appendix K).

The location of the proposed SSTS is provided on the Site Plan drawings attached to this DEIS. The SSTS design is subject to WCDOH, NYSDEC and NYCDEP review and approval authority and is currently under review by these agencies.

Well Locations

Four water supply wells were drilled on the property to support a community water supply system for the Salem Hunt site. Water supply for the project is described below and in Section 5.0 Groundwater. Based upon pump testing, three of the wells will be utilized; wells TW-2, TW-3 and TW-4. The closest water supply well to the SSTS system is well TW-4, located 450 feet west of the system. Well TW-2 is located approximately 500 feet west of the SSTS system. In addition, the three production wells have steel casings ranging from 71 to 101 feet in depth indicate that the wells are drawing water from considerable depth and separation distance from the ground surface. The proposed wells have substantial vertical and horizontal separation distance from the proposed SSTS.

The closest off-site potable well to the wastewater system is located approximately 300 feet north of the sanitary system. This distance is well beyond the 100 foot separation distance required NYSDOH separation distance between wells and sanitary systems. The SSTS must also be located a minimum of 100 feet from the NYSDEC protected stream within Wetland (L-32), as well as from any other watercourses, to comply with State, County, and City regulations. The proposed SSTS complies with this requirement.

As required by WCDOH and NYCDEP, the proposed SSTS has been designed to accommodate 16,000 gpd of wastewater from the proposed residential housing development. This design flow is based upon applicable WCDOH, NYSDEC, and NYCDEP SSTS design standards.

Groundwater Impacts - GeoDesign Study

The Applicant conducted extensive investigations and analyses of hydrogeologic conditions in the proposed SSTS area, which are provided in the GeoDesign Hydrogeology Investigation (Appendix J). The GeoDesign investigation included a three-dimensional computer model, for the prediction of groundwater flow conditions under the proposed sanitary disposal system (mounding analysis). The investigation also provided estimated effluent travel time, and a contaminant (nitrate) transport model.

Simulated Flow Patterns

A groundwater simulation was performed using a proposed 16,000 gpd sewage flow rate in the area of the proposed subsurface disposal systems. A discussion of the groundwater model and the parameters and assumptions used in the model is provided in Section 5.2 Groundwater - Potential Impacts.

Based on the simulation results, a limited area of the septic area will require filling to achieve sufficient cover to prevent breakout and maintain the trenches above the shallow groundwater levels. The report indicates that if the recommended fill thickness are placed, the simulation does not predict breakout of the leachate above the proposed ground surface or flooding of the leaching trenches. The project engineer will design the primary and reserve areas to achieve the modeled results.

Estimated Effluent Travel Time

The groundwater flow model predicted the estimated travel times for effluent from the proposed septic field to the closest stream, a distance of approximately 105 feet at its closest point (Southeast of B-14). According to the model, which incorporates, soil permeability, soil porosity, and hydraulic gradient, the minimum estimated travel time is 35 days (see Table 5-6 - Appendix J Hydrogeology Investigation Report).

Nitrate Transport Model

According to the GeoDesign report, septic effluent contains ammonia (NH₃) which is converted to nitrate as effluent is discharged to absorption trenches. Nitrate concentrations are typically 40 mg/l (parts per million) approximately one foot below absorption trenches. The fate and concentration of nitrate in groundwater can be modeled using a transport model. The model used was developed for the US Army Corps of Engineers, known as MT3DMS. The purpose of the transport model was to predict nitrate concentrations at the property line closest to the proposed SSTS field. The model for the Salem Hunt site was simplified by conservatively assuming that no chemical reaction or natural breakdown of nitrate occurs. Therefore, the model used only considers dilution over the transport distance.

To address the flow condition during drier periods when dilution is less than during typical flow or high flow conditions, Geodesign used a lower base flow rate than was used in the model to predict mounding. The use of a lower base flow rate for modeling nitrate concentrations provides a "worst-case" scenario or a more conservative analysis, since nitrate concentrations are expected to be higher during dry periods, with less flow to dilute nitrate concentrations. This flow rate was termed the Mean Flow Condition in the Addendum Hydrogeology Investigation (Appendix J) and is based upon a recharge rate of 8.4 inches per year, compared to the 16 inches per year used for the High Flow rate condition.

The results of the modeling are shown in the plots provided in the Addendum Hydrogeology Investigation (Appendix J), Case III - High Flow and Case III - Mean Flow. In the High Flow Condition (typical or high rainfall periods), the predicted nitrate concentration is approximately 6.5 mg/l at the northern property line. In the Mean Flow Condition (low rainfall periods), the model predicts a nitrate concentration of slightly above 10 mg/l at a portion of the northern property line near the project entrance at June Road (see Figure 10-1 Nitrate Concentrations). The 10 mg/l nitrate concentration is predicted to extend approximately 65 to 75 feet beyond the

northern property border, within the June Road right-of-way, under Mean Flow Conditions (periods of low rainfall). The 10 mg/l concentration is not shown to extend onto any private property. East of the proposed SSTS area, the predicted nitrate concentrations are reduced to less than 1 mg/l as the flow reaches the nearby wetlands.

The Geodesign study of the proposed sanitary system concluded that the project site would be able to support the project daily design wastewater flow of 16, 000 gpd.

Odors

The proposed wastewater treatment system is a conventional septic tank and absorption field subsurface sewage treatment system (SSTS). A properly functioning septic tank/absorption field treatment system does not produce odors. The active bacteria in septic tank, although providing an anaerobic situation and potential for odors, are located completely underground. short term, localized odors may be produced during the pump out of the septic tanks. It is anticipated that the tanks will be pumped infrequently, or every few years. Although the septic tanks will be larger than the typical residential tank, they function the same as residential tanks found throughout northern Westchester and southern Putnam Counties. Since there is the potential for short term, localized odors during the pumping of the tanks, they have been located away from residences, adjacent to the wastewater pump station in the eastern portion of the site. Any short term odors during pumping of the tanks are not expected to affect off-site residences.

10.3 Mitigation Measures -Sanitary System

The applicant has demonstrated through extensive field investigations, the capacity of the site to support an SSTS that will accommodate project generated wastewater. A properly designed, constructed, maintained SSTS, will adequately treat wastewater and mitigate the potential for the adverse impacts. The Salem Hunt SSTS location was determined suitable to support the proposed primary and reserve systems. Groundwater simulations predict that the proposed sanitary system can adequately treat project wastewater and that nitrate levels from the system will be at acceptable concentrations at the property boundaries.

The system will be designed and constructed in accordance with applicable State, County, and NYCDEP requirements, and recommendations from GeoDesign. The proposed SSTS is not expected to result in point source discharges, odors or any adverse environmental impacts.

In order to mitigate any potential concerns regarding the nitrate effluent concentrations from the proposed community SSTS, a recirculating filter treatment system will be added to the septic system treatment train. The filter system will be located between the septic tanks and the absorption trenches. At this time, it is anticipated that the filter would be similar to Orenco's AdvanTex AX100 packed bed recirculating textile filter. This type of system can provide significant reductions in BOD (biochemical oxygen demand), TSS (total suspended solids), and TN (total nitrogen, including nitrates). Although the percentage of reduction varies with the wastewater influent characteristics, this filter system would provide the following removals:

	<u>Influent Quality</u>	<u>Effluent Quality</u>	<u>% Removals</u>
BOD	150 mg/L	< 20 mg/L	> 86%
TSS	40 mg/L	< 20 mg/L	> 50%
TN	65 mg/L	< 25 mg/L	> 61%

It should be noted that this pre-treatment is provided to lower nitrate concentrations of the final wastewater effluent following sub-surface treatment in the absorption trenches. This pre-treatment is not to be confused with pre-treatment for sub-surface disposal, which would allow reductions in loading rates and the amount of disposal area and expansion area. No reductions will be taken in the design calculations for sizing the proposed conventional septic tank/absorption trench SSTS with the addition of the recirculating filters. At this time, the Orenco system has been chosen as a system capable of providing the desired effluent qualities. The final system will provide effluent qualities equal to, or better than the Orenco system.

10.4 Existing Conditions - Water Supply

Groundwater resources, off-site wells and groundwater use, local groundwater recharge, and on-site well testing are described in detail in Section 5.0 Groundwater. This section provides a summary of the existing conditions, potential impacts and mitigation measures described in Section 5.0 Groundwater.

On-site and Off-Site Groundwater Uses

The project site is located in an area of primarily low density residential uses. Properties in the vicinity of the site (within 2000 feet) include single family residences, a deli, a Town of North Salem Highway Department facility and the North Salem Middle School/ High School. All of the nearby properties, in the Town of North Salem and north of the site in the Town of Southeast utilize individual wells. The closest public water supply system is the Peach Lake community water system, located approximately 4000 feet southeast of the site.

All properties within 2000 feet of the Salem Hunt site are shown on Figure 5-2 Pumping Test Location Map. The map is based upon town tax maps for the Town of North Salem and the Town of Southeast. The map shows well radii of 1000 feet from the proposed water supply wells as well as all tax lots within 2000 feet of the site. Each of the lots shown can be assumed have an individual potable well. All wells within 200 feet of the project site are shown in Figure 5-3 Pumping Test Monitoring Locations.

As described in Section 5.0 Groundwater, groundwater is found in both a shallow aquifer generally found in the glacial till material overlying the bedrock, and in deeper bedrock aquifer. Wells utilizing the shallow aquifer found in the unconsolidated material are most often installed in glacial sand and gravel outwash deposits. While sand and gravel wells can produce high yielding wells, these shallow wells are more susceptible to drought conditions and impacts from road salts and petroleum.

The majority of local wells utilize the bedrock aquifer. The bedrock in the vicinity of the Salem Hunt property is mapped as the Manhattan formation, described as pelitic schist and amphibolite rock. Depths of bedrock wells and well yields can vary considerably, depending upon the size and quantity of fractures that are intercepted by any specific well. In areas of faults and regional fracture zones, well yields can be high. In locations with few or poor fractures, well yields will be poor, or wells need to be installed to considerable depth to intercept an adequate number of fractures.

Current groundwater use in the vicinity of the property was estimated based upon a review of tax maps and parcels located in drainage areas. Based upon the Town of North Salem tax map,

the upgradient drainage area contains approximately 19 tax lots or portions of lots (i.e. only a portion of a specific property lies within the drainage area boundaries) (see Figure 5-1). The majority (16 lots), contain low density residential uses. The drainage area also includes a portion of the North Salem Middle School/ High School property, as well as the Town Highway Department facility. One commercial property, a deli is also located in the drainage area. Total water demand in the upgradient aquifer area, including the Middle School/ High School property, is conservatively estimated to be 23,650 gpd (see Section 5.0 - Groundwater).

The downgradient aquifer area is approximately 66.6 acres in size, within one-quarter mile of the subject property and according to the Town of North Salem Tax Map, contains 16 properties or portions of properties (i.e. only a portion of a specific property lies within the drainage area boundaries) (see Figure 5-1). The 16 residences result in a total water demand of 7,200 gpd for the 66.6 acre downgradient aquifer area. Total current estimated water used in areas upgradient and downgradient of the site (one quarter mile downgradient) is approximately 31,350 gpd.

On-site Groundwater Recharge

Groundwater recharge for the Salem Hunt site was estimated using a model described in *Wappinger Creek Watershed Groundwater Recharge and Stream Baseflow Evaluation Assessment, The Chazen Companies, March 2006*. Groundwater recharge is further described in Section 5.0 Groundwater.

Based upon the conservative Chazen analysis, 36,010 gpd (or 25 gallons per minute (gpm)) are available for recharge on-site. The proposed average daily water demand is 20,500 gpd or 14.2 gpm.

Based upon the Chazen recharge model, adequate groundwater is available from precipitation on the project site to supply project water demands. The recharge estimates provided above do not account for groundwater contributions from upgradient groundwater areas, surface water contribution, or water added to the local aquifer from the wastewater system.

On-site Groundwater Characteristics

Groundwater in the glacial till material or shallow aquifer is found at depths between 2.0 feet to greater than 20 feet in depth in the 14 shallow monitoring wells on the property. Two wells were dry following installation. Shallow groundwater is seasonally found at surface grade in wetlands and where it contributes to surface water flow in the unnamed stream at the eastern edge of the site. Groundwater in the shallow aquifer is expected to flow generally from south to north consistent with surface water flow patterns. The glacial till varied from 14 to 90 feet in thickness over the bedrock, based upon all wells and borings drilled on the property. It is expected that groundwater in the glacial till contributes to the bedrock aquifer through surface fractures. No direct hydrogeologic connection between the on-site wetlands and water course and the bedrock aquifer was observed during the pumping test completed for on-site wells (see Section 5.0, Groundwater).

10.5 Potential Impacts - Water Supply

Groundwater Quantity

A 72-hour pump test was completed in December, 2006 on three proposed water supply wells for the Salem Hunt project. A well testing protocol was prepared by Tim Miller Associates, Inc. and is provided in Appendix G. The protocol provides the procedures for the pump test and was reviewed by the WCDOH as well as the Town of North Salem and its consultants, prior to the initiation of the test. The pumping test results are described in Section 5.0, Groundwater, and in Appendix H, Water Supply Report.

The pumping test included the monitoring of off-site wells surrounding project site. The location and number of off-site residential wells monitored was evaluated and approved by the Town and its consultants. Well monitoring locations are provided in Figure 5-2, Pumping Test Location Map. Streambed piezometers were installed in the streambed of the unnamed water course to evaluate the potential impact to surface water resources from the on-site wells.

The pumping test results indicated that there is sufficient groundwater on the Salem Hunt property to provide the estimated water demands for the project. Based upon engineering estimates, the Salem Hunt project would require 20,500 gpd or 14.2 gpm. This estimate is based upon 65 two bedroom units utilizing 300 gpd, per unit as well as 400 gpd for the community building usage and 600 gpd for pool usage. The Pumping Test was based on the water demand of 90 residential units. A total of 90 residential units would require 27,000 gpd or 18.8 gpm (average daily demand). The New York State and Westchester County Departments of Health require that the developed wells produce twice the average daily demand [or peak daily demand] with the best well out of service. Therefore, the three wells tested for this project were required to produce a total minimum of 109,440 gpd, or 38 gpm for the primary well and a combined 38 gpm for the remaining two wells. The pumping test demonstrated adequate well yields to meet project water demands.

A report which summarizes the pumping test results is provided in the Water Supply Report - Appendix H. The report summarizes recharge estimates, impacts to on-site and off-site wells, and potential impacts to wetlands and supporting shallow aquifer. Project water demand and overall groundwater recharge studies and water budget are described in Section 5.0 Groundwater and in the Water Supply Report (see Appendix H).

The potential impacts to recharge capacity due to the introduction of impervious surface onto the site was discussed in Section 5.0 Groundwater. The Wappinger Creek Watershed Groundwater Recharge and Stream Baseflow Evaluation Assessment (*The Chazen Companies, March, 2006*), provides factors for different land uses, which can be used to compare pre-development and post-development recharge rates. These run-off and recharge factors show an approximate 10 percent reduction in recharge when comparing undeveloped land uses to multi-family development.

As described above, the Salem Hunt development will result in the conversion of 5.9 acres or approximately 15 percent of the property to impervious surface. A portion of stormwater from roadways will be directed to stormwater management facilities where it can enter soils and contribute to groundwater recharge. In addition, much of the water withdrawn from the local aquifer for residential use will be returned to the subsurface via the community septic system.

Therefore, a 10 percent reduction in on-site recharge rates, following site development, appears to be reasonable.

If current recharge rates 36,010 gpd or 25 gpm were reduced by 10 percent, the post-development recharge rates would be 32,409 gpd or 22.5 gpm. The post development recharge rates exceed the estimated daily water demand of 20,500 gpd or 14.2 gpm.

Groundwater Quality

The proposed stormwater management system and the proposed subsurface sanitary treatment system (SSTS) are not anticipated to impact the groundwater quality, both on-site and downgradient from the site. Section 6.0 Wetlands, Watercourses and Buffers describes stormwater management, treatment facilities and methods to treat stormwater quality. The water quality impacts of the proposed SSTS are described in Section 5.0 Groundwater and in Section 10.2 Potential Impacts - Sanitary System, above.

Extensive site investigations were conducted to determine the feasibility of the site to support a SSTS for the proposed development and to aid in the design of the system. The Salem Hunt SSTS location was determined to be suitable for the proposed primary and reserve systems. Groundwater simulations predict that the proposed sanitary system can adequately treat project wastewater and that nitrate levels from the system will be at acceptable concentrations at the property boundaries. The final designs for the wastewater treatment system will be designed in accordance with applicable State, County, and NYCDEP requirements. The proposed SSTS is not expected to result in point source discharges, or any adverse environmental impacts.

The quality of the water sampled on the property meets the New York State Drinking Water Standards, with the exception of coliform bacteria. Coliform bacteria is common found in newly installed wells and can be introduced to wells during the drilling and pump testing process, by the introduction of material and equipment into the wells from the surface. Disinfectant treatment of wells typically removes the coliform. The laboratory analytical results are provided in the Water Supply Report (see Appendix H).

No salt or chemical deicing materials are proposed to be used on the site. Sand will be utilized for traction following snowstorms and in icy conditions on the Salem Hunt development. Therefore, no impacts to groundwater or the local aquifer are anticipated from deicing materials.

No irrigation is proposed for the Salem Hunt property. Landscaping fertilizer and pesticide use will be minimized to the extent possible. An Integrated Pest Management plan has been prepared for the development and will be implemented by the Salem Hunt Condominium Association. A copy of the IPM is provided in Appendix O. The Condominium Association will have the primary responsibility for the maintenance and care of the project landscaping, including the use of fertilizers and any required use of pesticides.

Integrated Pest Management is a systematic approach to managing pests that focuses on long-term prevention or suppression with minimal impact on human health, the environment and non-target organisms. This approach incorporates all reasonable measures to prevent pest problems by properly identifying pests, monitoring population dynamics, and utilizing a combination of methods to reduce pests to acceptable levels. At its most basic, IPM is a common sense pest control strategy based on two tenets: 1) treat only when necessary, and 2)

use the safest available alternative to do the job. In practice, IPM involves careful monitoring for pests, and the use of a wide range of methods to exclude, remove, drive away or kill pests with the least possible hazard to people, property, the watershed, groundwater and the environment in general.

The careful and minimal use of fertilizers and pesticides for the Salem Hunt development will minimize the potential impact of fertilizers and pesticides to groundwater quality.

10.6 Mitigation Measures - Water Supply

Existing water supply systems in this part of North Salem and Southeast rely on groundwater for water supply, and the proposed Salem Hunt development will be served by a community water system. As described above, future development is not expected to result in significant adverse impacts on groundwater resources.

As described above, the monitoring of off-site wells during the pumping test showed interference (drawdown) in four off-site wells. The greatest interference was observed in the Havell well located close to the southern property border with a drawdown of 25 feet. The Red Horse farm well, the Town Highway facility well and the Seeley well were all impacted to a lesser degree, by approximately 2 feet, 5 feet and 5 feet respectively. Again, the pumping test was run at close to seven times the average daily demand. The interference observed is not expected to affect the long term use, viability or yields of the off-site wells.

Monitoring

While no long term impacts to existing private wells are anticipated, the applicant would offer a monitoring program for the Havell well. The need for and utility of a long term water level monitoring program should be determined by the Lead Agency in consultation with a professional hydrogeologist. The details of the proposed monitoring program are described in Chapter 5.3 Groundwater Mitigation.

A well monitoring program, would provide the Town and the homeowner, with data to document whether the project could potentially affect an existing off-site well. Without such monitoring data, it would be difficult to document or substantiate whether the project wells were affecting an off-site well or whether other factors, not related to the project were affecting the capacity of the off-site well.

The hydrogeologic consultant retained by the Town, will determine if the well impact is the result of project pumping or other factors, not related to the project. Appropriate mitigation, such as well deepening or well replacement will be provided by the applicant should it be determined that the project well pumping resulted in loss of function of an off-site well.

Other Water-Supply Mitigation Measures

While no adverse impacts to groundwater resources are expected, several mitigation measures are proposed by the applicant. Undeveloped and landscaped portions of the site will remain undeveloped and will allow continued recharge of the aquifer. As described above, the majority of stormwater collected from parking lots and driveways will be treated in stormwater management facilities. Water will infiltrate into the ground in these facilities thereby contributing to the recharge of the groundwater on-site.

The four mapped wetlands, including the eastern wetland (wetland D) which surrounds a stream corridor, will be undisturbed and will continue to function as natural stormwater detention areas. Water collected in the on-site wetlands will continue to contribute to the shallow and bedrock aquifers underlying the project site.

Water conservation for the project will be achieved through the use of low-flow, water efficient plumbing fixtures and appliances. The use of such water conserving fixtures can reduce water consumption by up to 20 percent, according to the U.S. Green Building Council. The project will utilize extra-low flow toilets that utilize 1.2 gallons per flush as compared to standard water saving toilets that use 1.6 gallons per flush, or a further 25 percent reduction in water use from toilets.

Groundwater quality for the proposed community supply wells will be maintained by the design of the wells and the project layout. The project will maintain all required wellhead radius protection areas and separation distances, as required by the NYSDOH. As described above, the three proposed supply wells have steel casings ranging from 71 to 101 feet in length. A substantial thickness of glacial till material separates the water bearing bedrock fractures, from surface influences, including potential influences from the project wastewater treatment system. As described above, the wastewater treatment system is located 450 feet east of the nearest proposed water supply well (TW-4), providing adequate separation distance between the sanitary system and water supply wells.

10.7 Other Site Utilities

Existing Conditions

Utilities available to the project site include electrical service, telephone and cable service. No natural gas lines are available for the project site. The above utilities are located on June Road and North Salem Road, in the Town of Southeast, north of the site.

The area surrounding the project site currently has electric service provided by New York State Electric & Gas (NYSEG). The existing transmission lines on June Road provide electricity to the residences located to the east, north and south of the project site, as well as other nearby residential development and the North Salem Middle School/ High School.

Potential Impacts

The existing utility services, including electrical, telephone and cable are expected to be capable of servicing the Salem Hunt project site. Two written inquiries have been made to NYSEG regarding the capacity of the existing infrastructure to service the site, or whether changes or upgrades would be required to serve the proposed 65 residential units (see February 15, 2007 and August 29, 2007 letters - Appendix B). A copy of the Site Plans were provided to NYSEG on August 29, 2007. On January 16, 2008, Mr. Mark Bonjuklian from NYSEG provided an E-mail which conceptually grants approval for work in the NYSEG's easement area and the moving of a distribution pole (see Appendix B). The applicant is working with NYSEG regarding the details of work within NYSEG's easement.

Heating for the development is proposed to be provided by electrical service. Underground propane tanks are proposed to be used for cooking. The locations of propane tanks are shown

in Drawing SP-3 Grading and Utilities Plan. One tank will be shared by approximately four units. The use of propane is not anticipated to have any significant environmental impacts.

Where possible, joint trenches will be used for underground utilities, such as electric, cable and telephone service. Separation distances for these utilities will be determined by the specific companies providing service to the Salem Hunt development.

Mitigation Measures

Since the project is utilizing existing utility infrastructure, and no underground or above ground fuel oil storage tanks are proposed, no mitigation measures related to utilities are proposed. All utility lines will be installed underground, as required by the Town of North Salem Code.

11.0 COMMUNITY FACILITIES AND SERVICES

11.1 Demography

In order to assess the demand that Salem Hunt development would place on community services and facilities, the anticipated population, including public school-age children, must be estimated.

Existing Conditions

Population Growth

The northern portion of Westchester County, in which the Town of North Salem is situated, is located in the New York metropolitan region’s outer ring, an area of generally high growth and development, although the growth rate in North Salem and surrounding Towns has slowed in the last four years.

Westchester County had a total population of 923,459 persons in 2000, according to the US Census Bureau. Westchester County grew from 874,866 persons in 1990 to 923,459 persons in 2000, which is a 5.6% increase.

Population throughout Westchester County, including the Town of North Salem, is expected to continue to grow throughout the 2000 decade and beyond. According to US Census estimates, and studies by Westchester County Department of Planning, the Town’s population is projected to continue to increase between 2000 and 2025.

Table 11-1 summarizes select US Census 2000 population characteristics for the Town of North Salem.

Table 11-1 2000 Population Statistics	
Population Characteristic	North Salem
Total Population	5,173
School-aged Children	967
Total Households	1,979
Average Household Size	2.8
Average Family Size	3.17
Source - US Census Bureau, 2000.	

With a population of 5,173 persons in 2000, Town of North Salem had a total of 242 persons per square mile. With an area of 22.9 square miles, North Salem is second only to Pound Ridge in terms of having the least population density in Westchester County (Comprehensive Plan Update, Town of North Salem, December, 2006).

According to US Census figures, the population of the Town of North Salem grew by approximately 9.5 percent during the 1990 to 2000 period from 4,725 to 5,173. Population in 2005 was estimated to be 5,246, a one percent increase over 2000, according to the

Westchester County Planning Department. The most recent population projections for the Town, provided by the Westchester County Planning Department show slow growth rates in North Salem for 2005 through 2015 (1% or less per 5-year period) and slow rates of population decrease for 2015 through 2030 (-0.5% to -1.5% per 5 year period) (per Comprehensive Plan Update, Town of North Salem, December, 2006).

Based on 2000 Census estimates, there were a total of 967 school-age children (K-12) in the Town of North Salem.

Household Size and Composition

The Town of North Salem had 1,764 total households in 2000. The 2000 Census showed that “family households” constituted 95 percent of all households in the Town of North Salem. According to the 2000 census, approximately 40.8 percent of all households in North Salem had children under the age of 18 years. This is similar to the overall Westchester County value of 36.6 percent of all households having children under the age of 18 years. In addition, 19.7 percent of all households had an individual residing therein that was 65 years and over in age. Approximately 86.2 percent of all households were in owner-occupied housing units and 13.8 percent were renter households.

In 1990, the number of households within the Town was 1,561. By 2000 the number of households was 1,764, an increase of 13 percent, which is greater than the population growth during the same period. The average household size in 2000 was 2.8 persons per household, a decrease from the 1990 average household size of 3.0 persons per household. This reflects the national household trend toward smaller household sizes.

This population was found in a total of 1,239 families, which averaged 3.17 persons per family. In 1990, there were 1,239 families in North Salem, which averaged 3.22 persons per family.

Potential Impacts

The Salem Hunt development proposes construction of 65 two-bedroom condominium units.

The total population and number of public school-aged children that would be expected from the proposed development has been estimated. The most commonly used multipliers are those prepared by noted practitioners of fiscal impact analysis in the United States -- Robert W. Burchell, David Listokin, and William R. Dolphin of Rutgers University’s Center for Urban Policy Research (CUPR). These multipliers are published in the Urban Land Institute’s Development Assessment Handbook (1994). Demographic multipliers are developed using data from household surveys or from the US Census Public Use Microdata Samples (PUMS) for recently constructed housing. The multiplier data include estimates of household size based on bedroom number and the region within which housing is located. Although CUPR is in the process of developing new multipliers using 2000 census data, they have yet to be released.

The population which could be expected as a result of the construction of Salem Hunt development is based upon the Development Assessment Handbook. The multiplier for two bedroom condominiums in the northeast, is 2.0685 persons per unit and the school-aged children multiplier is 0.1393 children per unit. Based on these multipliers, the proposed Salem

Hunt development is projected to add 135 persons including 9 school age children to the Town¹.

The 135 new residents added to the Town population would represent approximately 2.5 percent of the projected 2010 total Town population, estimated to be 5,300. The 2010 population projection for the Town of North Salem was developed by the Westchester County Planning Department (per Comprehensive Plan Update, Town of North Salem, December, 2006).

The proposed Salem Hunt development is not expected to have an adverse effect on the Town's population, its population density, or the existing household character of the community. While the proposed condominium development is not as common as the typical single family residential development in the Town, such development was specifically sought with the rezoning of four parcels in the Town in 2000 and 2001, as a result of the Continental Decision (see Section 2.0 Project Description). The Salem Hunt property was rezoned by the Town in 2000 to accommodate additional housing options and encourage affordable housing in the Town (Comprehensive Plan Update, Town of North Salem, December, 2006). Therefore, in rezoning the property to a medium density residential zoning district, the Town anticipated higher than typical density and projects and developments which would add to the Town's population.

Mitigation Measures

As no significant impacts are anticipated, no mitigation measures are proposed.

11.2 Fiscal

The purpose of this section is to examine the potential fiscal effects of the proposed construction of Salem Hunt. The project site is currently undeveloped. The fiscal analysis for Salem Hunt analyzes 65 townhouse condominiums with a common lot with recreational facilities. The project would be served by a private road, water supply system consisting of community wells and a subsurface sewage treatment system (SSTS). The site would be served by the North Salem School District.

All units would be in condominium ownership. The two bedroom condominium units are anticipated to be approximately 1,700 to 2,400 square feet in size.

Existing Conditions

Current Tax Revenues

According to information provided by the Town of North Salem Tax Assessor's Office, the project parcels currently generate taxes to Westchester County, the Town of North Salem, the Croton Falls Fire District and the North Salem Central School District. Table 11-2 provides the tax revenues by taxing jurisdiction generated by the property at this time. With no changes in assessments, these rates are likely to increase over time.

¹ School aged child: the household members of elementary and secondary school age, defined as children 5 to 17 years of age. Source: Burchell, Robert W., David Listokin and William Dolphin, et al. Residential Demographic Multipliers - Estimates of the Occupants of New Housing. 2006.

Table 11-2 Current Taxes Generated by Project Site		
Taxing Authority	2006 Tax Rate*	Current Taxes
Westchester County Tax	\$33.24172	\$2,596
Town of North Salem	\$28.007713	\$2,187
Croton Falls Fire District	\$5.25109	\$410
North Salem Central School District**	\$160.490039	\$12,534
TOTAL		\$17,728
*Tax Rate per \$1,000 of Assessed Valuation.		
**School Tax rate is for 2005-2006 school year.		

According to the Tax Assessor's office, the current assessed value of the proposed project to Westchester County, the Town of North Salem and the North Salem School District is \$78,100.

Potential Impacts

The proposed Salem Hunt condominium units will be taxed based on the developed assessed value. This will result in an increase in tax revenues to each of the taxing jurisdictions, as compared to existing tax revenues.

To establish the values for the proposed dwellings for purposes of determining future tax revenues, based upon condominium ownership, residential units should be valued based on an analysis of the income potential of the property. Based upon information provided by the developer and using the income approach, the average market value of the 52 market-rate townhouse units would be \$850,000 per unit, while the 13 affordable units would have a market value of \$225,000 per unit, for a total market value of \$24,146,087.

As shown in Table 11-3, the proposed project would generate a total of approximately \$504,246 in property tax revenues annually to the representative taxing jurisdictions. The increase in tax revenues reflects the change in land use from vacant land lots to residential use for 65 condominiums.

Table 11-3 Current & Projected Taxes for 65-Unit Development				
Taxing Authority	Tax Rate*	Current Taxes	Projected Taxes	Difference
Westchester County Tax	\$33.24172	\$2,596	\$73,844	\$71,248
Town of North Salem	\$28.007713	\$2,187	\$62,217	\$60,030
Croton Fire District	\$5.25109	\$410	\$11,665	\$11,255
Total Town Tax			\$73,882	\$71,285
North Salem Central School District	\$160.490039	\$12,534	\$356,519	\$343,985
TOTAL		\$17,728	\$504,246	\$486,518
*Tax Rate per \$1,000 of Assessed Valuation of \$2,221,440.				

Town of North Salem Fiscal Impact

An estimate of costs incurred by the Town of North Salem associated with the proposed residential development may be provided by obtaining a reasonably accurate composite of current taxpayer costs on a per capita basis and multiplying this amount by the anticipated population of the proposed project.

The per capita cost is determined by dividing the population into the amount of expenditures raised by the tax levy.

In this instance, the 2006 municipal budget for North Salem amounts to \$6,915,073, but only \$4,181,417 was raised by the tax levy. Dividing this amount (\$4,181,417) by the 2005 estimated population of North Salem of 5,246 provides an estimate of per capita municipal costs of \$797. It should be noted that this is a conservative estimate, since the actual population for the Town of North Salem in 2006 was greater than the 2005 population.

The proposed 65-unit Salem Hunt development is projected to increase the population of North Salem by 135 persons. As noted above, the estimated annual per capita property tax levy for municipal services is \$797. Using this as a basis for projections, the additional costs payable through the property tax, which are induced by the Salem Hunt project, are projected to total \$107,595.

The proposed 65 townhouse units will generate \$62,217, an increase of \$60,030, in annual tax revenue to the Town. These tax revenues may be used to offset costs to the Town that may be incurred as a result of the proposed Salem Hunt development.

Project construction inspections by the Town will be covered by a construction bond provided by the applicant. Inspections may also be completed by an independent inspector or firm retained by the Town to monitor construction and erosion control measures. Funds for this inspection will be provided by the applicant.

North Salem Central School District Fiscal Impact

The costs to the North Salem Central School District associated with the addition of nine school age children was examined. Potential impacts to the School District are further described, below. Costs are compared with anticipated tax revenues to determine the fiscal impact, if any, that would result from the project.

According to the NYS Department of Education², the School District's budget for the 2005-2006 school year totaled \$32,738,040 with \$30,236,570 being raised by the tax levy. The School District's enrollment for the 2005-2006 school year was 1,386 students, resulting in a per student cost from the tax levy of \$21,816.

Based on the \$21,816 figure calculated above, School District costs to educate the additional nine students introduced by the Salem Hunt development would be approximately \$196,344. By comparison, the property tax revenues to be generated to the School District would total \$356,519 annually, which is \$343,985 more than currently generated. The fiscal impact associated with the proposed project, after considering the costs to the school, would be an annual tax surplus of \$147,641.

² New York State Education Department website--http://www.emsc.nysed.gov/mgtserv/2005_property_tax.htm

The proposed use of the site for a single-family residential community is compatible with surrounding residential uses and the high market value for the proposed homes would be expected to have a positive effect on the property values of the nearby residential properties.

It is anticipated that construction of the roads and utilities will start upon Town approval, with the completion of all homes within the next three years. It is not anticipated that any portion of the development would remain unfinished for a long period of time. There is a high demand for single family homes in Westchester County and a limited inventory. The real estate market is expected to readily absorb the proposed development. Therefore, delays in the completion of the project are not anticipated.

Thus, the proposed use of the site for a single-family residential community, a use considered compatible with surrounding residential and institutional uses, would be expected to have a positive effect on the property values of neighboring and nearby residential properties.

In addition to direct fiscal benefit to the local taxing districts, there are expected to be secondary benefits to the local economy from spending by the new residents of this project. The spending of higher-income residents expected to live at the proposed development will benefit commercial businesses in the local area and the region.

Mitigation Measures

No significant impacts, including potential impacts to student transportation, to the North Salem School District are anticipated by the proposed Salem Hunt development, thus no mitigation measures are proposed.

11.3 Schools

The project area will be served by the North Salem School District.

The North Salem Pequenaconck Elementary School would serve the project site is located on June Road approximately one mile south of the project site. The school currently serves approximately 600 students in kindergarten through grade five. The North Salem Middle and High School, also located on June Road, would serve the project for the upper grade levels and are situated approximately one half mile from the project site and have 340 students and 440 students, respectively, attending during the 2006-2007 school year.³ Refer to Table 11-4, below.

³ Phone conversation with Mr. Robert Celente, Assistant Superintendent of Business, December 15, 2006.

Table 11-4 North Salem School District 2006/2007 School Year⁴			
School	Grades Served	Approximate Student Age	2006-2007 Enrollment
North Salem Pequenaconck Elementary School	K-5	5 to 10	600
North Salem Middle School	6-8	11 to 13	340
North Salem High School	9-12	14 to 18	440
TOTAL (approximate)			1,380

There was an average annual increase in enrollment of 3.5 percent in the ten-year period from 1993 to 2003. Enrollment is anticipated to continue to increase and reach nearly 1,600 students by 2012.⁵

According to the *North Salem Central School District Long Range Planning Study*, (April 2004), "North Salem CSD has shown consistent K-12 enrollment growth beginning in 1994 and throughout the historical period. Between 1998 and 2003, all grade configurations experienced increases, with the greatest growth in secondary grades. Enrollment growth is projected to continue through 2008 in all grade configurations, and continue through the latter half of the projection period for the middle and high school grades. Slight losses are expected in elementary grades during this time. A peak District enrollment of 1,580 students is expected in 2012."³

According to the District, the schools are currently operating at capacity, but there are no existing plans for staff or facility expansion.

As previously noted, the School District's budget for the 2005-2006 school year totaled \$32,738,040 with \$30,236,570 being raised by the tax levy. The School District's enrollment for the 2005-2006 school year was 1,386 students, resulting in a per student cost from the tax levy of \$21,816.

Other educational facilities in that area include parochial schools, several boarding schools and facilities for handicapped students. Seventy-nine students, or approximately five percent of the District's student population, attended private schools during the 2006-2007 school year. According to the Town Comprehensive Plan Update, approximately 10 percent of the school-age children in the District attended private schools in 2003. It is anticipated that non-public school enrollment will stay within a range of five to ten percent of the District resident children.

The Northern Westchester and Putnam Board of Cooperative Education Services (BOCES) also provides high school students with special educational programs. This facility is located in Yorktown Heights.

⁴ Phone conversation with Mr. Robert Celente, Assistant Superintendent of Business, December 15, 2006.

⁵ Comprehensive Plan Update, Town of North Salem, December 2006.

Potential Impacts

Based on the ULI multiplier of 0.1393 school-aged children per each two bedroom townhouse, the proposed 65 unit development is projected to introduce nine new students to the North Salem Central School District when fully occupied. A portion of those children would be expected to attend private schools, however to provide a conservative estimate, this analysis included all nine children that could attend the North Central School District.

Using the residential demographic multipliers set forth in the Residential Demographic Multipliers - Estimate of the Occupants of New Housing⁶, the breakdown of projected school age children by grade from the proposed development is shown in Table 11-5, below. The introduction of these students into various grade levels over a multi-year period would ameliorate the effect of the increase in school district enrollment associated with this project. The approval and construction period of this project provides time to allow the North Salem Central School District to implement measures for the introduction of new students from this and other area projects.

Table 11-5 Projected School Aged Children by Grade from Salem Hunt			
Structure Type	Grades	Multiplier used	Number of students
Townhouse (single family attached), greater than \$194,500	K-2	0.05	3.25
Same as above	3-6	0.04	2.6
Same as above	7-9	0.03	1.95
Same as above	10-12	0.02	1.3
TOTAL			9.1

Based upon the above grades and multipliers, it is anticipated that the Salem Hunt project will result in an additional 5 to 6 students attending the North Salem Pequenakonck Elementary School, 2 to 3 additional students attending the North Salem Middle School and 1 to 2 Students attending the North Salem High School.

The North Salem Central School District was contacted to verify the number of school-age children that would be expected to be generated by the proposed project. While the School District does not maintain statistics on the number of school-age children per household being generated in new housing developments, the district's representative, Mr. Robert Celente, indicated that he felt the projected school-age population appeared to be low but did not have an alternate multiplier which he felt would be more accurate. He suggested that up to 25 school-aged children could reside in the proposed development.⁷ This would result in a school-age multiplier of 0.278 children per unit, which is double the multiplier provided in the ULI. The analysis of potential impact to the School District was based upon the ULI multiplier,

⁶ Burchell, Robert W., David Listokin and William Dolphin, et al. Residential Demographic Multipliers - Estimates of the Occupants of New Housing. 2006.

⁷ Phone conversation with Mr. Robert Celente, Assistant Superintendent of Business, December 15, 2006.

which is an accepted method of developing demographic data, by professional planners. Without Town-specific data based upon projects similar to Salem Hunt, the ULI multiplier in conjunction with the Residential Demographic Multipliers were used.

The North Salem Central School district was contacted to determine whether the District's school facilities have capacity to handle the increase in the number of students generated by the proposed project. The district currently has no plans for expanding the school facilities.

Mitigation Measures

The proposed 65-unit Salem Hunt development will add approximately nine school children to the North Salem Central School District. The introduction of nine school-age children over grades K through 12, is not expected to have a significant impact to the North Salem Central School District. The introduction of only nine school children along with the central location of the proposed development along June Road (North Salem Pequenakonck Elementary School - one mile south of the project site along June Road and North Salem Middle and High School - one half a mile south of the project site also located on June Road), the proposed development is not expected to impact the student transportation to and from District Schools.

The increase in student population would be offset by the tax revenues generated by the proposed project to the District and result in a net annual increase in revenues of \$147,641. No mitigation measures are proposed.

11.4 Police Protection

Existing Conditions

Police protection for North Salem and the project area is provided by the New York State Police Department and the North Salem Police Department.

New York State Police located in Somers serves four towns in the area, including Lewisboro, North Salem, Pound Ridge and Somers, as well as Interstate 684. There are substations located in Lewisboro and Pound Ridge. The State Police consists of approximately 42 officers, including three sergeants and five investigators. The NYS Police provide primary police protection for the project site.

The Town of North Salem Police Department also provides police protection for the Salem Hunt project site. The North Salem Police Department consists of 14-member force and a parking enforcement officer. It is a part-time organization located on Titucus Road, approximately 2.5 miles from the project site. According to Thomas Howley, Chief of Police, response time to the site could vary anywhere between one to 15 minutes, depending on the location of patrol cars. The Department has four vehicles and supplements the State Police patrols.

The Department responds to approximately 900 calls for service per year. Based upon the Town of North Salem population of 5,200 persons, the current ratio of the town's police force to the population of the Town is approximately 1 police officer per 433 persons.

The police protection provided is presently adequate and there are no major problems in the area. However, the Department is looking to add evening patrols in the future, which may entail

hiring one additional officer. The Department also hopes to upgrade its facilities and equipment in the coming years.

Potential Impacts

It is anticipated that the proposed project would add approximately 135 residents to the Town's population.

Based on standards contained in the Development Impact Assessment Handbook (Urban Land Institute, 1994), two police officers and 0.6 police vehicles are required per 1,000 population. The service ratio for the North Salem Police Department currently exceeds this standard.

The increase in population of 135 persons would generate a need for 0.3 additional police personnel and 0.08 police vehicles. It is noted that the increased demand placed on the Police Department from the Salem Hunt development would represent an incremental increase in demand on existing services, rather than demand for new services in this area, which the ULI rates assume.

With the projected increase in population of 135 persons, the service ratio for the North Salem Police Department would continue to exceed the ULI standard. The addition of one new officer, as anticipated by to the Department in the future, the existing ratio of police officers to the population will be maintained.

Mitigation Measures

According to the Town's Police Department, no significant demands would be placed on police services as a result of the proposed project. As no significant adverse impacts have been identified, no specific mitigation measures relating to police protection services are proposed.

11.5 Fire Protection

Existing Conditions

The Croton Falls Volunteer Fire Department provides fire protection for the project area and is located in Croton Falls, New York. The Department is an all-volunteer company that provides fire protection services for approximately 4,900 people living in an area of 25 square miles. The Department operates out of two stations that protect a primarily residential area.⁸

The Department has approximately 60-80 members and a ladies auxiliary which provides support at extended fire scenes.

The Department has two stations. Station 1 is the headquarters station and is located on 1 Front street in Croton Falls. Station 2 is located on Titicus Road in North Salem, which is less than three miles from the project site. Station 2 is being expanded to provide additional space for offices, meeting rooms, training space and additional bays for equipment and trucks.⁹

⁸ Croton Falls Volunteer Fire Department website, <http://departments.firehouse.com/dept/CrotonFalls>, NY.

⁹ Comprehensive Plan Update, Town of North Salem, December 2006.

The Department's equipment includes three engines, one tanker, two mini-attack vehicles (brush trucks), one rescue vehicle and one utility vehicle.¹⁰

Additional information was requested from the Department in a letter, dated August 14, 2006. A meeting with the Croton Falls Fire Department on April 9, 2008 is summarized below.

If mutual aid is needed, the Fire Department would be assisted by fire fighters from nearby volunteer departments.

Potential Impacts

The Salem Hunt development would introduce 65 condominiums and 135 persons to the district served by the Croton Falls Volunteer Fire Department. The primary access to the site would be from June Road.

The proposed project would be supplied water from a private water system with wells. Details regarding the proposed water supply system are provided in Chapters 5.0 and 10, Groundwater and Utilities, respectively, of this document.

The buildings would be required to meet applicable standards of the New York State Uniform Fire Prevention and Building Code, and would also adhere to applicable regulations of Chapter, 108, Building Construction and Fire Prevention, of the Code of the Town of North Salem.

The proposed internal roads are designed to accommodate fire engines and truck traffic. Emergency access is provided around all residential buildings on the project site. Specifically, fire lanes will be provided in front of the buildings, and access would be possible around sides portions of the buildings. The finalized plans will be reviewed by the Town Fire Inspector during the site plan approval process.

As previously discussed, the Salem Hunt project will increase the town's population by 135 persons. Based on planning standards contained in the Urban Land Institute's 1994 Development Impact Handbook, it is estimated that 1.65 fire personnel per 1,000 population is required to serve a new population. The anticipated increase in population of 135 persons would generate a demand for 0.3 additional fire personnel. The Department's current personnel level of 50 fire personnel exceeds this standard even after the proposed Salem Hunt population increase. This is a conservative value, as the ULI multipliers assume no existing services, thus the actual demand for personnel is expected to be somewhat lower. Salem Hunt would generate property tax revenues to the Croton Falls Fire Department of approximately \$11,665 annually. This additional revenue can be used to augment the Department's capabilities as necessary.

If mutual aid is needed, the Fire District would be assisted by fire fighters from adjoining districts.

On April 9, 2008 the applicant met with the Croton Falls Fire Department at their firehouse on Titicus Road. At this meeting, the applicant reviewed the general layout of the proposed development and requested input from the Fire Department Chief, Captains and other Fire Company personnel who were present. Also in attendance was the North Salem Planning

¹⁰Croton Falls Fire Department, James Maddaluna, phone conversation, December 27, 2006.

Board Chairwoman and the Building Inspector. The fire department requested the following, all of which the applicant agreed to:

- 1) that the applicant provide two subsurface 25,000 gallon storage tanks that would be located off of Road A, immediately after the intersection of Road A and Road B;
- 2) that if the applicant proposes any hydrants for draining the domestic water for the community that they be turned inward and cleared identified as not to be used for fire-fighting;
- 3) that the applicant provide information about what type of periodic maintenance and inspection the homeowners association would do to ensure that the water is available if it is ever needed;
- 4) that the homeowners association be responsible for this maintenance;
- 5) that an easement be granted to the Fire Company to allow them to utilize the water in the storage tanks to fight fire on other properties not related to the applicant's property. In this event, the Fire Company would refill the storage tanks.

The applicant agreed that the FEIS will address all of the items above. It was discussed that the it would be appropriate for the approvals to require compliance with 4 and 5 above.

The Preliminary Water System Report provides a total average daily design flow for the project as 20,500 gallons per day (gpd) or 14.2 gallons per minute (gpm). This estimate includes the residential usage of 19,500, community building usage of 400 gpd and pool usage of 600 gpd.

Mitigation Measures

Based on the foregoing, no mitigation measures are proposed.

11.6 Emergency Services: Ambulance and Health Care Facilities

Existing Conditions

The Croton Falls Volunteer Fire Department, provides advanced life support services for North Salem and the area surrounding the Salem Hunt property. As previously mentioned, a letter was sent to the Fire Department requesting information regarding the Department's capabilities as well as several attempts to contact the Department by phone, but no information was received at the time of this DEIS.

The North Salem Volunteer Ambulance Corps is located in Croton Falls, New York and would also provide emergency service to the project site. The Corps recently relocated to a new facility located on Daniel Road and four ambulance bays and adequate space for its facilities. The Corps responds to approximately 365 calls annually and has the capability to hand over 400 calls annually.¹¹ The Corps is a part of a mutual aid agreement with volunteer ambulance companies in nearby communities.

Several medical facilities serve the project area and are described below.

¹¹Comprehensive Plan Update, Town of North Salem, December 2006.

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Located on Stoneleigh Avenue in Carmel, New York, the Putnam Hospital Center (PHC) serves a population of more than 150,000 in Putnam, northern Westchester and southern Dutchess counties. PHC is a 164-bed, not-for-profit, acute care hospital offering the highest quality medical, surgical, psychiatric, pediatric and obstetrical/gynecological care, as well as 24-hour emergency services and home health care. The hospital has 110 medical/surgical beds, a 10-bed intensive care unit, a 10-bed pediatric unit, a 14-bed maternity unit and a 20-bed adult psychiatric unit; a full range of inpatient and outpatient services are offered. PHC has a staff of over 300 physicians, surgeons and allied health professionals and approximately 1000 employees. Expanded facilities at PHC include a Certified Home Health Care Agency and Long Term Home Health Care Program, a Dialysis Center for outpatients, a birthing center, a state-of-the-art ambulatory surgery unit, MRI center, pain management program, outpatient radiology and physical therapy departments, 36 physicians' offices and administrative offices.

The Danbury Hospital has 371 beds and is located on Hospital Avenue in Danbury, Connecticut, which is approximately 15 miles from the project site. This hospital serves approximately 360,000 residents of western Connecticut and southeastern New York. Its specialized facilities include a Level II Trauma Center and Emergency Department, a Cancer Center, a Family Birth Center and Level II neonatal intensive care unit, a Cardiac Center, a Cardiac Catheterization Laboratory and Cardiac Rehabilitation Center, a Dialysis Unit, the Center for Ambulatory Surgery, an accredited sleep disorders center, advanced radiologic and oncology care via two linear accelerators, MRI, CAT, PET Scan and interventional radiology, Main Street Physical Rehabilitation Center, a pediatric pulmonary/asthma management program and the Seifert & Ford Family Community Health Center. Danbury Hospital has 10 clinical departments and a medical and dental staff of more than 500 physicians. The Hospital employs close to 3,000 people and 67 resident physicians.

The Hudson Valley Hospital Center (HVHC) is located on Crompond Road in Cortlandt Manor, which is approximately 19 miles south of the project site. HVHC has emergency facilities and provides a full range of medical services with specialty clinics for maternity, radiology, surgery, cardiology, breast care, arthritis and rehabilitation.

The Four Winds Hospital, located in Katonah, New York, provides comprehensive Inpatient and Outpatient mental health treatment services for children, adolescents and adults on 55 wooded acres in Westchester County. The 175-bed inpatient service is staffed by a multidisciplinary professional team that includes psychiatrists, clinical psychologists, registered nurse practitioners, registered nurses, clinical social workers, masters-level teachers, and creative/expressive art therapists and mental health workers.

Additional hospitals are located in Montrose, Beacon and southern Westchester County, New York.

Potential Impacts

The standard for Emergency Medical Services, according to the Urban Land Institute's 1994 Development Impact Handbook, is 4.1 full-time personnel and 1 vehicle per population of 30,000. The introduction of 135 persons in the Town of North Salem results in potential added demand for 0.02 full-time health care personnel and less than one hundredth of a vehicle.

The ULI Development Impact Handbook indicates that 36.5 Emergency Medical Service (EMS) calls are generated per year per 1,000 population, which would result in the generation of

approximately five calls by the proposed project annually. Based on the ULI multipliers, the proposed project would not have a measurable impact on emergency services.

Additionally, the ULI indicates that four (4.0) hospital beds should be provided per 1,000 persons. Based on this standard, the projected population increase associated with the Salem Hunt Development (135 persons) has a potential to increase the need for beds in hospitals serving the Town of North Salem by less than one bed (0.54 beds, actually).

As the project will be developed and occupied over a period of years, there is expected to be a gradual increase in population that would not create significant demands on health care resources.

Mitigation Measures

No mitigation measures specific to Health Care Facilities are proposed.

11.7 Solid Waste

Existing Conditions

The Town of North Salem does not collect refuse and recyclables, but contracts a private carter, the Tri-County Disposal (TCD), located in Brewster.

Household solid waste is picked up curbsides weekly. Each household is allowed either one cubic yard container or up to four trash cans full, each weighing no more than 60 pounds. Additional service, such as in-driveway and/or container services, are available directly from TCD for a fee.

Newspapers, magazines and co-mingled recyclables are picked-up weekly curbside, as is yard waste. Bulk items can be dropped off at the facility, or special pick-up can be arranged for a fee.

Tri-County Disposal also provides commercial waste disposal for the Town of North Salem.

Refuse is transported to the Charles Point Resource Recovery (RESCO) facility in Peekskill, which is operated by Wheelabrator Westchester, L.P. on the County's behalf. This facility consists of three municipal solid waste combustors that generate steam which is used to produce electricity. According to information provided by the Westchester County Department of Environmental Facilities, the RESCO facility has a permitted throughput capacity of 710,000 tons per year. In 2002, municipally generated solid waste delivered to the facility totaled 666,025 tons, with private carters and direct haul waste comprising the balance.

Potential Impacts

The per household rate for solid waste generation according to the Urban Land Institute's 1994 Development Impact Handbook, is .00175 tons per person per day. The Salem Hunt development projects an increase in population by 135 persons, resulting in an estimated solid waste generation of less than 0.3 tons per day, or 7.1 tons per month. Assuming that solid waste generated by future residents at the project site has a typical three to one ratio of

non-recyclable to recyclable materials, the project will generate 4.7 tons per month of non-recyclable solid wastes and 2.4 tons per month of recyclable materials.

The solid waste collection points at the proposed Salem Hunt development meet all the requirements of §250-19.1. All proposed buildings have been located a minimum of 25 feet from the garbage collection areas. These collection areas will be properly screened.

Mitigation Measures

As no significant adverse impacts regarding solid waste collection are anticipated as a result of the proposed project, no mitigation measures are proposed.

11.8 Recreation and Open Space

Existing Conditions

There are numerous open space and recreation areas available to residents within the Town of North Salem. There is approximately 1,300 acres of publicly-owned land available for recreation and an additional 446 acres are under the management of the North Salem Open Land Foundation, which is a private not-for-profit organization.

The Town of North Salem maintains two parks, Volunteers Park and Joe Bohrdrum Park. Volunteers Park is a 13-acre park located at the intersection of Bloomers Road and June Road. The park has active recreation including one baseball field, one soccer field, and one basketball court. There is also a children's playground. Joe Bohrdrum Park total 20 acres and has two tennis courts, a soccer field, two youth baseball fields, two basketball courts, a children's playground and a picnic area. The Town leases the Purdys Field recreation facility, which is three acres of softball, baseball and soccer field area.

The Mountain Lakes Park and Camp, located in North Salem, is operated by Westchester County and is approximately 1,038 acres of passive recreation, including ice skating, and trails for walking, jogging and cross country skiing.

The New York City Department of Environmental Protection (NYCDEP) maintains the Titicus Reservoir, located in North Salem and totaling 682 acres, where North Salem residents can fish and boat (non-motorized).

There are three State Parks (Franklin D. Roosevelt, Old Croton Aqueduct and Rockefeller State Park Preserve), the John Jay Homestead located in northern Westchester County as well as three State Parks (Wonder Lake, Clarence Fahnestock and Hudson Highlands) located in nearby Putnam County. These parks total nearly 20,000 acres of parks and open space areas.

Planning standards set forth by the National Parks and Recreation Association (NPRA) suggest that 5 to 8 acres per 1,000 residents is a reasonable goal to meet recreation needs. Based on the Westchester County Planning Department's projected population of 5,246 for the Town of North Salem in 2005¹², the Town should have between 26 to 42 acres available for recreation. The recreational facilities owned by the Town total 33 acres. The additional Town-leased Purdys Field, County-owned Mountain Lakes Park and NYCDEP bring the total open-space acreage in the Town to 1,756 acres. Thus, the Town's recreational resources currently have

¹²Comprehensive Plan Update, Town of North Salem, December 2006.

approximately 334.7 acres per 1,000 population, which exceeds NPRA standards for acreage. Additionally, there are active recreation facilities available for use at the North Salem Central School District schools and an additional 20,000 acres of State parks and facilities located in the area.

Potential Impacts

According to the Westchester County Planning Department, the 2005 projected population for the Town of North Salem is 5,246. The proposed project will add a projected 135 persons to the Town’s population and increase local demand for recreation facilities and open space. Land area requirements for neighborhood recreational facilities for single-family developments, based on open space standards derived from the Urban Land Institute’s (ULI) Development Impact Assessment Handbook, are summarized in Table 11-6 below along with the required amount of recreational open space needed for the proposed development based on these standards.

Table 11-6 Parkland Requirements		
Type of Facility	Acres per 1,000 persons	Acres Required for a 65-unit Development
Minipark	0.25-0.5	0.04~0.07
Neighborhood park	1-2	0.14~0.27
Community Park	5-8	0.7~1.1
Aggregate Area	6.25~10.5	0.84~1.4
Source: ULI Development Impact Assessment Handbook, page 262.		

Based on the existing acreage of parks in the Town of North Salem and the Town’s 2005 projected population, the Town has approximately 334.7 acres of parkland per 1,000 population, which is well above both the NPRA standard of 5 to 8 acres and ULI standard of 6.25 to 10.5 acres of aggregate parkland per 1,000 population. However, this estimate is a conservative assessment as it does not take into consideration the additional North Salem Central School District’s recreation facilities or State parkland in the vicinity, and the actual amount of parkland would therefore be higher.

Future residents of the proposed Salem Hunt development would add a projected 135 persons to the Town of North Salem’s population and increase the local demand for recreation facilities and open space. Based on projected population of 135 persons for this project, a total of 0.7 to 1.1 acres of parks would meet the recreational demand for this project according to the NPRA standards, while the ULI standard would require 1.0 to 1.6 acres.

The proposed Salem Hunt development will include a 3,250 square foot, single story recreation building (clubhouse) located at the northeastern portion of the development. The clubhouse is intended for the Salem Hunt residents and their guests and will include a separate parking area with 12 spaces. The clubhouse will contain a large lounge with meeting space for community gatherings and a fitness center complete with exercise equipment and space for aerobic or pilates and yoga exercise. The clubhouse will possibly have space for billiards or a gaming room, plus restrooms, kitchenette and storage space. The recreation building (clubhouse) will include a 25-foot by 50-foot heated outdoor swimming pool with a fenced common area.

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These recreational facilities will be located on a common lot and controlled by the Condominium Association. These common areas will meet the requirements as per §250-19.1- L.

According to §250-19.1-K, the proposed swimming pool must be located at least 30 feet from any building and 50 from any lot line. The proposed pool is an integral part of the recreation building and, by design, has been located closer than 30 feet from the building. For purposes of accessibility, the proposed parking has been located closer than 25 feet from the recreation building. The applicant proposes to seek variances for both of these setbacks.

Additionally, approximately 20 acres or one-half of the site will remain undeveloped open space after completion of the proposed condominiums.

Mitigation Measures

As previously noted, the proposed project will provide its own on-site recreational facilities. As per §250-19.1-L, these facilities will be held in common ownership by the Salem Hunt homeowners association. These facilities will minimize the demand for off site recreation facilities. The project proposes the construction of a community recreation building and swimming pool. Lastly, the wetland and open space system would afford passive recreation opportunities.

Section 250-19.1-H of the Town Code states that the Planning Board may require on-site recreational amenities held under common ownership, the reservation of parkland or a payment of a recreation fee. Since the proposed plan provides adequate open space and recreation areas for the residents of Salem Hunt, the requirement for parkland has been satisfied.

No significant demand is anticipated to be placed on Town of North Salem recreation facilities as a result of the proposed Salem Hunt development, therefore no mitigation measures are proposed.

12.0 EFFECTS ON THE USE AND CONSERVATION OF ENERGY RESOURCES

Both short-term and long-term energy consumption effects are associated with all residential construction projects. Short-term energy consumption impacts would occur during construction of the proposed development, primarily due to the consumption of fossil fuels through the operation of power equipment and construction vehicles.

Once constructed, the 65 condominium units would be occupied by households that would place long-term demands on various energy sources. Once construction is completed, energy from several possible sources will be required for space heating, air conditioning, water heating, refrigerators and lighting as well as other appliances and incidental domestic electrical uses. Indoors climate control systems will demand the largest quantities of energy consumed over the lifetime of the project. Energy efficient heating, cooling and insulation systems will be utilized to conserve energy resources associated with climate control within the housing units. New construction, such as the Salem Hunt project, is much more energy efficient compared to older homes, due to technological improvements in construction, such as wall insulation and thermal windows.

Energy conservation in New York is regulated at the state level for new residential and commercial construction. The Salem Hunt development would be constructed in accordance with the New York State Energy Code. In effect since 2002, the code specifies basic requirements that are mandatory for newly constructed buildings. Requirements apply to heating and cooling systems, hot water systems, electrical systems, construction materials, equipment specifications and building sealing and insulation. Additionally, the New York State Energy Research and Development Authority and the Public Service Commission promote compliance with Energy Star® and New York Energy SmartSM programs by construction firms, building management firms and homeowners that encourage the use of energy conserving appliances, materials, technologies and building techniques. Compliance with provisions of these energy conservation programs would reduce the overall long-term energy consumption of the project.

The Salem Hunt project will utilize the most current energy efficient appliances, furnaces and water heaters, in order to minimize energy consumption in the development. Propane will be utilized for cooking, further reducing the electrical usage by residents. Specifically, the Salem Hunt project will be designed to be LEED for Homes certified. As one requirement of LEED for Homes, all homes must be NYS Energy Star Certified. This certification is provided by a third party State registered HERS rater who will certify that the Salem Hunt homes are at a minimum 30% more energy efficient than a standard built, newly constructed home that complies with the NYS Energy Code.

The Salem Hunt homes will be constructed to meet the requirements for the residential energy efficiency tax credits under Section 1332, Credit for Construction of New Energy Efficient Homes, of the Energy Policy Act of 2005. In meeting this standard, the residences will have a projected level of annual heating and cooling energy consumption that is at least 50% below the annual level of heating /cooling energy consumption of a typical dwelling in the same climate zone. Typical overall annual energy cost savings for homes constructed by the applicant average over \$1400.

The Energy Information Administration of the US Department of Energy conducts a Residential Energy Consumption Survey (RECS) which provides statistical information on the use of

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household energy in the United States. RECS data for New York indicates that approximately 64 million BTUs¹ are consumed per household annually in New York State. While actual electrical and gas demands for individual homes may vary considerably based upon the lifestyles and habits of the occupants, the RECS consumption data generates an estimate that the 65 households proposed for this project would consume 4.16 billion BTUs of energy annually. Based upon the projected energy savings for the Salem Hunt project described above, the project is expected to utilize 30 to 50 percent less energy than is typical for residences in New York.

Residential electric service, provided by New York State Electric and Gas (NYSEG), would be extended to the project site from June Road via buried utility connections. NYSEG does not anticipate any problems accommodating the projected electrical demand created by the proposed development.² All underground utility connections will meet Town Code and industry specifications.

The utility supplier supports a variety of programs that encourage the use of renewable energy resources and conservation of energy.

The Salem Hunt project, with 65 new condominium residences, is not expected to have a significant effect on local or County wide energy use.

¹ BTU, or British Thermal Unit, is a unit of heat measurement.

² Eileen Palmasino, NYSEG customer service, conversation, January 19, 1007.

13.0 GROWTH INDUCING IMPACTS OF THE PROPOSED ACTION

As indicated in previous sections of the document, the proposed project will add a projected 135 persons, including 9 school-age children to the population of the Town of North Salem.

The Salem Hunt property, as well as three other sites in the Town, were specifically rezoned as R-MF/4 Multifamily Zoning District by the Town of North Salem in 2000. The primary objective of the rezoning was to create the opportunity for affordable housing and to provide for the development of a variety of housing types in the Town. The project's density, allowance for Moderate Income housing and its location within the Town are the result of a deliberate environmental review process by the Town.

In terms of attracting similar residential development, the Salem Hunt project is somewhat unique in the Town, since the Site is zoned R-MF/4 Multifamily Zoning District, and surrounding and nearby development is zoned low to moderate density residential, including R-1, R-2 and R-4 in the Town of North Salem and R-60 in the Town of Southeast. Therefore, it is unlikely that the project could attract similar residential development.

The 135 new residents added to the Town population would represent approximately 2.5 percent of the projected 2010 total Town population, estimated to be 5,300. The 2010 population projection for the Town of North Salem was developed by the Westchester County Planning Department (per Comprehensive Plan Update, Town of North Salem, December, 2006).

The future residents of Salem Hunt will utilize existing retail and service businesses in the local community, such as Peach Lake and Brewster, as well as regional shopping centers such as Sears Corners in Southeast and the Danbury Mall in Danbury. The Salem Hunt project and 135 new residents are unlikely to trigger the demand for new retail and commercial development in the local area. The potential for new commercial and retail business in the vicinity of the project site is also limited by the primarily residential zoning near the site. The project may result in the gradual expansion or addition to existing local businesses. The project site's environs are served by private water supply and sewer services. Public water and sewer services will not be extended into the project site, since such services are not available in the vicinity of the site. The project is not expected to result in the creation of infrastructure that could induce future growth since such infrastructure is not being constructed for the project.

The project will promote increased construction employment in the short term and, on a cumulative basis, an increased long term demand for residential goods and services that will have a steady multiplier effect in the project area's retail markets. As discussed above, the project's 135 new residents are unlikely to result in new retail and commercial development, but will the residents will utilize and possibly result in the expansion of existing businesses.

No significant adverse effects on the area's utilities, community services, or facilities are expected. No adverse effects on area commercial services are expected as a result of the proposed development.

14.0 ALTERNATIVES

The New York State Environmental Quality Review Act (SEQRA) calls for a description and evaluation of reasonable alternatives to the proposed action that are feasible, considering the objectives and capabilities of the project sponsor. The proposed project is presented in detail in the Project Description of this document and assessed in detail in the various sections of this document. Following is an assessment of alternatives to the proposed action that were included in the Lead Agency's adopted scope.

During the preparation of the Site Plan and DEIS the proposed action was revised and the number of units and scale of the project was reduced. As described in this document, the current proposed action and Site Plan involves 65 condominium units in 24 buildings. Each of the buildings would contain two or three, two-bedroom residences. A previously designed and engineered project layout envisioned 75 units in fifteen buildings. In the previous proposal, each of the buildings contained 5 units. The current 65 unit proposal reduces the scale and bulk of the residential buildings and makes them more compatible with the nearby residential development in North Salem and Southeast. The revised plan also reduces impervious surface, population, and water and sewer use. Although a comparison of these two project designs was not specified in the Scoping Document, comparisons of the proposed action and the previous project are discussed in this chapter.

The adopted scoping document includes seven alternatives, as provided below:

1. No Action Alternative
2. Structure Design and Layout Alternative
3. Increased Unit Count Alternative
4. Reduced Impervious Surface Alternative - Decreased Unit Count Reduced Impervious Surface Alternative - Same Unit Count as the Proposed Action Walkable Community
5. Fee Simple Alternative

As described above, the current Site Plan has been substantially modified since the adoption of the Scope, based upon feedback from the Planning Board, advancement of the engineering and site plan drawings and a better understanding of the site's septic system capacity, following testing and studies. These changes to the Site Plan resulted in a reassessment of the alternatives set in the adopted Scope. The applicant met with the Planning Board on March 5, 2008. At that meeting, the above alternatives were each discussed.

The Planning Board agreed that the currently proposed project meets the objectives of Alternative 2 - Structural Design and Layout Alternative. The Scoping Outline indicates that: "An Alternative building design and layout shall be provided which reduces uniformity and provides a development more consistent with the community character found in North Salem by designing the buildings in this development to resemble farm structures". The details of this alternative and a comparison of it to previous design and layout proposals are provided below.

The Board agreed that the currently proposed Site Plan, with additional measures to reduce impervious surfaces, meets the objectives of Alternative 4 Reduced Impervious Surface Alternative - Decreased Unit Count. Alternative 5 - Reduced Impervious Surface Alternative - Same Unit Count no longer applies since the applicant is no longer proposing 75 units as contemplated by the Scope.

A Fee Simple alternative was requested in the Scoping Outline and is described herein.

14.1 No Action Alternative

The No Action Alternative is the scenario that would occur if no development were to take place on the project site. This is effectively an open space preservation alternative. The site would remain in its current undeveloped and underutilized condition. A summary of impacts of this alternative, as compared to the proposed action, is presented below.

Zoning and Land Use: With no improvements to the site under the No Action Alternative and no construction associated with the proposed project, the project site would remain vacant, with no resulting land use impacts. The creation of housing in an area where there is a demand for such housing would not be realized.

Vegetation and Wildlife: Under the No Action Alternative, the disturbance or removal of on-site vegetation and available wild life habitat, with the introduction of buildings and associated infrastructure on the site would not occur. The site would provide more habitat and cover for local wildlife than under conditions with the proposed action.

Groundwater: There would be no use of groundwater under the no action alternative, and therefore existing residential groundwater use, in the vicinity of the site would remain unchanged.

Wetlands: No disturbance of wetlands or their regulated areas would occur under the No Action alternative.

Geology, Soils and Topography: There would be no disturbance to soils or topography under the No Build alternative. No grading of soils would occur on the project site under the No Build alternative.

Cultural Resources: There would be no change to the visual environment as a result of this alternative. The site would remain vacant and largely unchanged.

Transportation: The No Action Alternative would not alter the traffic patterns that occur presently in the site area. No additional traffic would be generated by the site and no impacts to traffic would result.

Utilities: No impact to existing utilities will occur in the No Action Alternative.

Community Services: With the project site remaining vacant, there would be no impacts to community services, and no significant increases in municipal property tax revenues generated by the project site to fund community services.

Given the viability of this site for development under the existing zoning regulations of the Town, as demonstrated by this project proposal, the No Action Alternative, or the continuation of the vacant state of the project site, is not a likely alternative. It should be noted that with the proposed development plan, a substantial amount of land would remain as undeveloped open space.

14.2 Structure Design and Layout Alternative

The Structure Design and Layout Alternative development scenario entails construction of homes that are more consistent with the community character found in North Salem. According to the Scope, the intent of the alternative would be to reduce uniformity by designing buildings that resemble farm structures. This alternative can include different combinations of units per building, variation in unit layout and variation in unit size.

The applicant originally proposed larger buildings with five units in each building. Based upon the applicant's site plan considerations, input from the Town of North Salem Planning Board and its consultants the project has been revised to include smaller buildings. Among the applicant's goals in revising the site plan for the proposed action was to address the elements sought by the Lead Agency in this alternative. Specifically the buildings are now that are "more consistent with the community character found in North Salem". Currently 24 smaller residential buildings are proposed, having a combination of two and three units in each building. The buildings have been designed to be consistent with traditional farm house architecture and structures, as shown in Figure 14-1 Proposed Building Elevation. Elevations of the four building types are provided in Chapter 2.0 Project Description, Figures 2-5 through 2-8.

The buildings are designed with early American architectural details, including clapboard wood siding, simple lines and highly pitched roofs. The primary roof-line is reminiscent of a traditional farm structure. Traditional early American details include the doors, shutters, double-hung windows, as well as the use of columns and wood railings at some of the entrances. The facades of the buildings are broken-up with varied roof lines and peaks. Traditional color schemes or earth tones will be used for the siding and roofs.

Given that the proposed action provides building architecture and layout designed to be consistent with the community character of North Salem, the goals of this alternative have been achieved and a separate alternative is therefore not necessary. A summary of impacts of the Proposed Action compared to the other alternatives listed in the Scoping Document are provided in Table 14-1, below.

14.3 Increased Unit Count Alternative

The Final Scoping Document listed an Increased Unit Count Alternative. The applicant investigated a proposed plan with an increased unit count of 90 two bedroom units. The proposed 90 units would have been provided in 5 buildings with 18 units in each building.

The project engineer has conducted extensive testing and analysis to determine the project site's capacity for sanitary system disposal. The site could not support a Subsurface Sanitary Treatment System (SSTS) for 90 units and therefore this alternative was not considered practicable or feasible. No further detailed analysis of this alternative was conducted.

14.4 Reduced Impervious Surface Alternative - Decreased Unit Count

The Final Scoping Outline prepared for the project called for the consideration of a Reduced Impervious Surface Alternative with a decreased unit count. As described in this DEIS, the proposed project currently envisions 65 residential units, compared to a previous design of 75 units. The layout and design of this alternative was developed in consultation with the Planning Board. Based upon discussions with the Lead Agency, the currently proposed plan with 65

residential units, meets the goals of the Reduced Impervious Surface - Decreased Unit Count Alternative. The currently proposed project shows less impervious surface as it has a smaller building footprint and fewer parking spaces, consistent with the Scope. This alternative includes design modifications such as pervious pavement and narrower pavement width to further reduce the project impervious surface. The currently proposed plan is shown in Figure 14-2 and the previous 75 unit plan is shown in Figure 14-3, for comparative purposes.

The current plan was designed in consultation with the Planning Board and neighbors to the site. The applicant has voluntarily provided a 100 foot buffer between the southern property line and the nearest building, instead of the 50 feet required by the Zoning Code. This layout reduces the site's development envelope. Septic system constraints reduced the total number of units that could be supported on the property to 65 units. The reduction in the number of units provided flexibility in the layout and design of the project. Therefore, the current design proposes the 65 units in 24 two and three unit buildings, instead of the previous project layout with 75 units in fifteen buildings. In the previous proposal, each of the larger buildings contained 5 units.

Impervious surface was reduced from 6.3 acres in the 75 unit plan to 5.9 acres in the current plan, without design modifications. The area of impervious surface can be further reduced from the current plan by providing pervious pavement in the parking areas for the recreation building and for visitor parking. Also, by reducing the width of secondary internal roads from 24 feet to 20 feet, project impervious surface can further be reduced. These design modifications result in an impervious area reduction of approximately 14,660 square feet, as compared to the current Plan.

A comparison of impacts between the formerly proposed 75 unit design and the current 65 unit plan with design modifications is provided in Table 14-1, below.

14.5 Reduced Impervious Surface Alternative - Same Unit Count as Proposed Action

Alternative 5 involves the analysis of a Reduced Impervious Surface Alternative with the same unit count and layout as the proposed action. In reducing the unit count from a previously designed project of 75 units to the proposed 65 units, the amount of impervious surface has been reduced from 6.3 acres in the 75 unit plan to 5.9 acres in the current plan. Since the applicant is no longer proposing 75 units as contemplated by the Scope, this alternative no longer applies.

14.6 Walkable Community

As provided in the Scoping Document, this alternative examines the potential impacts associated with the project designed as a "walkable community". This alternative examines a layout which strives to increase the pedestrian environment of the planned development.

The Salem Hunt development is a clustered development of 65 condominium units. The residential portion of the development consists of approximately 13 acres with residences clustered around a looped access road. There is a single entrance and exit to the development on June Road. There is no through traffic and internal traffic is likely to travel at low speeds. The distance from any of the units to the recreation center is less than 1,200 feet. Therefore, due to the compact, clustered nature of the project layout, walking is likely to occur within the development. Pedestrians will walk to other residences or units and to the recreation building

using sidewalks or by utilizing the internal roadways. The clustered layout and design of the project is consistent with the planning objective of this alternative.

Sidewalks and walking opportunities adjacent to or near the site are limited. There are no sidewalks on June Road/ North Salem Road or Starlea Road and the shoulder is narrow or nonexistent in places. New York State Department of Environmental Conservation (NYSDEC) wetlands are located on the west and east sides of June Road, along its frontage with the site. These wetlands limit the potential for the future construction of sidewalks along June Road to the south. Walking destinations near the Salem Hunt site would be a Deli located on June Road, southeast of the site; Volunteer Park, located adjacent and east of the site on June Road; and the North Salem Middle School/ High School, also located on June Road directly southeast of the site.

An opportunity to access Volunteer Park would be a sidewalk or path constructed near the southern edge of the site, across the small perennial stream, and through the NYSDEC wetland, to Town owned property east of the site. This sidewalk or path would need to cross 180 feet of NYSDEC regulated wetland to access Town property. Approximately 1080 square feet or 0.025 acres of wetlands would need to be disturbed for the path/sidewalk construction and a NYSDEC Wetlands Permit would be required for the work. The potential location of the sidewalk crossing the wetland and accessing Town land is shown in Figure 14-4 Walkable Community Alternative.

The walkable community alternative would not result in any significant environmental impacts. A slight increase in site disturbance and impervious surface compared to the proposed action (up to approximately 0.2 acres) would result from this alternative. As described above, a NYSDEC Wetlands Permit would be required for the approximately 1080 square feet (0.025 acres) of wetland disturbance for the path/ sidewalk connection to Town property.

14.7 Fee Simple Alternative

The Fee Simple alternative evaluates the potential impacts associated with the development of the proposed action as a fee simple ownership project versus the planned condominium development. A Fee Simple proposal involves the physical ownership of land by the prospective owner, around each of the residential units. A condominium association would own and maintain common land and the utilities under this scenario. The Fee Simple alternative would require the subdivision of land for creation of individual lots around the units. Under this alternative the design and layout of the buildings, access roads and infrastructure would remain unchanged from the proposed action. The private ownership of individual residential lots would result in a different method for calculating taxes, a Market approach, compared to the income approach used for a traditional condominium development, as described below. This alternative was evaluated and a fee simple layout was designed, as shown in Figure 14-5.

The Fee Simple alternative involves development restrictions related to the Public Water Supply (PWS) system and wellhead protection areas. Any multi-family residential development on the site would need to be served by a community water system which would require a Permit for a Public Water Supply from the NYSDEC. Public Water Supply systems have development restrictions that include the requirement of ownership of land around each water supply well associated with the system. Specifically, the New York State Department of Health (NYSDOH) requires that there shall be ownership (possession or legal title) by the owner of the PSW well, of lands within 100 feet of the PWS well, and controls by ownership lease, easement or other

legally enforceable arrangement of land use activities within 200 feet of the PWS well (Part 5, Subpart 5-1 Public Water Systems).

In the proposed action, the proposed condominium association would own the PSW well and all of the land in the development, so residences can be constructed within the 100 foot well radius. Under a fee simple alternative, all units would need to be outside of the 100 foot ownership radius, since individual property owners would own the land associated with each residence, unless a variance is obtained from the NYS Sanitary Code.

The applicant has discussed the need for and the process for obtaining a variance from the NYS Sanitary Code with the Westchester County Department of Health (WCDOH) and the NYSDEC. In order to obtain a variance, a condominium association would need to establish "constructive ownership" of the land outside of individual condominium lots, including the land around each well. In addition, wells in close proximity to development may require double casing.

A Transportation Corporation is typically established for residential developments with a community water supply and a community wastewater disposal system. The community wastewater system will require an individual SPDES permit. According to NYSDEC regulations Section 750-1.6 (b)(2)(f) Applications to Obtain New SPDES Permits, "a permit for a sewage disposal system or approval of a sewer extension intended to serve more than one separately owned property shall be issued only to a governmental agency, municipality or sewage disposal corporation formed and regulated pursuant to Article 10 of the Transportation Corporations Law". The condominium association would provide funding for the Transportation Corporation for routine and long term maintenance of the water and sewer facilities and infrastructure. In connection with the Transportation Corporation, the Town of North Salem would need to form underlying water and sewer districts. These districts would be established in the event that the Transportation Corporation failed to adequately fund or implement maintenance of the water and sewer systems.

The gross fiscal benefits to the Town and the other taxing jurisdictions would be greater with the Fee Simple alternative compared to the proposed action. Under a Fee Simple proposal, taxes are calculated using the market value of the residential units. Under the proposed action and condominium ownership, an income approach is used to estimate taxes. As shown in Table 14-1, total projected tax revenues to all jurisdictions would be \$984,118 using the fee simple method for 65 units, compared to \$504,246 using the income approach for 65 condominium units.

14.8 Impact Comparisons for Salem Hunt Alternatives

Tables 14-1 below summarizes the quantitative impacts associated with the proposed plan and the alternatives for the Salem Hunt site.

Table 14-1 Alternative Impact Comparisons						
Area of Concern	No Action Alternative (Alt - 1)	Proposed Action (Same as Alt - 2 Structure Design Alternative)	Previous 75 unit Alternative (This Alternative was not specified in the Scoping Document)	Reduced Impervious Surface Alternative - Decreased Unit Count (Alt - 4)	Walkable Community (Alt - 6)	Fee Simple Alternative (Alt - 7)
Developed Area						
Residential Units	0	65	75	65	65	65
Impervious Surface (acres)	0	5.9	6.3	5.6	6.1	5.9
Lawn/ Landscaping (acres)	0	14.4	12.9	14.7	14.8	14.4
Open Space and Natural Resource Impacts (acres)						
Wetlands (acres)	8.1	8.1	8.1	8.1	8.1	8.1
Woods (uplands) (acres)	31.9	11.6	12.7	11.6	11.6	11.6
Total Area of Disturbance	0	20.3	19.2	20.3	20.9	20.3
Disturbance to slopes > 15 %		0.6	0.7	0.6	0.6	0.6
Community Resources						
Population	0	135	155	135	135	135
Water demand (gpd)		20,500	22,500	20,500	20,500	20,500
Sewage flow (gpd)		16,000	18,000	16,000	16,000	16,000
Total Revenues						
Revenues to Westchester County	\$17,728	\$504,246	\$581,822	\$504,246	\$504,246	\$984,118
Revenues to Town of North Salem	\$2,596	\$73,844	\$85,205	\$73,844	\$73,844	\$144,119
Revenues to North Salem Central School District	\$2,598	\$73,882	\$85,249	\$73,882	\$73,882	\$144,194
	\$12,534	\$356,517	\$411,368	\$356,517	\$356,517	\$695,805
Traffic						
Traffic Generation (Total AM Peak Hour Trips/ Total PM Peak Hour Trips)	0	36/42	41/48	36/42	36/42	36/42
Source: Tim Miller Associates, Inc., Insite Engineering, Surveying & Landscape Architecture, LLC. ** Includes areas of stormwater management basins.						

15.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The proposed plan will commit the project site to residential use. Once committed to this use, the site will be unavailable for other uses for the foreseeable future.

Development of the project will result in the loss of portions of the forested upland wildlife habitat occurring around the existing residential homesites on the site. The forested portions of the site that are not disturbed by the proposed project will continue to function as wildlife habitat areas. Landscaped portions of the developed area will provide additional habitat for species adaptable to areas of residential land use.

The finite resources that will be irretrievably committed by implementation of the proposed action are the materials and energy required for construction and for maintenance of the development afterward. Construction will involve the commitment of a variety of natural resources. These include, but are not necessarily limited to, concrete, asphalt, steel, lumber, paint products, and other building materials. However it should be noted that many of the materials utilized for construction may at some time be recycled or reused. The operation of construction equipment will result in consumption of fossil fuels and other finite energy sources.

When completed, the new residences will require the consumption of fossil fuels either directly as heating fuel or indirectly as electricity. The regional electrical grid is also supplied in part by nuclear generating stations as well as generating stations utilizing renewable energy such as hydroelectric and wind power resources. There will also be solid waste disposal requirements associated with the project, however, a significant portion of the total solid waste stream (30%) can be expected to be recycled.

The proposed residences are projected to have a total market value of approximately \$24,530,850. Construction of the project will require a commitment of person hours of labor, which can be viewed as beneficial to the community, the local economy, and the construction industry. It is anticipated that a portion of the construction-related workers at the site will come from the Town of North Salem and other surrounding Westchester County towns. The construction trade workers would have a short term positive impact on existing local businesses that provide goods and services such as food, convenience shopping, machinery lubricants, repairs and fuels.